BAKKAFROST

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GENERAL PRESENTATION 2016

BAKKAFROST GROUP
Glyvrar, Faroe Islands

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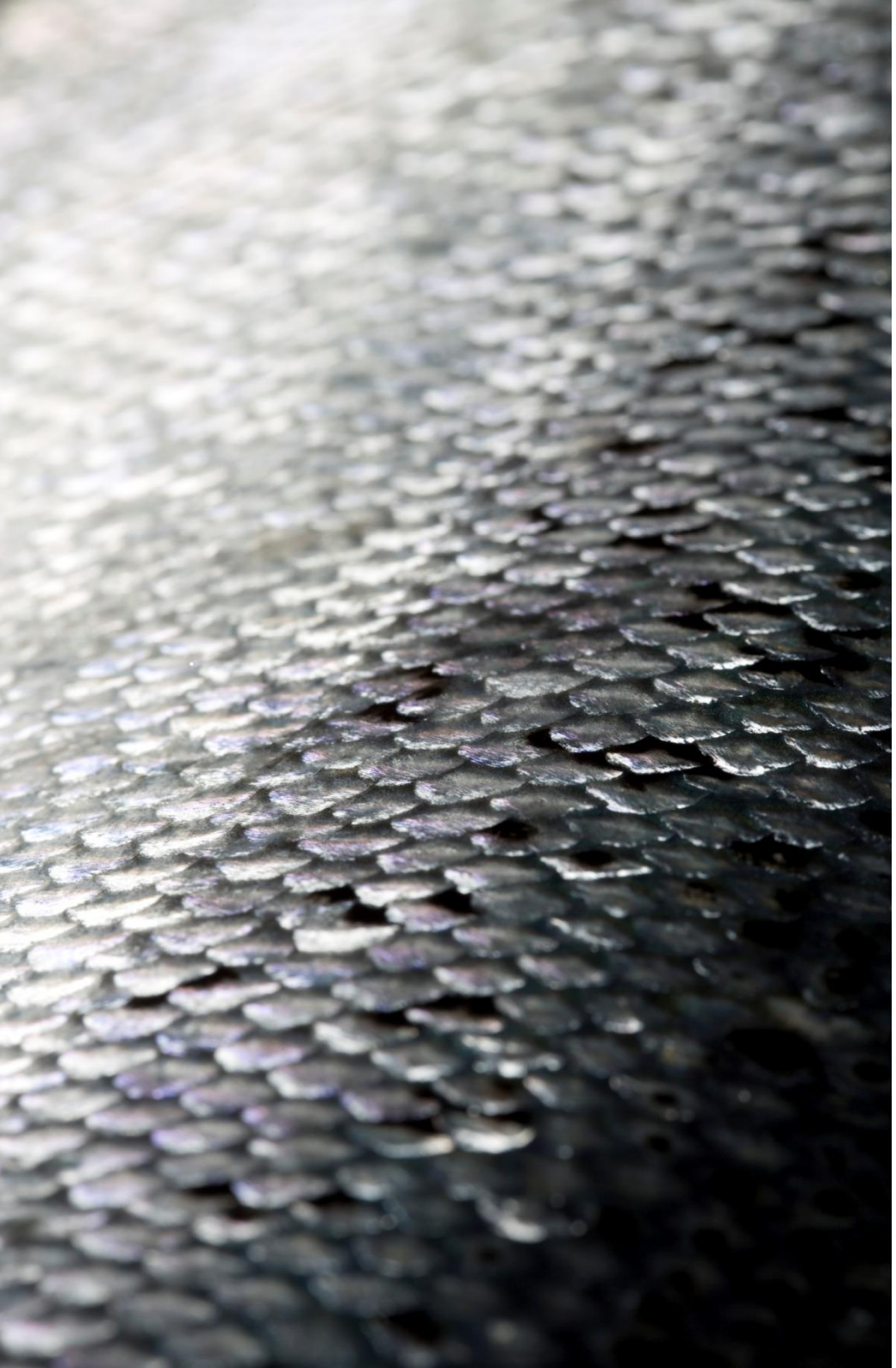

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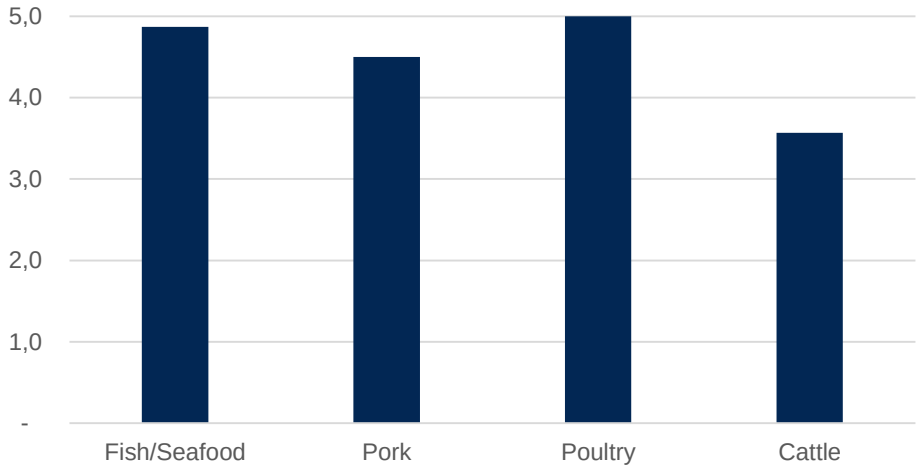
- **MACRO ENVIRONMENT**

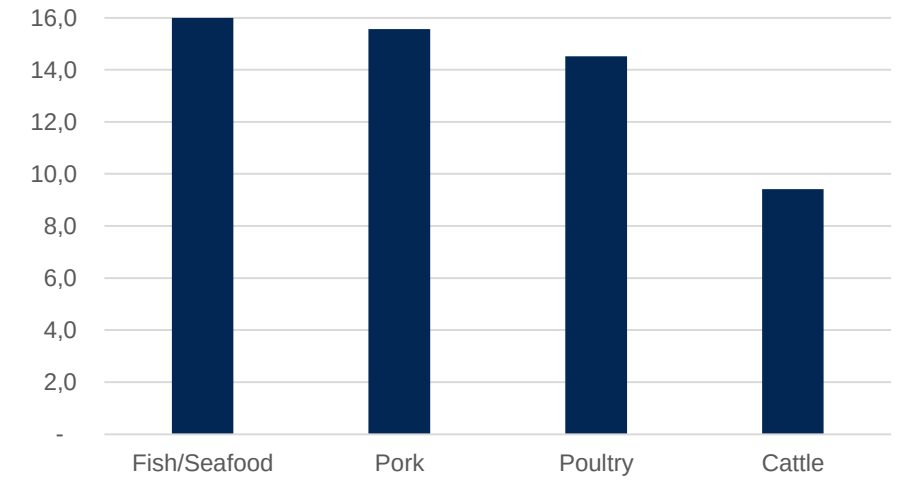
RELATIONSHIP BETWEEN KEY FOOD CATEGORIES

- Among the four most common protein categories, Seafood has the largest consumption protein per capita
- Together with poultry, seafood also accounts for the largest protein intake per capita
- Protein content of seafood is generally higher than pork, but lower than poultry and cattle

Protein supply quantity (g/capita/day)



Food supply quantity (kg/capita/yr)

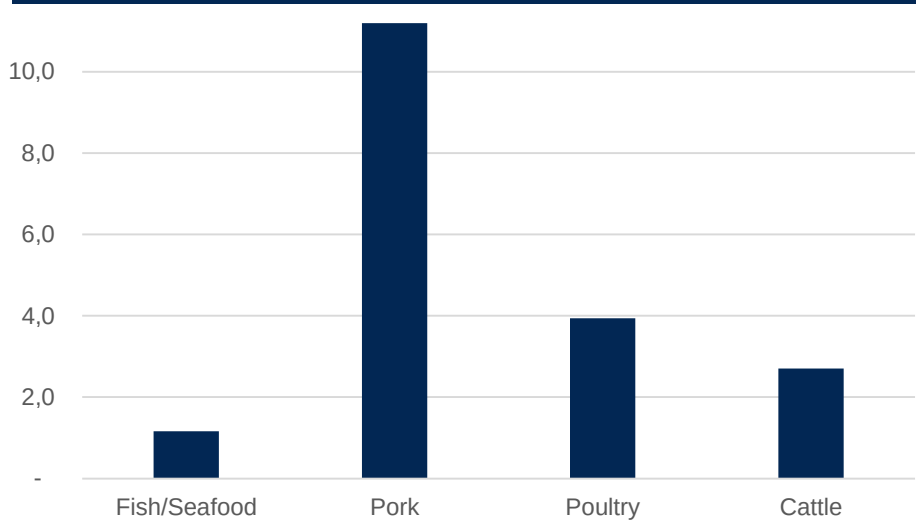


Source: FAOSTATS

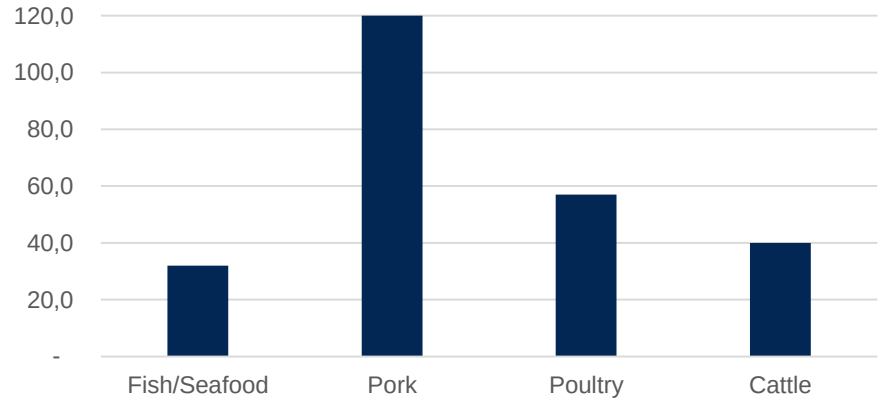
SEAFOOD INTSTRUMENTAL IN THE TREND TOWARDS A MORE HEALTHY DIET

- The fight against obesity requires reduced amounts of energy (kcal) and saturated fat
- Seafood is generally very low in fat content
- Certain species such as salmonids and pelagic fish are however rich on healthy fat acids (omega 3/6)
- Replacing saturated fat with these fat acids provides significant health benefits for the consumer

Fat supply quantity (g/capita/day)

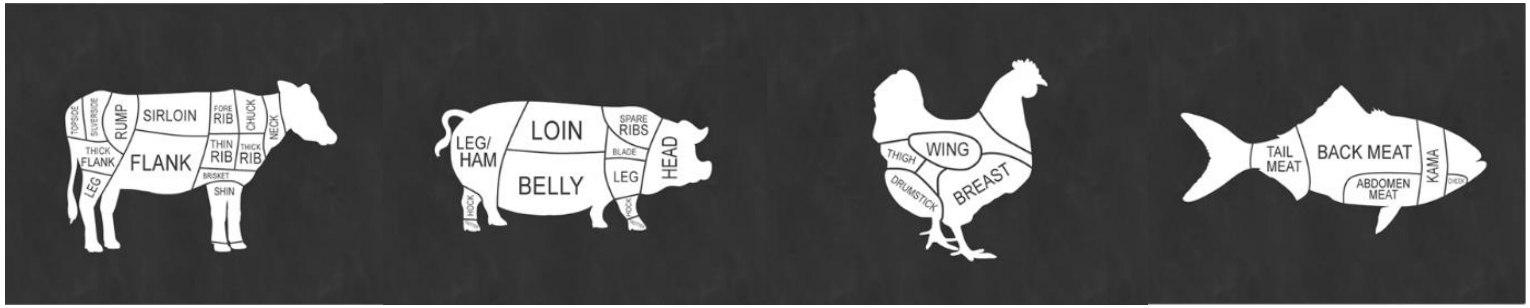


Food supply (kcal/capita/day)

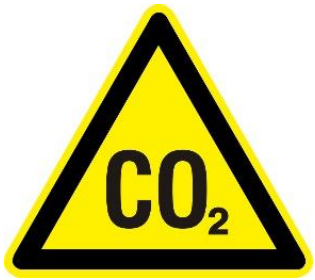


Source: FAOSTATS

FRESH WATER AND CO2 EMISSION PER KG EDIBLE MEAT



15 400 litres	**6 000 litres**	**4 300 litres**	**1 400 litres**

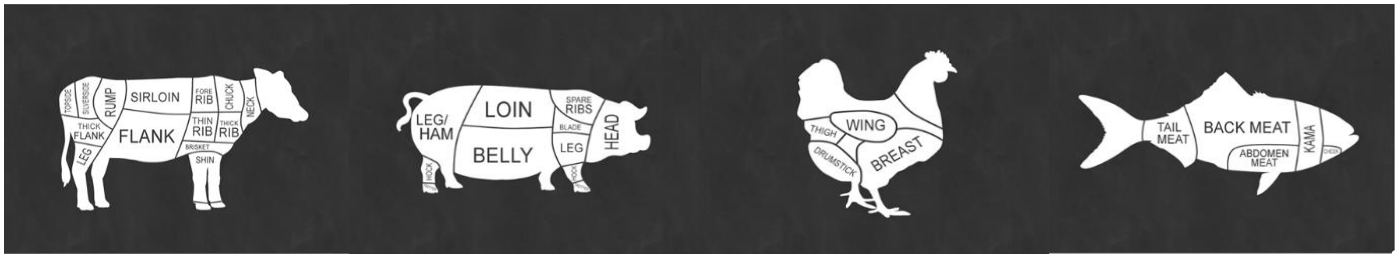


30 kg	**5,9 kg**	**3,4 kg**	**2,9 kg**

- Consumer awareness of environmental impact puts pressure on retail
- Costs of emission and water usage are becoming tangible and increasing

Source: M.M. & Hoekstra A.Y. (2010), Ytrestøyl et.al. (2014), Sintef report (2009), Carbon footprint and energy use of Norwegian seafood products, IME (2013)

RELATIONSHIP BETWEEN KEY FOOD CATEGORIES



Feed conversion	4,0-10,0	3,0	1,7	1,2
Energy retention	27 %	14 %	10 %	27 %
Protein retention	15 %	18 %	21 %	24 %
Edible yield	41 %	52 %	46 %	68 %
Edible meat per 100kg feed	4,0-10,0	17,0	21,0	57,0

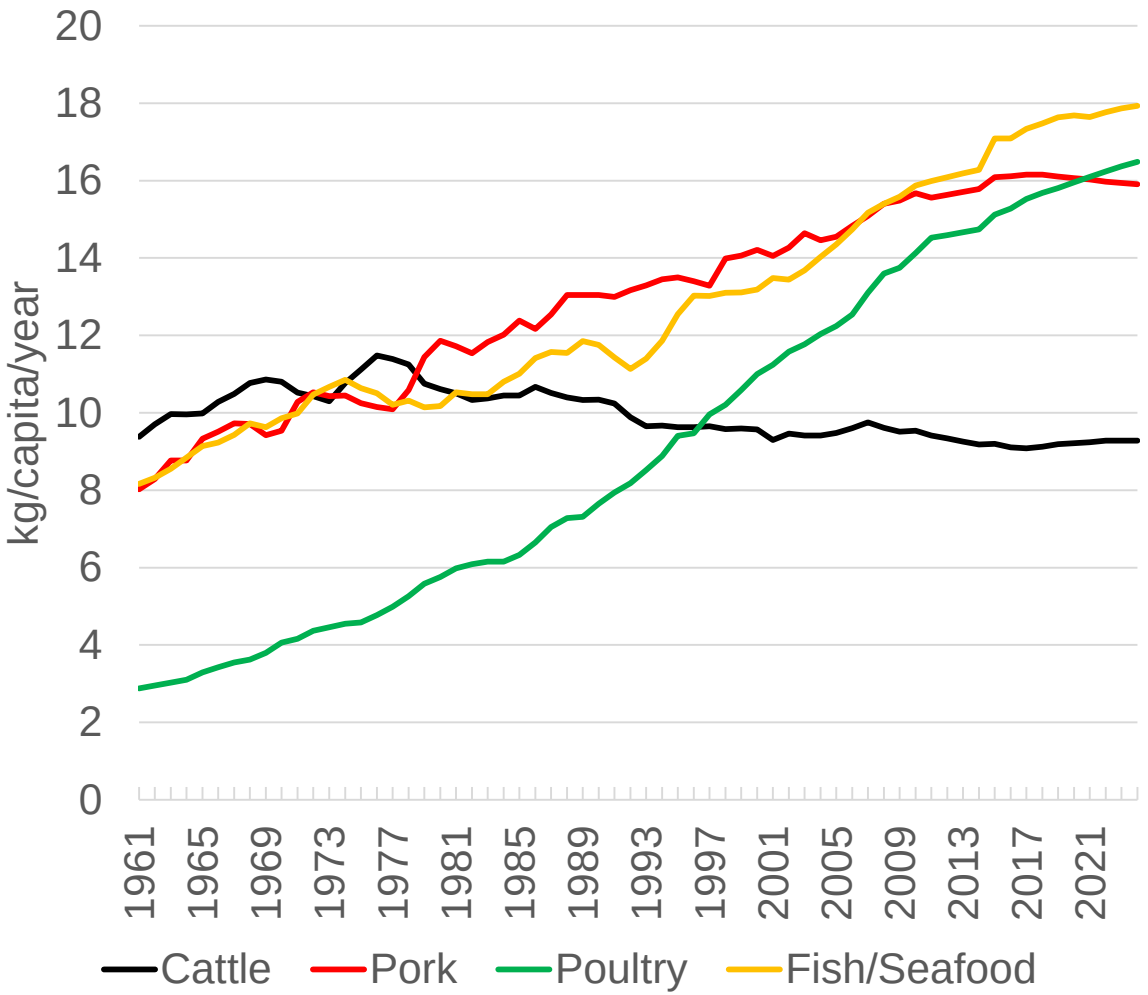
- Seafood represented by farmed Atlantic Salmon
- Trend of increasing population and increased consumption per capita will push capacity boundaries
- Costs of producing “inefficient” protein sources expected to rise significantly with time

Source: Bakkfrost, Ytrestøyl et. al. (2014), National Beef Organisation UK (2014), Volden H. and N I Nielsen (2011), Energy and metabolizable protein supply, www.journaloffarmanimalscinence.org, Skretting 2012, Sustainable feed solutions for aquaculture, , Sintef report (2009), Carbon footprint and energy usage for Norwegian seafood products

STRONGLY INCREASING CONSUMPTION PER CAPITA

- Consumption per capita has risen, and is expected to continue to rise – with one exception
- The most efficient categories, seafood and poultry, has outperformed, and is expected to continue to outperform, pork

