



Renahav

ENERGI OCH VÄXTKRAFT



Smögenlax

2023-11-14

1st Mission Arena

Gothenburg

“The Problem”

“Production Industry meet increasing demands on emissions to water and air, recycling and responsible sourcing from authorities, causing investments and cost increases

Sustainability, recycling, clean energy and CO₂ reductions demanded by consumers, causing more cost increase

Owners expect cost reductions, on time delivery and stable quality from owners, otherwise other locations may be preferred

Can this seemingly impossible equation be solved ?”

Situation before we started

Swedens leading suppliers
of seafood are located in
Sotenäs county!

CO₂

Expensive disposal of
15.000 ton yearly
organic "waste"

3.000.000
ton kilometers
organic rest

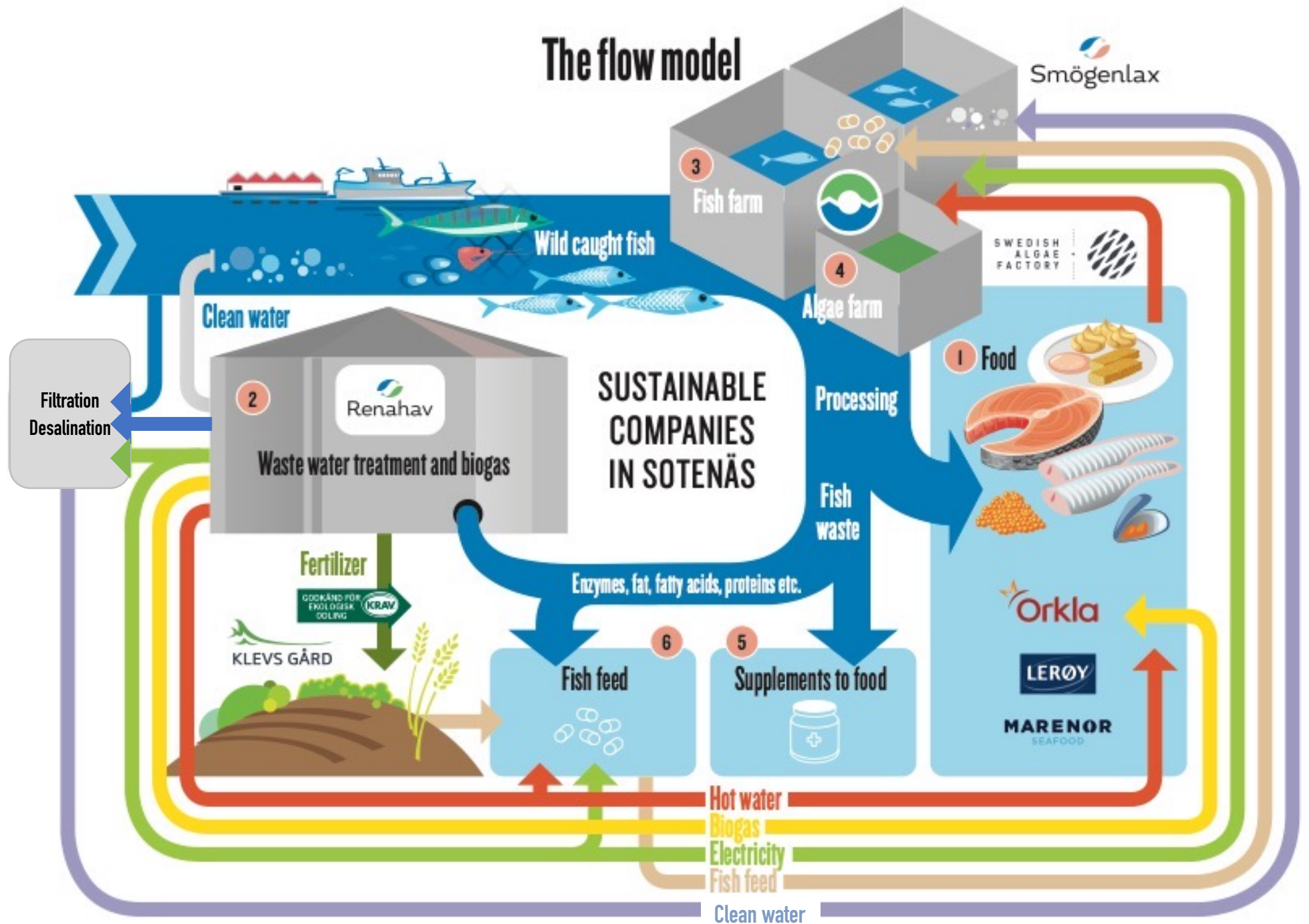
TOC, N, P

Critically high load on municipal sewage
treatment plant.

