



Empowering Future Protein Production



“Danfoss supports GreenScale, believing in a sustainable transformation of Danish agriculture through innovative technology solutions.”

“We invite industrial partners and Danish agriculture to join GreenScale in revolutionizing sustainable future protein production through a modular high-tech system.

GreenScale enables minimal energy consumption and circular resource system - an environmentally friendly solution producing the sustainable protein that the world increasingly needs.”

Jørgen M. Clausen

Chairman Emeritus,
Danfoss A/S

Danfoss


greenscale

Future Sustainable Agricultural Fish Farming

Nanoscience Centre NanoSYD
SDU
MADS CLAUSEN INSTITUTE


spiras

AARSLEFF


**Protein
PARTNERS**


**Gråsten
Landbrugsskole**

POUL DUE JENSEN / GRUNDFOS
FOUNDATION


CODIN IT

 **DTU Aqua**
Institut for Akvatisk Ressourcer


GRUNDFOS
SDU
University of
Southern Denmark

**BITTEN &
MADS CLAUSENS FOND**

Global Aquaculture
Tech
Hub
GATH

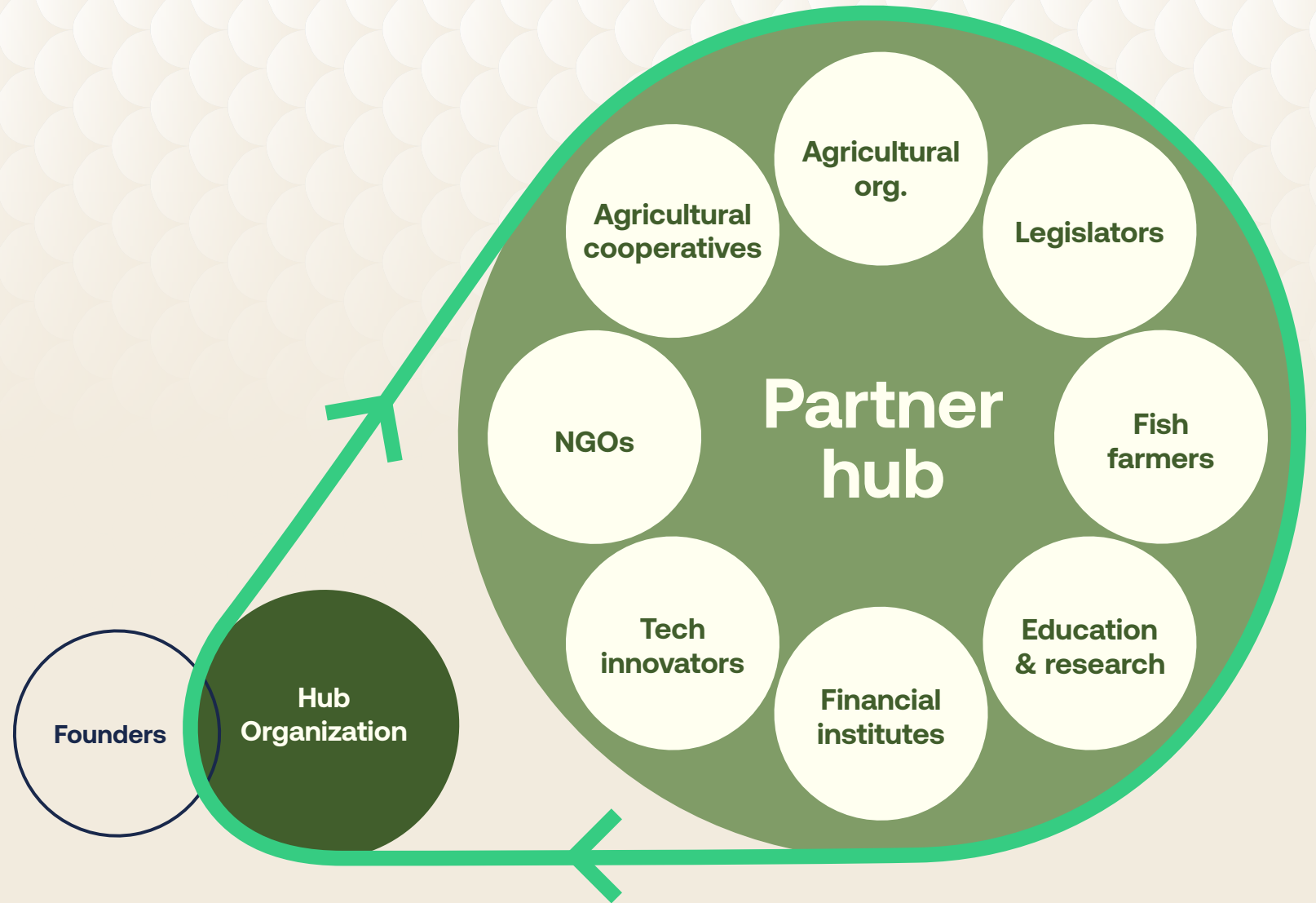

Danish Crown


**FARM
IN A BOX**

Sydbank

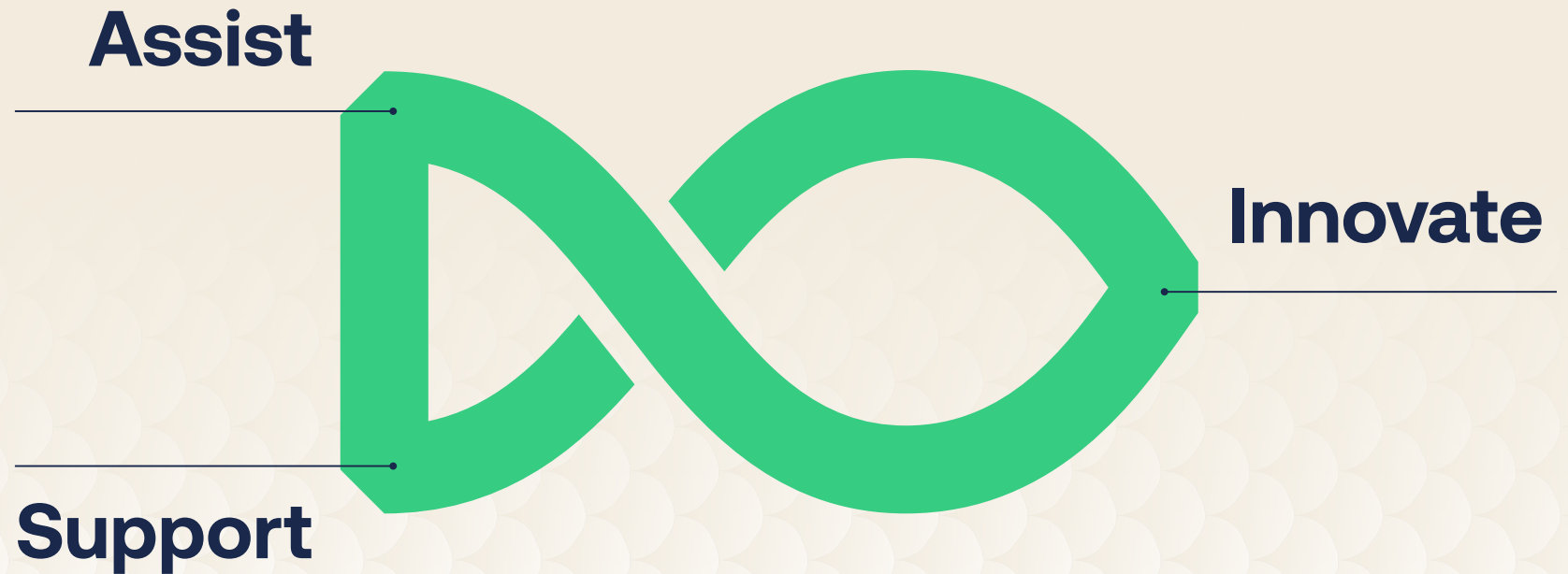
The *GreenScale* Hub

- GreenScale is founded and partnered by multiple big partners
- The GreenScale office will organize the stakeholders in the hub for collaboration
- The Hub will support farmers with adding agricultural fish farming as Recirculated Aquaculture Systems (RAS)
- GreenScale collaborations will lift innovation, technology and education with economical and environmental sustainability in mind.



Primary *Focus Areas*

- GreenScale enables the establishment of an aquaculture and technology hub
- GreenScale acts as a catalyst for innovation and export of Danish technology by enabling agricultural fish farming to Danish farmers
- GreenScale will support innovation and collaboration to deliver on the sustainable protein production of the future.



The GreenScale *ambition*

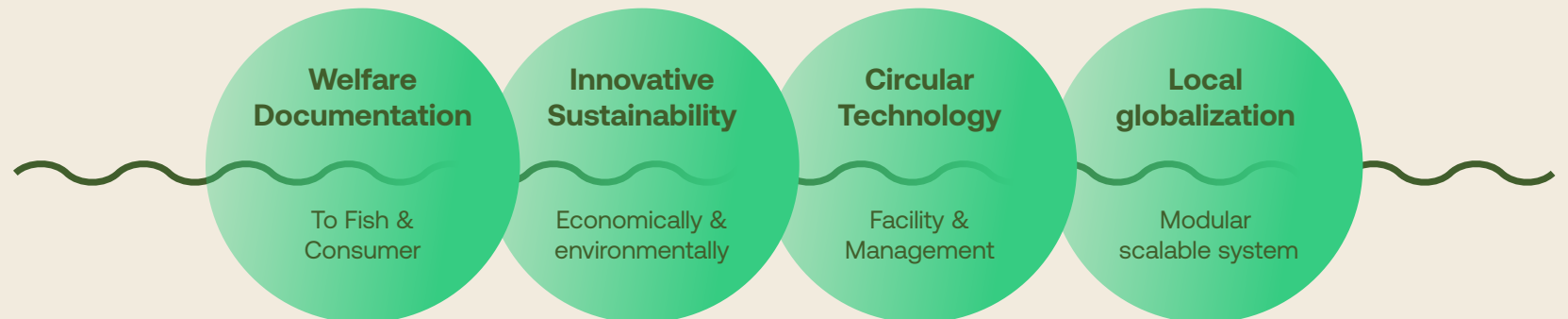
