



AquaGreen

Sludge Treatment

We turn a problem into a resource

Re-think innovation

Re-move pollutants

Re-duce greenhouse gasses

Re-turn on investment

Re-circulate resources



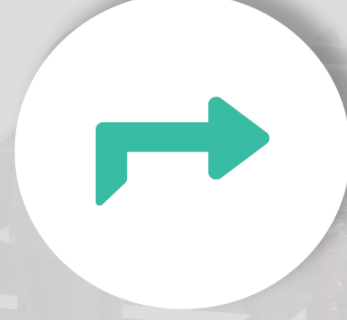
Re-turn on investment



Re-think innovation



Re-circulate resources/energy



Re-move pollutants



Re-duce CO₂ and GHG emissions

Who is AquaGreen?



Technology Company

Within the Clean-Tech area.

Patented Technology

We have two patents pending

Co-operation with DTU

We are located at the DTU Campus.

Business Focus

Our main focus territory is currently near

- Municipal Waste Water Treatment
- Industrial Waste Water Treatment
- Aqua Culture Industry.



What do we do?

First, we dry, using super heated steam, and then we pyrolyse the sludge

The energy source is the organic content in the sludge.

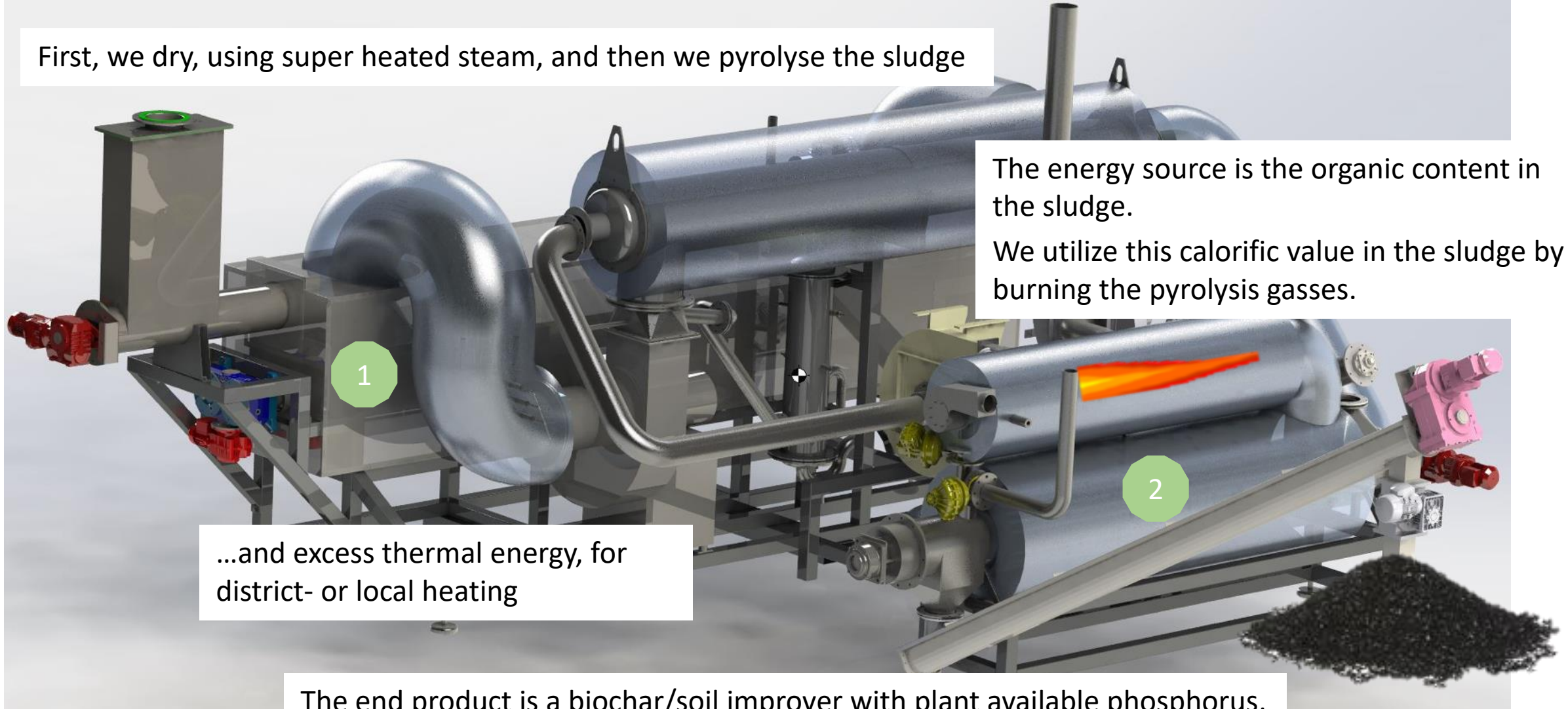
We utilize this calorific value in the sludge by burning the pyrolysis gasses.

