INTERREG BALTIC SEA ANSÖKAN

POWERPOT: Boosting Local Green Protein Usage in Public Food Services

Public food services play a significant role in the food supply chain. They possess considerable expertise in distributing nutritious and affordable meals. Additionally, their customer base represents a significant portion of the local population. As a result, food services have great potential for fostering local food innovations.

In POWERPOT project, the solutions tested are based on the everyday practice of experience foodservice operators. We gather the best practices, tune them for local environments, and after piloting spread them throughout the Baltic Sea area. We truly believe that the best expertise for sustainable food solutions is found just next to the pot!

POWERPOT offers practical models and techniques for incorporating green plant proteins into daily food service operations. We carefully consider regional nuances related to ingredients, food culture, and nutritional needs. By collaborating with diverse food chains across Baltic Sea countries, we aim to make their operations more sustainable and flavorful.

The pot-based solutions in our project focus on two critical aspects of food service:

1) What Goes in the Pot – Local Protein Procurement:

a. Dynamic Procurement: Agile sourcing of local proteins

b. Economic-Ecological Valuation: Balancing cost-effectiveness and environmental impact.

2) What Bubbles in the Pot – Enhancing Protein Quality:

c. AI-Aided Recipe Creation: Using artificial intelligence to develop recipes.

d. Combining Tradition and Menu Planning through Co-Creation: Collaborating to create menus that honor local food traditions.

Our consortium includes professionals from municipalities, research institutes, and expert organizations. Together, we have the knowledge and skills necessary to implement the solutions outlined in sections (a) to (e) above.

Throughout the project, we will pilot these methods in various countries and contexts, evaluating their effectiveness. Best practices will be shared locally and internationally, facilitating knowledge transfer and food resilience among the Baltic Sea countries.

Project participants:

Finland: University of Turku (lead partner) Valonia. Expert organization for sustainable development in the municipalities of Southwest Finland

Sweden: Hållbar Utveckling Skåne, Skåne Food Innovation Network (Livsmedelsakademin), Region Skåne

Poland: Warsaw University, Fundacja ochrony wielkich jezior Mazurskich

Lithuania: Vytautas Magnus University, The Association "Klaipėda Region" (AKR)

Latvia: Institute of agricultural resources and economics (AREI)

WP 1 Preparing solutions

A) GA Dynamic procurement (Valonia)

Increasing dialogue in procurement

Procuring and increasing the use of plant-based proteins in public food services is a challenge that requires consideration from various perspectives. Producers of plant-based proteins seek assurance of product demand, while purchasers need more information on the available products and their suitability for public sector needs. Producers may not see the public sector as an attractive partner, though public units can be stable long-term partners. There must also be demand for new types of plant-based proteins from end users. While kitchen staff are often motivated to test new types of proteins, they might arouse suspicion among end users. The challenge is also communicative and general acceptance and awareness of plant-based proteins is at the heart of the development of procurement processes.

For these reasons, the procurement of new plant-based proteins needs to develop in a **more active, participatory, and dialog-oriented direction, which is the approach this project aims to foster.** This involves traditional market dialogue between prospective producers and purchasers, as well as various participatory procurement practices (for example end user food councils) and increased dialogue throughout the entire procurement chain, including end users and related stakeholders (for example parents and teachers in schools).

During this preparing phase, the baseline and initial situation of plant protein procurement in the participating countries will be defined. Opportunities for increasing the use of plant-based proteins in the public sector will be mapped, as well as the presence of local plant protein producers in each country. Best procurement practices and participatory methods from different countries will be identified for potential scaling to new procurement methods and plant protein procurement. A survey or focus group interviews will be conducted with purchasers, producers, and other relevant stakeholders.

Following this phase, the project will move towards piloting new procurement practices (operational models) emphasizing dialogue and co-development in the participating countries.

B GA Economic-ecological valuation (AREI)

Economic and environmental competitiveness of local green protein ingredients for food production procurements.

The goal of this solution would be to promote the use of local green protein ingredients in food processing, enhancing sustainability and resilience of the region.