- GreenScale will facilitate sustainable investment in agricultural fish farming, complementing Denmark's existing agricultural production
- With funding and support from policymakers, leading companies, and stakeholder organizations, we establish facility and production standards that form the foundation for sustainable, circular food production with maximal animal welfare and minimal environmental impact
- Through ambitious goals and stringent requirements, the GreenScale facility creates a blueprint for scalable, sustainable transformation across Danish agriculture.

“GreenScale will deliver antibiotic-free, traceable trout production with a focus on health, safety, and environmental sustainability. We shall provide fresh, Danish-produced protein supporting local farmers while maintaining top welfare standards. Through data transparency, scalable systems, and innovative facility management, GreenScale will create aquaculture that meets market demands and environmental responsibilities — delivering value for consumers, communities, and the planet.”

Camilla Bak
CEO, GreenScale



Effects



Supporting a Sustainable Future

- GreenScale will establish an economically and environmentally sustainable model for agricultural fish farming, which also functions as an innovation platform throughout the value chain – from technology solutions and product development to data use, documentation, ESG and animal welfare.
- The model will form the basis for commercial actors and technology partners to find it attractive to scale the solution internationally – based on Denmark's strong position within technology and agri- and aquaculture production.

Transition of farmers



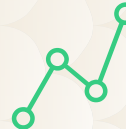
100 farmers converted
to fish farming by 2030

Increased fish production



Additional 50,000 tons fish
produced by 2030

Increased economic value



Farming revenue increased
from 0.9 (pig) to 2.2 (fish) billion
DKK by 2030

Reduce CO₂ emissions



180,000 tons CO₂ reduction in
2030. CO₂ neutral in 2040.