1

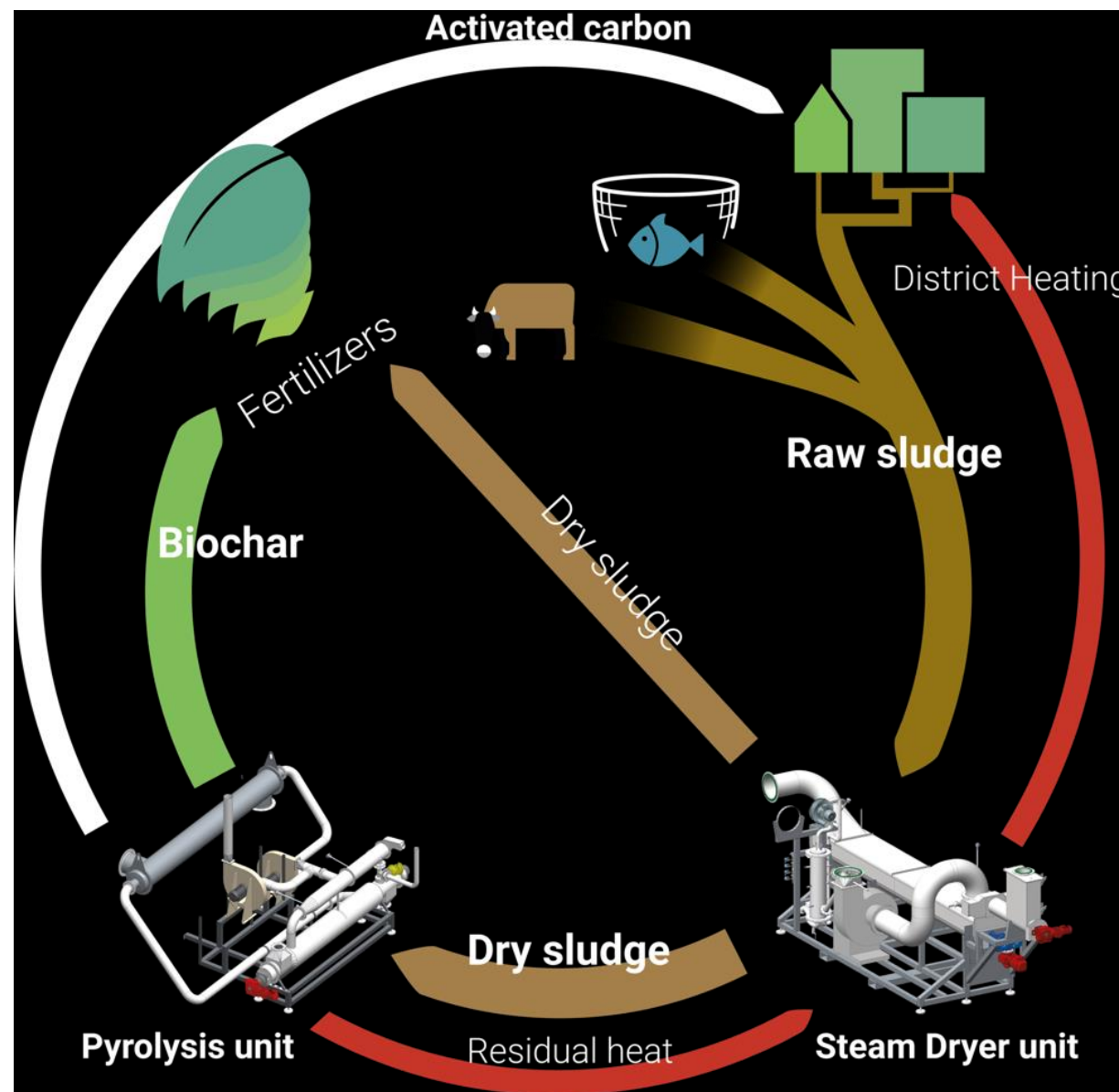
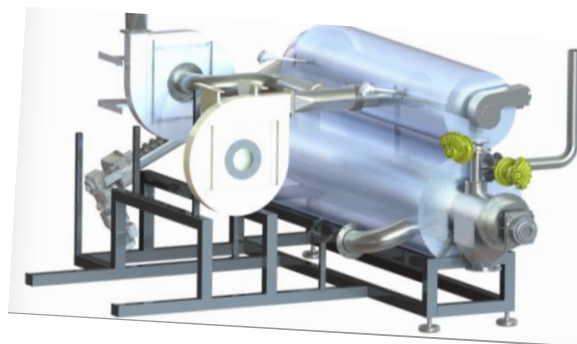
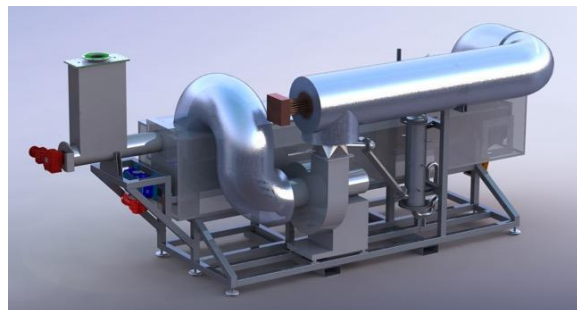
...and excess thermal energy, for district- or local heating

