



FOLKETINGET

Åben høring om potentialer og barrierer for den danske biosolutionssektor

Erhvervsudvalget

29. februar kl. 13:30-16:15 i Landstingssalen



FOLKETINGET

Velkomst

Louise Schack Elholm (V), Erhvervsudvalget

Åben høring om potentialer og barrierer for den danske biosolutionssektor
Erhvervsudvalget



FOLKETINGET

Mikael Valsted

DI Bio

Åben høring om potentialer og barrierer for den danske biosolutionssektor
Erhvervsudvalget

Danmark som verdensledende biosolutions-center: Nu og i fremtiden

Mikael Wraae Valsted, DI Bio

MIWV@di.dk

29. februar 2024



Dansk Industri



8%

8 pct. af de globale CO₂e-udledninger kan fjernes, hvis innovative biologiske løsninger (*biosolutions*) implementeres

Biosolutions er naturens egne mikroorganismer

Input
Sukkerstof eller
biomasse



Naturlig proces
Mikroorganismer
fermenterer

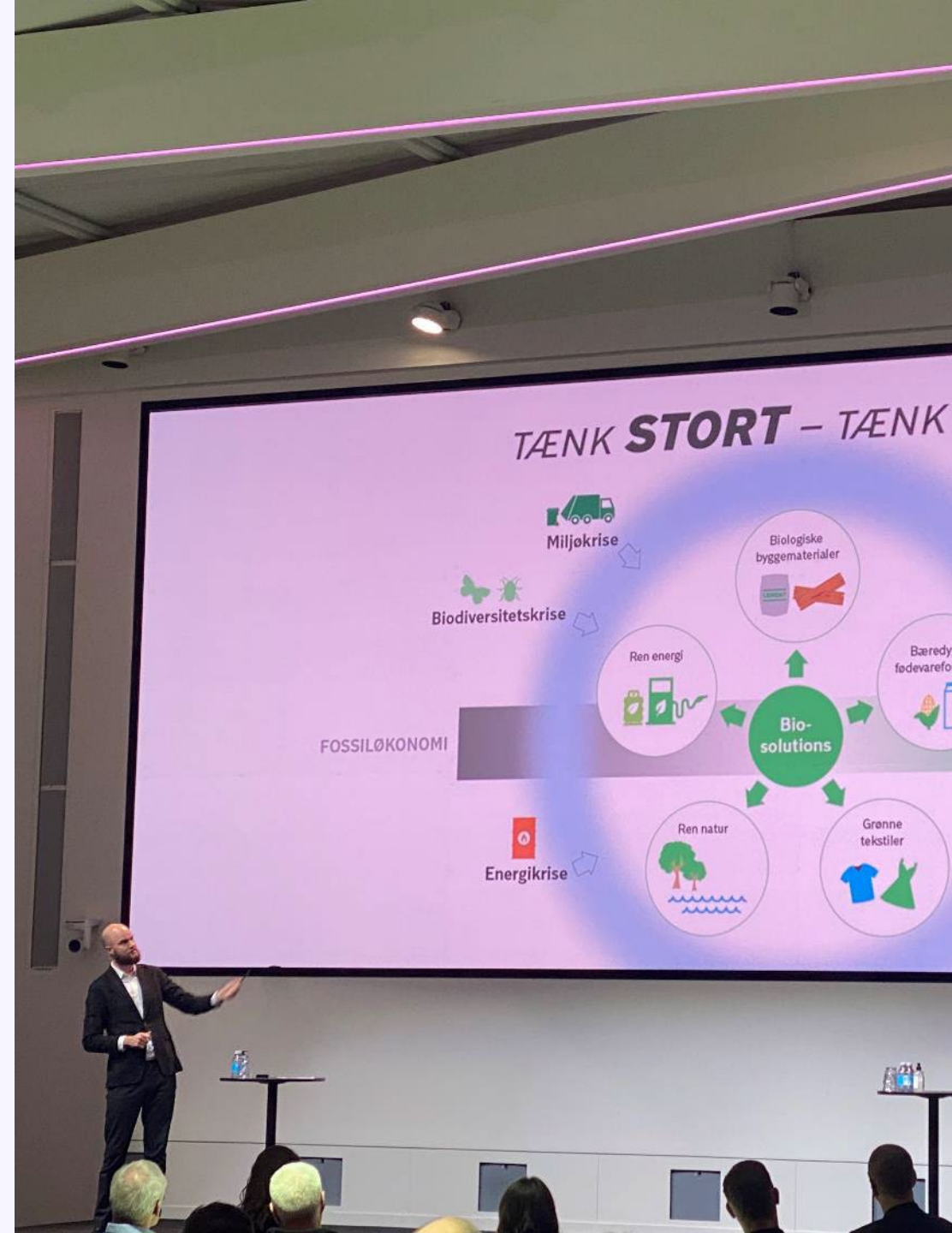


Output
Enzymer, biopesticider,
biokemikalier, nye fødevarer
etc.



Danmark er verdensledende

- ✓ **Novonosis** (fusionen af tidl. Novozymes & Chr. Hansen) – verdens førende leverandør af enzymer og gærkultur
- ✓ **DTU** – verdens 5. bedste og EU's bedste universitet ift. biotek
- ✓ **KU** – EU's 7. bedste og verdens 32. bedste universitet
- ✓ **Novo Nordisk Fonden & Holding** – én af verdens førende biotekinvestorer samt verdens største erhvervsdrivende fonde
- ✓ **BioInnovation Institute** – unik biotek-inkubator som første skridt på vores svar til Bostons "Kendall Square"
- ✓ **Kalundborg Symbiosen** – verdens førende biotekklynge



Hvad sektoren ønsker herfra: Først og fremmest tidssvarende EU-lovgivning

Baggrund

- Til marts 2024 præsenterer Europa-Kommissionen sit udspil til et nyt Biotek & Bioproduktions-initiativ = grundlaget for fremtidens biosolutions-sektor.

Folketingets rolle

- Det er nu, at EU's nationale parlamenter (Folketinget) og EU-staternes regeringer skal prioritere deres ønsker til en kommende Europa-Kommission.

Det danske EU-formandskab i 2025

- Her er det oplagt, at den danske regering tager biosolutions-sektorens potentiale med i det politiske arbejde.

New initiatives in the 2024 Work Programme	
A European Green Deal	
1	Wind power package
2	2040 climate target
3	Water resilience
A Europe Fit for the Digital Age	
4	A safe space for the green and digital transition
5	Artificial intelligence to serve European innovation and competitiveness
An Economy that Works for People	
6	Biotech and biomanufacturing
7	Social dialogue
8	Green and digital transition, open strategic autonomy
9	European Works Council
A Stronger Europe in the World	
10	Strengthening partnerships
11	European defence
Promoting our European Way of Life	
12	Fight against migrant smuggling
13	A joint European degree
A New Push for European Democracy	
14	Preparing for enlargement
15	Child protection



FOLKETINGET

Panel 1: Inspirationsoplæg fra sektorens iværksættere samt den verdensførende virksomhed Novonosis

Åben høring om potentialer og barrierer for den danske biosolutionssektor
Erhvervsudvalget



FOLKETINGET

Peter Steen Mortensen


Public Affairs Director, Novonosis

Åben høring om potentialer og barrierer for den danske biosolutionssektor
Erhvervsudvalget



Better our world with biology

Our purpose



10K

Number of employees (approx.)



€3.7B*

Revenue



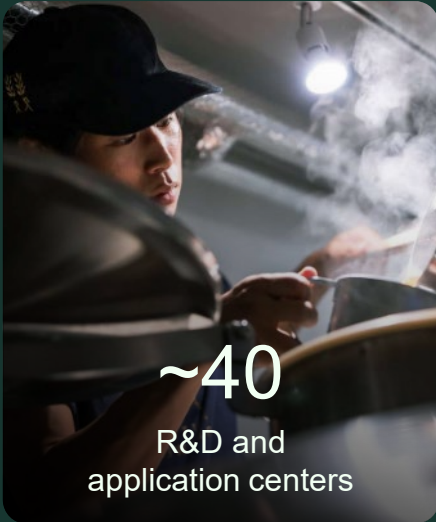
>9.9K

Number of patents (approx.)



~10%

Expected revenue spent on R&D



~40

R&D and application centers



>20

Manufacturing sites



Net Zero

We are on track to reach our 2050 climate target



45%**

Diversity target across Novonesis



* Combined financials are based on Chr. Hansen's audited Annual Report 2022/23 and Novozymes' unaudited interim reports for 9M 2023 and Q4 2022. Novozymes figures have been converted from DKK to EUR using a single FX rate of 7.44 for purposes of translation only.

**45% minimum men and 45% minimum women across all professionals and senior management by 2030

Biosolutions is a key enabler in the green transition



Facility in Blair to produce
Advanced Proteins



Enzymes enabling
industrial-scale PET
recycling



Enzymes enabling sustainable
carbon capture

We must have a national strategy



FOLKETINGET

Thomas G. Schmidt

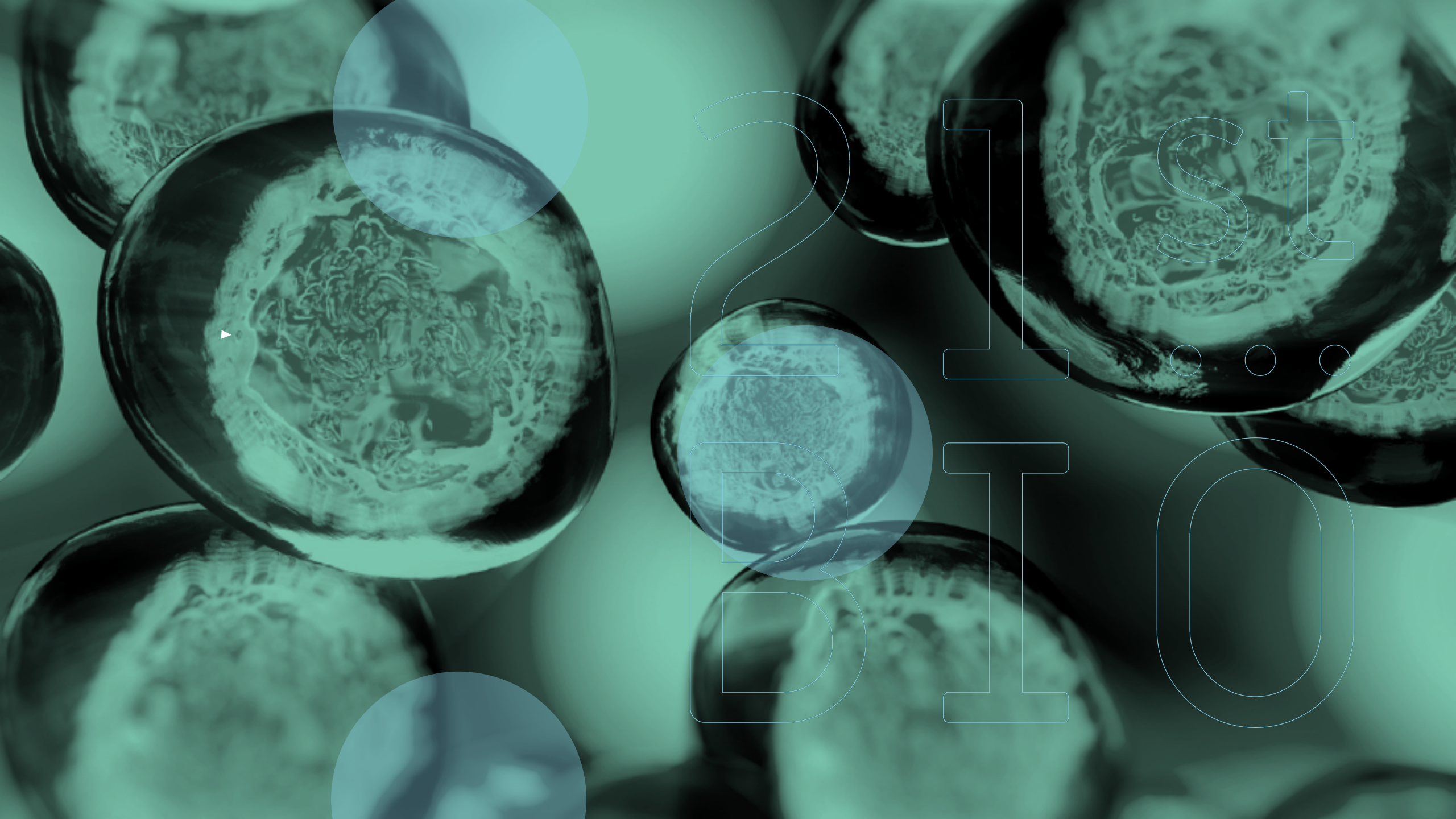
Adm. direktør og grundlægger, 21st.BIO

Åben høring om potentialer og barrierer for den danske biosolutionssektor
Erhvervsudvalget

