

An aerial photograph of a large green energy park. In the foreground, a tall white wind turbine stands prominently. Behind it, several large industrial storage tanks and buildings are visible. In the background, a long line of wind turbines stretches across a green field under a clear sky. The overall scene depicts a modern, sustainable energy facility.

GreenLab

Green & circular energy park – Technology enabler – National research facility

Christopher Sorensen, CEO – GreenLab A/S, Skive, Denmark
CDSO@GreenLab.dk

PROPERTY OF
GreenLab





Green & circular energy park

- »»» A physical platform
- »»» Own supply of 100% green energy – 80MW wind and solar energy
- »»» Sector integration in practice: Industry coupled with PtX through SymbiosisNet, our coming intelligent grid of energy and data



Technology enabler

- »»» “The perfect host” for technology companies. We provide infrastructure and services that reduce time-to-market
- »»» We introduce the chicken to the egg and create new markets
- »»» Green transition facilitator

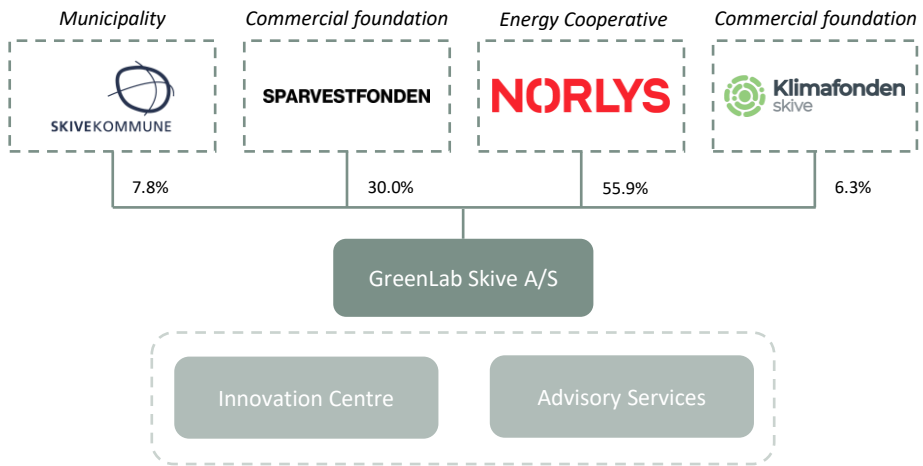


National research facility

- »»» A center for knowledge and green innovation within intelligent and integrated energy
- »»» Accelerate R&D to commercial scale
- »»» Skill development

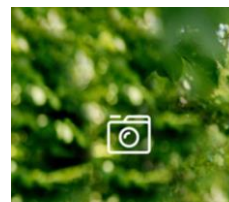
Shareholders & governance structure

Ownership structure 2019 - present



Approaching 400m USD in site investment since 2019 with progression from 50% to 95% private funds

Board of Directors

 Gert Vinther Jørgensen Chairman EVP and Group CFO at Norlys	 Anders Vedel Dep. Chairman Chief Scientific Advisor to the management and BoD of Vestas	 Anne Zachariassen Member COO of Aarhus Havn	 Robbert Stecher Member Director of strategy and business development at Norlys	 Peter Højsgaard Member Director of Spar Vest Fonden	 Peder Chr. Kirkegaard Member Mayor of Skive Municipality	 Claus Antonisen Nielsen Member Norlys A.m.b.a. board
--	--	---	---	--	---	---

Key market drivers and mega trends

Green transition urgency



Climate laws

Towards 70% CO2 reduction
REDII compliance



Hydrogen economy

Wind market hedge
Development curve similar to wind and solar energy
EU hydrogen strategy: 6GW in 2024, 40GW in 2030



Circular economy

Resource efficiency throughout value chain
Next generation sustainable production



Sector coupling

Need widely accepted: Treat energy as energy regardless of form (SymbiosisNet™)