Development in consumption per captia

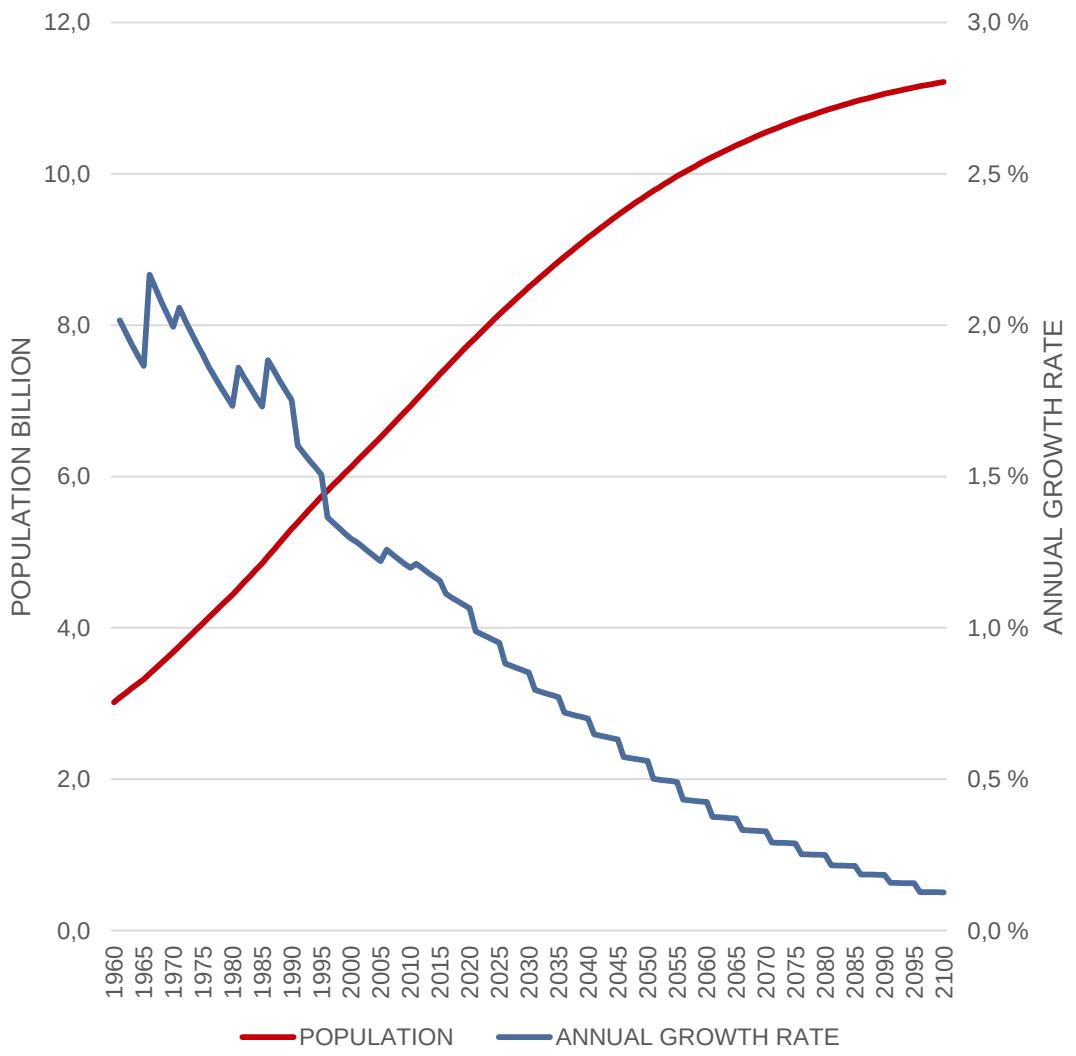


Source: FAOSTATS, OECD/FAO AGRICULTURAL OUTLOOK

ANNUAL POPULATION GROWTH CONTINUES ABOVE 1% UNTIL 2025

- Increased consumption per capita combined with sharply rising population growth forms a large force
- Total consumption of the four categories expected to rise by >13% from 2015-2024

World population – Development and forecasts

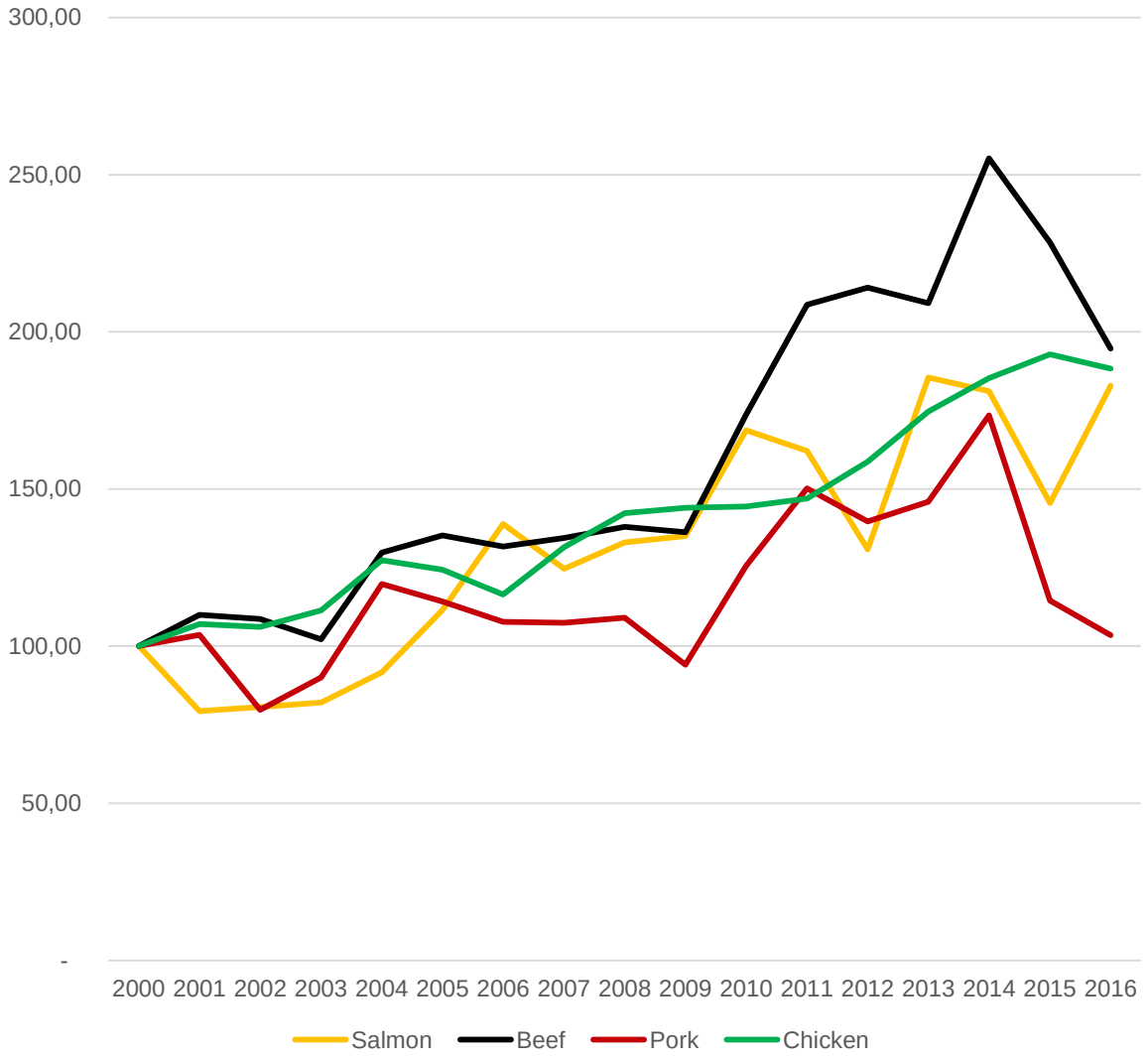


Source: UN POPULATION DIVISION

PRICE DEVELOPMENT IN LINE WITH POULTRY AND CATTLE MEAT

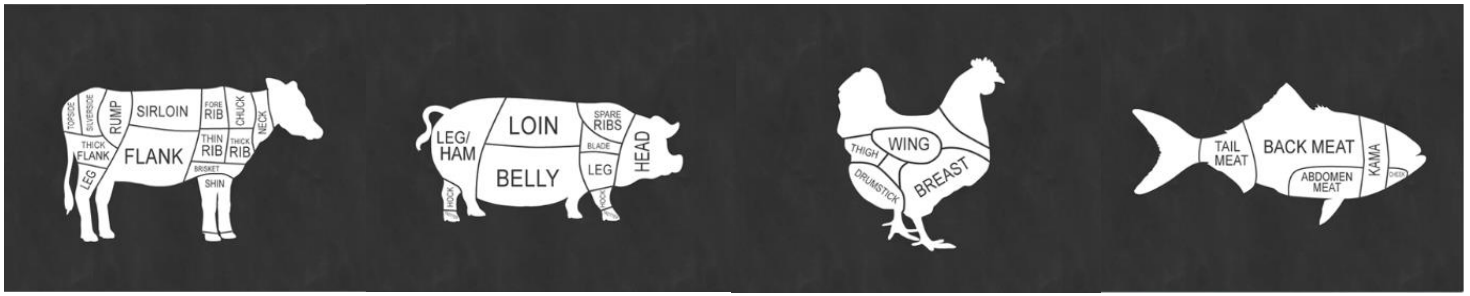
- Salmon prices have been volatile and risen in line with chicken prices
- Beef prices have generally risen more
- Pork has become relatively cheaper

World population – Development and forecasts



Source: IMF

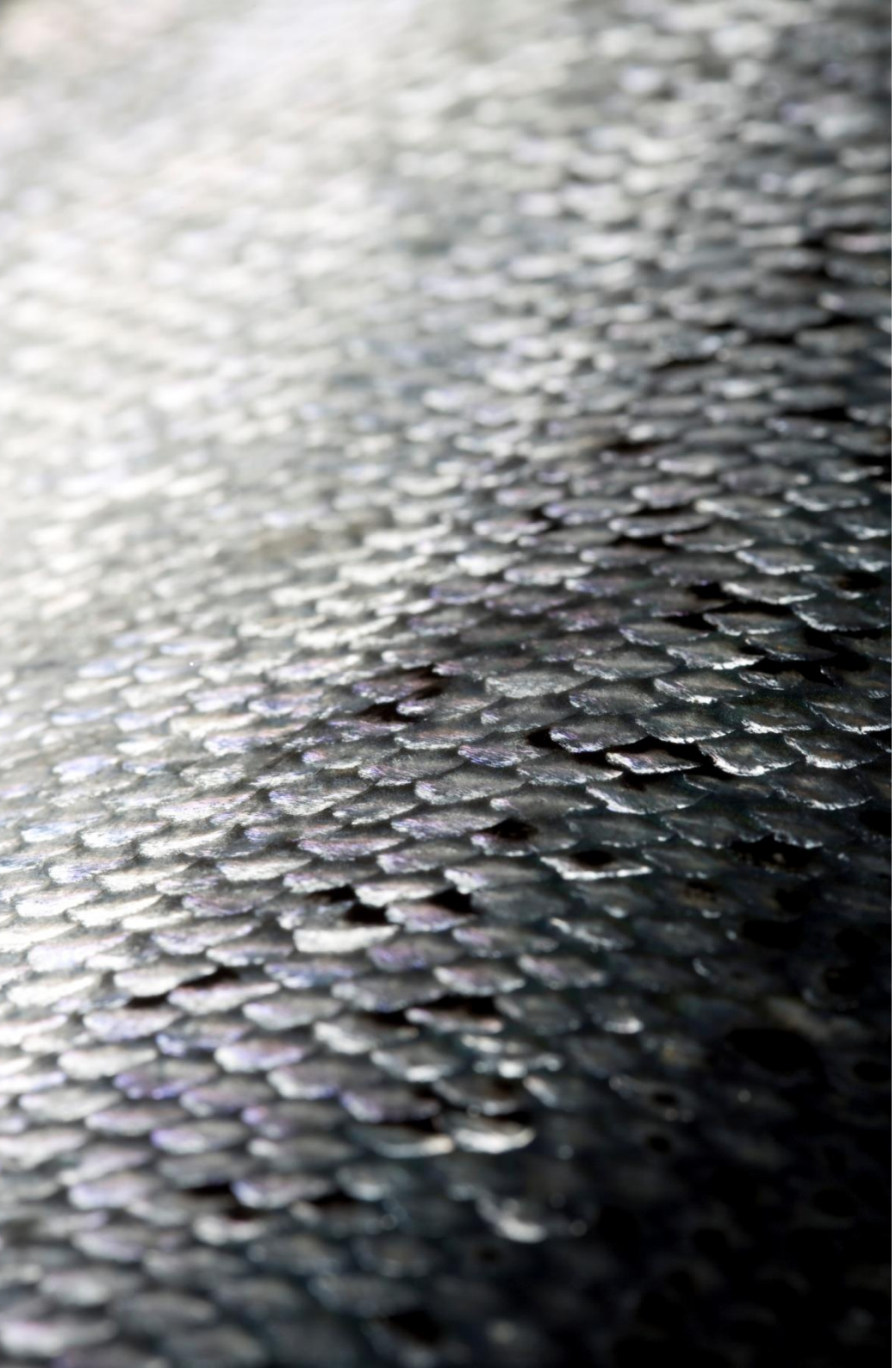
SNAPSHOT AT MARKET PRICES (SAINSBURY UK)



Number of items	30	64	43	32
High (GBP/kg)	36,50	15,00	19,00	50,00
Mean (GBP/kg)	21,11	6,31	10,20	19,72
Median (GBP/kg)	21,00	5,84	10,54	17,80
Low (GBP/kg)	6,43	1,80	5,20	5,56
Comparison between categories (e.g. median salmon product 29% higher than average of median observations)				
High	21 %	-50 %	-37 %	66 %
Mean	47 %	-56 %	-29 %	38 %
Median	52 %	-58 %	-24 %	29 %
Low	35 %	-62 %	10 %	17 %

- Currently, the absolute price of salmon significantly higher than pork and poultry products
- Currently, mid range salmon products slightly cheaper than cattle products

Source: Sainsbury UK, 28 May 2016, breast and fillets only for chicken



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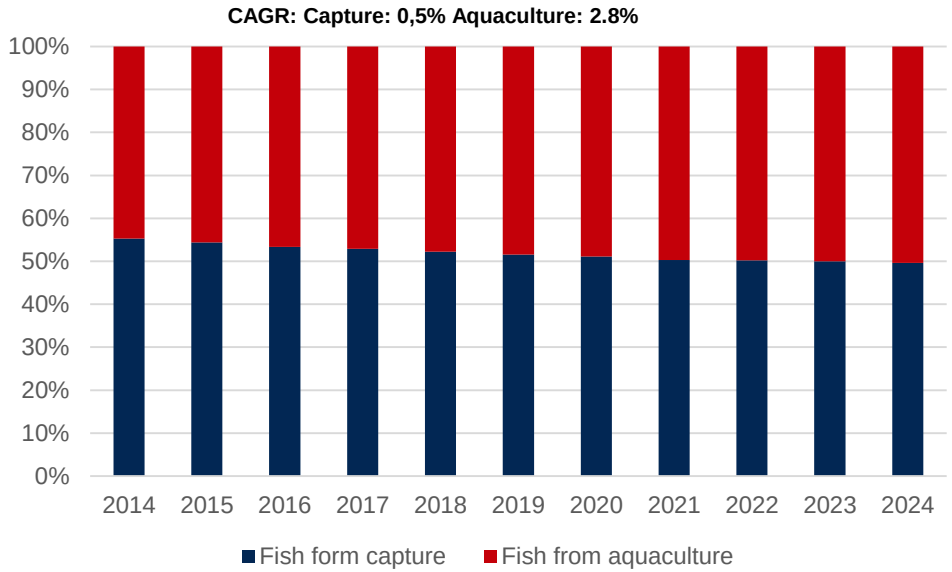
- **SEAFOOD – CATCH AND AQUACULTURE**

RELATIONSHIP BETWEEN GLOBAL KEY SEAFOOD CATEGORIES

- Minor growth in catch as resource is close to capacity
- Aquaculture growing at a high annual rate (2.8%)
- By 2020 aquiculture is expected to overtake wild catch in supply

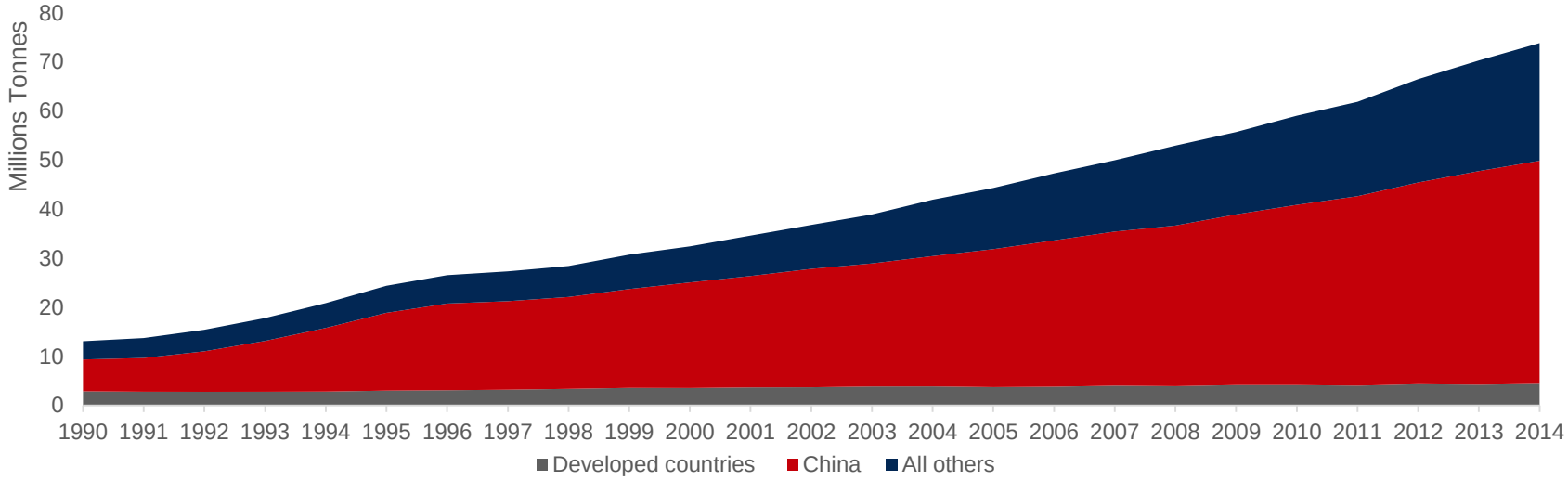
Aquaculture growing, and overtakes wild catch

