



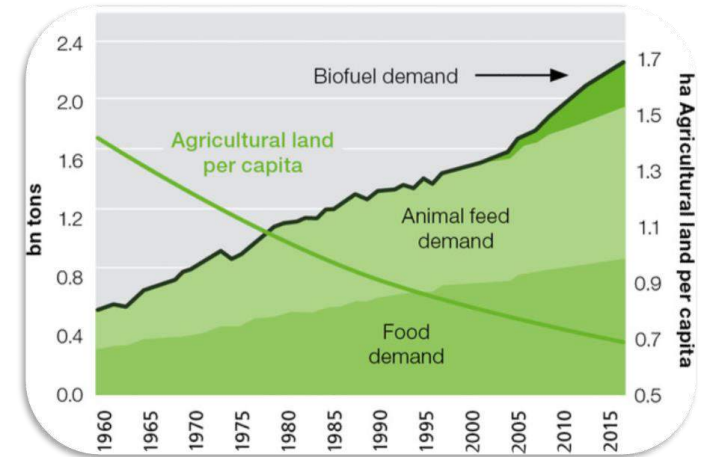
WAGENINGEN
UNIVERSITY & RESEARCH

Dr. Martin. C. Th. Scholten

HealthSea Food Security, thanks to algae

Outline of this Lecture

- 1. Nutrition Security: Food & Feed
- 2. Food of Future: Poultry
- 3. Feed of Future: Seaweed



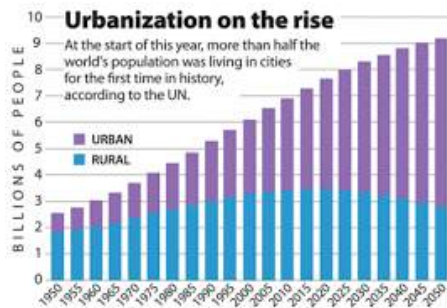
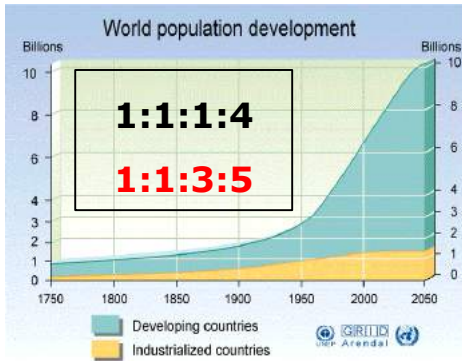
A Big Challenge: Sustainable Nutrition

Healthy Food and Nutrition ...
..... for > 9 Billion People in 2050 ...
..... Within the Capacity of our Planet



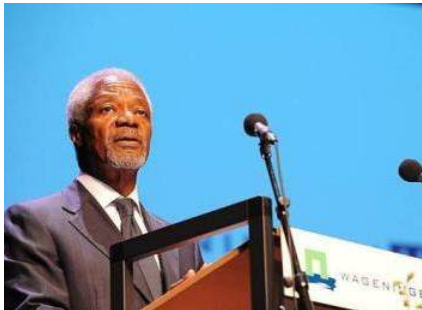
- We need 70% more food;
- Without an increase in land use and footprint;
- By using all the agricultural biomass production