2

The end product is a biochar/soil improver with plant available phosphorus, and can be processed into activated carbon (filter material)



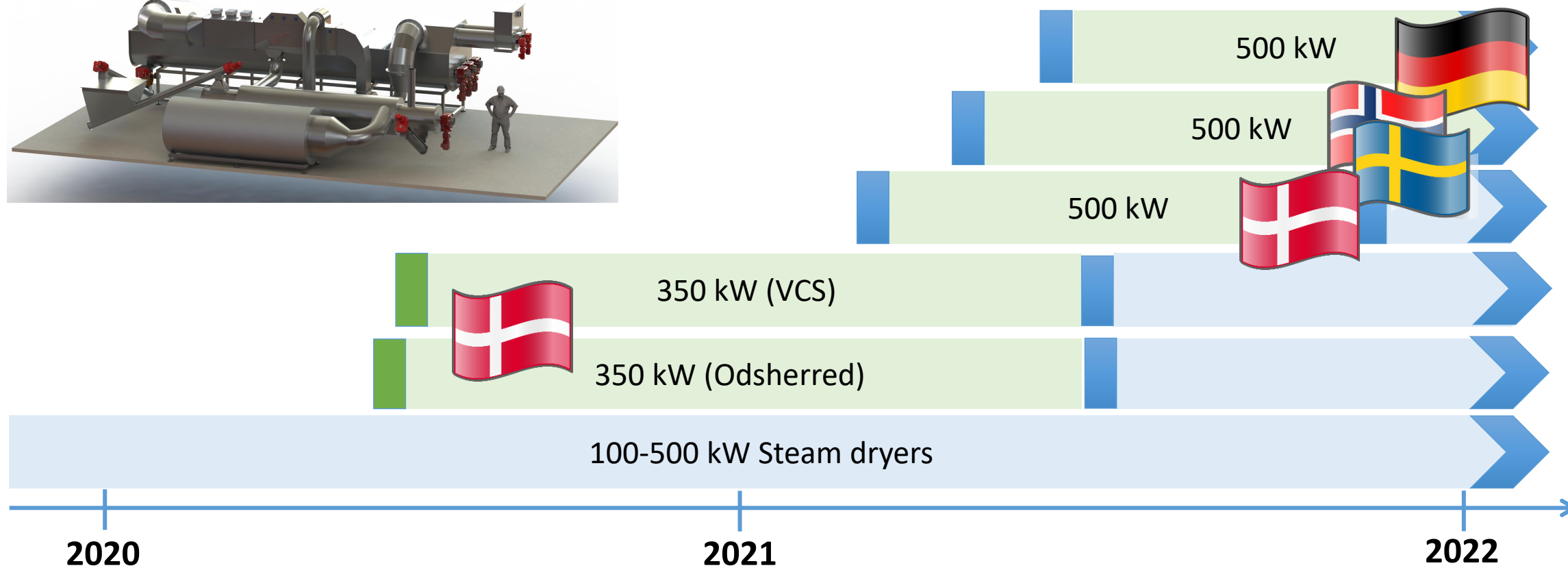
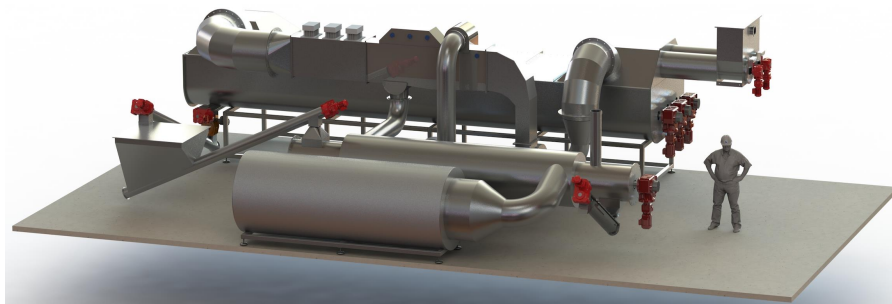
Recycle resources