Social impact

Anchor regional growth
Social CSR
New local investment

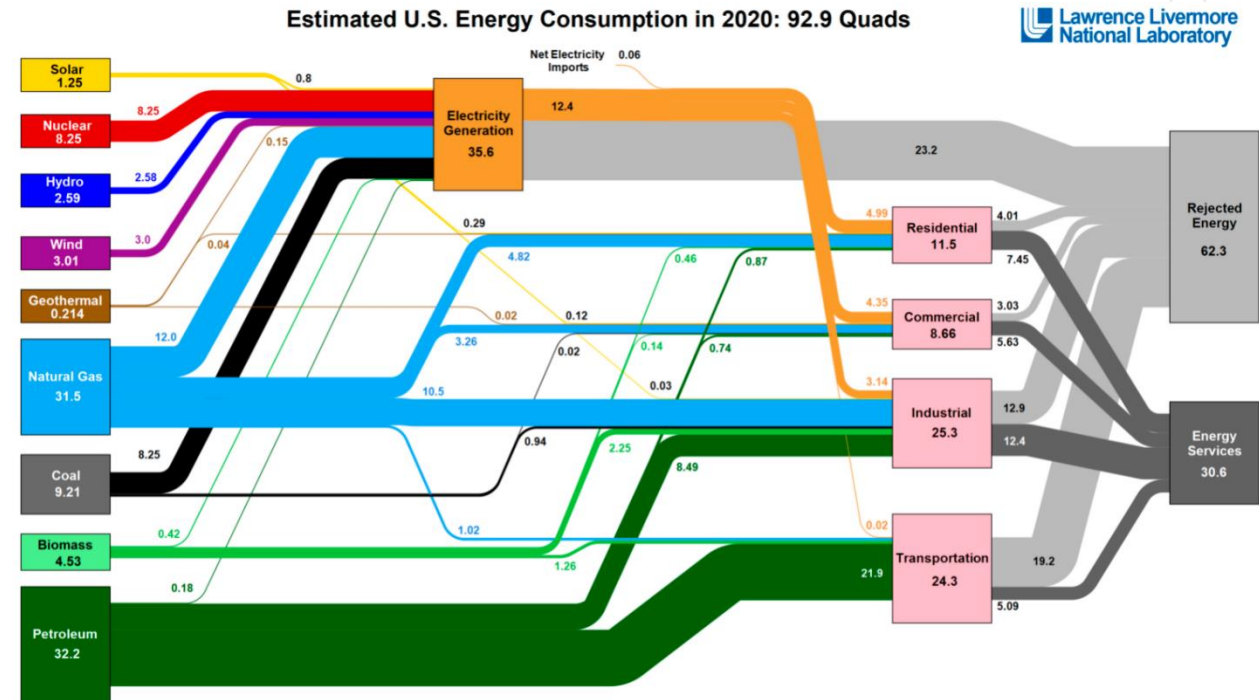
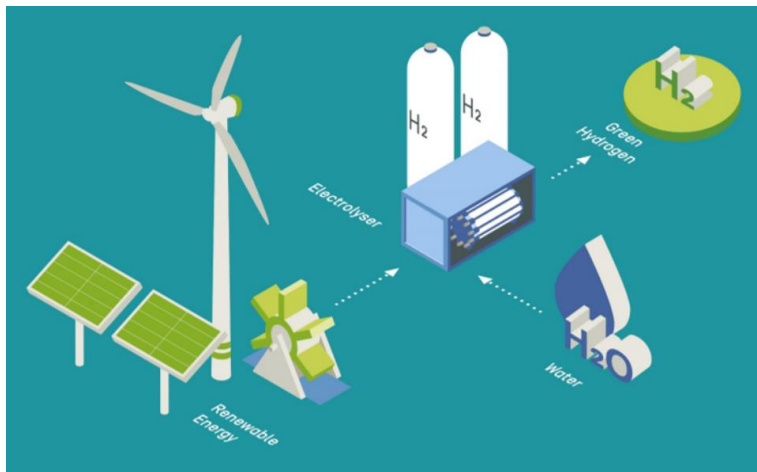


Need for a power shift – market making

Why industrial symbiosis?

What problem are we trying to solve?

- »»» About 2/3 of global energy production is lost in process
- »»» About half of energy in industry goes to waste
- »»» Storage of renewable energy will potentially lead to even more energy loss from source to product



How to tackle no waste?

The components of a "no waste" ecosystem



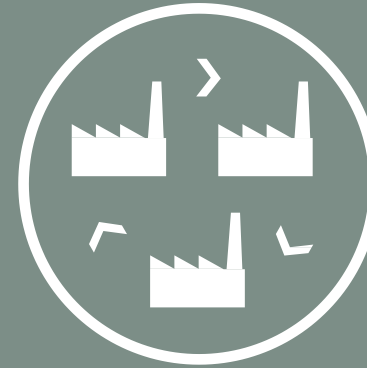
GENERATE

We generate sustainable energy for our partners



TRANSFORM

The green energy is stored in all its forms: Electricity, heat, chemical, gas and electrofuels



SHARE

The SymbiosisNet™ is an intelligent grid of energy and data that lets our companies share their surplus energy

GreenLab Research Missions

VILLUM FONDEN



01

Development of the design manual for the green industrial clusters of the future

02

Successful optimization between fluctuations in renewable energy, consumption flexibility with industry and infrastructure costs for storage and conversions

03

Demonstration of valuable sector integrations that can show the way to scalable initiatives for industry in the rest of society