Upcoming environmental
regulations forcing
industry to investments
or moving abroad

Communal WWT
overloaded

In Kungshamn, Smögenlax / Renahav has built a hub for energy and organic recycling and upcycling. All organic waste and wastewater from all seafood industry in the area flows through Renahav, currently generating biogas, electricity, hot water and organic fertilizer, in addition to a much cleaner ocean. This circular economy will soon be expanded with fish feed ingredients and desalinated water, as a land-based salmon farm is to be added to the mix. An algae farm has already been built and is in operation, which will be circulating water with Smögenlax salmon farm.





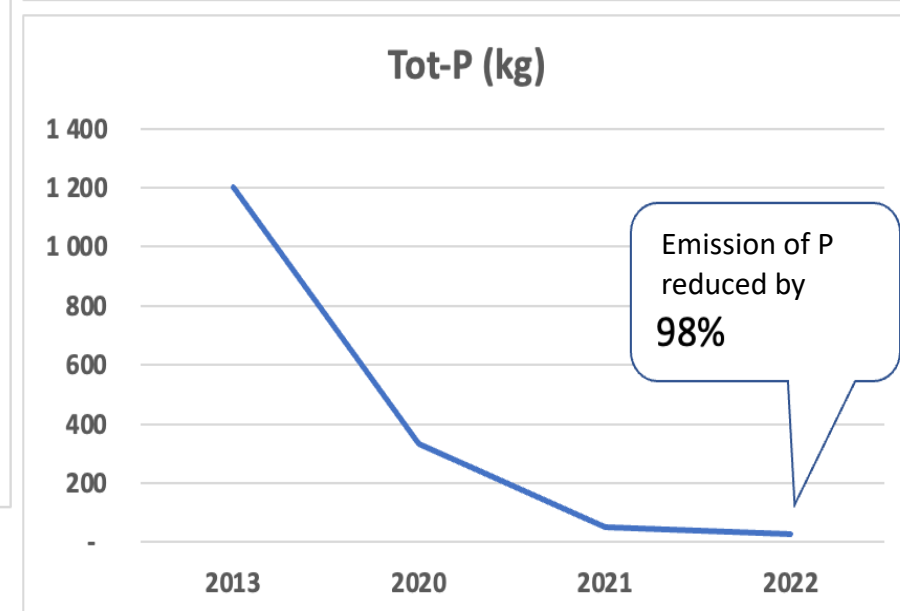
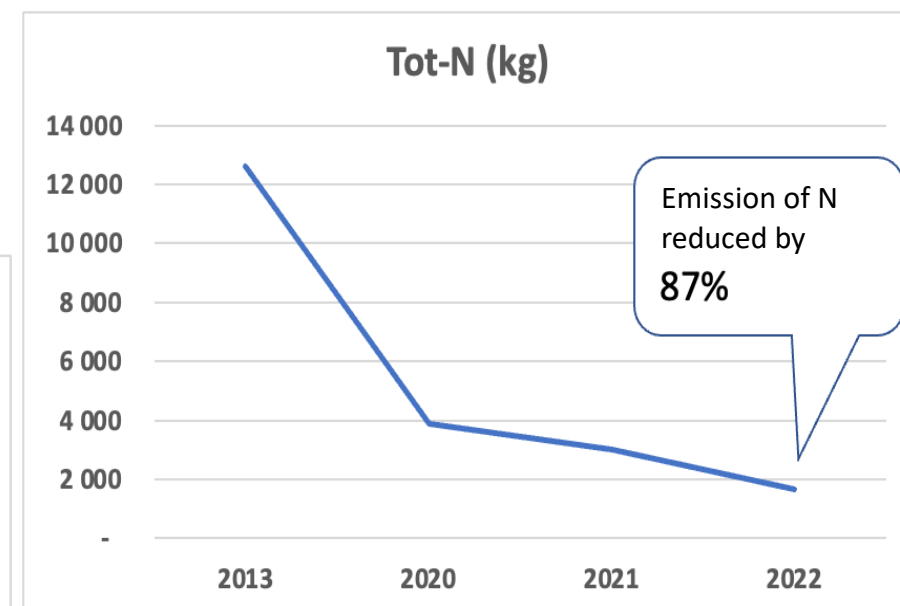
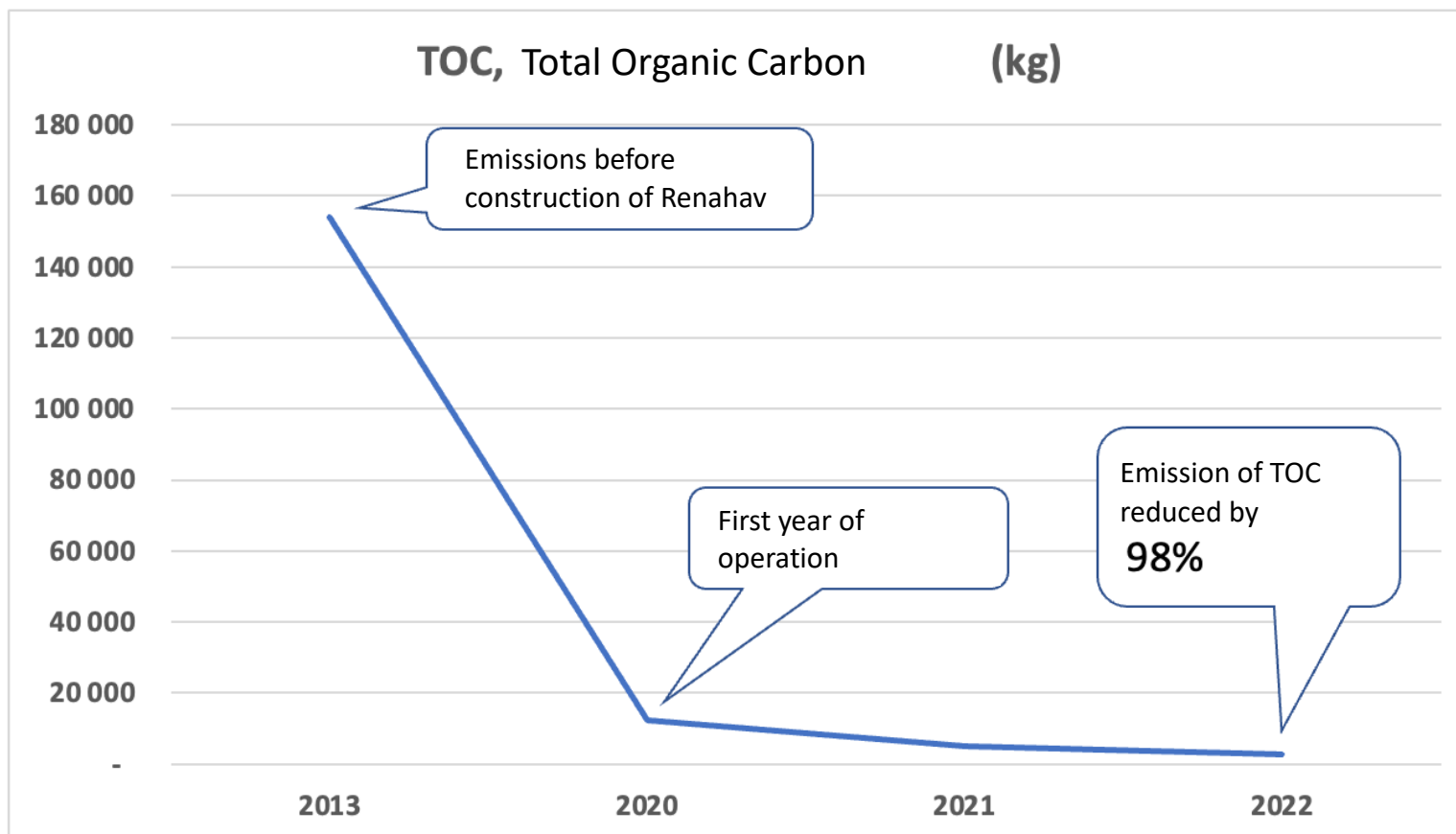
Smögenlax



