



THE  
**KINGFISH**  
COMPANY

## Sustainable farming of Yellowtail Kingfish

The Blue Economy Aquaculture Forum – Abu Dhabi  
April 18, 2024

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- Why Kingfish
- RAS Technology
- Future
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# The story of The Kingfish Company

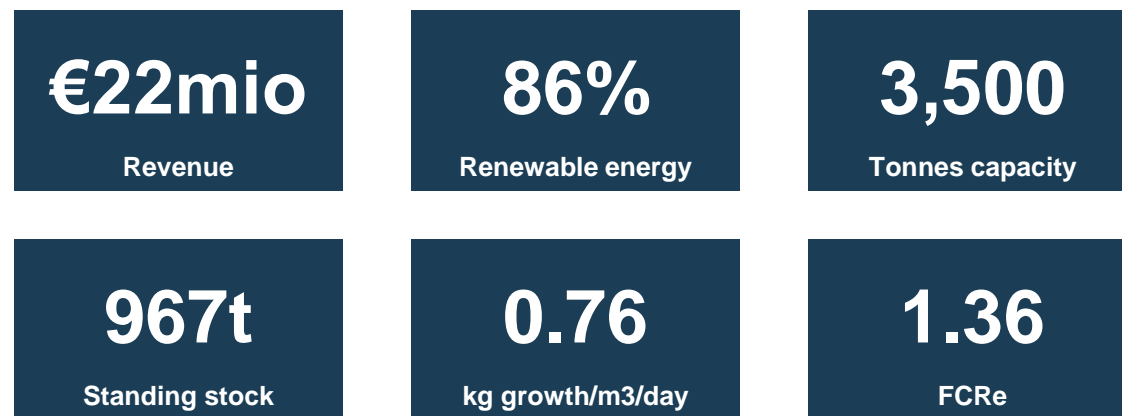


# The Kingfish Company | A market leader in the sustainable production of high-value Yellowtail Kingfish

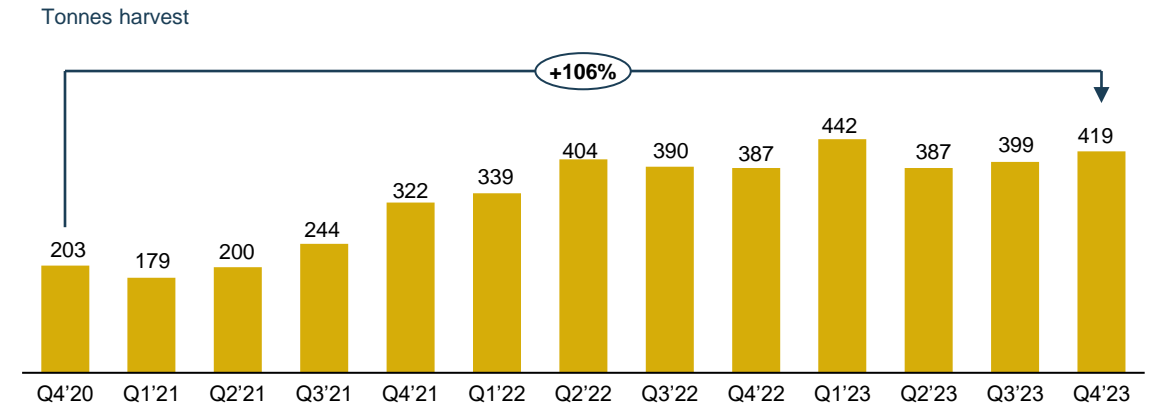
## About the company

- The Kingfish Company is a Dutch land-based fish farming company established in 2015 and has produced Yellowtail Kingfish continuously since 2017
- Largest producer in the European market: 3,500-tonnes installed capacity, with room to nearly double on site
- First company permitted to produce land-based Kingfish in the US
- Leading position in technology driven aquaculture through in-house developed land-based Recirculating Aquaculture System (RAS) technology
- Sector leading operational track record with robust productivity, system stability and consistent output
- Most advanced Yellowtail Kingfish genetics, representing high entry barrier for newcomers