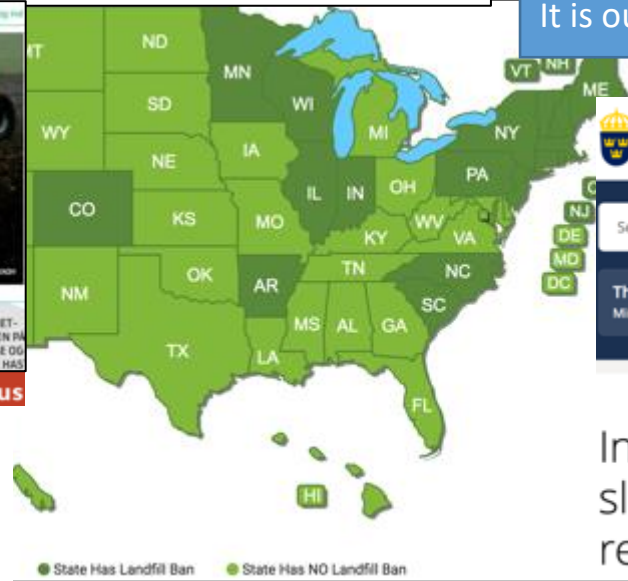
Our technology supports 11 out of UN's 17 Sustainable Development Goals



2 plants treating sludge from 50.000 PE will be running in Denmark from summer 2021. We will sell a 500 kW model serving 75.000 PE also in Norway, Sweden and Germany 2021-22



Burning platform 1: Sludge banned on farmland

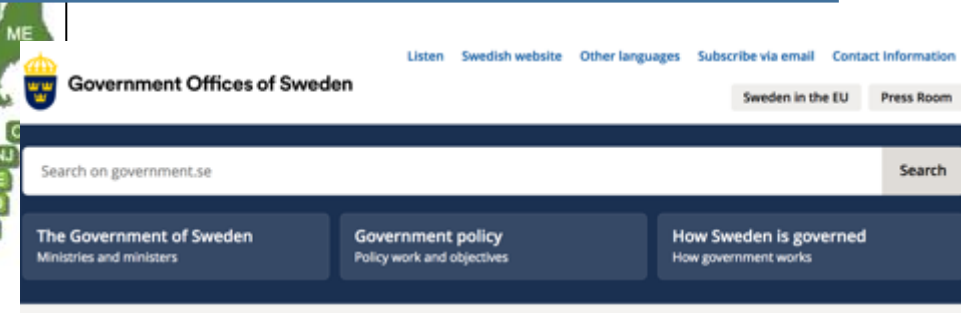


Sludge on farmland has been banned in more countries

- Switzerland
- Holland
- Germany (From 2020)
- Austria (All plants > 50.000 PE)
- Croatia (most regions)
- Slovakia
- Slovenia
-