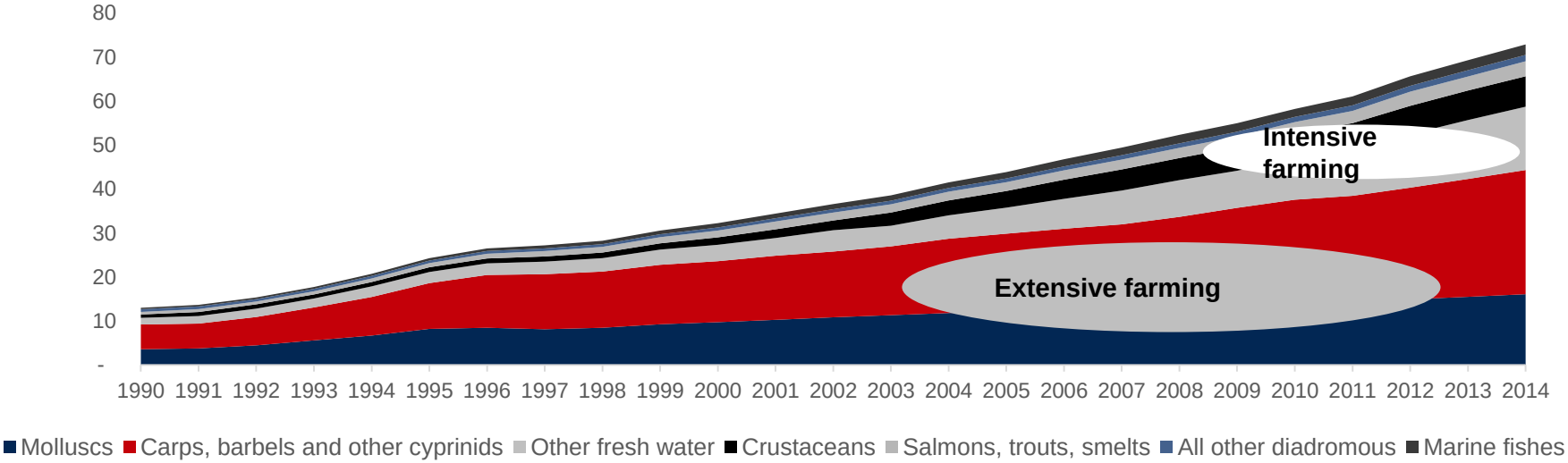


Source: FAOSTATS/OECD/Kontali

AQUACULTURE ORIGINS, SPECIES AND TYPE OF PRODUCTION

- Aquaculture has grown considerably since the 1990´s
- Aquaculture still dominated by non-industrial production
- China has the majority of production – mostly non-industrial
- Farmed Atlantic salmon represents around 2 million tonnes (~3%)

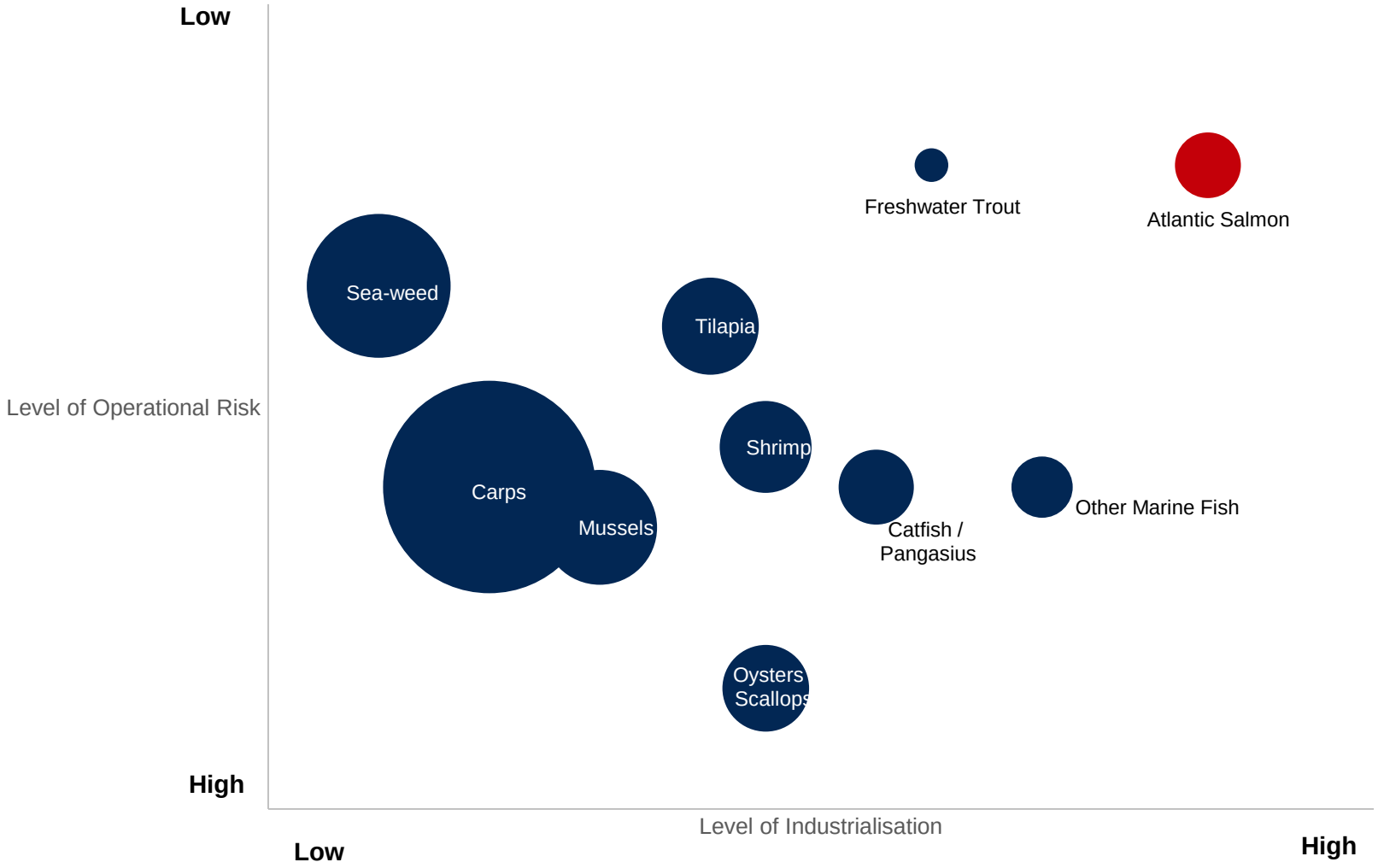




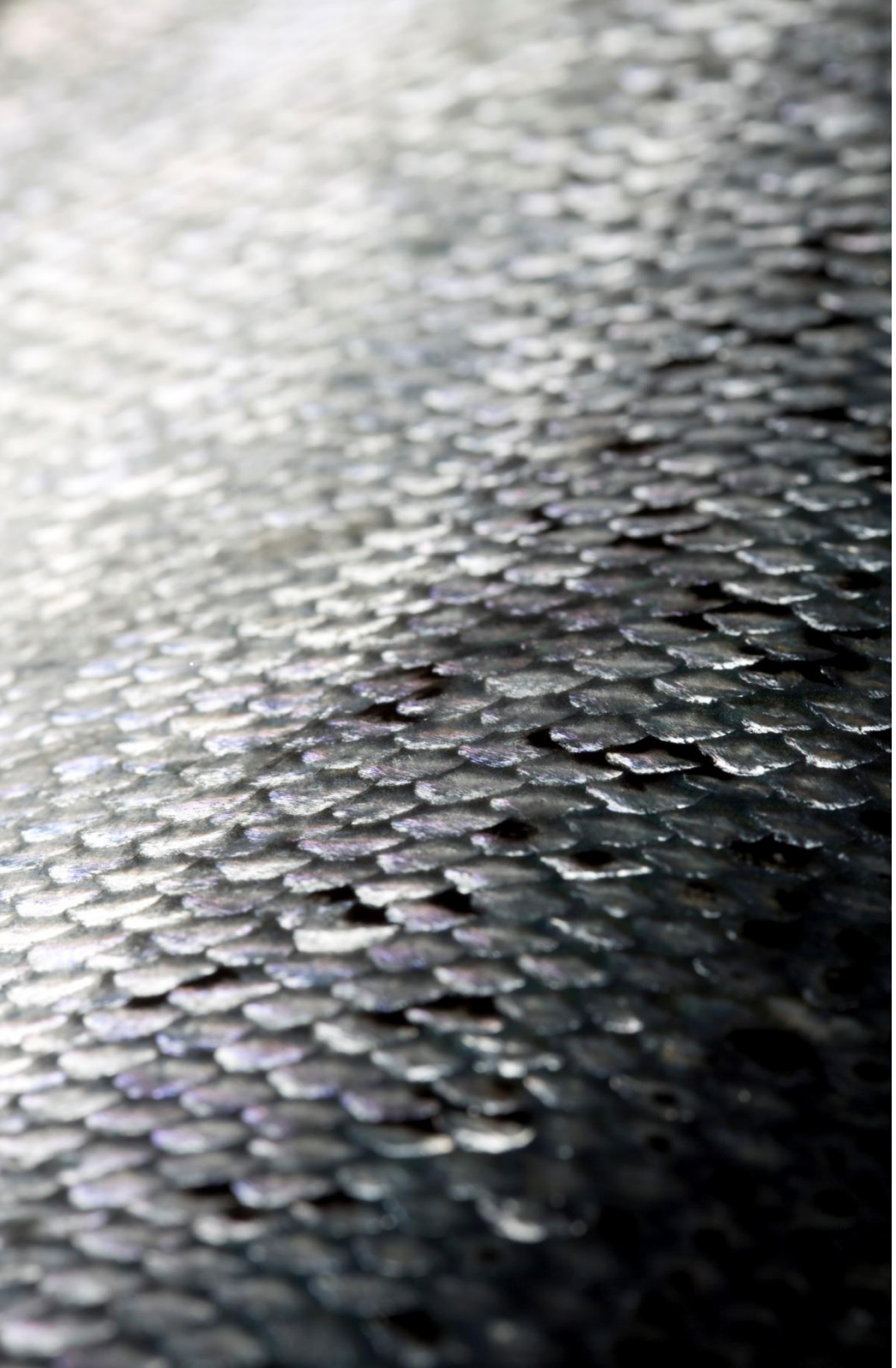
Source: Rabobank/FAO

AQUACULTURE SPECIES

- Farmed Atlantic salmon represents the future aquaculture as highly industrialized with fairly good control of operational risks
- There is a great potential in global food production in industrializing other species



Source: Kontali



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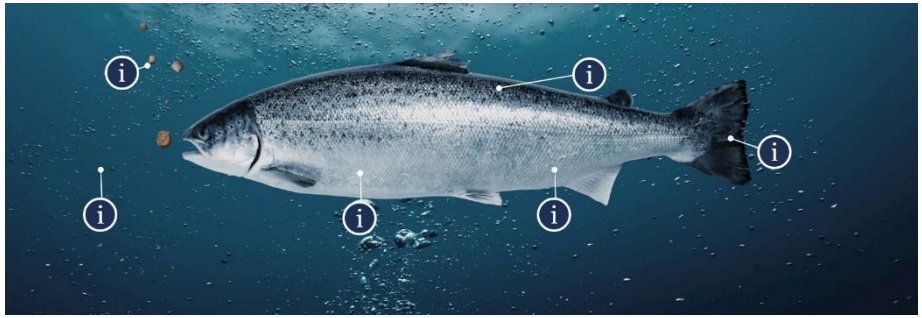
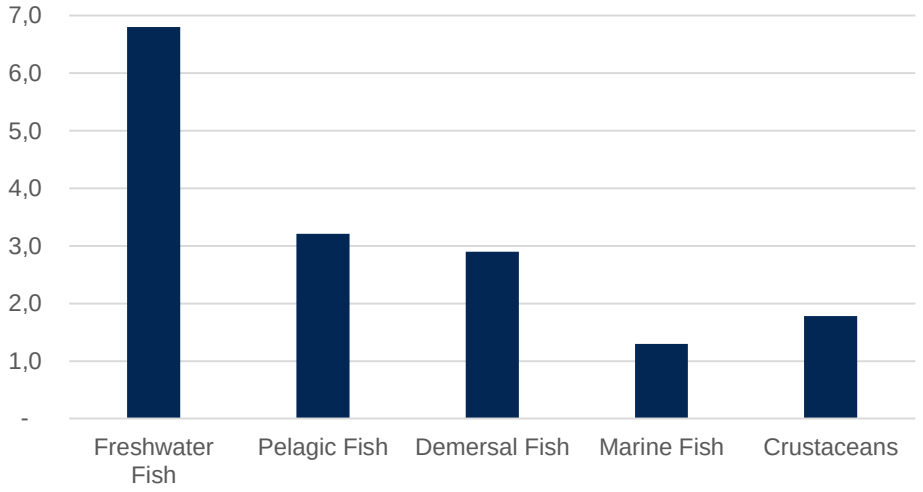
- **FARMED ATLANTIC SALMON**

RELATIONSHIP BETWEEN KEY SEAFOOD CATEGORIES

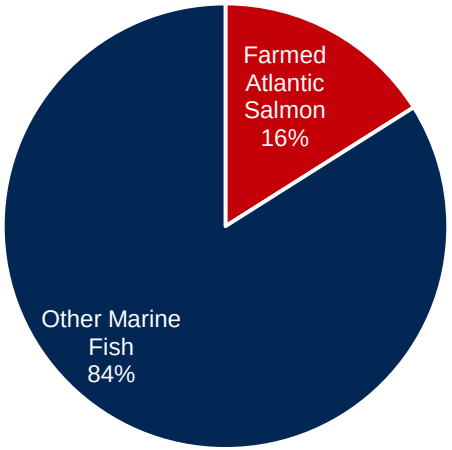
- Farmed Atlantic salmon constitutes a small high end niche within the global seafood space
- Still key category in retail on a global level due to
  - High nutritional level
  - Consistent delivery through the year
  - Red color stands out compared to most other species



Fish/Seafood (kg/capita/yr)



Marine Fish

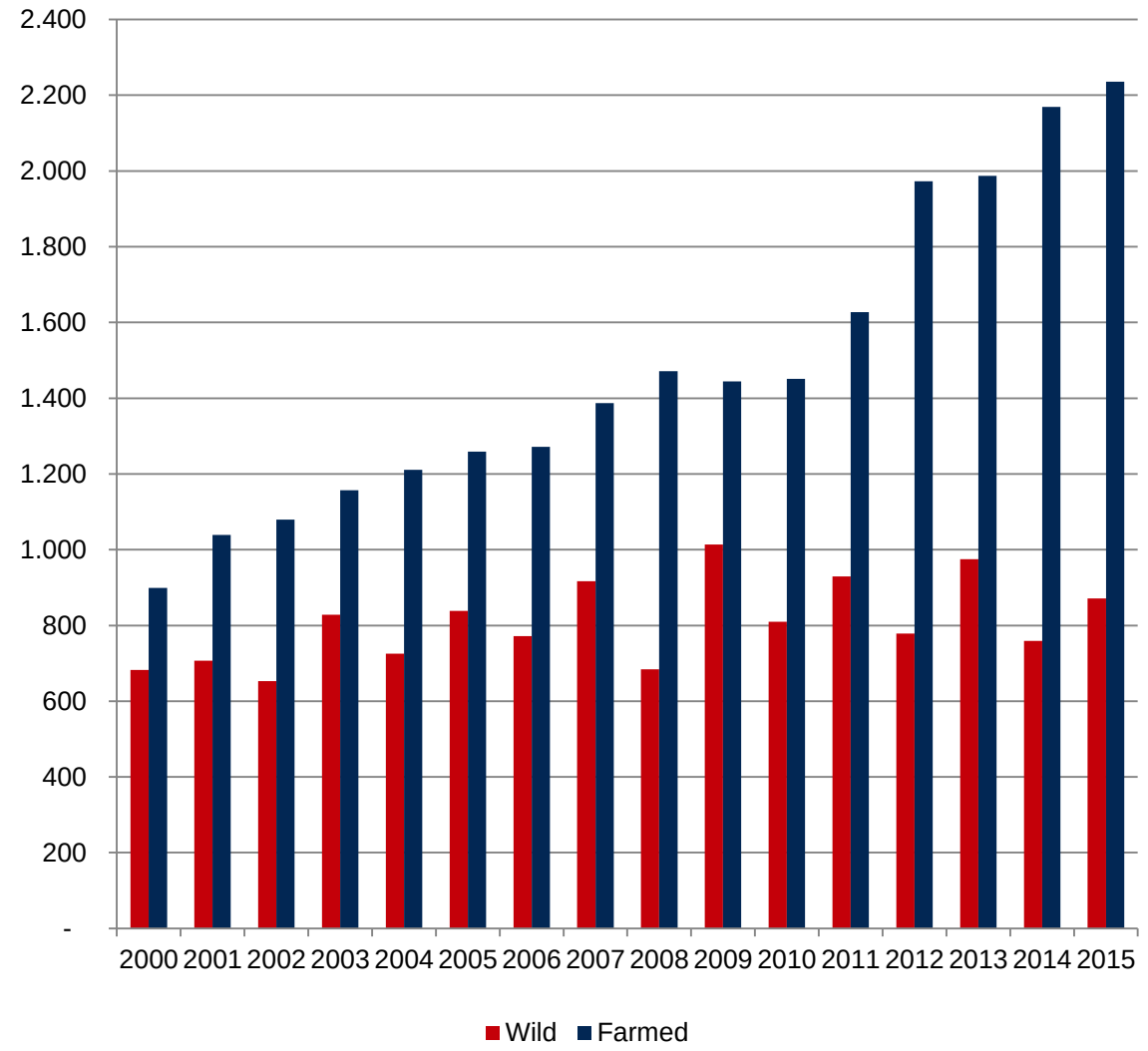


Source: FAOSTATS/OECD/Kontali

SALMON – WILD VS. FARMED

- As for wild catch in general, wild salmon catch revolves around a stable average
- Wild salmon's impact on farmed salmon prices has gradually diminished

Output farmed and wild salmon (1,000 tonnes HOG)

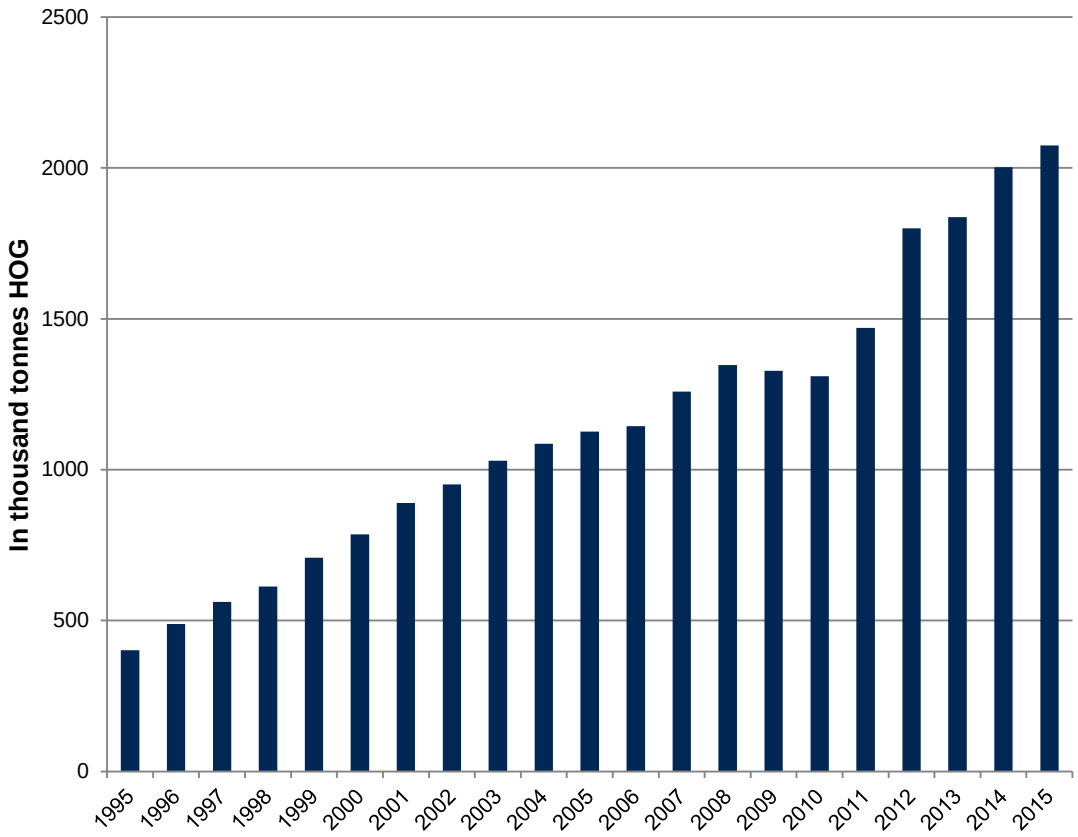


Source: Kontali

DEVELOPMENT IN GLOBAL OUTPUT

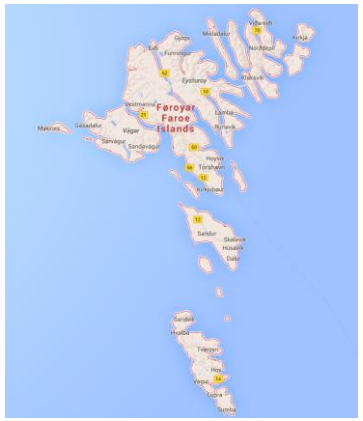
- Farmed Atlantic salmon has grown by about 8% per annum since the mid nineties
- The volatility in growth has been driven by biological set-backs and financial constraints due to cyclical pricing

