

# Eneco

***Seaweed development, make it happen***

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Elmer de Boer – Manager New Energy Development



# About Eneco



- **Eneco's mission:** everyone's sustainable energy (since 2007)
- **1<sup>st</sup> energy company recognized** as Climate Saver WWF
- **One Planet target:** reduce emissions from energy use of Eneco and it's clients, ahead of global, EU and national emission reduction trajectories
- **Growth Leader within Mitsubishi platform:**
  - Sustainable power: lots of wind- & solar parks, and further growth of Offshore Wind Parks
  - Replacing current use of natural gas will require mix of renewable power and sustainable molecules
  - Wind parks support direct electrification (heat-pumps, e-boilers), green H<sub>2</sub> (electrolysers) and may support more ...



碳减排先锋  
Defensores do Clima  
クライメート・セイバーズ  
Climate Savers



# Eneco & seaweed

- **Biomass charter Eneco:** cascaded use of biomass only (achieve/surpass highest sustainable standards for biomass)

## *Cascaded use of seaweeds:*

- Proteins and green gas -> helping GOA-ventures start-up
  - Cascaded refinery of seaweeds works! -> high-quality proteins -> 85-90% of total value
  - Residual stream can produce green gas -> 10-15% of total value
  - Potential for new conversion technologies for energy -> e.g. SCW = Super Critical Water gasification
- **Windparks Eneco:** offshore windparks enable multifunctional use with seaweed farming
    - Secondary usage windparks might become standard > we'd like to discuss with policy makers what is smart
    - World premiere Windpark Norther in Belgium:
      - Eneco co-owner of windpark opened for seaweed farming July 2020
      - *"Multifunctional use of space is a prerequisite for the large-scale roll-out of wind energy at sea and for accelerating the energy transition. A project like this contributes to this. We're proud to be a pacesetter in this,"* says Ruben Dijkstra, Eneco's Director of Offshore Wind



# Upscale seaweed for Food & Energy



- **Seaweed offers great potential!**

- Great benefits in carbon reduction (short cycles, fast growth, renewable products)
- Food & Energy seem the perfect fit in terms of optimum sustainability & economics
  - Supports protein transition with high(er) quality proteins for growing markets
  - Support energy transition with hybrid windpark development & urge for green molecules
  - 2500 km<sup>2</sup> of farming space in 2050 seems to balance seaweed economy & eco boundaries

- **Seaweed volumes are still far too small & farming prices are too high!**

- Farming innovations needed e.g. mechanization (fits NL) & other efficiencies (smart farming)
- Processing technology is not the issue: cascaded biorefinery is proven and close to ready for scaling-up

- **Who will be the sustainable-food-industry-leaders?**

- Proteins carry ~85% of the economic value of cascaded refinery and serve a fast-growing global demand
- With ~15% of the business case the renewable energy sector cannot take the driving seat...
- Who will step forward to lead the scaling-up of seaweed value chain for proteins market value?
- Would a CO<sub>2</sub> tax on FOOD trigger upscale?

# Closing remarks

- Eneco **has supported** seaweed development to understand, innovate & improve the business case potential and landscape
  - Setting the scene: support Noordzee boerderij
  - Farming: opening our windpark Norher to start offshore farming
  - Products: co-founding GOA for improved products and cascaded principles
- Eneco is **willing to support** further development
  - Food industry leaders and/or different type of investors should take the lead in scale-up
  - Eneco willing to open discussions for smart farming (thus lower costs)
  - Incentives Dutch govt need to make a leap (beyond research) -> US example ARPE-e program
- Seaweed offers **serious upscaling potential** for food & energy
  - Seaweed value-chain can be a good part of sustainable developments in EU and the world
  - Seaweed seems a perfect fit for Dutch skills (in the sweet spot of Agri, Food, Water, Energy, Maritime, etc.)
- **Let's move, make it happen, together,** keep up the good spirit and continue to do good for mother earth and people by upscaling seaweed to it's full potential worldwide!