AARHUS UNIVERSITY AALBORG UNIVERSITET



GreenLab

Located at the intersection of national gas and electricity grids

- Existing
- In progress
- Opportunity

GreenLab supply

- Power
- Water
- Heat/Steam
- Instrumental Air
- Nitrogen

Shared energy/ressources

- Methanol
- CO₂
- Hydrogen
- Surplus PtX heat for District heating
- Heat



Green Hydrogen Initiatives

GreenHyScale 100 MW

GreenLab

Everfuel

QUANTAFUEL

energy CLUSTER DENMARK

Lhyfe

equinor

H
GREEN
HYDROGEN
SYSTEMS

euroquality

DTU

Imperial College
London

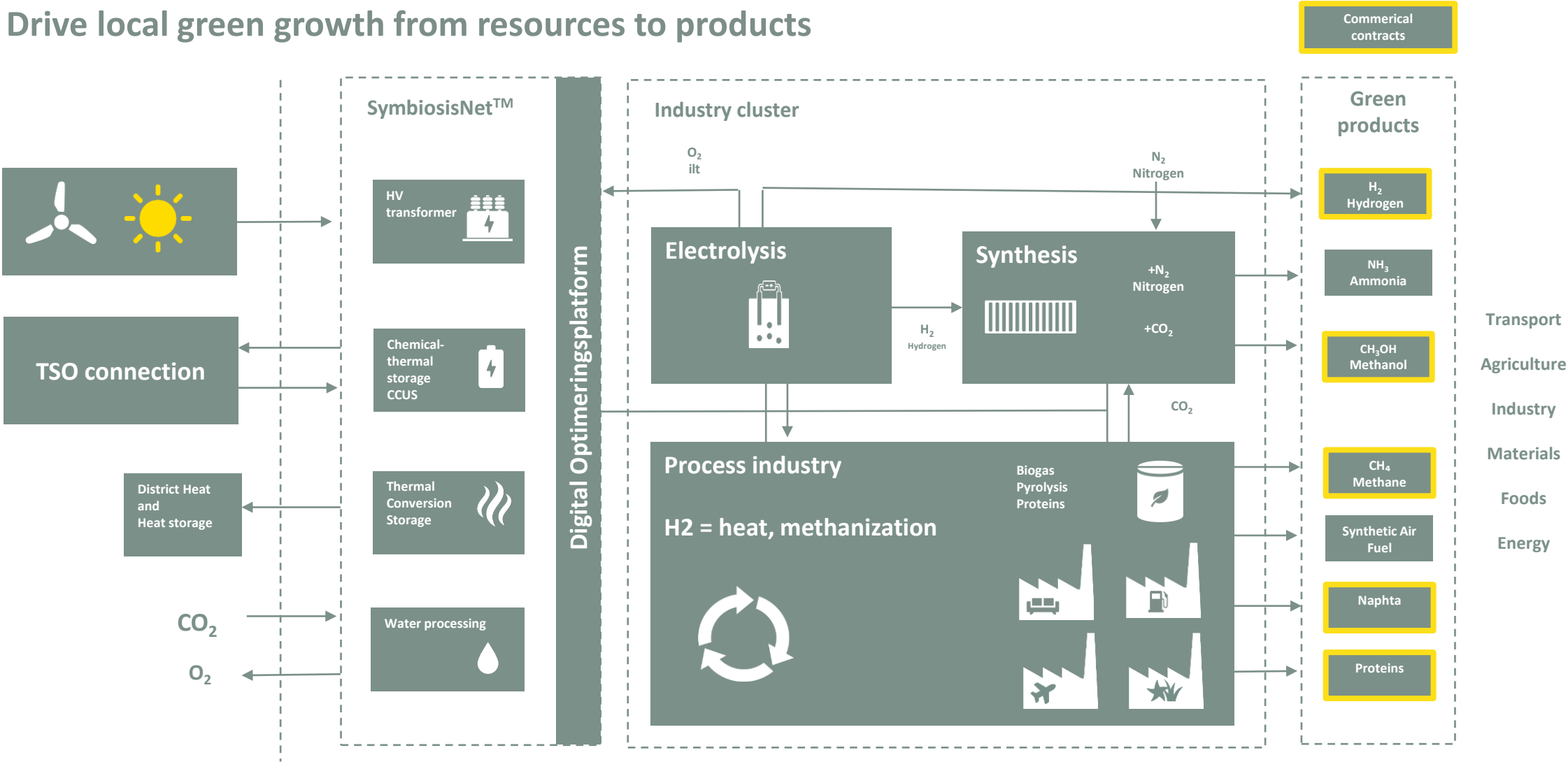
SIEMENS Gamesa
RENEWABLE ENERGY



THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION'S HORIZON 2020 RESEARCH AND INNOVATION
PROGRAMME UNDER GRANT AGREEMENT NO 101036935

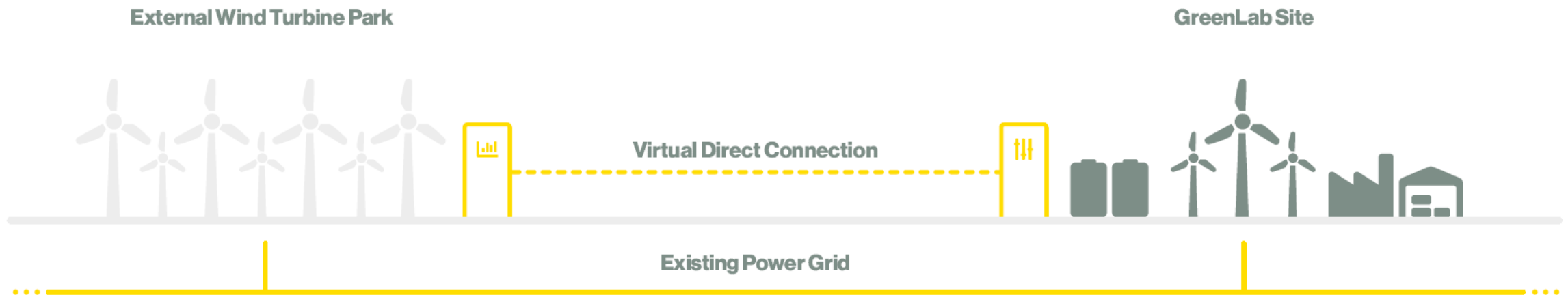
GreenLab Skive energy park – SymbiosisNet™

