



Chile in the new era of the world salmon industry

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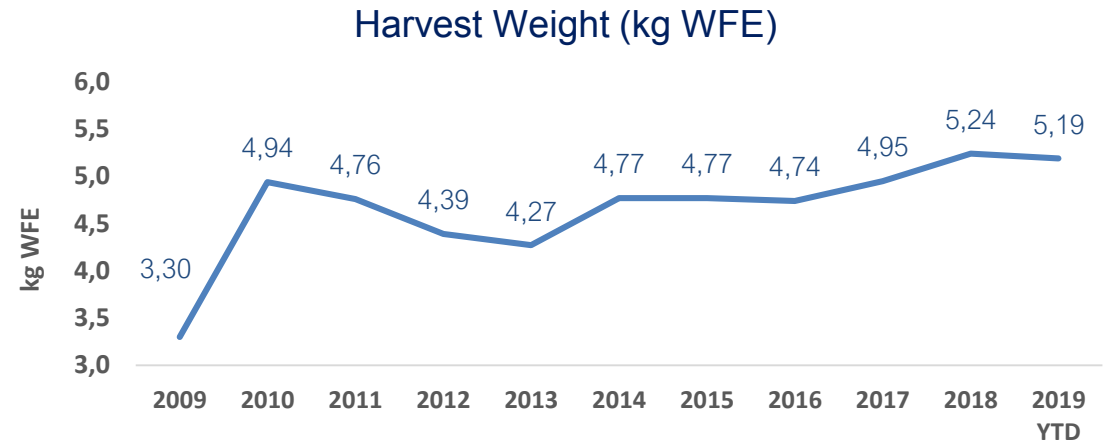
Chile: The evolution for a better industry



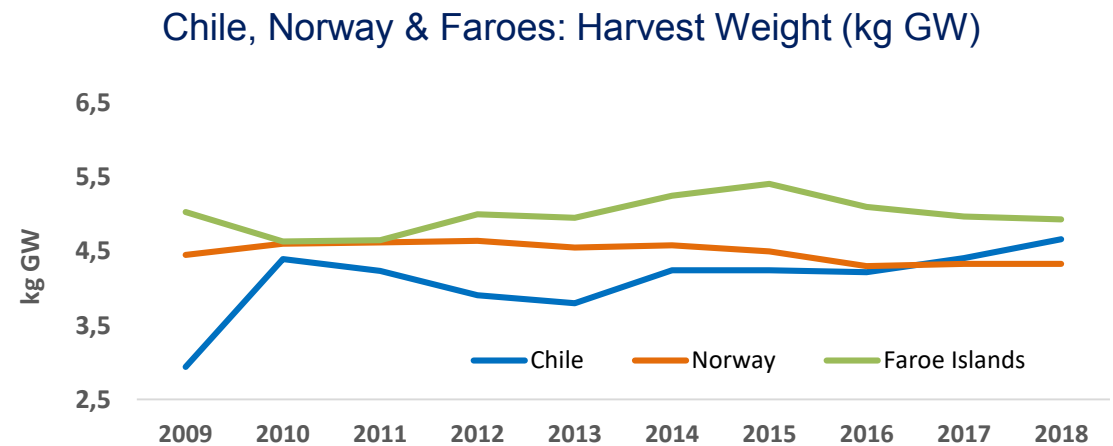
New Chilean Regulation: The Game Changer



Improving average harvest weight ... even above most of our peers



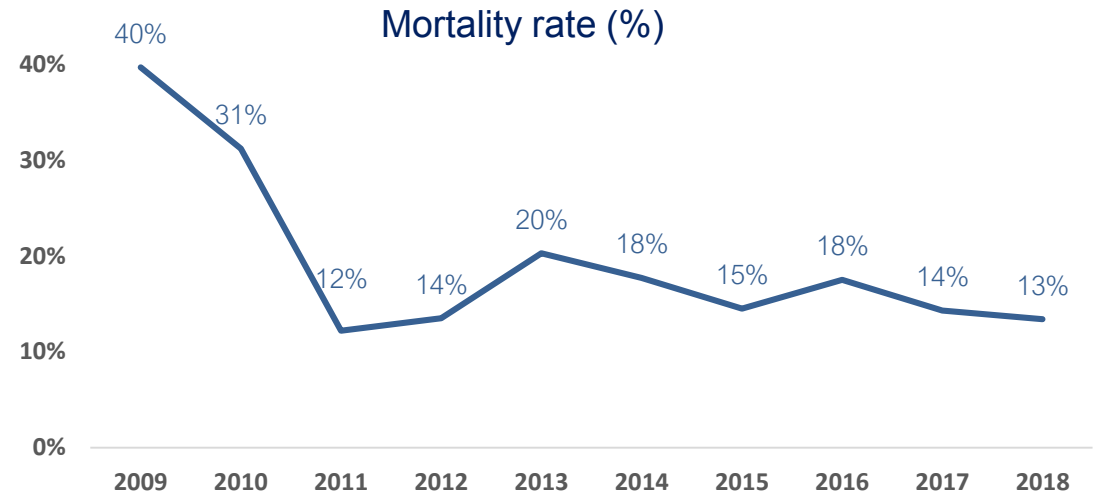
Source: Aquabench



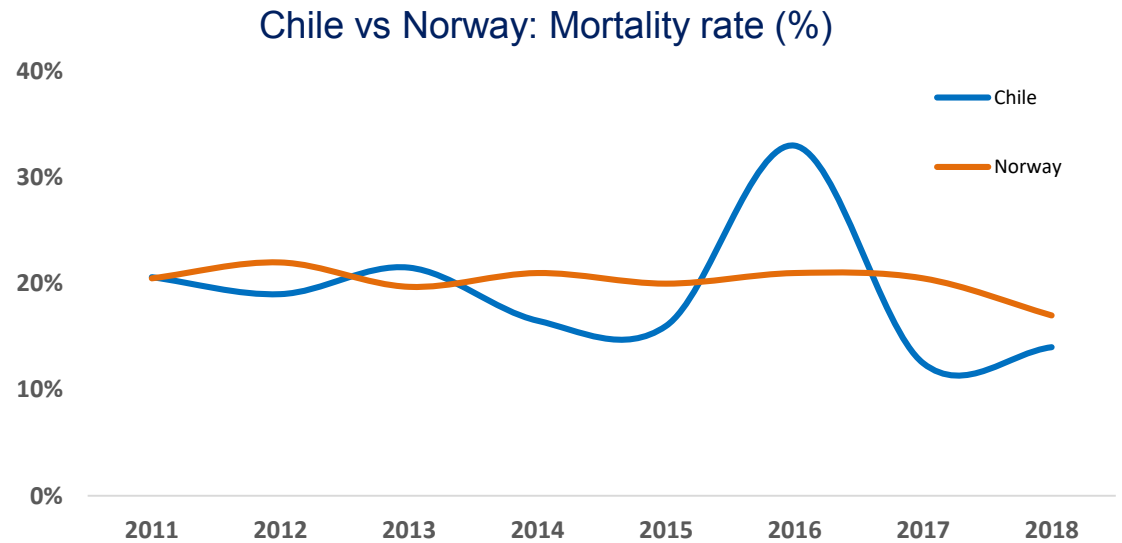
Source: Kontali



Reducing Mortality rate to low levels



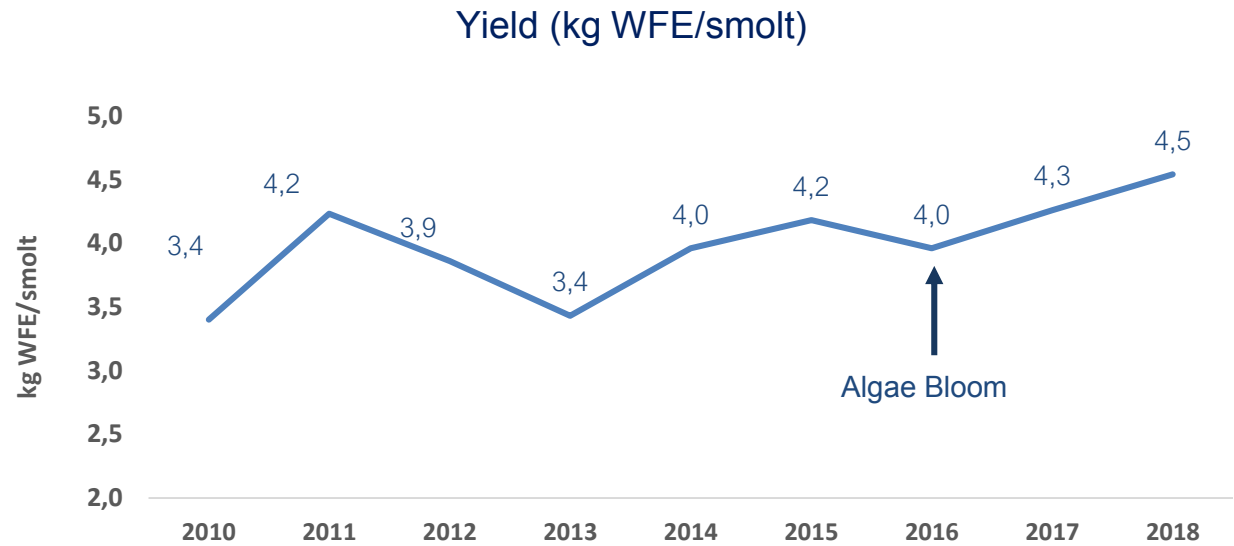
Source: Aquabench



Source: Kontali



Increasing yield per smolt ...