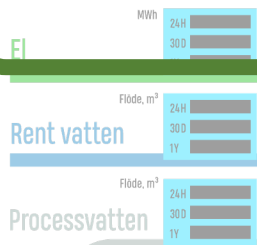
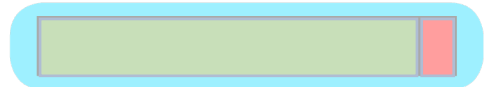
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Real and powerful drop in harmful emissions to water so far



Andel förnyelsebar energi - Orkla



Close to CO2 neutral production in Orkla plant

All this is done without adding cost to the industry!
 Their customers like it and are more willing to purchase their products

Renahav Smögenlax

Over 2 million m3 biogas /år

10 000 ton reduction of CO2

Organic certified fertilizer to local farms

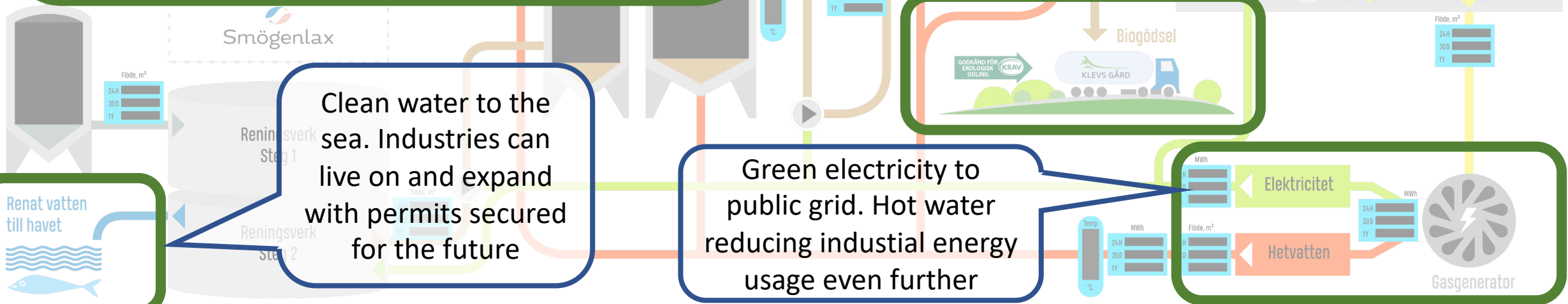
Biogödsel
 GODKÄND FÖR EKOLOGISK ODLING (KRAV)
 KLEVS GÅRD

Clean water to the sea. Industries can live on and expand with permits secured for the future

Green electricity to public grid. Hot water reducing industrial energy usage even further

Renat vatten till havet

Elektricitet
 Hetvatten
 Gasgenerator





Renahav

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Smögenlax



Salmon
4000 ton/year

Swedish Algae Factory

Slaughter

Biogas

Biogas

Electrical gen

Salmon
2000 ton/year

Desalination
WWT

Orkla

Orkla

Fish feed
production

Salmon RAS test facility

Docks
to be
built

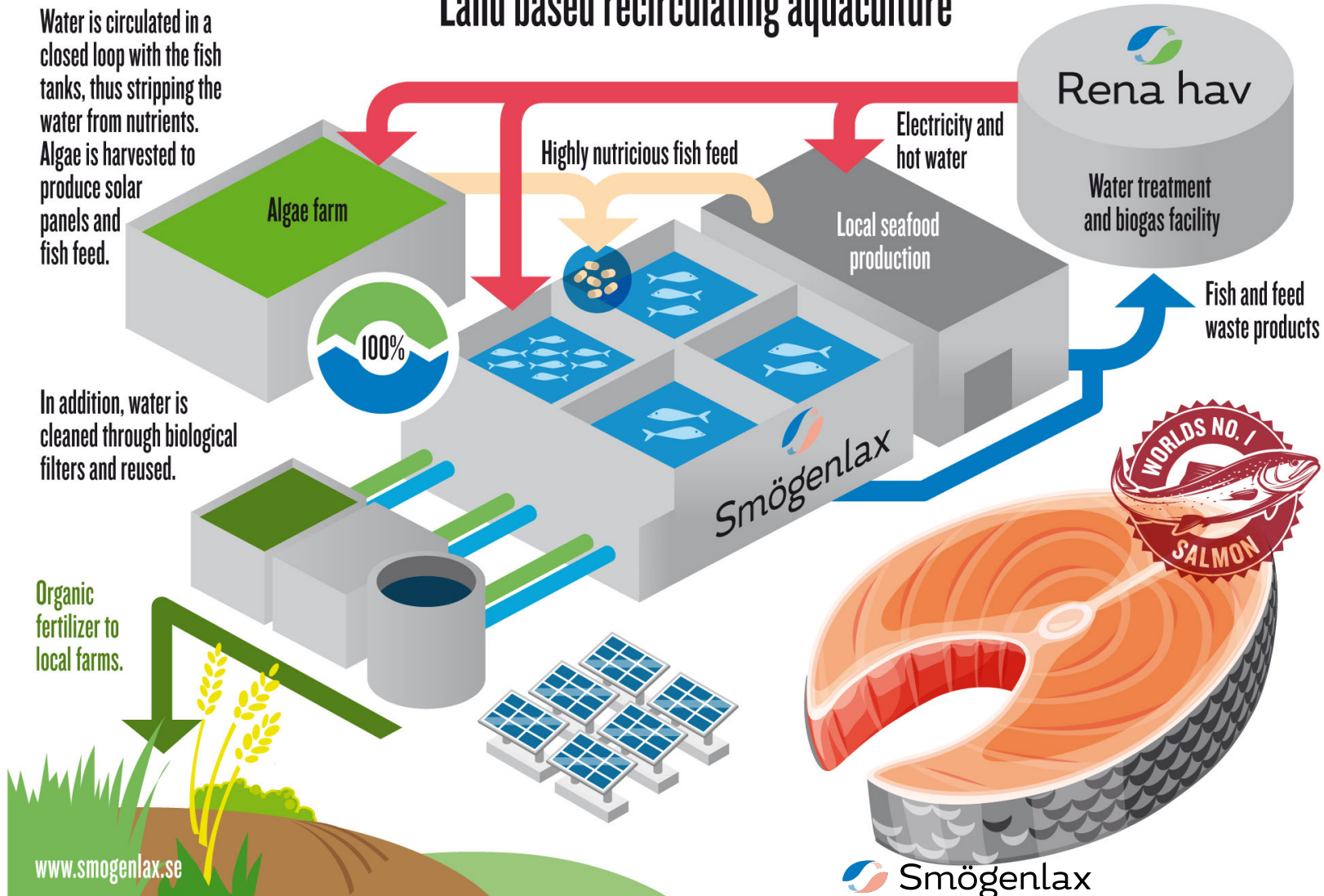
Water intake

29.11.2023

To be built by 2026-01-01

Symbiotic collaboration with cutting edge algae production company to reduce waste water treatment and CO2 emissions even further

