

BLUE ECONOMY AQUACULTURE FORUM

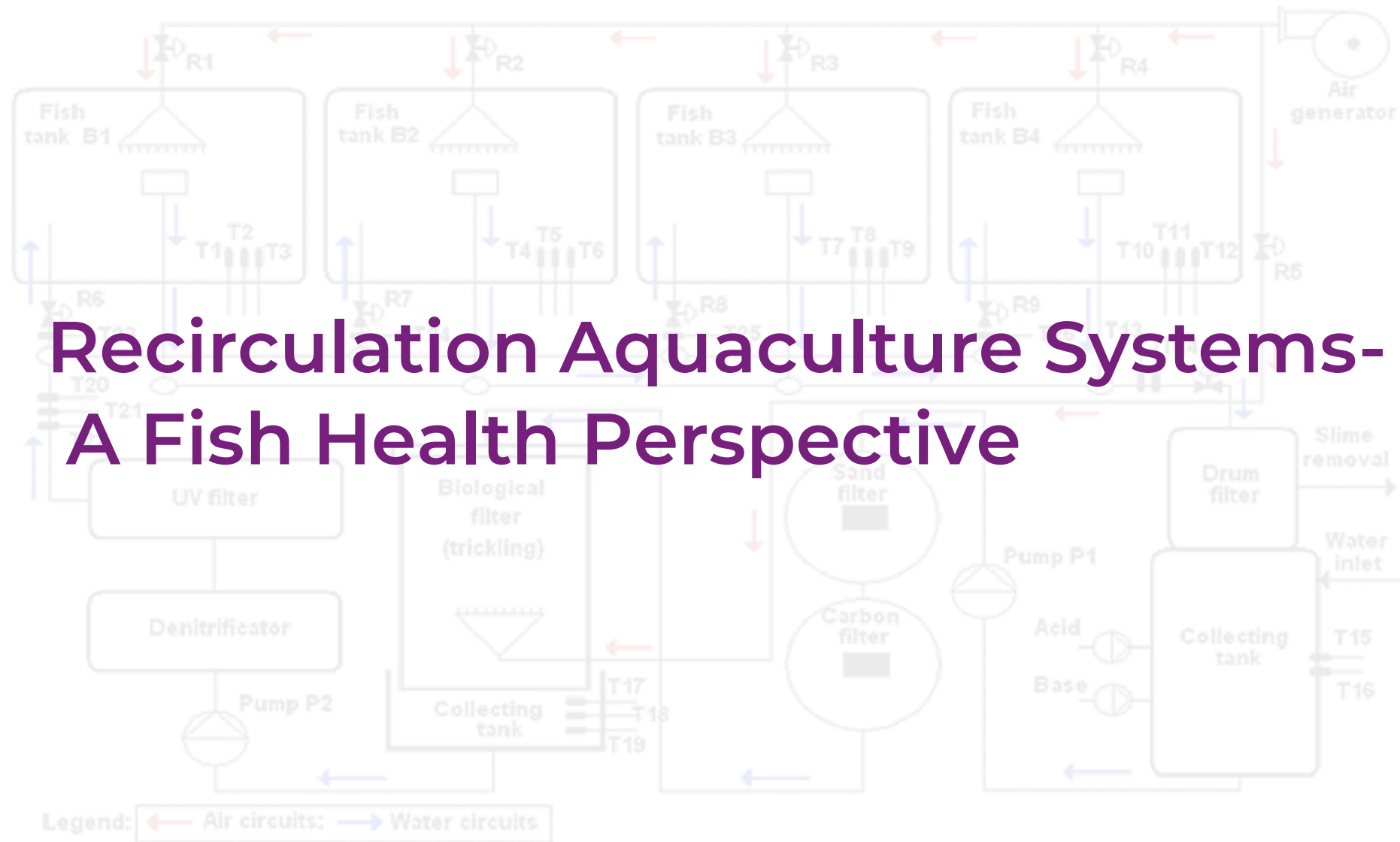




Fish Health & Biosecurity

Parallel Session - Summary
Abu Dhabi 2023

Markus Schrittwieser, Fish Health Specialist / Veterinarian – SAN VET AQUA