Drive local green growth from resources to products

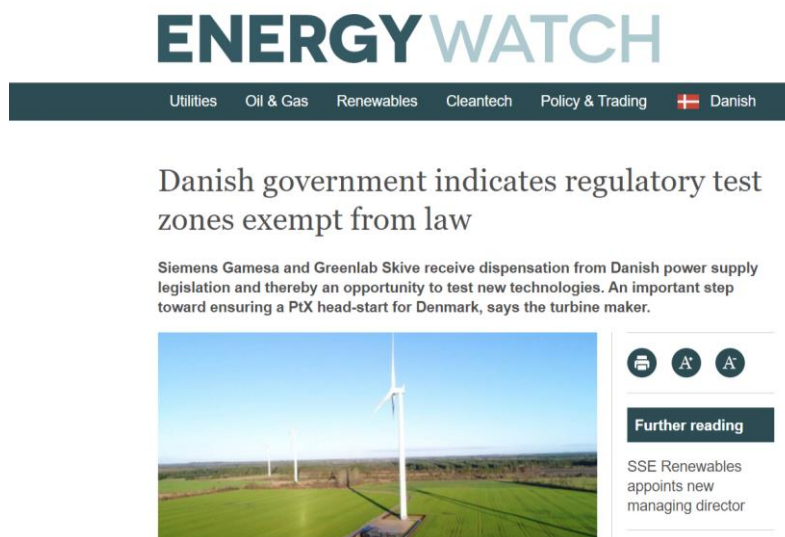


GreenLab Skive Energy Park

Collaboration with DSO/TSO



Unique regulatory test zone & “The GreenLab Law”