Not a stand alone issue



SUSTAINABLE DEVELOPMENT GOALS
17 GOALS TO TRANSFORM OUR WORLD

Sustainable Nutrition Security



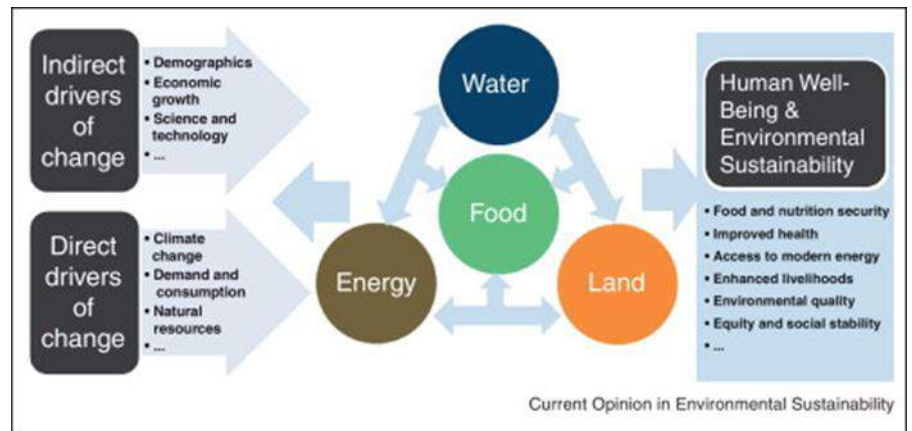
A NEW FOOD REVOLUTION

- Hunger and malnutrition is increasing
- 70% more proteins needed in 2050
- Less land available for food production
- 30% of crops used for feed
- >50% of crops and food are wasted or unused
- Freshwater is scarce
- Soil quality is decreasing
- Land use: 24% of GHG emissions
- Many farmers are old or poor
- Sea: 70% of earth gives 7% of human proteins