Traditional Farming

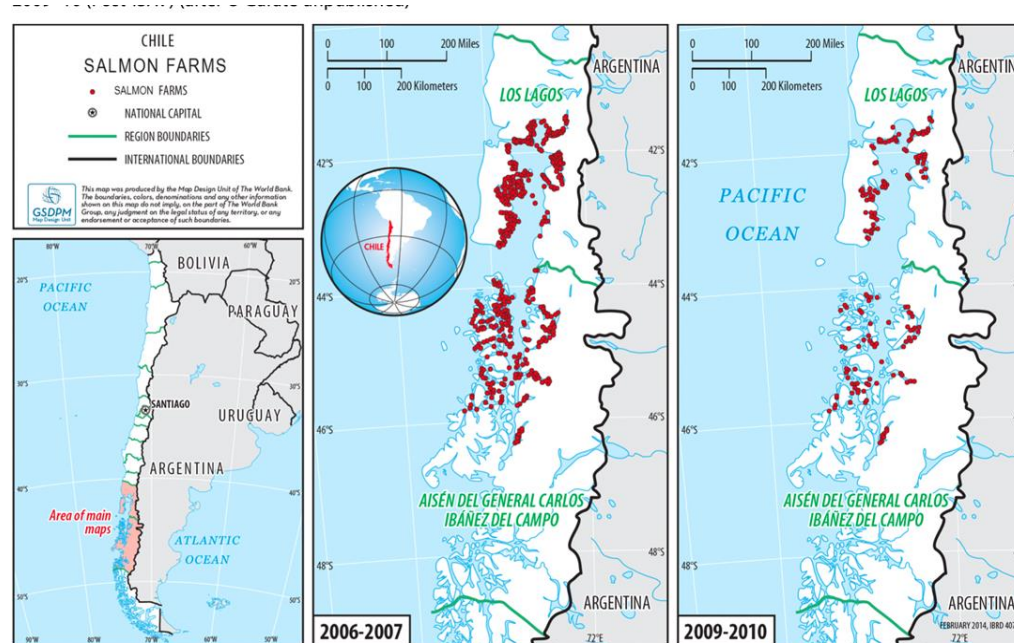
Traditional farming

Ectoparasites

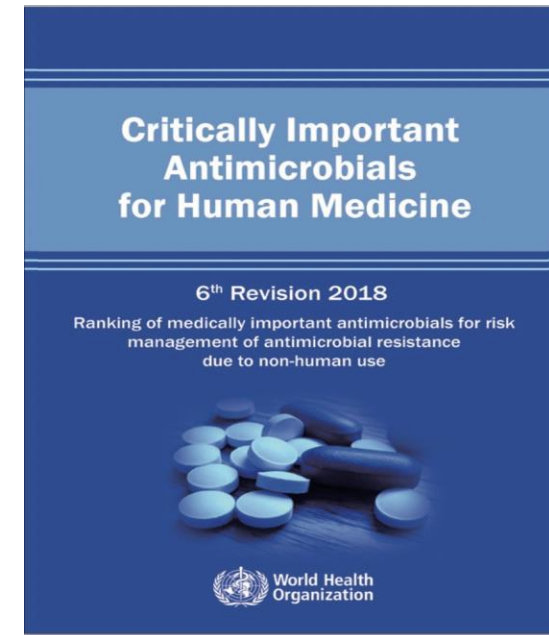


Jap. Flounder and *Benedenia* spp

Viral outbreak e.g. ISA Chile



