



Norilia, Heidi Alvestrand, NoRest 25-26. october

From waste to plus-products
Why science and research is important for Industry



Norilia

- **Our mission:** To sell and create added value for co-streams from the meat industry
- Annual turnover:
 - Euro 55 000
- Annual volume:
 - 150 000 tons
- 3 factories, 44 employers





Key figures 2015

- Approx. NOK 22 billion in annual turnover
- Annual production of 230,000 tonnes of meat and 43,000 tonnes of eggs
- Industrial activities in 28 municipalities
- 5,353 man-years of labour
- Owned by 19,000 farmers and organised as a cooperative



From waste to plusproducts!

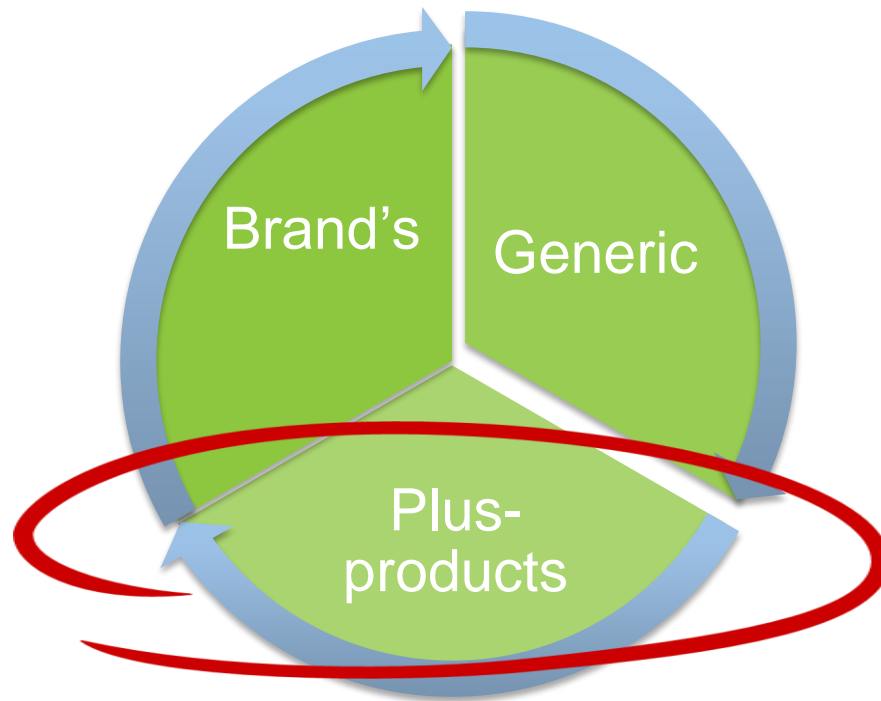
- Nothing is waste!! – It all goes in to further production
- It is about attitude and focus!
- **«A plus-product is a product in addition to the meat that properly handled gives a plus»**