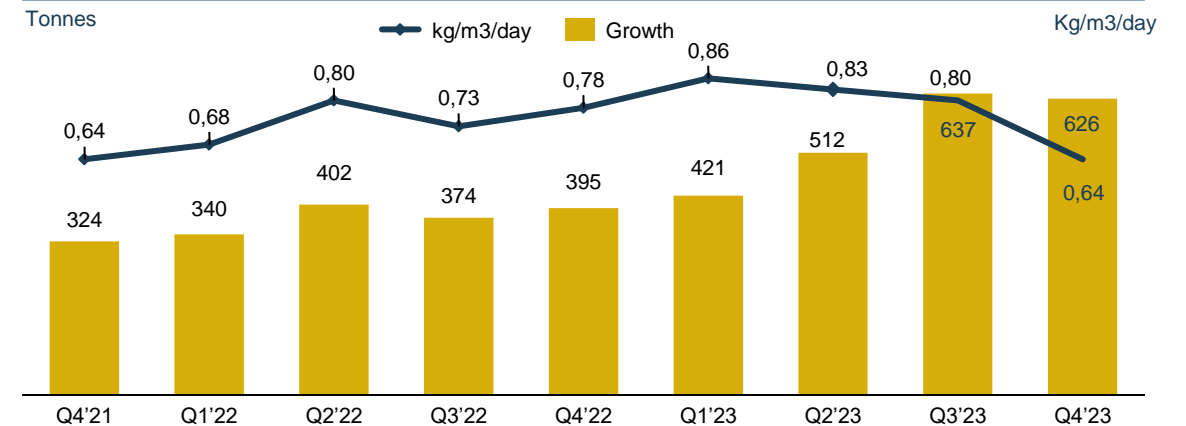
## Key facts and figures FY2023



## Consistent growth in harvested volume meeting increasing demand

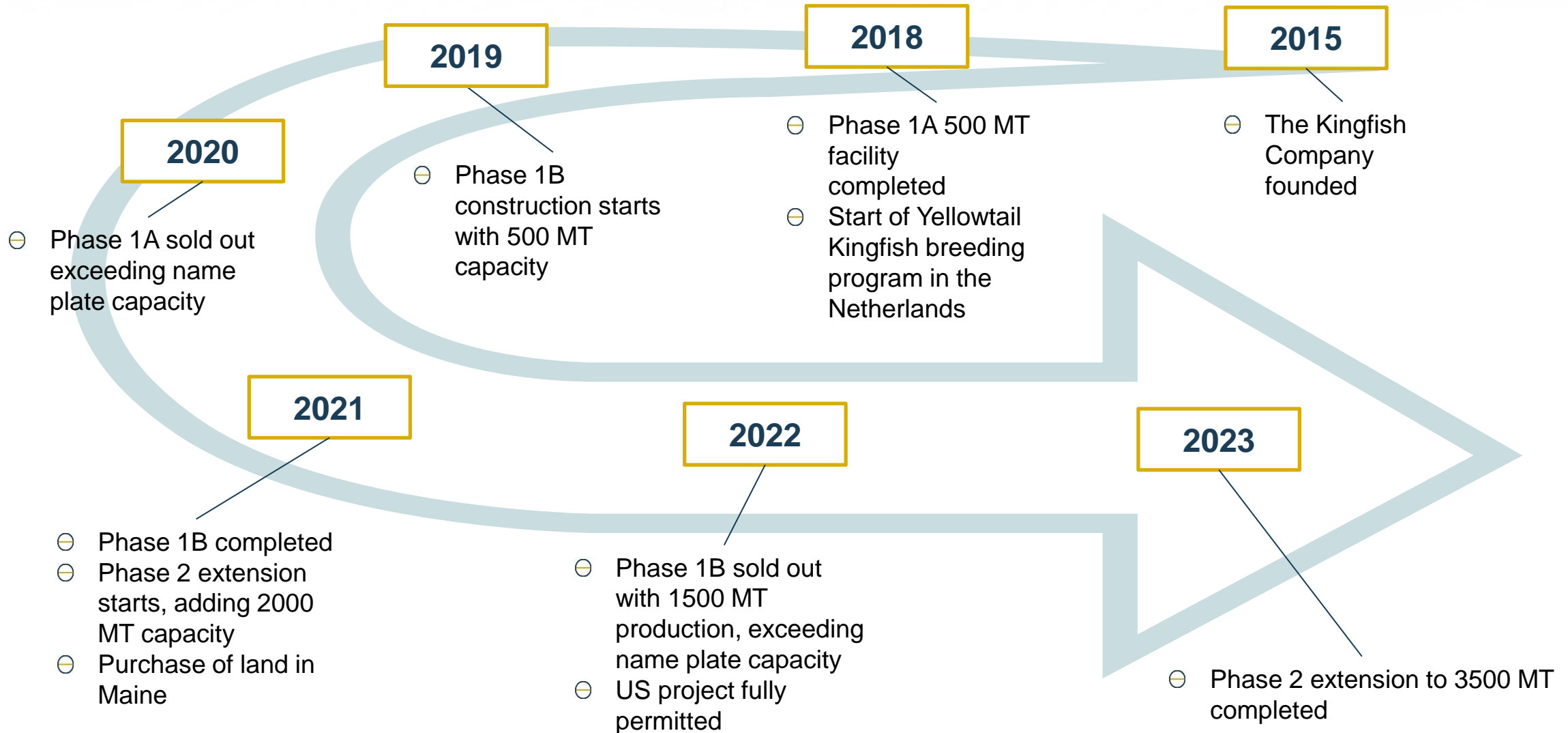


## Steadily increasing growth and productivity



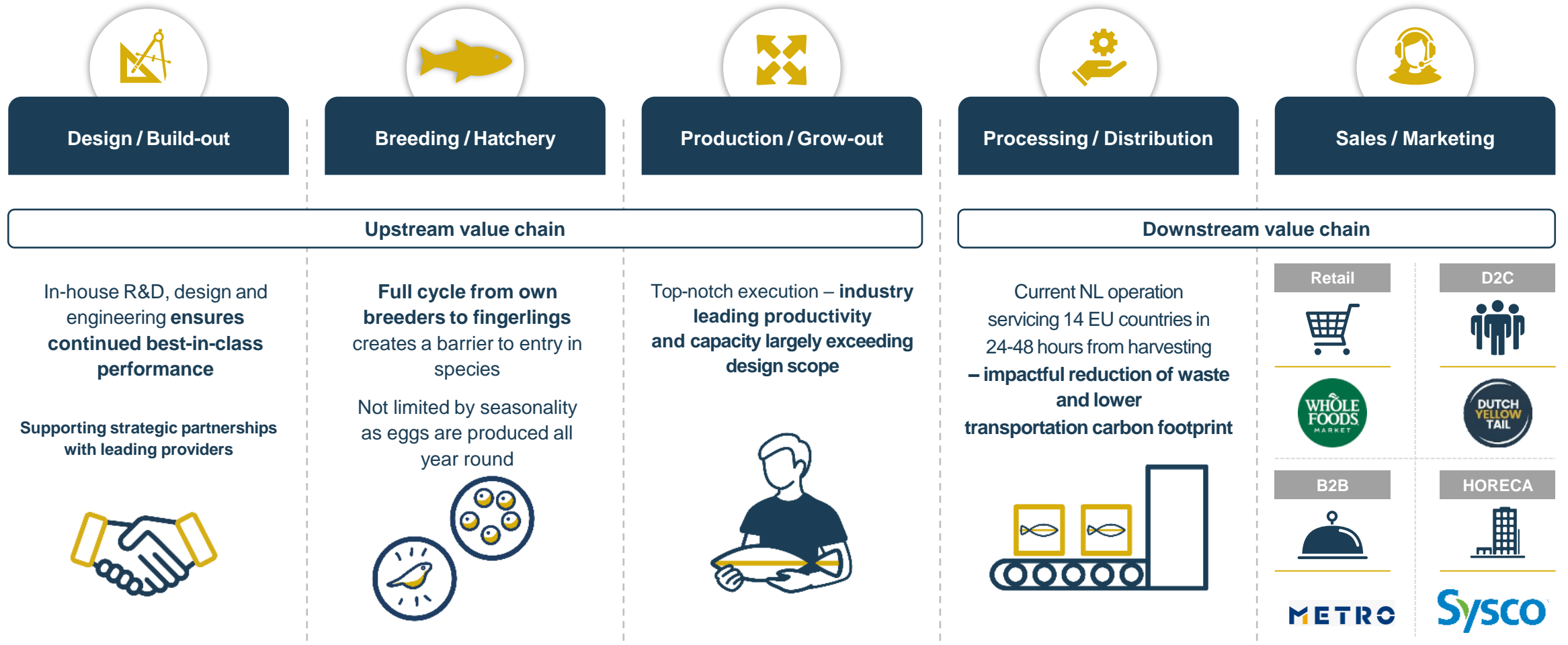