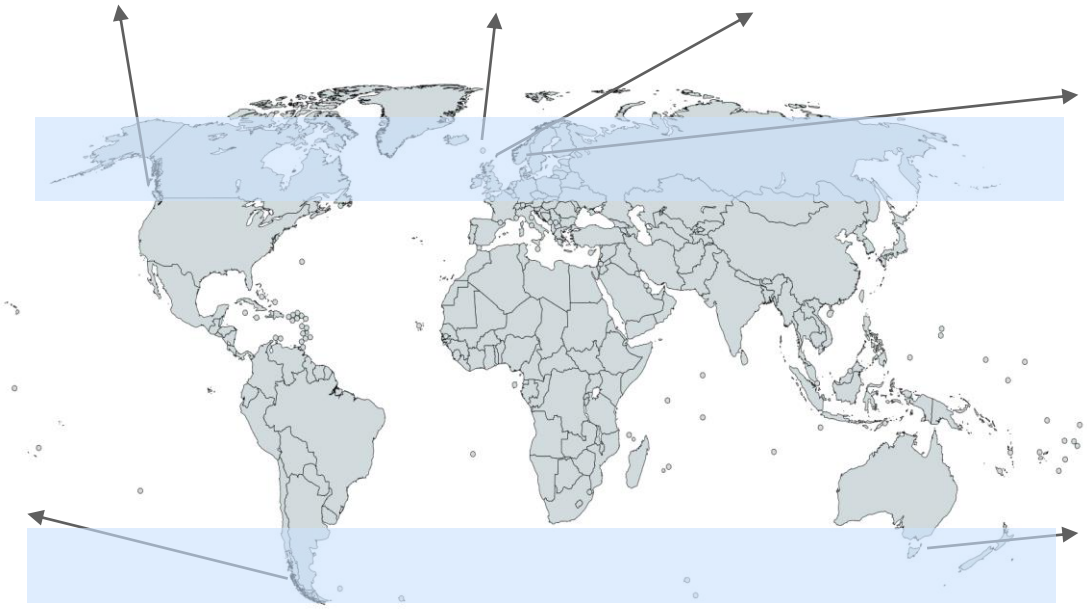
Global output farmed Atlantic salmon (CAGR 8%)



Source: Kontali

SALMON REQUIRES CONDITIONS FOUND IN REMOTE AREAS



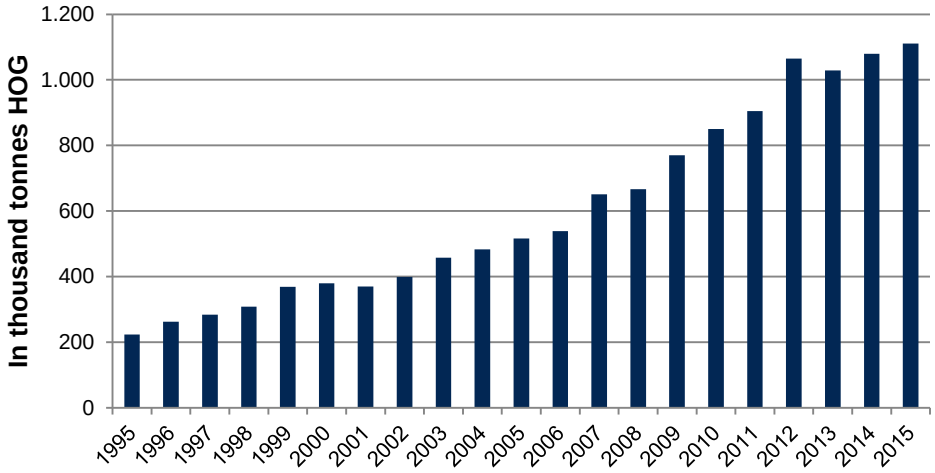


SEAWATER TEMPERATURES | **BIOLOGIC ENVIRONMENT** | **PROTECTED WATERS**

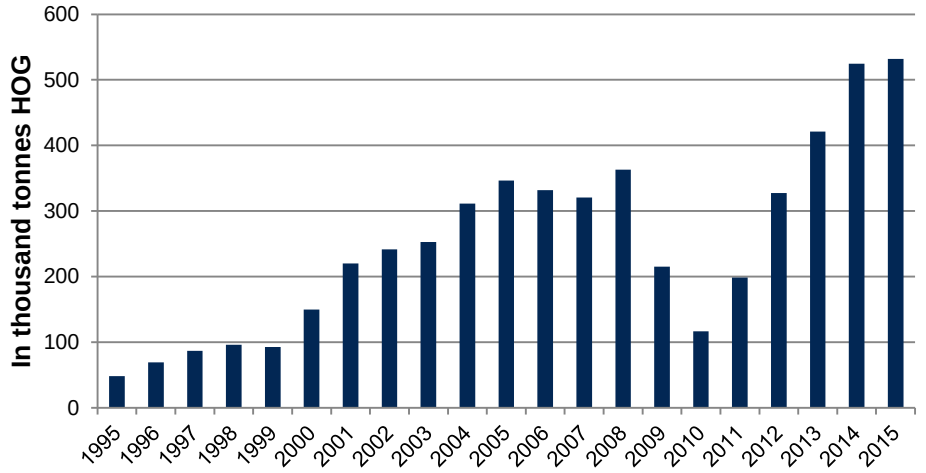
Source: www.mapchart.net, Google Maps

DEVELOPMENT IN OUTPUT BY MOST SIGNIFICANT REGIONS

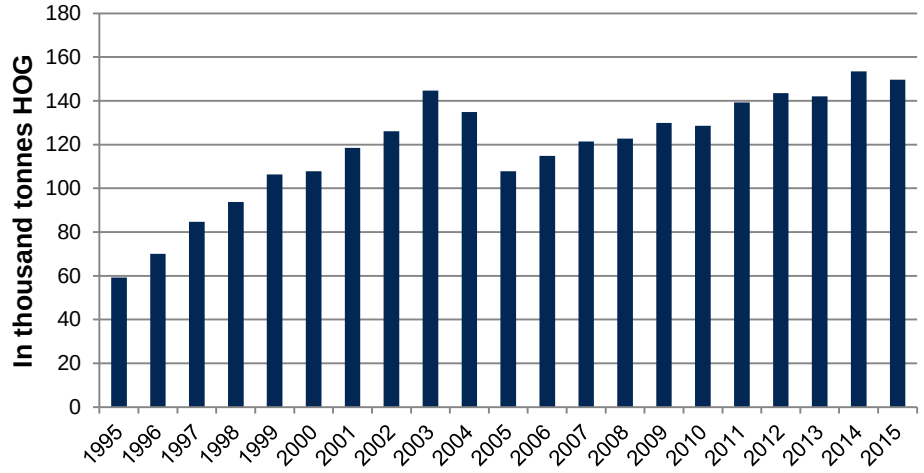
Norway (CAGR 8%)



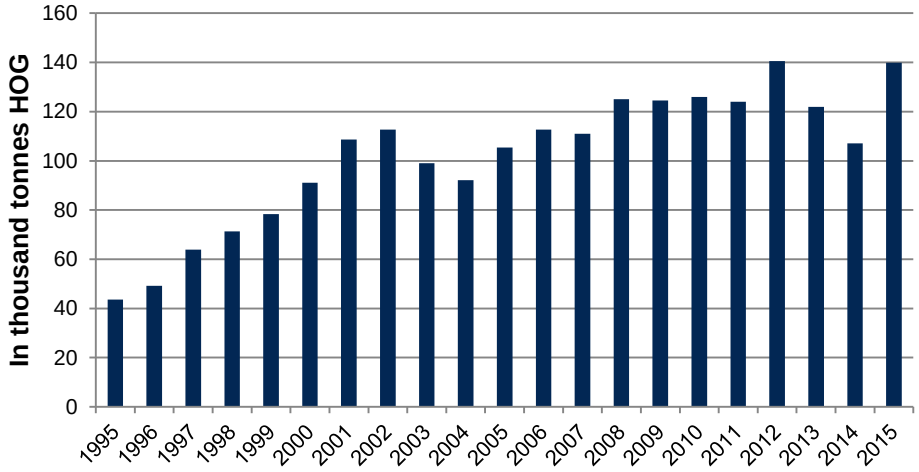
Chile (CAGR 13 %)



UK (CAGR 5 %)



North America (CAGR 6 %)



Source: Kontali

TRADE PATTERS DRIVEN BY LOGISTICAL COSTS AND TRADE BARRIERS

- Trade issues such as the Russia sanctions and strained relationship been Norway and China favours “independent” origins

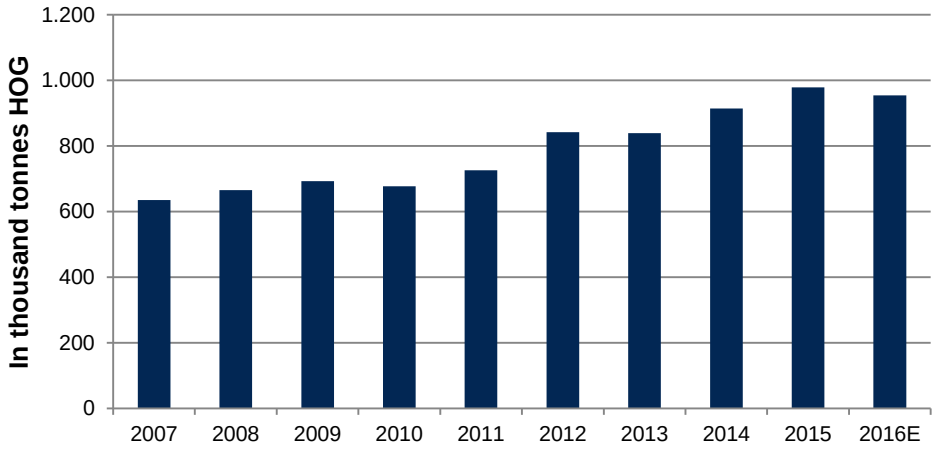
2015	EU	USA	Russia	Brazil	China	Japan	Other	**Total Production**
Norway	821	46	0		28	39	176	**1 111**
Chile	40	202	55	99	16	12	107	**532**
UK	109	15			13	0	12	**150**
Canada		84			2	1	35	**122**
Faroe Isl.	17	13	25		9		6	**69**
Australia					6	1	34	**41**
Ireland	13						1	**14**
USA		12					6	**18**
Other/re-export	-22	3	19		2	1	15	**18**
Total Consumption	**978**	**374**	**99**	**99**	**77**	**54**	**392**	**2 075**

2015	EU	USA	Russia	Brazil	China	Japan	Other	**Total Production**
Norway	74 %	4 %	0 %		3 %	4 %	16 %	**100 %**
Chile	8 %	38 %	10 %	19 %	3 %	2 %	20 %	**100 %**
UK	73 %	10 %			9 %	0 %	8 %	**100 %**
Canada		69 %			2 %	1 %	29 %	**100 %**
Faroe Isl.	25 %	19 %	36 %		12 %		8 %	**100 %**
Australia					14 %	2 %	84 %	**100 %**
Ireland	94 %						6 %	**100 %**
USA		68 %					32 %	**100 %**
Other/re-export	-121 %	14 %	103 %		13 %	6 %	85 %	**100 %**
Total Consumption	**47 %**	**18 %**	**5 %**	**5 %**	**4 %**	**3 %**	**19 %**	**100 %**

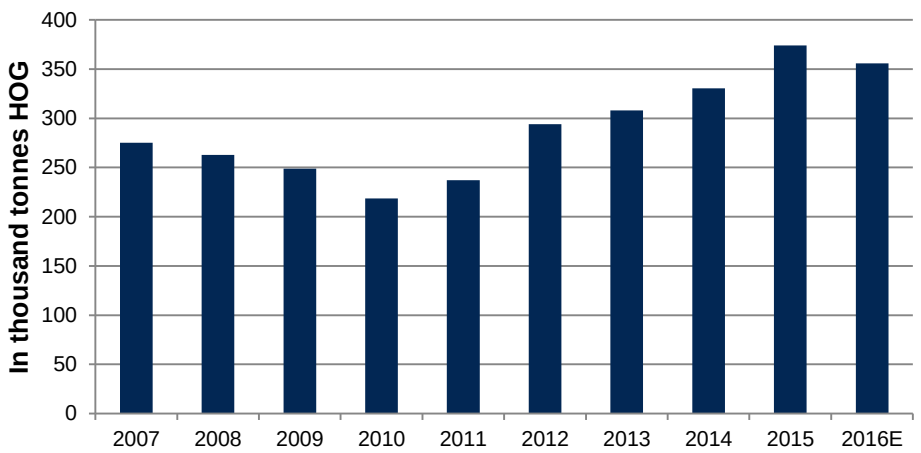
Source: Kontali

DEVELOPMENT OF KEY MARKETS

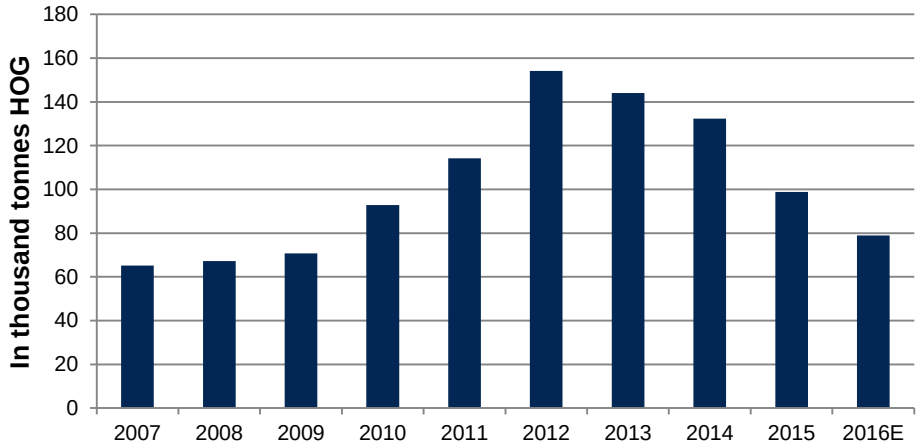
EU (CAGR 5 %)



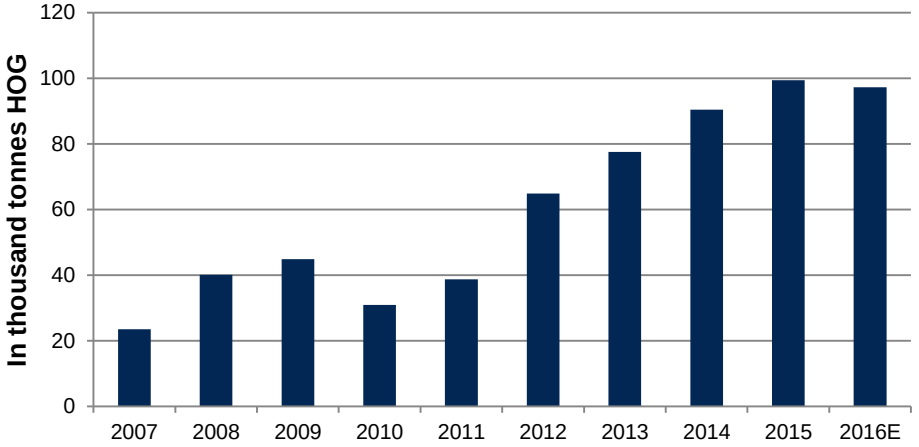
USA (CAGR 3 %)



Russia (CAGR 2 %)



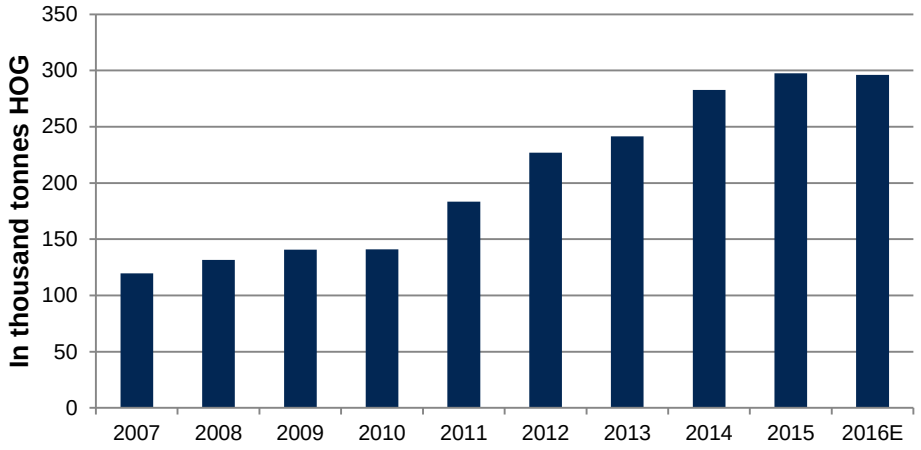
Brazil (CAGR 17 %)



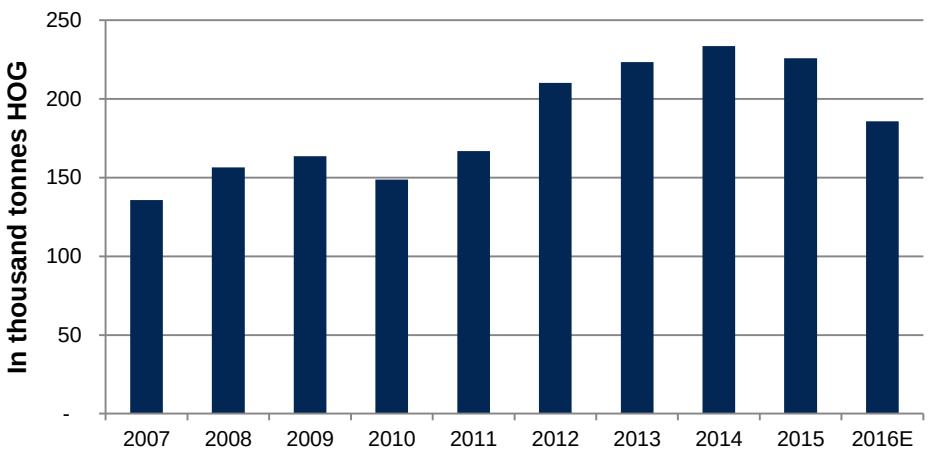
Source: Kontali

DEVELOPMENT OF KEY MARKETS

Asia (CAGR 11 %)