Reduce Nitrogen Discharge



2,000 tons reduction in
nitrogen discharge in 2030

Technology Exports



Aquaculture technology
exports increase with 15 billion
DKK in 2035 from 4 in 2023

Challenge & Opportunity

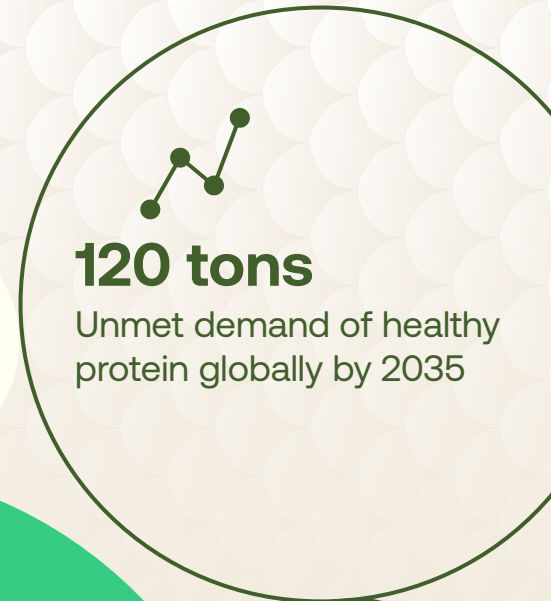
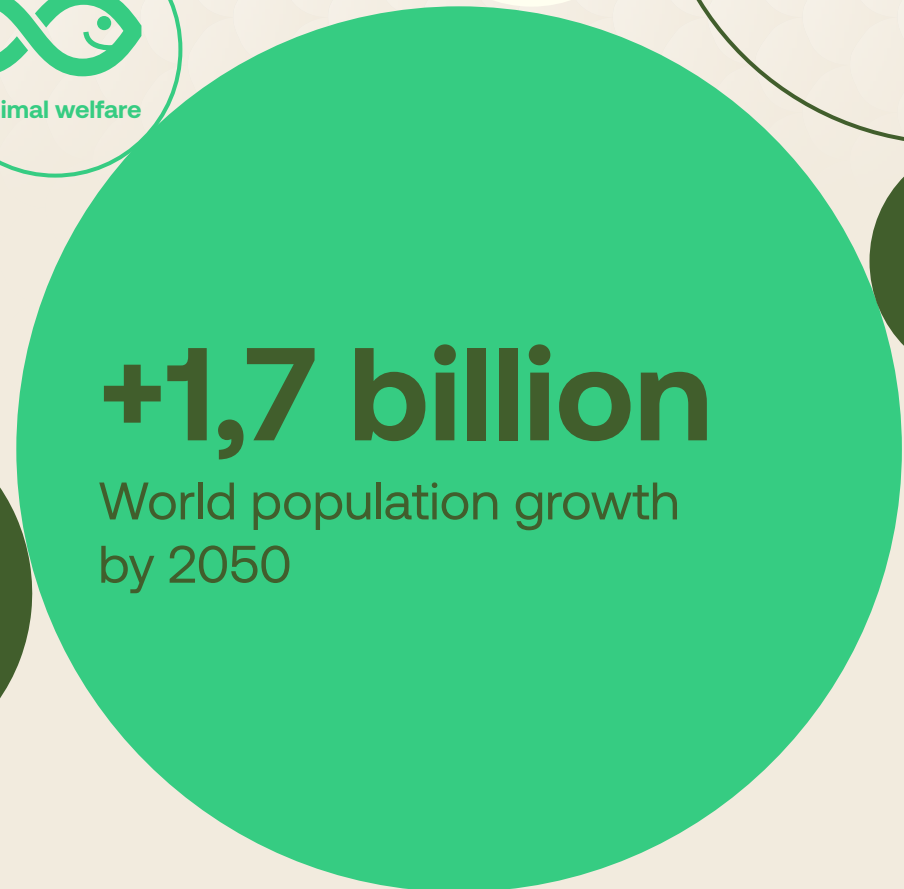
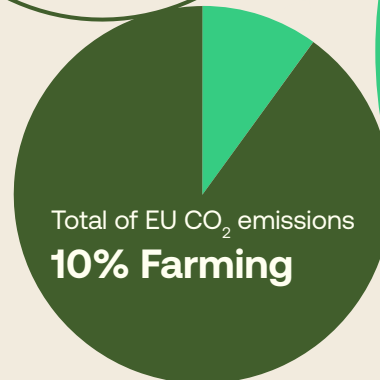
Mega Trends Overlap in Agri- and Aqua- culture.

Facts & Needs

- Growing population and food scarcity
- Demand of sustainable food production
- Need of CO₂ emission and waste reduction
- Clean waters
- Food safety
- Local produce
- Traceability
- Animal welfare

"Farmed seafood provides an answer to increasing demand for protein sources as the world's population becomes more affluent, urbanized and approaches 9 billion before 2050."

– WWF



Mega Trends Overlap in Agri- and Aquaculture

Consumer concerns

- Data streaming
- Health & Safety
- Animal Welfare
- Sustainability & Circularity
- Clean waters
- Local Production
- Scalability

“Aquaculture is the world's fastest growing food sector, with huge potential for expansion. It plays a critical role in global food production and over half the aquatic foods for human consumption are farmed.”

– FAO



The global consumer

56% are willing to pay more for fish from a certified sustainable fishery.

65% believe that we should only consume fish and shellfish from sustainable sources.

** Marine Stewardship Council (2023). "Consumer Awareness and Attitudes Towards Sustainable Seafood: Global Survey Results."