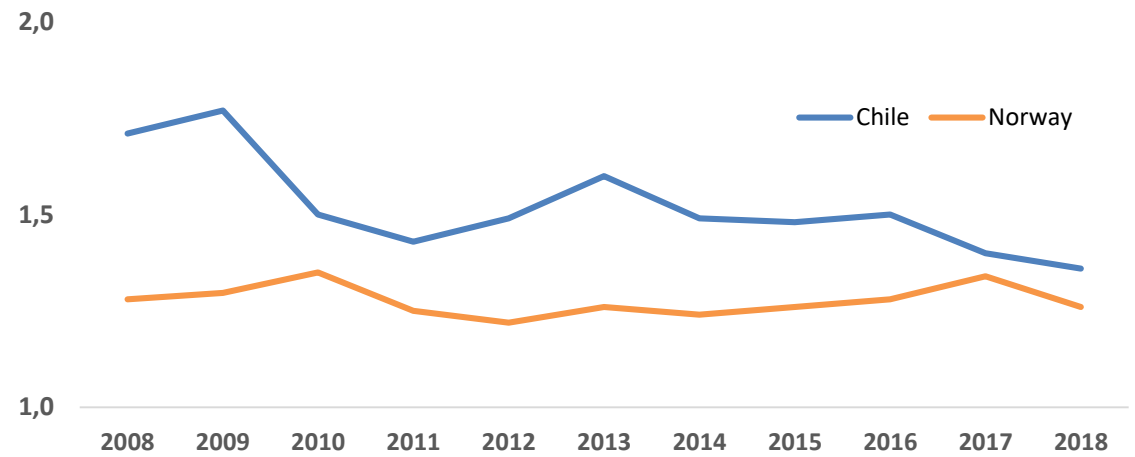


Source: Aquabench



Improving Feed Conversion Ratio (FCR)

Chile & Norway: FCR_e

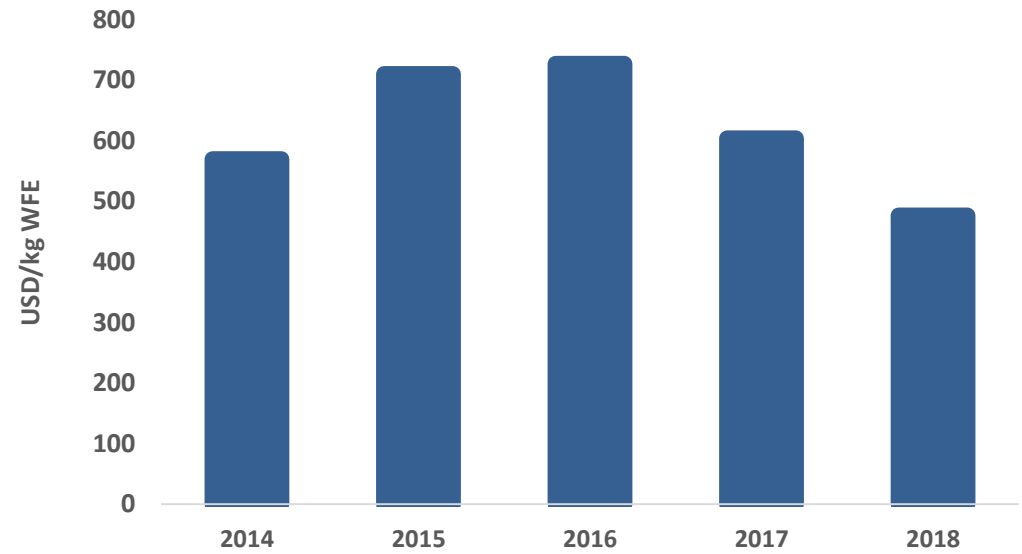


Source: Aquabench + Norwegian Directorate of Fisheries



Reducing antibiotic use...

ICA*: Gr AB/Harvested ton

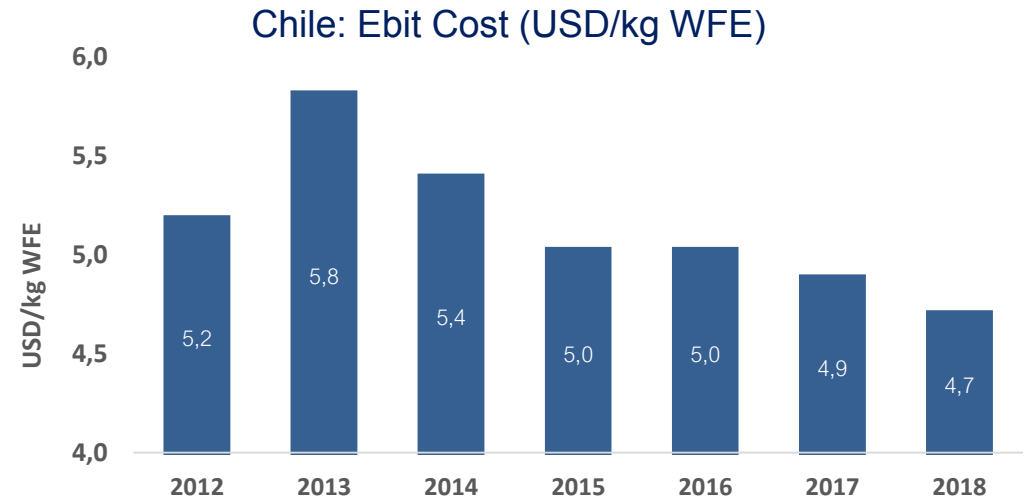


*Atlantic Salmon only

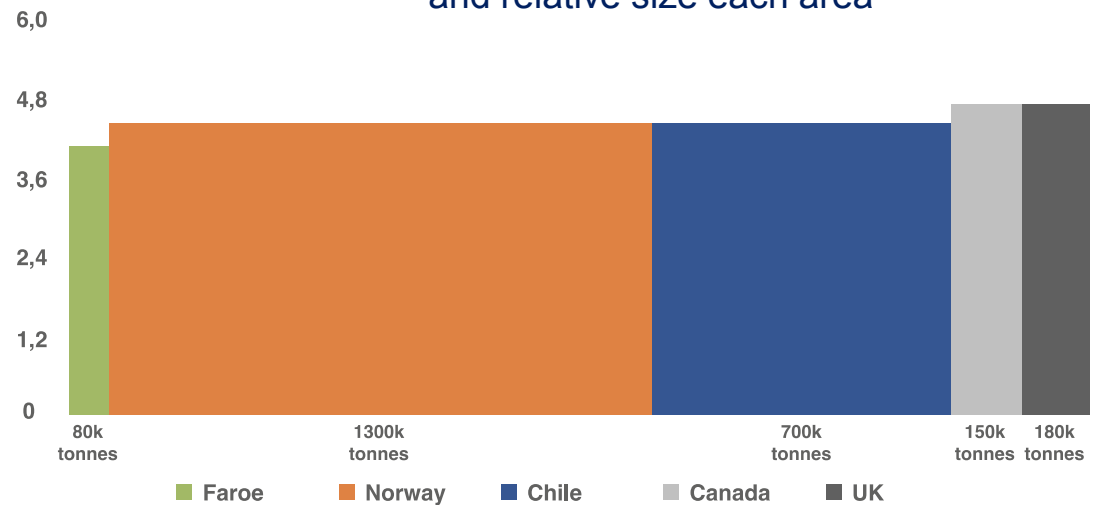
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Decreasing Ebit cost...