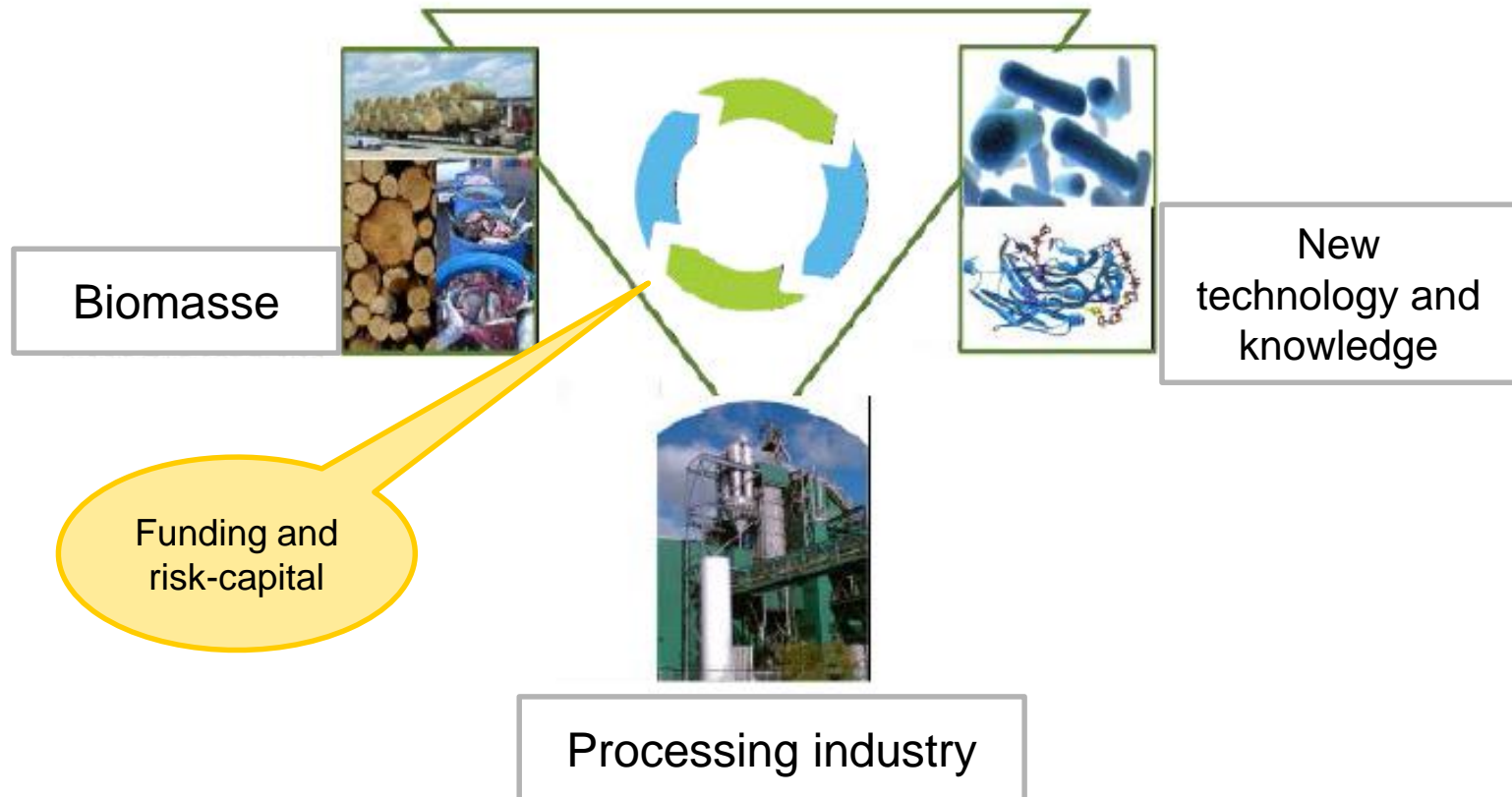
Nortura strategy 2015 -

Plus products is one of three core areas for future growth and profitability!

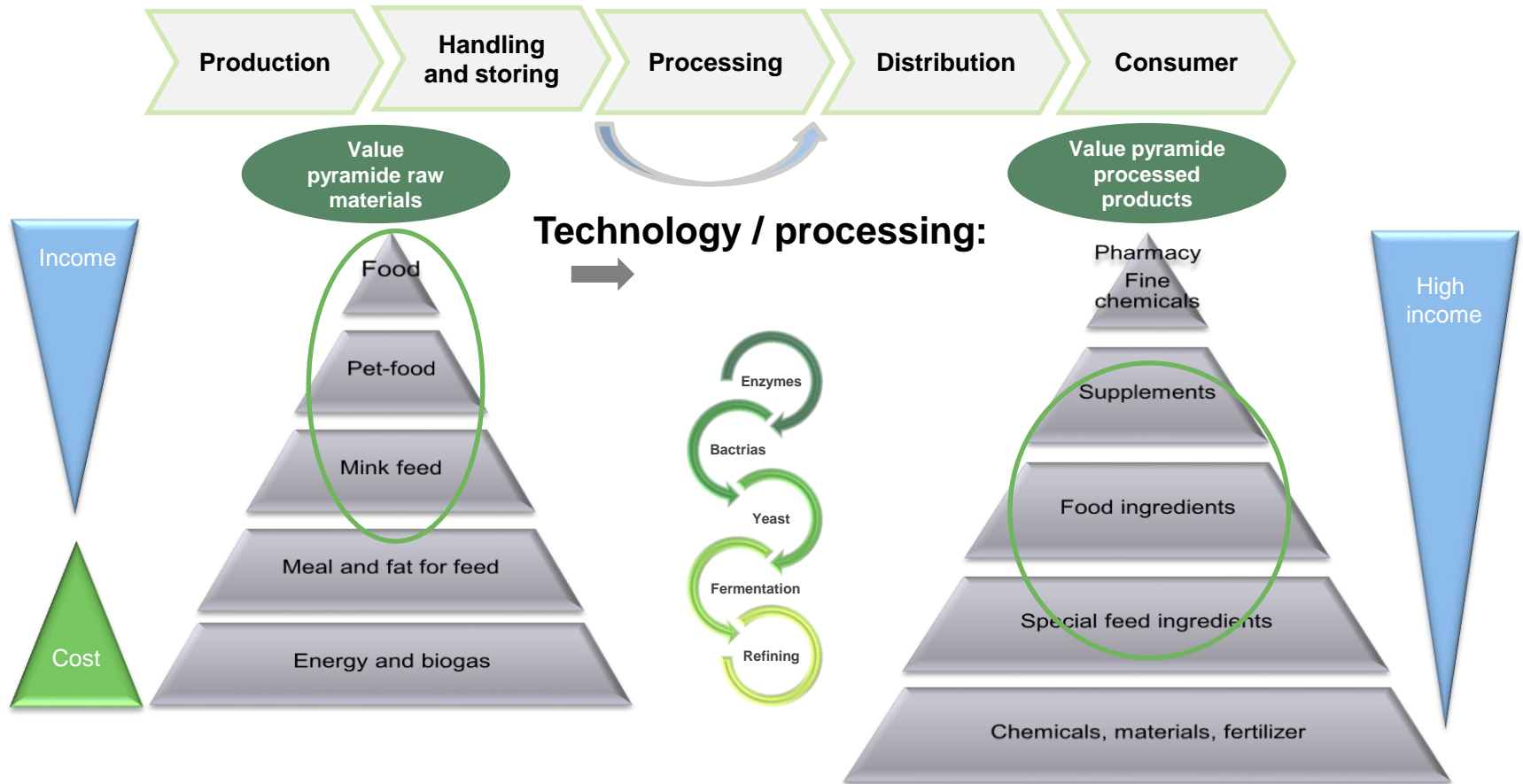
Bioeconomy and sustainability in focus!