It is all about Efficiency

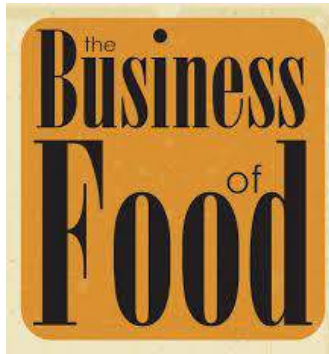


nexus / *nederland*

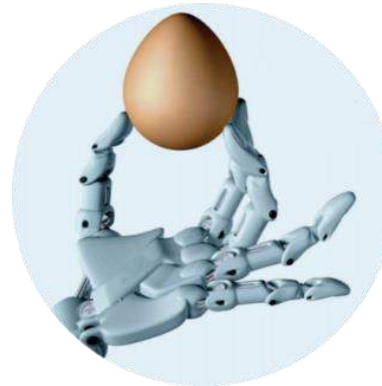


Innovation: Knowledge & Entrepreneurship

- Societal Challenges

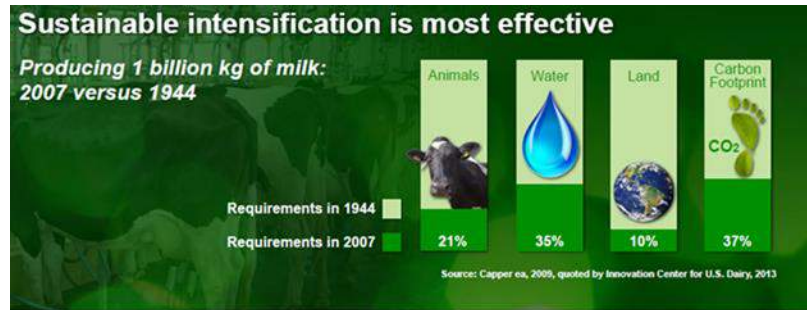


- Disruptive Key Technologies

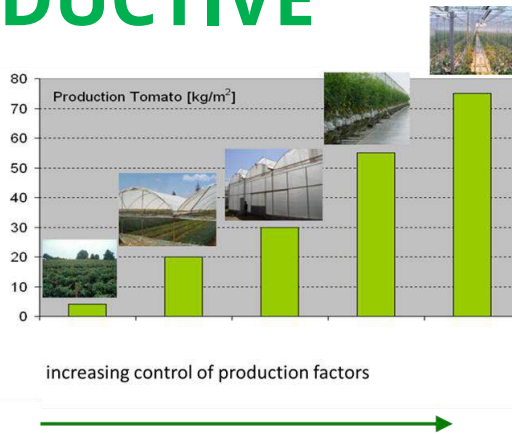


20th Century: Linear Efficiency

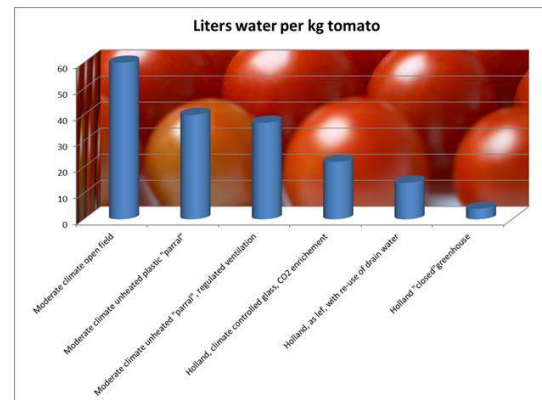
THE GREEN REVOLUTION



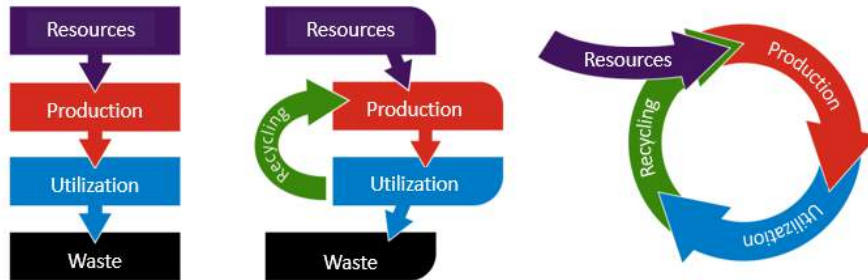
PRODUCTIVE



SUSTAINABLE



21st Century: Circular Efficiency



SMART



Figure 1. Food loss and waste occurs more 'near the fork' in developed regions and more 'near the farm' in developing regions (Percent of kcal lost and wasted)



Note: Number may not sum to 100 due to rounding.

Source: WRI analysis based on FAO 2011. Global food losses and food waste—extent, causes and prevention. Rome, UN FAO.

WORLD RESOURCES INSTITUTE

Nature Inspired Circularity



Circularity means: New Role for Livestock

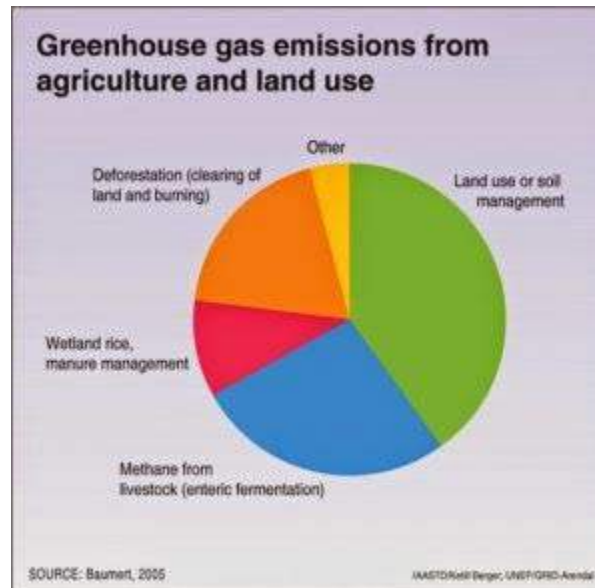
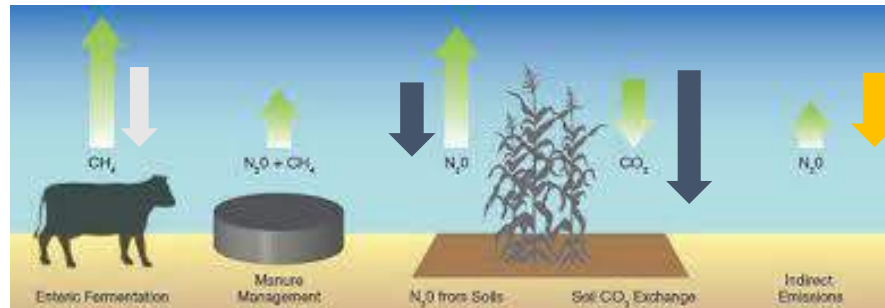
VALORISATION PROTEINS