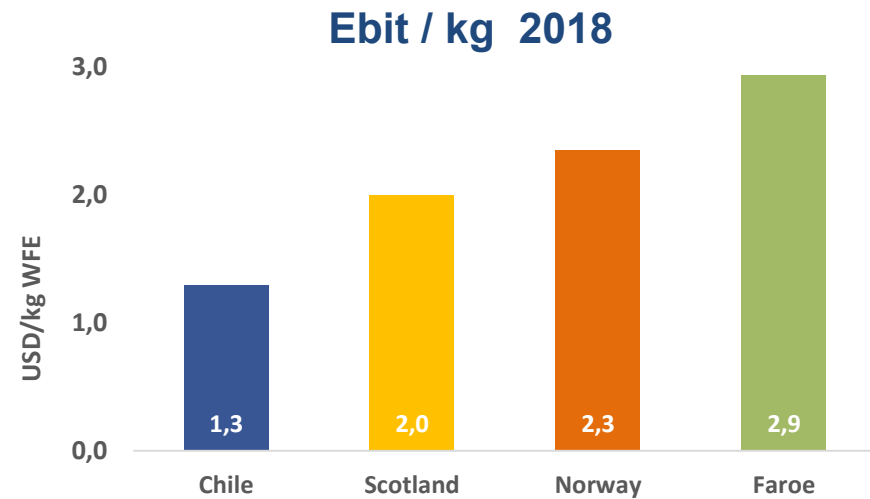
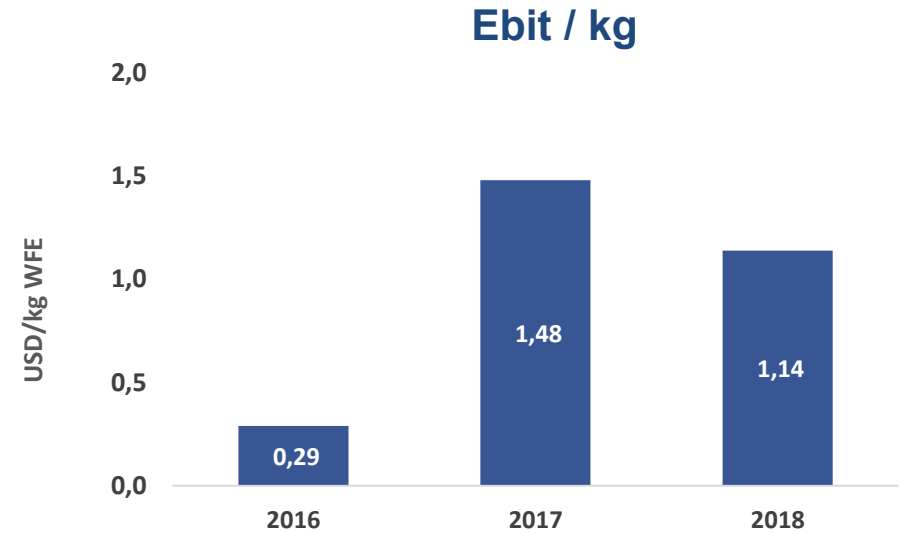
Average cost (USD/kg GWE) in different farming areas and relative size each area





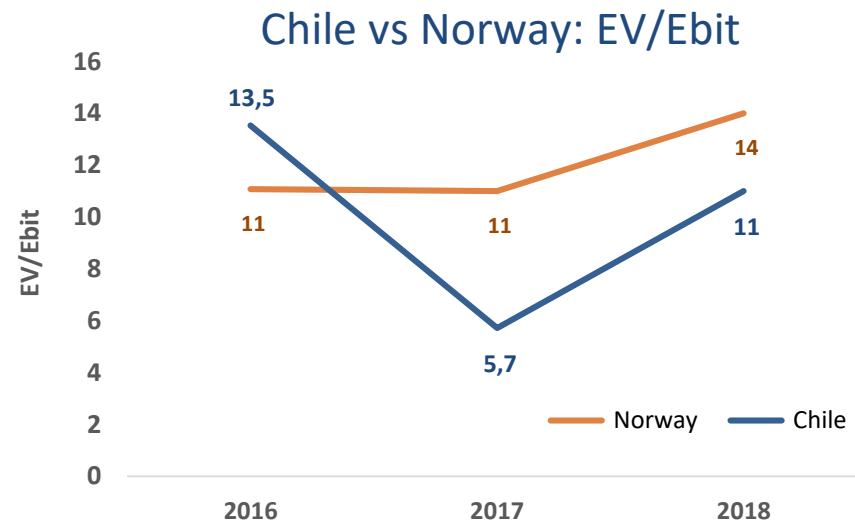
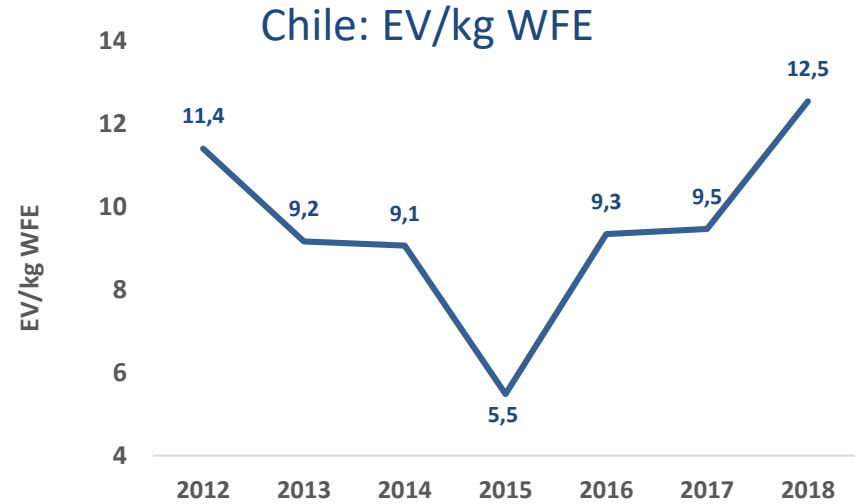
Increasing Ebit per Kg produced

...even though is still well below its peers!





Improving market valuation... even though is still well below its European peers!



*Share price avg of the year



Overall...
Chile has improved a lot!



Overall...
Chile has improved a lot!

...and is ready for new challenges!

In Summary.....

1. Regulation has been the Game Changer
2. Competitiveness on the farming side is close to the best performing countries
3. Chile is now ready for new challenges
4. Norway, focus in R&D + Innovation, is way ahead on the road of the “New Era” of the world salmon industry



Defining the “New Era”
of the world salmon farming industry



What's the world salmon industry doing now?

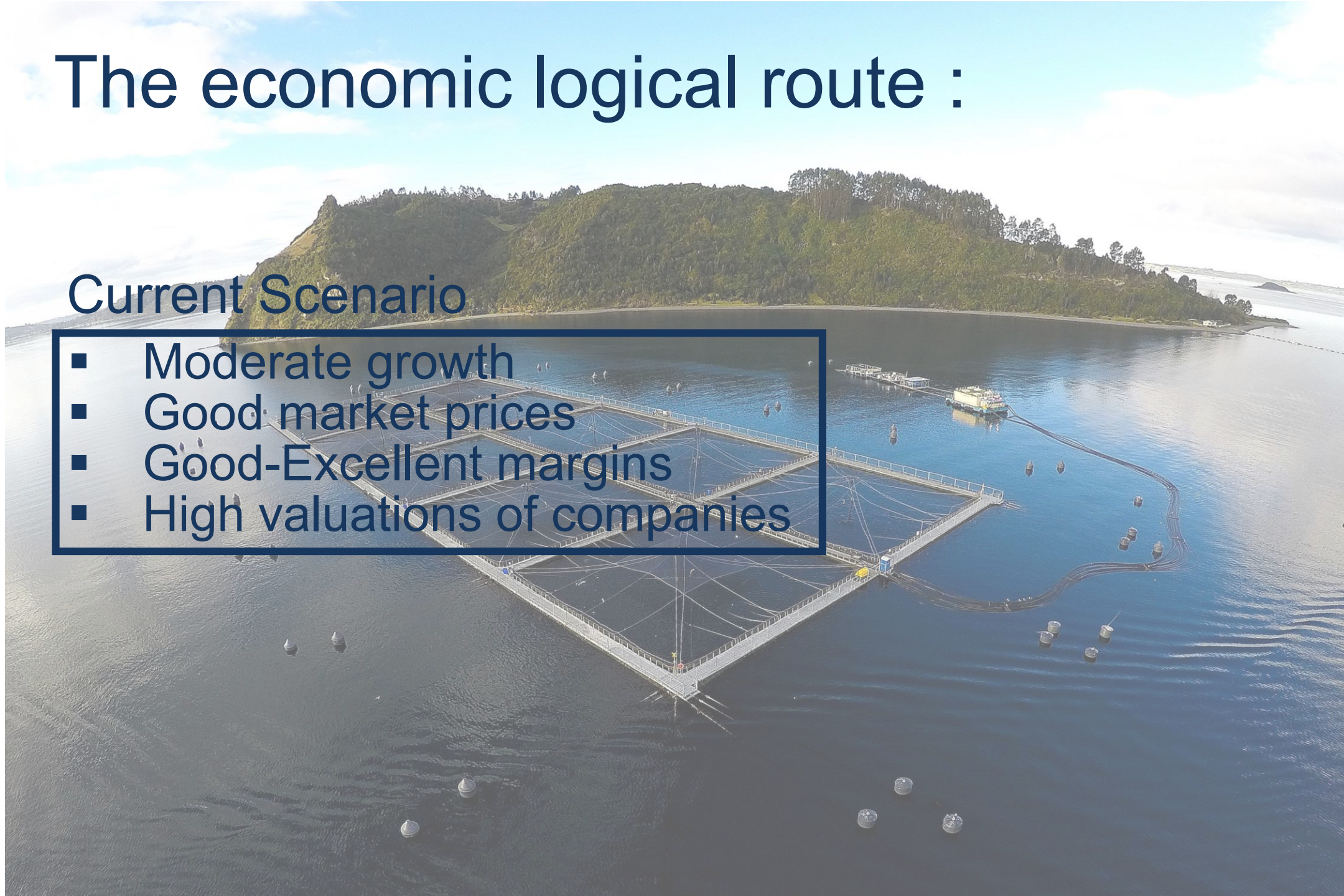
What's the new scenario?