Land based recirculating aquaculture



Cooperation is in place with the company “Swedish Algae Factory” that specializes in silicon algae. The algae uses nutrition from the unfiltered fish water, and thus become a natural part of the filter process, that reduces emissions. The algae shell is a silicon based micro material with nano structures, that absorbs light extremely well, and can be used to enhance the yield on regular solar cells by several percent. This technology has the potential to reduce CO₂ emission with millions of tons per year if applied in production of solar cells around the world.

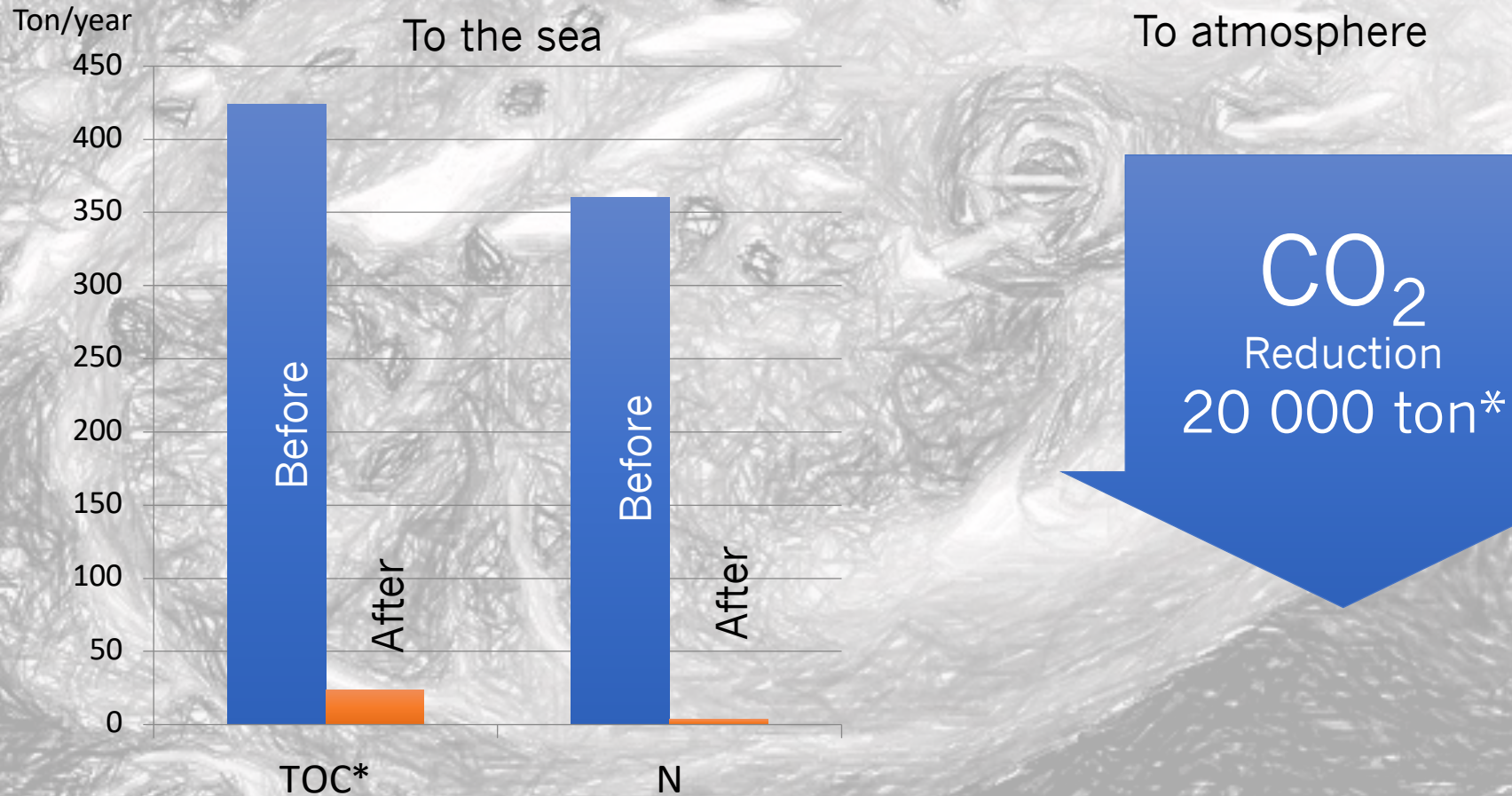





Smögenlax

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Satsningens miljönytta, Rena Hav + SmögenLax