21st BIO

February, 2024





21st BIO

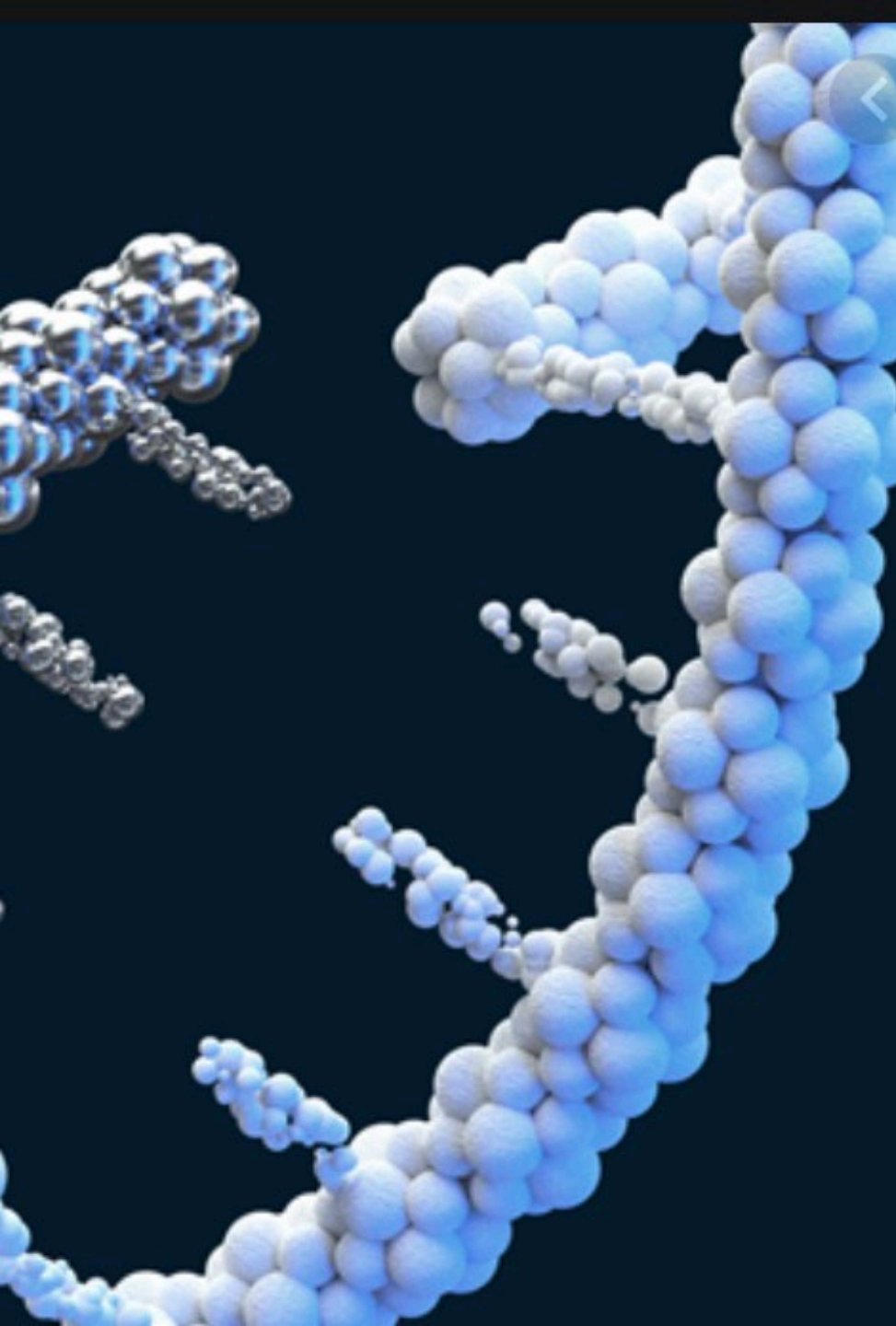
60%

OF THE WORLDS PHYSICAL
INPUTS COULD BE MADE USING
BIOLOGICAL MEANS

**AGRICULTURE,
AQUACULTURE
AND FOOD**

MATERIALS

**CHEMICALS
AND ENERGY**



- Cost and speed evolving **faster than Moore's law**
- Computing power and **AI real accelerators**
- **New tools** allowing sharp increase in experimentation
- Transcribing the **genome becoming an engineering thing**
- **Modular building blocs** are more robust and accessible
- Innovation increasingly democratizing



- World leading precision fermentation capabilities
- Technology #1 growth driver, tax payment and export
- Home to global biotech leaders e.g., Novonosis, Novo Nordisk
- Strong talent, educational and research base – and commitment to driving bio industrial growth
- Highly capitalized





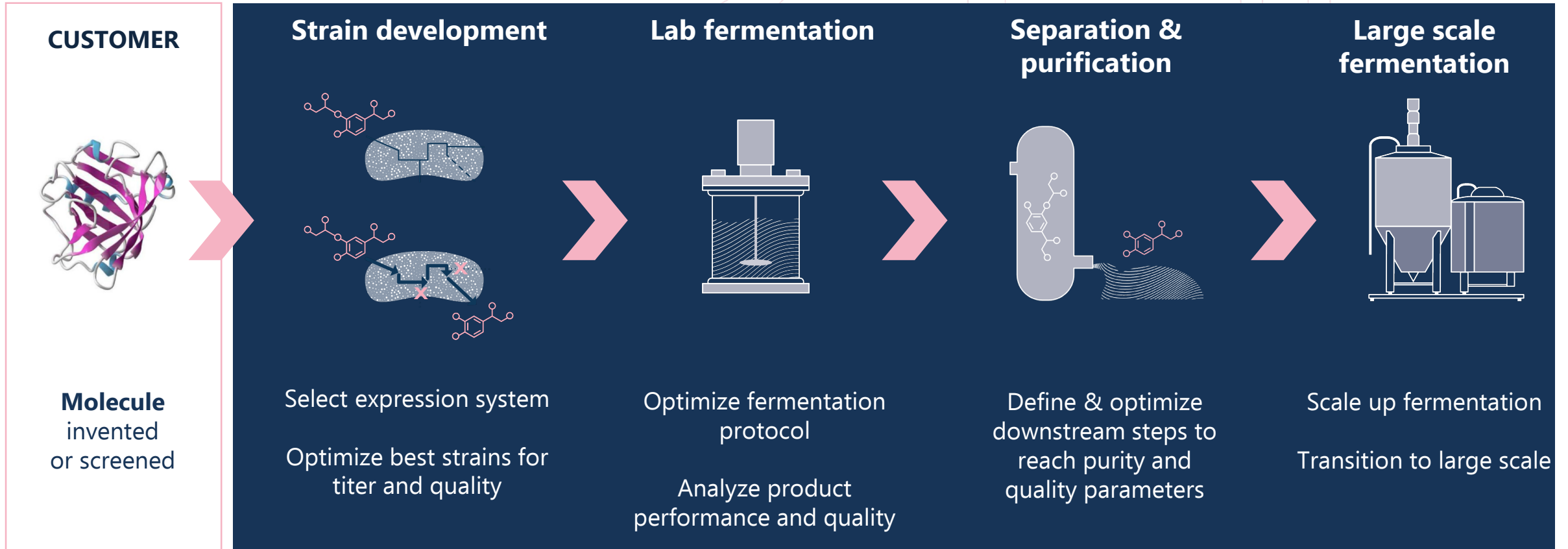
Denmark, a world-leading hub for fermentation, is home to global industrial pioneers.

Novonosis – 21st.BIO's key technology provider – **is a global leader** in enzymes and proteins for high value products in food, household care, and agriculture.

21st.BIO's fermentation technology is in part licensed from Novonosis who has developed it over several decades.

What we do

Development of molecule manufacturing platform





e focus on proteins and peptides in...

FOOD

- Milk proteins
- Egg proteins
- Meat (ingredients and replacement proteins)
- Completely novel proteins/nutrition
- Colors and flavors

MATERIALS

- Silk and textiles
- Personal care
- Bio chemicals (starting with protein based)

AGRICULTURE

- Insecticides
- Pesticides
- Plant vaccination





88% Water

5% Lactose

3% Milkfat

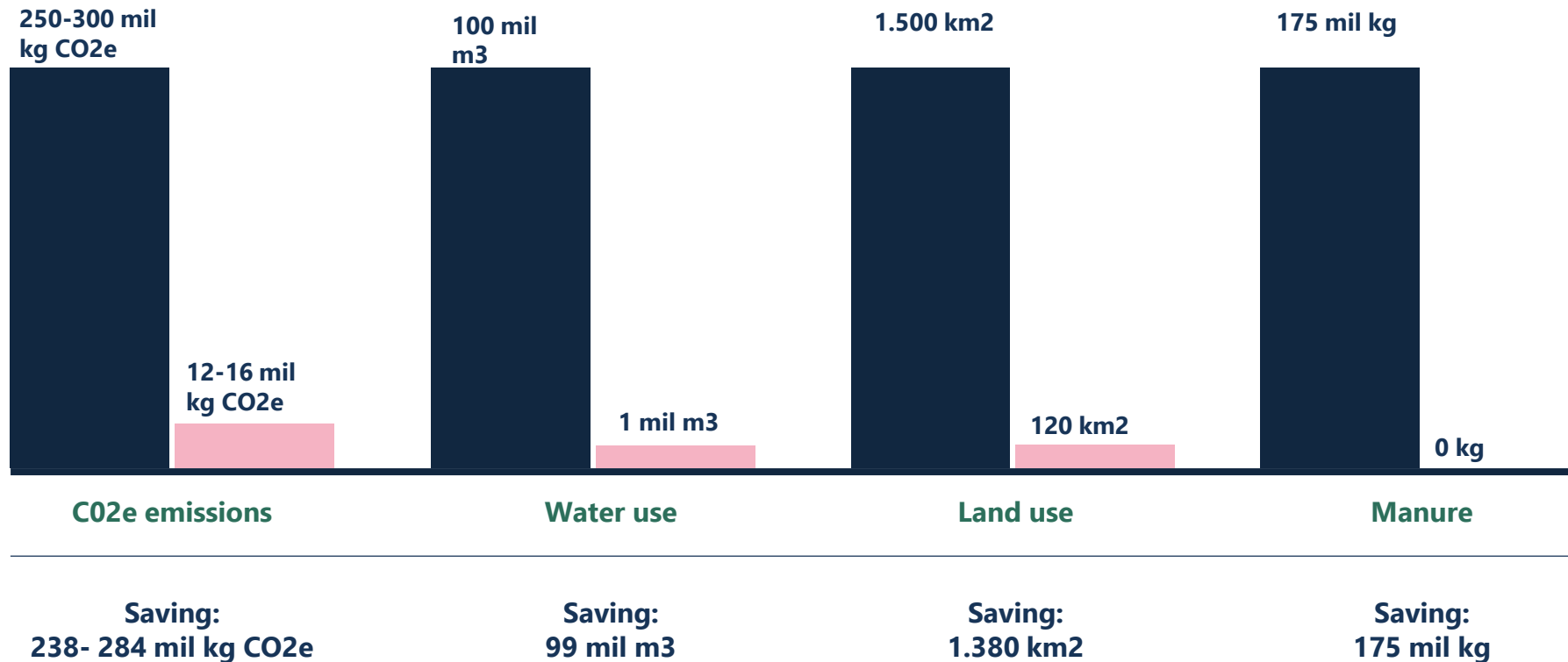
3% Protein

<1% Minerals

All numbers are approximations from publicly available sources



Impact from production of 6.000 tons of milk protein from compared to animal produced protein (appr. 16.000 milking cows)



et's

21st

st



21st

novozymes®

novo nordisk®

Helping people who change the world

21st
BIO

Spider silk – nature's





Headquarters, R&D hub and pilot plant
Contract Development of strains
+ processes