Will Supply meet Demand?

The economic logical route :

Current Scenario

- Moderate growth
- Good market prices
- Good-Excellent margins
- High valuations of companies



The economic logical route :

Current Scenario

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Sooner than Latter

Supply
will meet
Demand

When ???



What's the world industry is doing to increase Supply?

R&D + Innovation



To create new
sustainable supply





Conventional salmon farming

Norwegian industry is working and investing hard to optimize license utilization:

- ❖ Traffic Light system (Estimated growth : 2% annually)
- ❖ Post Smolt (Potential growth : +10-20% next 7 years)
- ❖ Improvements in harvest weight (Depends on biology + MAB regulation)
- ❖ Development licenses (Depends on Norwegian government policy)



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➡ Expected new 400-500 Ktons by 2025



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- ❖ PRS System (Estimated growth : +2% annually)
- ❖ Density Regulation (4 kg/m³) (Estimated growth : Difficult to predict)
- ❖ XII region development (Estimated growth : 80-100 Ktons)



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➡ Expected new 200-250 Ktons by 2025



Conventional salmon farming in “New Territories”

- ❖ Canada :
 - Newfoundland’s local government hired McKinsey for study
 - McKinsey proposed further development of Salmon Farming
 - Potential growth: Not defined yet
- ❖ Iceland :
 - The Marine Research Institute released a biological risk assessment
 - 4 norwegian companies controlling JV projects with local producers
 - Potential growth: Estimated 60-80 Ktons by 2025

The upcoming new farming technologies



Evolution & Revolution?



Off-Shore Farming

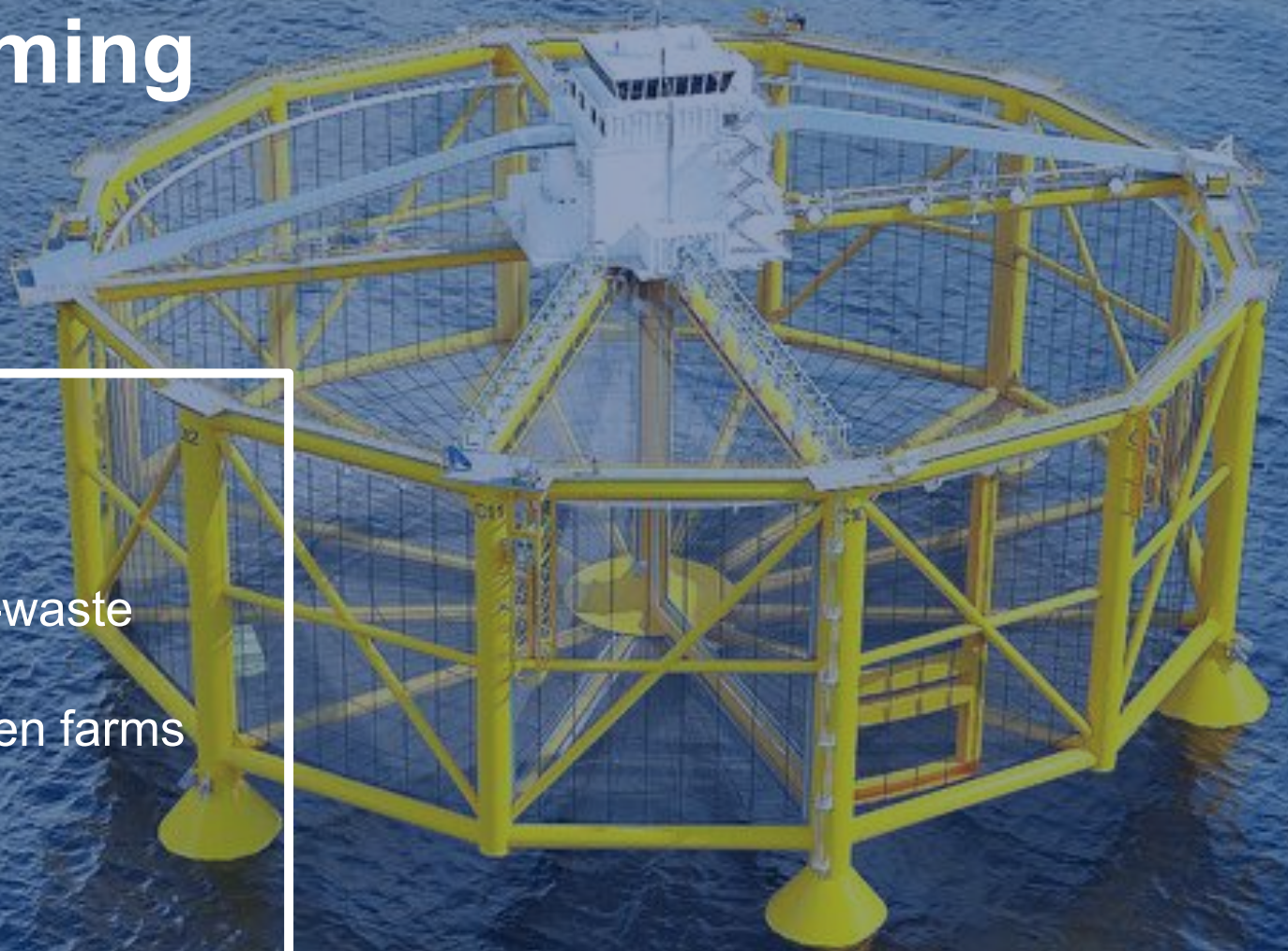
- ❖ The Development Licence System in Norway is incentivizing Off-Shore development
- ❖ Evolution of existing Conventional Farming
- ❖ Developed in Norway by existing players in existing regions
- ❖ Norway : +20 Projects, 4 approved
- ❖ China is developing an off-shore project in Yellow Sea (new region)



Off-Shore Farming

Pros

- ❖ Increase farming areas
- ❖ Better dispersion of bio-waste
- ❖ Lower impact on coasts
- ❖ Greater distance between farms



Off-Shore Farming

An aerial photograph of a large, yellow, circular offshore aquaculture cage structure in the ocean. The structure is a complex metal framework with a central white control building. It is supported by several yellow vertical posts that extend into the water. The water is a deep blue color.

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Cons

- ❖ Higher Capex (12-14 US\$/Ton)
- ❖ Higher Opex
- ❖ Complicated logistics
- ❖ Higher farming cost
- ❖ Same other facts of Conventional farming (diseases, sealice, algae blooms, airfreight, etc.)

