PURE Salmon

Harvest the finest

SUSTAINABLE LAND-BASED AQUACULTURE

Pure Salmon is a Founding Signatory member of the WWF Blue Economy Finance Principles

WORLD RESOURCES INSTITUTE

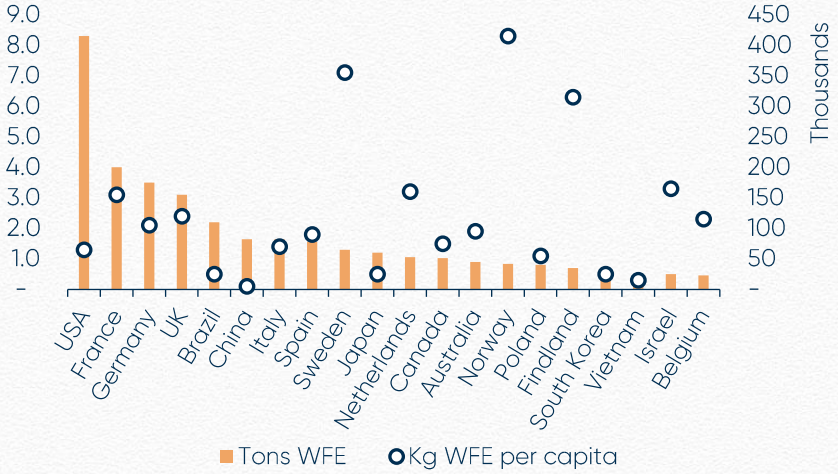
European Investment Bank The EU bank

SALMON & RAS
WHY NOW

Supply and Demand Imbalance

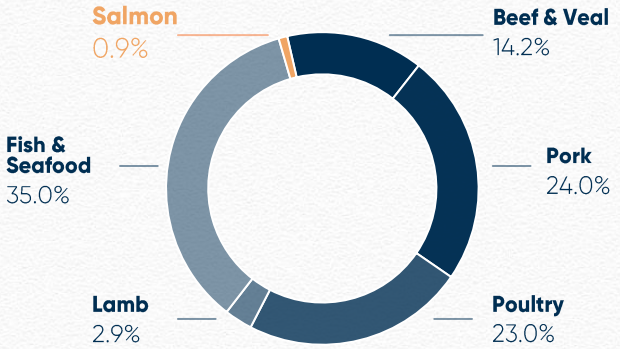
- Fundamental supply - demand imbalance in the global salmon market
- Demand increasing in what is a global commodity and in line with healthy eating trends.

Salmon Consumption per Capita [2]
of Certain Countries Remains Low Relative to their National Average



(3) OECD – FAO Agricultural Outlook 2017 -2026.
(4) Salmon World 2019, Kontali Analyse, 2019.

Salmon Market Share Still Negligible in Global Protein Consumption [1]



Sustainability and Local Production Trends

- Increasing customer and investor focus on sustainability and carbon footprint driving commercial change
- Government focus on food security (accelerated by Covid 19) and consumer preference for local consumption from local production

THE CURRENT SEA-CAGE BASED SALMON FARMING INDUSTRY **CANNOT SUPPORT MARKET DEMAND**

ONP Supply Constrained

- Biological challenges
- Regulatory challenges
- Geographic limitation
- Climate change
- Customer awareness
- Environmental pressure
- Distance to market

Alternative Production Systems

- Offshore
- Enclosed and Semi enclosed
- Pump Ashore
- RAS
  - RAS Technology has **matured and scaled** over the last 25 years.
  - Very significant advantage in producing fish **close to market**.
  - From recent reports there are 91 grow-out projects with **750,000 tons production forecast** by 2025.
  - Constraints include capital raising capability and availability of experienced staff.