AMR



Traditional farming

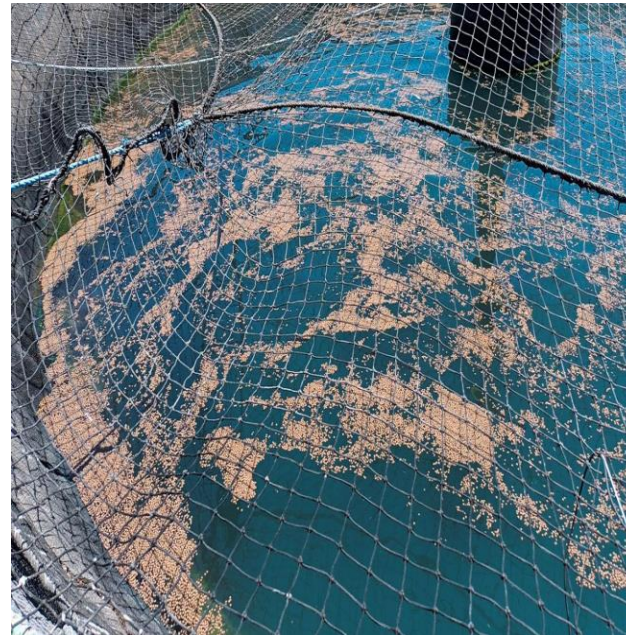
Other risks

Predators/Biofouling

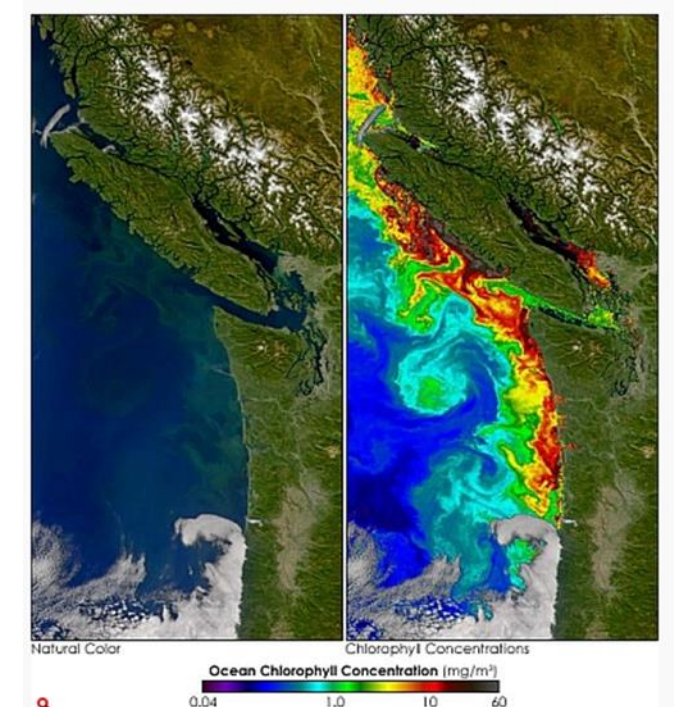


Complex Gill Disease and net cleaning

Biomass estimation