VALORISATION MANURE



Credits: Climate Smart

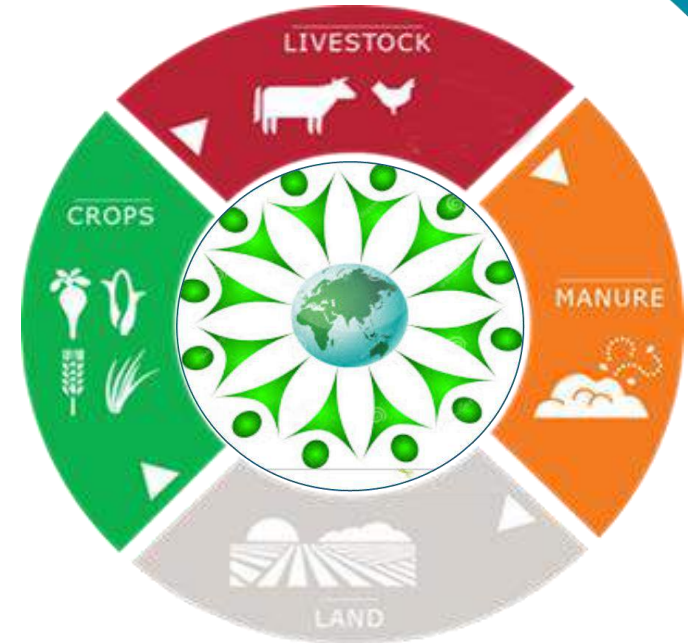


In Conclusion

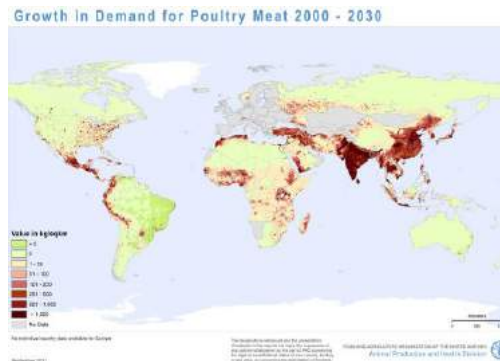
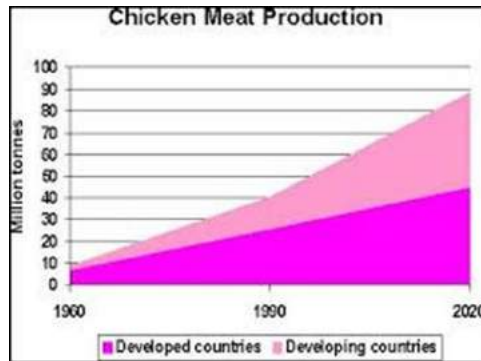
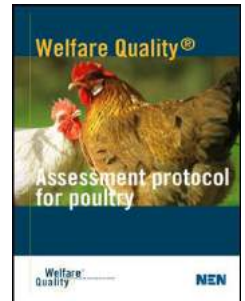
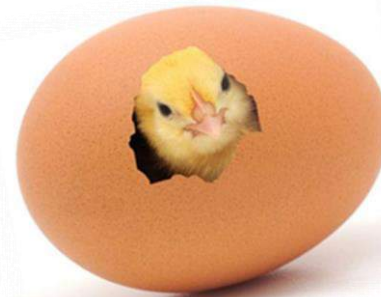
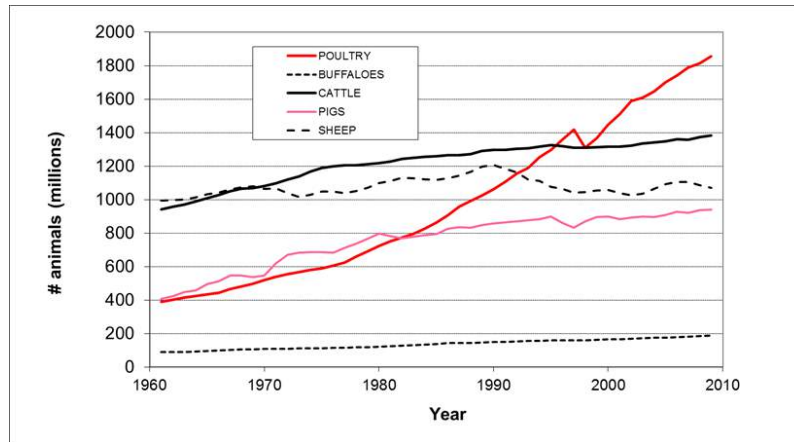
“Circular Food is Good”