Others (CAGR 4 %)

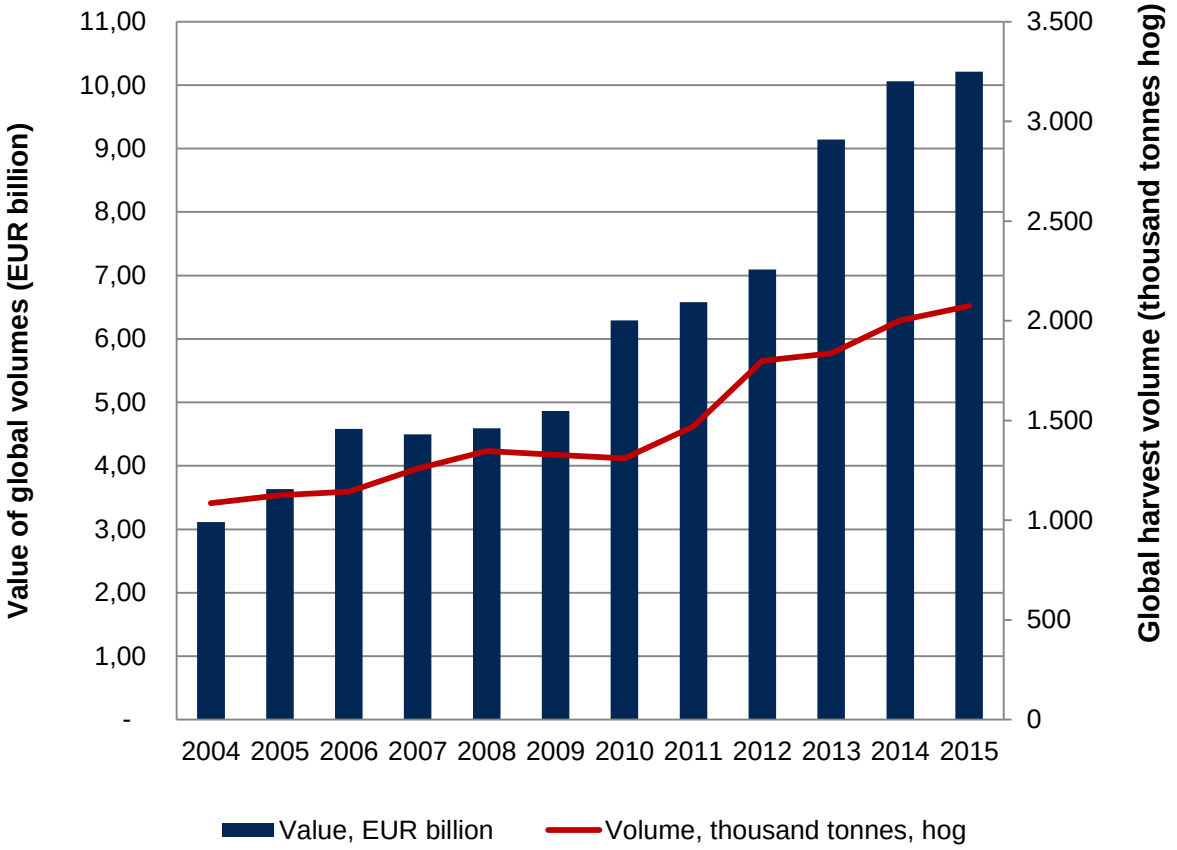


Source: Kontali

DEVELOPMENT IN OUTPUT AND VALUE – STRONGLY APPRECIATING CATEGORY

- Output has doubled
- Value (price*output) has more than tripled

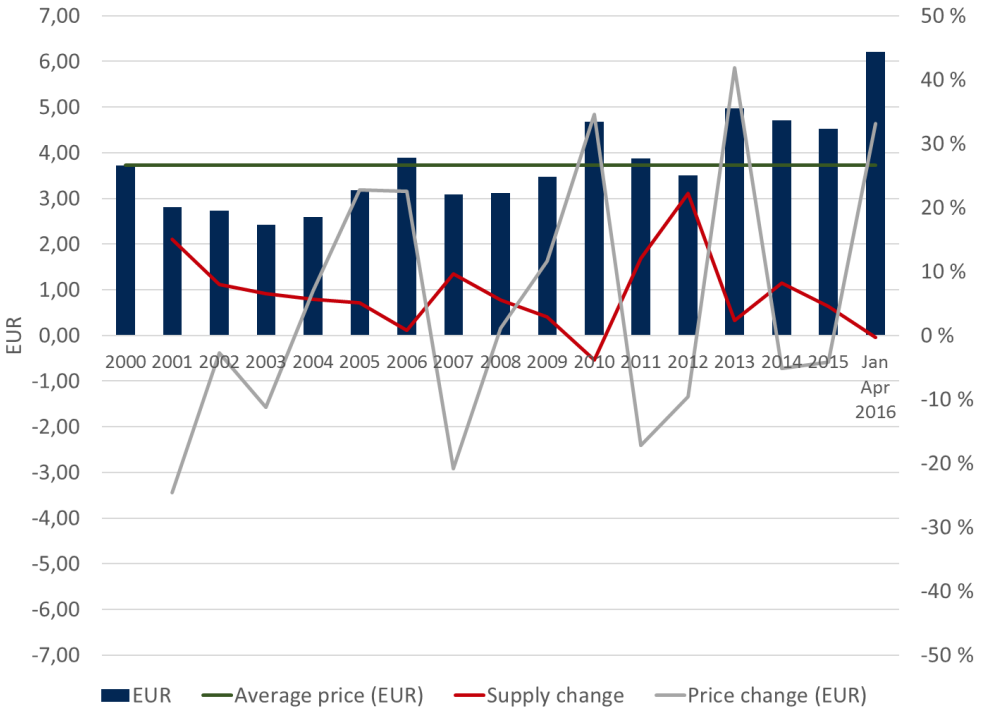
Development in volume and value (price*volume)



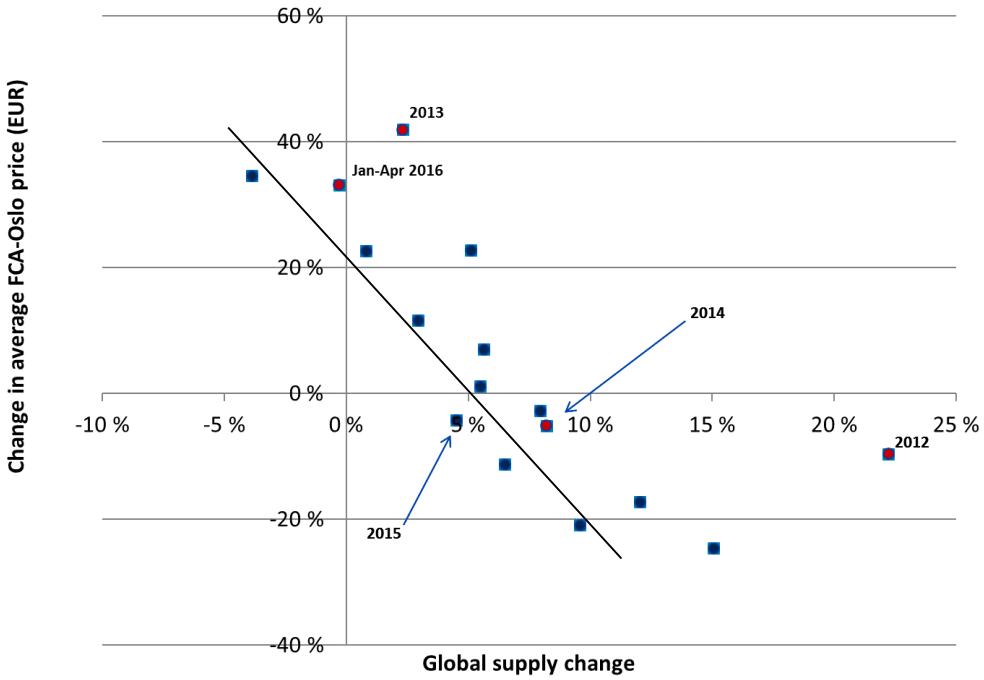
Source: Kontali

HISTORIC PRICE SENSITIVITY TO SUPPLY CHANGES

Historic development in supply and price



Relationship between supply and price changes



- Changes in global supply has been the most significant driver of price changes
- The market has historically been able to absorb about 7% supply increase at stable prices

Source: Kontali

KONTALI'S FORWARD LOOKING ESTIMATES FOR OUTPUT

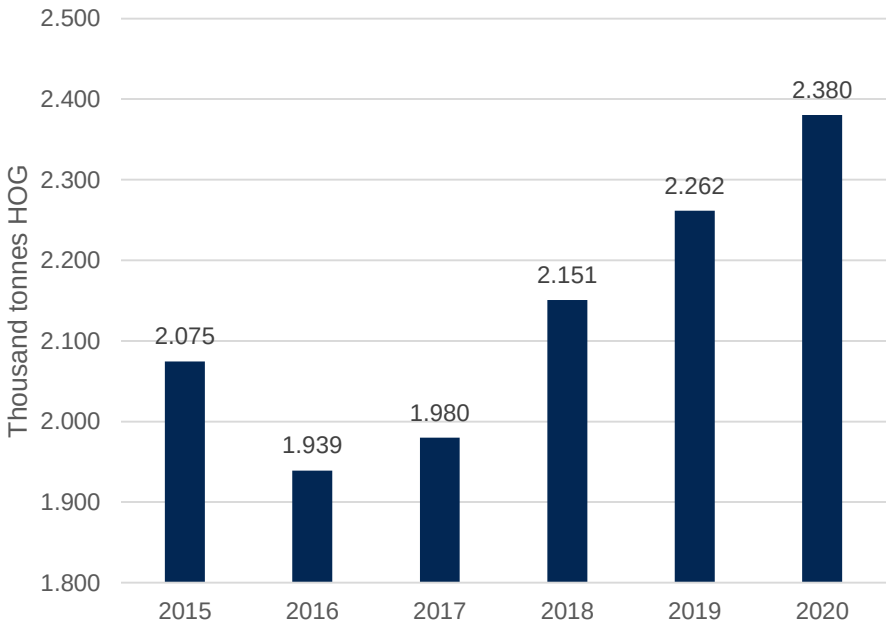
FACTORS DRIVING HIGHER GROWTH

- Lower sealice pressure Norway - reduced treatment
- Faster development of alternatives to antibiotics, for control/combat of SRS - Chile
- Higher & faster than expected granting of development licences - Norway
- Positive sealice situation through 16/17, allowing for full, green "traffic-light" based capacity growth
- Improvement in survival/yields - particularly in larger regions
- Implementation larger smolt - taking place faster than anticipated

FACTORS DRIVING LOWER GROWTH

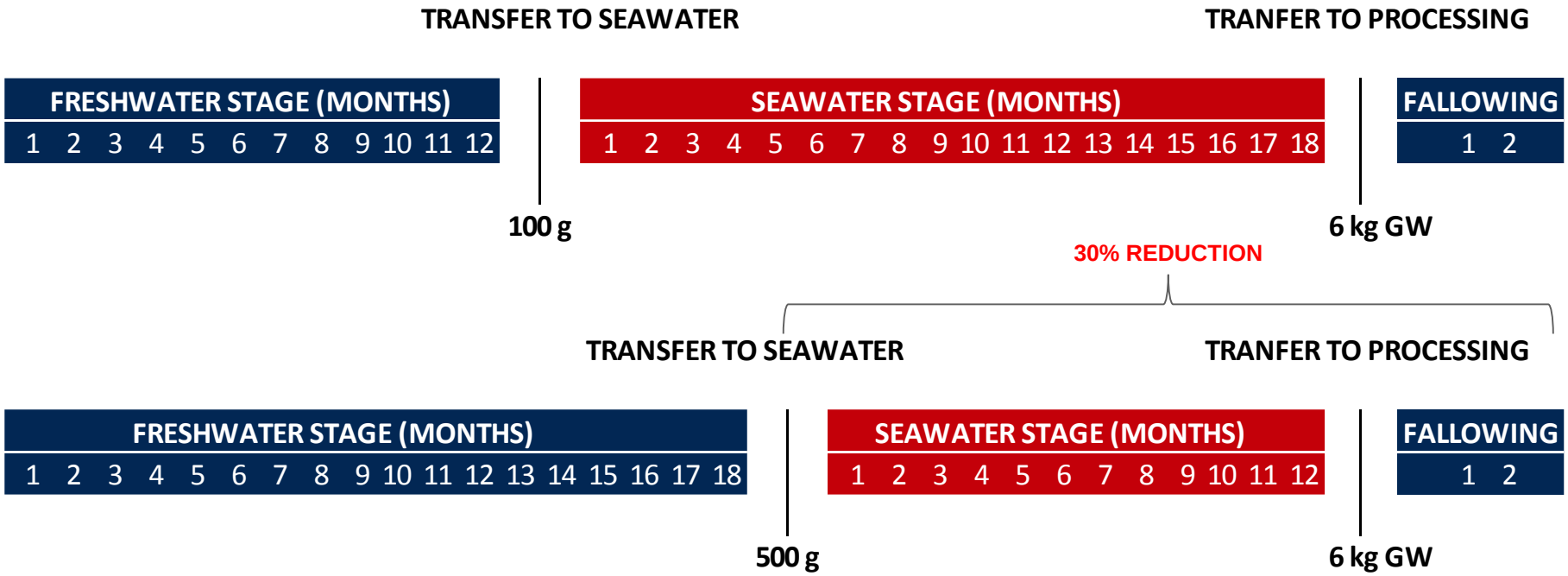
- Low and slow issuance of development licences - Norway
- Continued high prevalence of SRS & sealice Chile - Limiting earnings & cashflow
- Negative sealice-situation in 16/17, reducing "traffic-light" based capacity growth
- Set-backs linked to biology or fish-health related issues - Particularly Norway / Chile
- General deterioration in productivity factors, such as survival, yields etc

Estimated supply 2015 – 2020 (HOG Farmed Atlantic Salmon)



Source: Kontali, Bakkafrost

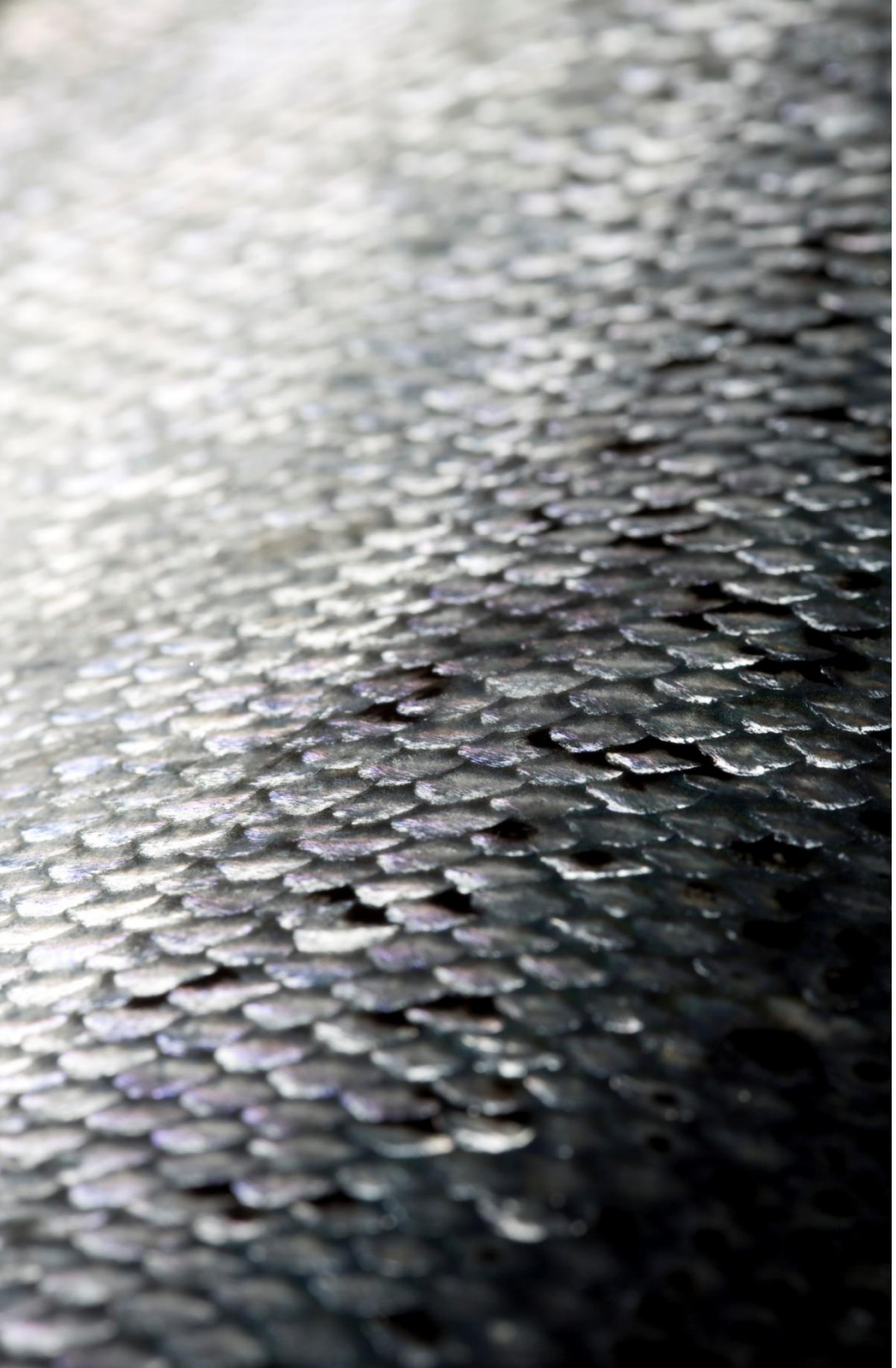
DE-BOTTLENECKING: SHORTENING THE SEA-WATER PRODUCTION CYCLE



- Allowing for~30% increased production capacity
  - De-bottlenecking of value chain – cycle in sea reduced by ~5 months (~30%)
- Synchronised fallowing
  - Sites/companies in each area needs to implement new cycle simultaneously to achieve full capacity effect
- Reducing exposure to biological risks in the sea water environment
  - Both spring and fall releases exposed to one summer season

DE-BOTTLENECKING: NEW PRODUCTION TECHNOLOGY

- Sea water licences/biological constraints represent bottlenecks for further growth across all regions
- Strong cash flows enables large R&D and capex project
- Large engineering resources available in Norway due to the low activity in the oil and gas industry
- Large uncertainty as to how well fish would adapt to new environment