*Approximerat

 Smögenlax
Test facility



Feed with sustainable ingredients



Local rest products from Fish



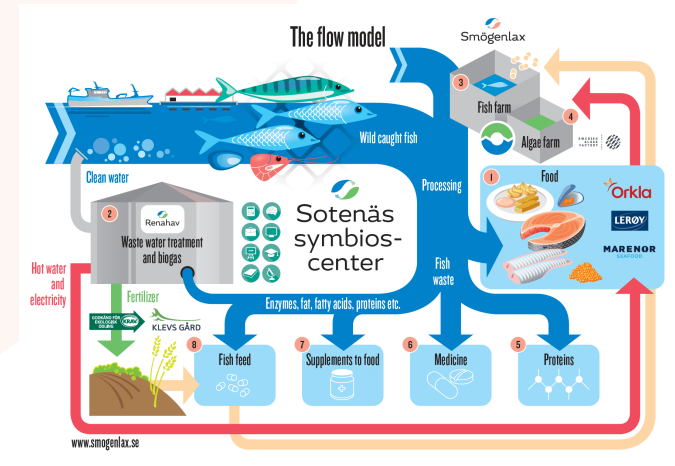
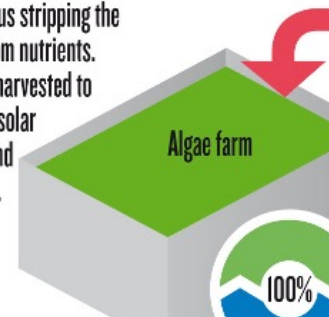
Crops from local farms using fertilizer from Renahav

Other sustainable possible ingredients with a competitive price.

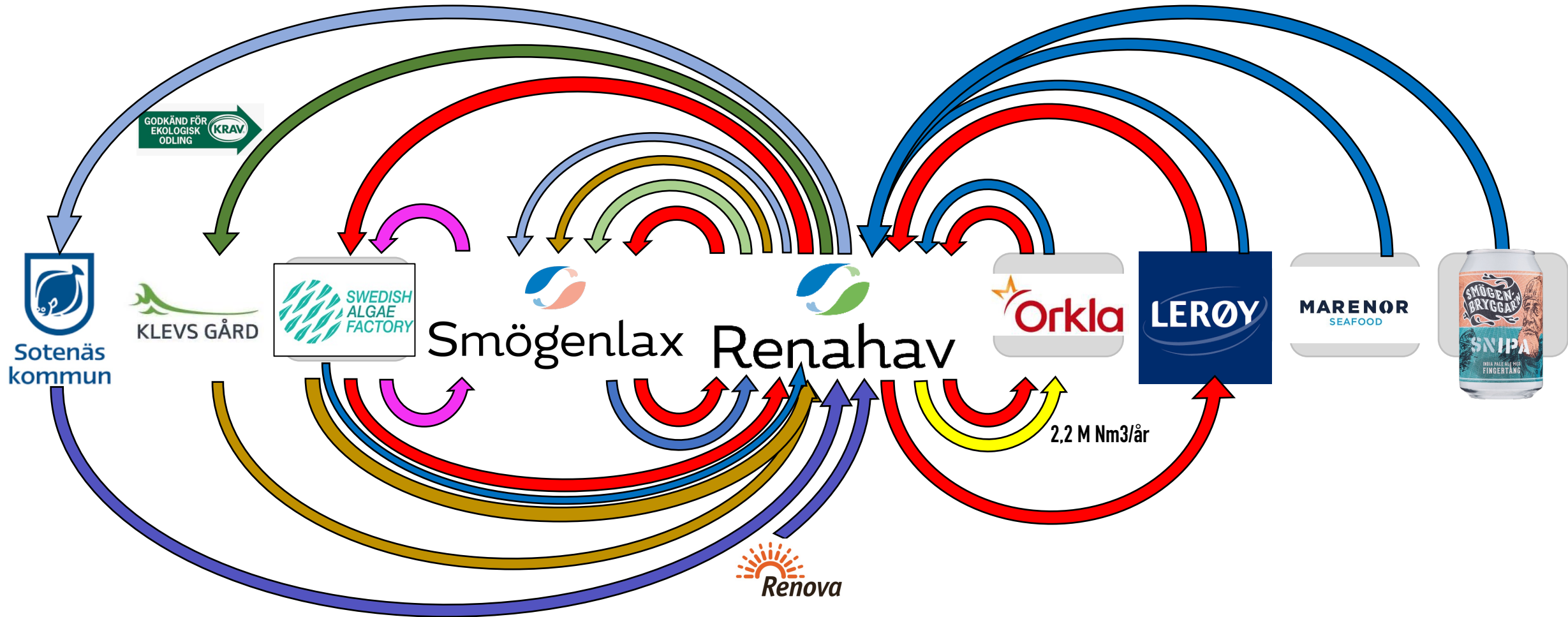


 Smögenlax

Water is circulated in a closed loop with the fish tanks, thus stripping the water from nutrients. Algae is harvested to produce solar panels and fish feed.