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Expected new 50-100 Ktons by 2025



Land Based Farming

- ❖ Complete different business model
- ❖ High price of licences in Norway is incentivizing Land Based projects
- ❖ Main economic driver is airfreight saving
- ❖ Supply Destination : 100% local market
- ❖ Main Locations : USA and Asia, far away from the main producing countries



Land Based Farming



Pros

- ❖ Very low freight to market
- ❖ Lower environmental impact
- ❖ No Sealice
- ❖ Lower mortality?

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- ❖ Fish welfare due very high density
- ❖ 3-4 Kg. Average harvest size
- ❖ Energy intensive
- ❖ High Operational Risk
- ❖ Complexity of operation & control
- ❖ Off flavor of the fish meat
- ❖ Water quality

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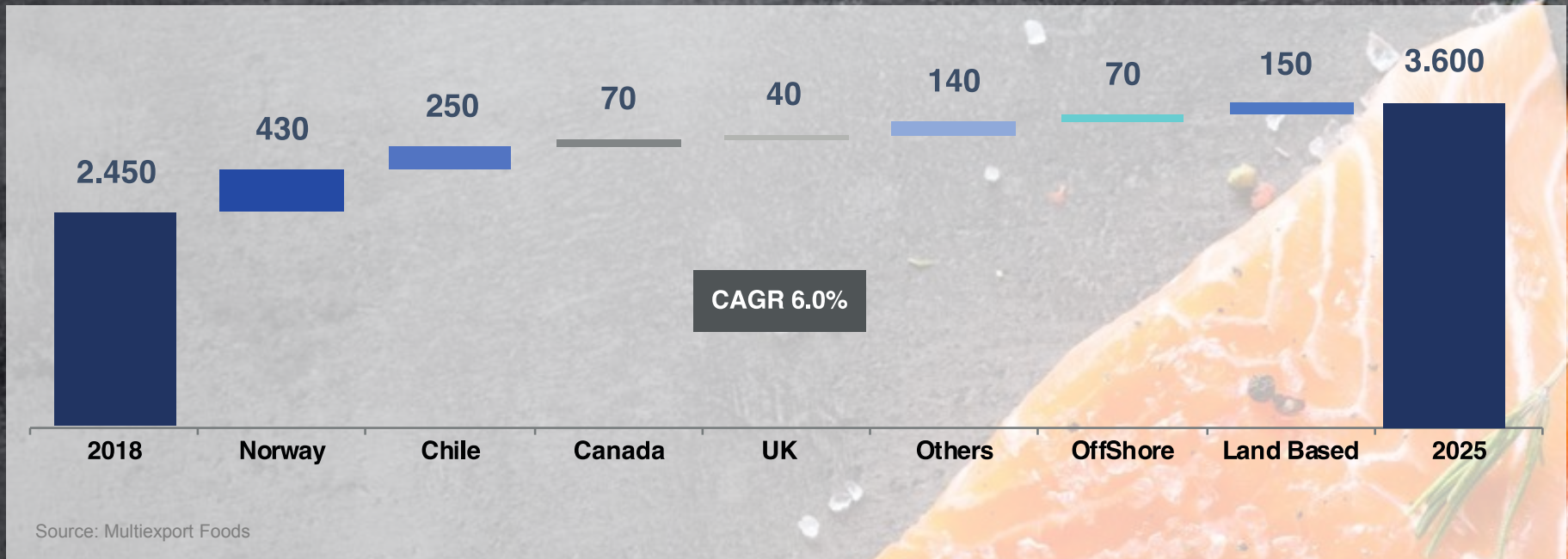
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Expected production: Very difficult to predict !

Supply estimation by 2025



- ❖ Conventional Farming → CAGR 5,0%
- ❖ Conventional Farming + Offshore → CAGR 5,3%
- ❖ Conventional Farming + Offshore + Land Bases. → CAGR 6,0%

With all these developments... Will Supply meet Demand?



With all these developments... Will Supply meet Demand?

→ There is no question Supply will meet Demand!



With all these developments.....Will Supply meet Demand?

- There is no question, Supply will meet Demand!
- The open questions are: **When? At which Cost?**



A wide-angle landscape photograph featuring a calm, dark body of water in the foreground. In the background, there are dark, forested mountains under a heavy, grey sky. A bright sun is breaking through the clouds in the upper right, creating a lens flare and illuminating the scene. The overall mood is serene and atmospheric.

Conclusions at this point:

A scenic landscape featuring a large body of water in the foreground, likely a lake or fjord. In the background, there are dark, forested mountains under a dramatic, cloudy sky. The sun is breaking through the clouds, creating a bright glow and rays of light. The overall mood is serene and majestic.

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3. Land Based has the chance to prove that it can be one of the next Game Changers
4. We have to wait 5 years to see what may happen

A wide-angle landscape photograph of a high-altitude mountain range. The mountains are rugged and dark, with significant snow cover on their peaks and in their crevices. The sky is a deep blue with scattered, light-colored clouds. In the foreground, a large, calm lake with a striking turquoise color stretches across the valley. The overall scene is one of natural grandeur and beauty.

Chile in the new era
of the world salmon industry

Chile is ready for new challenges...
but needs to work hard under this new
scenario



A high-angle photograph of a snow-capped mountain peak. The sky is a deep, clear blue. In the lower right foreground, a climber is visible, wearing a red jacket and a black backpack with a large coil of red rope. The climber is looking up towards the mountain. The mountain's surface is covered in snow and patches of dark rock. The overall scene conveys a sense of challenge and adventure.

Chile is ready for new challenges...
but needs to work hard under this new
scenario

**Chile has not unlimited time to
move forward...** and is a little behind
its peers

Chile: The Key Drivers for next decade

The background of the slide features a Chilean flag waving on a white flagpole. The flag has a white top section with a blue triangle and a red bottom section. The sky is a deep blue with scattered white clouds, and a green forested hillside is visible at the bottom of the frame.

- ① Demand
- ② Price
- ③ R&D + Innovation
- ④ Reputation & Sustainability

1 Demand

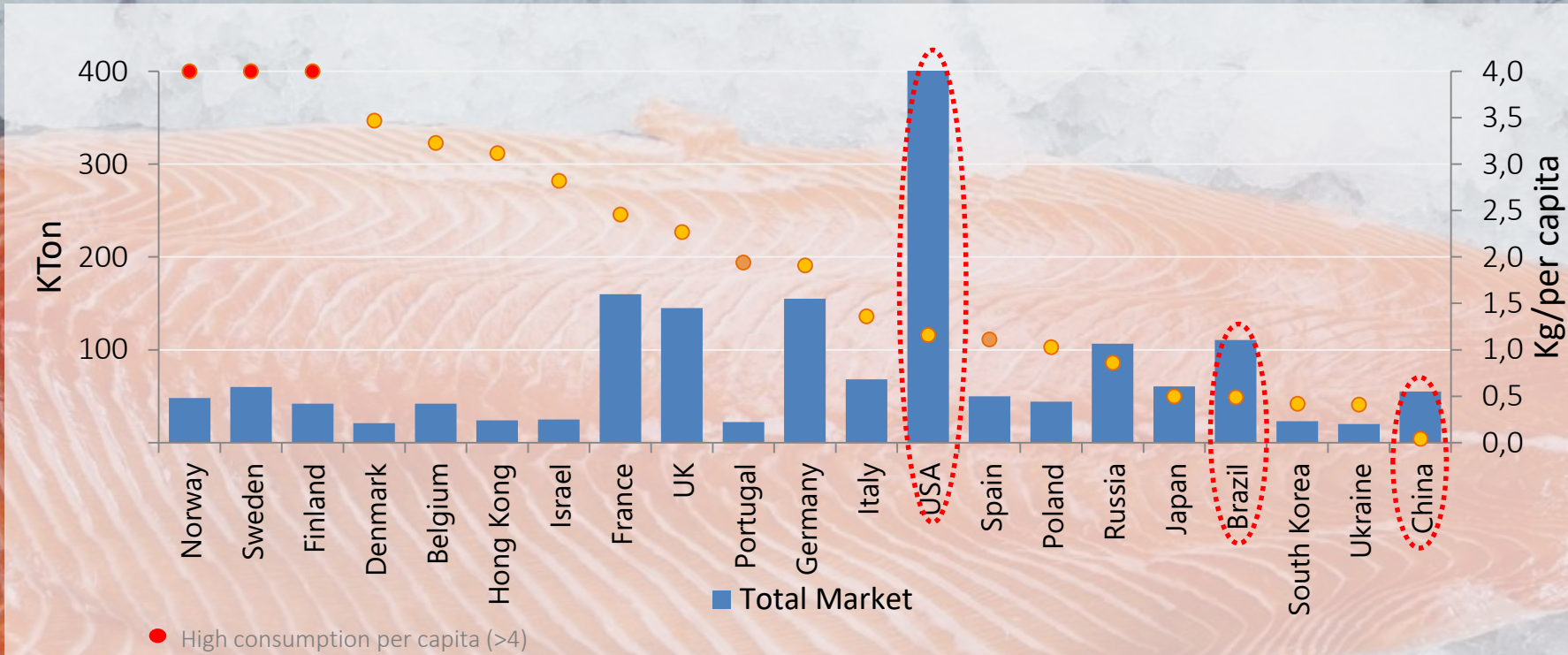


1 Demand

A. Focus in USA, Brazil and China (UBC), markets with the highest per capita consumption growth potential

- ❖ Chile dominates UBC markets...far in Brazil and USA
- ❖ Chile enjoys benefits from FTA with UBC markets (No customs duty)
- ❖ Large population 2 billion people
- ❖ Consumers from UBC loves salmon
- ❖ UBC Per capita salmon consumption are at a very low level