A PROVEN LAND-BASED TECHNOLOGY

ADDRESSING THE CHALLENGES OF MODERN AQUACULTURE

No geographical restrictions,
can be located near to consumer-base

Defined license restrictions

No impact on the oceans,
less environmental footprint

Year-round,
uninterrupted production

Shorter transportation
means lower costs and limited food miles

Sustainable, fresher product
free of antibiotics, hormones, pesticides and microplastics

Enclosed bio-secure environment
means no impact from adverse weather or seasonality

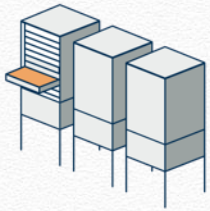
Local Production for local consumption
means lower food miles and fresher product

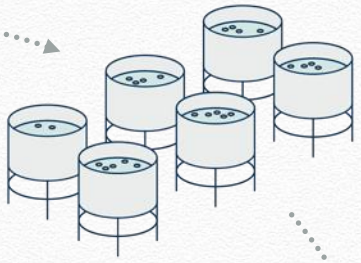
CONTINUOUS
WATER TREATMENT

- Filtration 1
  – Solids removal
- Filtration 2
  – Nitrification
- Gas balancing
- Oxygen Injection
- Ozone Injection
- Recirculation
- Constant monitoring and management of all parameters: temperature, pH level, salinity, etc ...
- Denitrification to increase water reuse