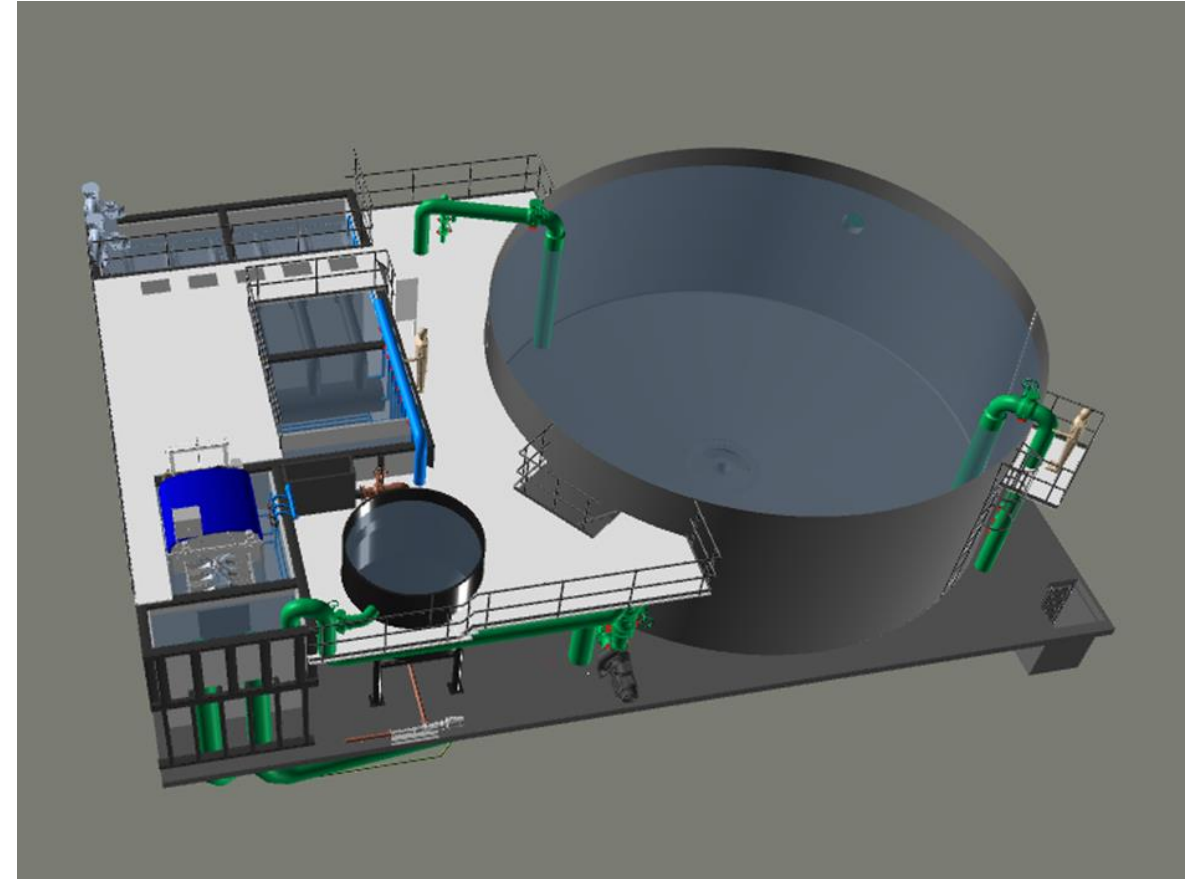


Climate change and HABs



RECIRCULATION AQUACULTURE SYSTEM

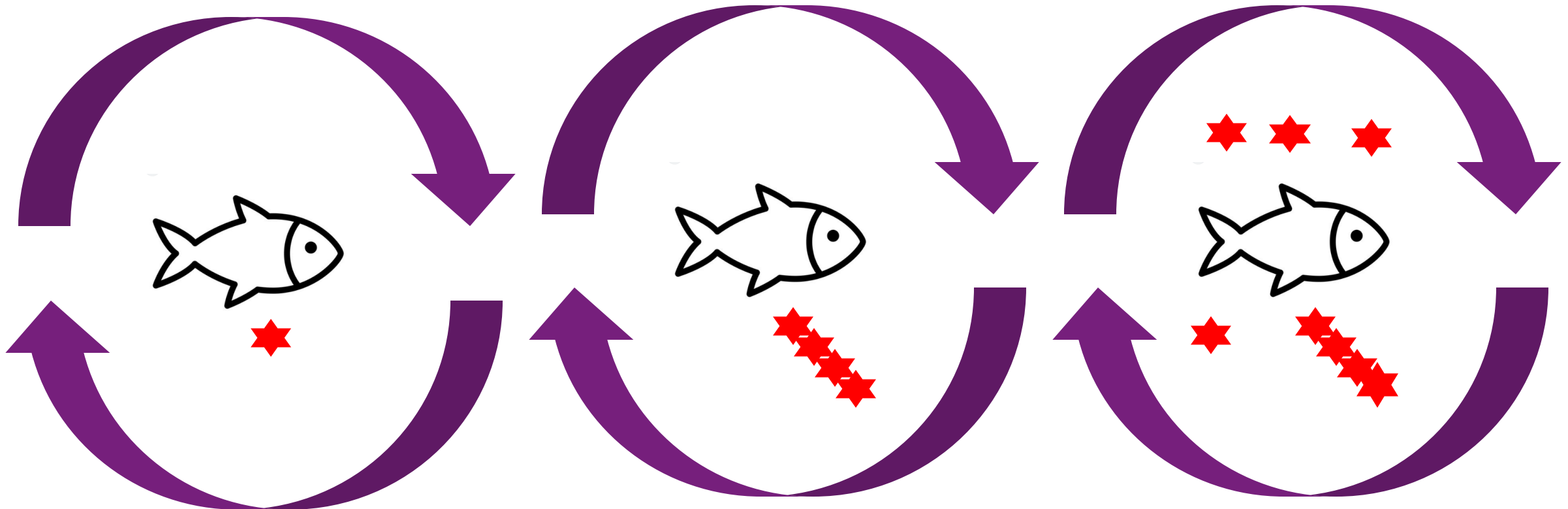
**A full life support system
for our fish: 24 hours – 7 days a
week- 365 days a year!**