1 Demand



Chile's salmon market share in UBC Countries

	2018
US	57%
Brazil	100%
China	49%
Russia	70%
Other Asia	30%

B. Addressing the airfreight cost and solving logistic problems (from the farm to the market)

Airfreight Cost Comparison


USD/ Net Kg

	Chile	Norway
USA	1,35	1,72
China	3,31	1,97
Brasil	0,32	2,3

Logistic Challenges

- ❖ Shortening transit time from farm to market
- ❖ Restrictions on Wellboats operations (algae bloom)
- ❖ Availability of “viveros” next to processing plants
- ❖ Cargo airlines availability to China
- ❖ Local bureaucracy at port of entry (China)

1 Demand

- A. Focus in USA, Brazil and China (UBC), markets with the highest per capita consumption growth potential
 - B. Addressing the airfreight cost and solving logistic problems (from the farm to the market)
 - C. Consistent quality supply
 - D. Permanent Marketing
- 
- A large, fresh salmon fillet is shown resting on a bed of crushed ice. The salmon has a vibrant orange-pink color with distinct white marbling. The ice is light blue and textured. The background is a soft, out-of-focus greyish-blue.

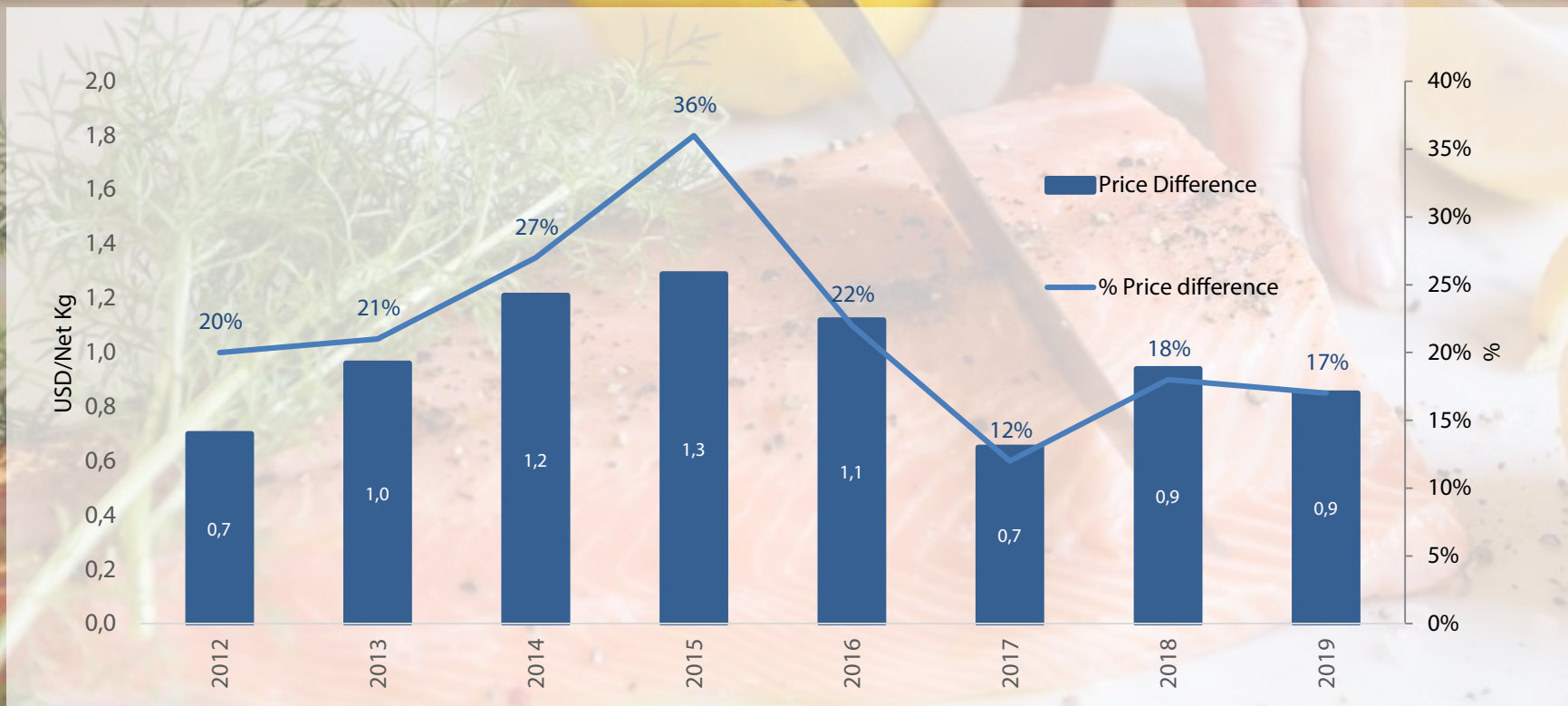
2 Price



2 Price

USA Market : Price of Chilean salmon has been historically lower compared with other origins

USA : Chilean salmon price difference with other origins



The US consumers perception about Chilean salmon:

- a. Low awareness that Chile is a source for salmon
- b. Vague understanding of Chilean farming practices and recent good performance (No clear about sustainable practices)
- c. No association between Chilean salmon and Patagonia
- d. Environmentalist increasingly aware of aquaculture as part of the “solution” and not “the problem” for feeding a growing population



**CHILEAN SALMON
MARKETING COUNCIL**

Chilean salmon is developing a BRAND based on:

Sustainability improvement

Engagement with local community

AB reduction

Product Quality

Origin promotion



The Promise of Patagonia

Ketchum



**Salmón
de Chile**

Discover delicious,
sustainably raised
salmon from Chilean
Patagonia—the
place where nature
and nurture meet.



ThePromiseofPatagonia.com



The Promise of Patagonia



ThePromiseofPatagonia.com

The Commitment:

1. Producing high quality, healthy and nutritious salmon
2. Preserving the pristine territory and supporting the communities of our homeland, the Chilean Patagonia
3. Ensuring the wellness of our salmon and treating our fish with the greatest care
4. Using the highest processing standards, employing talent throughout the value chain
5. Assuring consistent availability to deliver high-quality salmon year-round

If we are able to work hard and
do the job, decreasing the price gap
by 50%...

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The REWARD :

MUS\$ 350-500 of more Chilean exports annually, going directly to the bottom line (exTax)

3 R&D + Innovation

- The world is changing everyday.....but the speed of the changes is amazing
- Digital Revolution offering impressive number of new tool :
 - ❖ Big Data
 - ❖ Artificial Intelligence
 - ❖ Robotization
 - ❖ Machine Learning –Deep Learning

③ R&D + Innovation

- The salmon industry is changing :
 - ❖ New farming technologies (Off-Shore, RAS, Land Based)
 - ❖ Many new applications year by year

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MAIN OBJECTIVES :

- To be the world's lowest cost producer
- To improve industry sustainability, lowering its environmental impact
- To supply the highest quality products