Market size

2030*

↑300%

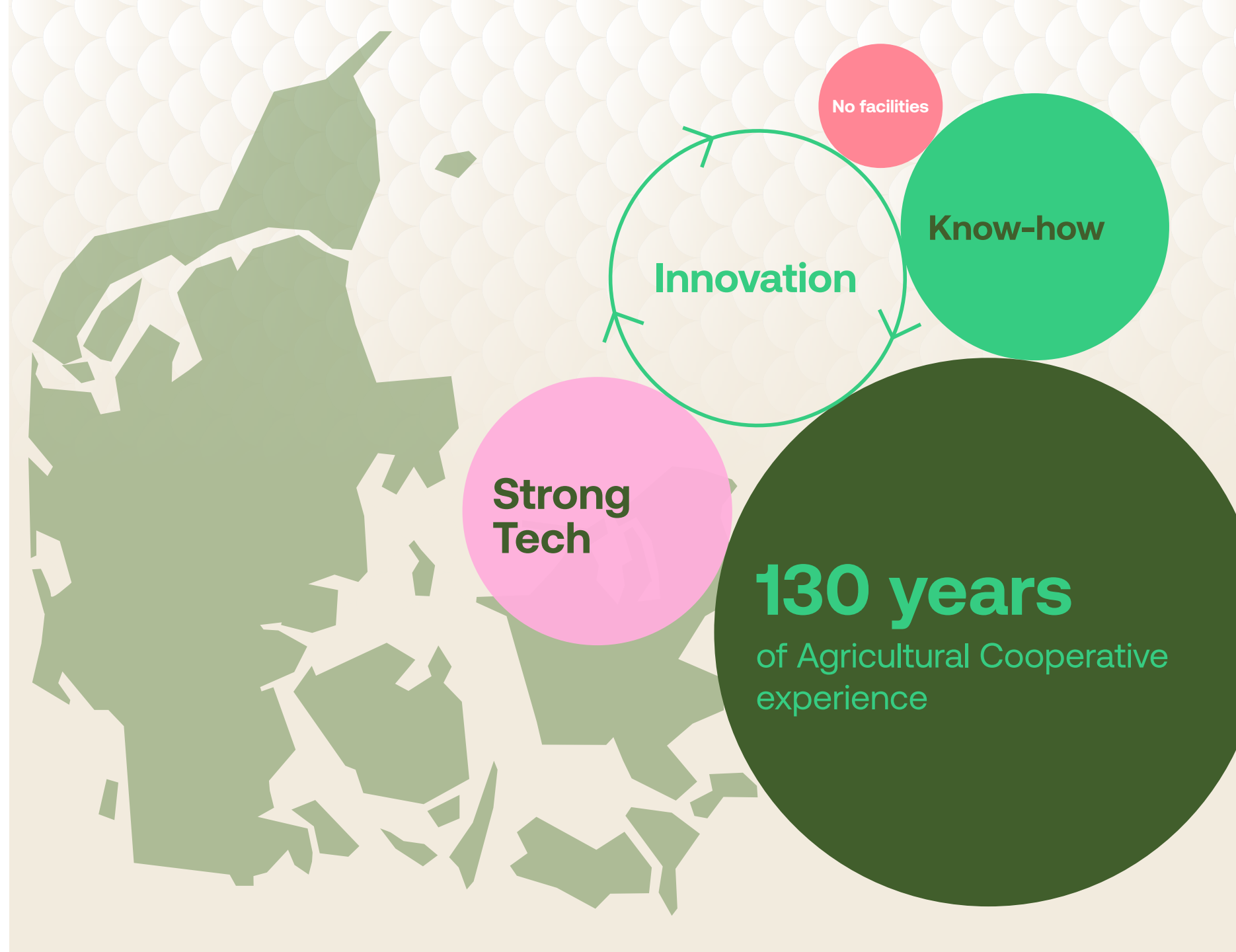
- ✓ Innovation, documentation, certification
- ✓ Antibiotic-free, traceable, quality
- ✓ Transparency, documented welfare and practices
- ✓ Lower environmental footprint,
- ✓ Reuse, multiple-use
- ✓ Clean waters on land and at sea
- ✓ Fresh, local produced protein
- ✓ Scalable modular system

2010

Denmark Has a *Unique Position of Strength*

- Some of the world's leading aquatech-suppliers are Danish
- Denmark has a strong history of agricultural cooperatives
- Combining the agri- and aquaculture creates unique synergies
- Agricultural fish farming will help transform Denmark's future sustainable protein production.

But currently there is no home market... Yet



GreenScale *powered* by Danish agriculture

Strengths in Danish Agriculture

- Denmark pioneered cooperatives more than 100 years ago
- Danish farmers own most of the value chain together
- The traditions run deep; from working with national legislators to environmental optimization and education
- Farmers have great experience in sharing and using production data.



The greenscale solution

The GreenScale *contribution*

- GreenScale will contribute to simplifying the application processes through dialogue with authorities
- GreenScale will help farmers join together in agricultural fish farming consortia
- Through standardization GreenScale will contribute to a valid business concept.



Contributions to GreenScale

→ GreenScale depends on robust partnerships across the value chain ecosystem to foster innovation and facilitate scalable growth.

“Project GreenScale represents exactly the type of innovation Danish agriculture needs. With our long and broad experience in agricultural advisory services and SPIRAS' focus on digitalization, we see tremendous potential in supporting the GreenScale initiative. Aquaculture on land is part of the future food production and aligns perfectly with our mission to help Danish farmers become more sustainable and profitable.

This collaboration supports Denmark's position as a leader in sustainable food production and demonstrates how new partnerships can accelerate the green transition.”

Sverre Vincent Lenbroch

Adm. direktør, CEO, SPIRAS



“At Grundfos, water has always been at the heart of our mission. GreenScale's vision for sustainable aquaculture perfectly aligns with our 75+ years of advancing water flow while reducing energy consumption. With our proven RAS technology that enables 96% water reuse and 24/7 reliability, we're excited to support Denmark's leadership in creating the sustainable food systems of tomorrow. This is how we respect, protect, and advance the flow of water.”

Poul Due Jensen

CEO, Grundfos

Standardization is key

- Minimizing complexity by standardized facilities, ratios and scorecards
- Standardized facilities will lower establishment costs
- With standardizing best practice and automated processes can be established
- Standardization pushes to improvement and innovation through useful and comparable data
- A validated system help scale the technologies to the world market with succes
- A standardized modular “plug and play” system fuel exporting aquaculture technology.