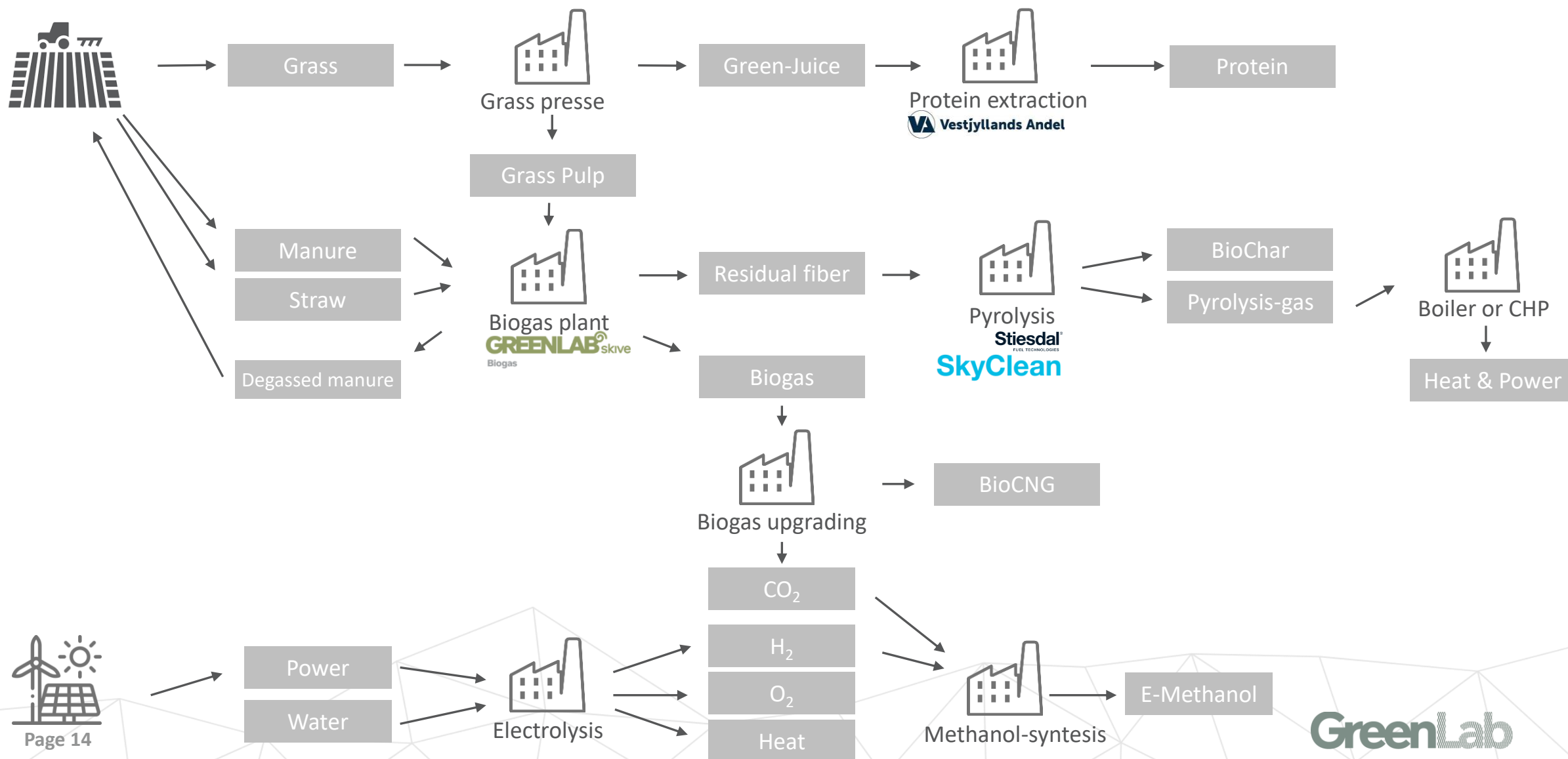
“

Today is a great day for the green transition! The national transmission company Energinet and GreenLab have agreed to establish a Learning Lab to test new energy and supply solutions exploiting GreenLab's unique test zone cluster environment.

We will explore new solutions to accelerate sector integration, system flexibility, and data-driven systems and we will challenge the current market models to determine mutual incentives and high social impact for Denmark's green transition



Case: Rural development (Skive, Denmark)



