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Beach cast biomass as a resource

Coastal Biogas Conference – Denmark. Nov. 13th 2019

BIOECONOMY HOTSPOT GULDBORGSUND

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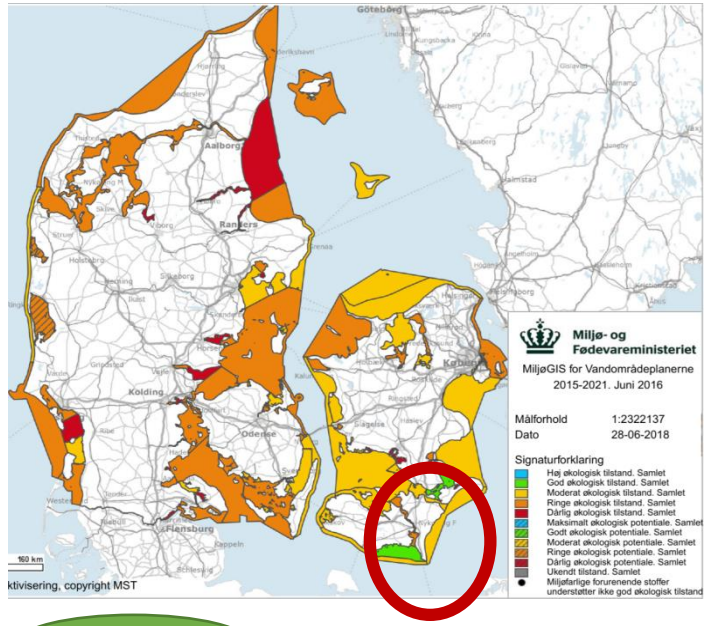
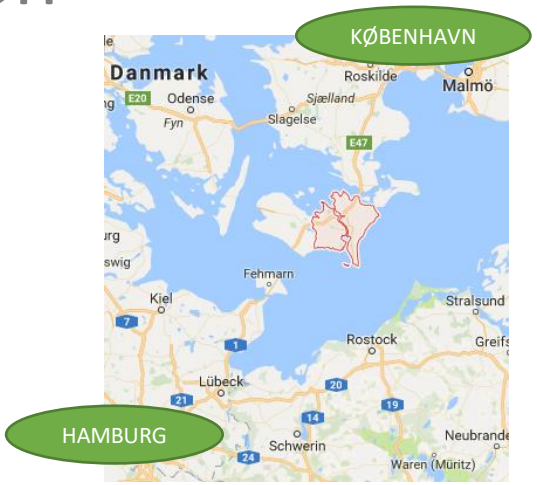
Municipality of Guldborgsund

- Rural municipality
- Richest soil – plant breeding expertise
- Good transport infrastructure
- Commitment to green transition through circular bioeconomy
- 328 km coastline





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What is our goal?

- New jobs

through

- Green transition

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What do we do?

- We aim to ensure that local biomasses and the potential for new crops are in focus with the researchers, so that they can help identify the greatest potentials for new production.
- We pave the way for ties between researchers and companies interested in creating new products based on local biomass - and with a focus on local value creation.
- We support initiation of projects with strong practical focus together with local, national and international partners.
- Dansk Bioøkonomi Konference is an important supportive activity.