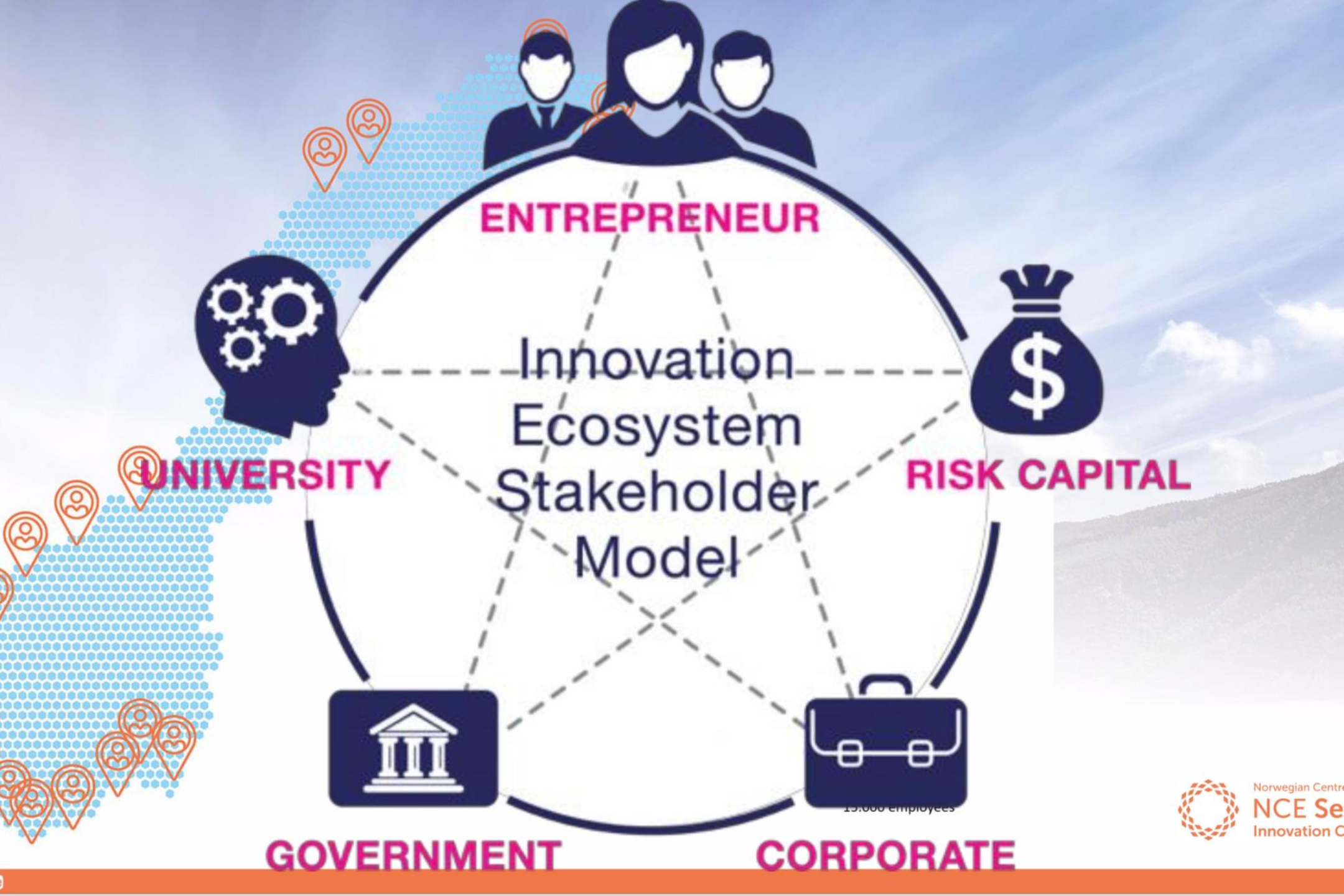
4 CONCRETE INITIATIVES :



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1. Establish the Chilean Salmon Innovation Council





ENTREPRENEUR

Innovation
Ecosystem
Stakeholder
Model

UNIVERSITY

RISK CAPITAL

GOVERNMENT

CORPORATE



Norwegian Centre
NCE Se
Innovation C

15,000 employees



Knowledge

Future-oriented
knowledgebase

Knowledge sharing

Talent attraction



Innovation

Secure sustainable
seafood production

Ensure faster adaption on
new technology

New growth areas in
seafood



Entrepreneurship & Commercialization

Increase competence in
entrepreneurship and
risk-capital

Strengthen entrepreneur-
ship to match industry
needs

Actively facilitate better
capital flows

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2. Specific Government policy to incentivize R+D+I within Salmon Industry (Imitate Norwegian example)

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4 CONCRETE INITIATIVES :

1. Establish the Chilean Salmon Innovation Council
2. Specific Government policy to incentivize R+D+I within Salmon Industry (Imitate Norwegian example)
3. To create the Salmon Research Institute
4. Create the Chilean version of Norwegian NASF

4 Reputation & Sustainability



Industry reputation is negative within Chile,
being perceived as polluting and not
sustainable industry



Negative public events with national attention :

- ❖ ISAv Crisis (2008)
- ❖ Chiloé Algae Bloom (2016)
- ❖ Salmon Escapes (2018)

DRUGS, SLUDGE AND SUPERBUGS: THE DANGERS OF CHILEAN SALMON FARMS

If you eat salmon, you're most likely eating the farmed stuff. And if you eat the farmed stuff, there's a good chance it came from Chile. That's because 70 percent of the salmon consumed globally is farmed, and Chile is the world's second-largest farmed salmon producer after Norway. While Norway's salmon industry is relatively clean, Chile's farms have only gotten dirtier, bigger and riskier.

Oceana's Chile team has worked to rein in dangerous salmon aquaculture since 2009. Recently, they scored a major victory when the Chilean Supreme Court ordered salmon farmers to disclose antibiotic use on a company-by-company basis. This is a first step to addressing the skyrocketing use of these drugs on salmon farms. But in Chile, antibiotics are just one piece of salmon's toxic puzzle.



TONS OF DRUGS:
Each year, Chile doses its farmed salmon with tons of antibiotics. In 2016, Chilean farmers dumped 282,500 kilograms (643,300 pounds) of antimicrobials into their fish pens. Norway used just 523 kilograms to produce twice as much salmon.

FUGITIVE FISH:
Atlantic salmon are not native to Chile. But many have escaped from farms and now compete with wild species for food, upsetting the balance of Chile's ecosystems.

SPAWNING SUPERBUGS:
Studies of antibiotic-resistant bacteria have uncovered these worrying bugs everywhere researchers look: in feed, fish, water and sediment. The concern is that salmon farm workers and local communities might pick up these bacteria and pass them to other people.

FISH PLAGUE:
The packed, unsanitary conditions on Chilean farms means salmon fall prey to a deadly bacterial disease known as *pleuritis/tyllosis*. This disease isn't just bad for farmed salmon. It can spread to Chile's native fish and kill them.

DEADLY SLUDGE:
A slurry of feces, uneaten food, drugs and pesticides accumulate underneath salmon pens. Excess nutrients in the sludge spurs algae overgrowth. When the algae die they rob the water of oxygen, creating dead zones that kill ocean life. This pollutes some of the most pristine coastal habitats left on earth, like the bays and fjords of Patagonia.

OCEANA

Antibiotic for therapeutic use

ENVIRONMENT JULY 23, 2015 / 10:07 AM / 3 YEARS AGO

Addicted to antibiotics, Chile's salmon flops at Costco, grocers

Anthony Esposito

7 MIN READ



SANTIAGO (Reuters) - Chile's salmon farmers are using record levels of antibiotics to treat a virulent and pervasive bacteria, driving away some U.S. retailers including Costco Wholesale Corp, which is turning to antibiotic-free Norwegian salmon.



Dirty beaches and coasts with farming materials

(mostly from mussels farming)



Poor
industry relationship
with local communities

Aggressive campaigns from ENGOS





Chilean citizens awareness about the industry

- ❖ How industry works
- ❖ Which are industry practices & certifications
- ❖ Industry sustainability reporting
- ❖ Poor experience with the product