It is our firm belief that many more are to come.

Three combined solutions sold



- Overvej slam på marker en ekstra gang

Landboformand vil ikke selv have spildevandsslam på sine marker

Inquiry to propose ban on spreading sewage sludge on farmland and a phosphorus recycling requirement

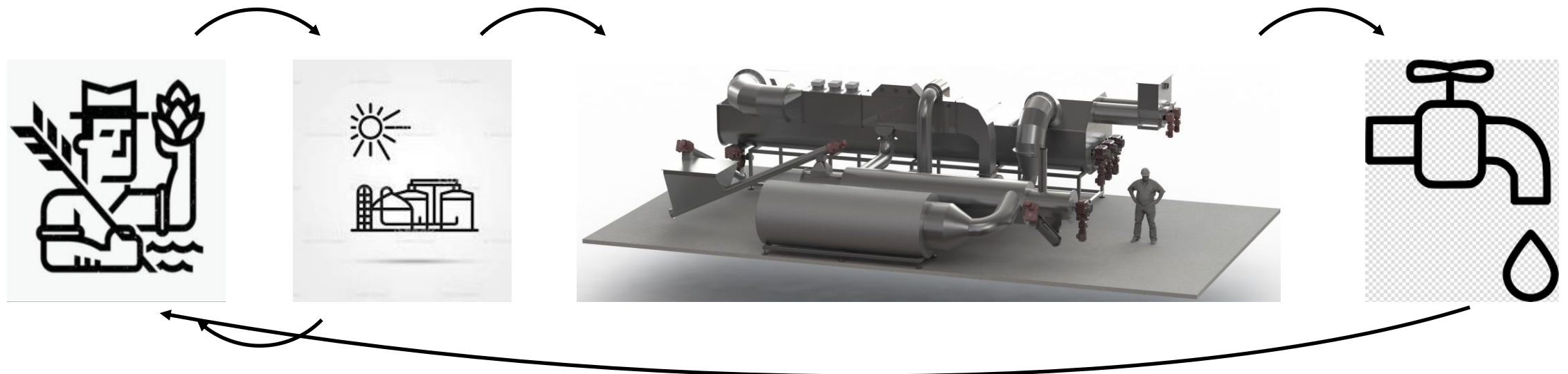
Burning Platform 2: Climate change -> Farming Industry -> Biogas Industry

IPCC (Intergovernmental Panel on Climate Change) states

1. Phase our fossil fuels
2. Carbon accumulation outside the atmosphere required:
 - Plant trees
 - CO₂ from air or flue gas to be captured and stored
 - **Produce and use biochar (or activated carbon)**