# FROM VISION TO REALITY

## The Kingfish Company's 9-year evolution








# Integrated “egg-to-plate” business model, with significant route-to-market capabilities

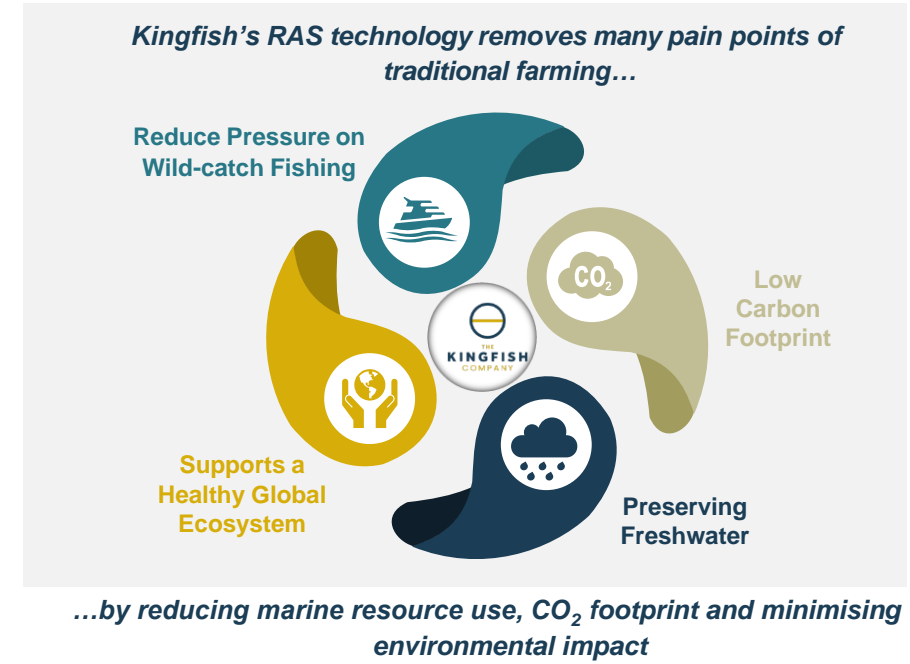
Kingfish owns the supply chain, ensuring best-in-class execution




