

Seaweeds – A new industry ?

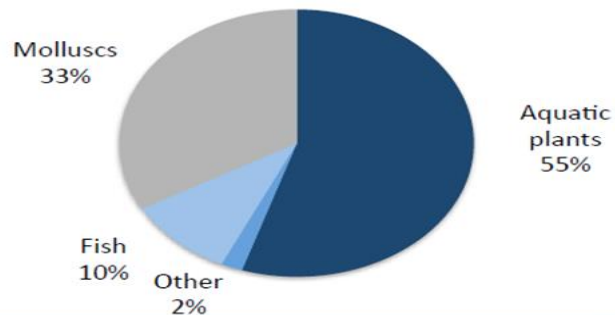
Seaweeds

Harvest

Cultivation

Industrial possibilities

World marine aquaculture (47 Mton)



Sangou Bay, China



NIVA and seaweeds







Kelps heavily overgrown and
probably outcompeted by
epiphytes

Many seaweeds have
been exploited for
years

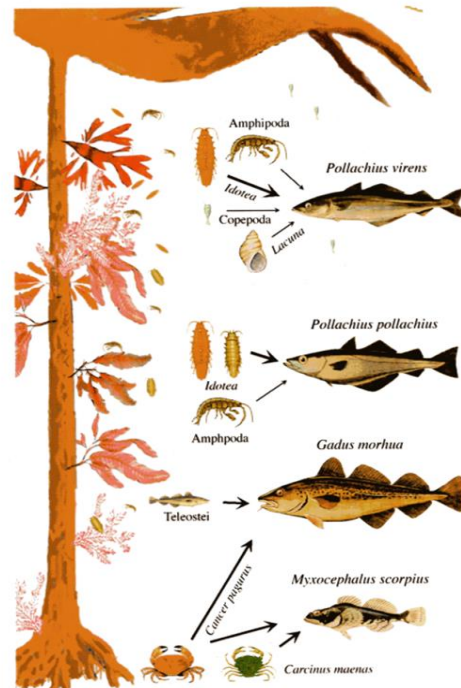
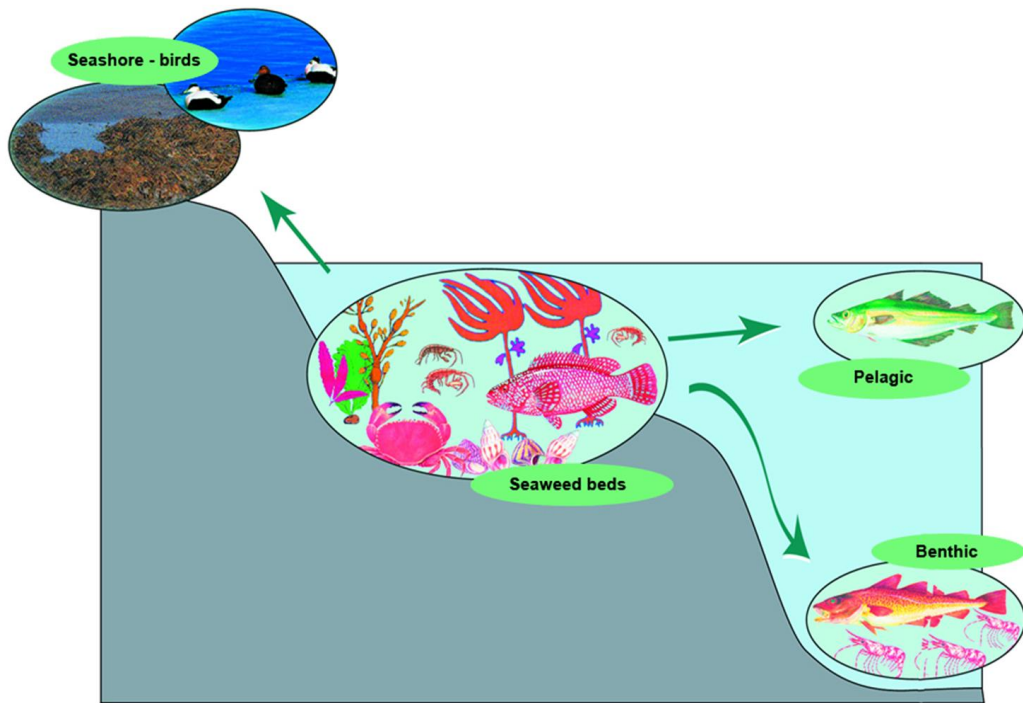




Kelp trawling since 1960ies
Our first seaweed industry
Together with collecting littoral seaweeds



Natural kelp forests are important for coastal ecosystems.
By kelp harvest (trawling) one removes the foundation of the ecosystem.
Industrial kelp production may interfere with natural kelps or kelp forest ecosystem services.









