BRIDGES project, additional activities

Value chain mapping leading to interregional complementarities through EDP collaboration
Interregional meeting 9.3.2022

PP4, Regional Council of Helsinki - Uusimaa (ARI etc)

PP5, ANKO (Tasos etc)

Purpose

- INDUSTRIAL TRANSITION: The region of Western Macedonia is radically diversifying its economic base, transferring from dependence on coal economy, to valorisation of primary sector raw materials through industrial diversification and services.

- PLACE-BASED APPROACH & DIVERSIFICATION POTENTIAL: Western Macedonia has strong raw-material potential, however, to valorise it requires considerable investments for achieve product (=skill, process, equipment) diversification. Market access requires ex ante market orientation beyond regional "borders".

- INTERREGIONAL COMPLEMENTARITIES: Western Macedonia discussed with Helsinki-Uusimaa because of the latter's research and economic base activation in whey products, the possibility of collaboration was profiled.

- AIM: Ultimately, a strategic collaboration between the two regions is expected. Depending on the range and depth of the recommendations identified during the joint EDP sessions, it might mean that a strategic approach would be more suitable as enabling framework. In such a case, quantification of expected outputs and returns to scale would be included in joint planning studies. It could be achieved step by step following common actions within project and other programmes / projects with relevant targets.

Approach

Identification and activation steps, interregional complementarities		Dates, findings, time range											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Dairy industry sidestreams value chain mapping (products & technologies) - GENERAL MAP (exists in literature)			Dec 21- Febr 22									
2	Western Macedonia RIS3 preparation_	Oct 21- June 22											
3	Value chain mapping in western Macedonia (Peaks and valleys identified re-shoring & in-shoring initiatives profiled; near-shoring outline of collaboration scenarios)			Dec21-March 22									
4	Meetings with regional stakeholders, fact finding and interests for the RIS3 Collaboration scenarios with trans-regional partners and local development actions clarified —->> Collaboration potential between PP4 (Helsinki-Uusimaa) & PP5 (Western Macedonia)				Jan 22-June 22								
5	Exploration material shared: PP4 —> PP5 (meeting and report)			Nov 21 - Dec 21									
6	EDP sessions EDP session 1, preliminary interregional (FI-GR) EDP meeting confirming interests on information shared and further fact finding				Jan 22 - Febr 22								
7	EDP sessions EDP session 2, EDP meeting exploring in-depth complementarities between Western Macedonia & Helsinki-Uusimaa; prioritisation of products and technologies; prioritising options						Mar.2022						
8	EDP sessions EDP session 3, discussing the value chain proposed scheme, activity recommendations						March22-April 22						
9	EDP sessions Exploitation scenario based on recommendations of EDP (material jointly created PP4, PP5, PP1)							April 22- June 22					
10	EDP implementation, i.e. integration into the RIS3 and its implementation provisions Implementation concepts and funding schemes										Clarifications		September 22 onwards

2 Regional stakeholder group meetings in Western Macedonia

Contacts with RIS structure, the dairy businesses and the emerging cluster of dairy product industries have been held so far, but they will be systematically organised following the value chain mapping progress.

	Regional stakeholder group meetings in Western Macedonia	Dates											
		1	2	3	4	5	6	7	8	9	10	11	12
1	RIS structure of Western Macedonia Region	Oct 21- Sept 22											
2	Dairy Industry company		Nov 21 - Mar 22										
3	Managing Authority of Western Macedonia Region		Nov 21 - Sept 22										
4	Emerging cluster of dairy industries in Western Macedonia Region		Nov 21 - Sept 22										

3. Dairy industry side-streams mapping in Western Macedonia

It is ongoing. It consists of 5 WPs:

a) status of the dairy industry in the WMR

b) field research

c) mapping of the dairy industry supply chain

d) mapping of the dairy industry value chain

e) proposals for developing value chain stages through investments, transnational cooperation at research and business level, policy impact - proposals for financing investments regarding the strengthen of dairy industry value chain.

