

# BLUE ECONOMY AQUACULTURE FORUM



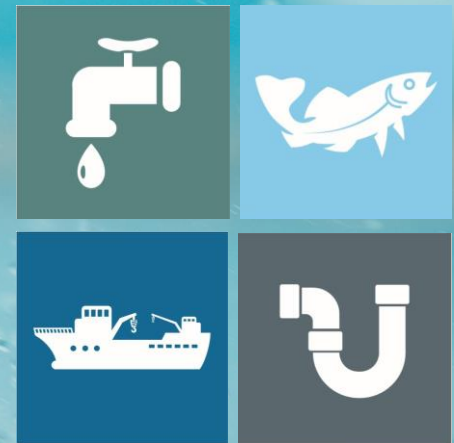




# Circular economy nutrient and energy utilization in fish waste

Providing the world with **green energy**  
and **nutrients** for future generations!

Robert Eliassen, Abu Dhabi, 25<sup>th</sup> of May 2023



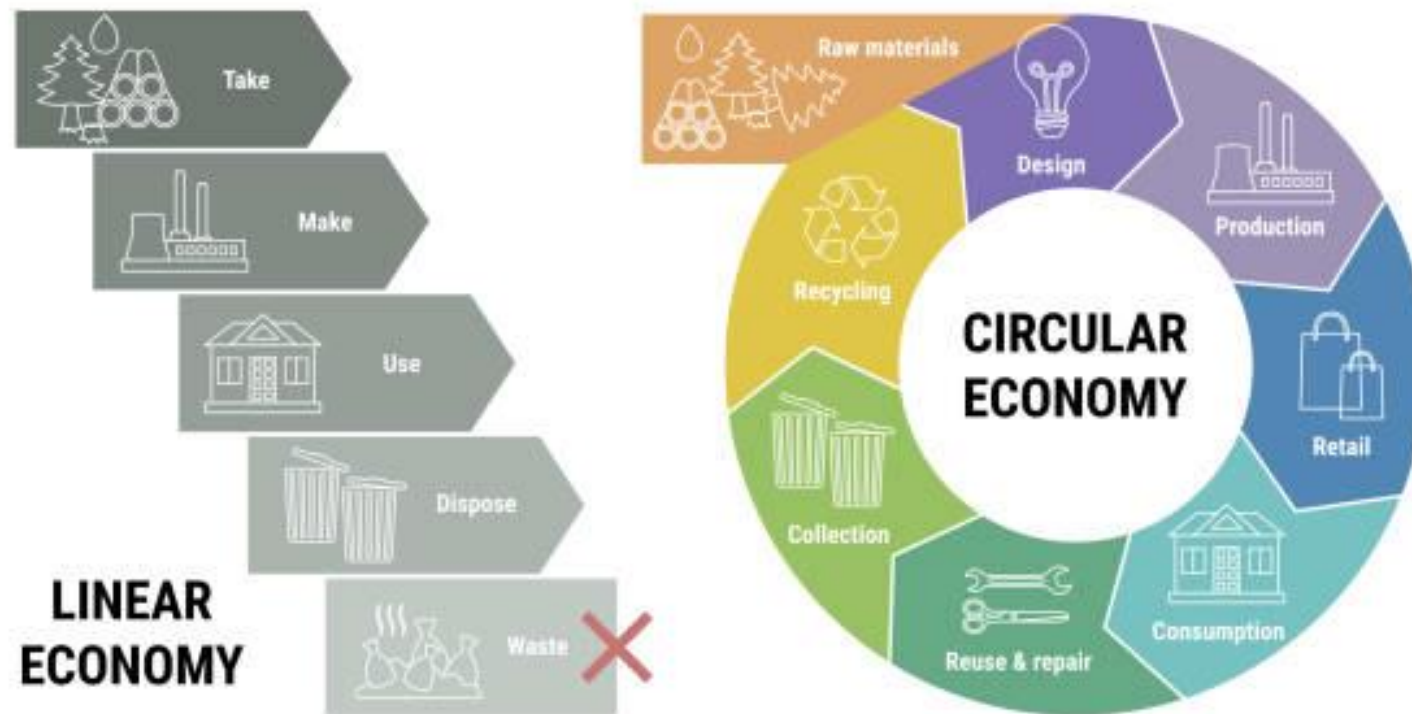
# Why is nutrient capture and energy production from fish waste important for a more sustainable future?