Additional Tech Exports

↑ € 2 bn
per year

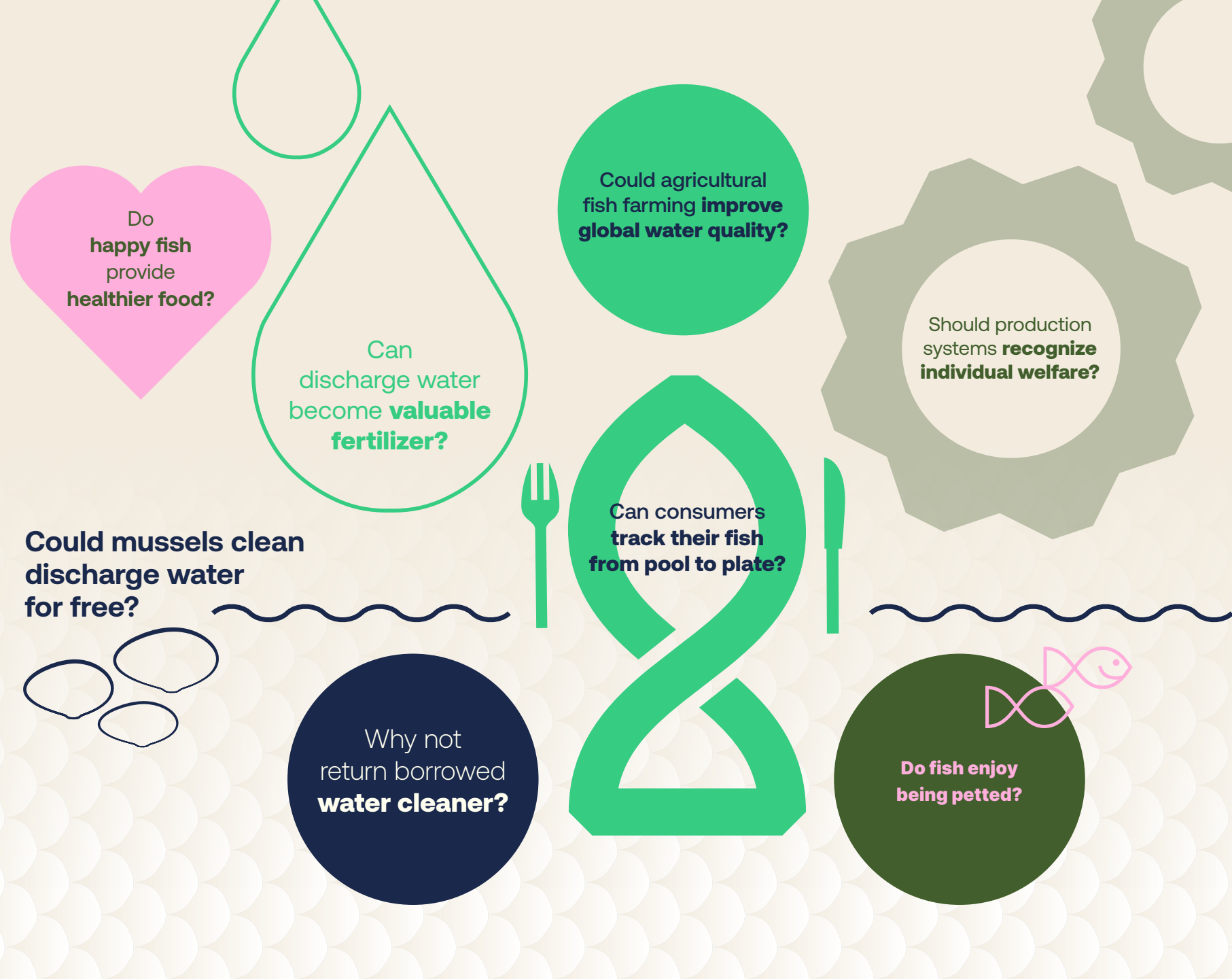


- ✓ Data use
- ✓ Datatracking
- ✓ Automatisering
- ✓ Continuous improvement
- ✓ Best practice
- ✓ Production costs

A possible aquaculture standard system
– Plug&Play

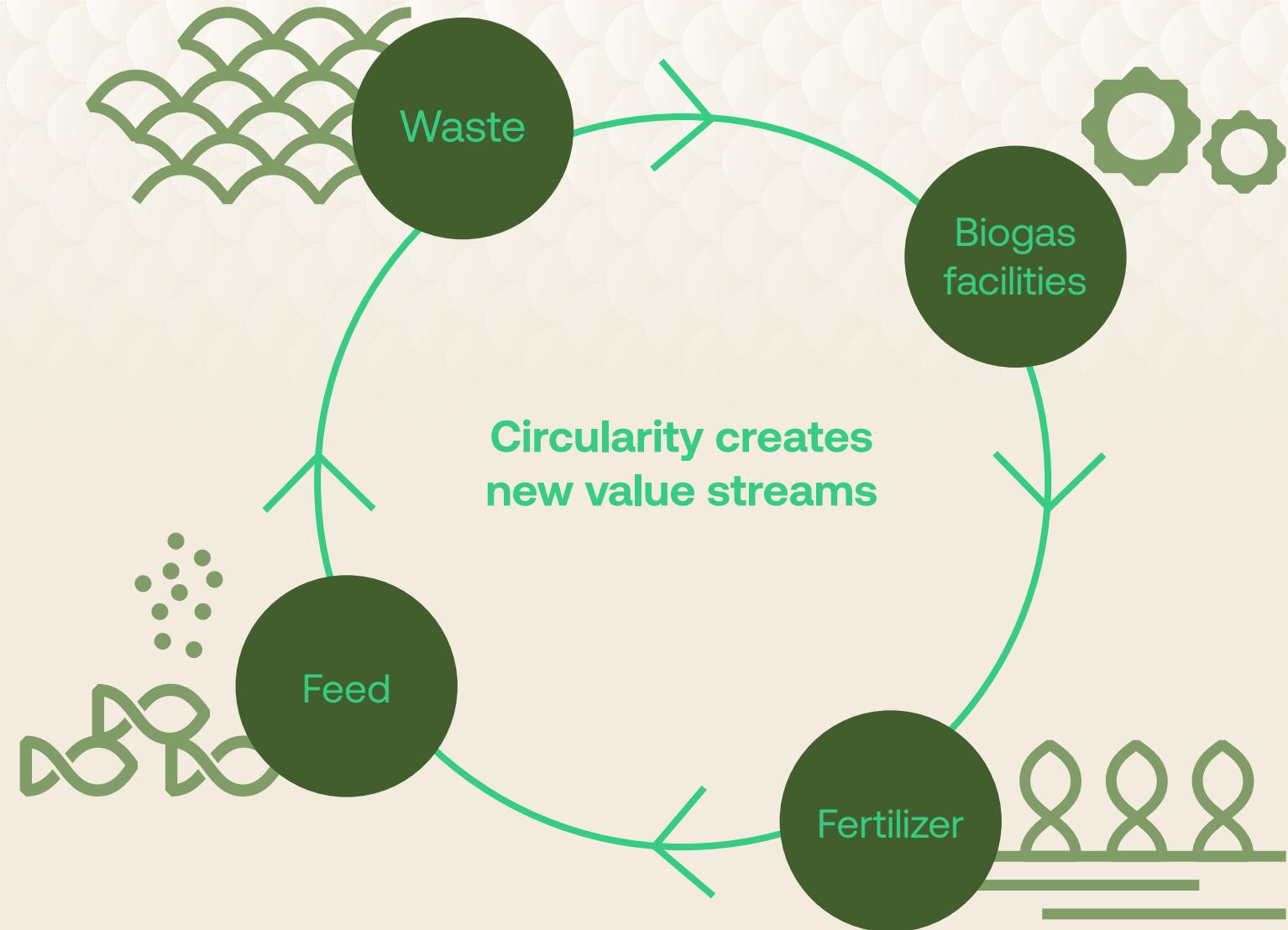
Innovation is key

- Collaborations between tech leaders, research, and agriculture sparks innovation, circularity and energy optimization
- Data-Driven Development with real-time monitoring, AI optimization, and shared benchmarking for continuous improvement and fish welfare detection nation wide.