# Best-in-class practices to achieve key sustainability goals and superior quality


Kingfish promotes sustainable aquaculture, minimizing greenhouse gas emissions

 <b>Increasing energy efficiency and utilising renewable energy</b>	▶ <b>100% renewable</b> electricity-based operations <sup>2</sup>
 <b>Improving feed efficiency</b>	▶ Uses <b>only</b> certified top-quality feed, increasing feed efficiency and minimizing waste and carbon emissions
 <b>Local production and processing</b>	▶ RAS allows production facilities near end-markets, <b>minimising transport requirements and food waste</b>
 <b>Preserving local natural resources</b>	▶ Uses <b>seawater</b> with strict effluent management and <b>avoiding the need of scarce fresh water in production</b>
 <b>Zero antibiotics and GMO<sup>1</sup></b>	▶ <b>No antibiotics, medicine or GMO</b> used in production






**World's First Certified Source of Yellowtail Kingfish**



**Quality and Production Approved by**



**Recommended as Green Choice by**



**Winner of the 2019 Seafood Excellence Global Award**

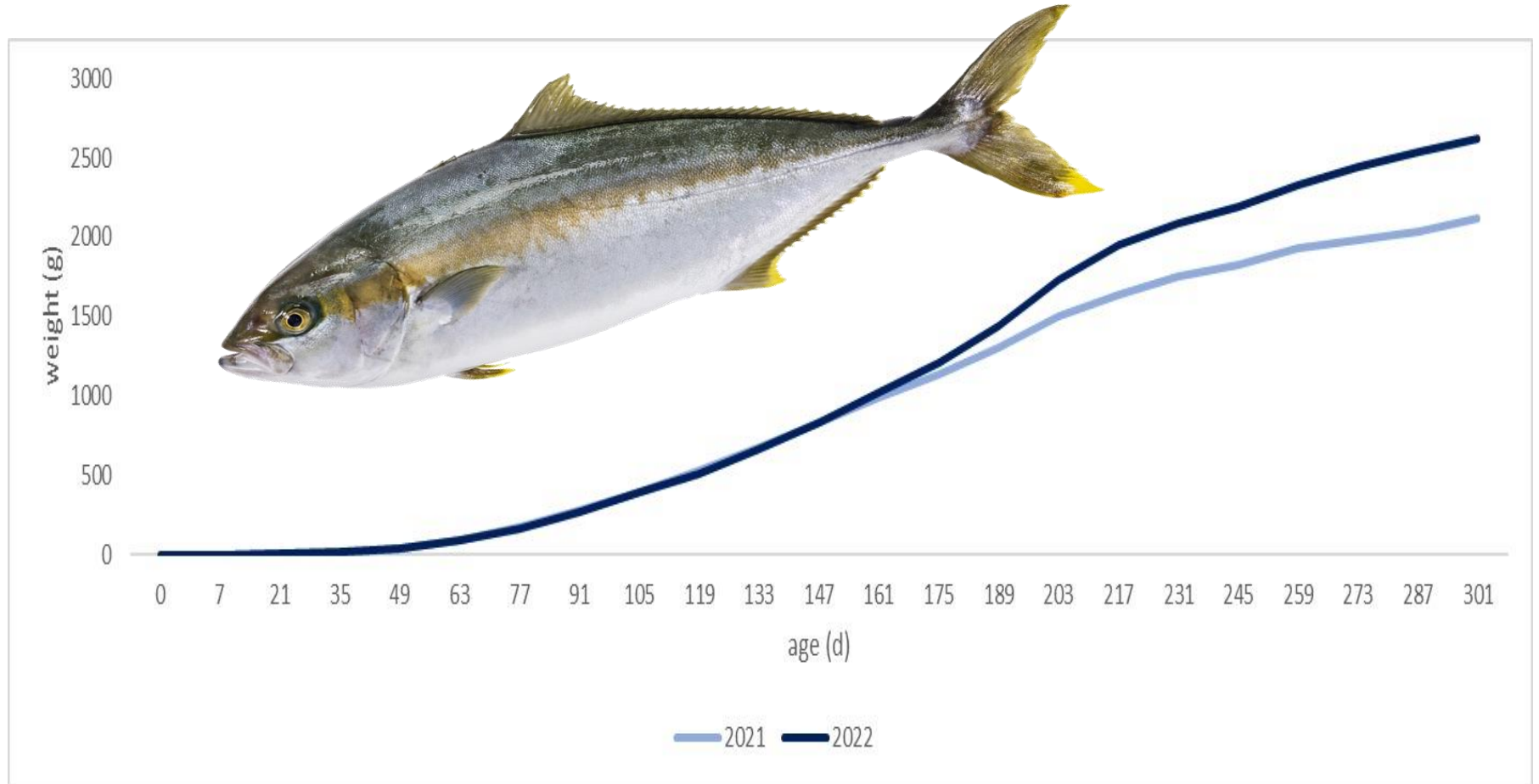


**World's first 3-star BAP Certified land-based farm**



# Why Kingfish?

- Reproduction cycle closed: year-round supply of juveniles
- Suitable for high densities
- Resilient to handling / robust species
- RAS technology for kingfish has been developed and proven
- Fast grower: 0 – 3 kg in <12 months / FCR of 1.35
- Obtains excellent price; around Euro 15 /kg, well above salmon





# RISING DEMAND FOR PREMIUM QUALITY KINGFISH

## Chef Testimonials



It is versatile and can be served in different ways: as a raw starter, sashimi or ceviche, or as a main course, grilled or baked.



Yellowtail Kingfish in RAS requires no antibiotics or other medications during production



Premium fish with higher average sales price compared to salmon



'Harvest-to-order' substantially eliminates food waste and significantly improves economics for HORECA partners



