



**Circulair Congres:  
Agrifood, chemie en  
energie samen naar een  
circulaire economie**

**RWE**

**TKI•BBE**  
TKI•BBE

# Viride Green Pellet concept

*Biomass commodity as feedstock for the biobased economy*

**Viride SuStra B.V.**

*Innovation Contributing to a Sustainable World*

# Introducing **Viride**

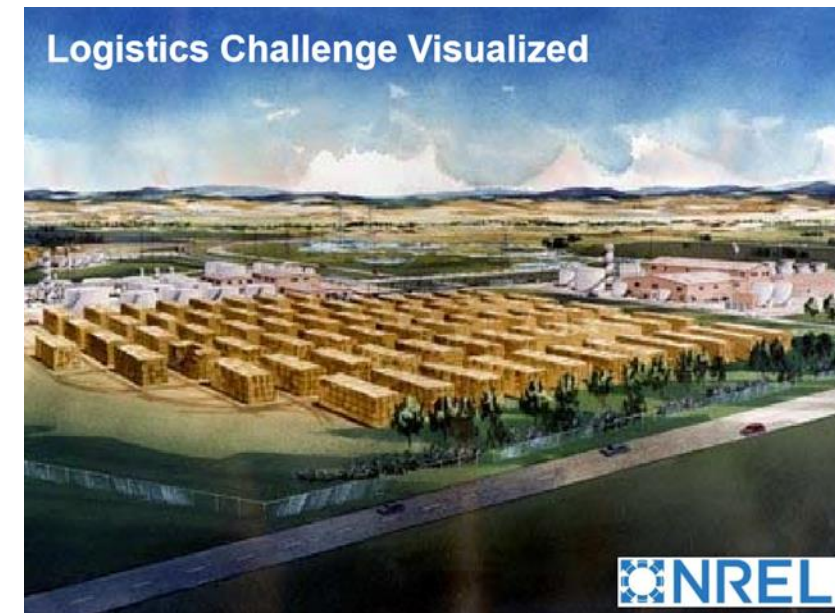
- **Viride** is Latin for Green
- Innovation start up founded in 2016
- Mission: make biomass available for biorefineries in constant quality at the lowest possible cost – The Green Pellet concept
- Milestones:
  - 2016 / 2017 Proof of principle Green Pellet - KG scale
  - 2017 Green Pellet patent filed
  - 2017 onward Development Green Pellet technology
  - Feb 2018 **Viride** manpower doubled



# Why Green Pellets?

- Biomass cost too high for Biorefineries, especially in EU
- Industry does not like biomass issues in RM handling
- Availability and market need mismatch

*Unmet need: biomass commodity*



# Green Pellet Concept



Green Pellet Plant  
- Small scale  
- Simple low cost  
- Economy of repetition



Biorefinery Plant  
- Large scale  
- Complex \$\$  
- Economy of scale



Sugars

Lignin

2G ethanol  
Itaconic Acid  
Biobased Chemicals

Fuel  
Bitumen  
Resins

## Biomass

- Low Cost
- Sustainable
- High Quality
- Remote areas

## Green Pellet

- Efficient logistics
- Disconnect supply/demand

## Enzymatic Hydrolysis

- Optimized for pellets
- Conventional equipment
- Industrial areas
- Close to market

Energy production from the Green Pellet and lignin also feasible



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Joop Groen CEO Viride BV

# Viride collaborations

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- Proof of principle: TU Delft, BE-Basic and BPF
- Development Veni Vidi Viridi: TKI BBEG, DDNA, TU Delft, DSD
- Development Black Birds: TKI BBEG, ECN, Avantium, Kodok, Catalok
- Development plan GP: BRD, PoR/Smart Port, WR, ECN, Alco, RWE, BBD, SEKAB

*Biobased is hard work, together we can make it happen!*

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# Viride Green Pellet – Next Steps

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- Optimization and development of the concept
- Best biomass sources (sustainable, low cost, high quality)
- Extraction technology for nutrients
- Application development: 2G ethanol, Itaconic Acid, electricity .....
- Scale up to ton scale, continuous process TRL4

***Interested?? Join the action!!***

***=====The Future is Biobased=====***



# Questions – Discussion ??

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**Thanks for your attention!**

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