CAPITAL

\$4.000

EL PODER DE
ASCANIO CAVALLO

LA SUPERPLANTA
QUE PODRÍA
COMBATIR EL
CAMBIO
CLIMÁTICO

EL ÚLTIMO PASE
DE CLAUDIO
PALMA: VUELVE AL
CDF

#LABATAJALLA DELSALMÓN

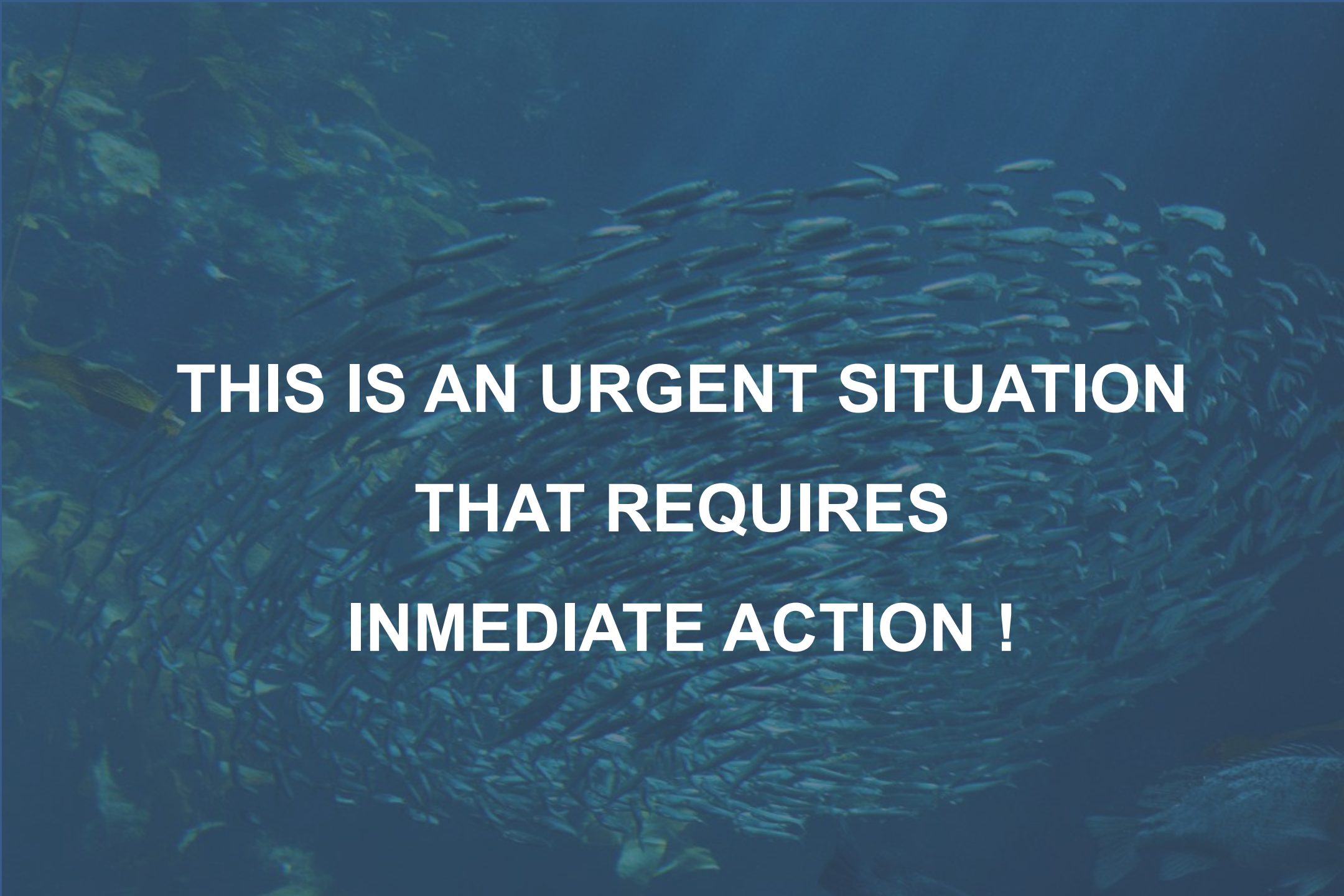
HACE UN MES SE ENCENDIERON LAS ALARMAS EN CHILE POR UNA CAMPAÑA
LIDERADA POR LOS CHEFS MÁS MEDIÁTICOS DE ARGENTINA, ENTRE ELLOS
NARDA LEPES, PARA EVITAR LOS CULTIVOS EN LA PATAGONIA DE ESE PAÍS. LOS
SALMONEROS CHILENOS ESTÁN PREOCUPADOS Y ACUSAN DESINFORMACIÓN.

Main Failure:

Industry hasn't told its fantastic story

Leaving to others the
space to
communicate their own
version of the industry



A large school of fish swimming in deep blue water. The fish are densely packed and moving in a coordinated pattern, creating a sense of movement and urgency. The background is a solid, deep blue color.

**THIS IS AN URGENT SITUATION
THAT REQUIRES
IMMEDIATE ACTION !**

5 CONCRETE ACTIONS:





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4. Public demonstration that industry is taking care about the environment

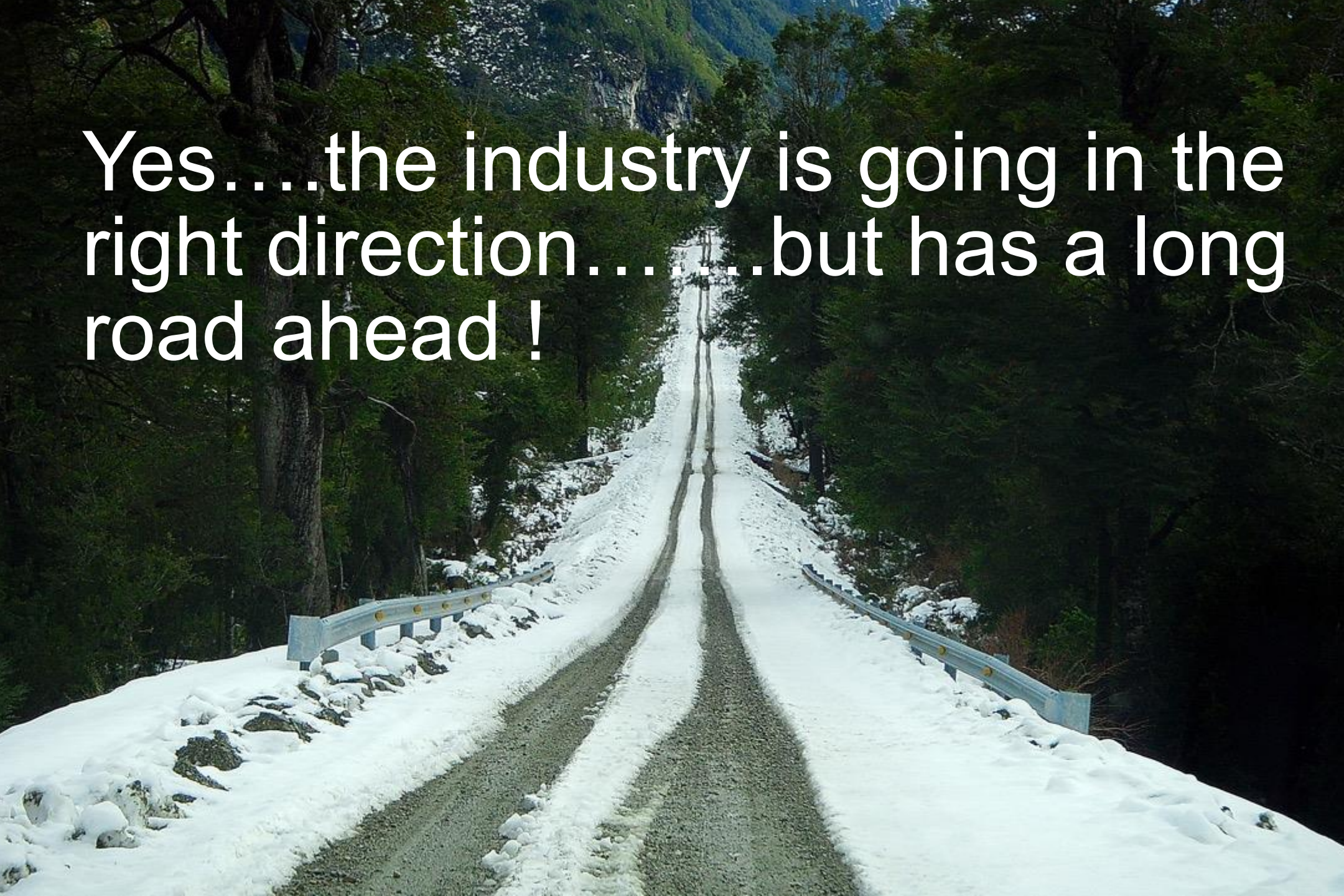
5 CONCRETE ACTIONS:

1. Telling the story
2. Strengthen relations with communities
3. Public demonstration of industry sustainability
4. Public demonstration that industry is taking care about the environment
5. Make Chileans fanatic salmon consumers

Yes....the industry is going in the
right direction



Yes....the industry is going in the right direction.....but has a long road ahead !



**We have to drive
fast... but smart**



A scenic landscape featuring snow-capped mountains in the background, a forested island in the middle ground, and a body of water in the foreground. The text "Thank you !" is overlaid in the center.

Thank you !