

PROMINENT PROJECT – MOTIVATION FOR MINING NEW PLANT PROTEIN SOURCES

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New protein sources – a megatrend

Drivers

- Global protein supply security
- Restricted availability of animal proteins
- Consumer interest for high protein foods

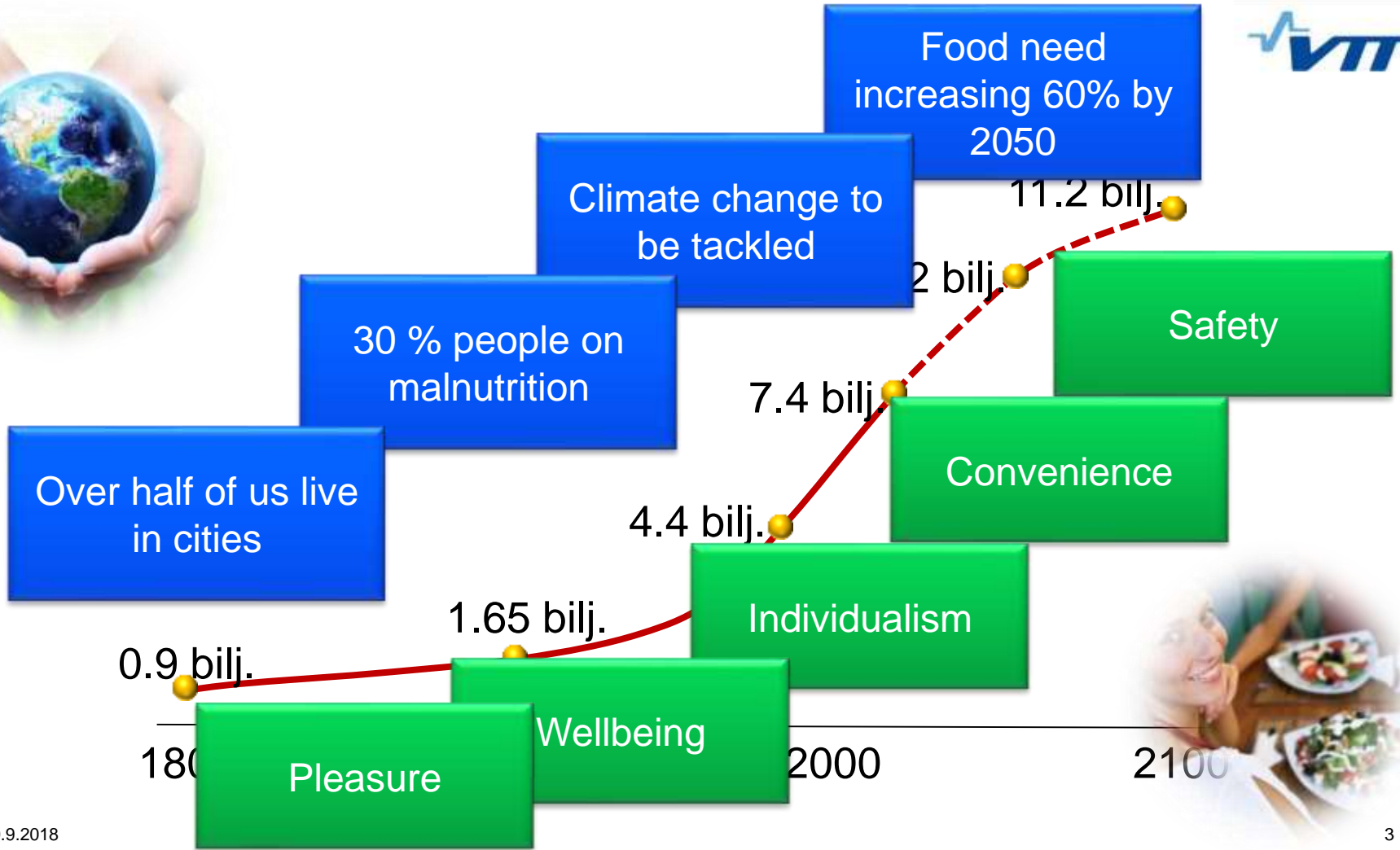
Need

- Plant sources and agro side streams should be utilized more efficiently and sustainably
- New sustainable ways to produce proteins

Challenges

- Enrichment of protein from the matrix
- Technological functionality
- Sensory quality
- Nutritional quality