1.-Whey industry value chain mapping (1)

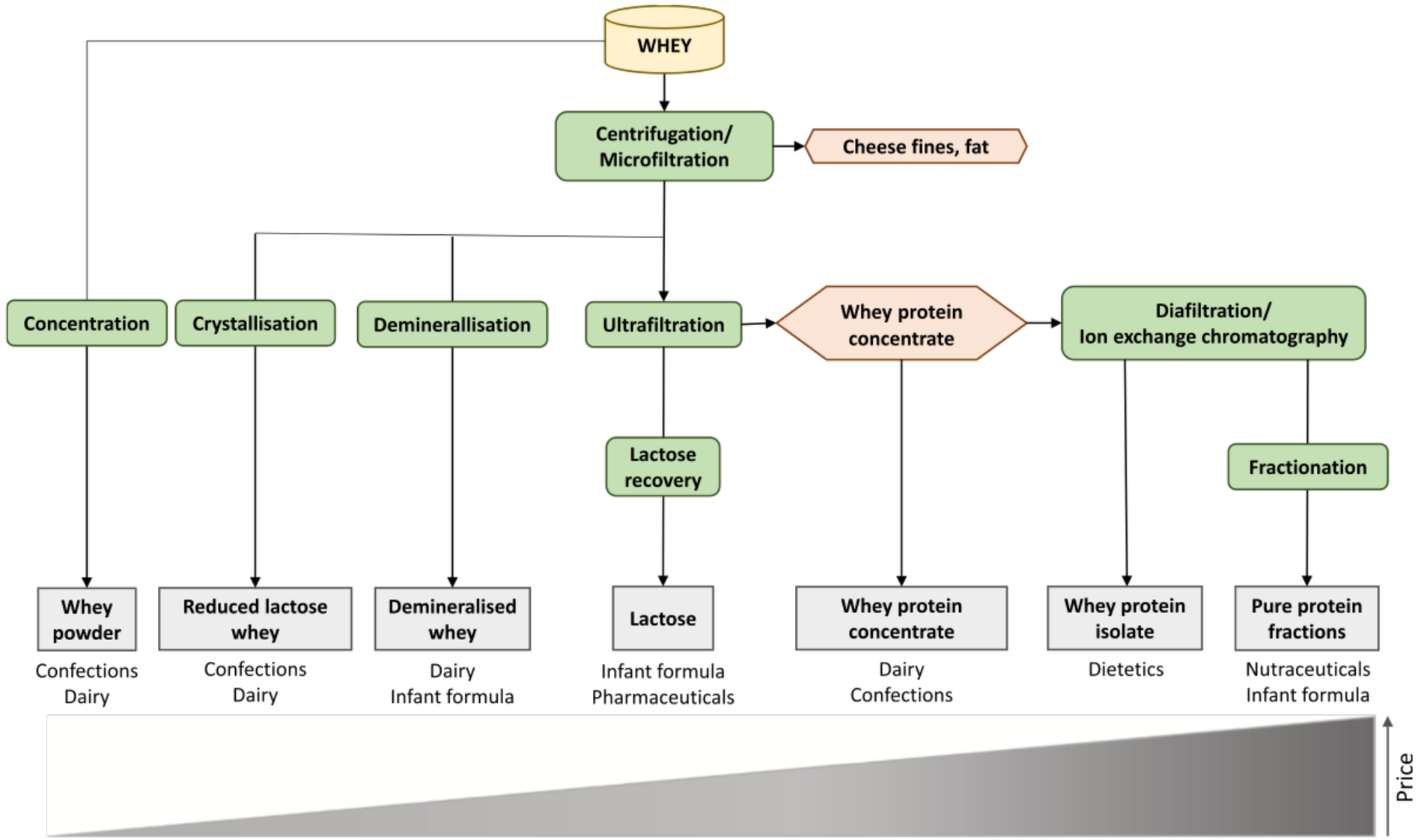


Fig. 3. An overview of sweet whey processing for the production of whey-derived ingredients (adapted from Ramos et al., 2016, pp. 498–505) and their Industrial applications.