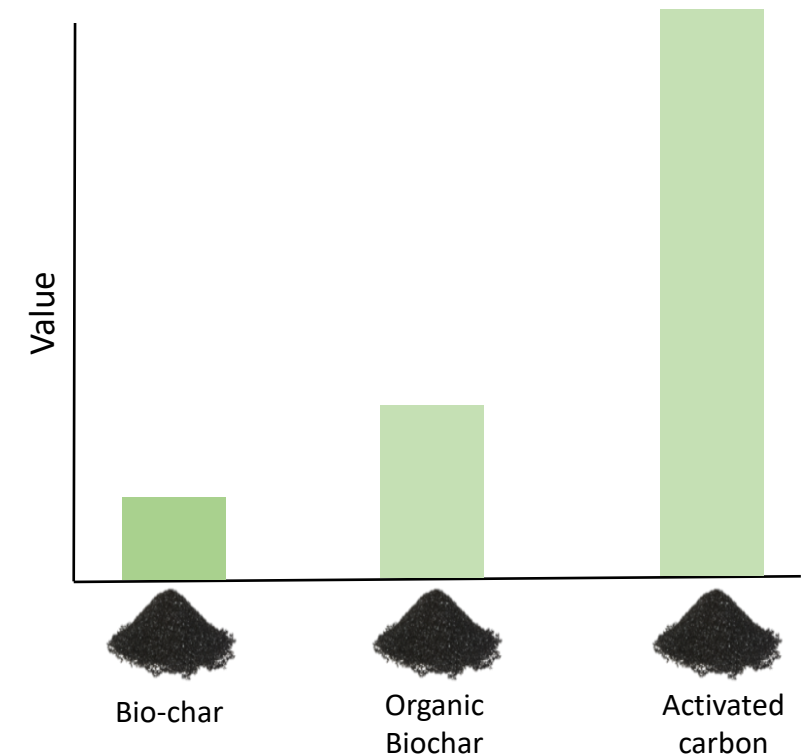
One
pyrolysis
solutions
sold



Burning Platform 2: Climate change -> Farming Industry -> Biogas Industry

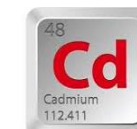
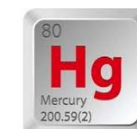
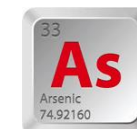
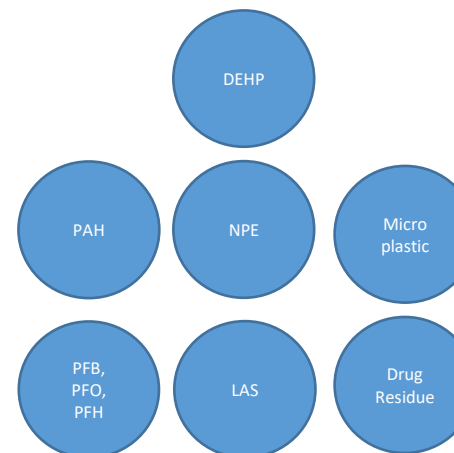
Why is biochar good for the environment and agriculture?

- Biochar is a marketable product
- Biochar is transportable (biomass volumes reduced with 90%)
- Biochar eliminates CO₂ emission from biomass residue
- Biochar is a fertilizer product with nutrients (P, K)
- Biochar is a soil improver
- Biochar increases water capacity
- Biochar may reduce leaching of N
- Biochar ensures carbon storage -> carbon removal credits
- Biochar can now be up-cycled to Activated Carbon in our reactor