Circularity is key

- Recirculating Aquaculture Systems (RAS) are closed circulated systems with approximately 96% water reuse
- Denmark has a strong biogas infrastructure. By utilizing fish waste in biogas production, we ensure circularity
- Biogas waste becomes fertilizer for crop production on farms
- Traceable production creates new value from byproducts
- Waste is an issue that must be addressed in food production.



Key *partners*



Key partners through the value chain help define sustainability, circularity as well as providing real life economical calculations.



“GreenScale is an excellent example of how Danish technology can transform global food production. At Danfoss, we see significant potential in combining our energy-efficient solutions with innovative aquaculture concepts like this. When we can significantly reduce energy consumption while scaling sustainable protein production, we create real value for both society and the environment. This is precisely the type of partnership that drives the green transition forward.”

Kim Fausing
President & CEO, Danfoss

Benefits for the farmer

- Economic growth
- Environmental leadership
- Future agricultural production
- Sustainable protein Transition
- Supports Green Tripartite Agreement land- and nutrient discharge reduction.



→ Environmental Leadership

- ✓ CO₂ reduction: 180,000 tons by 2030
- ✓ Nitrogen discharge: -2,000 tons annually
- ✓ Water efficiency: 75% recycling in RAS systems
- ✓ Support for Green Tripartite agreement goals

→ Economic Growth

- ✓ Farming revenue increase: 0.9 → 2.2 billion DKK by 2030
- ✓ 100 new agricultural businesses (fish farms)
- ✓ Rural job creation: 2,000+ direct employment
- ✓ Investment attraction: 3-7 billion DKK in facilities



500 ton Annual Production



7,05-9M DKK

Annual Revenue

20-22M DKK

15-18 DKK

Price per kg

40-44 DKK

125-250 DKK

Net income

200-290 DKK

8-15 %

EBITDA Margin

30-35 %

5-8 years

ROI

2,5-3,4 years

Benefits for Denmark

- Economic & export growth
- Environmental leadership
- Rural job creation
- Food Security & self-sufficiency
- Sustainable protein Transition
- Supports Denmark's climate goals

Green tripartite agreement

GreenScale enables Danish farmers to meet 2030 requirements

- ✓ 34% CO2 reduction
- ✓ Zero nutrient discharge
- ✓ Support land conversion demands
- ✓ traceable high-tech production

Denmark

→ Food Security & Innovation

- ✓ 50,000 tons additional protein production
- ✓ Reduced import dependency
- ✓ Higher value protein (2.4x pig farming)
- ✓ Innovation hub development in Denmark

→ Export & Trade

- ✓ Danish Aquaculture technology exports:
+15 billion DKK by 2035
- ✓ Global market share in RAS technology
- ✓ Danish companies leading international projects



The path to success

*Cooperatives scales
the Values successfully*

Market impact

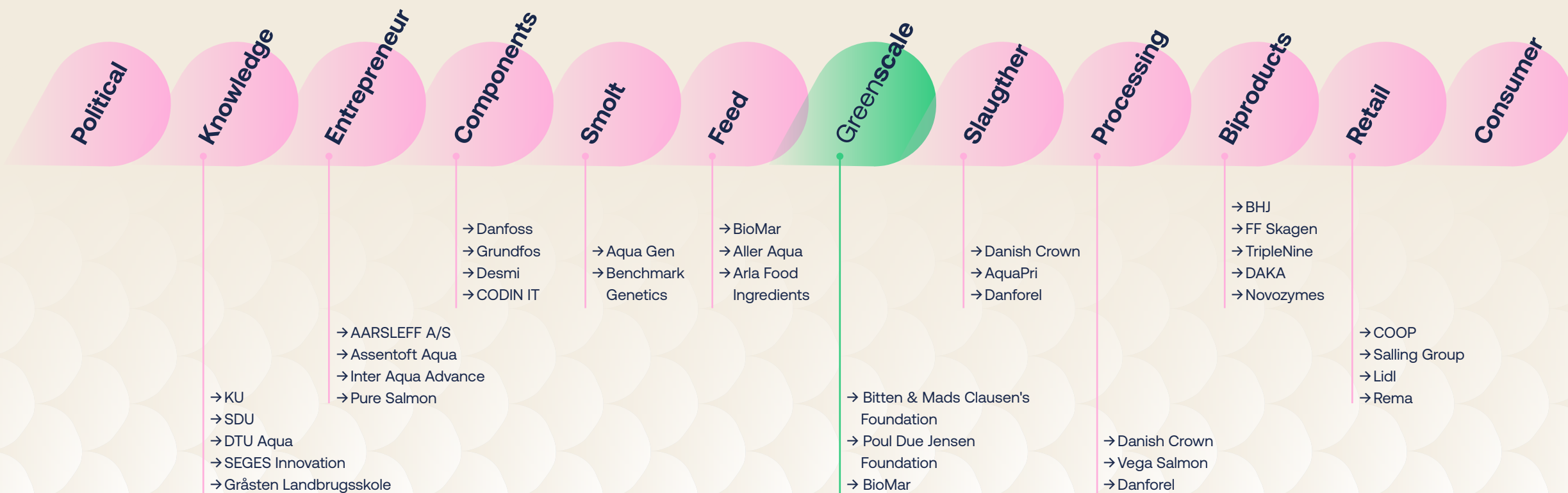
Data sees the individual

Animal welfare

Scaling

- Scaling for fast market impact
- Scaling puts Denmark on the world map
- Partnership synergies towards the full value stream system
- Scaling in control for critical mass and sustainable profit