Protein challenge

is one of the most urgent global food security challenges

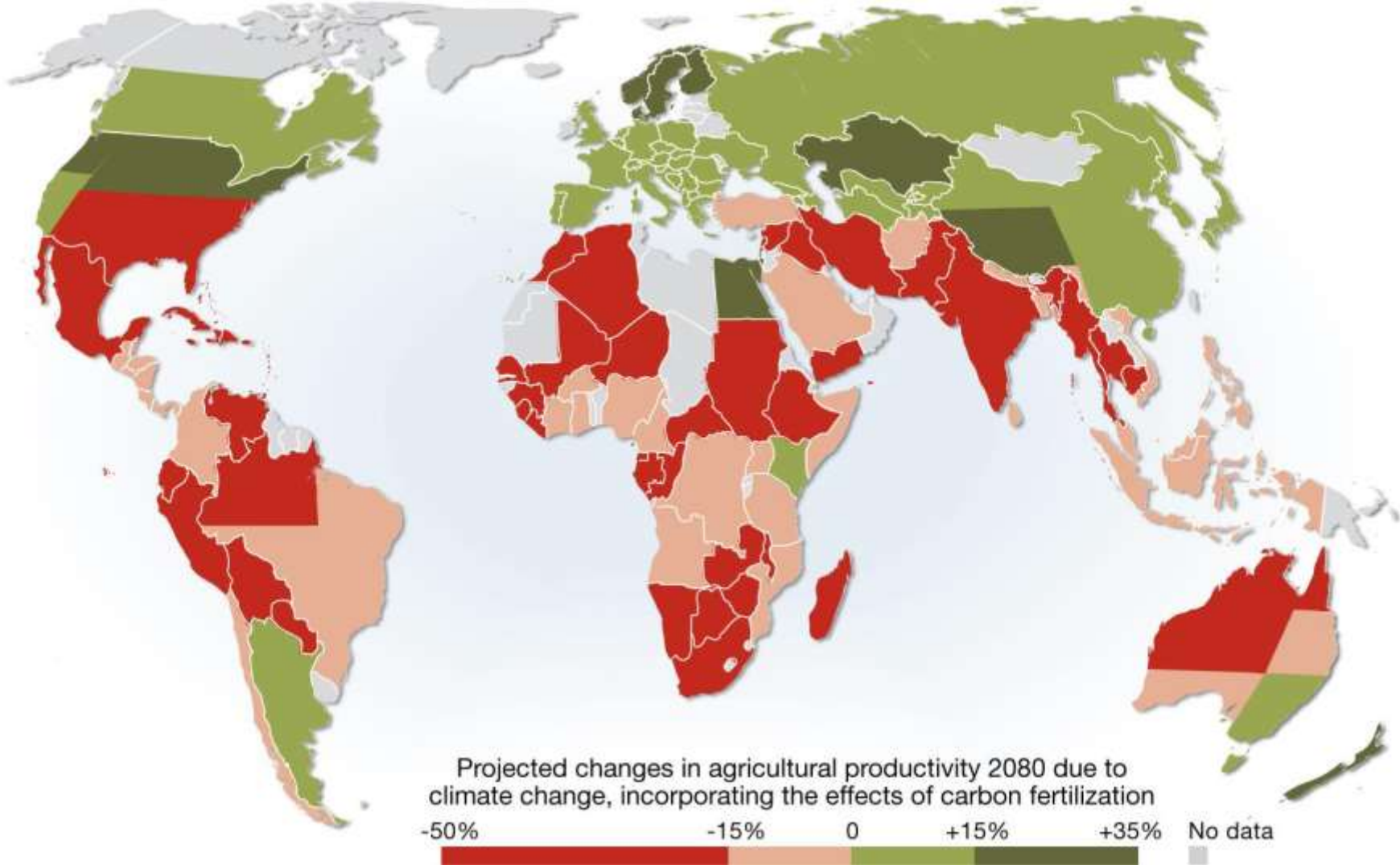


45%
more
energy

50%
more
food

30%
more
water







1kg protein from animal meat requires 6 kg of plant based proteins

One hectare land per year can feed 19 humans on the basis of rice, 22 humans on the basis of potatoes, but only 2 humans on the basis of lamb and 1 human on the basis of beef (WHO, 2008)