BAKKAFROST

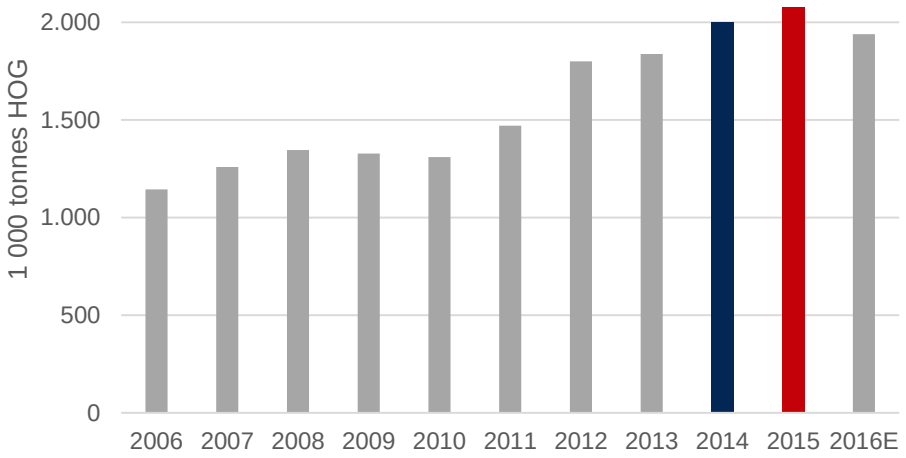
ESTABLISHED 1968

- **THE FAROE ISLANDS AND BAKKAFROST**

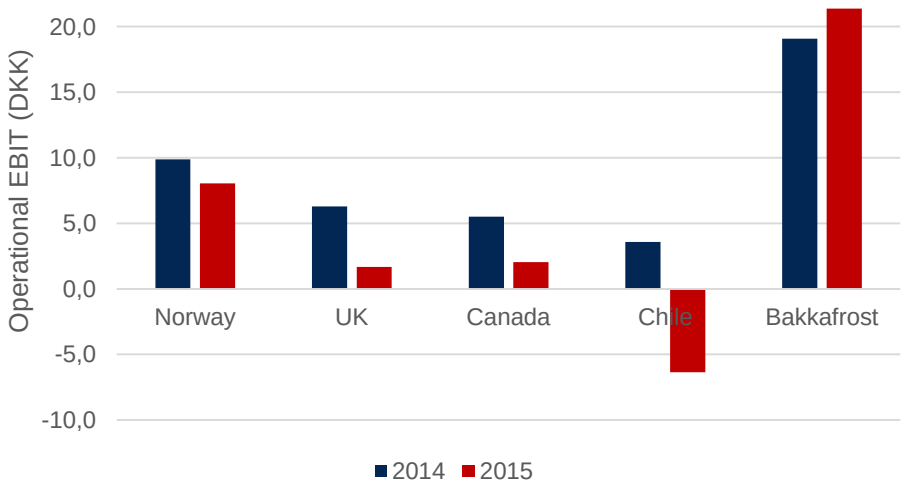
RECORD PRICES, YET CHALLENGING TO RETAIN WINDFALL PROFITS

- Production has generally exceeded practical capacity given current technology, regulations, industry cooperation/ practice and pharmacy
- Pending progress in the constraining factors, nature responds by increased biological problems and in turn escalating costs
- The Faroe Islands implemented a robust, scalable regime pending its issues in the mid 2000's
- The Faroese production has hence become an exception and in a position to retain windfall profits

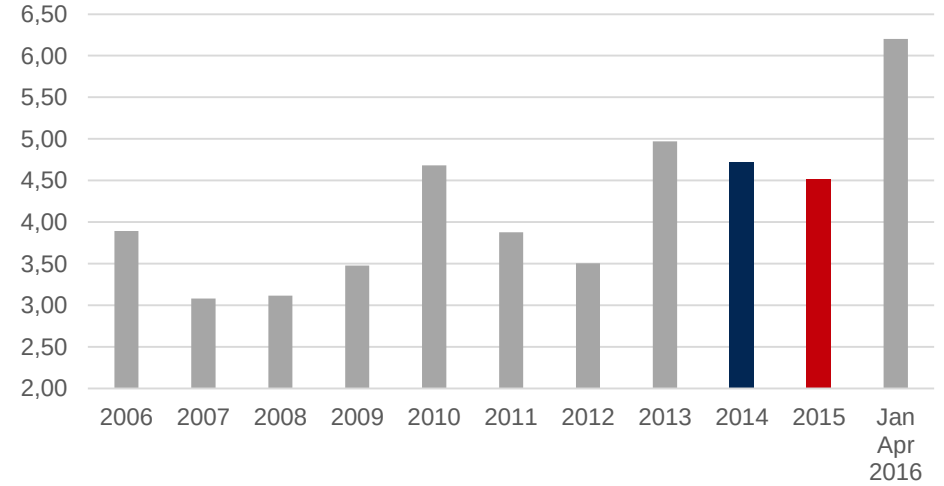
Global output



EUR EBIT/kg (Largest public players)



EUR price



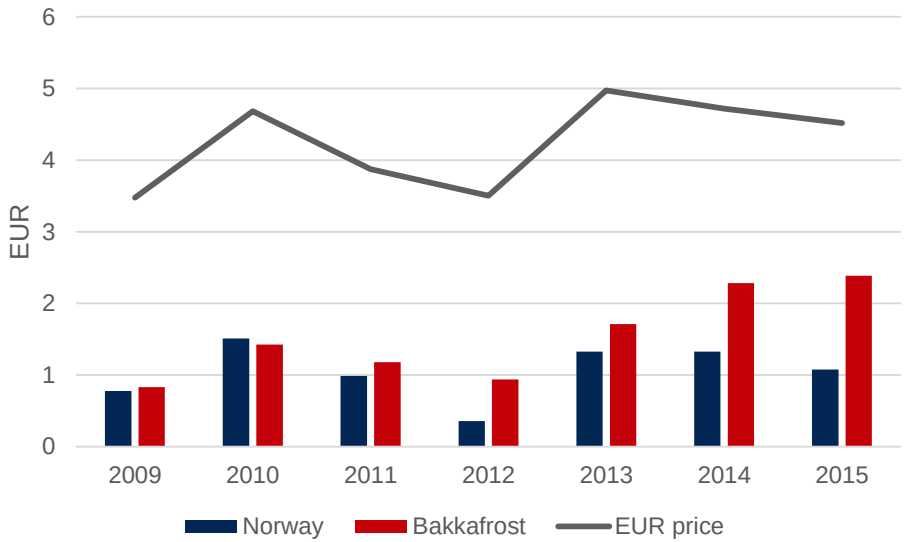
Source: Kontali, annual reports

EBIT PER KG

Margin diverged since 2010

- Compared to a large selection of production in Norway, EBIT per kg has diverged significantly since 2010
- The absolute improvement for Bakkafrost is a function of
  - Robust farming framework with ability to maintain biological control
  - Market recognition of high end product (price achievement)
  - Efficiency in the value chain

Price and EBIT per kg



Source: Kontali, Annual reports

BIOLOGICAL CONTROL – CRITERIA 1
A GOOD REGULATORY FARMING ENVIRONMENT

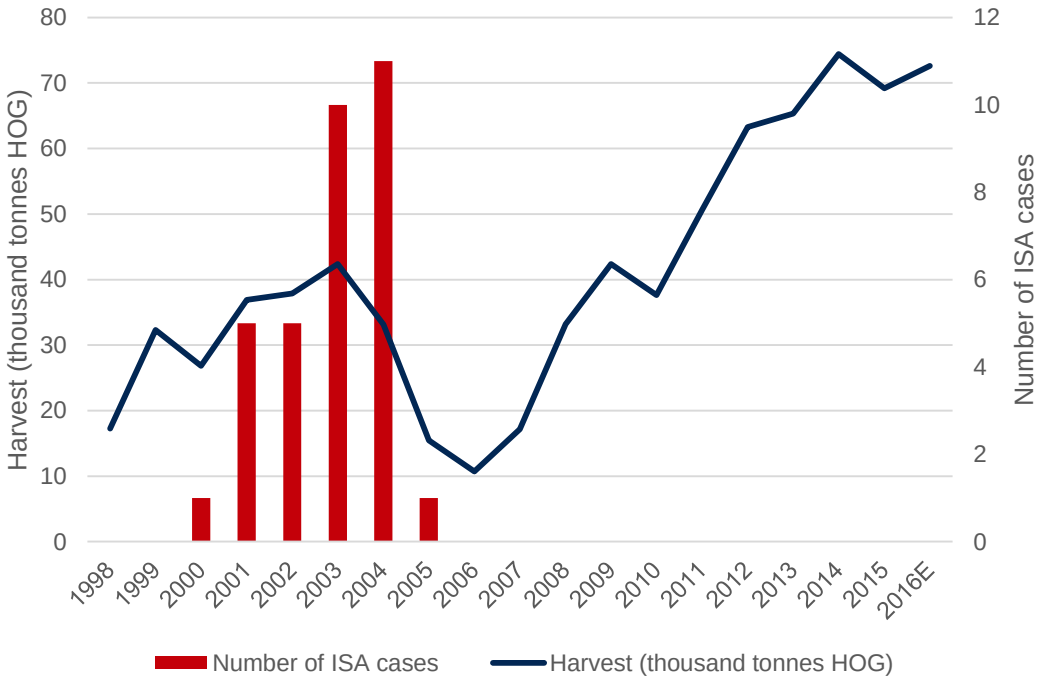
During the period 2001-2004 the Faroe Islands were severely struck by ISA outbreaks

New legislation and regulation was introduced in 2003 known as ”The Faroese Veterinary Model”:

- One generation based farming model
- Fallowing periods between each generation
- Immunisation and vaccination programs
- Restricting movement of equipment and fish
- Density limits introduced
- Brood stock facilities allowed on land only
- Fish for harvest not allowed in open waiting cages at harvest station
- Minimum distances between farms and hatcheries
- Rules to fight and control sea-lice introduced

The Model has resulted in one of the most predictable fish production environments in the world with good KPI for salmon farming, such as FCR, Mortality and Growth rate

Biological meltdown paved way for robust regulatory regime



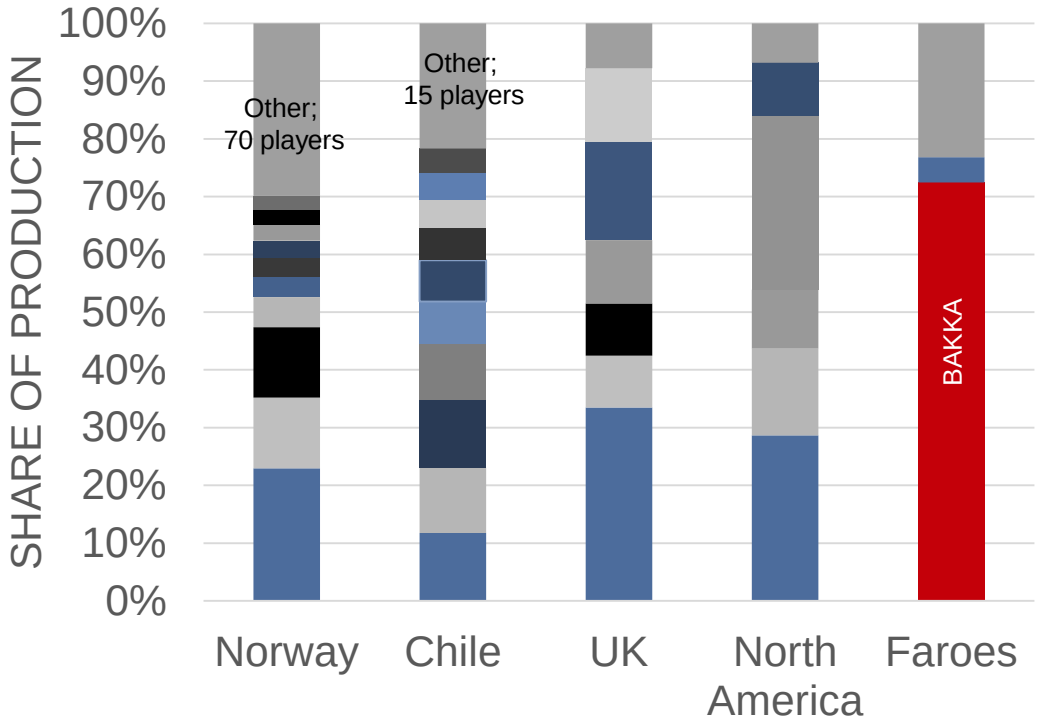
The mortality rate with the Faroese Veterinary Model has been between 5 and 10% compared to 20 to 25% before – despite the annual production has never been higher than now

Source: Bakkafrost, Kontali

BIOLOGICAL CONTROL – CRITERIA 2
FEW PLAYERS IN EACH PRODUCTION REGION

- A tight regulatory regime is not enough
- A large number of decisions will always be left to the operators
- As opposed to most other industries, operators are directly exposed to each others behaviour
- Efficient production requires a high degree of cooperation in the waters, e.g.
  - Coordinated fallowing periods
  - Coordinated lice treatment in direction of current
- Hard to get «all the ducks in a row» as coordination will always carry a cost to some operator, e.g.
  - Requirement to await next generation to join new fallowing regime
  - Self reporting of disease in order to protect surrounding farms

Highly fragmented industry, except Faroes

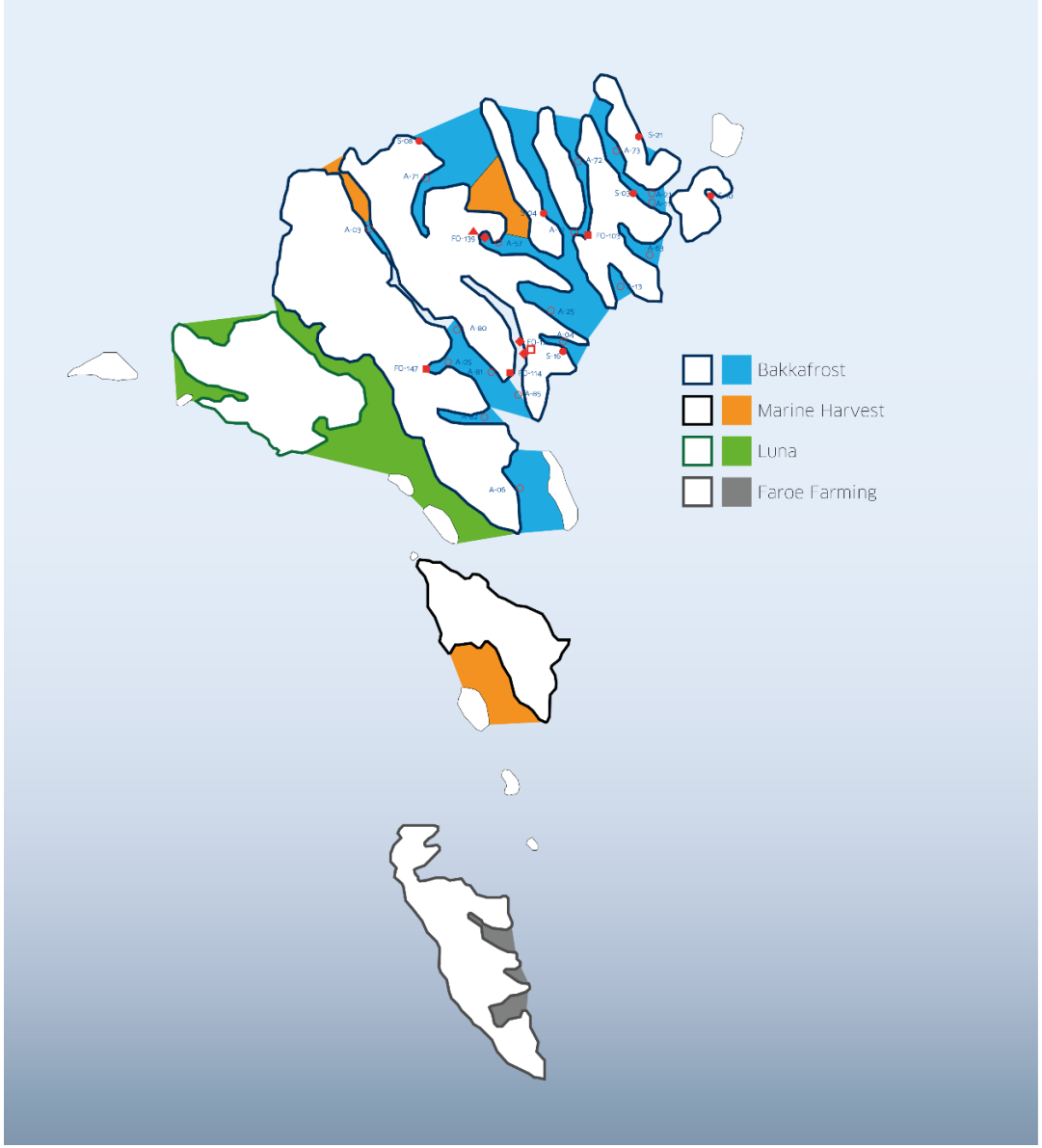


The "tragedy of the commons" is challenging to avoid in a fragmented industry

Source: Kontali

BIOLOGICAL CONTROL – CRITERIA 3
MINIMISE EXPOSURE TO OTHER COMPANIES IN EACH PRODUCTION AREA

- Strong regulatory framework
- Few players to agree on coordination of unregulated matters – avoids “tragedy of the commons”
- Limited overlap of players within production zones
- Swaps have enforced each players “independence”
- Existing licenses are operated on a 12-year rolling lifespan system
- Automatic renewal unless
  - Failure to fulfill the veterinary conditions
  - Conflict with governmental or municipalities’ planning areas
  - Conflict with animal welfare
  - Conflict with environmental protection
- License give right to utilise given area of fjords for farming fish
- No MAB, but strict regulative measures on farming activity maintaining environmentally sustainability



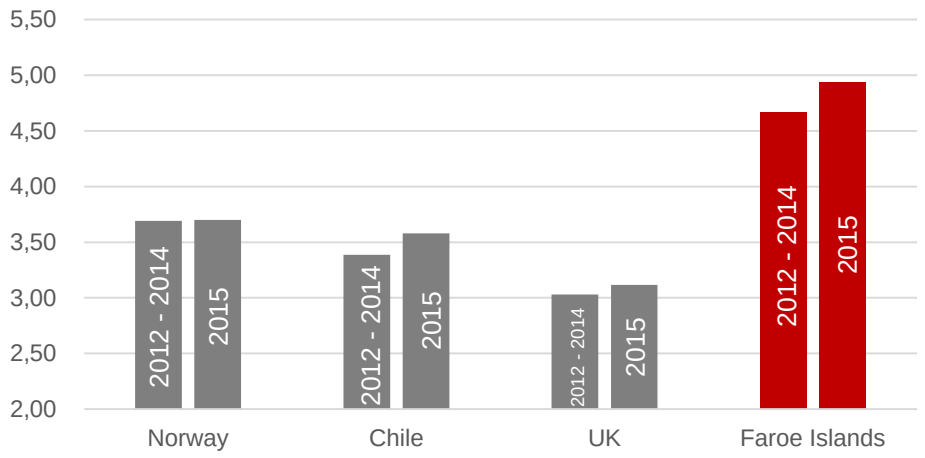
….BUT NO-ONE IS PROTECTED

Risks

- Biological risk
  - Diseases, such as ISA, PD, AGD etc.
  - Sea lice
- Weather condition - storms
- Price on salmon
- Geopolitical situation – market access
- Fishery and quotas in the North Atlantic Ocean – raw material for FOF segment
- Feed contaminants
- Financial risks
  - Foreign exchange risk
  - Credit risk
  - Counterparty risk
  - Liquidity risk