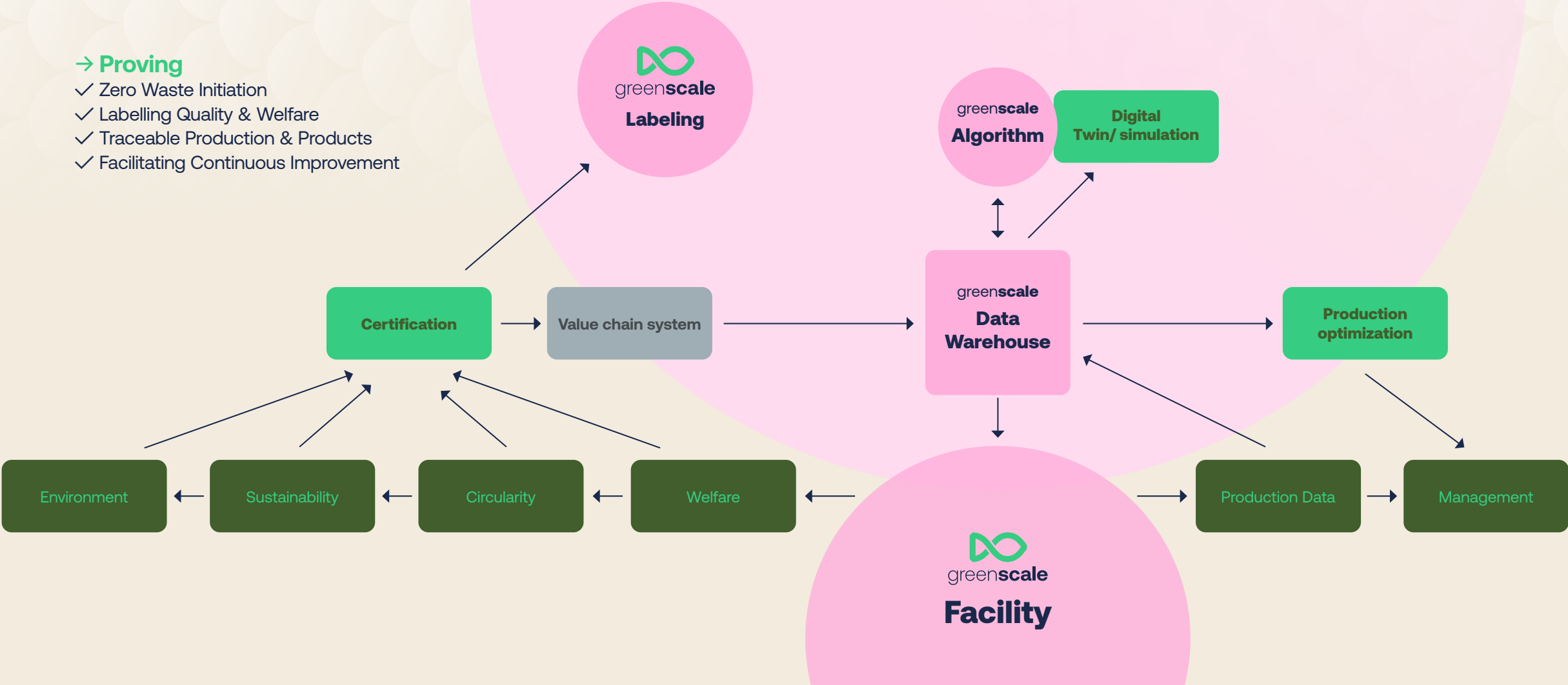
Strong Danish Value Chain synergies



Data strain *connecting partners*

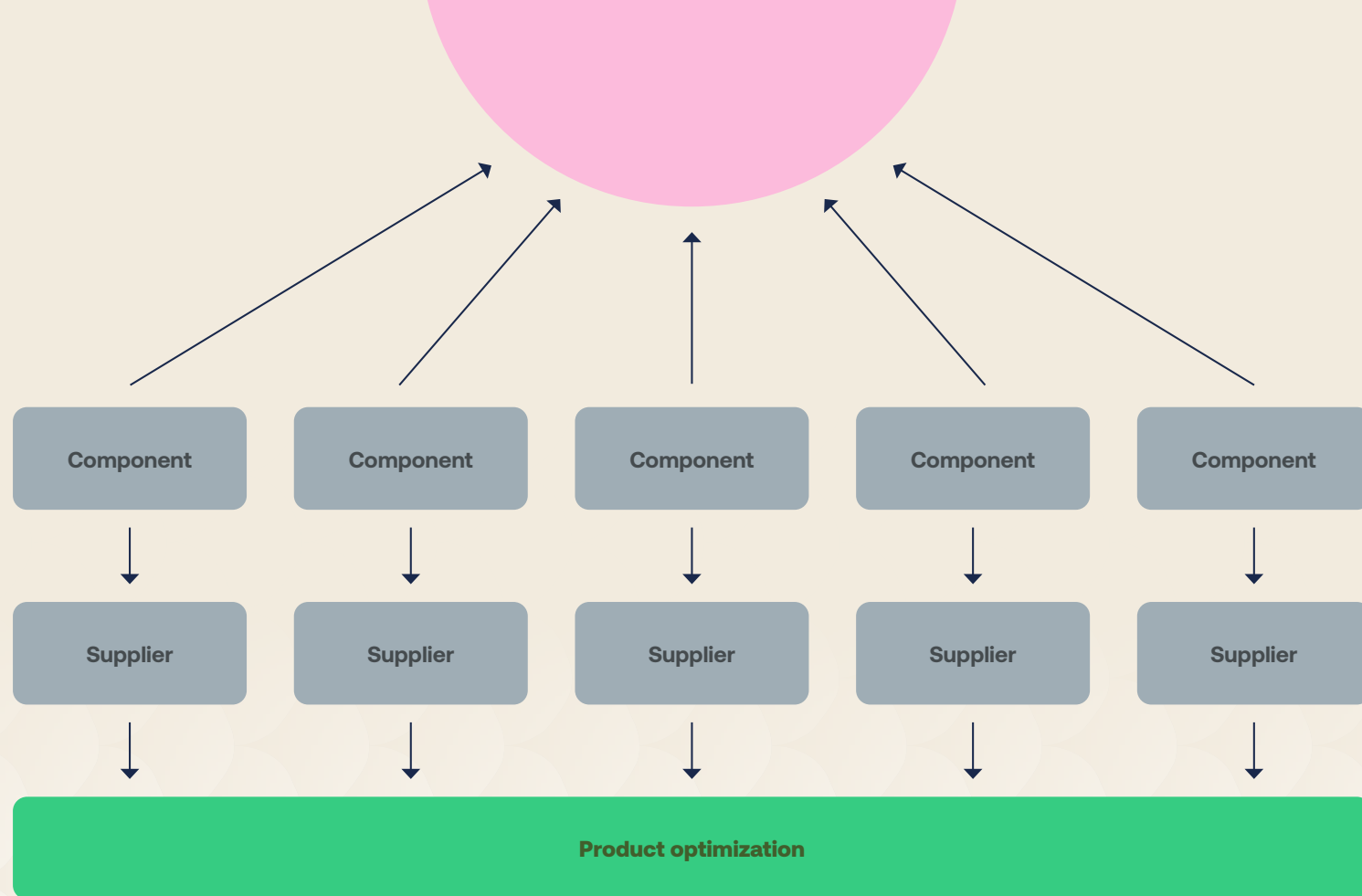
→ **Proving**

- ✓ Zero Waste Initiation
- ✓ Labelling Quality & Welfare
- ✓ Traceable Production & Products
- ✓ Facilitating Continuous Improvement



→ Data Driven Facility

- ✓ Collect Data
- ✓ Analyze Data
- ✓ Action & Value Creation
- ✓ Evaluate & Innovate



- GreenScale criteria
- Optimization
- GreenScale Innovation



Superior Value Creation for Danish value chain

→ Annual Revenue Potential

Domestic market opportunities and new business development for each partner company within Denmark.

~5,6 bn

DKK

Annual revenue
potential 2030

~4,200

**Direct
technology jobs**

~38,1 bn

DKK

Combined
export potential

→ Export Potential (2030)

International market expansion opportunities representing actual Danish export growth contributing to trade balance.

9

**World class partners,
examples**

Economic Foundation

Revenue projections based on partner company CAPEX investments and increased export potential through technology leadership in sustainable aquaculture. The 100 facility target by 2030 represents domestic market establishment, while 250 facilities by 2035 enables significant international expansion and export growth across all partner technologies.

Superior Value Creation for *potential value chain partners*

Technology Partners

525-625m
DKK/year
100 facilities revenue

Danfoss
AI-based temperature control & energy-efficient heat pumps.

225-275m
DKK/year
100 facilities revenue

Grundfos
Intelligent pump system & water quality monitoring.

450-550m
DKK/year
100 facilities revenue

Aarsleff
Modular tank systems with optimized flow dynamics.

Value Chain Partners

2.6-2.8b
DKK/year
100 facilities revenue

BioMar
Specialized RAS feed & AI-based feeding systems.

950m-1.05b
DKK/year
100 facilities revenue

Danish Crown
Mobile processing units & complete traceability.

180-220m