1,3 billion

CULTURED MEAT



EGGS

NO HEN



Roadmap to increase protein self-sufficiency in Finland

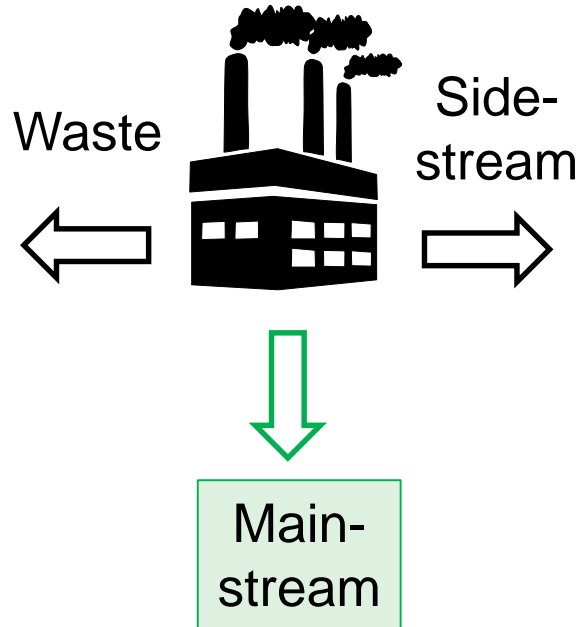


Main findings:

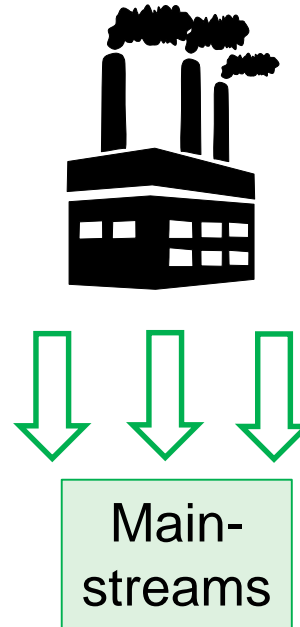
1. The most powerful but long-term tool: Increase of **protein content and crop productivity of cereals** and grass
2. Efficient use of **side streams** highlighted as one of the key means to reach the targets in a short time frame
3. The use of **crops both for food and feed** activates and balances markets and attracts the farmers
4. The **use of plant proteins for human consumption**, new technologies to fractionate and process proteins and the collaboration in the protein value chain are more and more crucial in the future