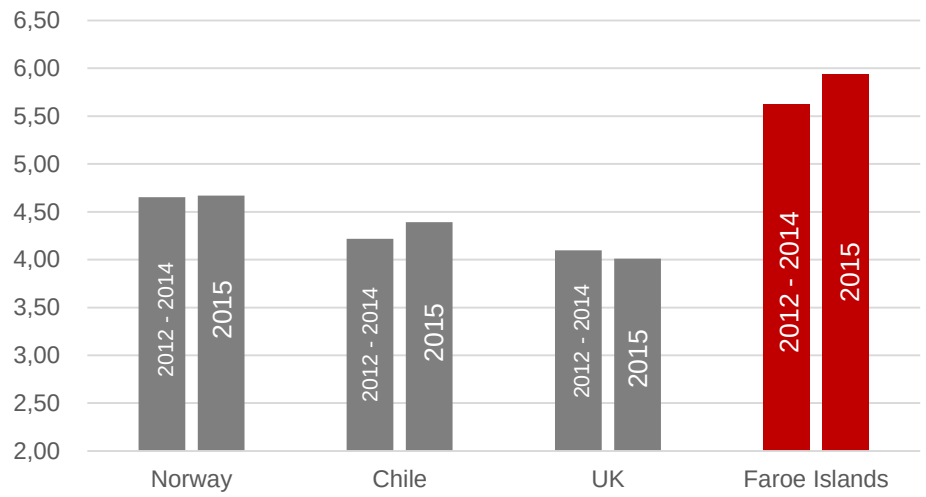
SIZE AND SURVIVAL MATTERS

Yield per smolt (HOG)

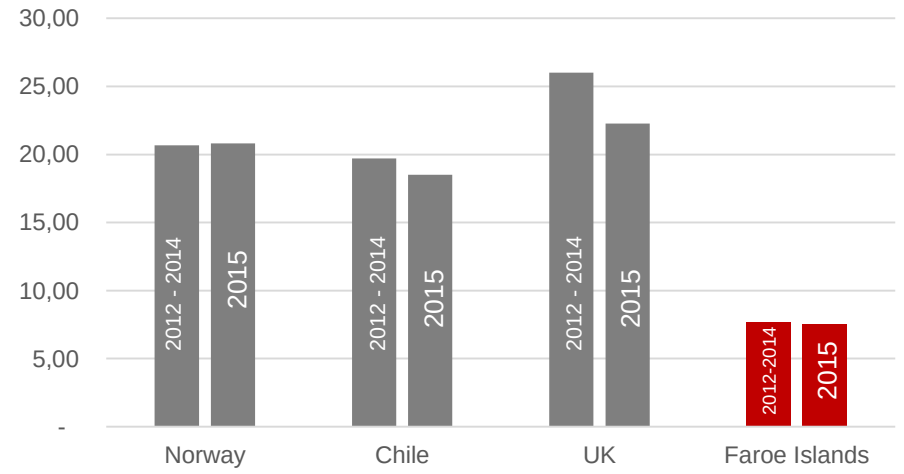


- Yield per smolt a key KPI
- Function of average harvest weight and mortality
- Faroe Island performs on both parameters

Average harvest weight (HOG)



Average mortality (%)



Source: Kontali

SIZE AND SURVIVAL MATTERS!

Average price diff. vs. 4/5 kg (2014-2016)

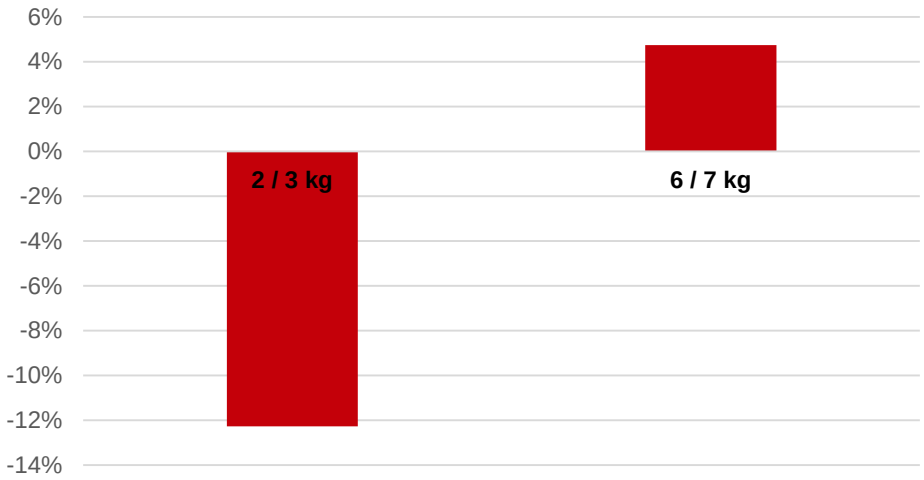
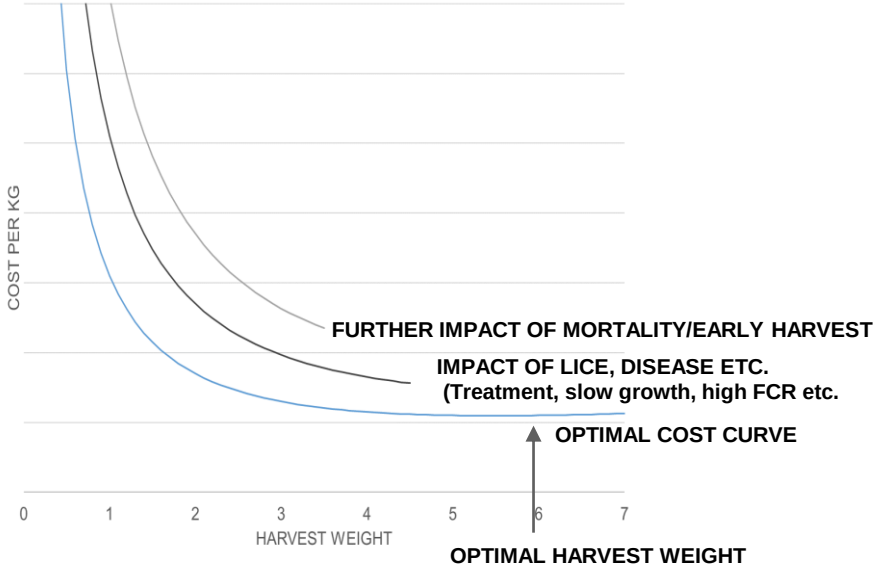
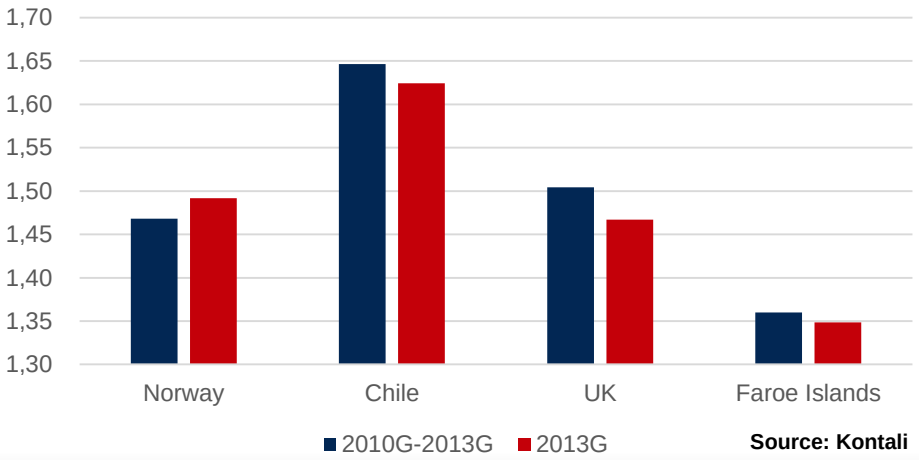


Illustration of cost dynamics



- Significant benefits of yield per smolt performance
- Larger fish generally catches a price premium, early/accelerated harvest is punisher with discount
- Healthy fish keeps costs down
  - Low mortality
  - Less treatments, better feed conversion and faster growth
  - Fixed cost dilution with larger size

Feed used/harvest volume (HOG), EFCR

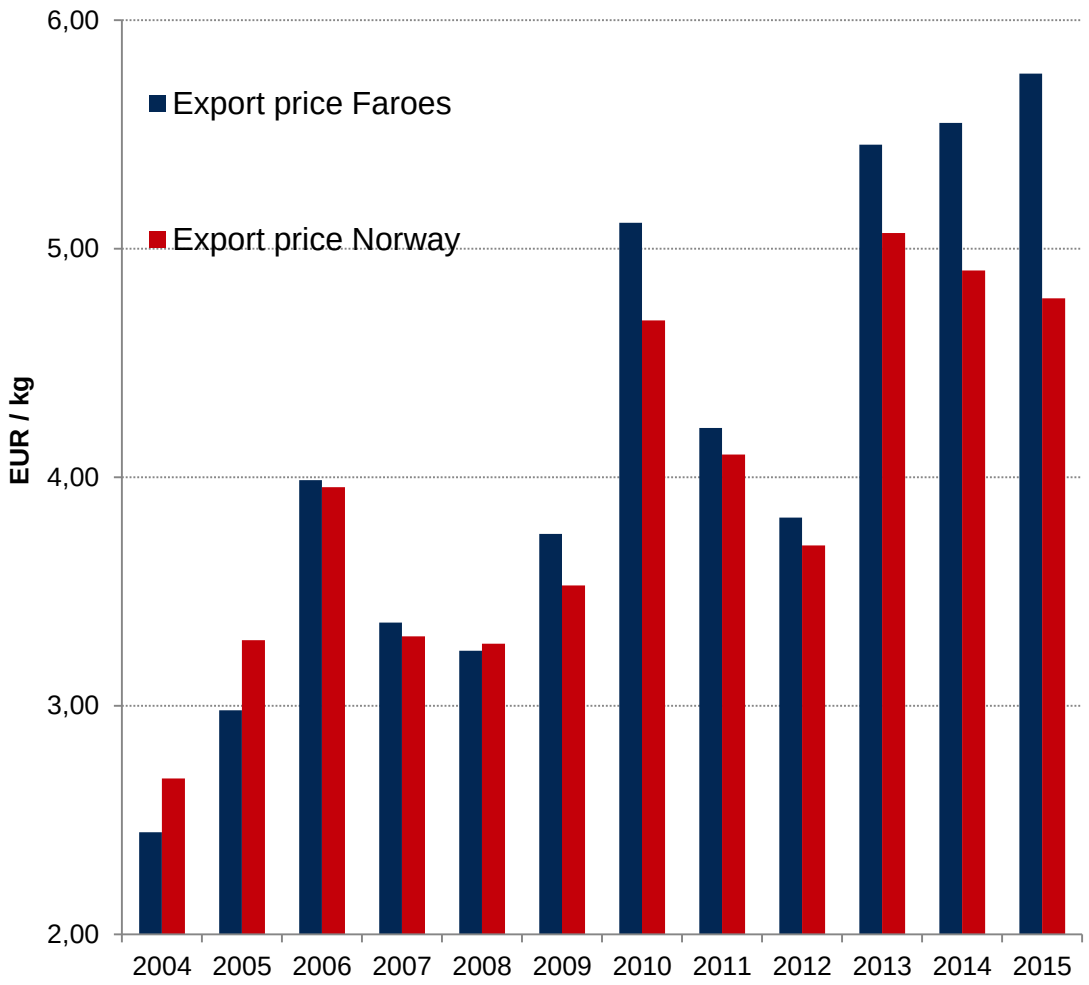


Source: Kontali

THE MARKET IS WILLING TO PAY UP FOR PREMIUM PRODUCTS

- Consistent large sized fish forms baseline for price premium
- Bakkafrost has further tailored its product for the premium market through
  - Investing in very high inclusion rates of marine raw materials
  - Development of a demand driven value added processing franchise
    - Including capability of “upgrading” parts of ~10% of fish normally sold at discount as “downgraded” due to skin scars, deformities etc.
- Superior market access as the Faroe Islands is rarely part of recurring trade sanctions/embargos/dumping duties etc.

Price differential, Norway/Faroes

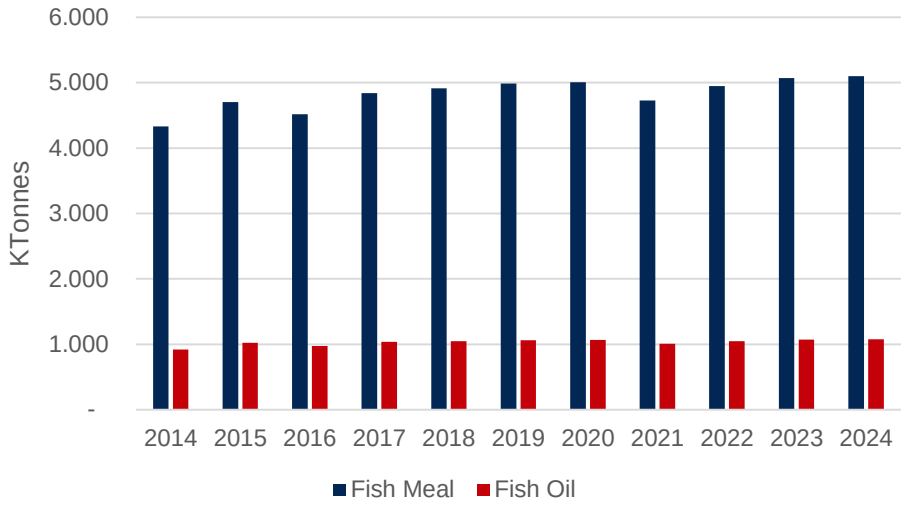


Source: Kontali

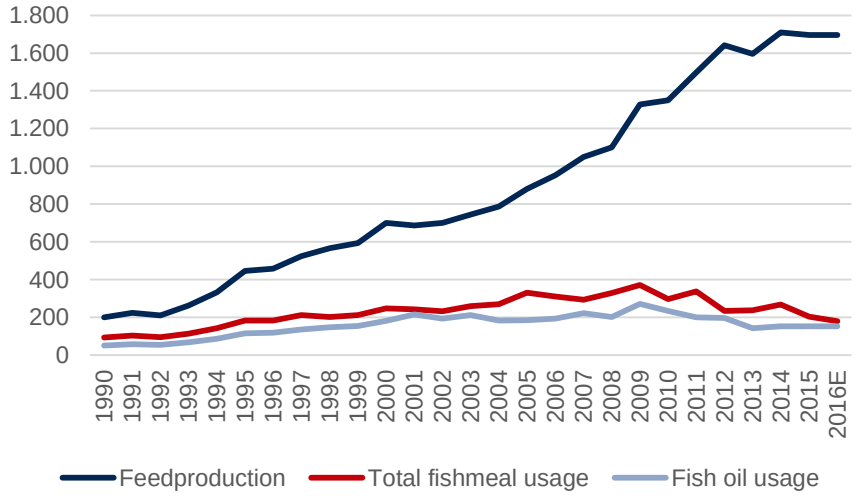
MARINE RAW MATERIAL IS A FINITE RESOURCE

- Fish meal and fish oil key raw material for aquaculture (salmonids in particular)
- Extracted from wild catch (pelagic fish) with finite supply
- Growing demand requires reduced inclusion rates

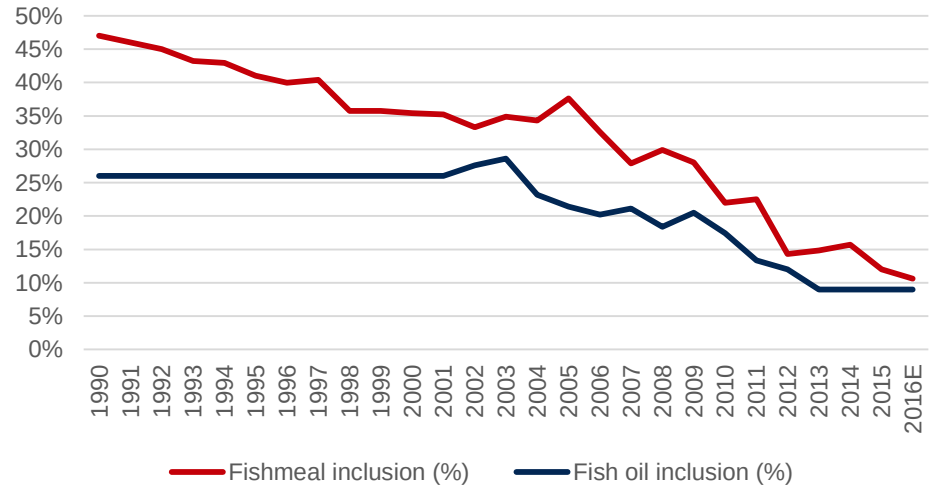
Constant global marine raw material availability



Industry development in usage(1)



Industry development in inclusion rates(1)

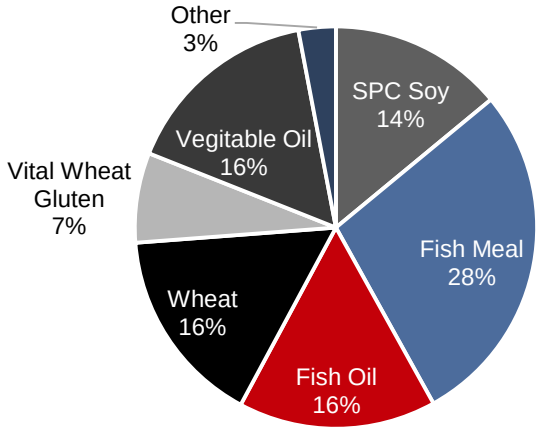


Source: Holtermann Note: (1) Norway

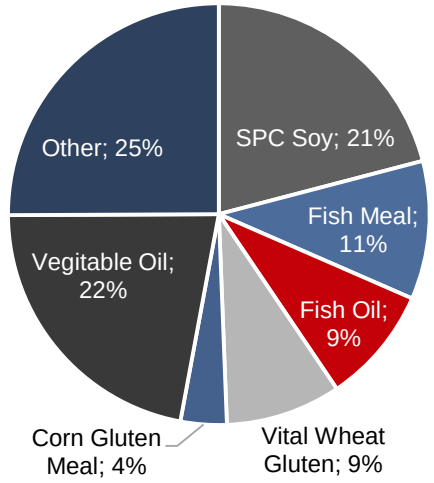
BAKKAFROST INVESTS IN HIGH MARINE PROFILE

- Supply constraints makes fish oil and fish meal costly ingredients
- Keeping the diet closer to the natural diet of wild salmon provides measurable benefits
  - Healthier nutritional profile of end product
  - Superior meat structure
  - Higher production efficiency due to animal welfare has positive impact on non-feed cost elements

Feed recipe Bakkafrost 2015



Standard feed recipe 2016E(1)



Source: Holtermann, Bakkafrost Note: (1) Norway

HEALTHY FEED

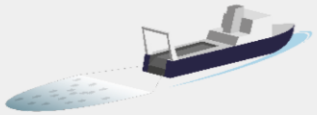
- Local raw materials
- High marine ingredient in feed
- A different taste – taste of the Faroe Islands
- Full traceability
- Certifications and quality systems
- Fish oil cleaned for pollutants