Prevention is better than Cure
Even more so in RAS

Biosecurity

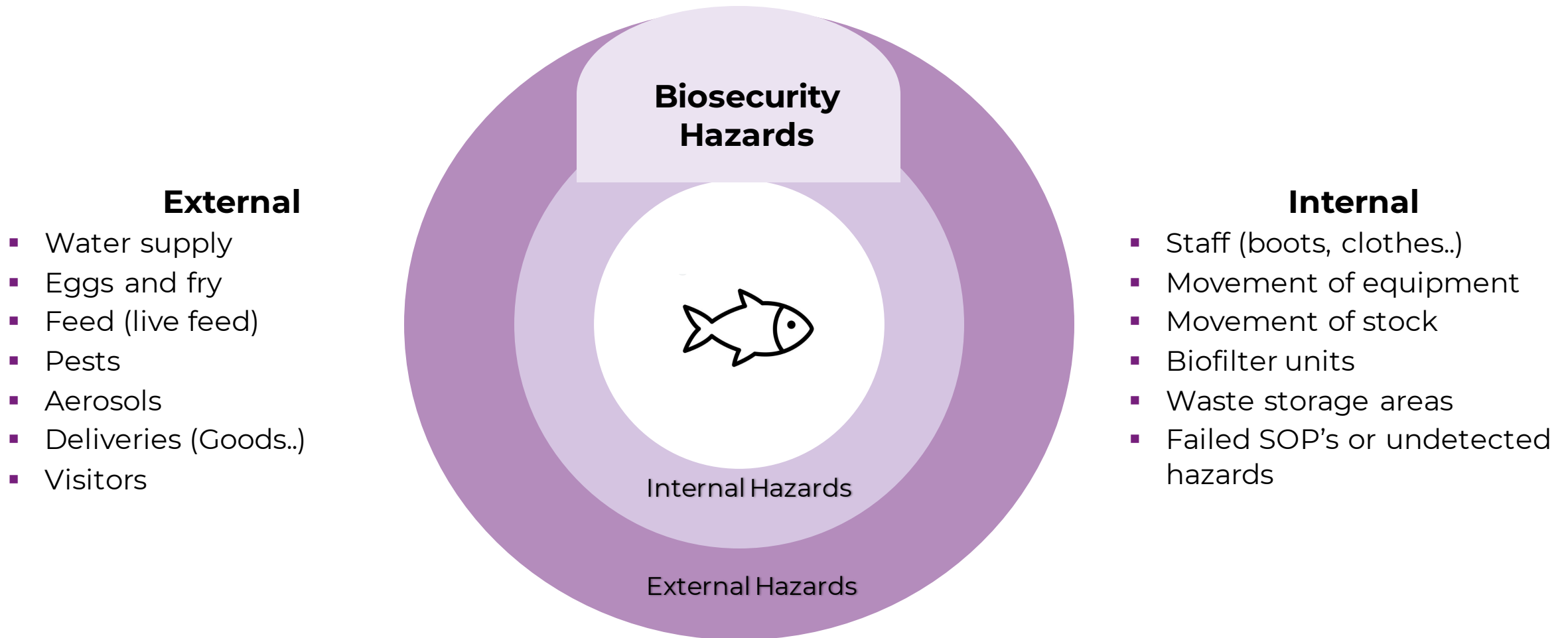
What goes in - Stays in



and multiplies

Biosecurity

Biosecurity needs to address internal and external risk (HACCP)