DKK/year
100 facilities revenue

BHJ
Bioactive technology for by-product valorization.

Knowledge Partners

125-175m
DKK/year
100 facilities revenue

Protein Partners
AI control systems & digital twin technology.

75-125m
DKK/year
100 facilities revenue

Spiras
Agricultural cooperation & farmer network integration.

450-550m
DKK/year
100 facilities revenue

Codin IT
Software development & system integration.

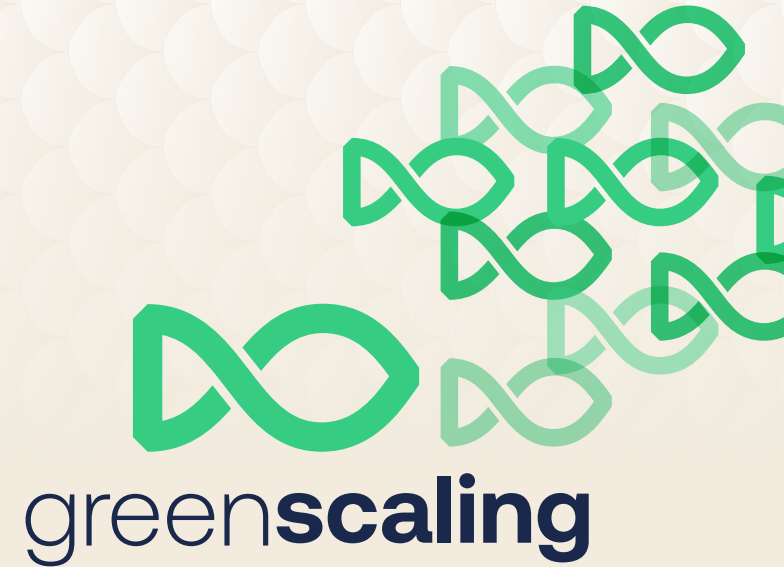
Path to success 2024-2030

- **2024**
The GreenScale office and hub will be defined
- **2025**
The GreenScale office and hub will be established
- **2026**
First agricultural fish farm is to be established
- **2027**
Scaling concept and blueprint ready
- **2030**
100 facilities facilitated



2025—2026—2027

✓ **Scaling concept
& blueprint ready**



2030

✓ **100 operational facilities
facilitated in Denmark**

Which fish would YOU choose?



– Sustainable, *Danish Fish?*

” We believe that aquaculture holds the answer to many of the problems the world face today. Especially if we can farm fish on land.”

Denmark as Global Leader in Sustainable Protein

- ✓ Scalable facilities
- ✓ Global technology export
- ✓ Circular economy model
- ✓ Carbon-neutral production by 2040
- ✓ Denmark frontrunner on innovative sustainable protein production



Kjell Stroem

Chairman of the Board,
GreenScale



Camilla Bak

CEO,
GreenScale



Jørgen M. Clausen

Chairman of the Board Emeritus, Danfoss A/S
Founder, GreenScale



greenscale.dk





Supporters

OFFICIAL SUPPORTERS SHARING EXPERTISE

Protein
PARTNERS



Gråsten
Landbrugsskole


Danish Crown

Sydbank

Nanoscience Centre NanoSYD
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Institut for Akvatiske Ressourcer

Assisting Partners

STRONG PARTNERSHIP WITH DEDICATED RESOURCES


AARSLEFF


spiras


GRUNDFOS

Danfoss

CODIN IT


FARM
IN A BOX

Initiators

FOUNDER AND FUNDER

POUL DUE JENSEN / GRUNDFOS
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