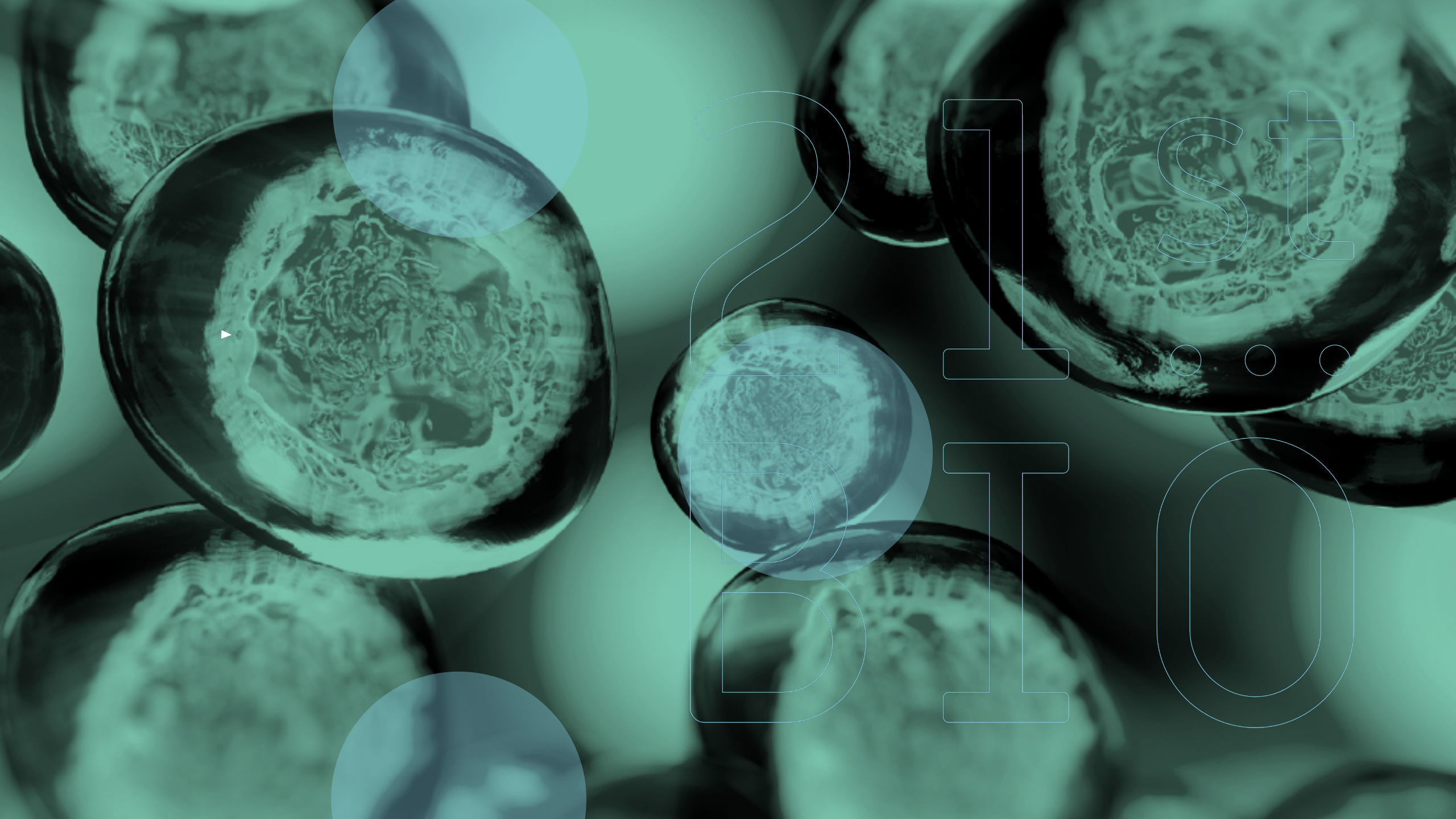


R&D hub, pre-pilot
Contract Development of strains
+ processes




Helping people who change the world

21st
BIO



21st BIO



21st
BIO



Helping people who change the world

21st
BIO



6 mill kg protein per year

	1 Fermentation factory	16.000 dairy cows (2)	Δ
GHG emission (1)	16 mill kg CO ₂ e	300 mill kg CO ₂ e	95% reduction
Water use	1 mill m ³	100 mill m ³	99% reduction
Land use	120 km ²	1500 km ² (3)	92% reduction
Manure	0	175 mill kg	100% reduction

(1) LCA study by Perfect Day

(2) Corresponding to 2.9% of all Danish dairy cows

(3) Corresponding to the size of Lolland + Møn

(-) From 2030 it is expected that a toll of 750 DKK per ton CO₂e will be introduced. A yearly saving of 300-16 = 284 mil kg CO₂e will thus correspond to a toll of 213 mil DKK. Current cost of carbon credits in EU is at 563 DKK per ton CO₂e which corresponds to 160 mil DKK.

<https://www.fao.org/news/story/en/item/197623/icode/>

<https://videnskab.dk/naturvidenskab/hvilken-slags-maelk-er-mest-miljoevenlig/>

<https://www.greenqueen.com.hk/environment-sustainable-precision-fermentation-life-cycle-assessment-lca-scientific-research/>

<https://www.pwc.dk/da/artikler/2022/06/co2-afgift-realitet.html>



FOLKETINGET

Nethaji Gallage

Adm. direktør og grundlægger, Octarine

Åben høring om potentialer og barrierer for den danske biosolutionssektor
Erhvervsudvalget



 **OCTARINE**

Nethaji Gallage Ph.D.

Feb 29th, Copenhagen, Denmark

The textile industry is one of global importance

Textiles and clothing is an important multi-trillion industry with high-levels of employment and producing a turnover of €162 billion in Europe.¹

The Global Textile Industry is worth €2.5T²

1. Source: One Planet Network

2. Source: McKinsey



Pressing issues of global importance

A key pressure point: the dyeing process.

Due to its' heavy energy consumption, impact on water systems and harmful toxic chemicals, **the textile industry is the second largest polluter in the world after the oil industry.**



OB-CLR™ IS OUR BOLD RESPONSE

Fueling positive change one vibrant hue at a time

Vibrance at the core

Its color redefined by science & nature

Our vibrant OB-CLR™ color spectrum is yet to be seen before in the nature-based dyes industry.

1. Environmentally & Socially Responsible

2. Enhanced Performance

3. Seamless Integration



OB-CLR™ is produced sustainably from renewable feedstocks

Octarine's innovative yeast-based fermentation technology not only makes violacein commercially available for the first time, but also scalable and cost-efficient dyeing process.

Cell-factory Engineering



Precision Fermentation



Nature-based Color Dyes



Seamless Integration

A drop-in replacement for synthetic dyes

1. OB-CLR™ can dye a range of fabrics directly

2. Dye fabrics without use of any mordants or harmful chemical additives

3. A drop-in replacement for synthetic dyes



We're pioneers of discovery, charting the course toward a better future

Octarine currently collaborate with:

16 global leading fashion brands/houses - USA, Canada, UK, Italy, France, Denmark and Japan

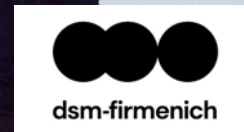
Global leading Dye houses/ garment producer
4 x Portuguese, 1X SouthEast Asia, 1x Italy, 2x Sri-Lanka

And we would like you to join.

 OCTARINE



Funded by:





OCTARINE

Octarine Bio, Lersø Parkallé 42, 1-th, 2100
Copenhagen, Denmark

www.octarinebio.com
info@octarinebio.com



FOLKETINGET

Jonas Korsholt

Nordic Microbes (tidligere Bioomix)

Åben høring om potentialer og barrierer for den danske biosolutionssektor
Erhvervsudvalget



Bioomix skifter
navn til...

Nordic microbes

Bioindustriel virksomhed
Midt i Odense
Eableret i 2021



>1200m² faciliteter
1ha intern testmark
21 medarbejdere

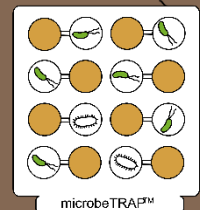


Biostimulanter til landbruget
Første produkt i 2023
70M DKK i investering

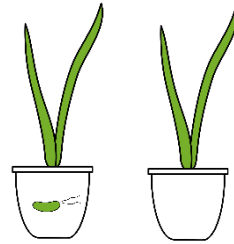
Vores metode.

Isolering og produktion af gavnlige mikrober

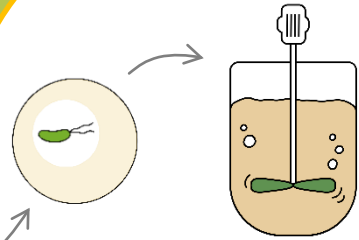
Unik microbeTRAP™
indfanger mikrober med
de rette egenskaber og
tilpasset lokale, danske
forhold.



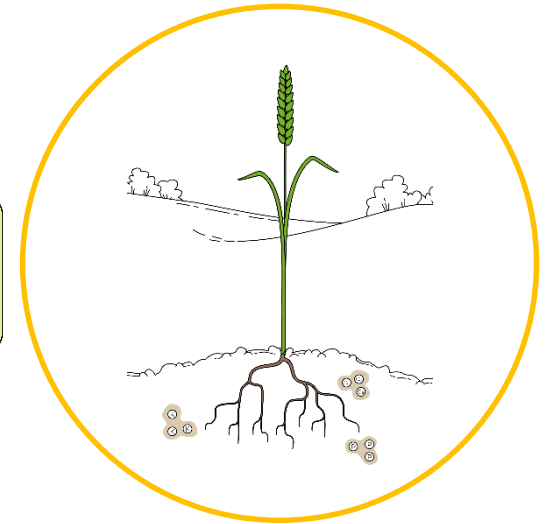
Kvalitetskontrol og test internt og eksternt



Opformering i fermenteringstank



Distribution til grovareselskaber og landmænd



Landbrugets udfordringer.



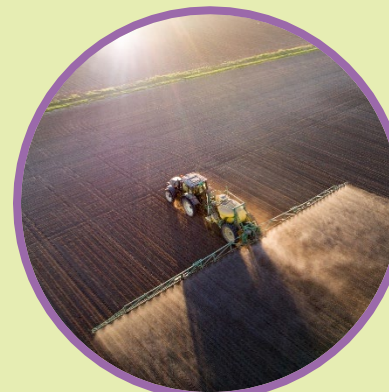
Bevare/øge produktionsudbyttet med lavere input og forandret klima