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Origin of idea

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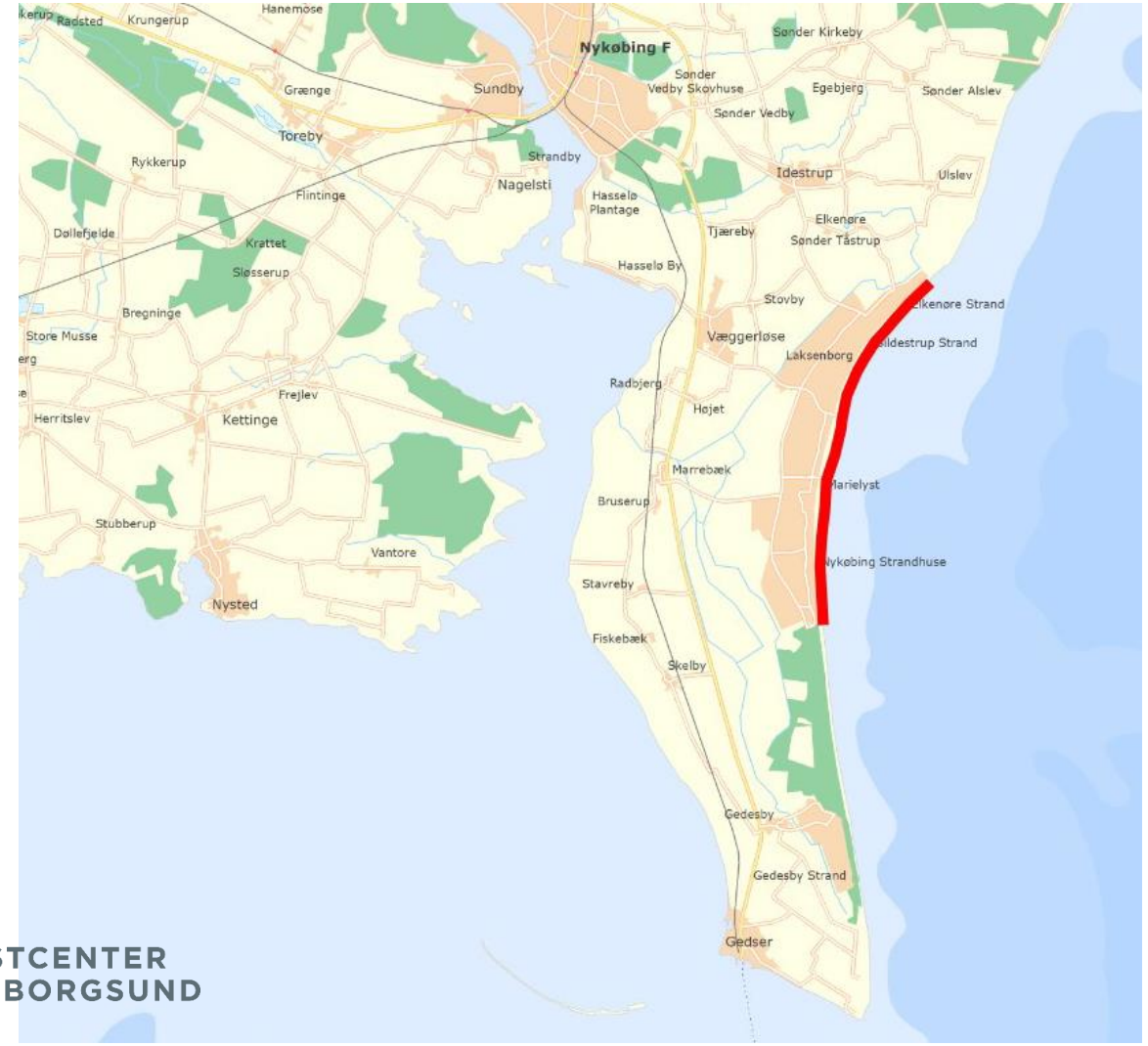
Beach cast is removed from ultimo June – mid August
A municipality service to support local tourism



Totally 150 – 250 m^3 removed from Marienlyst beach. ~ 7-12 truck loads.

Ad hoc smaller quantities are removed from Nysted and Gedesby beaches.

There are more locations with beach cast where no action is taken.

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Value from local beach cast?