The triangle of bio-economy

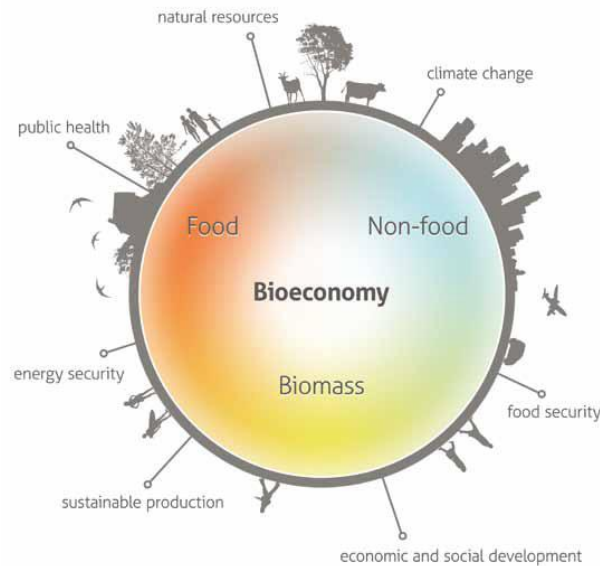


Adding value by using bio-technologies and bio-processes to produce new ingredients to more high-value markets



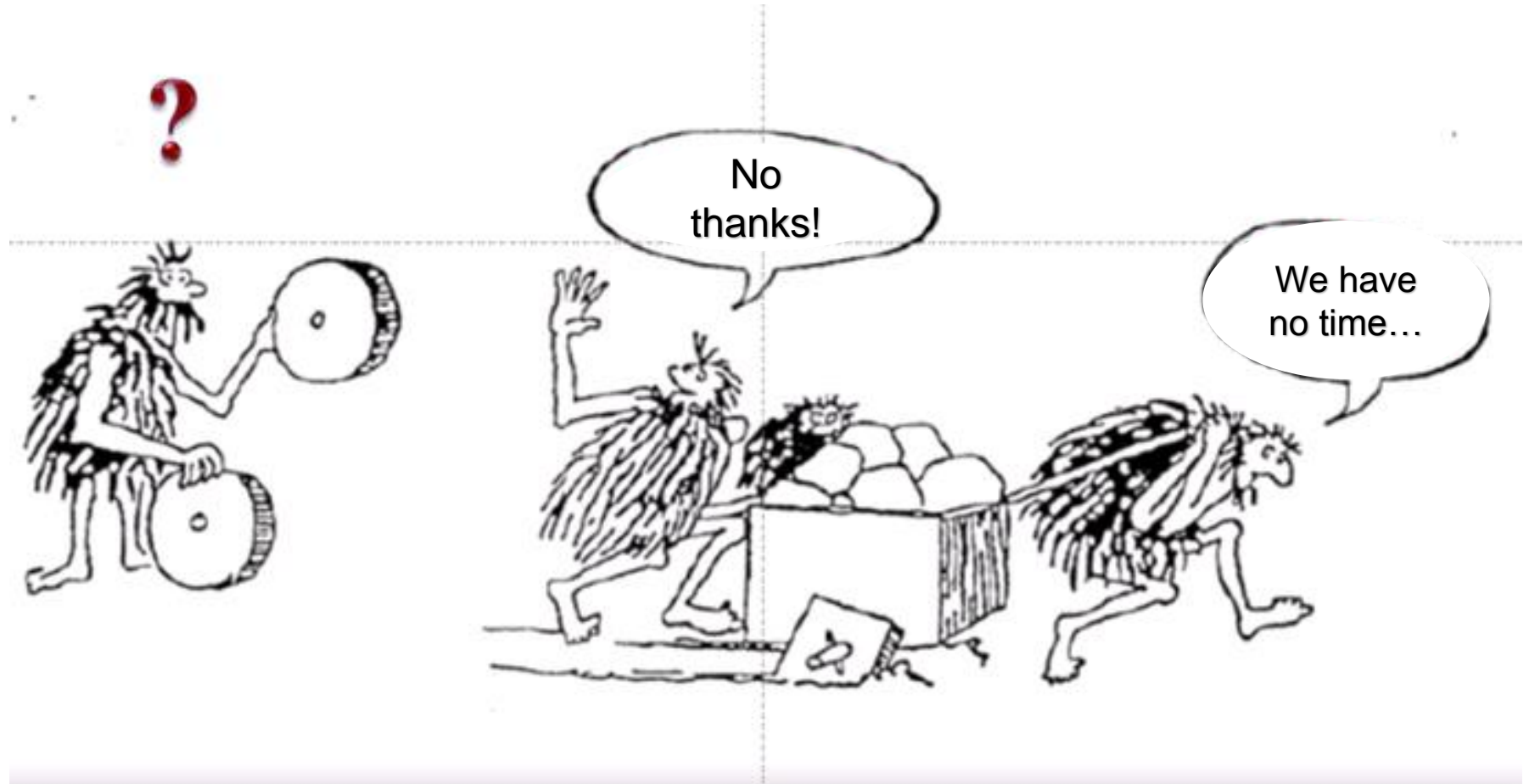
From selling raw-material to selling advanced ingredients....