Seafood is an excellent source of protein and essential nutrients. Our Dutch Yellowtail delivers high quantities of omega-3 fatty acids.

## Testimonials on product quality



**Schilo Van Coevorden**

Executive Chef & Operator Taiko Amsterdam & Taiko Dubai

*"For me, besides the quality, the sustainable way of breeding and the right taste, this fish also has an inspiring story that we like to share with our guests"*



**Sidney Schutte**

Executive Chef at the Waldorf Astoria Amsterdam

*"Really amazing product. It is versatile and so can be used in many different ways. It also helps in the conservation of certain other fish, such as tuna, because it is the perfect substitute"*



**Delfin Jaranilla**

Chef Leland Eating and Drinking House, NY

*"This is one of my favourite fish thanks to its firm texture and fat/oil content"*



**Noah Poses**

Executive Chef The Fulton, NY

*"At the Fulton we focus to only use sustainable fish and sustainable methods. Dutch Yellowtail is one of those that we can trust"*

# The Kingfish Production Cycle



# Proprietary in-house developed RAS technology

## Best-in-class land-based farming technology utilizing big data and automation capabilities

- 1 Six years of continuous operations, over 52 full production cycles of fish produced from egg to harvest.
- 2 System based on proprietary design developed by co-founder and RAS pioneer Kees Kloet in cooperation with key supply partners such as Billund Aqua, ACE, NP Innovation.
- 3 Highly trained and experienced production staff on site 24/7, with triple redundancy on critical life support systems
- 4 Systems designed for reliability and sector leading productivity



## Solid operational results, however, several initiatives that will further elevate performance

### 1<sup>st</sup> generation farm (Zeeland phase I)

- ✓ Total tank volume ~5500m<sup>3</sup>
- ✓ 50% Moving Bed and 50% Fixed Bed filters
- ✓ Production 50% above name plate capacity
- ✓ Proven technology with high productivity