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ALLIANCE

BIOFISK case

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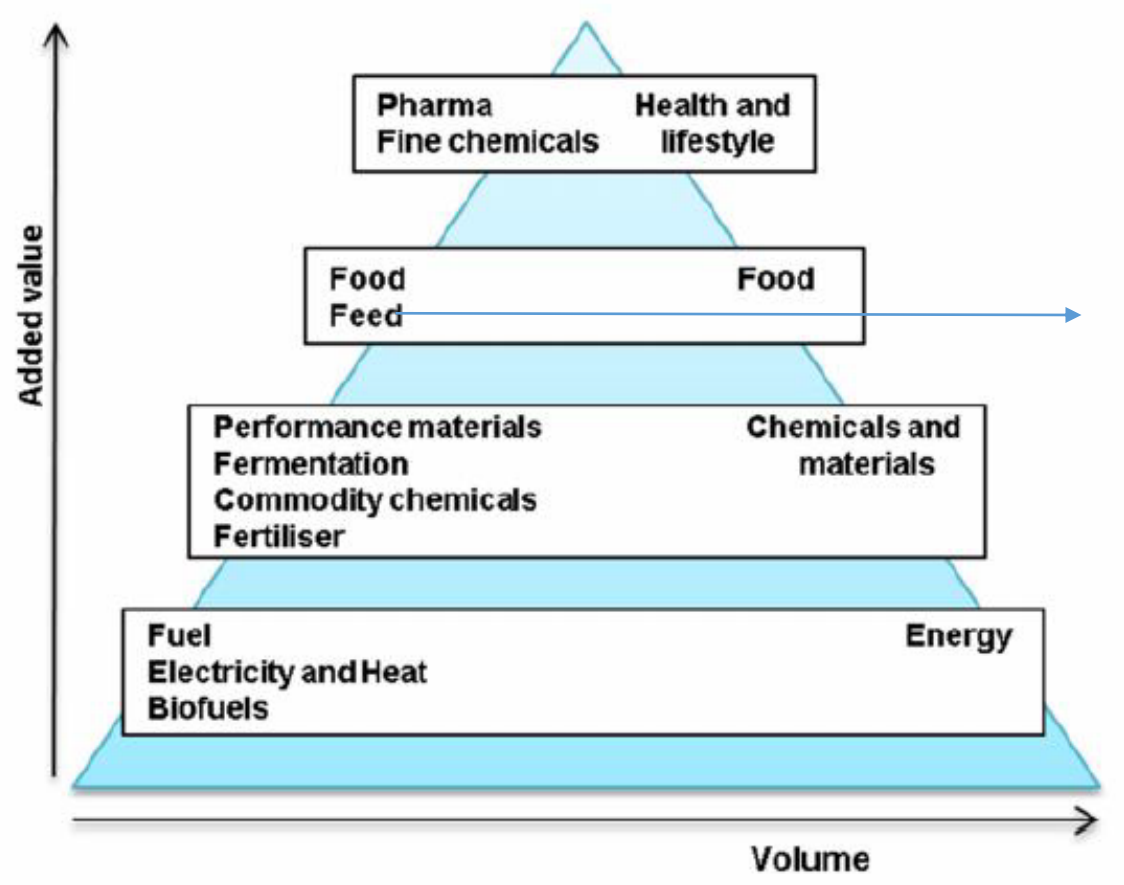

Source: Kretschmer et al. 2013:86, adapted after Eickhout (2012), based on http://www.biobasedeconomy.nl/themas/bioraffinage_v2/

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Screening of local beach cast

- 48 samples, 6 beach locations in Guldborgsund municipality. June-October 2017
- Samples were dried. Dry matter, pH, conductivity, sand and ash content measured at Technological Institute.
- Composition analysis: sea grass, bladder wrack, sea lettuce, etc. - 9 samples were sent to EUROFINS and demonstrate heavy metal contents below threshold levels.

Læs rapporten: bioguldborgsund/Viden/Lokale analyser og rapporter

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Bioconversion of beach cast with black soldier fly larvae (BSFL)

- Beach cast (primarily eel grass) was used as feed for BSF larvae in mixes with
  a) source-separated organic household waste (25-75%)
  b) brewers mash (25-75%)

  Conclusion: Up to 25% beach cast (primarily eel grass) can be added to larvae feed with out loss of growth.

- The Danish Food Administration does not approve that larvae fed with beach cast are used for food or feed for production animals (zoo and pets excepted).

Læs rapporten: bioguldborgsund/Viden/Lokale analyser og rapporter

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Black Soldier Fly larvae bred on residue biomass – New sustainable protein source for fish?





Feed-screening and dietary experiments:

- Larval and frass production,
- Substrate reduction
- Feed conversion rate,
- Larval weight and survival rate (%)

Analysis of larvae and frass: protein, carbohydrate, lipid and ash (+Larvae: amino acids profile and chitin concentration. +Frass: NPK and sugar profile)

LCA

Business model

Interreg North Sea Region BIOCAS
European Regional Development Fund
EUROPEAN UNION

Production of ice worms (Enchytraeidae) – a local source of omega-3 fatty acids and fish feed?

Martin Holmstrup and Kirsten Engell-Sørensen

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DEPARTMENT OF BIOSCIENCE

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4Fishlab
Environmental Investigations

The project in a nutshell

Removal of N and P from the sea

Decomposing beach cast

Worm production

Frass/compost for farming and horticulture

Live feed

Tørret, formalet og brugt som foderingrediens

Fish feed

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Environmental Investigations

Habitat
&
Natural coast protection

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beachwrack-contra.eu/

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EUROPEAN UNION

EUROPEAN REGIONAL DEVELOPMENT FUND

CHALLENGE

Beach wrack is often regarded as a nuisance, particularly when it lands unexpectedly and in large quantities on tourist beaches. The challenge is to find a balance between public demand for 'clean' beaches, environmental protection and local economies.

Six Case Study sites to test the environmental, social & economic impact of different beach wrack recycling options.