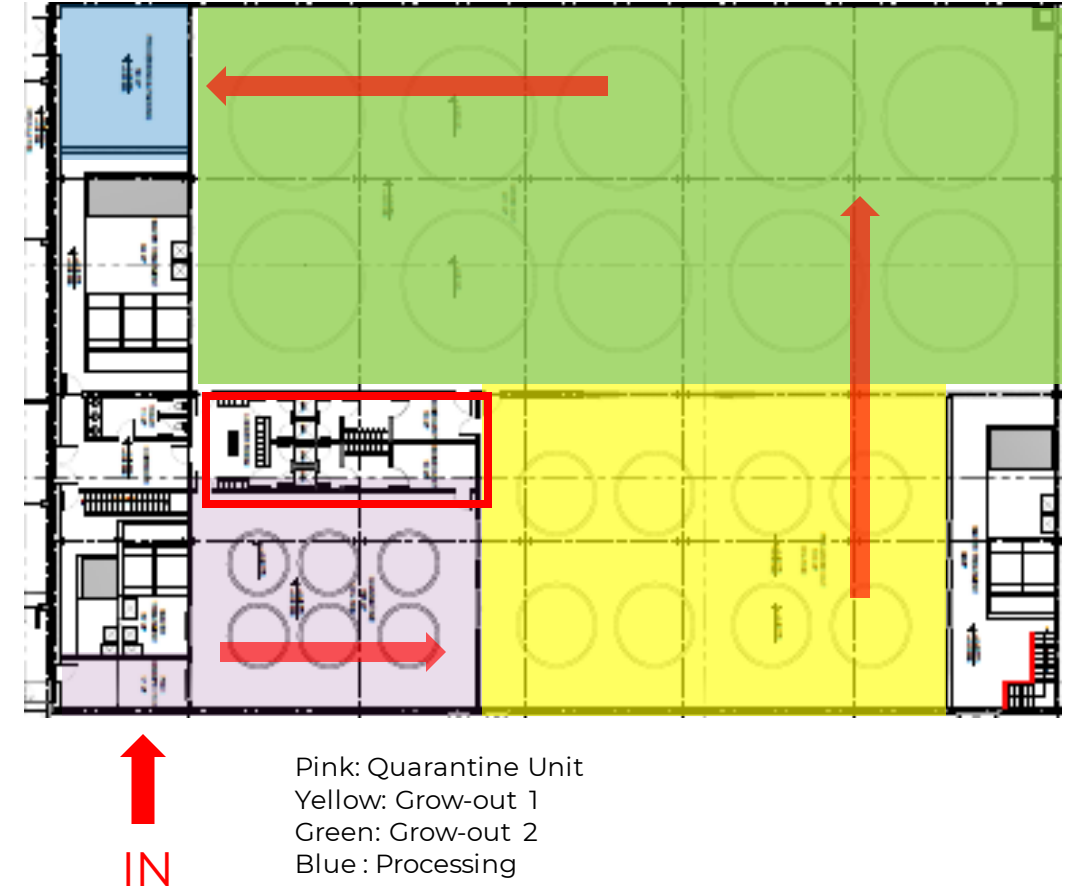
Bio-secure Recirculation Aquaculture System - RAKEZ

Production of 100 mt of table-size Barramundi per year



- 2100 m2 RAS facility partitioned into **4 units**
- Receive disease free (**SPF**) Barramundi fry **OUT** ←
- **Biosecurity lock** for staff and goods
- **Quarantine** unit for Stage 1 (fish < 20g)
- Growth-out in phase 2 and 3
- **Automated feeding** system to maximize Growth
- Fish will be harvested around **400g**
- **Separated areas** of fish production and processing to avoid cross-contamination

