

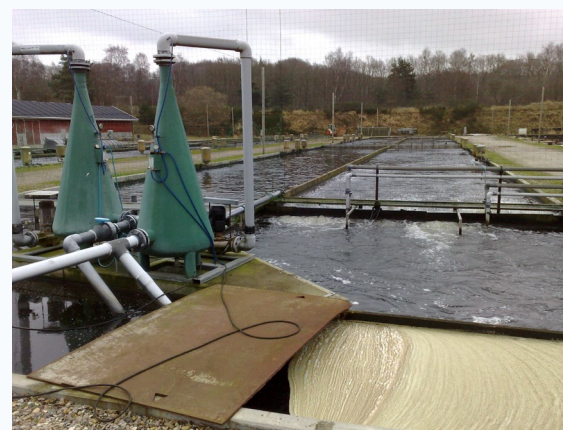
OXYGUARD INTERNATIONAL

WATER QUALITY AND FISH WELFARE

Mette Cristine Schou Frandsen (M.Sc. Ph.D freshwater Biology)

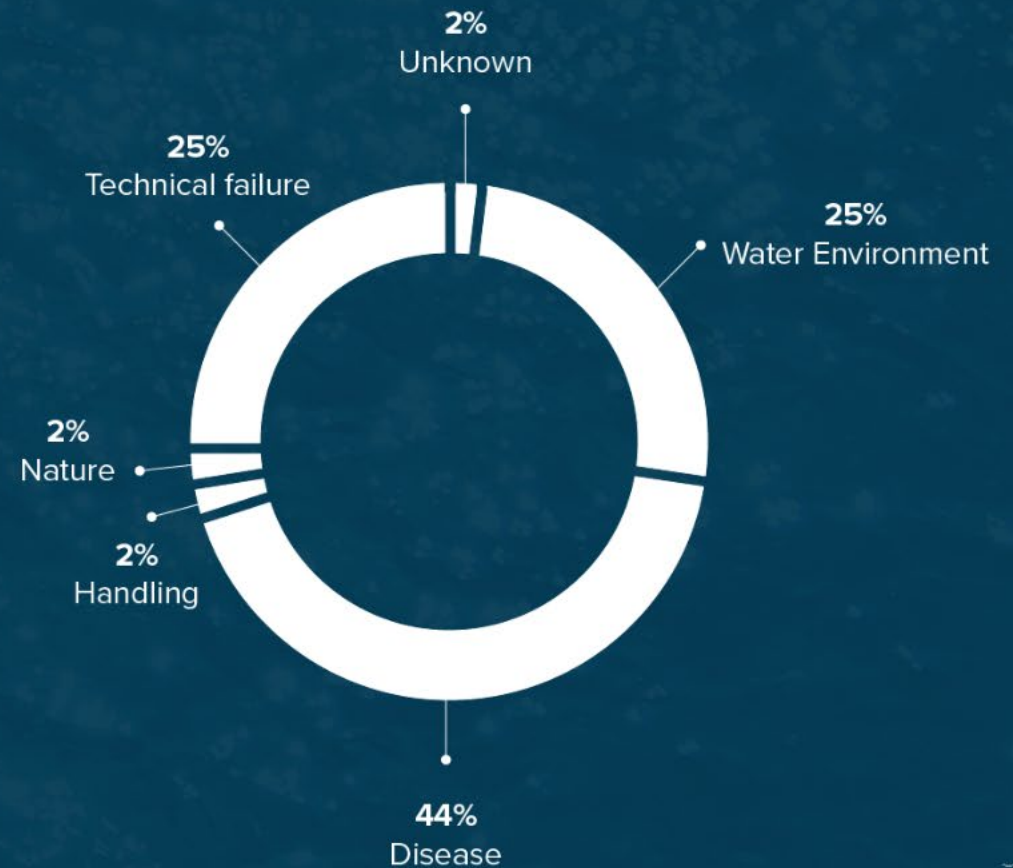
What is fish welfare?

Can we measure it?



What kills fish in RAS?

*according to Norwegian insurance company Gensidige



IT ALL DEPENDS ON SPECIES AND THE PRODUCTION FORM



Welfare can be defined as

Freedom from

- hunger
- thirst
- discomfort
- pain
- injury
- disease
- fear
- distress

as well as the freedom
to express normal
behaviour.