OUTPUTS

A 'Toolkit' of sustainable recycling options

Guidance on resource management and value chains

Information on socio-economic responses

Transnational & cross-discipline stakeholder support network

Cross-border & public-private co-operation

RESULT

Coastal authorities adopt beach wrack management strategies that are environmentally sound and include sustainable recycling options for pollution & nutrient remediation that provide blue growth opportunities.

BALTIC BEACH WRACK

CONVERSION OF A NUISANCE TO A RESOURCE AND ASSET

CONTRA
BALTIC BEACH WRACK
CONVERSION OF A NUISANCE TO A RESOURCE AND ASSET

- Improve existing technology for the collection and processing of beach cast cost, sand etc.
- Crushing and compression technologies
- Prepare a business case for compost / fertilizer made on the beach
- The requirements of the costumers for the compost are investigated
- It is investigated whether composting of beach cast is economically sustainable in the long term
- To optimize the charcoal technology for the specific composition of the beach cast (salt, sand, etc.)
- To test the use of beach cast to restore sand dunes
- To test the possibilities of creating a fertilizer product by adding beach flush to biological sludge plant
- And more……

https://www.submariner-network.eu/blue-platform

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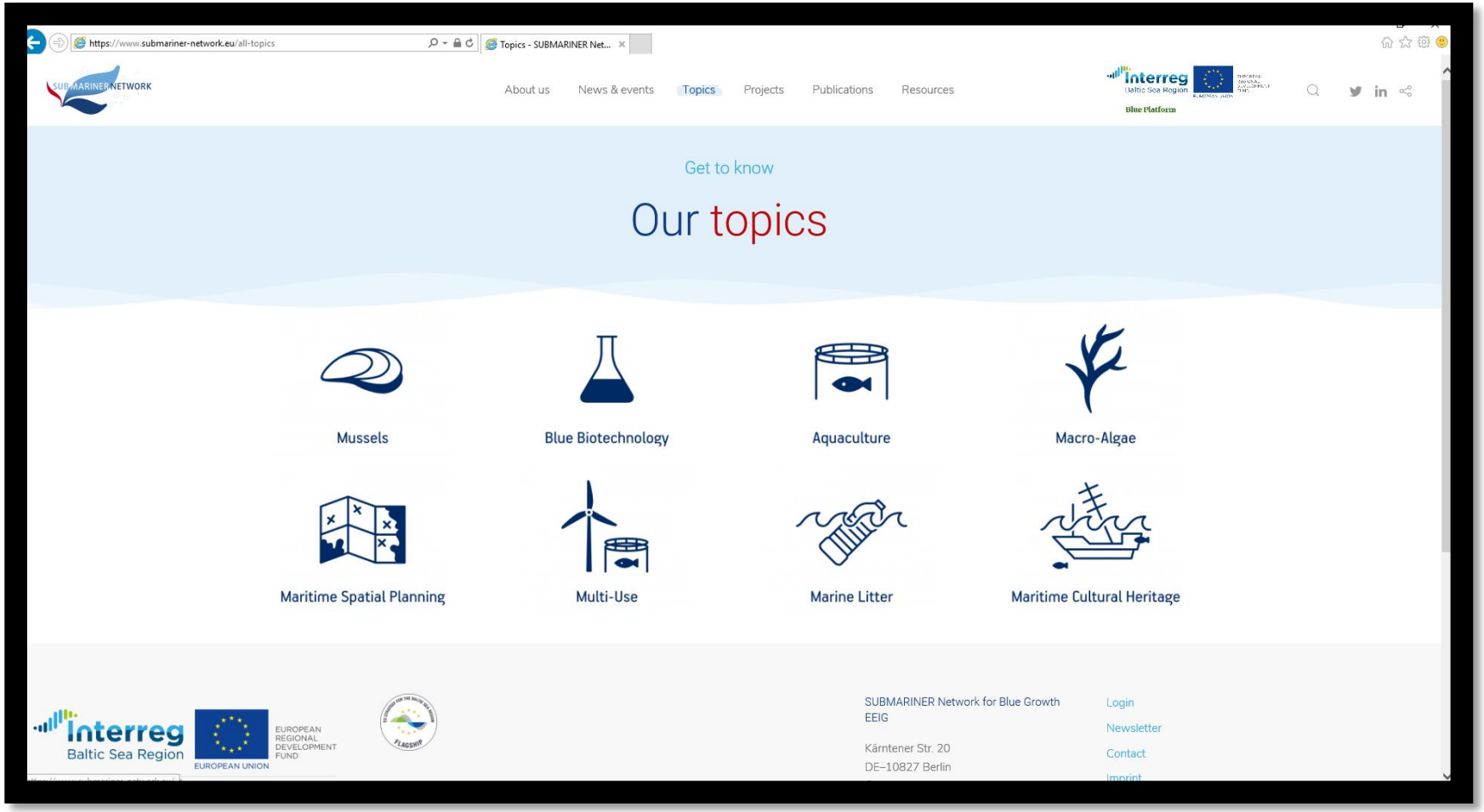
Blue Platform