Næringsstofudledning og regulering heraf

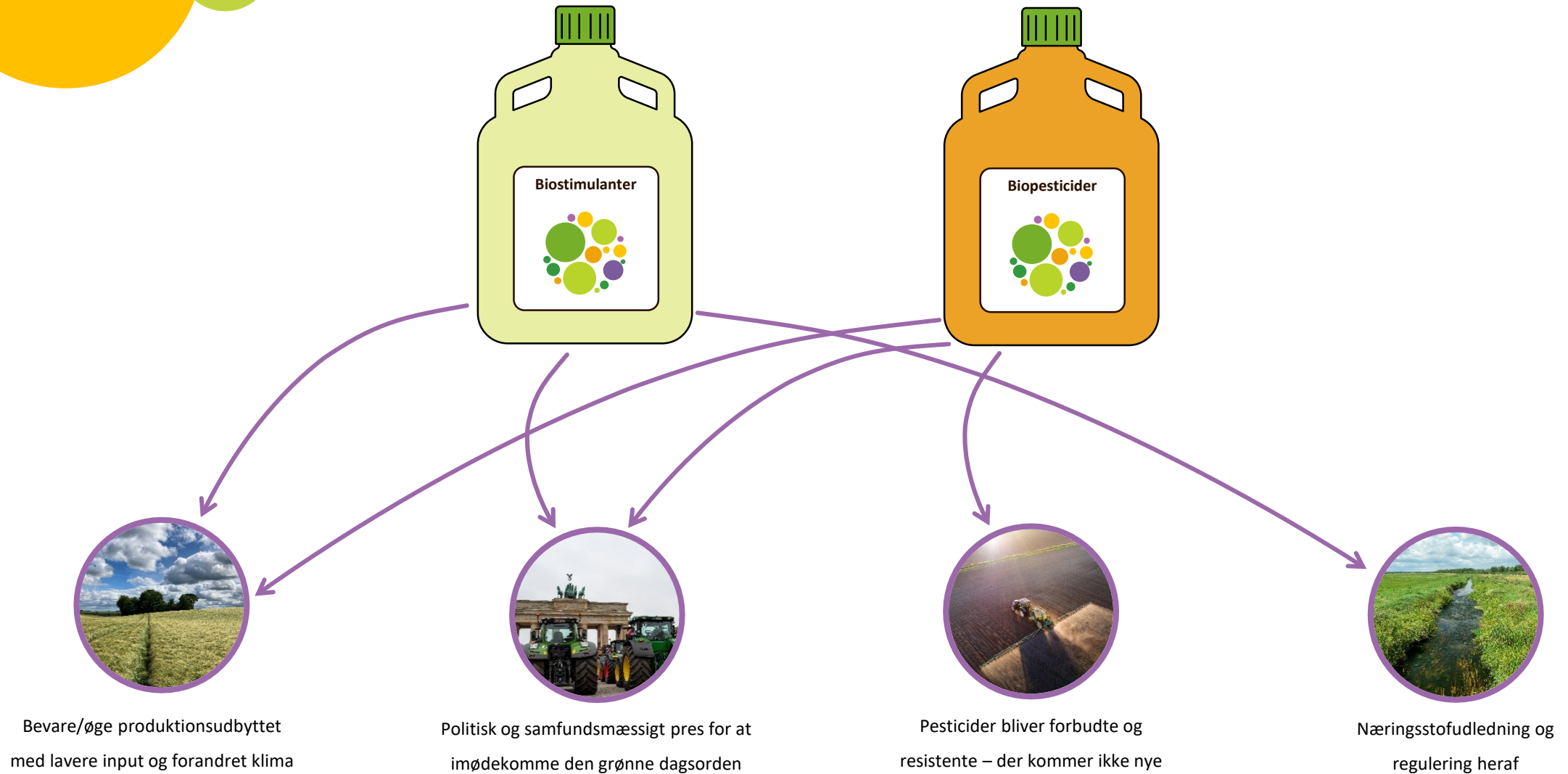


Politisk og samfundsmæssigt pres for at imødekomme den grønne dagsorden



Pesticider bliver forbudte og resistente – der kommer ikke nye

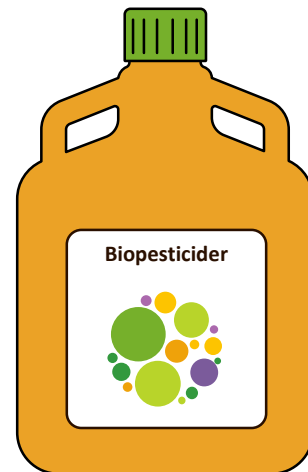
Vores løsninger på udfordringerne.



Vores udfordringer med løsningerne.



Opretholdelse af fornuftig og hurtig godkendelse af biostimulanter.



Praktisk talt umuligt at få godkendt biopesticider for andre end de helt store spillere på markedet.



Tak for opmærksomheden!



Nordic
microbes



LIVING SOLUTIONS



FOLKETINGET

Spørgsmål

Åben høring om potentialer og barrierer for den danske biosolutionssektor
Erhvervsudvalget



FOLKETINGET

Pause

Åben høring om potentialer og barrierer for den danske biosolutionssektor
Erhvervsudvalget



FOLKETINGET

Panel 2: Potentialiet i biosolutionssektoren, der kan levere grønne jobs og accelerere den grønne omstilling i Danmark og i Europa

Åben høring om potentialer og barrierer for den danske biosolutionssektor
Erhvervsudvalget



FOLKETINGET

Sofie Carsten Nielsen

Direktør, European Biosolutions Coalition

Åben høring om potentialer og barrierer for den danske biosolutionssektor
Erhvervsudvalget

European Biosolutions Coalition

– The Industrial Bio Revolution

Sofie Carsten Nielsen
Director, European
Biosolutions Coalition



Dansk Industri

The burning platform

Potential: Biosolutions can be key enablers for climate and energy transition, for a better environment and more biodiversity and for ensuring sustainable and healthy food for more people.

Issue: The European legislative environment for the bio-based industry is a patchwork of regulations not fit for biosolutions.

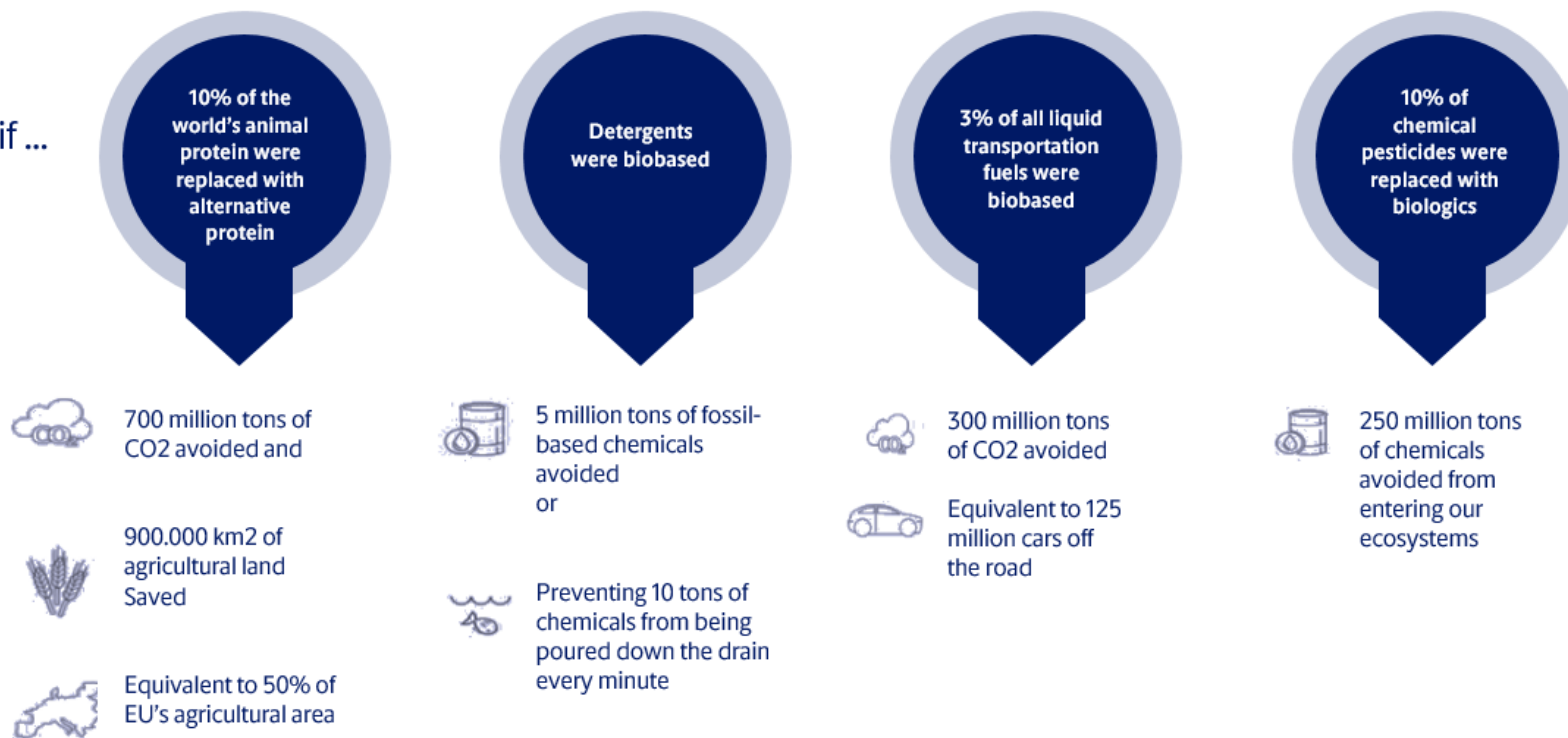
Solution: A shared transborder European industry coalition to create a new paradigm for biosolutions in Europe.

Why now? New industrial policies in EU can support momentum for a competitive biosolutions industry in EU, otherwise we will lose the race to the US, China and other regions.



The green potential of biosolutions

What if ...



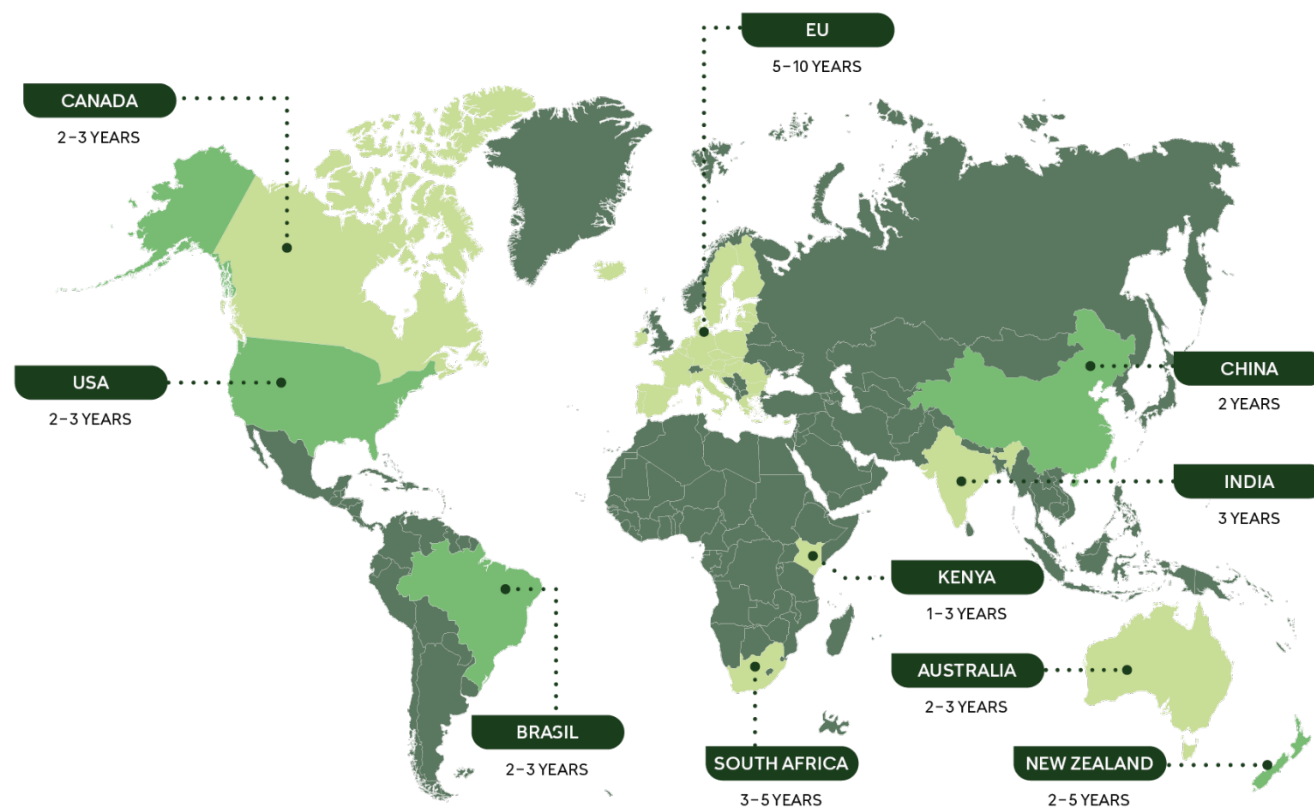
... are much more than green

According to McKinsey (2020) findings, in 10-20 years a visible pipeline of biological applications could create appr **\$ 2-4 trillion of direct annual economic impact**. More than half of it is outside the healthcare sector – with biosolutions.

With an average **annual growth rate of 4.1%**, the biotechnology industry is growing more than twice as fast as the EU information and communication sector (2.0%) and the overall economy (1.9%). Making it one of the fastest growing innovative industries in Europe.