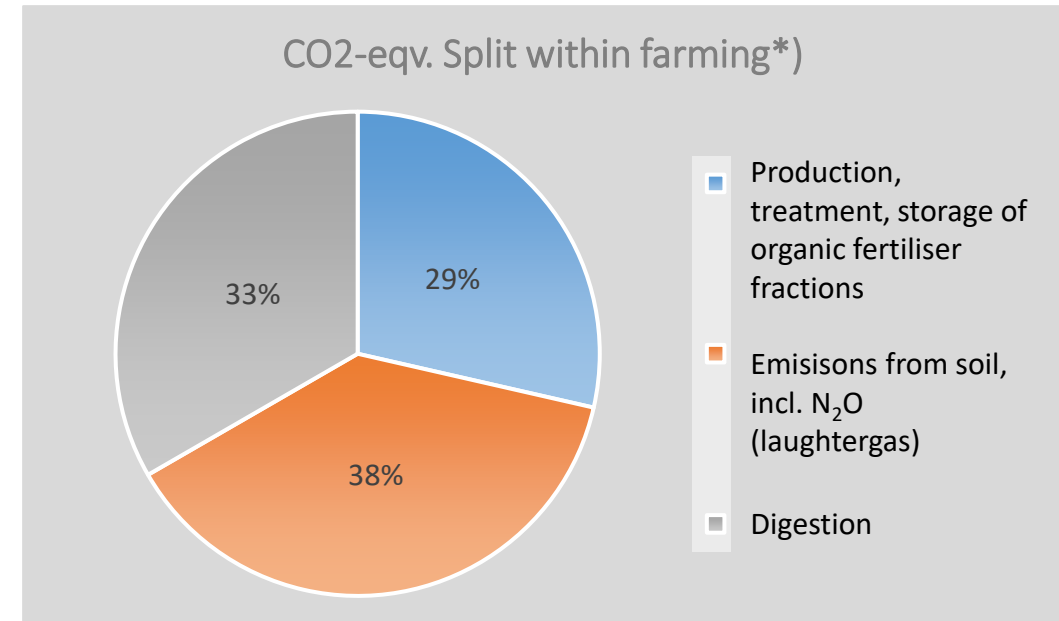
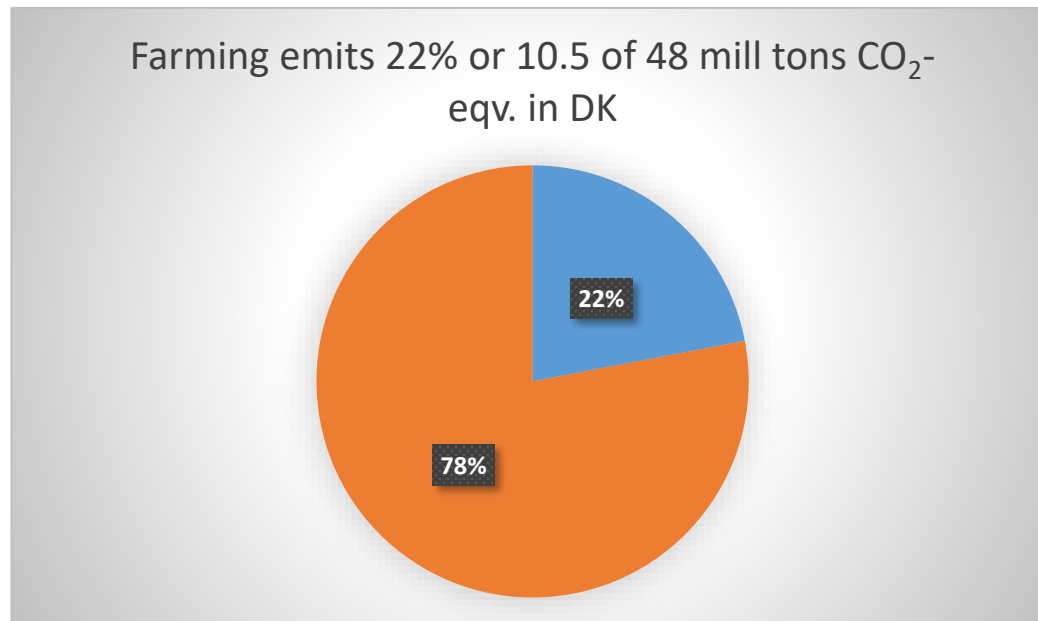


Burning Platform 3: Industries with “hazardous” waste

- Diseases eliminated
- Environmental pollutants eliminated
- Heavy metals evaporated and captured
- Volumes reduced up to 90%



Farming greenhouse gas emissions can be reduced with 50 % Equivalent to 11 % of Denmark's total GHG emissions



*) 89% of all nitrous oxide and 78% of all methane is emitted from farming

- The farming industry accounts for 22% of the GHG emissions in Denmark – 10.5 million CO₂-eq
- AquaGreen's technology can reduce the manure storage time (29%) and eliminate the emissions after spreading manure and sludge (38%)
- A total reduction of 50% of the GHG-emissions from the farming industry can be obtained, which equals **11% of Denmark's total GHG emissions.**

What are the benefits?