SUBMARINER NETWORK



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Blue Platform

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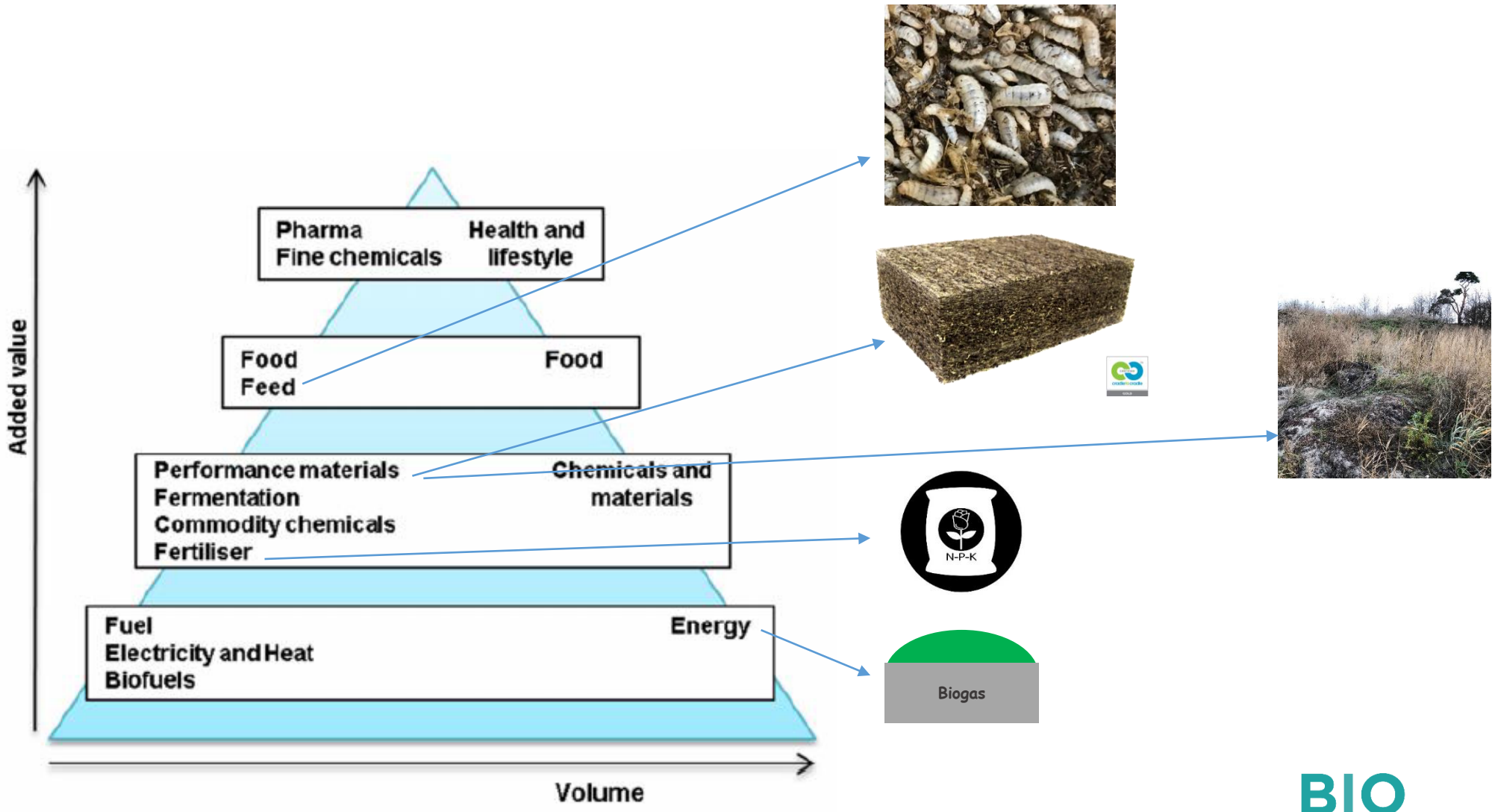
There is a long tradition of using eel grass and several relatively new reports.

The sources we know of will be shared at our homepage – soon ☺

www.bioguldborgsund.dk



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THANK YOU !

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