The biotechnology industry strengthens the labour market by directly creating **223,000 jobs** in the healthcare, industrial and agricultural biotechnology sector, as well as supporting **710,500 jobs** in the overall economy through indirect and induced effects. For each job in the biotechnology industry there are 3.2 additional jobs in the overall economy (WifOR Study for EuropaBio 2020).

The current regulatory approval processes in the EU are not fit for purpose



A window of opportunity has been opened

Letter of intent

In September 2023, in her State of The Union and the following Letter of Intent to the European Parliament, the European Commission President, Mrs Ursula von der Leyen made biotech and biomanufacturing a key priority for 2024. This is a key assignment for the European Biosolutions Coalition to follow-up.

Photographer: Etienne Ansotte



How biosolutions can strengthen Europe's

sustainability

resilience

and competitiveness

Manifest and policy recommendations
The European Biosolutions Coalition
21 February 2024

Four principles for solutions

We sum up our wishes in the four following principles:



Embrace Nature's Wisdom

Biosolutions capitalise on millions of years of natural evolution to address modern challenges. The EU should acknowledge this advantage and commit to harnessing nature's innovations for a sustainable future.



Improve the Regulatory Framework

Existing regulatory frameworks must evolve to support the unique attributes and potential of biosolutions. A shift from a fossil-based paradigm towards more sustainability and circularity, focusing on risk-benefit analysis and the unique characteristics of biological solutions is needed.



Move from a Process to a Product Centric Approval

We need to move away from a process centric approval system toward a product centric one. Rather than focusing on the methods used to tailor (micro) organisms, the regulatory framework should focus on the traits and characteristics of the biosolutions to be approved.



Recognise Environmental and Climate Impact

The EU should acknowledge the significant positive impact of biosolutions on reducing greenhouse gas emissions, enhancing agricultural sustainability, making Europe more resilient and strategically autonomous, bringing down the use of undesirable chemicals and fossil based substances, improving circularity and biodiversity and thereby contributing to a healthier planet.

IMPACT: Six Policy Recommendation to establish a green and bio-based paradigm

Following the four principles, the European Biosolutions Coalition proposes the following policy recommendations. Firstly, six recommendations for a more horizontal approach to biosolutions, enabling delivery on the EU Green Deal and, secondly, eight concrete and sector specific policy recommendations.

To establish a Green and Bio-based Paradigm the European Biosolutions Coalition recommends:

1

Invest in Research, Development, and Innovation

For the EU to keep up with other economies and continue to develop new solutions, substantial investments in developing new biosolutions are required. Europe has been a world leader in quickly bringing ground-breaking products to market, especially through the early phase of the "valley of death".

Biosolutions should be part of the core future program. In addition, biosolutions aimed directly at the agricultural sector should be included in the revision of the Common Agricultural Policy (CAP).

2

Improve incentives to invest in scaling and infrastructure capacity

To accelerate getting biosolutions to market, investment incentives must be improved. SMEs face particular difficulties financing infrastructure to scale their biosolutions, especially through the early phase of the "valley of death".

Therefore, Pilot Facilities are needed to enable transition from R&D to market. We call on member states to explore possibilities to set up RCFs (Research Centres for Innovation). The development of a model where the EU could be co-investor in public-private partnerships, in infrastructure for scaling, could be a way forward for example through the European Investment Fund (EIF) and the European Innovation Council (EIC). Today there is a massive lack of investments in late stage ventures for scaling of biosolutions companies, also due to the regulatory barriers.

However, transitional permissions to the GMPs, that allow a smaller scale to establish production volumes for at least 30 years, must be added so that the scaling of new biotech can be used and commercialised in a wider market. Additionally, we recommend green living mandatory goals for the use of bio-based plastics in packaging. This might be realized by allowing the full lifecycle impact also with bio-based materials.

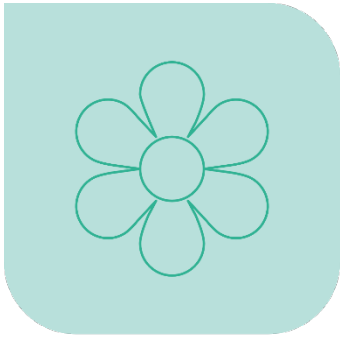
In addition, it should be noted, that it is also possible to use biosolutions derived from multiple food-based PET (polyethylene terephthalate) and this will reduce the demand for non food-based plastic.

The biosolutions industry develops at a fast pace, constantly developing new solutions. Together with our solutions we recommend for regulatory changes will probably follow in the future.

However, we have no time to waste. The European Biosolutions Coalition has been established to secure that the potential of the biosolutions industry is fulfilled in Europe to the benefit of all. We need to act and act fast, because the reduction in resolution is once in a lifetime opportunity for Europe.

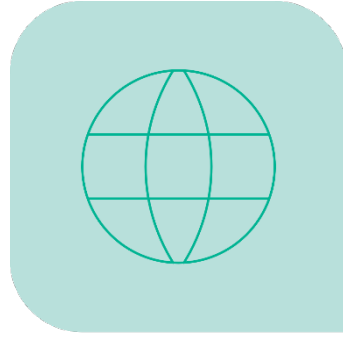


Four principles for solutions



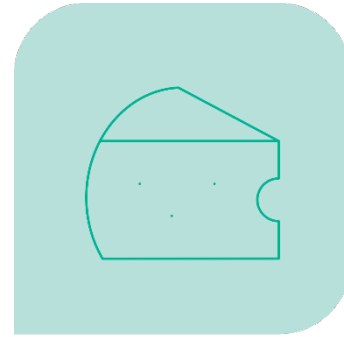
Embrace Natures
Wisdom

Improve the



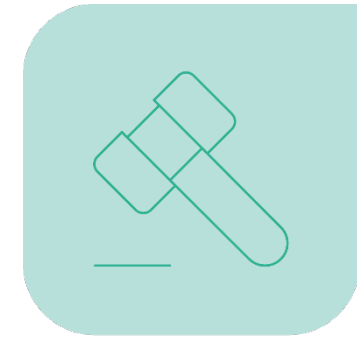
Regulatory
Framework

Move from a Process



to a Product Centric
Approval

Recognise
Environmental and



Climate Impact

Six Policy Recommendations to establish a green and bio-based paradigm

1. Invest in Research, Development and Innovation
2. Improve incentives to invest in scaling and infrastructure capacity
3. Ensure Fair EU Classification and revise the NACE codes
4. Develop and use a Risk-Benefit Approach
5. Develop a European Model of market access for biosolutions
6. Develop a framework for the fast approval og sustainable biosolutions

Eight proposals to improve the EU regulatory framework

1. Update regulations for microorganism-based biosolutions
2. Modernise Novel Food Regulation
3. Faster approval of biological plant protection products
4. Faster approval of microbial bio-stimulants
5. Modernise the nutrition and health claims legislation
6. Modernise regulatory classification of food cultures
7. Ensure that the delegated acts under the Eco-design for Sustainable Products Regulation (ESPR) take biosolutions into account
8. Add transitional provisions to the Packaging and Packaging Waste Regulation (PPWR) that allow for market ramp up of new bio-based plastics

European High-Level Summit on Biosolutions 21 February 2024



Watch out for ...

June 2024 Elections to the European Parliament

- All coalition partners will promote biosolutions and the work of the Coalition at events arranged for the EP election 2024
- A fact sheet and Q+As on biosolutions will be sent to EP-candidates in coalition countries

January 1, 2025 A New European Commission

- In the fall of 2024 new commissioners will be appointed (or reappointed) in all EU member states
- The draft to the next Commission's 5-year work programme is written in 2024
- Important to influence now!

Fall 2025 DK EU Presidency and National Governments

- The program for the Danish EU Presidency is not finalized yet – work to be done now.
- In addition, national governments and national parliaments also have important roles to play. Both in the Council and in the many EU working groups.

The background is a dark teal color with a repeating pattern of white line-art icons. These icons include various elements such as leaves, mushrooms, wine glasses, bags of grain, and abstract shapes, suggesting a focus on food, agriculture, and biotechnology.

Thank you!

Read more: eubiocoalition.eu
Like and follow us on [LinkedIn](#)

EUbioCoalition



FOLKETINGET

Ditte Brasso Sørensen

Analyse- og programchef, Tænketanken EUROPA

Åben høring om potentialer og barrierer for den danske biosolutionssektor
Erhvervsudvalget

**Oversigt over de grønne initiativer fra Europa-Kommissionen i
nuværende og kommende periode**
v/ Ditte Brasso Sørensen, analyse- og programchef, Tænk tanken
EUROPA

EU har været driftssikker på det grønne



2020

Klimalov og Strategier

- Fastsætter ved lov bindende reduktionsmålsætninger
- Sektorstrategier

2021

Delivering on GD

- FF55 – hvordan leverer vi på 2030-reduktionsmålet
- Kobler krisehåndtering og det grønne (NGEN)

2022/2023

Leverer på FF55

- I mål med størstedelen af FF55 (næste fuldt vedtaget i 2023)
- Kobler krisehåndtering og det grønne (RePowerEU)

2024 →

2040, implementering og stigende politisering

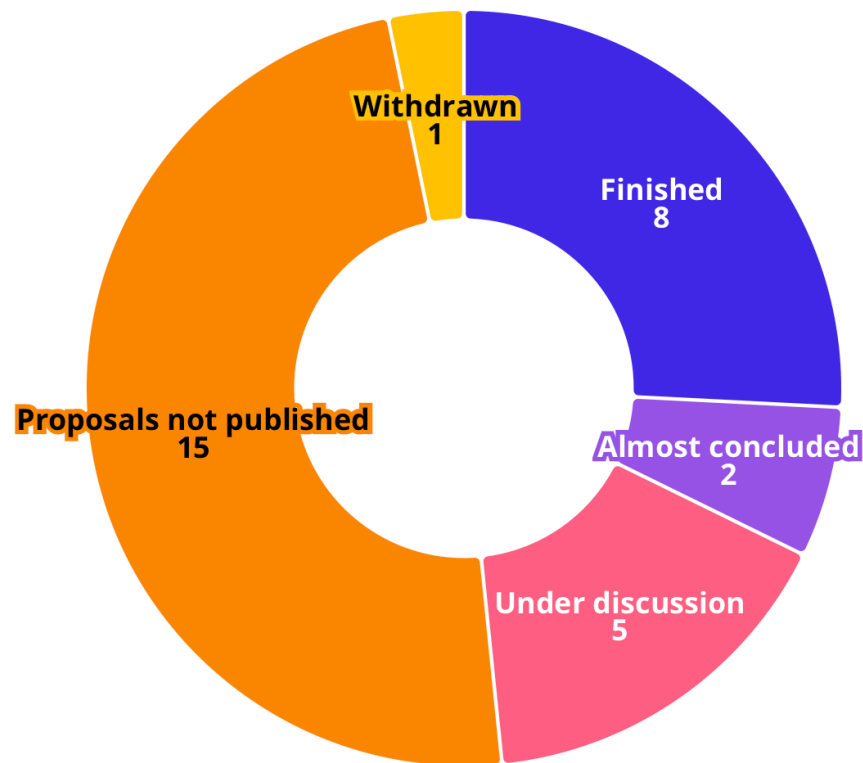
- Fødevarer // miljø // Landbrug
- Industri og konkurrenceevne
- 2040 lovpakke

FF55 – State of Play

	Status i EU-forhandlinger
ETS - kvotehandelsdirektivet	Godkendt
Den sociale klimafond	Godkendt
CBAM	<u>Godkendt</u>
ReFuelEU Aviation	Godkendt
Byrdefordelingen	<u>Godkendt</u>
LULUCF	<u>Godkendt</u>
CO2-krav til nye lette køretøjer	Godkendt
Energibeskatningsdirektivet	EP: Afventer udvalgets (Environment, Public Health and Food Safety) beslutning. Rådet: Endnu ikke kommet med en generel indstilling.
VE-direktivet	Godkendt
Energieffektivitet	Godkendt
Alternative Fuels Infrastrukture	Godkendt
Bygningsdirektiv	Provisorisk aftale
FuelEU Maritime	Godkendt