### 2<sup>nd</sup> generation farm (Zeeland phase II)

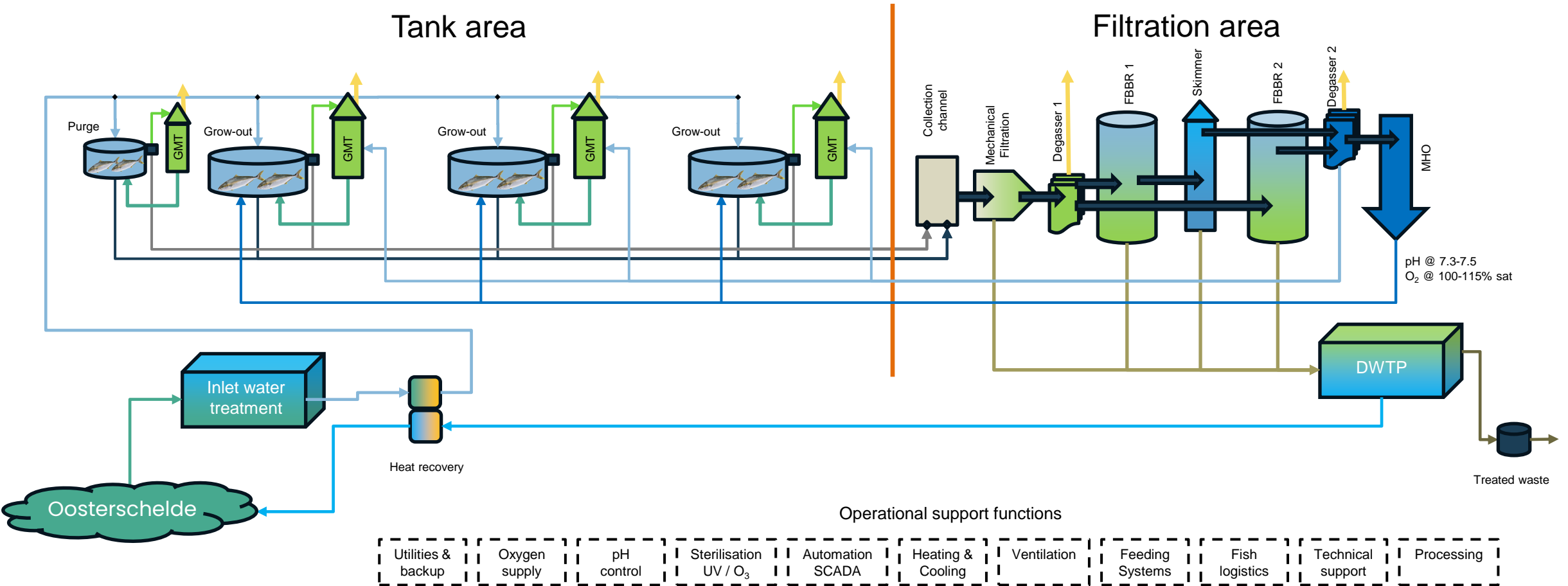
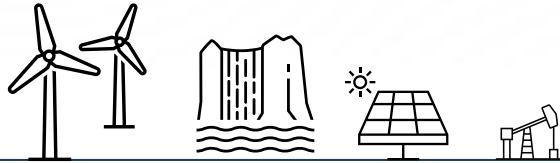
- ✓ Tank volume increased by 127% to ~12300m<sup>3</sup>
- ✓ 100% Fixed Bed Filters
- ✓ Improved fish handling systems
- ✓ Further automation



### 3<sup>rd</sup> generation farm (Zeeland phase III + Maine)

- ✓ Increased unit size and value engineering
- ✓ Lower capex costs
- ✓ Lower operating costs
- ✓ Increased energy efficiency