Smart use of resources

Currently



In the future

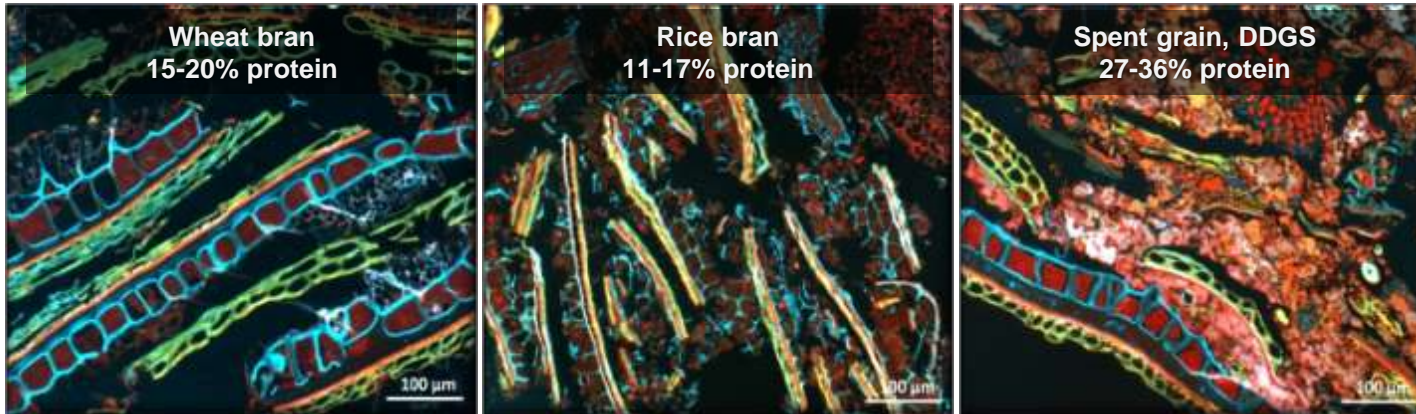


Maximize the use of plant-based raw materials

Rethink the food processes from the beginning

Transform waste and side-streams to main-streams

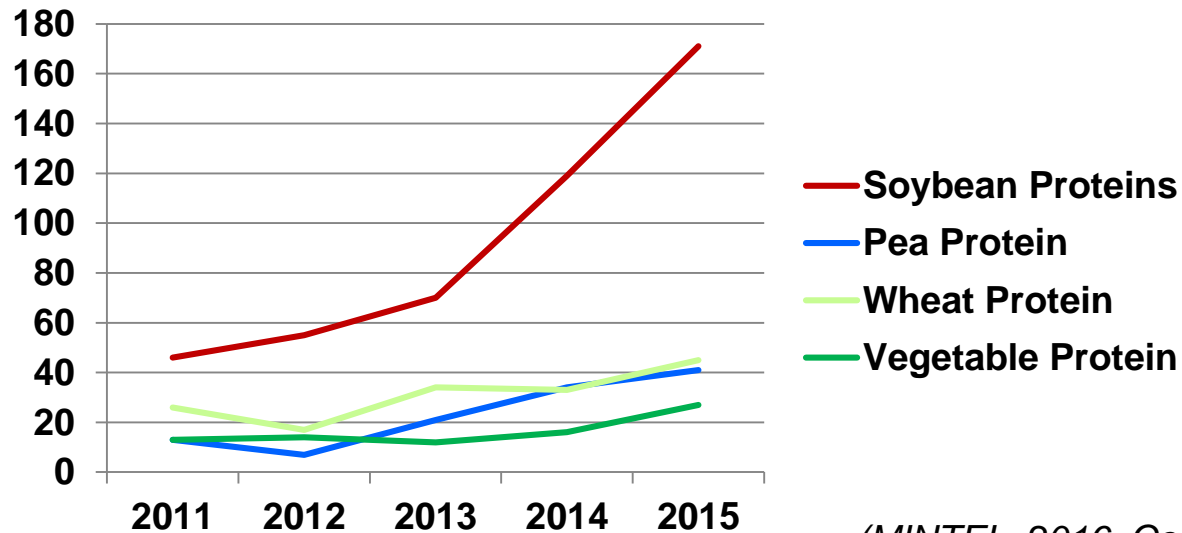
Cereal side stream raw materials are a significant protein source



Wheat bran and rice bran production is in total around 250 million tons per year → **Bran protein could feed a billion people**

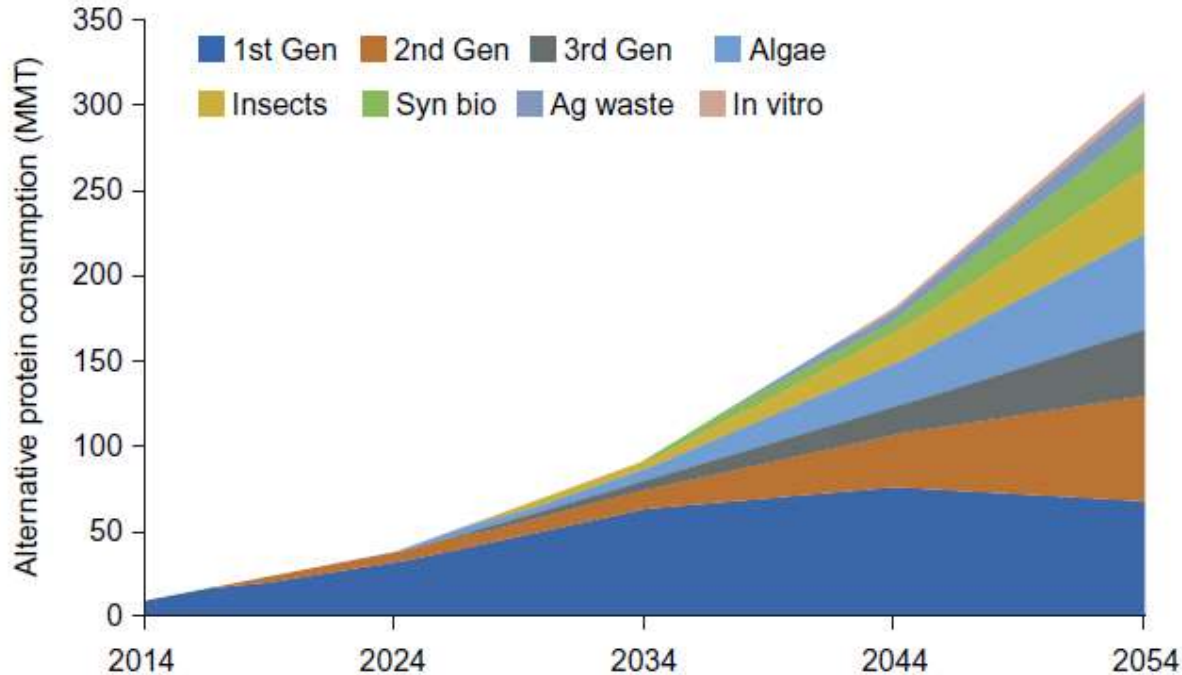
- Calculated with 15% raw material protein content and with 50% yield from side streams, and with 50 g daily protein need