Page 14

Danmarks
Tekniske
Universitet



NORLYS

Everfuel^o



EUROPEAN
ENERGY



e-on

Eurowind Energy

ENERGINET

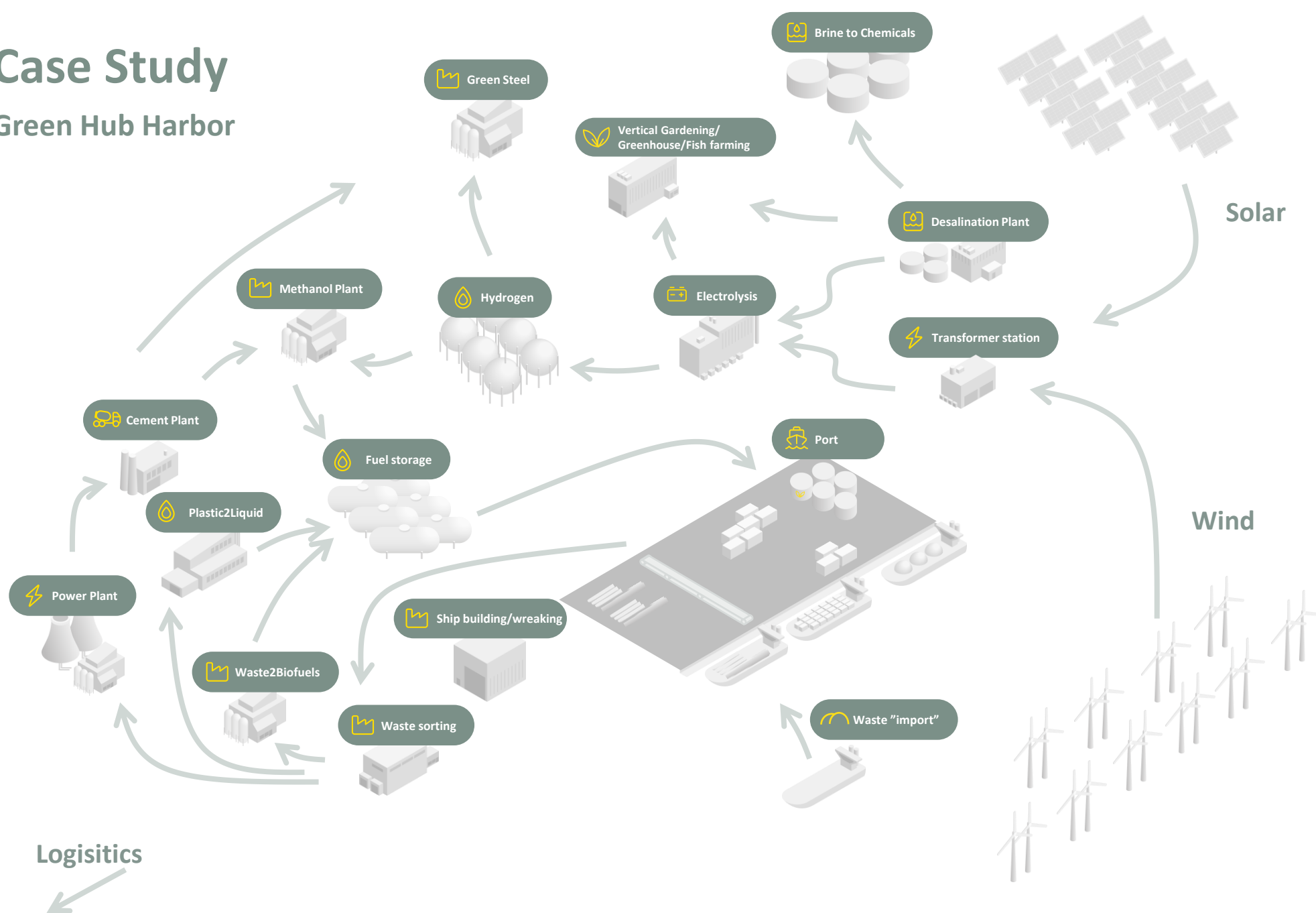


Ea Energy Analyses

GreenLab

Case Study

Green Hub Harbor

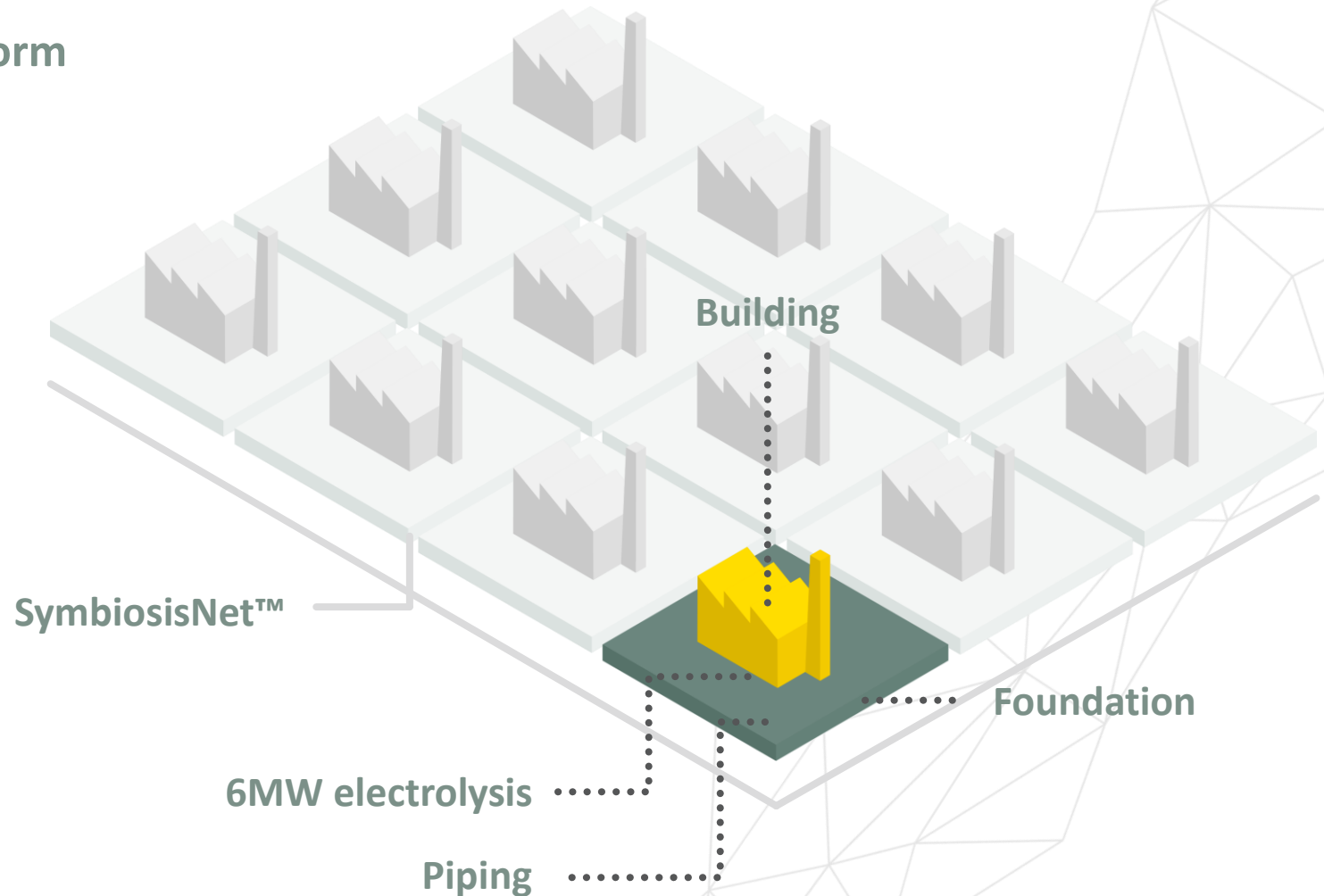


Facility-as-a-Service

A plug-and-play industrial energy platform

Adaptable, Replicable

- »»» A unique hosting environment – full infrastructure provided for green companies
- »»» Open innovation platform with access to green power and the SymbiosisNet™
- »»» Faster time-to-market, lower capex, lower cost of green production
- »»» Full utilization of clean energy