# Basic system layout and support functions



# RAS: Operational parameters & water quality

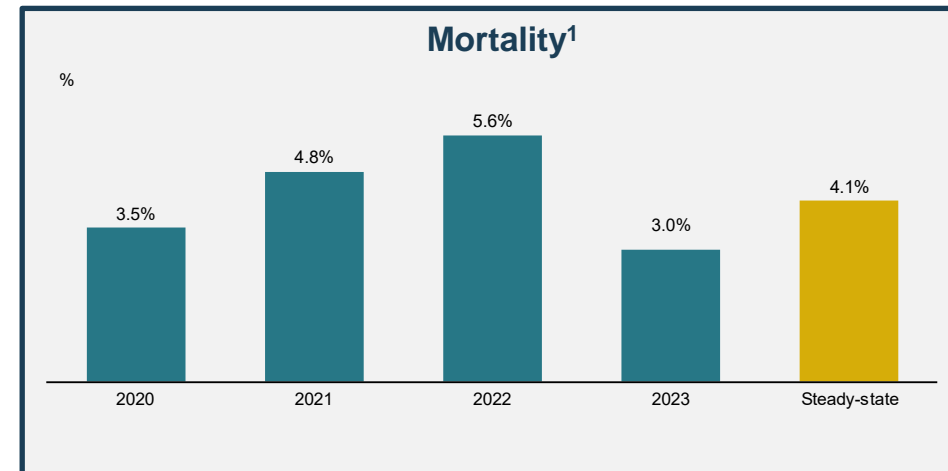
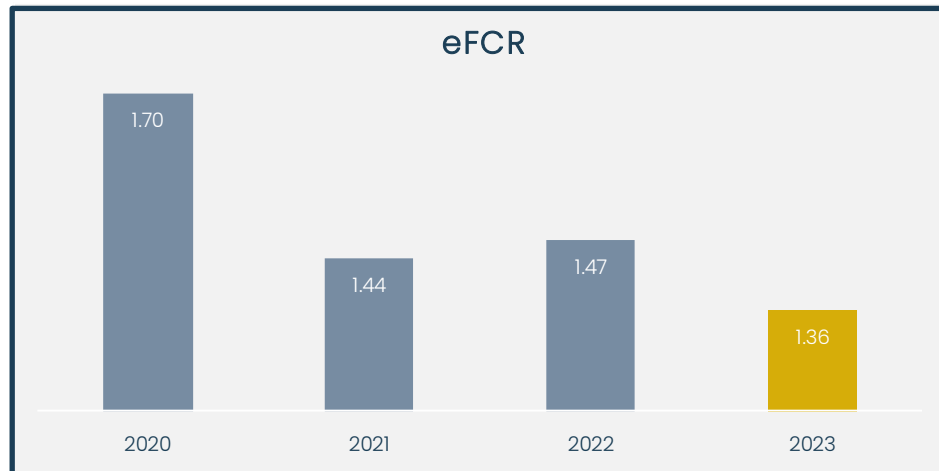
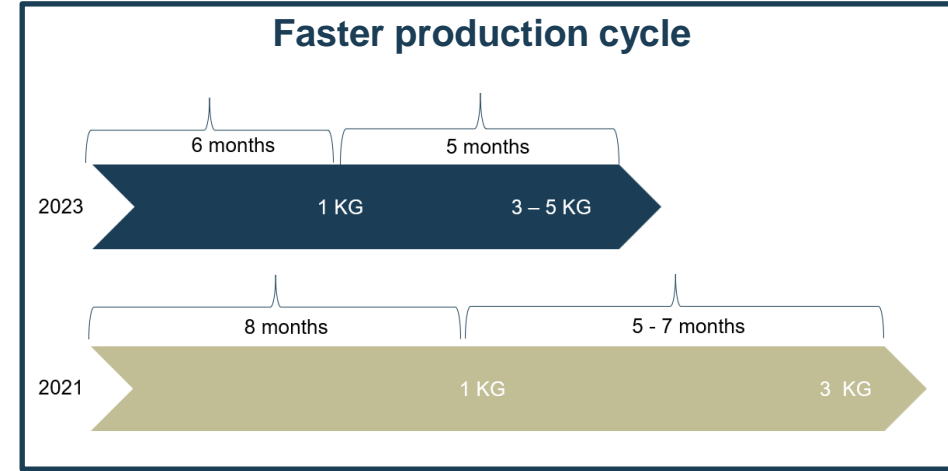
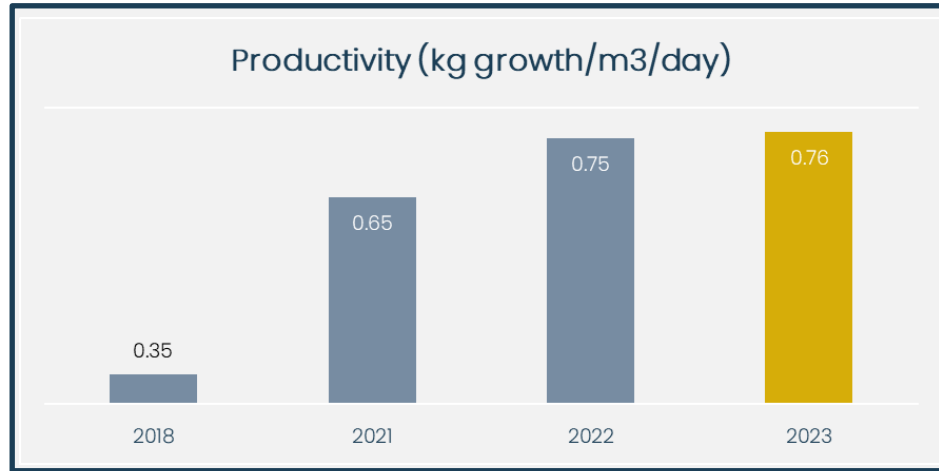


<b>Production capacity</b>	3500	tons/year
<b>Building surface area</b>	15000	m2
<b>Total tank volume</b>	12366	m3
<b>Growth period (egg - 3kg)</b>	12 -14	months
<b>Stocking density</b>	75 - 100	kg/m3
<b>Water exchange</b>	0.6	m3/kg feed
<b>Primary recirc. rate</b>	99.6	% of flow

<b>Temperature</b>	23	Celsius
<b>Salinity</b>	30	ppt
<b>pH</b>	7.4	
<b>TAN</b>	0.5 -1.5	mg/l
<b>Nitrite</b>	0.5 -1.5	mg/l
<b>Nitrate</b>	< 100	mg/l
<b>TSS</b>	< 4	mg/l
<b>CO2</b>	< 6	mg/l
<b>N2</b>	< 100	% saturation