Undtagelsen er Jord-til-Bord

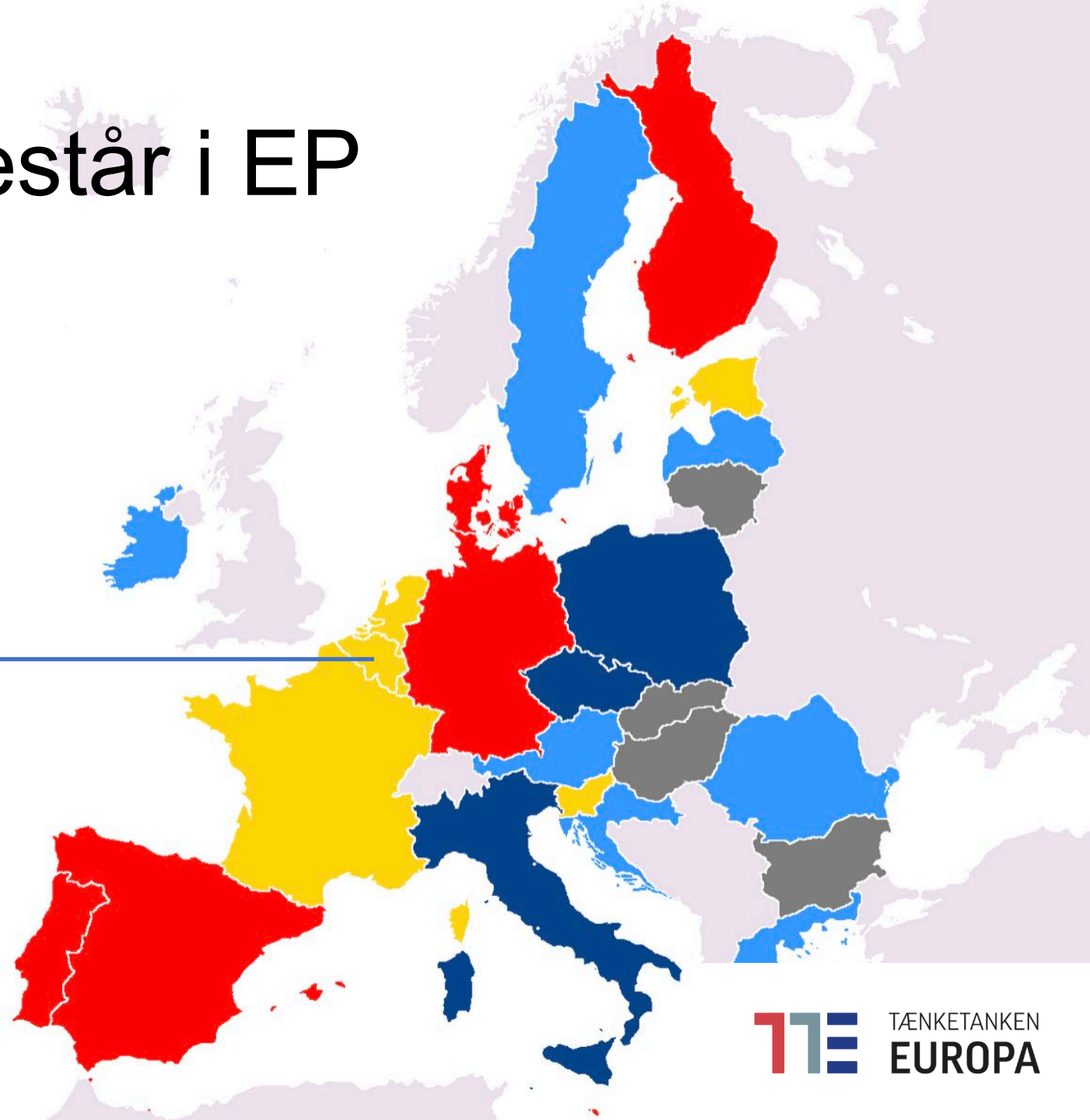
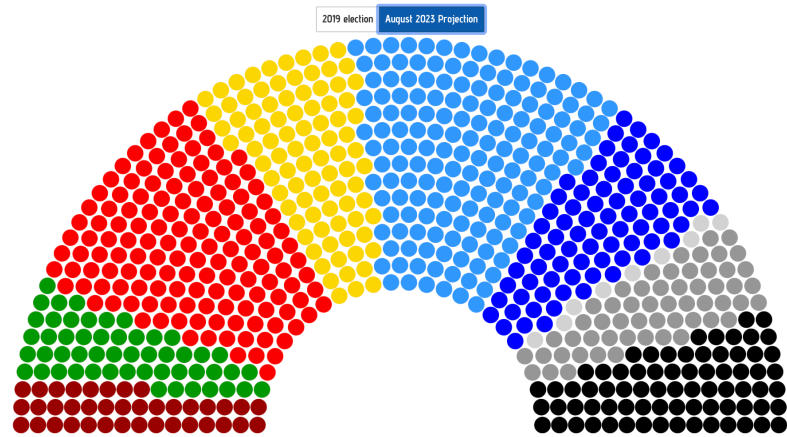
State of play of Farm to Fork initiatives



Source: Euronews elaboration based on Commission data



Center-koalition består i EP



Hvordan ser "det grønne" ud fremadrettet

Retfærdig omstilling
Strategisk dialog med
landbruget
Inflation og
fødevarer sikkerhed

Den Grønne målopfyldelse
2040-målsætning på 90%
EU carbon pricing på
landbrug

**Bæredygtig industri og
konkurrenceevne**
Clean Tech kapløb (NZIA)
Vinde globalt på nye
teknologier

Miljø?

Sikkerhed & konkurrenceevne

Klima

Miljø



FOLKETINGET

Michael Minter

Programchef, CONCITO

Åben høring om potentialer og barrierer for den danske biosolutionssektor
Erhvervsudvalget



Status på Danmarks klima- og naturmål samt behovet for udvikling af nye, bæredygtige løsninger

Høring i Folketingets Erhvervsudvalg
om potentialer og barrierer for den danske biosolutionssektor

29. februar 2024

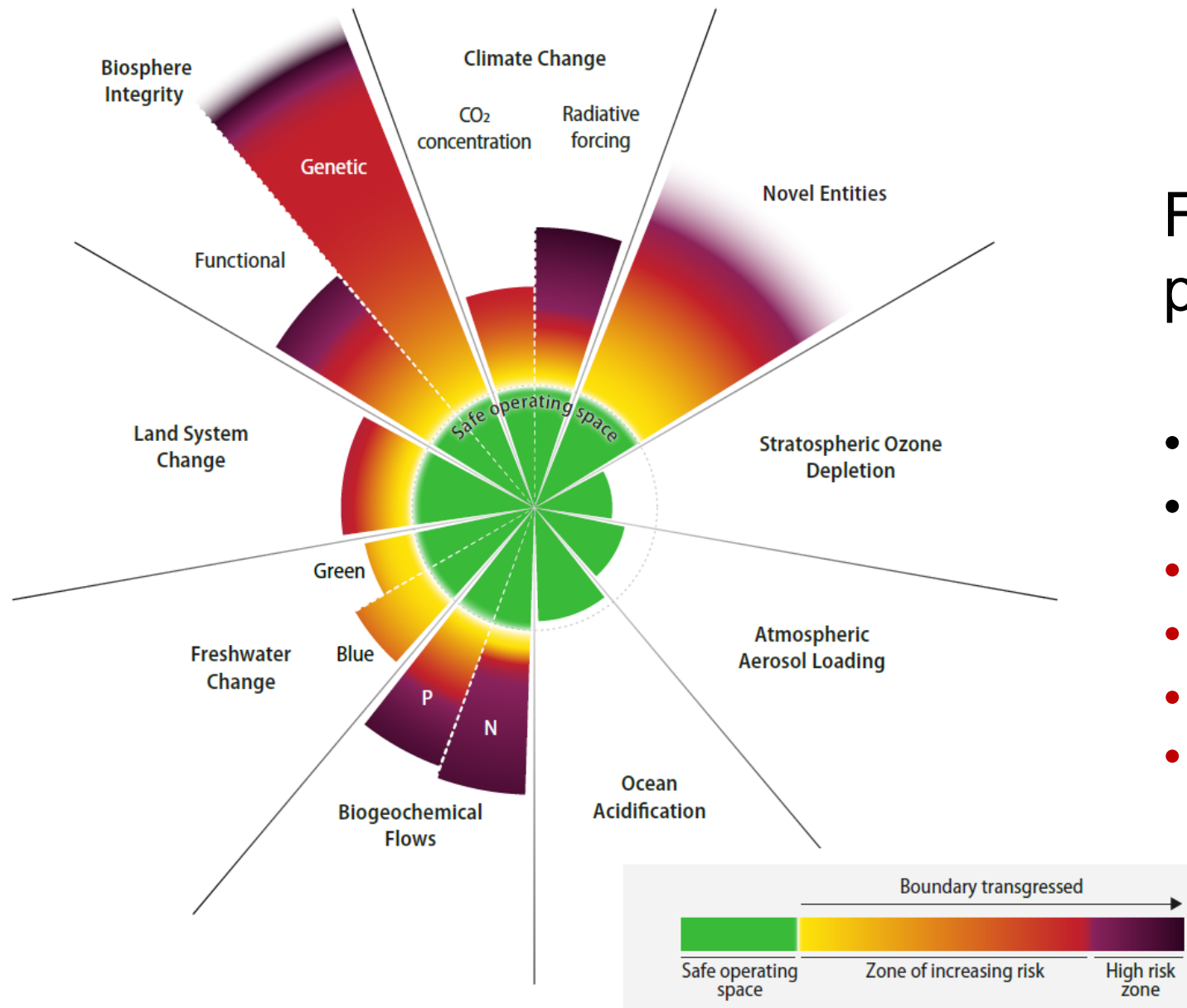


Klima-, natur- og miljømål fra det globale til det lokale



CONCITO

DANMARKS GRØNNE TÆNKETANK



Fødevarerens pres på de planetære grænser

- Klimaforandringer
- Miljøfremmede stoffer
- **Tab af biodiversitet**
- **Ændring af skovdækket**
- **Ændring i ferskvandsforbrug**
- **Udledning af kvælstof**