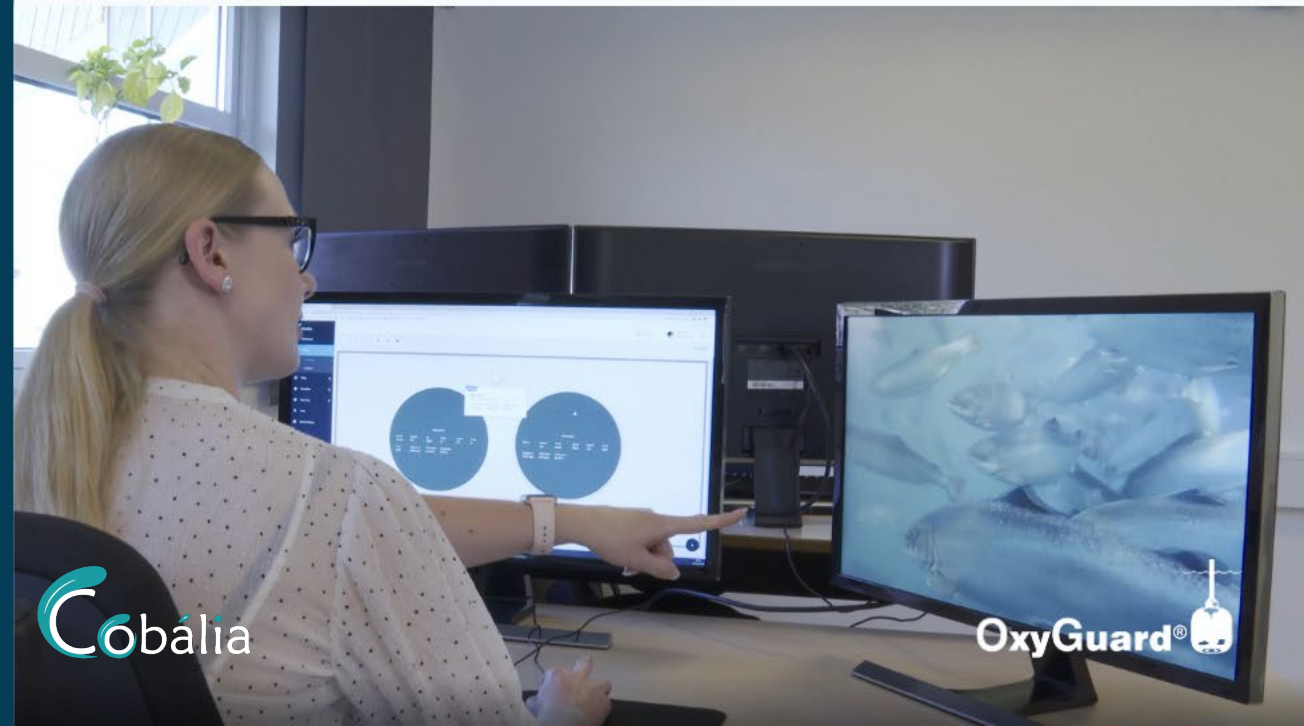
Fish welfare becoming commercially significant

- TRACEABILITY
- FARM TO FORK

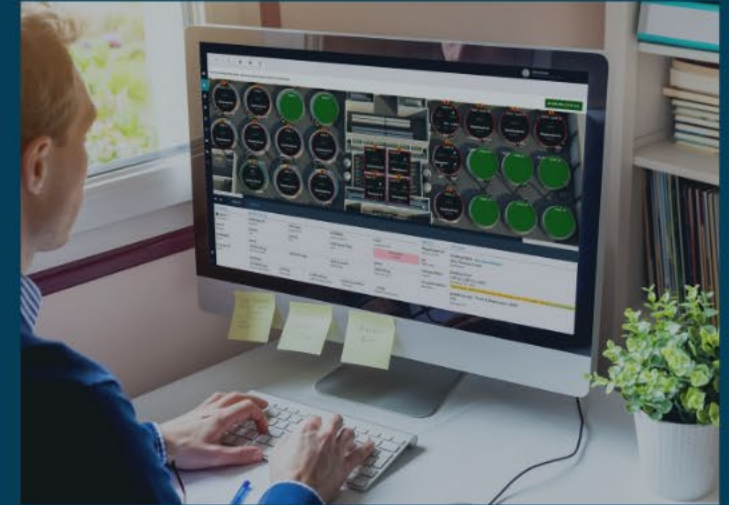


Digitalisation

AI and Machine Learning
for improving water
quality = improving fish
welfare



COUPLING BEHAVIOUR TO WATER QUALITY THROUGH AI



NEW SENSORS

- Ozone
- Bacteria
- Virus



Testing ozone technology
in Bornholm, Denmark

OxyGuard® 

Welfare in the future

- MEASURING STRESS
HORMONES

- WARNING SYSTEM FOR
VIRUS AND HARMFUL
BACTERIA

- OZONE

- UV

FUTURE RAS



AI



Monitoring
and Control



Behavioural
Monitoring



New
Sensors



Value Chain
Data Transfer

Thank you!
any questions?