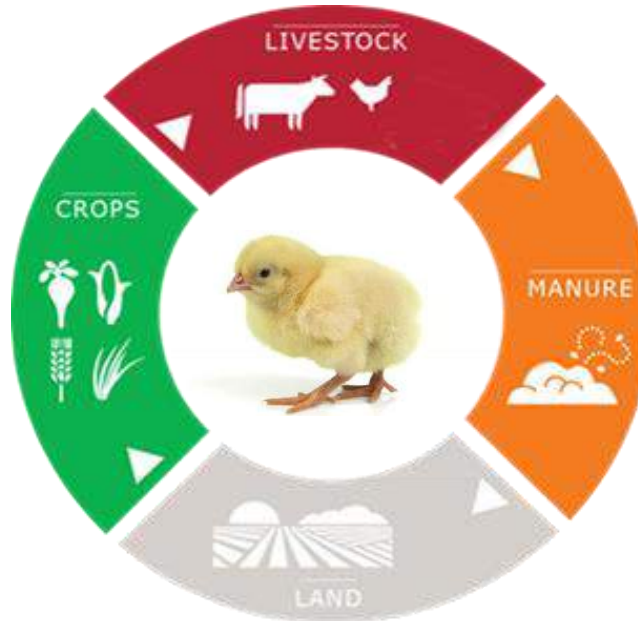
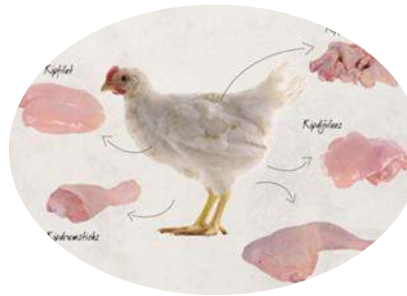
- For people (nutrition security)
- For planet (sustainability and biodiversity)
- For profit (farmers and business partners)



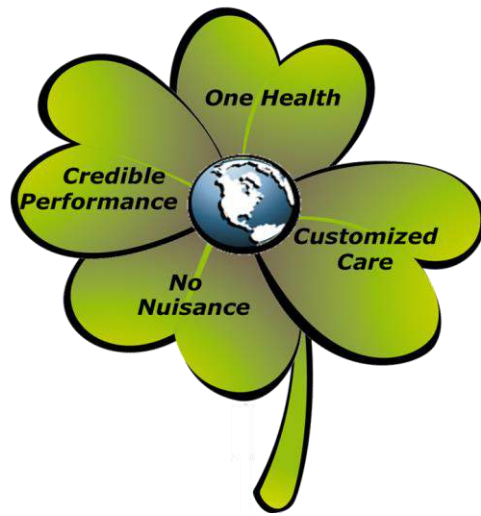
Poultry is now Food #1



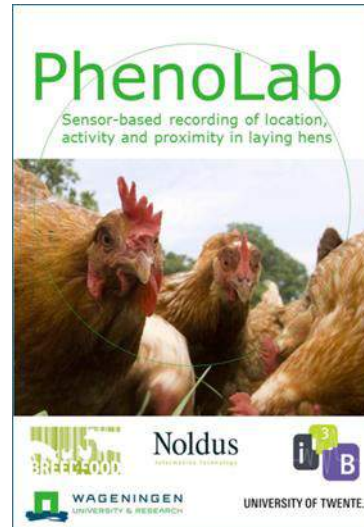
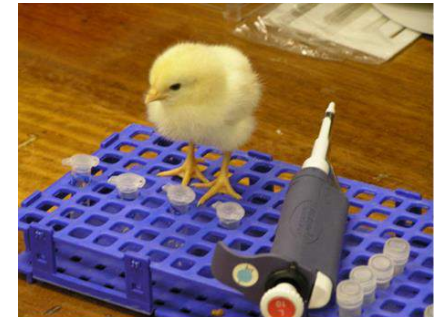
Poultry & Circularity