Biorefining can add value to 100 000 tons of plusproduct in Nortura, and at the same time contribute positive to environmental challenges



- ✓ Better exploitation – increased sustainability
- ✓ More protein to the people!
- ✓ Reduced carbon footprint
- ✓ Increased self sufficiency

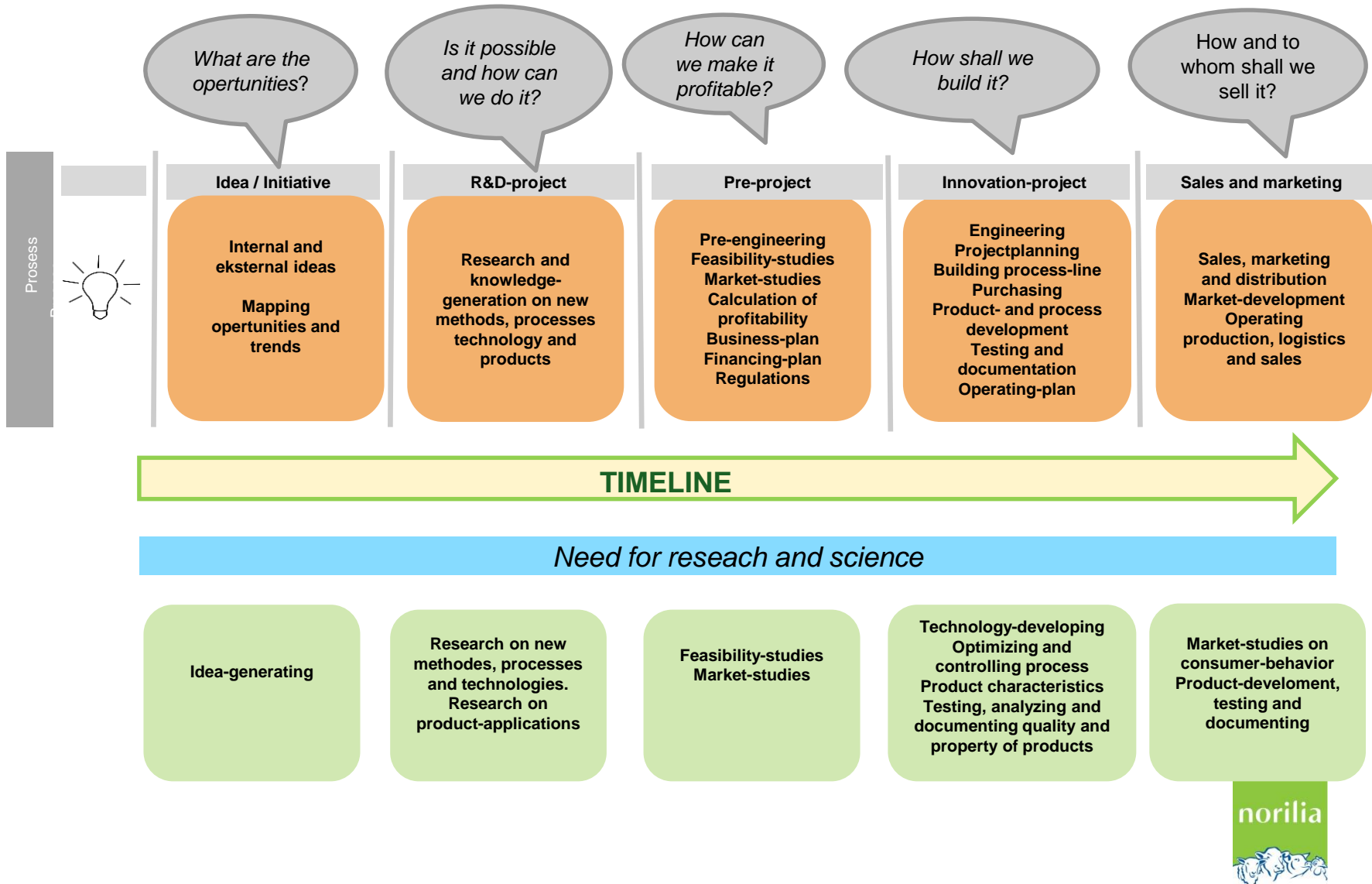
Why science plays an important role?