Efforts to include more locally grown protein plants in the Baltic Sea region's menu requires also changes in the local crop production structure. Currently, the cultivation of legumes and hemp, primary sources of plant-based protein, is not widespread in BSR. We must emphasize the benefits of including legumes in crop rotation, not only as a response to global challenges but also as advantage for the farms. Collaboration between local food producers and local farmers should also be promoted.

Transitioning to more sustainable food systems demands new approaches to properly evaluate and mutually compare various food ingredients (including imported and local origin), which may have varying content of nutrients. To address this issue, we have developed the concept of the economic nutrient units (ENU). ENU is an amount indicator that measures the content of all the basic nutrients (e.g., protein, sugars plus starch, fats) in the crop in terms of their economic/ market value. It has been used to assess economic (costs and gross margin per ENU) and environmental (greenhouse gas emissions per ENU) performance of feed crops and can be extended to food ingredients, providing an innovative way to evaluate production efficiency based on nutrient content, allowing sustainability comparisons among different ingredients. By

implementing this solution, we can gain the data enhancing stakeholders' awareness and promoting the inclusion of nutrient-rich crops in agriculture, aligning crop pricing with nutrient content rather than just physical yield.

Actions to do:

- Explaining the ENU approach: to develop and present ENU as a metric for raw material procurement in food processing to stakeholders.
- Identifying protein sources: to find common imported green protein sources in food production and local alternatives, focusing on at least two varieties of peas, faba beans, and hemp in each piloting country.
- Developing ENU-based methodology: to create a methodology based on the ENU approach to evaluate the economic and environmental competitiveness of local green protein ingredients for food production. The methodology for the assessment of ENU will be based on the AREI previous research (Auzins et al., 2021): https://doi.org/10.22616/erdev.2021.20.tf288.

Target groups of the solution:

- SMEs in farming and food processing
- Policy makers.

C AI-Aided Recipe Creation (Vytautas Magnus University)

Existing IA-based recipe generators (https://www.matellio.com/blog/ai-food-recipe-generator/) are to suggest recipes according to user preferences, dietary restrictions, ingredient availability, etc. Our aim is to increase plant-based food ingredients in public catering, which would help to reduce ecological footprint, to promote healthier diet, and to avoid food waste, by informing catering services about most user suitable options of plant-based meals.

VMU together with other partners will develop AI-based recipe generator taking as a basis the principles of existing generators. We will incorporate information from other activities of our project (on sourcing, green menu creation). In particular, we use the following inputs from other WP1 activities / solution owners:

GA Dynamic procurement (Valonia):

- Data on the key requirements applied in piloting countries/regions, e.g. nutritional requirements for meals in schools;

GA Economic-ecological valuation (AREI):

- Data on raw materials, footprints (protein sources, i.e. common imported green protein sources in food production and local alternatives, focusing on at least two varieties of peas, faba beans, and hemp in each piloting country);
- Data on price competitiveness of promoted foods;

GA Taste tuning and nutrient balancing (DTI):

- Data on green menu creation;

GA Combining tradition and menu planning by co-creation (HUT):

- Data on recipes (from cooking sessions where local producers and public chefs together will explore how to include the producers' products into traditional recipes without losing flavor, texture nor nutritional content; the recipes will be used to train the AI in the GA "AI aided recipe creation").

D GA Combining tradition and menu planning by co-creation (HUT)

In previous projects led by Hållbar Utveckling Skåne, Swedish municipalities have worked with several local food producers, adapting and making meals from the producers' products to fit the public sector's needs (e.g. plant-based meatballs). This innovative way of cooperation strengthens and shortens the food chain alongside supporting the local market. The pilot we are to prepare for WP2 will build on this concept but with focus on building meal concepts based on locally grown green proteins and adding them to the public catering menu in a way that is appealing for the customer. This, in turn, will inspire the public sector them to buy more local/regional produce.