Further collaborations are in the design process.....



← Organic rest, process wastewater
← Biogas

← Bio fertilizer, KRAV
← Hot water

← Electricity
← Clean water

← Salmon and algae recirk water
← Fish feed

Vision and Ambition Smögenlax

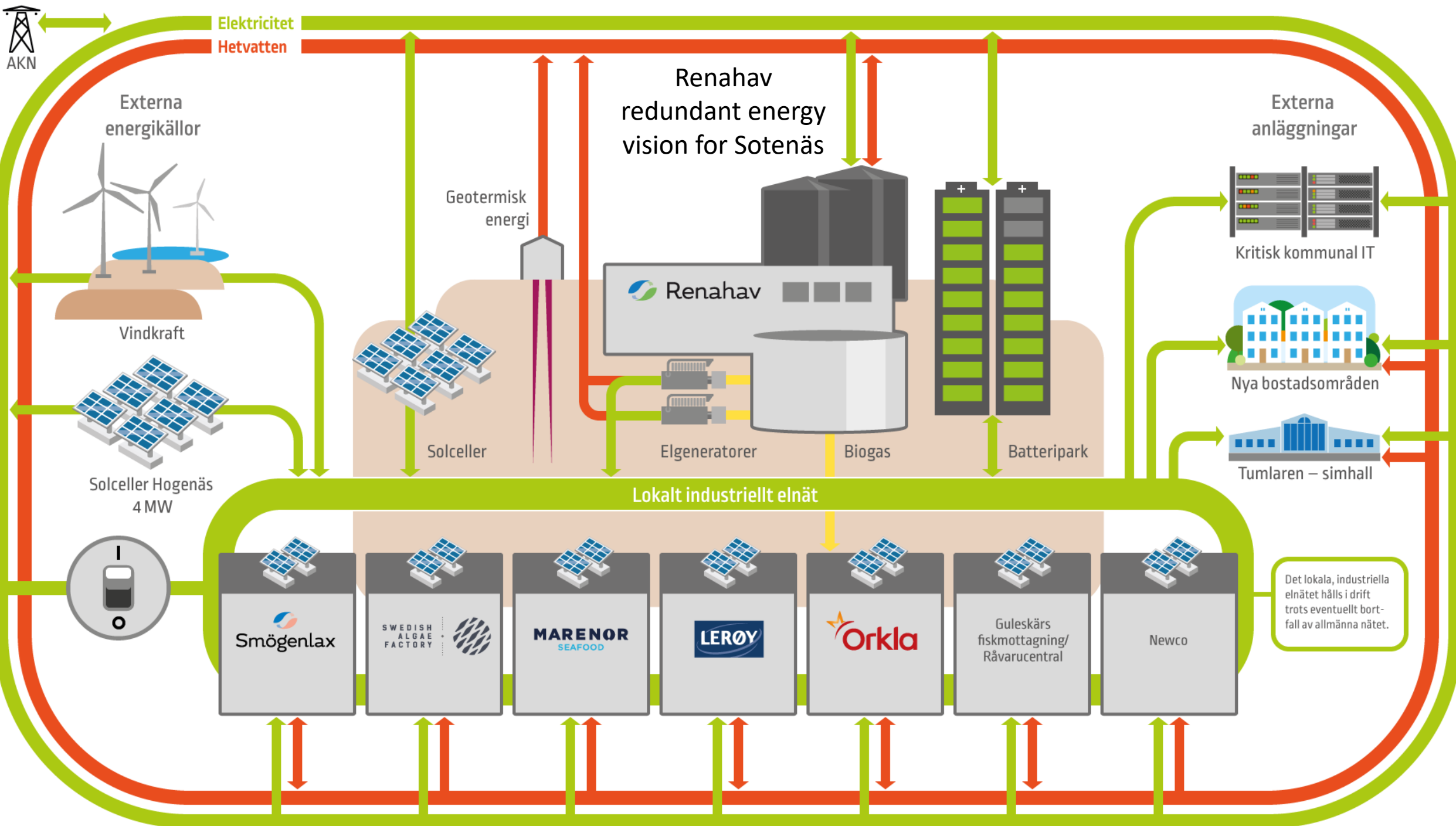
• Vision

- Produce and sell sustainable seafood with zero discharge in a circular economy

Ambition

- First production facility to be built in Kungshamn - Smögen for production of 6000 tons of Atlantic Salmon per year, in symbiosis with local industry.
- Lower than branch cost structure due to industrial symbiosis and feed from fish biproducts
- Higher than spot price due to eco certificates and high-quality meat taste and texture
- Expansion in Sweden, EU and other areas with strict environmental regulations