Newly launched food and drink products claiming to be rich in plant protein (EU)



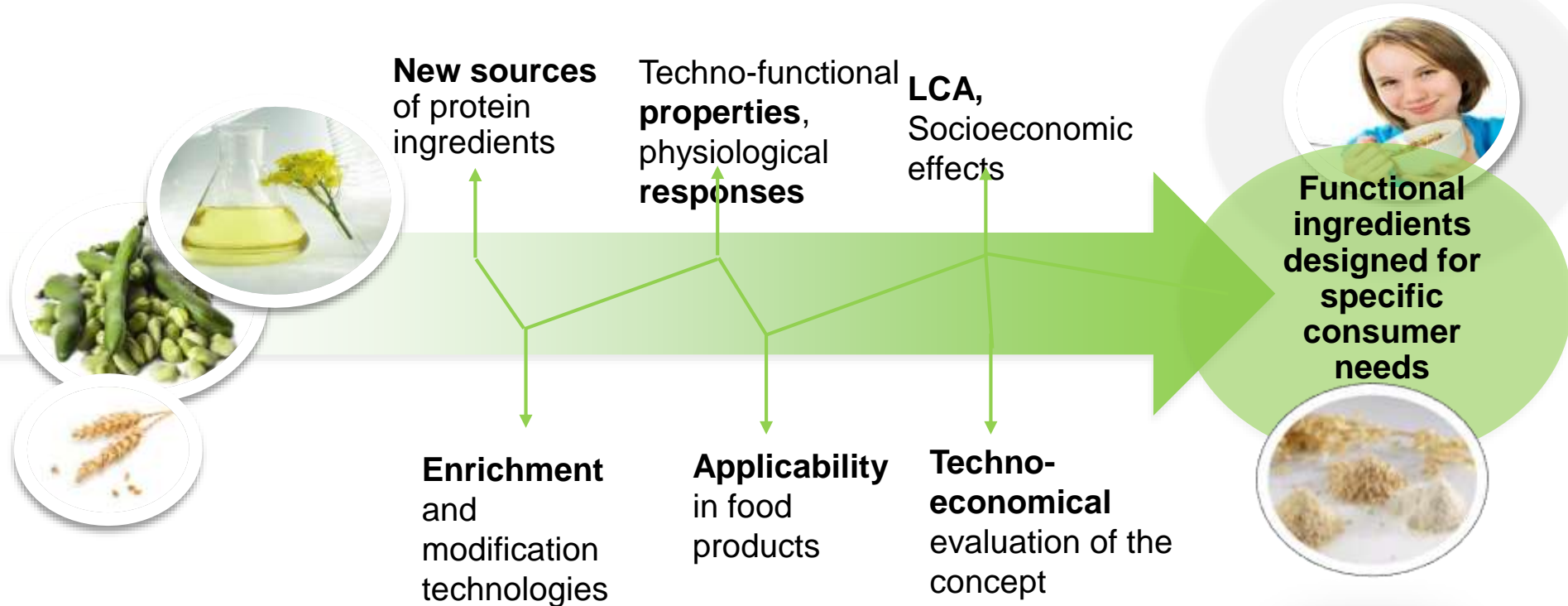
(MINTEL, 2016, Courtesy Marija Banovic, MAPP)

Forecast of alternative protein sources in the future



"Sustainable protein Sources", Elsevier 2017, eds Nadathur et al

Pathway to novel protein ingredients



PROMINENT project 2015–2018

AIM: To develop techno-economically feasible and sustainable food protein concepts that meet consumer demands