During the pilots, local producers will be invited to cooking sessions with public chefs and together they will explore how to include the producers' products into traditional recipes without losing flavor, texture nor nutritional content (the recipes will be used to train the AI in the GA "AI aided recipe creation"). This will firstly be done nationally, and in WP3 we will take it to the next step and open for the producers to become regional distributors by inviting them to cross-country cooking sessions with public chefs in project partner countries, to fit their products also to other countries traditional recipes. Increasing the market locally and across the Baltic Sea Region equals larger volumes/sales and reduced financial risk for the producers. In turn, if profitability increases, producers not only can stay in business, but new ones will be interested in cultivating and processing green proteins, which strengthens food resilience in the whole Baltic Sea Region.

In the preparatory phase, involved partners need to

1) Engage public chefs wanting to join cooking sessions as well as local producers interested in adjusting their product for the public market.

2) Interview the chefs on traditional recipes/needs that are of interest to pilot.

3) Matchmake between needs conveyed by the public chefs and products from local producers.

Specific challenge to be addressed

The past five years have been marked by crises, including the corona pandemic, the conflict in Ukraine, and extreme weather events due to climate change. These crises have revealed the fragility of global supply chains under pressure. Consequently, national and local authorities want to reduce their import-dependency and protect vital societal functions (such as food) and related critical infrastructure (food production, processing, storage and distribution). One strategic action is diversifying the supplier base by strengthening local and regional value chains and food systems. In contrast, relying heavily on imports makes us more vulnerable to shortages or delays in the delivery of essential food items, affecting food security and leading to price volatility.

When building more resilient and self-sufficient food systems, we should focus on sustainable foods. Green proteins (legumes, hemp) thrive in diverse conditions and are an excellent choice from this perspective. They have a low carbon footprint in comparison to animal proteins and many other food ingredients. In farming, legumes have the unique ability to fix nitrogen in the soil, reducing the need for imported synthetic fertilizers, and promoting soil fertility. Legumes and hemp are a given crop for organic farmers, as they provide a natural means for increasing agricultural resilience through crop diversification. Hemp is an effective sequester of carbon dioxide and regenerates the soil.

As regards human health and resilience, legumes and hempseeds are rich in protein and excellent nutritious additions (functional foods) to the diet. They are an outstanding choice to reduce our meat consumption and increasing the share of plants, in line with the Nordic nutrition recommendations.

Considering business opportunities, beans, peas, lentils and hempseeds are interesting ingredients for the plant-based foods market (including meat imitations) that is experiencing strong growth globally. On the other hand, should a crisis strike, they are also easy to store and cook, provided that the basic processing infrastructure is in place.

There are several reasons as to why locally, nationally, or regionally (BS) produced green proteins have not reached their full potential as an ingredient in public and private restaurants. A main issue is that demand and supply do not match, which is why coordinated actions - simultaneously addressing all the steps in the value chain - are needed.

Transnational relevance

I Baltic Sea countries are dependent on global supply chains for our food supply. In times of crisis, we rely on a chosen few agricultural produce at country level. At EU-level, we have high self-sufficiency rates across almost all agricultural products. This motivates food system cooperation between other EU countries, including the Baltic Corridor. The categories where the EU has lower self-sufficiency are protein crops (80%) and oilseeds (59%). Hempseed is both an oilseed and protein crop. These happen to be the crops that naturally can impede soil degradation, which is threatening the resilience of our food systems.

To create more robust and resilient food systems we need: less ingredients that are imported & more locally produced; less monocropping & more crop diversification; less conventional farming practices using imported chemical fertilizers & more circular farming practices where green proteins have an important role to play. From a health perspective and considering climate footprint we should, in addition, eat less meat & more green proteins.

The public sector, with its purchasing power and role as policy shaper, can be a motor for the green protein revolution from local to global level. However, knowledge has not yet been shared and solutions tested between the BSR authorities. A robust implementation is needed, making use of digital, AI powered tools to speed up the learning process. We need innovative solutions and strategies to create more demand for locally produced green proteins from the public and private sector. Even business, employment, and export opportunities will be created along the entire value chain. The main obstacles to increased local production of green proteins are low margins for the farmer due to scattered demand, incomplete processing facilities, and incoherent support from the innovation ecosystem for SMEs. By consolidating demand and addressing value chain hinders in a joint BSR effort, these obstacles can be overcome.