- Reduce greenhouse gas emissions
- Reduce the risk of negative environmental impact
- Reduce the amount of mineral fertilizers used



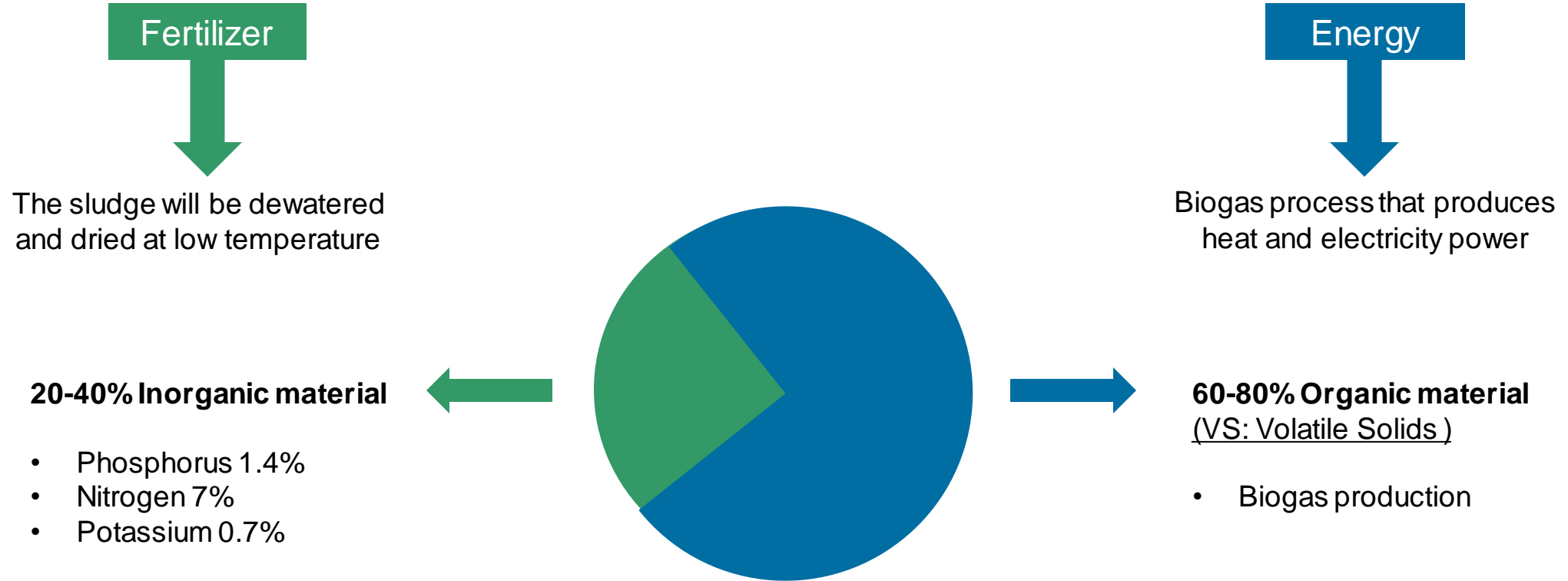
# Circular economy

Economic model that focuses on minimizing waste and maximizing the reuse of resources.





# What is waste from a Fish plant?



# Organic Fertilizer potential

Production of 5000-ton salmon 2500  
Seabass and 2500 Yellow Tail Kingfish

- Potential sludge capture as fertilizer is 3000 ton
- Can be used to fertilize 30 000 acres



# Biogas potential

Production of 5000-ton salmon 2500  
Seabass and 2500 Yellow Tail Kingfish

- Biogas production is estimated to 1 mill m<sup>3</sup>/yr = 10 mill kwh/yr
- Self sufficient with electrical energy
- Surplus energy available