One Health Care!



netherlands
centre for
one health



Modern Farming Systems

Rondeel®



windstreek



KIPSTER



The supportive Sea

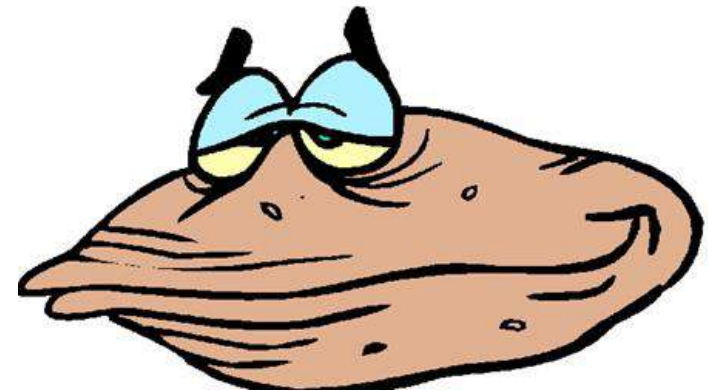
1 The Earth has **one big ocean** with many features.



70% Sea

7% Sea

Food



Marine Biobased Economy



Boosting Value Chain Seaweed



- Seaweed Production = New Biobased Resource
- Seaweed Processing = Creating New Green Values
- Seaweed Application = Healthy Food Production