GreenLab Model Requires a Value Mediator[®]

Facilitate all of the “in-between” elements

New technologies and business ideas

 Companies >>>

 Public entities >>>

 Researchers >>>

 Utilities >>>

Mediate

Facility as a Service
A physical platform
Innovation center
Expertise
Value chains
An eco-system

Output

>>>  New markets

>>>  New products

>>>  New investments

>>>  New spin-offs

Replicable locally and globally

- ››› Regional development and added value to renewable energy sites
- ››› Conversion of harbour sites, combined heat and power plants and industrial clusters
- ››› Based on know-how and cloud-based "plug-and-play" data driven learning solutions



MINISTRY OF FOREIGN AFFAIRS
OF DENMARK
The Trade Council



GreenLab



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



GLOBAL PROGRAMME
HYDROGEN IN INDUSTRY



UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



GLOBAL PROGRAMME
HYDROGEN IN INDUSTRY



GREEN HYDROGEN INDUSTRIAL CLUSTERS GUIDELINES

Agreement Signed in Washington D.C.

DK State Department
US Department of Agriculture
GreenLab

Letter of Intent
Among
BioCo-Norwalk, Inc.,
GreenLab,

and The Trade Council of Denmark in North America

This Letter of Intent ("LOI") is entered into this 1st day of May, 2023 by and among BioCo-Norwalk, Inc. ("BioCo"), and GreenLab, and The Trade Council of Denmark in North America (hereinafter referred to individually as "the Parties" or collectively as "the Parties"), and witnessed by supporting persons USDA Rural Development, the Livestock Center Regional Development Authority, State of Colorado, and Livestock Center, Norway (hereinafter referred to as "the Witnesses").

Exploitation of new proteins through protein engineering, systems biology, genomics, and metabolomics of organisms is an emerging research in today's modern science. Thus, and renewable energy is an important step in creating long-lasting structures, both for us increasing food security, protecting and sharing of resources in a future world to create a better tomorrow, environment and saving global resources.

The overall purpose of the LOI is to establish a collaboration among the Parties that both will benefit will be to be establishing an integrated renewable energy and industrial park in Livestock Center, Colorado, U.S. that is required for and controlled along the principles and human capital of Denmark in North America, where engagement in a structured and integrated business are sharing resources and efforts to create a sustainable future as a valuable space for scientific work. This integrated renewable energy and industrial park will be powered by green energy technology solutions such as wind, solar, hydro, geothermal, and biomass, and Power-to-X, hydrogen, electrolysis etc.). Based on this model, the Parties will explore ways to collaboratively produce value-added goods, services and products and explore further partnerships with other stakeholders in the U.S. with the goal of creating long-term green growth opportunities.

Article 1 (NAME OF THE MEMORANDUM)

The LOI is a general framework for cooperation between BioCo, GreenLab, and The Trade Council of Denmark in North America for establishing an integrated renewable energy and industrial park in Livestock Center, Colorado, U.S. that will include (e.g. green energy, technology, industrial like wind, solar, hydro, geothermal, and biomass, and Power-to-X, hydrogen, electrolysis etc.) as an industrial ecosystem setting.

Furthermore, the LOI is a general framework for cooperation between the Parties to create a sustainable future as a valuable space for scientific work, and long-term green growth opportunities.

Article 2 (FIELDS OF COOPERATION OF THE PARTIES)

Within the scope of the LOI, the following areas have been identified as areas of interest with potential for enhancing the establishment of an integrated renewable energy and industrial park in Livestock Center, Colorado, U.S.:

1. Sharing knowledge, experience, and solutions already developed in other development areas within projects in Denmark and elsewhere.
2. Discussing challenges and extensive solutions, including identifying best practices in sustainable production, materials and packaging along the innovation, production, supply, as well as market development opportunities in relation to the adoption of an integrated renewable energy and industrial park with rural support to create a better tomorrow and green jobs.
3. Further collaboration along the following lines, that are currently limited to:
 - a. Further research and development, and industrial supply to (bio) fuel, value added (green) energy, technology, industrial, services etc.
 - b. Greenhouse gas emissions reduction (e.g. Greenhouse gas emissions).



The partnership will assist others to replicate the GreenLab model in their own version across the US and globally