Renewable energy recovered



Re-circulated resources



Environmental pollutants removed

PAH

DEHP

LAS

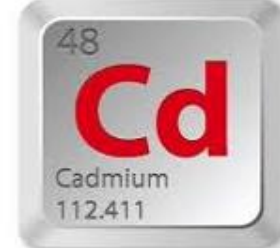
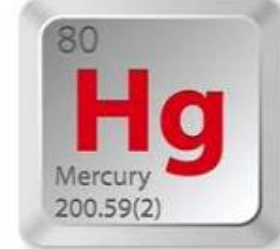
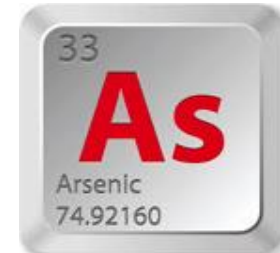
NPE

Micro plastic

Drug Residue

PFB, PFO, PFH

Heavy metals removed or significantly reduced



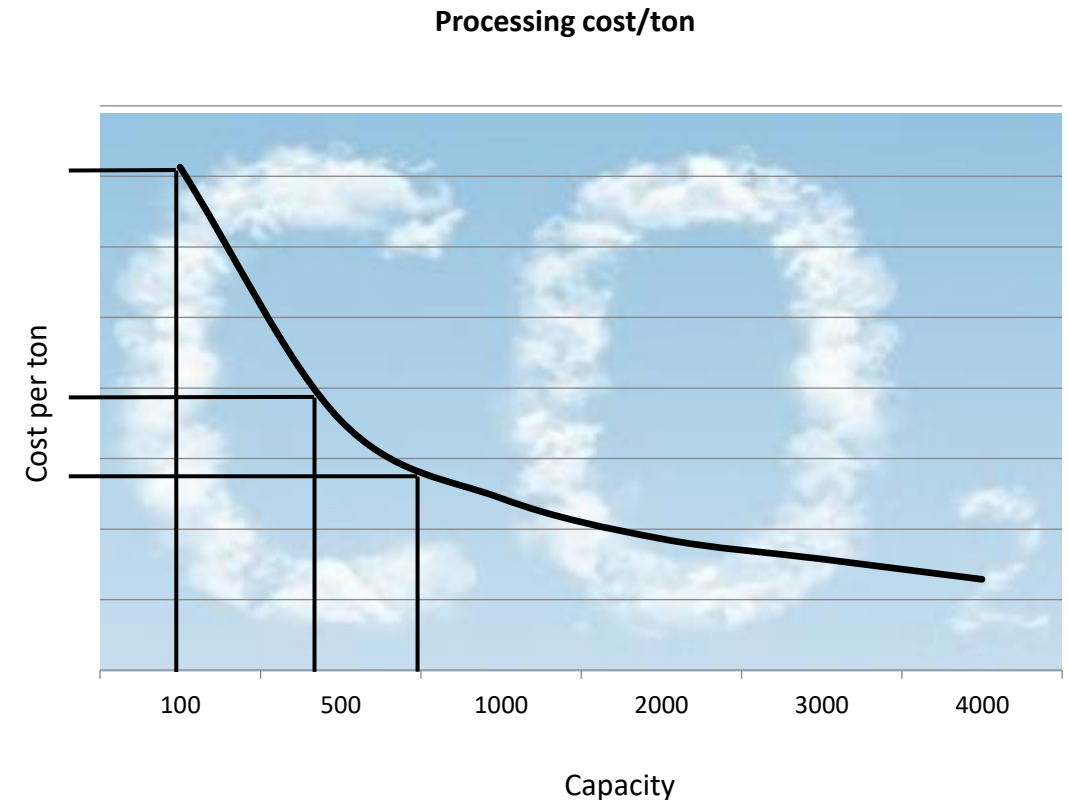
Other benefits



Return on Investment – 2-6 years today and will improve further as plants get bigger in the coming years

The ROI depends on:

- Income/savings:
 - Usage of and price for excess energy
 - Current disposal cost
 - Price of bio char/activated carbon
 - Carbon removal credits
 - CSR/PR/Image Value
- Size of equipment/volume processed



Acknowledgements from all regions in the world Europe, Asia and North America



Yes, our planet is under pressure

Yes, we are running out of Phosphorus

- But, our ancestors **can** be able to grow crops

Yes, we have environmental challenges

- But, our groundwater **can** be protected

Yes, we have climate challenges

- But, CO₂ emissions **can** be reduced
- And, we **can** produce sustainable energy





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