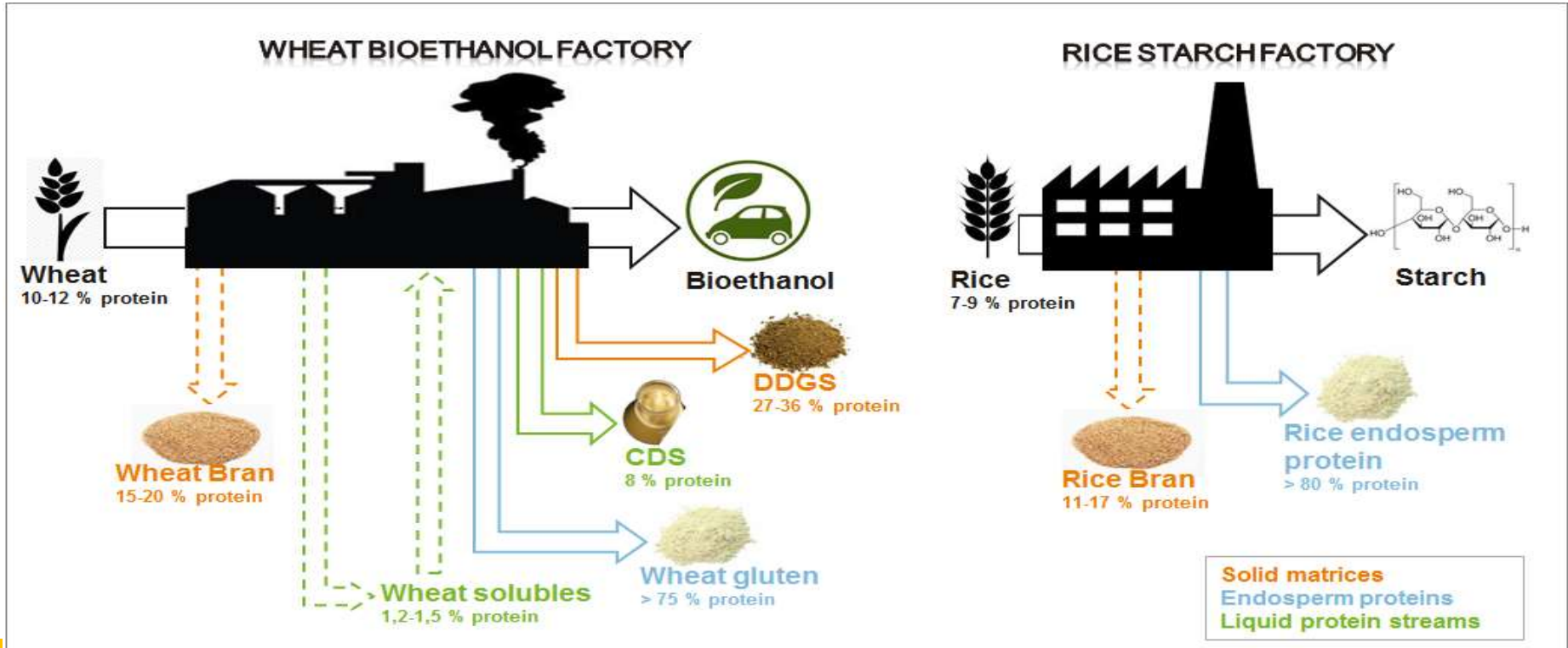
- To develop technologies to enrich and concentrate protein from solid and liquid side streams
- To tailor techno-functional and sensory properties of the protein rich fractions
- To use the fractions either as performance proteins or nutrients
- To assess the sustainability and socio-economic performance of the process scenarios

Consortium: VTT (coordinator), LUKE, Südzucker AG, AB Enzymes, Upfront Chromatography A/S, Pladis, Barilla, Olvi, Bridge2Food