The transition from a good idea to industrialization brings up many questions?



Process of business-development at Norilia



Collaboration with Research-institutes makes it possible!

- We can do a lot of research without a large in-house FoU departement
- We have access to great competences, and can use different competence in different projects
- We can get synergies from other sectors
- We are able to get more of the research financed



Some deviating interests:

- It is all public!
- Profitability is not always the main objective in research

The Eggshell-project:

From cost and negative environmental impact, to new profitable ingredients and increased sustainability

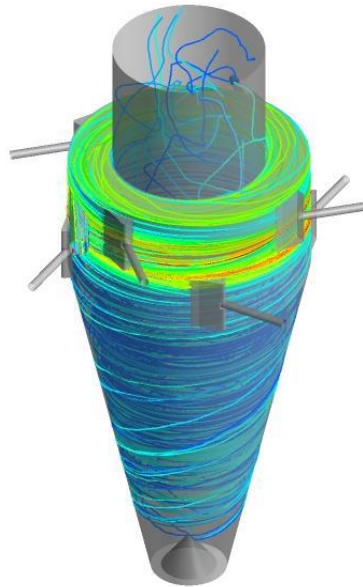
The challenge:

800 tons of egg-residues a year



The solution:

A new technology allowing unique processing



The new products:

Separated membran and organic eggshell – calcium.



Work in Cycle:

Eggshell-calcium testet as fertilizer

Dyrskun Seljord September 2016:



Foto: Norsk Landbrukssamvirke

Nominated by Norsk Landbrukssamvike:
**«Best innovation from
agriculture 2016»**

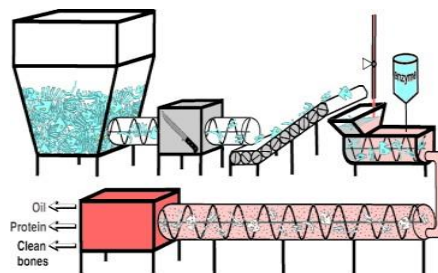


The Enzymatic Hydrolysis - project: Value-adding by biorefining

New factory is planned for enzymatic hydrolysis of chicken bones



Production of high quality hydrolysate, oil and sediments by use of new technology



New ingredients to high-value markets



Work in Cycle:

- Quality - differentiation in raw-material by use of sensor-systems
- Lab-scale tests of enzymatic hydrolysis by use of different enzymes
- Characterization of hydrolysate
- Analyses of chicken-oil



Thanks to Cycle for:

- For choosing chicken as a focus areas in Cycle
- Listening to our opinions and suggestions
- For knowledge and contribution to make industrialization possible
- For good collaboration and exciting seminars

Thank you for your attention!