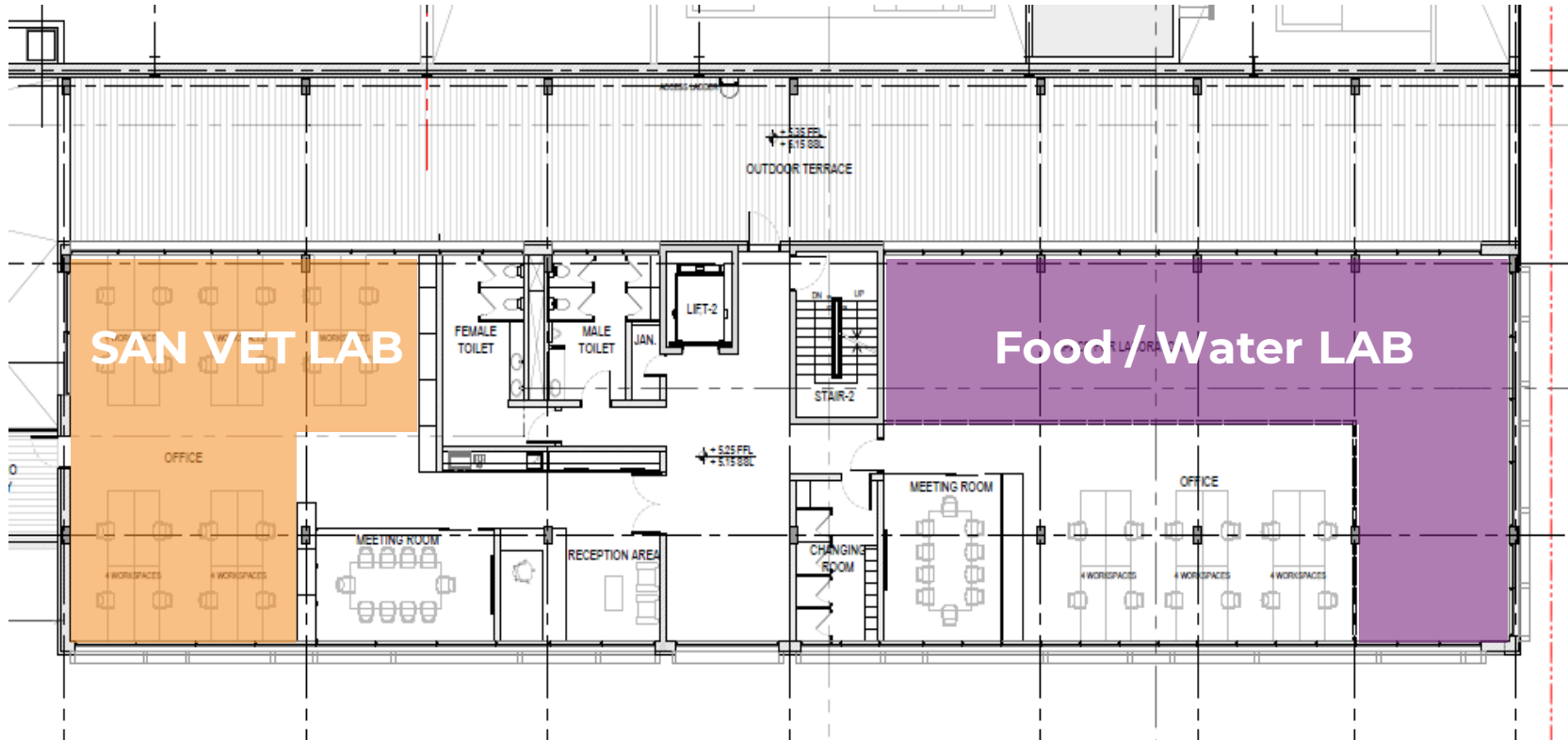
FLOOR PLAN - RAS



Pink: Quarantine Unit
Yellow: Grow-out 1
Green: Grow-out 2
Blue : Processing

San Vet LAB and Food Safety LAB

RAKEZ CAMPUS will include in-house laboratories



Separated Entrance
Separated Air-system

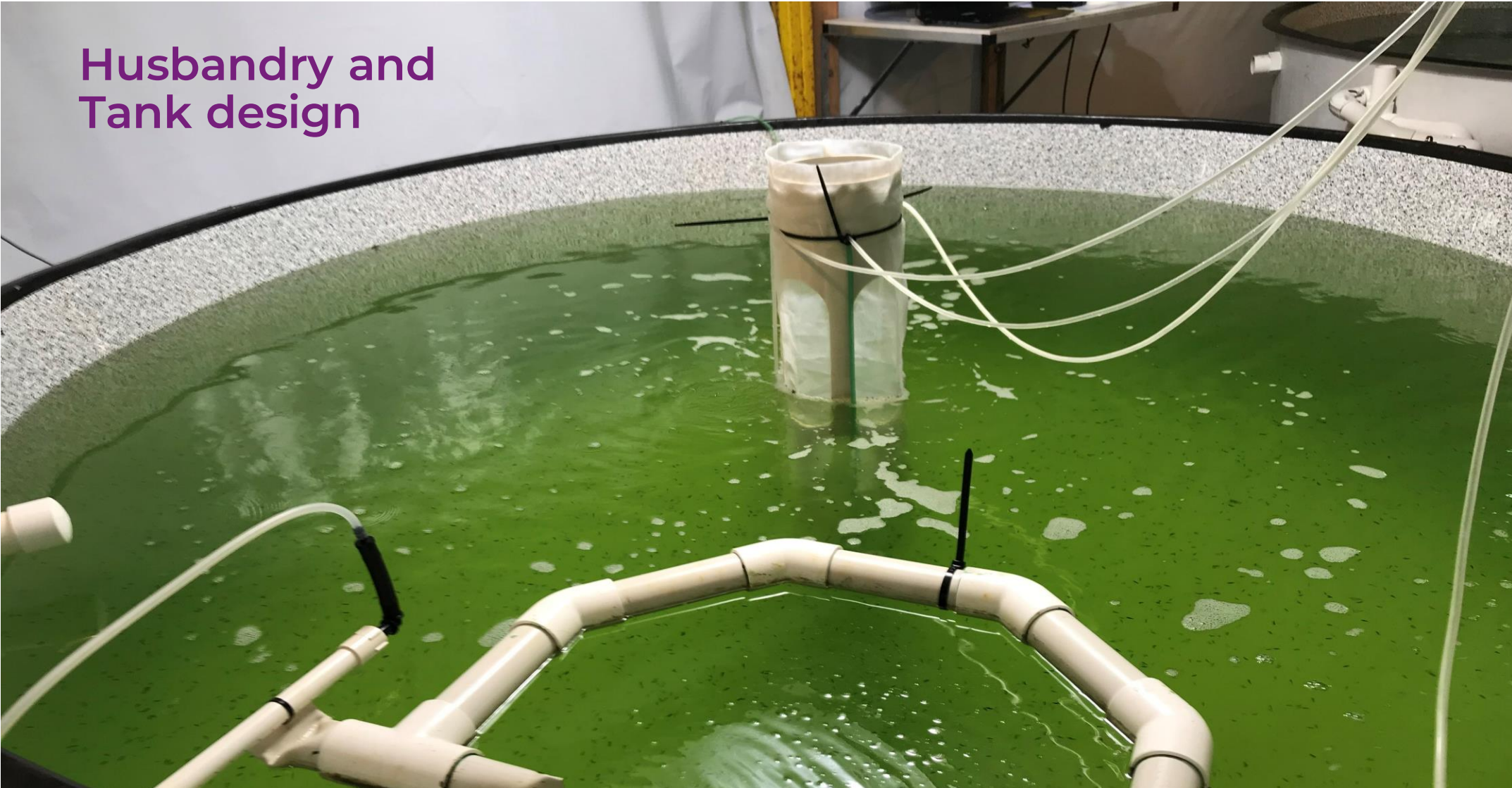
Fish Health Management

We will integrate a state-of-the-art Fish Health Laboratory and Food/Water Analytics in RAS Al Khaimah



- Necropsy
- Microscopy
- Microbiology
- Molecular diagnostics
- Serology (KYLT)
- NGS and Metagenomics for early detection of pathogens
- Water

Husbandry and Tank design





Under current news 2019: Welfare toll for Cleaner fish









Effect of pre-slaughter stress on quality of tilapia fillets



Global Sea Food Alliance 2023

Operational Welfare indicators

Happy fish - happy farmer!

- Operational Welfare Indicators (OWIs)
- Laboratory-based Welfare Indicator (LABWIs)

	1	2	3
Healed fin damage	 Most of the fin remaining	 Half of the fin remaining	 Very little of the fin remaining
Active fin damage, splitting, haemorrhaging	 Most of the fin remaining	 Half of the fin remaining	 Very little of the fin remaining

	1	2	3
Eye haemorrhage	 Minor haemorrhages	 Larger haemorrhages, or traumatic injury	 Large haemorrhages / traumatic injury. Eye may be ruptured
Exophthalmia	 Eye protruding a little	 Moderate eye protrusion	 Major eye protrusion