The GreenLab Principles

01 Positive community effect

02 Competitive Advantage

03 Mutual incentives

04 Sustainability

05 Continuous learning and development

06 Global frontrunner: Show it, don't tell it

A just transition

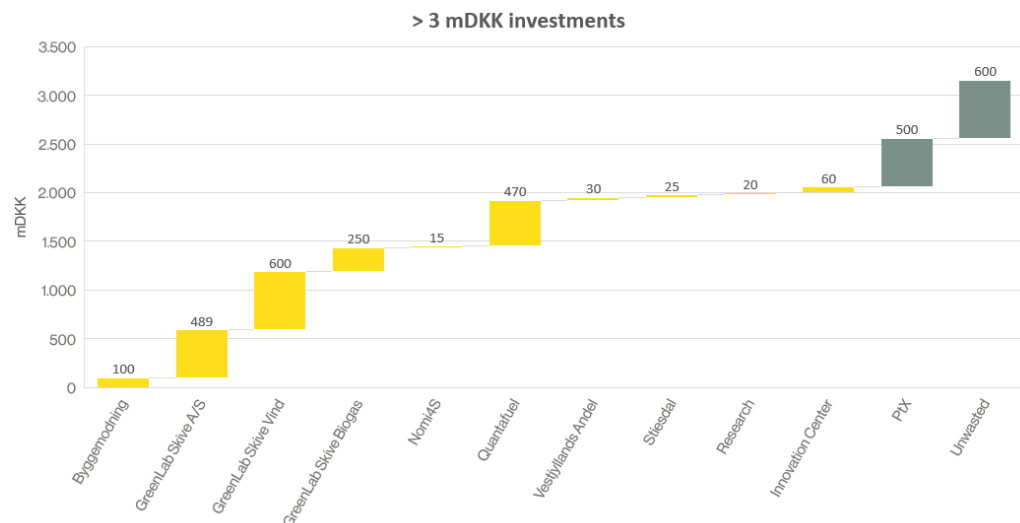
Rural areas play a key role and can become a growth engine while developed areas can reconfigure assets to enable green growth

- »»» Sustainable energy can only be produced large-scale in rural and offshore areas
- »»» That constitutes a window of opportunity for these areas
- »»» Done right, the local community can benefit greatly from green development
- »»» Job creation, industrial development, investments, increased tax base, branding, business tourism

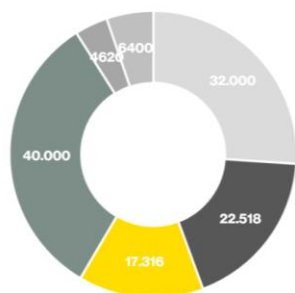


Social Impact

Investments, green jobs, business tourism, local engagement

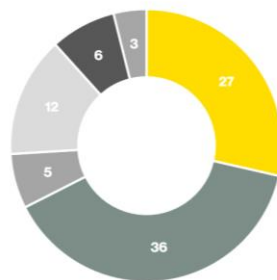


122.800 construction hours

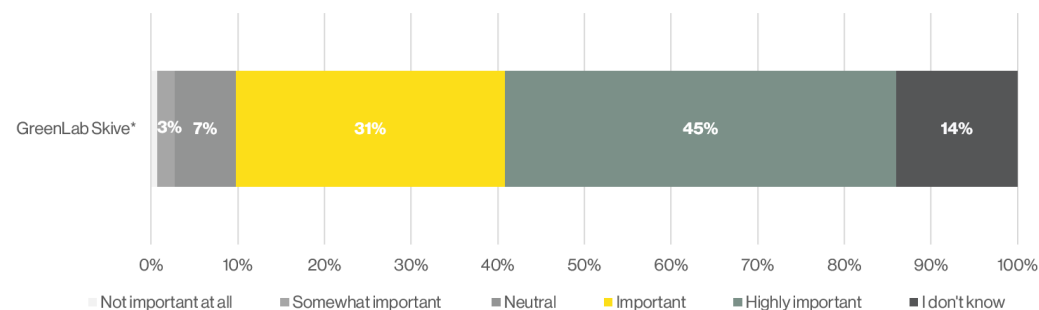


Quantafuel
Skive Municipality (Technical Department)
Stiesdal
KE Andersen
GreenLab Skive Biogas
Stenger & Ibsen (Wind Turbine foundation)

+120 FTE's



GreenLab Quantafuel Vestylands Andel GreenLab Skive Biogas Nomi4 Stiesdal



"To which extent do you view the following as important to the development of the Skive area?"

PROPERTY OF
GreenLab

Takeaways: Translate advantages to stakeholders

Mutual incentives and alliance contracts

- ❖ Main objective: Create regional green growth
- ❖ Determine what is valuable for the community, gain commitment through co-creation with opinionmakers
- ❖ Incentivize investment through alliance models with mutual benefits via co-location and infrastructure
- ❖ Leapfrog infrastructure challenges, accelerate renewable energy growth through cluster integration
- ❖ Turn electrons into jobs, trade, competencies, products, income through cooperative business models
- ❖ Use diversity, agility as risk management, upside portfolio
- ❖ Create laws in parallel with developments, use “sand box” frameworks to get momentum
- ❖ Exploit public procurement to make strategic gains, increase tempo

GREENLAB SUMMIT 2023

A GLOBAL OUTLOOK ON THE FUTURE OF ENERGY

Wednesday, November 8, 2023

GreenLab Summit is where we invite the brightest minds to exchange ideas, inspire each other, and learn from the latest research and pioneer projects. This year, the event will be bigger than ever.

- »» KEYNOTES
- »» DEEP DIVES
- »» EXPERT PANELS
- »» GREEN TECHNOLOGY EXHIBITION
- »» NETWORKING DINNER
- »» SITE TOUR





LET'S CREATE
A POWER SHIFT

PROPERTY OF
GreenLab