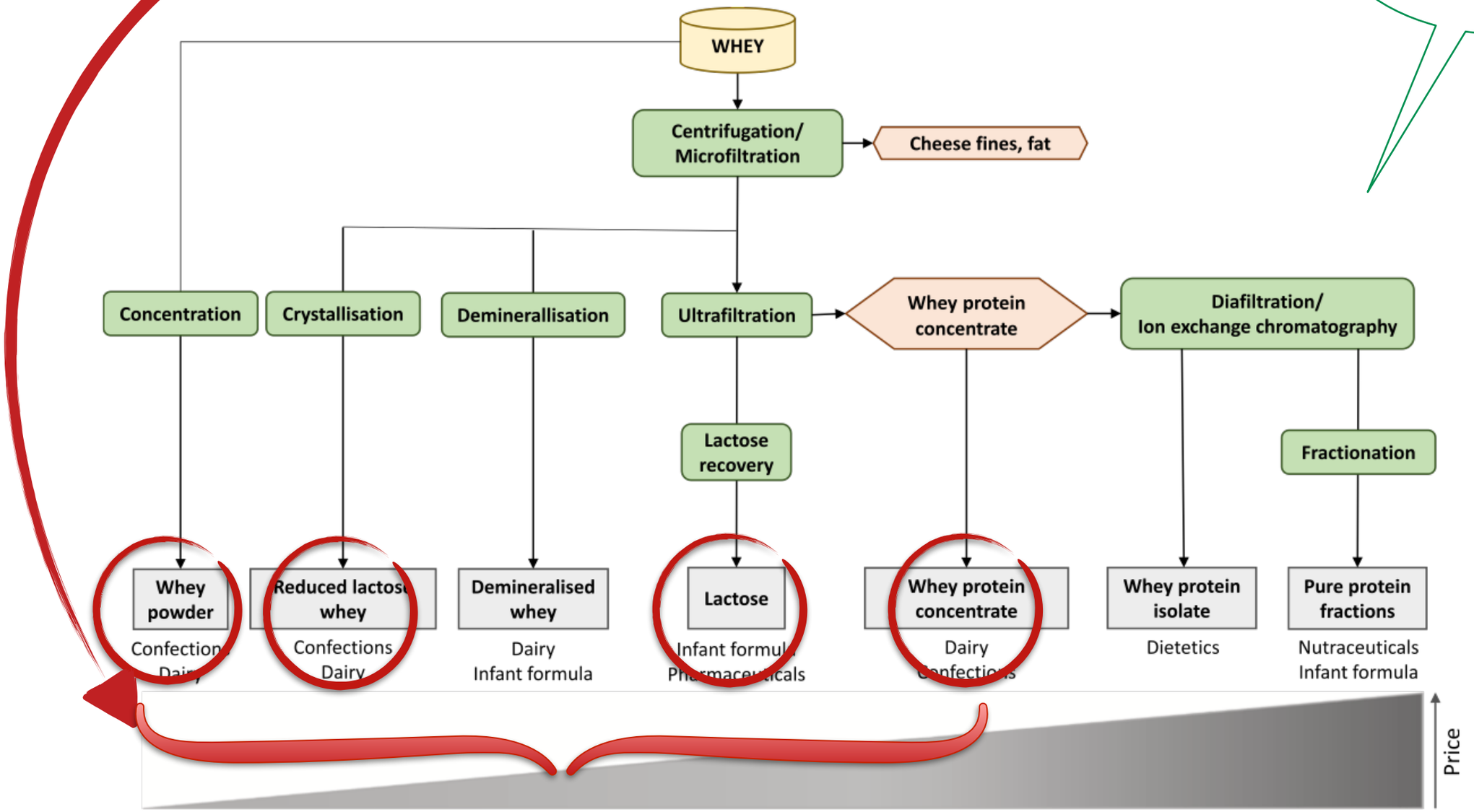
SOURCE: WHEY - The waste-stream that became more valuable than the food product

Paraskevi Tsermoula *, Bekzod Khakimov, Jacob Holm Nielsen, Søren Balling Engelsen ** Department of Food Science, Faculty of Science, University of Copenhagen, Rolighedsvej 26, 1958, Frederiksberg C, Denmark

1.- Whey industry value chain mapping (2)

Anticipated interests in Western Macedonia

Technologies to achieve each stage are also relevant VC parts



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4& 5 Collaboration domains proposed by Helsinki-Uusimaa (1)

- **The Finnish food production system**: sustainable food system innovation.
- **Focus areas of research:** 1) systemic transformation; 2) engaging citizens and co-creative activities; 3) sustainable business creation. (SOURCE: VTT research, https://www.vttresearch.com/sites/default/files/2021-03/Food-research-and-innovation-strategy-for-Finland_2021-2035.pdf).

THE FINNISH FOOD SYSTEM

In 2019, the entire food sector (including agriculture, retail, the food and ingredient industry, and food services) produced more than 19 billion € of added value, being 7% of the total added value to the Finnish economy (Figure 2). From this, 3 billion € comes from the retail section, 2.9 billion from the food services sector, 2.8 billion from industry and 1.2 billion from agriculture. Also many other sectors in Finland are indirectly involved in food production by providing materials and services. The demand for intermediate products in the food sector generates a value added of EUR 5 billion for these other sectors. In practice, the effects of the food sector extend to all other sectors, including the manufacturing industry, transport, trade, energy production, and waste and water management.