Opercular damage	 Operculum only partly covering gills	 Operculum absent on one of the gills (gill exposed)	 Both opercula absent (both gills exposed)

- Deformities
- Vaccines side effects

Welfare and Consumer Labels

Animal welfare plays increasingly important role in aquaculture
Consumers want transparency!



WELFARE | SUSTAINABILITY | CONSUMER +13 more 11 January 2023, at 8:00am

Stepping up tilapia welfare in China

Following the launch of a new tilapia welfare assessment programme in China, IQC's Conglong Li and Sisi Xie explain why they are working with FAI to raise awareness of its importance – both for ethical and economic reasons.

by Rob Fletcher
Senior editor, The Fish Site

Why are you currently focusing your attention on fish welfare in China?

Global Business Unit SAN Vet - MEA

www.san-vet.com



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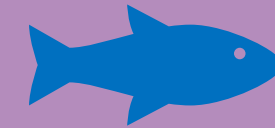
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ANIMAL HEALTH

Vaccines

*Veterinary Diagnostics &
Services*

*In-vitro PCR Diagnostic
Products*

Biosecurity & Medicals

Water, Food and Feed

THANK YOU ...

SAN VET - AQUA

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DUBAI

Please reach out to me and my colleagues during tomorrow's **Networking Session at 1100am!**

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