**Small scale
«Kitchen garden»**

A photograph showing three people on a small boat harvesting kelp. Two people in the foreground, a woman and a man, are wearing bright orange and red waterproof gear and are leaning over a large pile of harvested brown kelp. A third person is visible in the background, also in similar gear. The boat is on a body of water, and a distant shoreline with buildings is visible under an overcast sky.

Kelp farming in Norway now

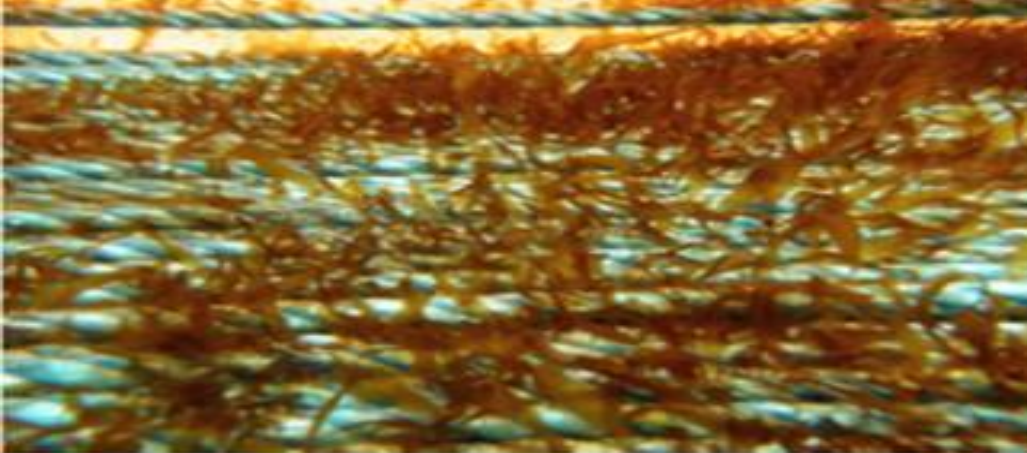
Mainly sugar kelp

Increasing interest

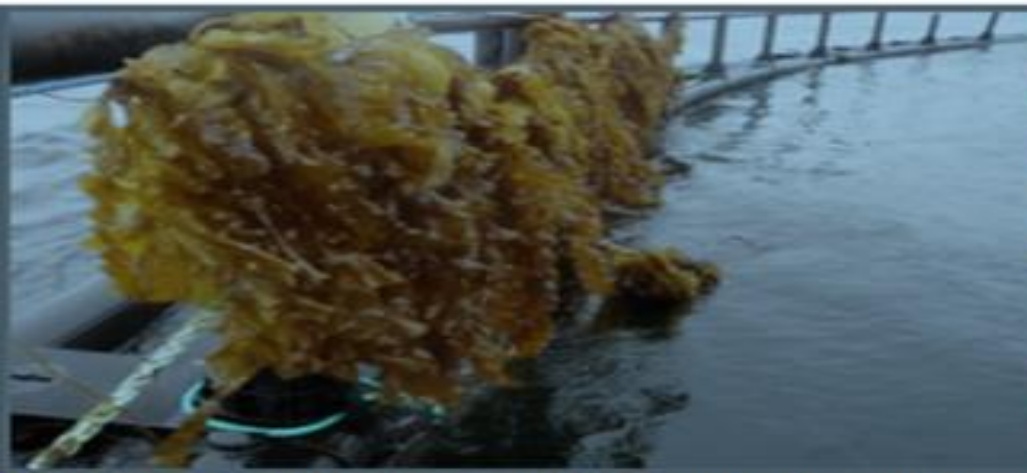
All regions along the coast

Problems along the value chain

A green and sustainable industry



Figur 1. Kimplanter på tau, klar til sjøsetting.



Figur 2. Sukkertare 4 mnd etter utsett ved et oppdrettsanlegg.



The background of the slide is a photograph of seaweed, likely kelp, growing in clear, shallow water. The seaweed appears as long, green, leafy fronds reaching up towards the surface, with some brownish structures visible. The water is a clear, light blue-green color.

Seaweeds/kelp farming – is a new and growing industry in Norway.

Seeding spores in autumn/vinter, harvest 10 kg per m rope in summer.