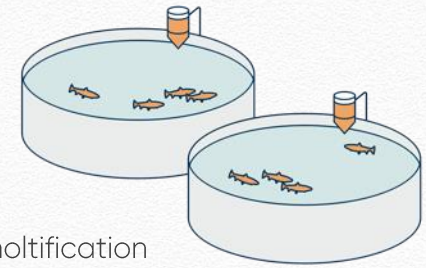
THE TWO-YEAR
RAS CYCLE

1
Incubation & Hatching
6-8 weeks
Egg <1g

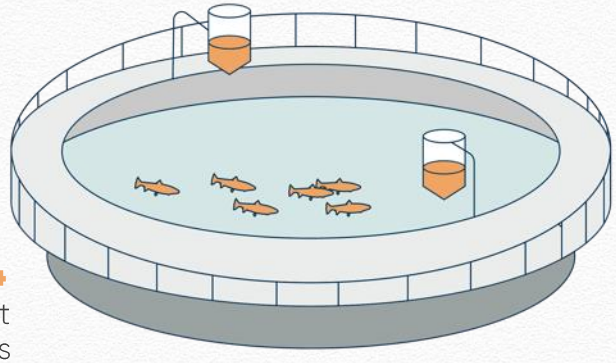




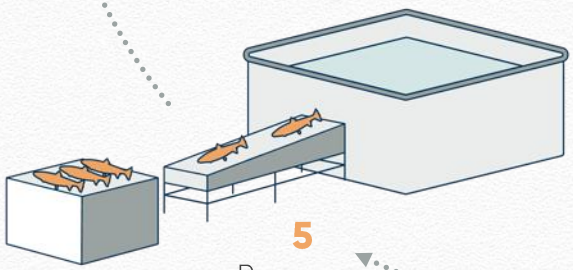
2
Nursery
5 months
Parr 40g



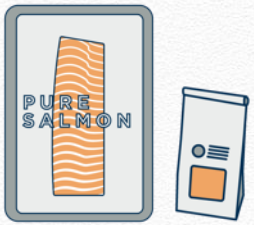
3
Smoltification
3 months
Smolt 150 g



4
Grow-out
14 months
Salmon 5kg



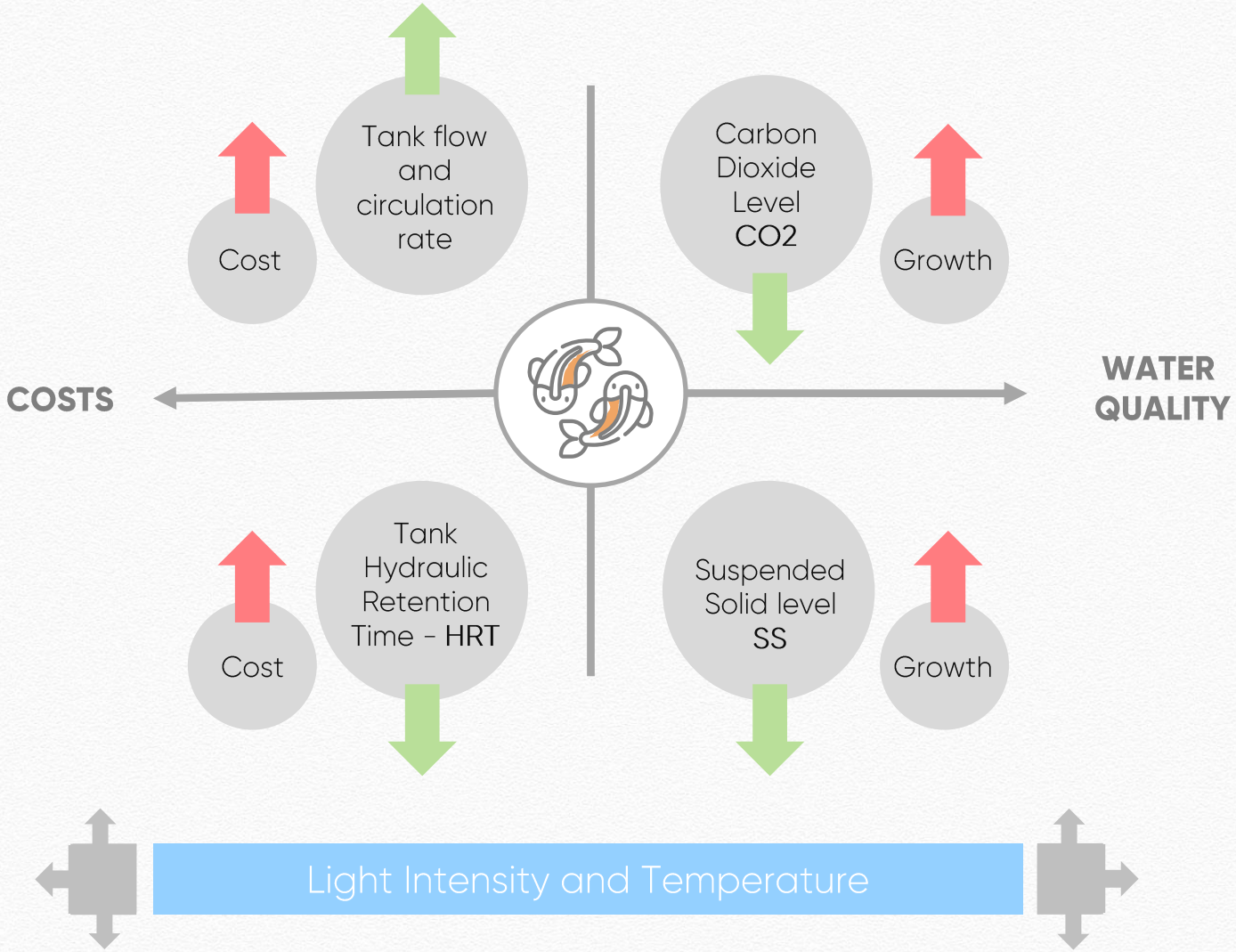
5
Purge
10 days



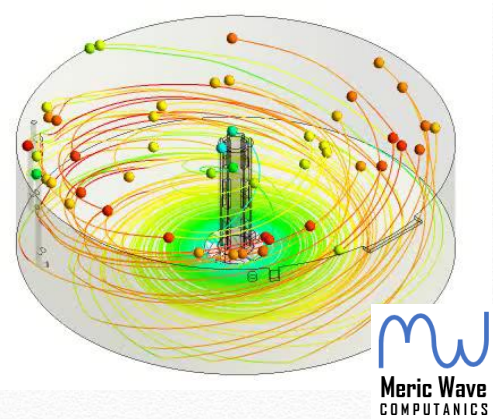
6
Processing
Filleting, smoking,
and by-products
(e.g. pet treats)