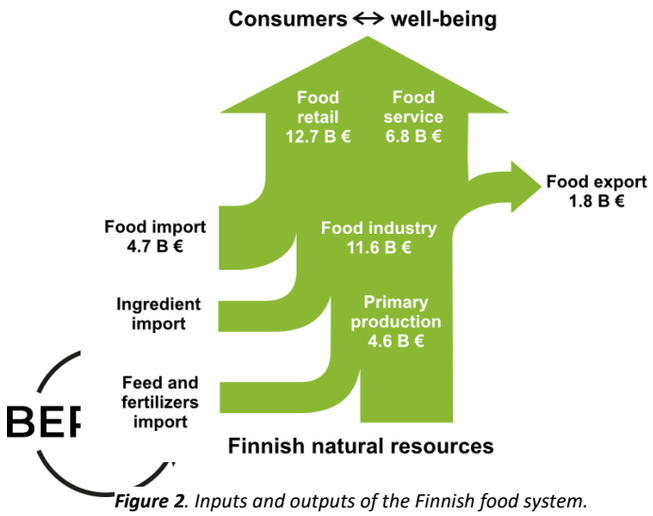


***Figure 2**. Inputs and outputs of the Finnish food system.*

The labor force involved in the Finnish food sector is 320 000, which is 12% of the employed workforce in Finland. The proportion of agrifood products of Finnish exports is 2.4% and imports 7.9%. In 2020, Finnish agrifood product exports reached a record-breaking 1.8 billion euros. The domestic content of the food sector is still relatively high, 80%, considering production and import in euros.

***Table 4**. SWOT analysis of the Finnish food system*

Strengths	Weaknesses
• Recognized knowledge in food and nutrition • Top-notch ICT knowledge within the field of agriculture • Research activities support industrial needs, good communication between research and companies. • High education level leads to active engagement and positive attitude towards science among citizens • Food chain in Finland is short and quite easy to manage. • Safe and transparent primary production. • Animal health and welfare standards are high. • Abundant amounts of clean water and environment • Small country with trust between the different actors in food chain with opportunities to focus on the key issues and act as testbed. • Consumers are open to test new food related solutions. • Policy makers and government recognize circular economy to make Finland forerunner.	• Fragmented initiatives, working in silos, lack of research harmonization • Difficulty to build critical mass in research expertise due to lack of research area focus. • Food related data harmonization, sharing and utilization • Lack of interdisciplinary approach including human sciences and arts, too much focus only on technology - lack of knowledge on consumer and user-oriented value creation. • Lack of public scientific communication • Inadequate funding for research, innovation, infrastructure and go-to-market activities
Opportunities	**Threats**
• New production methods, e.g. vertical food production, cellular agriculture • Research and development in regenerative agriculture • Consumer interest towards local and sustainable foods • Substantiating sustainability and climate effect of food products and processes. • Adaptation/ Positive climate change for Finnish agriculture • Systemic smart technology approaches to cut down agrifood waste and losses • Big data as tool for development and innovation • Collaboration between various regional food ecosystem players and Finland as testing ecosystem for (international) companies for new ideas, products and solutions • Cross-disciplinary research environment catalysing the innovations • Use of public food procurement to support new innovations and sustainability • Green capital and value creation through clean water resources	• Fragmented research • The attitude of being defensive instead of taking a step for renewal • Farmers unengaged to research, need for farmer incentives • No implementation of the joint vision • Focusing only on hot topics (guided by funding opportunities) and missing the opportunities to develop disruptions • Lack of climate/shock resilience • Loss of resources in domestic competition • Lack of trust towards data sharing. • Current Covid-19 and associated economic crisis • Policies and research strategies do not align. • Regulations risking the opportunities, e.g., environmental regulations risking domestic climate-friendly fish production. • Climate change and decrease in biodiversity will increase risk of foodborne zoonoses and also new emerging infectious threats.