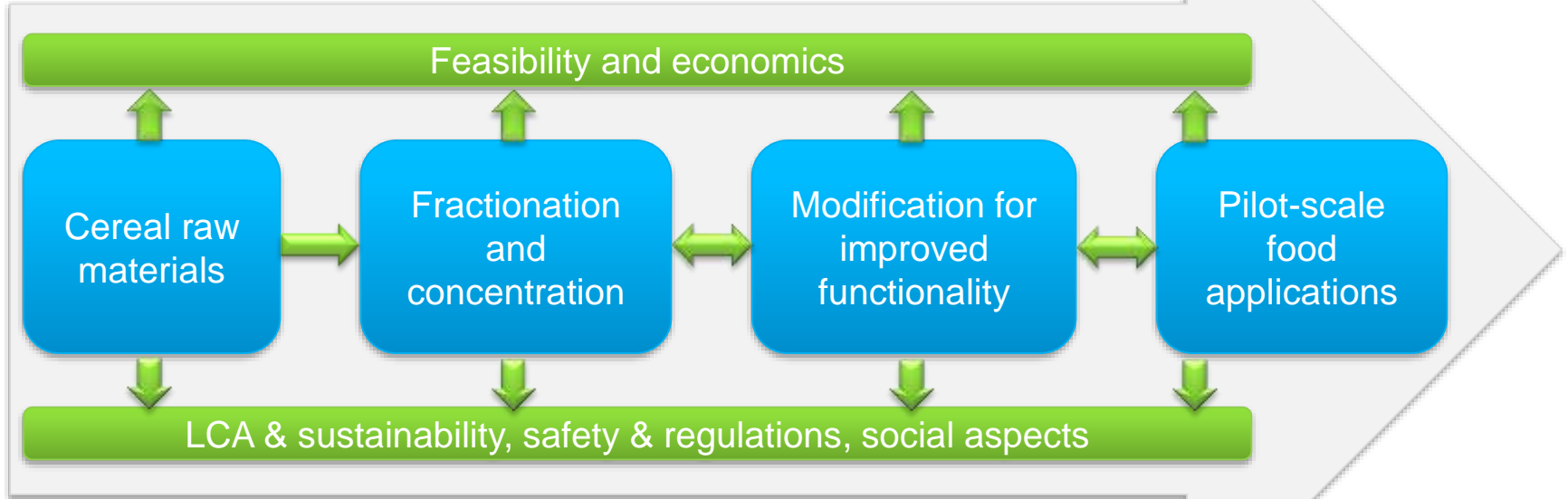
Funding: Bio Based Industries Joint Undertaking under the EUs Horizon 2020 research and innovation programme