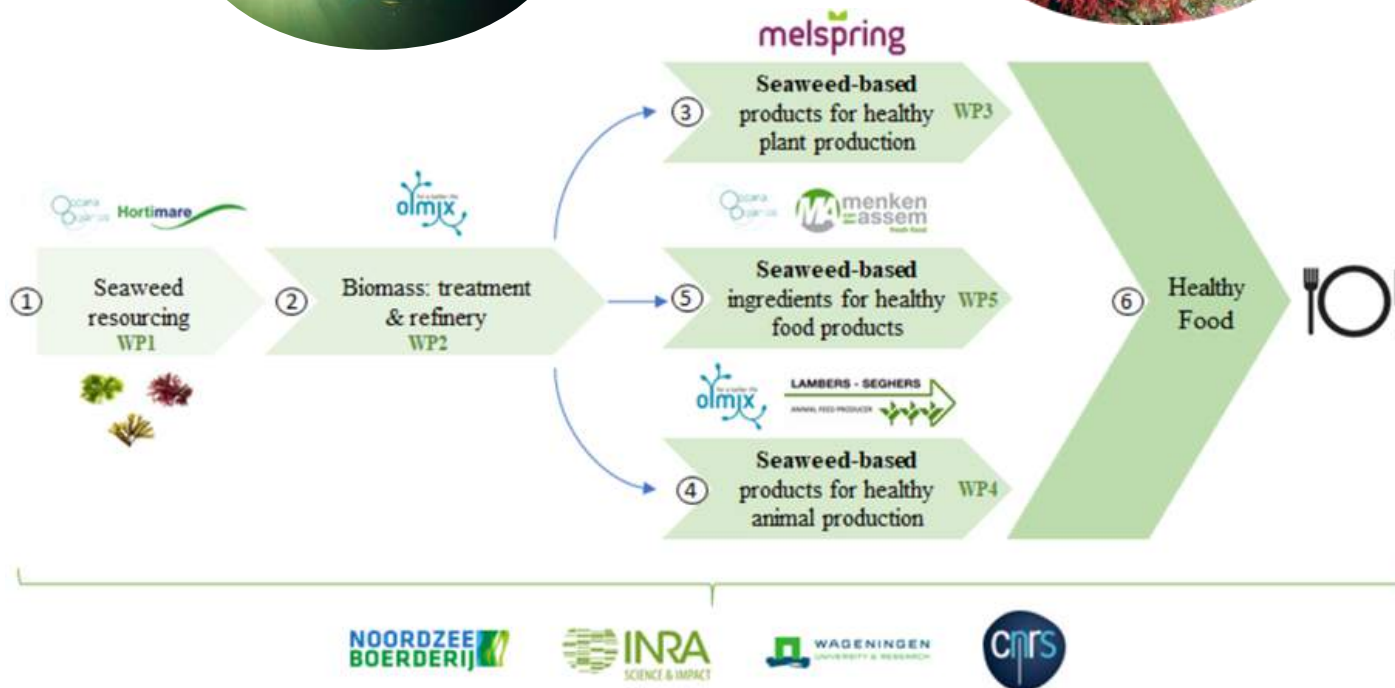
Nature Inspired Natural Partners



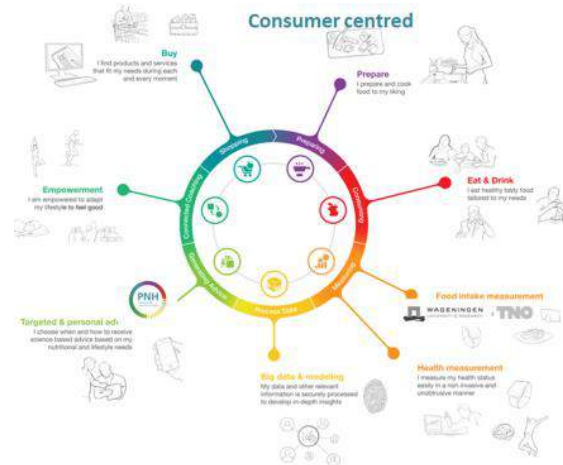
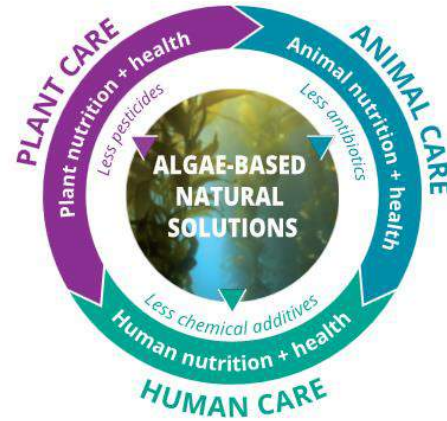
To explore the potential of nature,
To improve the quality of life



The Concept of Health Sea Food

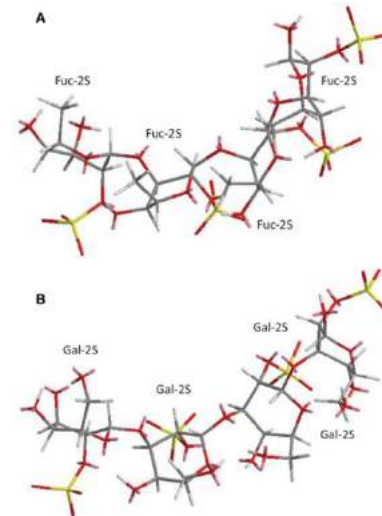


Seaweed Application (Circularity)



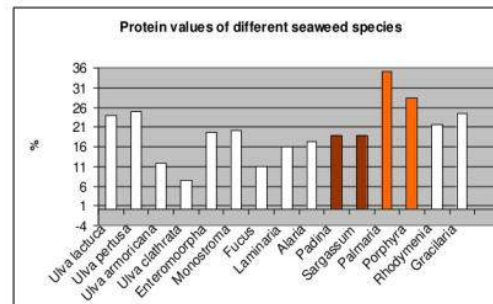
Seaweed Processing (Refinery)

- Marine (Sulfated) Polysaccharides

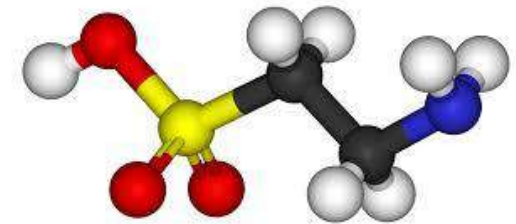


- Marine (Sulfated) Proteins

Seaweed protein content



WAGENINGEN for a better life



Seaweed Resourcing

- Collection



- Cultivation





**HealthSe
a Food**