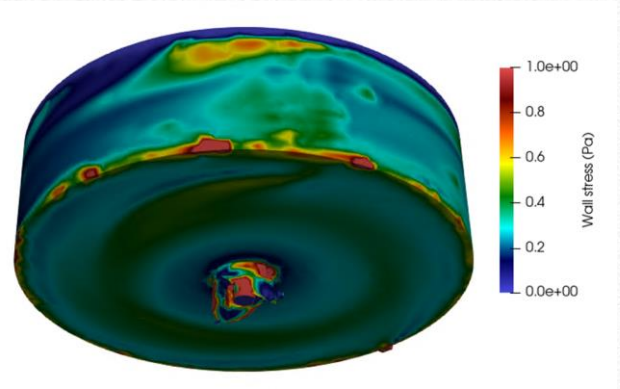
CRITICAL SUCCESS FACTOR

- Management of the tank environment to allow the fish to grow at the optimal rate whilst balancing operational and capital costs
- Research Work is ongoing to define the optimal levels e.g. through Ctrl Aqua and Freshwater Institute. Much though depends on the operator experience and the design of the system used. 'Company Knowledge' (benefit of trial systems)



THE USE OF ADVANCED TECHNOLOGY – M AI
TO OPTIMIZE SCALE UP AND REDUCE RISK





- Modelling systems can be used to ensure designs are optimized such as for flow rates and particle tracking.

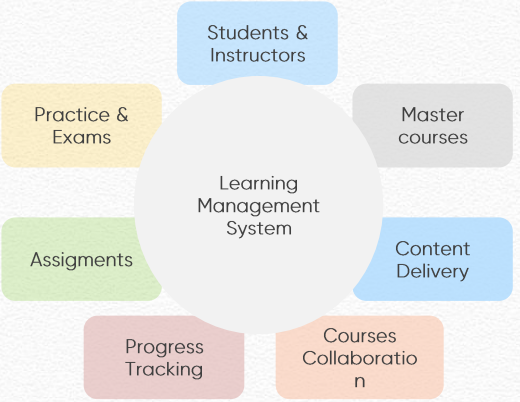
- Process engineering and 3D design can be integrated to produce operating models – 'The Virtual RAS system'

- Rapid developments in IT, sensor systems (IoT), cameras and operational management systems.

- Big Data – AI and machine learning and thereby design and operation optimization