All along the coast

No need for water, fertilizers, pesticides

Positive and negative effects: NIVA project KELPRO

Seaweeds – Products

Food (nutrients, vitamins, minerals)

Feed (for fish, cattle, chicken)

Pharmaceutical industry

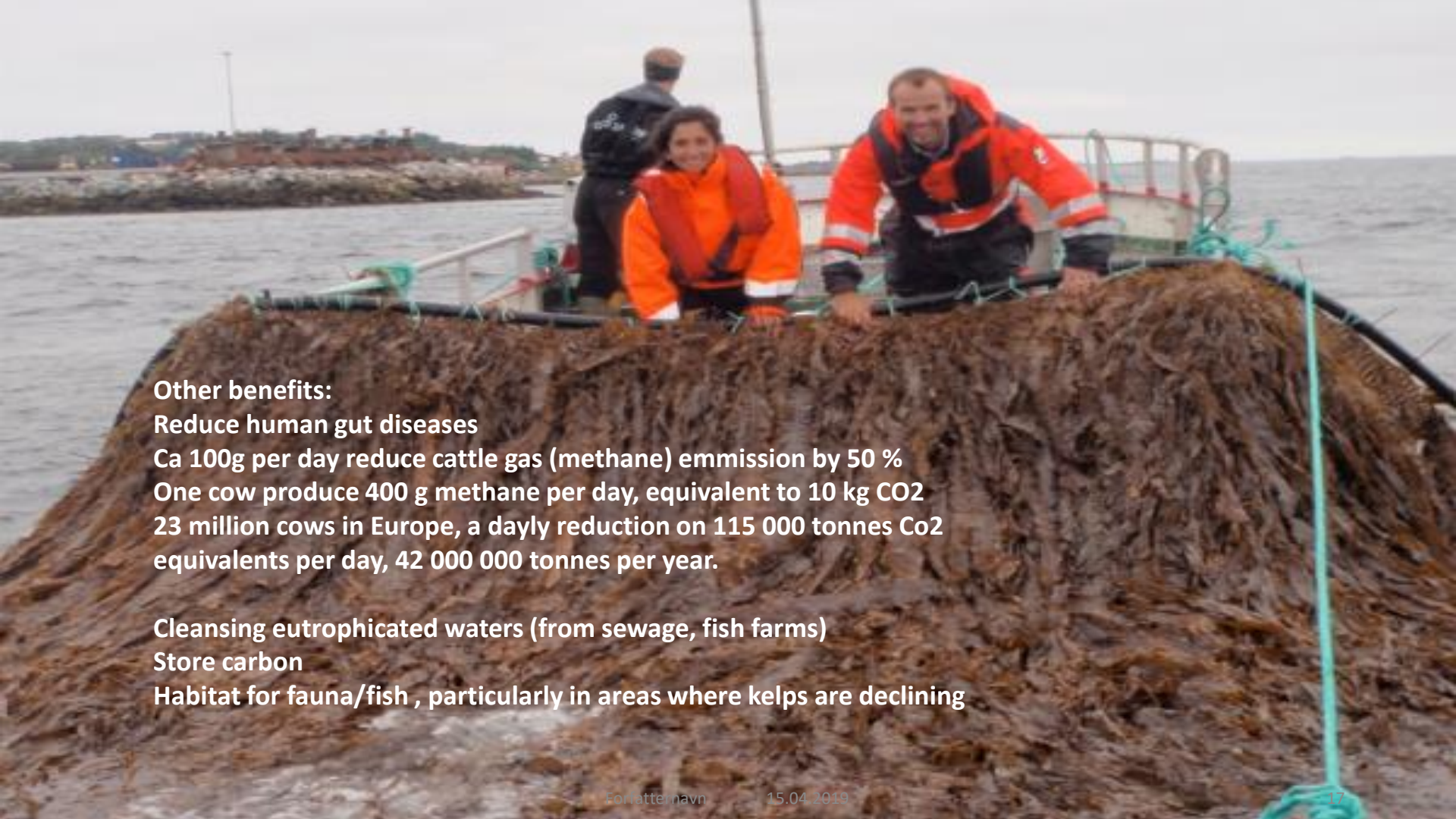
Cosmetics

Bioethanol

Plastic replacements, polymere industry

Others??

Development of farming techniques have come further than the development of profitable products



Other benefits:

Reduce human gut diseases

Ca 100g per day reduce cattle gas (methane) emission by 50 %

One cow produce 400 g methane per day, equivalent to 10 kg CO₂


23 million cows in Europe, a daily reduction on 115 000 tonnes Co₂

equivalents per day, 42 000 000 tonnes per year.

Cleansing eutrophicated waters (from sewage, fish farms)

Store carbon

Habitat for fauna/fish , particularly in areas where kelps are declining



Norway 2017

Harvesting 145 tonnes, <20 plants, 40 licenses

Perspectives 20 million tonner per year

Ongoing research on techniques, products, and environmental implications

A BLUE RESOURCE WITH A GREEN FUTURE