4& 5 Collaboration domains proposed by Helsinki-Uusimaa (2)

Examples of possible collaboration domains

- ValSa® milk salt, which can be used to make lower-salt products without compromising on taste.
- Valio Kiehu ™ milk drink was born when Valio's product development revealed that removing heat-sensitive whey proteins could produce milk that would be difficult to burn to the bottom.
- Microfiltration equipment acquired for Valio's Jyväskylä dairy was first time to separate whey protein from fresh milk instead of cheese whey. This created a fresh whey protein with a unique taste, around which the protein-rich Valio PROfeel® product line was built.
- Valio, WHEY EXTRACTED PROTEIN Purified protein extracted from milk: https://www.life.fi/Puhdistamo-Luomu-Hera-Maustamaton-500g
- Valio, MIFU, https://www.valio.fi/tuotteet/valio-mifu/. Valio MiFU® products are ready-to-use, milk-based and meat-free protein products for warm cooking. Mifu is available in different forms: ground, strip and granular.
- Valio, Gold&Green: https://www.hs.fi/talous/art-2000008650363.html?share=831b527fb7f9b3c6fed74f6270b9becd. This is new in Valio, it is about plant-based proteins. This is an option for product line diversification and / or cross - cutting products.

4 & 5 Collaboration domains proposed by Helsinki-Uusimaa (3)

COLLABORATION POSSIBILITIES

- TECHNOLOGY TRANSFER: agree knowledge and technology to transfer.
- JOINT DEVELOPMENT:
  - Develop a shared vision for food system transformation
  - Promote researcher training and dialogue across disciplines and organizations
  - Identify new opportunities for cooperation within the food sector to generate and support innovations.
  - Organise workshops (e.g. EDP) to engage actors to the transformation targets for the Finnish food system and multidisciplinary research needs, as well as to communicate research results, in order to catalyse communication between research, government and business actors.
  - Develop current ecosystems (Food & Beyond (Create Platform, Protein Cluster), Food Valley, Flavoria Research Platform, Viikki Food Innovation Lab) into a nationally coordinated activity for generation of innovations and new businesses.
  - Utilise innovation ecosystems to raise industry interest towards new research topics (e.g., cellular agriculture, protein crops, insects) and create business from research via incubating start-up. companies and supporting their growth (EIT FAN Helsinki Hub, Viikki Food Innovation Lab).

COLLABORATION PARTNERS: LUKE, Univ. of Helsinki, VTT, … ; businesses.

6,7,8 EDP sessions, results and next steps (1)

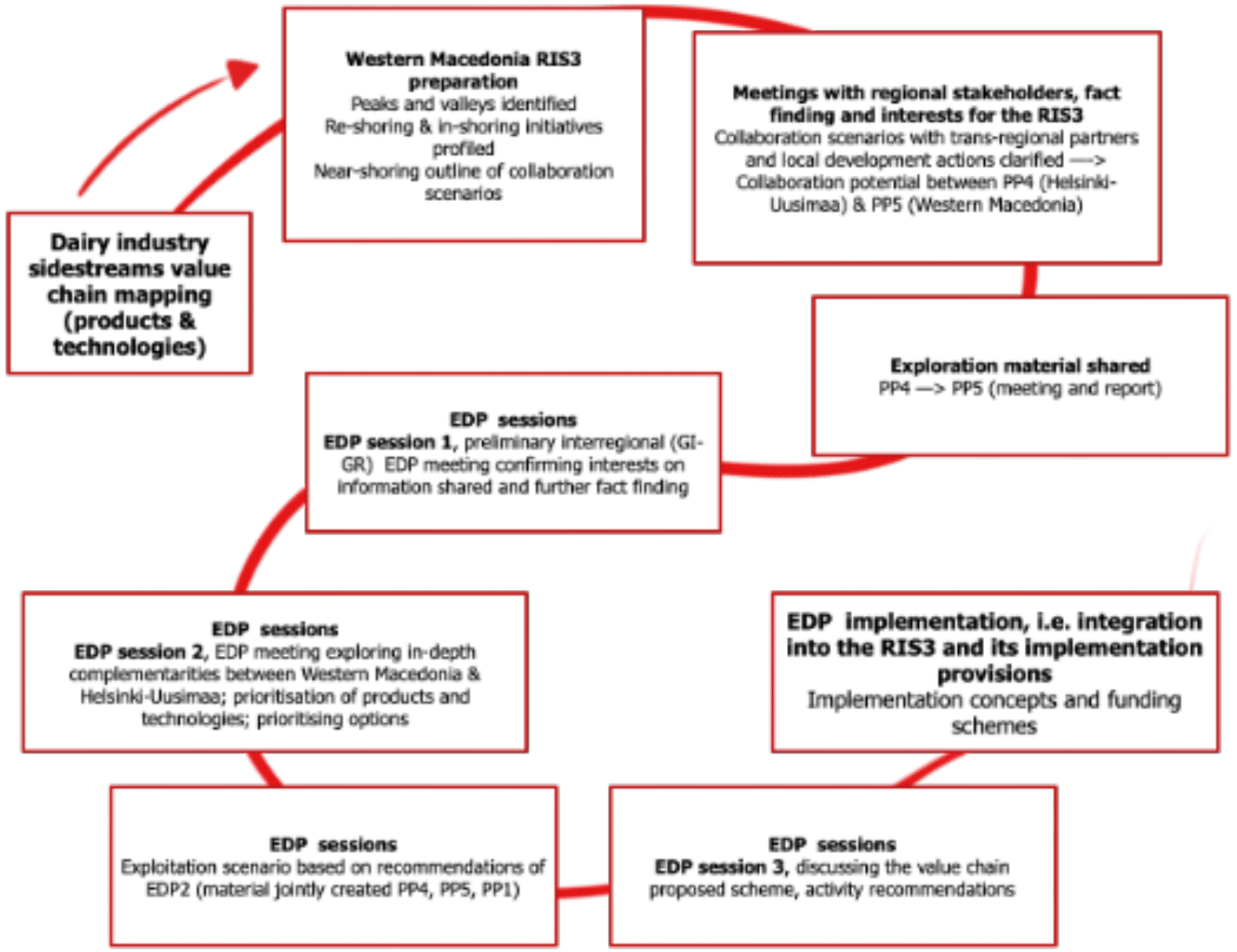
- Example of the EDP process (it is what we called in Phase 1 of the BRIDGES project 'second reading')