CHALLENGES AND OPPORTUNITIES
A BRAVE NEW WORLD

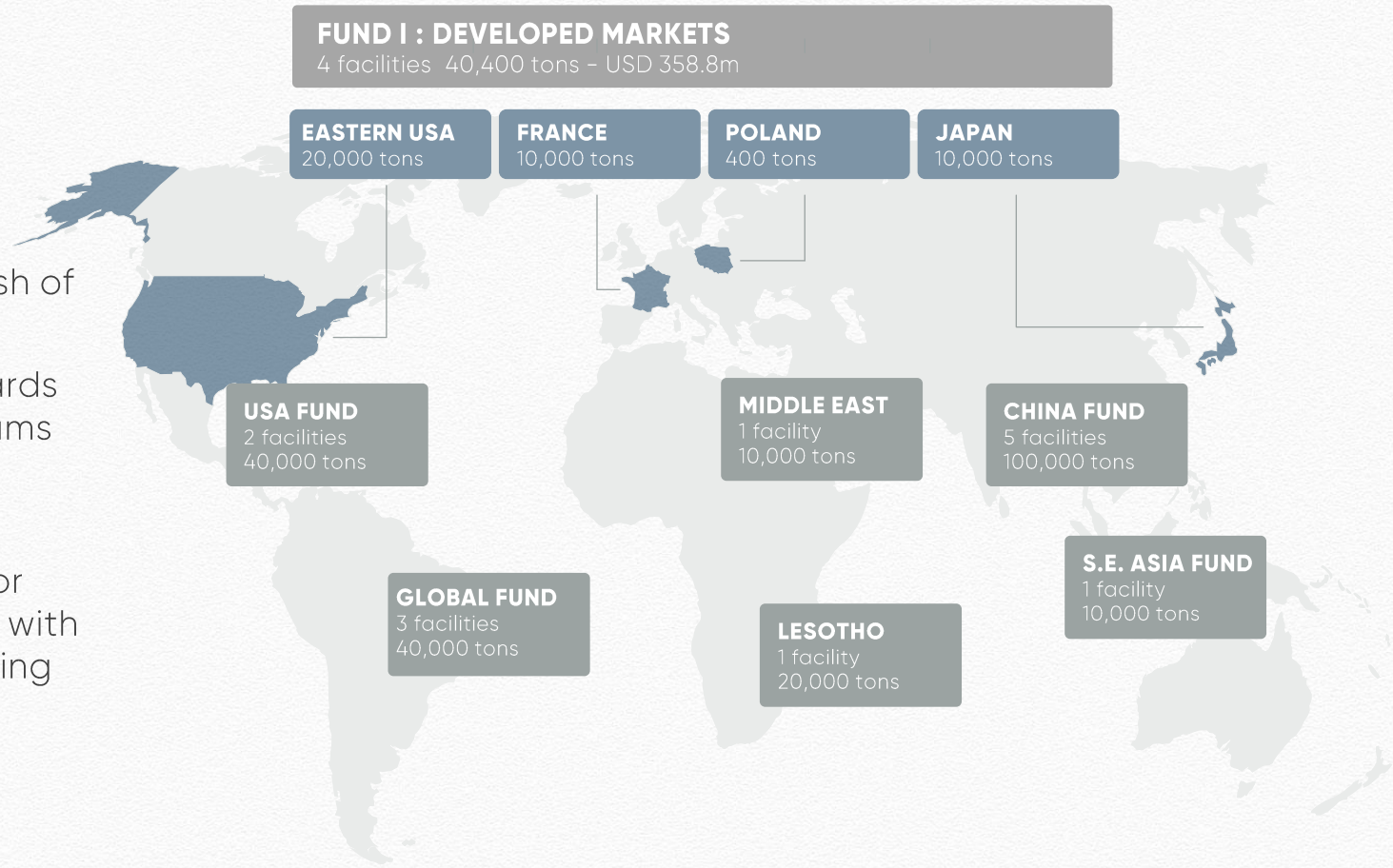
- **STAFF** (our most important asset)
  - Recognized as a potential growth constraint.
  - The Pure Salmon Academy for staff training is supported by appropriate process control and automation / monitoring.
- **FEED**
  - Feed formula impacts both the fish and the biofilters.
  - Refined first generation RAS grower diets are now available.
  - Can incorporate novel ingredients to increase ‘sustainability’.
- **GENETICS**
  - Salmon genetics can be optimized for robust performance in RAS (non-genetically modified).
- **OFF-FLAVORS**
  - Historically associated with RAS but solutions are now established and being further refined
- **CERTIFICATION SCHEMES**
  - Certification schemes need develop a suite of criteria for RAS
- **WELFARE AND BIOSECURITY**
  - We must treat our fish with respect with appropriate welfare indicators that are actively managed & publicized.
  - Camera systems linked to AI may well provide appropriate measures.



PURE SALMON
OUR VISION

Become the global leader in sustainably farmed salmon with an annual production of 260,000 tons

BRING A LOCALLY PRODUCED HIGH QUALITY, HEALTHY AND FRESH PRODUCT TO CONSUMERS



PURE SALMON POLAND

- Proof-of-concept for Pure Salmon RAS
- Harvesting healthy adult fish of 4-5kg
- Setting operational standards and managing R&D programs

PURE SALMON ACADEMY

- Practical on-site training for production staff combined with classroom and online learning

PURE SALMON
GLOBAL OPERATING COMPANY

- Central operating company for all Pure Salmon facilities worldwide
- 100% owned by investors
- Headquartered in Abu Dhabi, the Pure Salmon management team oversees the development and day-to-day management of the global business
- Ensures quality control and product consistency across all facilities and markets
- Pure Salmon is the primary brand name for consumer products

SUPPLIER MANAGEMENT
- RAS technology
- Design & construction
- Eggs
- Feed

ECONOMIES OF SCALE
- Lower costs of procurement and production
- Operational efficiencies
- Stronger pricing power

STAFF TRAINING
- Design of training packages
- Classroom training
- Hands-on in PS Poland

PRODUCTION KPIs
- FCR
- Growth rate
- Mortality

BRAND MANAGEMENT
- Design
- Packaging
- Trade marking

PRODUCT DEVELOPMENT
- Smoking
- Value-added products
- Secondary processing