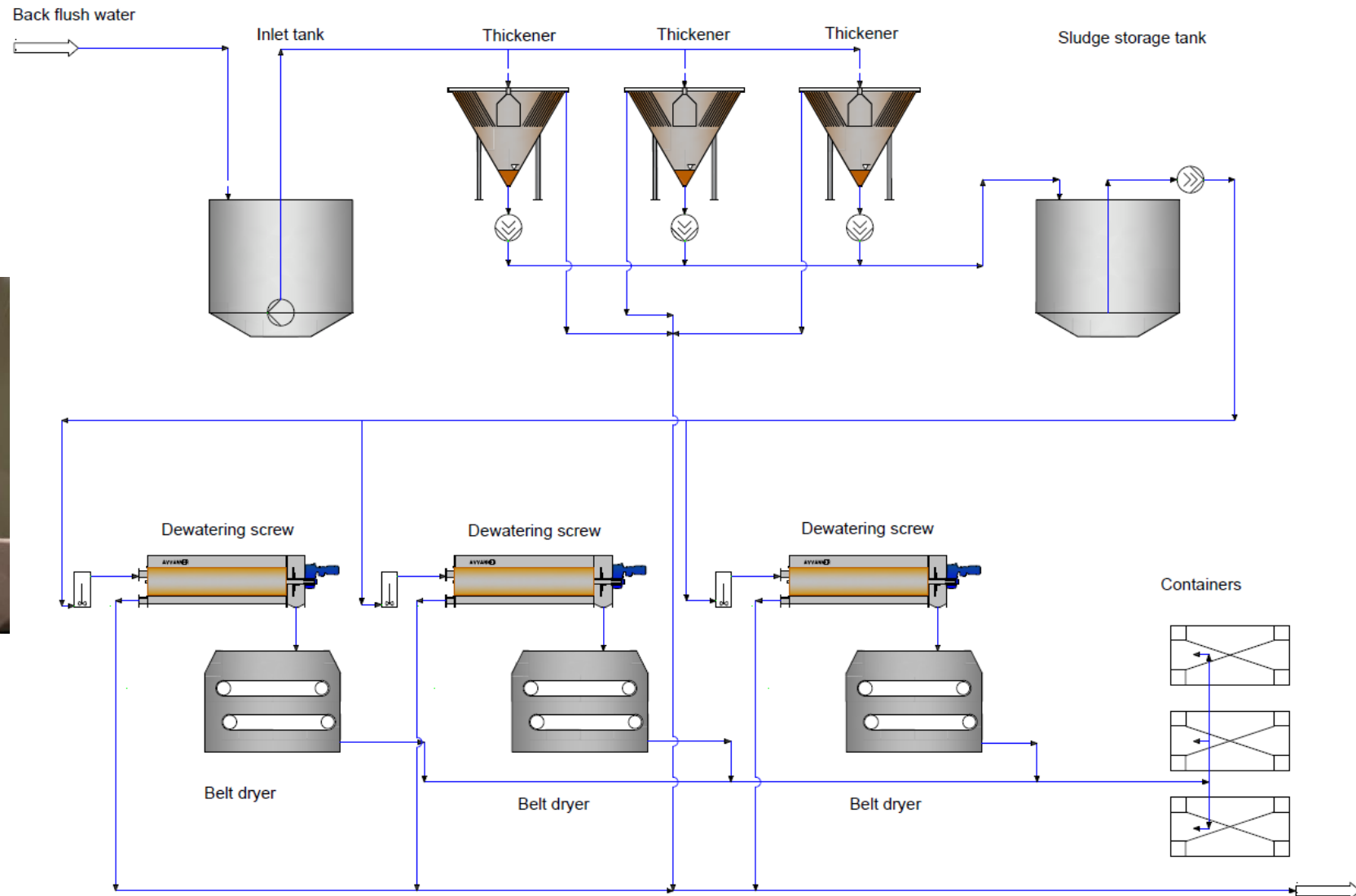


# Sludge treatment plant

- Mechanical Dewatering and Drying (MDD)
- Unique technology that dries the sludge at low temperature, preserving important nutrients for agriculture
- Has delivered 22 successful MDD plants