# BIOLOGICAL PERFORMANCE

## Improving over time & exceeding expectations



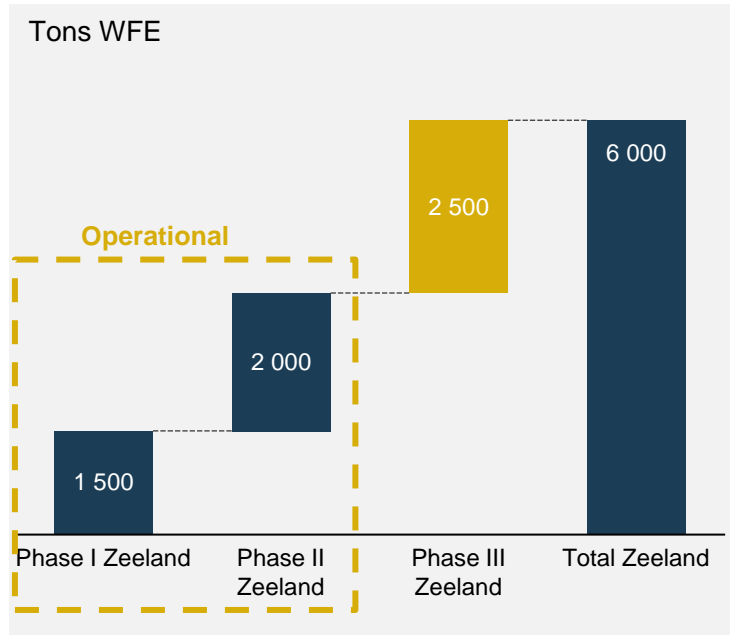
**What comes next?**



# WHAT ARE THE NEXT STEPS?

## The Netherlands: Phase 3 extension to almost double capacity

NL, Zeeland: Scale-up to full capacity



- ✓ Virtually double that to 6,000 tons in phase 3
- ✓ Leverage existing infrastructure: hatchery, grid connection, pumphouse, processing plant
- ✓ Discharge permit obtained - construction permit requested



Phase 3 timing of 2026 is an estimate



# Kingfish-Zeeland, Kats NL Phase III artists rendition

- Phase III conceptual design under review
- Permit is pending
- Existing technology performance evaluation
- Value engineering



# Kingfish-Zeeland, Kats NL Phase III conceptual site layout

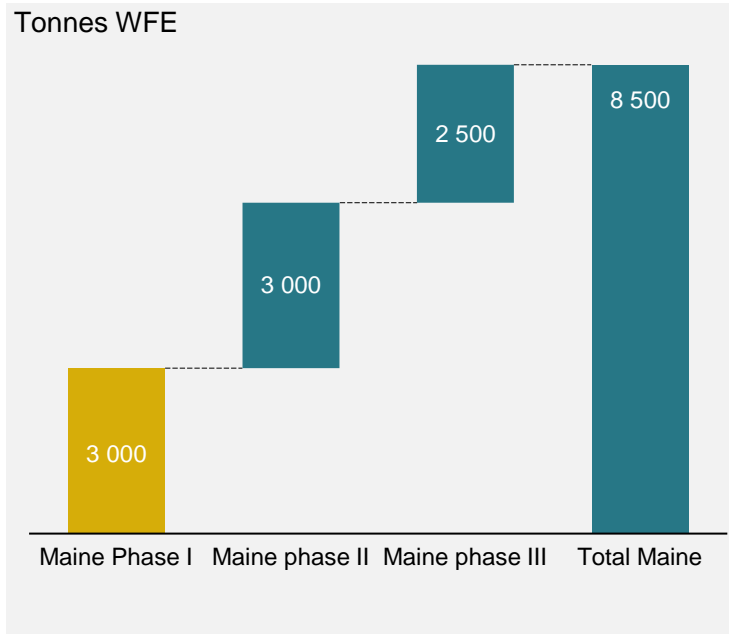


Source: Company information

# WHAT ARE THE NEXT STEPS?

## First fully licensed sustainable Yellowtail Kingfish farm in the United States

US, Maine: **First mover in the US market** 🇺🇸



- ✓ First and only fully permitted Kingfish farm in the US
- ✓ Pilot hatchery is operational
- ✓ Experienced team in place
- ✓ Strong support from local community



Jonesport, Maine, US

# Kingfish Maine – Jonesport, USA

- KFM @ LOD200 - under review
- All Federal and State permits / approvals acquired
  - Final municipal building permit is pending
- Land purchased, and sea lease acquired
- Existing technology performance evaluation
- Value engineering



# Kingfish Maine – Jonesport, USA



# Some thoughts..

## Farming & Engineering

It is not only about creating the best environment for the fish

## Treating effluent

To be truly sustainable you have to treat your effluent, suspended solids, Nitrate and Phosphate. Technology in salt water still developing

## Get your Sales and Marketing plan right from the very start

Production may grow in leaps and bounds, but the market does not

## With 40 years history, RAS will still see a lot of development

### Key focus areas for engineering:

- **Integrated design**, all parts must fit together
- Choice of materials
- **Minimize energy use**
- Fish transport
- **Do not overengineer; Keep it simple!**
- Value engineering
- Ease of maintenance
- **CAPEX Euro 25-35 /kg**
- **Thorough review of design with all parties involved** before the start of construction



DUTCH  
YELLOW  
TAIL



**THE FUTURE OF  
FISH IS HERE**