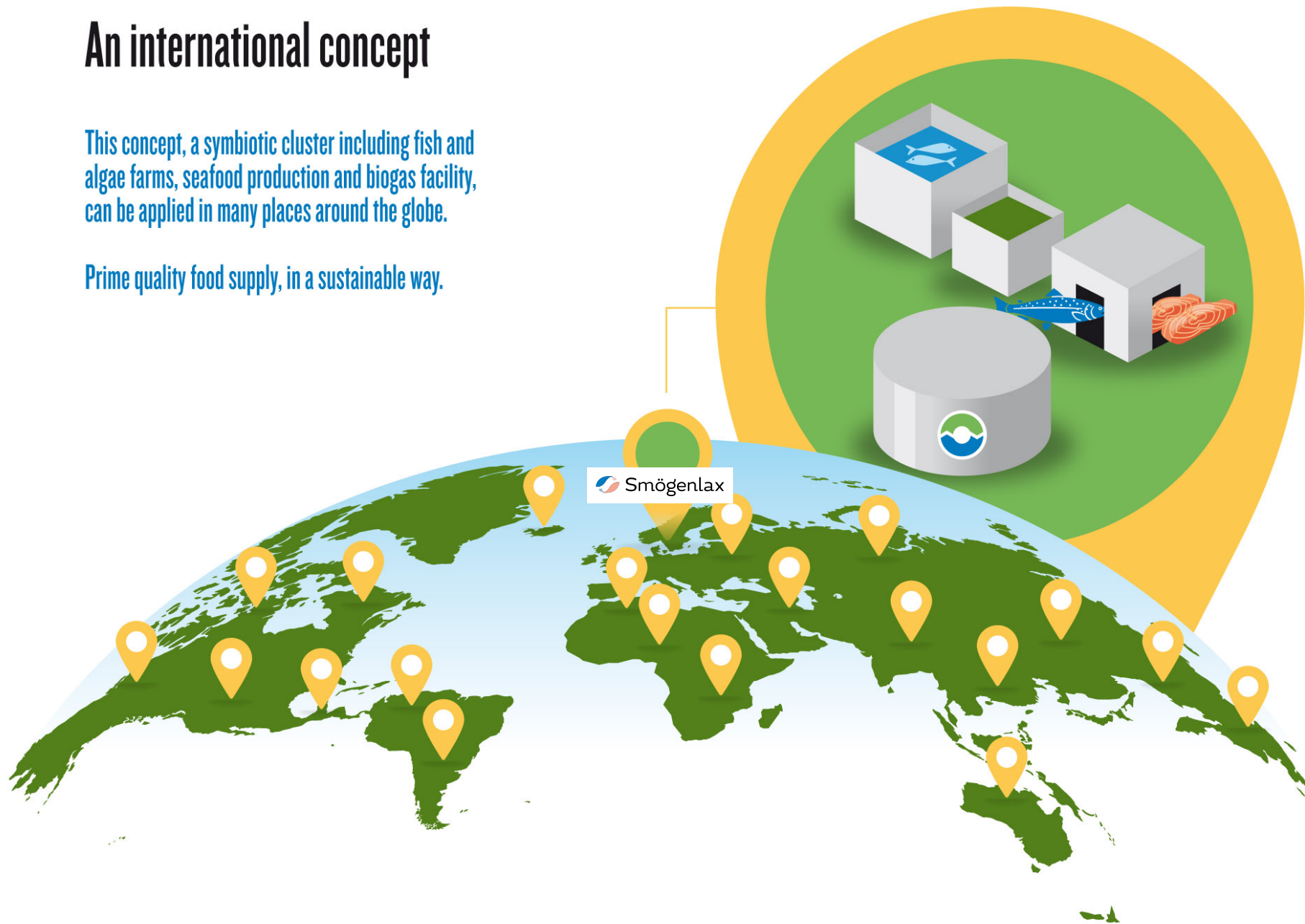




An international concept

This concept, a symbiotic cluster including fish and algae farms, seafood production and biogas facility, can be applied in many places around the globe.

Prime quality food supply, in a sustainable way.





Rena hav

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Smögenlax

INNOVATUM



GÖTEBORGS
UNIVERSITET



KLEVS GÅRD



Orkla



Energimyndigheten

SWEDISH
ALGAE
FACTORY



MARENOR
SEAFOOD



SLU



NATUR
VÅRDS
VERKET



EUROPEISKA UNIONEN
Europeiska
havs- och fiskerifonden



VÄSTRA
GÖTALANDSREGIONEN



LERØY

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Sotenäs
kommun