Motivation: to valorize protein in sidestreams

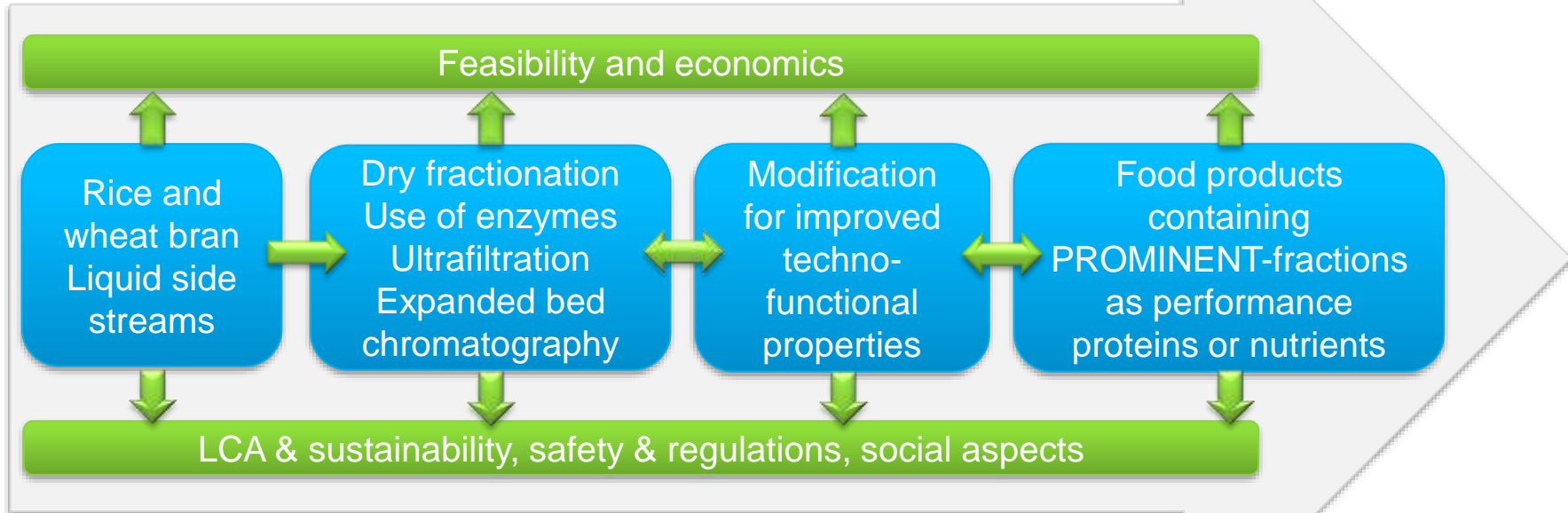


PROMiNENT work chart

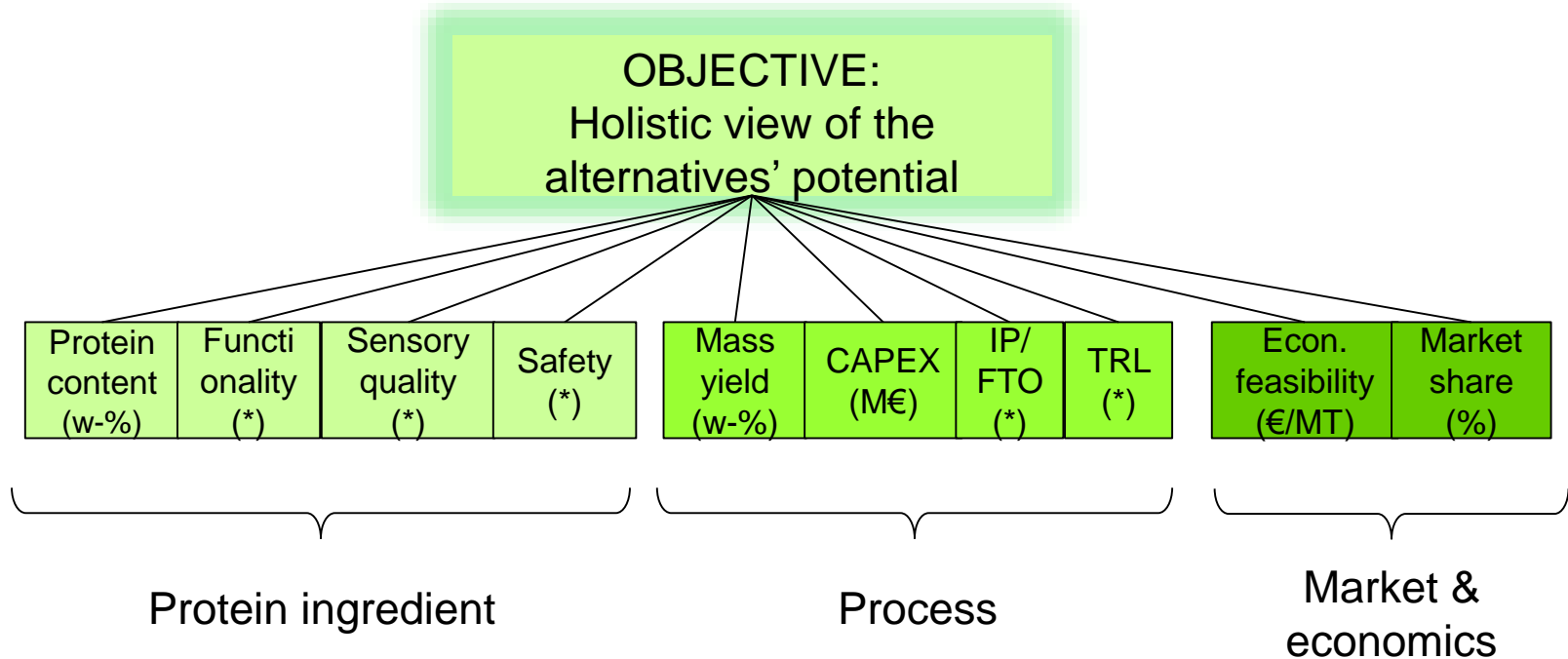


↔ key evaluation points for success and for the "go/no go" decisions (purity, quality, feasibility, sustainability)

PROMiNENT technologies and applications



Multidimensional decision-making in selecting the process alternatives for further development



A close-up photograph of a person's hand holding a small, young plant seedling with a dark soil cube. The background is a large tray filled with many similar seedlings, suggesting a nursery or laboratory setting. The text is overlaid on the image.

WELCOME TO THE SEMINAR

-
have a nice and active day!

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