Danmarks klima- og miljømål

Klima

70 procent i 2030 og klimaneutralitet i 2045

Biodiversitet

EU-mål om 30 procent beskyttet natur – heraf 10 procent strengt beskyttet

Vandmiljø

God økologisk tilstand i søer, vandløb, grundvand og kystnære havområder



CONCITO

DANMARKS GRØNNE TÆNKETANK

Behovet for udvikling af nye, bæredygtige løsninger

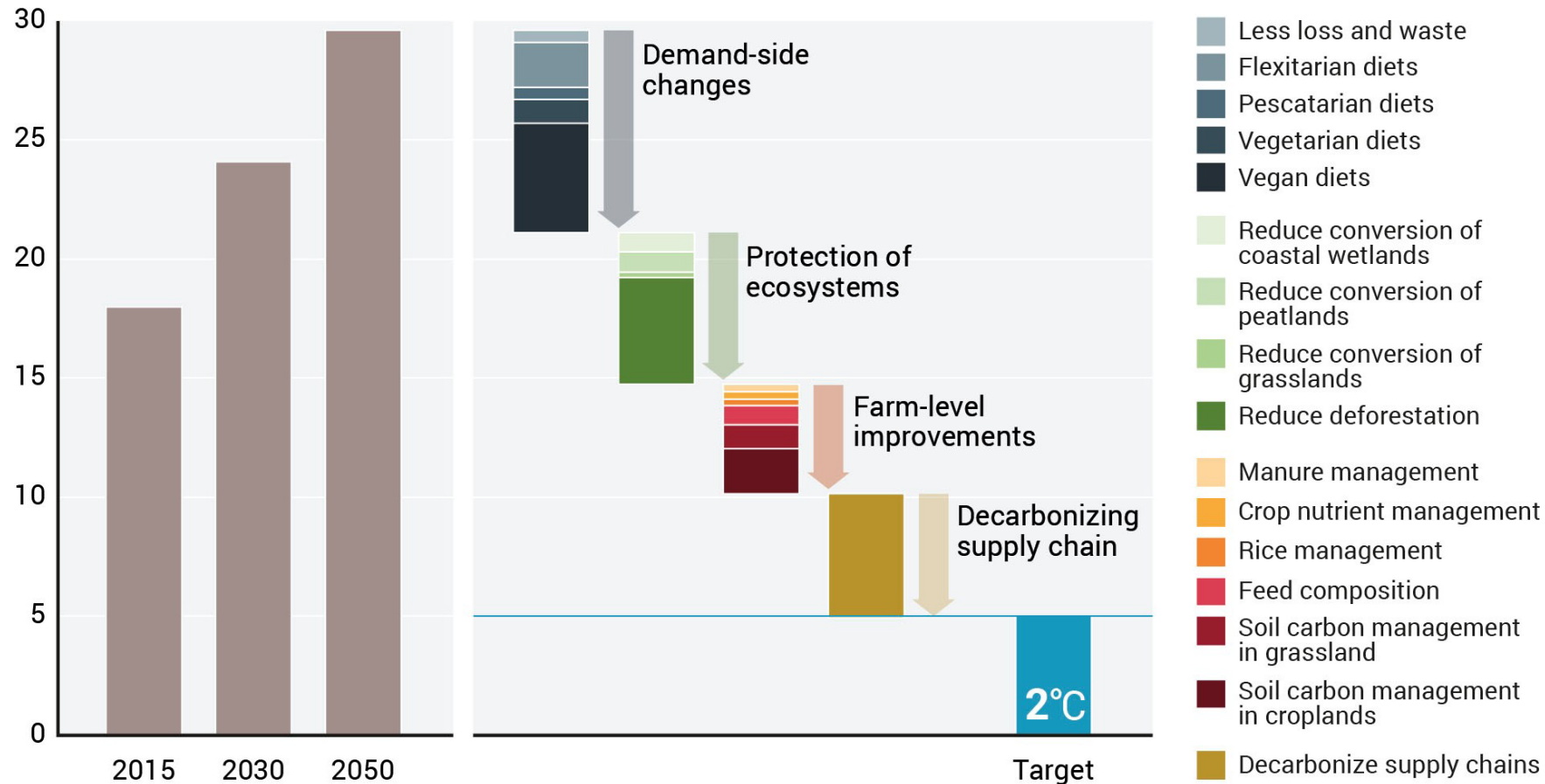


CONCITO

DANMARKS GRØNNE TÆNKETANK

Fødevaregabet og mulige løsninger ifølge FN's miljøprogram

Food systems emissions trajectory and **technical** mitigation potentials by 2050

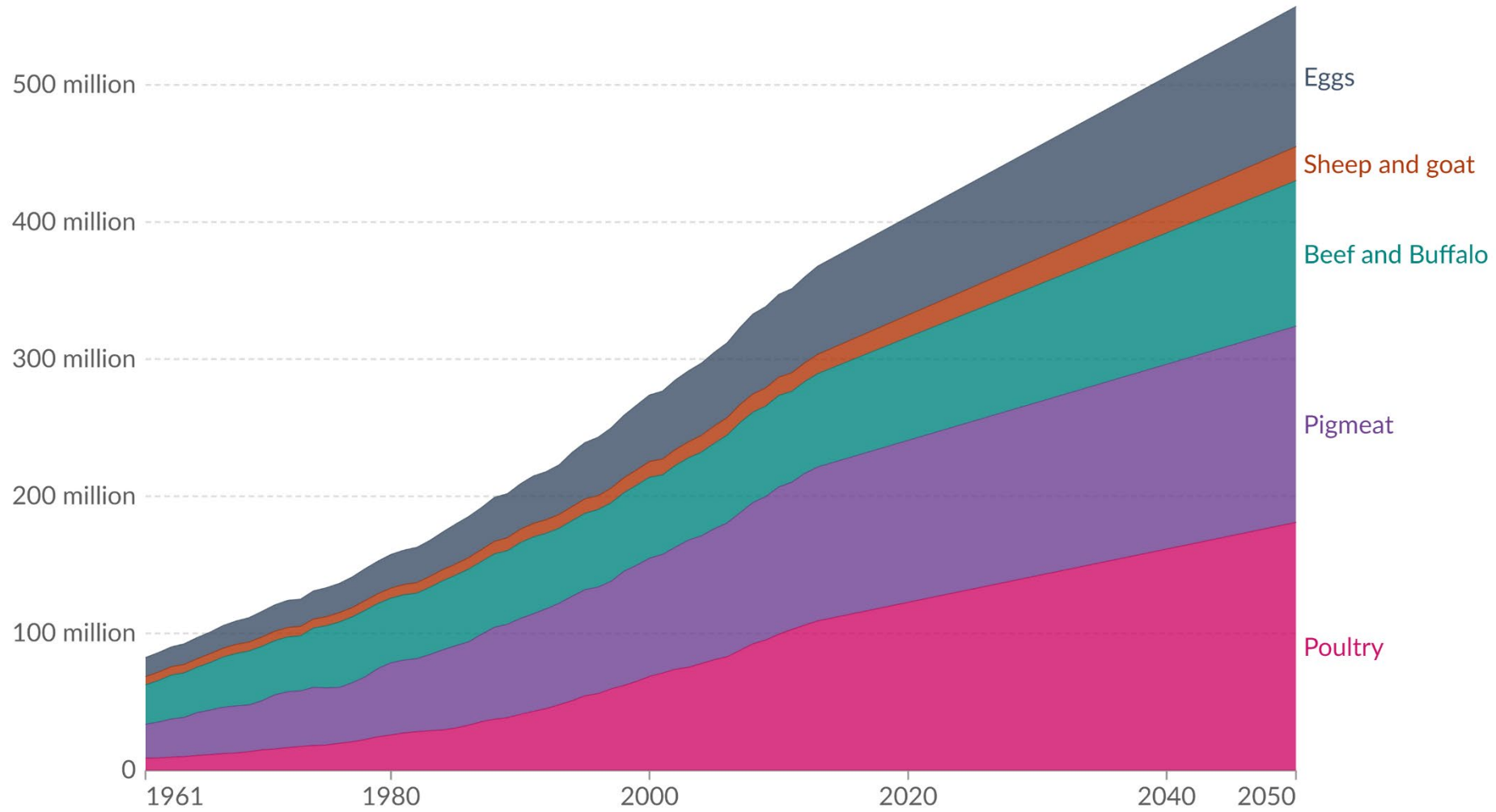


Emissions are projected to increase by up 60-90% by 2050

4 transformation domains identified

A combination of measures will be needed to transform food systems in line with emissions-reductions targets and pathways

Stigende kødforbrug



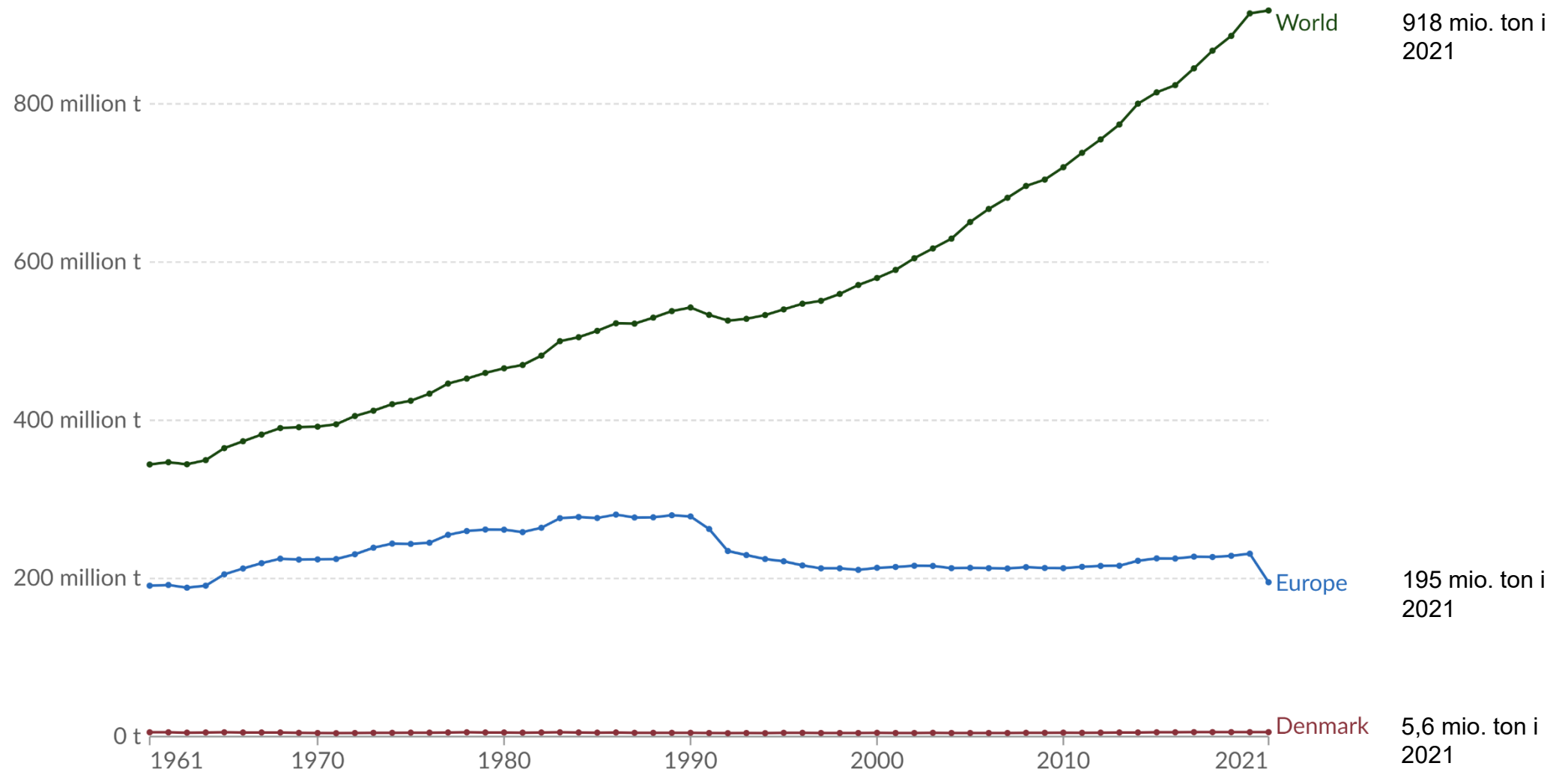
Kilde: FAO-data og fremskrivning via Our World in Data



CONCITO


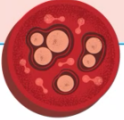
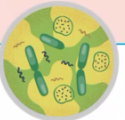
DANMARKS GRØNNE TÆNKETANK

Stigende mælkeproduktion







Biøløsninger i fødevarerektoren

- Anvendelse af bioteknologi inden for **landbruget**, f.eks. nye plantevariationer, produktion af foder, biogødning og biopesticider
- Anvendelse af bioteknologi i **madproduktion**, f.eks. biobaserede ingredienser, nye proteinkilder, mikrobielle kulturer mv.