		Involvement		Status
	EDP steps	**Local**	**Transregional**	**Options, mark what applies with some explanations** 1: Did not start 2: Satrted 3: In process 4: Important challenges identified
Foresight	— STEP 1: we are taking as baseline the products businesses produce and which are part of the preferred value chains.			
	— STEP 2: in the context of the prioritised value chains, we make a foresight exercise (collective): what technologies and demand (= end user products) are foreseen to be coming within the next five years?			
	— STEP 3: we map the preferred value chains especially in terms of RDI issues.			
	— STEP 4 we assess the possibilities of such products to be integrated into mainstream, competitive value chains based on the value chain mapping results. In the process we discuss with the businesses that produce the products about their product strategy and product processes, and position them, their competitiveness through the value chain mapping. By analysing the situation within and around businesses we understand also limitations, restrictions set by their environment (for example: missing research services, missing sophisticated innovation support, missing effective market placement and market access services, …).			
	— STEP 5: following Step 1, Step 2, Step 3 and Step 4 we agree with participating businesses types of pilots we identify maybe 2 or 3 or 4 pilots within the partnership, we assume one pilot per value chain.			
Activity planning & implementation	— STEP 6: we form sub teams for the specification and planning of each one of the			
	— STEP 7: we plan each one of the pilots separately. The plan is comprehensive and includes references to product development / improvement, business strategy and innovation services required and also the needs for transnational collaboration.			
	— STEP 8: we implement the pilot actions.			
	— STEP 9: we evaluate the results and make recommendations for transfer.			
Exploitation	— STEP 10: Dissemination			
	— STEP 11: Transfer plan (what activities we will include and how the transfer will be made)			
	— STEP 12: Transfer activities			
	— STEP 13: Exploitation (article, policies)			

6,7,8 EDP sessions, results and next steps (2)

- Preparatory sessions between PP4 and PP5 started in 2021 (27.10.2021, 7.12.2021).
- A first meeting aiming to prepare the organisation of transnational EDP sessions between Western Macedonia and Helsinki – Usimaa has been held on 2/2/2022.
- PP5, LP, RIS structure of Western Macedonia and the expert who implements the dairy industry side-streams mapping in Western Macedonia discussed the issues regarding the common EDP session and the way to be more effective.
- The 1st common EDP will be held within March 2022 (dates being discussed: 23, 28,29,30).
- Another interesting result following the efforts of PP4 and PP5 is an emerging collaboration between a dairy industry business from Western Macedonia region (Kourellas) and VTT in the field of transfer technology for the production of new diversified products in diary industry value chain.
- A first discussion among the interesting parties will be organised on March 2022.

Approach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Thanks

Questions welcome