# Mechanical Dewatering & Drying (MDD)



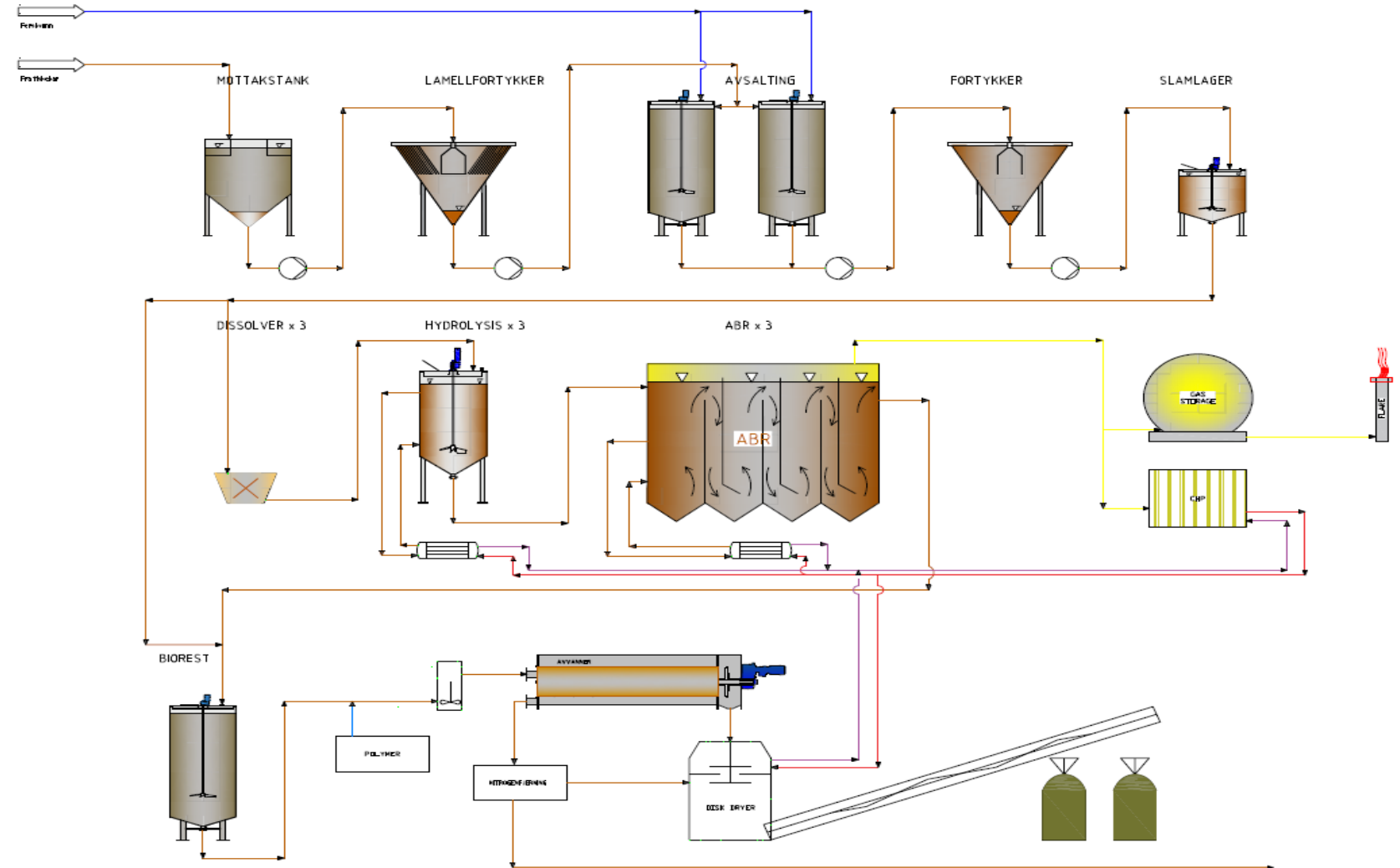


# Biogas plant

- Anaerobic Baffle Reactor (ABR)
- Unique technology that produces biogas solely from fish sludge as the only component
- Bacterial culture adapted to handle high level of nitrogen
- Continuous removal of settled material



# Anaerobic Baffle Reactor (ABR)





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Thank you!



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