 Novel plant-based products	 Cultivated meat	 Fermentation-derived products
<p>compared to conventional beef, offer reductions of:</p> <ul style="list-style-type: none">• Land use: 86–97%• GHG emissions: 67-89% <p>Compared to conventional pork and chicken:</p> <ul style="list-style-type: none">• Substantial land use reductions• Lower GHG emissions, if low-carbon energy is used.	<p>could significantly reduce land use needs:</p> <ul style="list-style-type: none">• Beef: 97–99% per kg• Pork: 60–99% per kg• Chicken: 43–98% per kg <p>Using low-carbon energy with the most carbon efficient production techniques, the GHG footprint of cultivated meat could be up to 40 times smaller than conventional beef and a quarter of conventional chicken and pork.</p>	<p>compared to ruminant meat, per unit, offer reductions of:</p> <ul style="list-style-type: none">• Land use: 90%• GHG emissions: 80%• Water use: 90% <p>The environmental benefits of replacing pork and poultry with mycoprotein are less clear.</p>




Miljøfordele




Environment¹


		Novel plant-based products	Cultivated products	Fermentation-derived products
Land use		●	●	●
Water use ²		●	●	●
Biodiversity and habitat loss ³		●	●	●
 GHG emissions, when fossil fuel energy is used as the energy source for alternatives	Poultry production 	●	●	●
	Pork production 	●	●	●
	Beef production 	●	●	●
	Dairy production 	○	○	●
 GHG emissions, when low-carbon energy is used as the energy source for alternatives	Poultry production 	●	●	●
	Pork production 	●	●	●
	Beef production 	●	●	●
	Dairy production 	○	○	●



Øvrige fordele

Health		Novel plant-based products	Cultivated products	Fermentation-derived products
Risk of emerging zoonoses		●	●	●
Risk of antimicrobial resistance		●	●	●
Nutritional quality and dietary health outcomes		●	●	●

Social		Novel plant-based products	Cultivated products	Fermentation-derived products
Food security		●	●	●
Job gains/losses ⁴		●	●	●
Changes in inequalities, e.g. global South and North, rural-urban, gender		●	●	●

Animal welfare		Novel plant-based products	Cultivated products	Fermentation-derived products
Number of animals affected by food production		●	● ⁵	●



Konklusion

- Påtrængende behov for mere mad på mindre plads med færre udledninger
- Biosolutions kan bidrage både i primærproduktion og fødevareindustri
- Alternative proteiner kan bidrage til ændret fødevareforbrug og forbedre ernæringsprofil af plantebaseret kost
- Kæmpe globalt potentiale for danske løsninger
- Behov for mere viden om miljø- og sundhedseffekter
- Afgørende med transparens og adressering af socio-økonomiske forhold



FOLKETINGET

Sara Sande

Partner, EIFO

Åben høring om potentialer og barrierer for den danske biosolutionssektor
Erhvervsudvalget

Høring om potentialer og barrierer for den danske biosolutionssektor

- Perspektiver på iværksætternes vækstrejse og behov for investeringer i nye biosolutions

Sara Sande
Partner og Teamleder af Green Transition Investment Team

29. februar 2024





“The time for Biosolutions
is Now”

Ester Baiget, CEO Novonosis



Agenda

- **Hvad er EIFO?**
- **Danmark som Biosolutions Videnscenter**
- **Skaleringsrejsen for Biosolutions Startups**
- **Hvad skal der til?**

Hvem er EIFO?

- Danmarks Eksport- og Investeringsfond
- *Vi gør Danmark rigere og verden grønnere*
- Vi finansierer risici, som markedet ikke helt eller delvist tager
- Vores forretningsmodel bygger på:
 - Udlån, garantier og kationer i Danmark
 - Eksportfinansiering
 - Egenkapitalinvesteringer i start- og scaleups
 - Fondsinvesteringer i andre venturefonde

Aktiv portefølje
(2023)

147
Mia kr.

Kunder

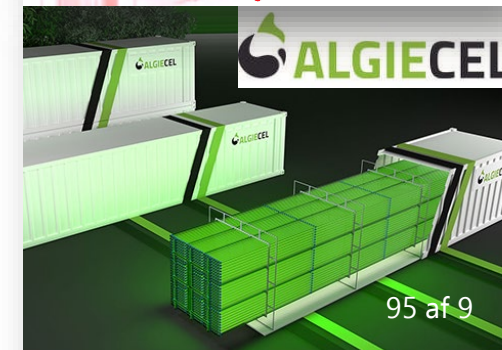
+5.000



Danmark som Biosolutions Videnscenter

Danmark har et stærkt fundament for at opbygge et solidt biosolutions økosystem

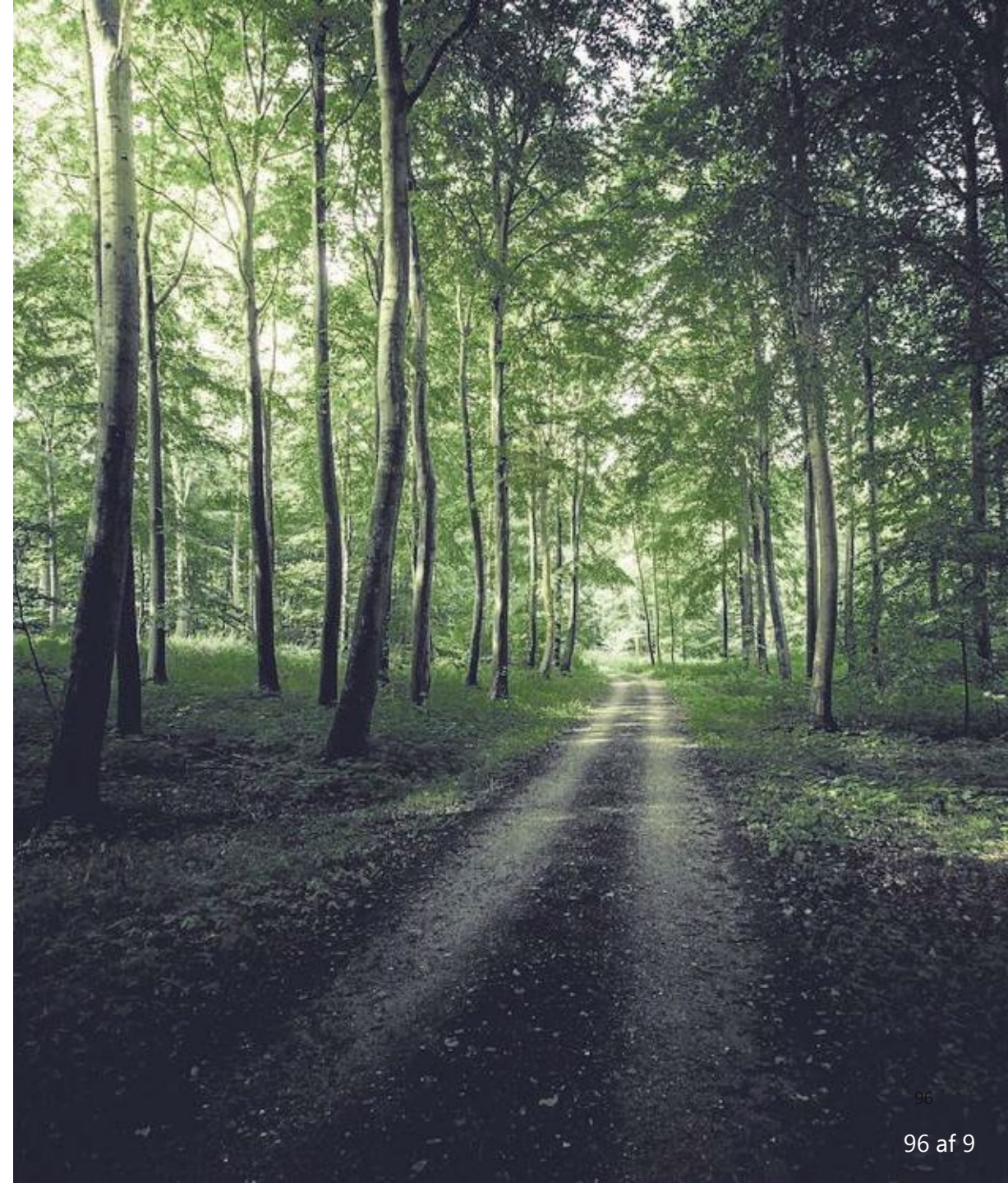
- Verdensklasse universitetsforskning og høj patenteringsaktivitet
- Videnstunge verdensledende virksomheder med stærk tradition indenfor bioteknologi og grønne løsninger
- En underskov af startups og vækstvirksomheder (langt flere end i andre lande)
- Biosolutions start- og scaleups spiller en ledende rolle i at udvikle nye grønne løsninger og tilføre innovation: Fx for plantebaserede fødevarer, bioplast, ingredienser, grønne brændstoffer mm.
- Etablerede virksomheder, familiekontorer, business engle, samt danske og udenlandske fonde viser stigende interesse for biosolutions



Vil vi i Danmark konkurrere
for
at være med
- eller for at vinde?

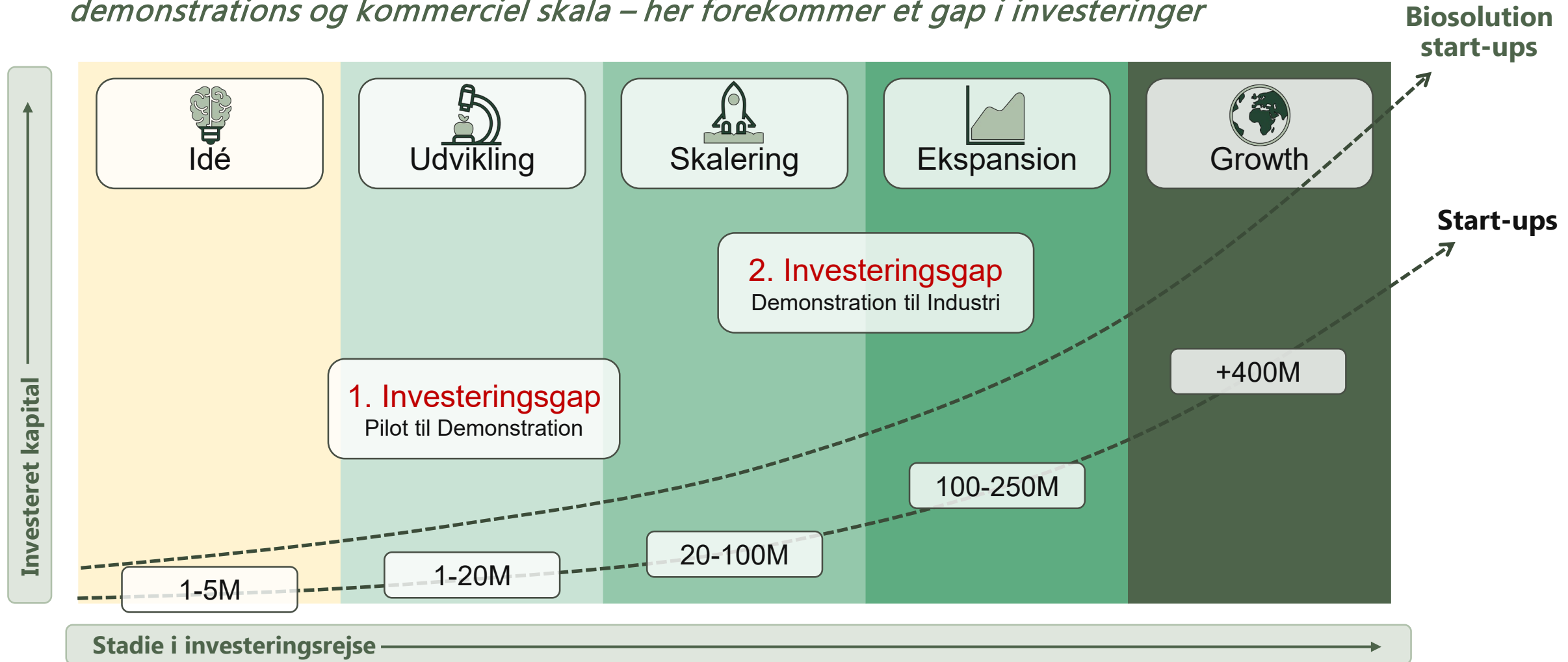


Det kræver yderligere
risikovillig kapital at
udbygge og udvikle
økosystemet for
Biosolutions



Skaleringsrejsen for Biosolutions Startups

- Biosolutions kræver store kapitalinvesteringer når der bygges produktionsanlæg i demonstrations og kommerciel skala – her forekommer et gap i investeringer*



Hvad skal der til?

- Mere kapital tidligt på rejsen – adressere markedsfejl
- Tålmodig kapital – Længere tid til markedet
- Forståelse for risiko/afkast profil
- Skaleringsfaciliteter – minimere skaleringsrisiko
- Domæneviden hos investorer
- Samarbejde på tværs af aktører



An aerial photograph of a dense, lush green forest. The trees are tightly packed, creating a rich, textured canopy of various shades of green. The lighting is soft, highlighting the intricate details of the leaves and branches.

Sammen kan vi styrke
Biosolutions i dag
for en grønnere fremtid



FOLKETINGET

Spørgsmål

Åben høring om potentialer og barrierer for den danske biosolutionssektor
Erhvervsudvalget



FOLKETINGET

Politisk debat og refleksioner ved Folketingets partier

Åben høring om potentialer og barrierer for den danske biosolutionssektor
Erhvervsudvalget



FOLKETINGET

Afrunding

Louise Schack Elholm (V), Erhvervsudvalget

Åben høring om potentialer og barrierer for den danske biosolutionssektor
Erhvervsudvalget