Rich in
OMEGA3
New
packaging
same great
salmon
Faroe
Islands Salmon
Premium
Salmon Portions
Skinless & boneless
Deep-skinned centre cut
From the cold clear waters
of the North Atlantic
BAKKAFROST
1.55 kg

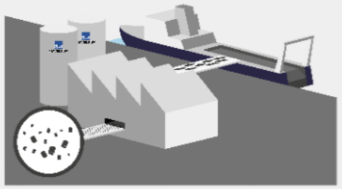

PÊCHE
OCÉA
PAVÉS
SAUM
COSTA
Nature
Lachs
Filet
BAKKAFROST
MEDALHÕES
Trawlic
iglo
Sea Fresh
Supreme
Atlantische
Zalm
Saumon
Atlantique
100%
filet
2 PIÈCES

VERTICALLY INTEGRATED VALUE CHAIN

Pelagic fishery

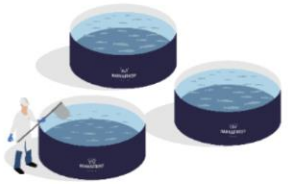


Fishmeal –oil & feed

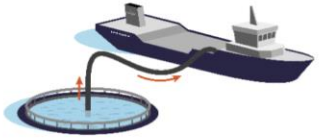


Hatching

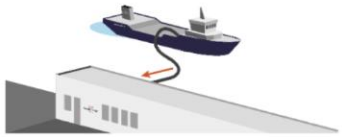
Fresh water stage



Sea water stage



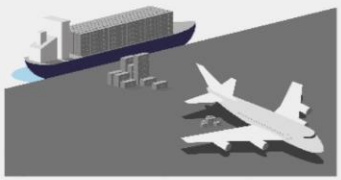
Harvest



Primary processing

Value added products (VAP)

Logistics



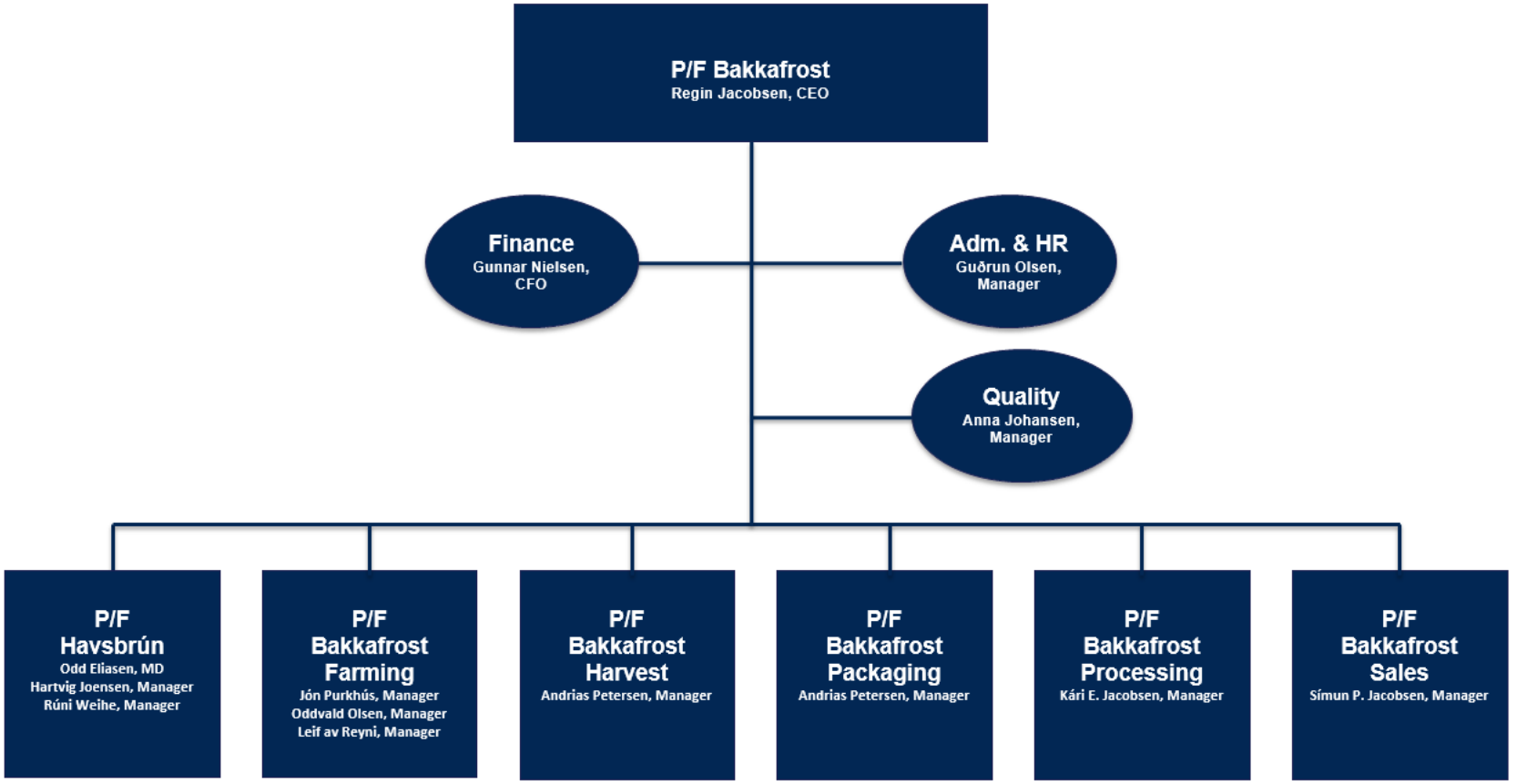
Sales & marketing

BAKKAFROST

ESTABLISHED 1968

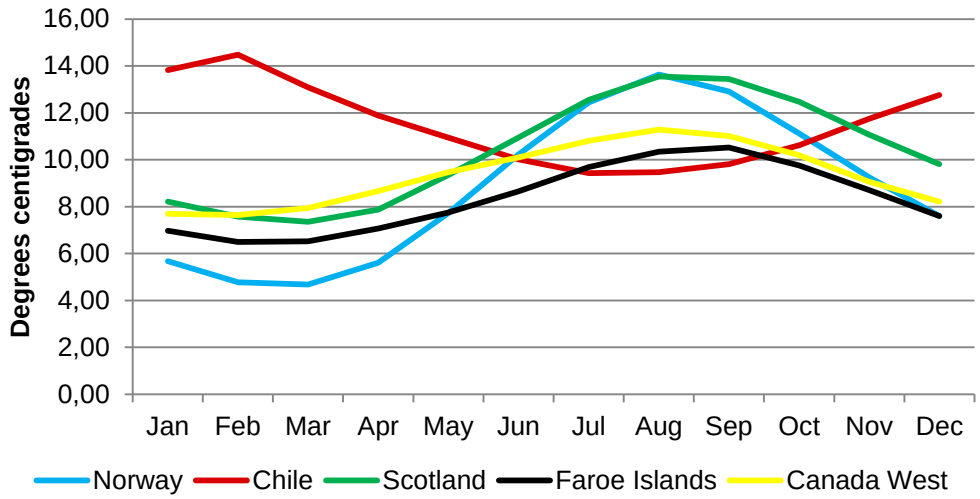
ORGANISATION

Group Organisation Chart

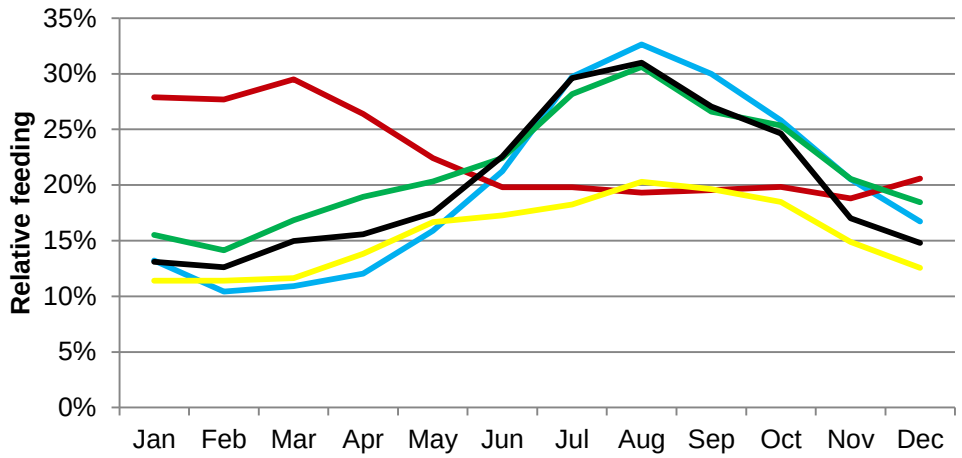


TEMPERATURES

Average temperature per month



Relative feeding[1] by month



1) Feeding relative to biomass

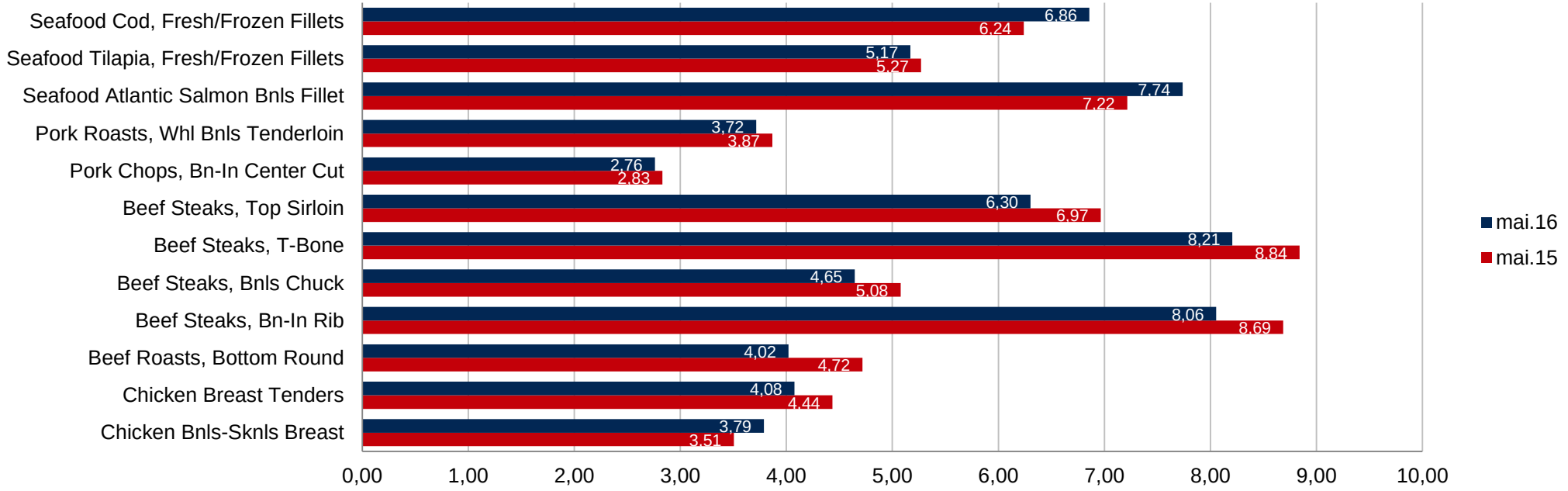
Source: Kontali

MARKET PRICES - US

US - Retail prices

Source: Urner Barry's Weekly Retail Summary

Avg. $/lb		01.05.2015	01.05.2016
Chicken	Bnls-Sknls Breast	3,51	3,79
	Breast Tenders	4,44	4,08
Beef	Roasts, Bottom Round	4,72	4,02
	Steaks, Bn-In Rib	8,69	8,06
	Steaks, Bnls Chuck	5,08	4,65
	Steaks, T-Bone	8,84	8,21
	Steaks, Top Sirloin	6,97	6,30
Pork	Chops, Bn-In Center Cut	2,83	2,76
	Roasts, Whl Bnls Tenderloin	3,87	3,72
Seafood	Atlantic Salmon Bnls Fillet	7,22	7,74
	Tilapia, Fresh/Frozen Fillets	5,27	5,17
	Cod, Fresh/Frozen Fillets	6,24	6,86



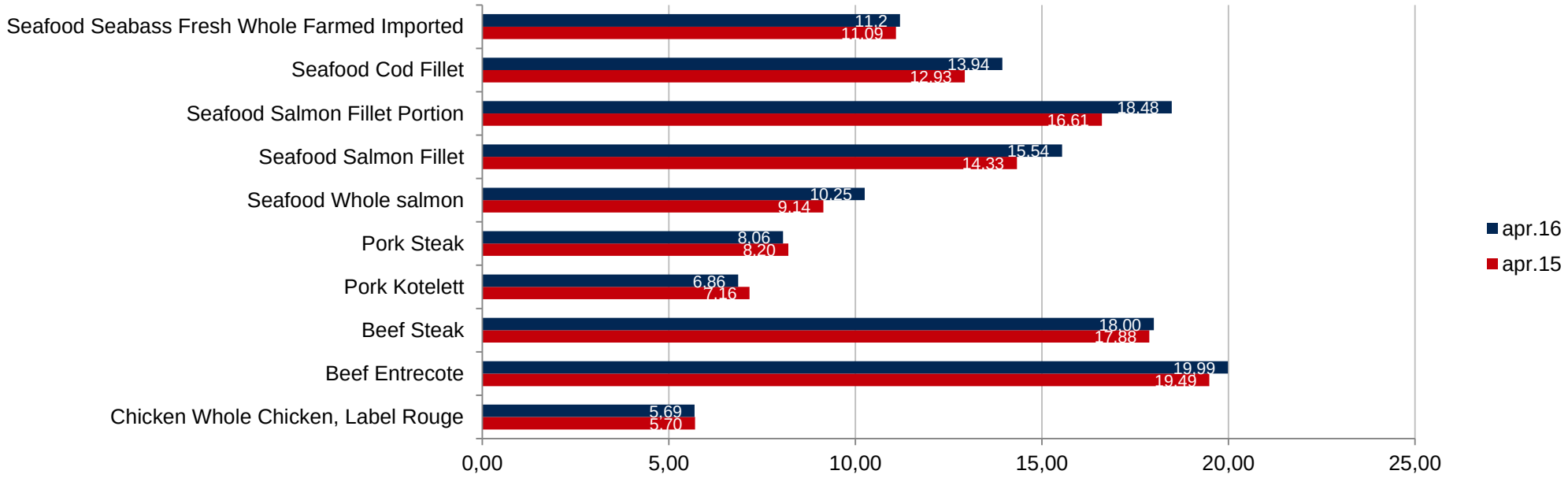
Source: Kontali

MARKET PRICES - FRANCE

France - Retail prices

Source: SNM

Avg. €/Kg		01.04.2015	01.04.2016
Chicken	Whole Chicken, Label Rouge	5,70	5,69
Beef	Entrecote	19,49	19,99
	Steak	17,88	18,00
Pork	Cutlet	7,16	6,86
	Steak	8,20	8,06
Seafood	Whole salmon	9,14	10,25
	Salmon Fillet	14,33	15,54
	Salmon Fillet Portion	16,61	18,48
	Cod Fillet	12,93	13,94
	Seabass Fresh Whole Farmed Imported	11,09	11,2



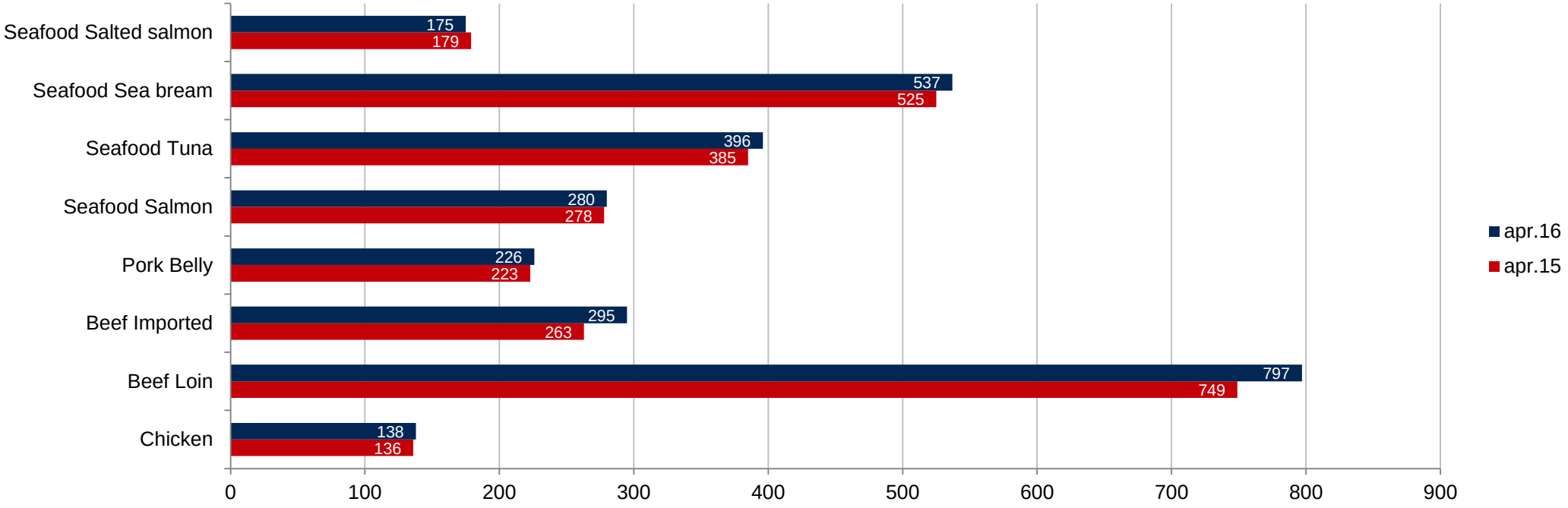
Source: Kontali

MARKET PRICES - JAPAN

Japan - Retail prices

Source: MAFF

Avg. Yen/100g		01.04.2015	01.04.2016
Chicken		136	138
Beef	Loin	749	797
	Imported	263	295
Pork	Belly	223	226
Seafood	Salmon	278	280
	Tuna	385	396
	Sea bream	525	537
	Salted salmon	179	175



Source: Kontali

CERTIFICATIONS

- Entire value chain is certified according to the GlobalGAP standard
  - Global GAP is an international standard which focuses on
    - Food safety throughout the whole production (based on HACCP)
    - Fish welfare
    - Health, safety and minimizing the impact on the environment
  - The entire value chain is Global GAP certified; including feed production, hatcheries, all our sea sites, our harvesting and processing plant

Furthermore

- The VAP production is certified according to the BRC and IFS standards (food safety standards)
- The Harvest and VAP production furthermore hold the ASC CoC certification
- Havsbrún, the meal, oil and feed production, holds multiple certifications, incl. ISO9001:2000, GMP+ standards and the IFFO RS certification
- 1 farming site (Gøtuvík) ASC certified and the next to be certified mid June

ASC SERTIFICATION PROCESS

- The Aquaculture Stewardship Council (ASC) has defined a certification system together with WWF
  - Objective to minimize or eliminate the key negative environmental and social impacts of salmon farming
- Difference from other standards:
  - Measureable parameters /common indicators
- Bakkafrost had its first site certified in 2015 and expect all sites to be certified by 2020
  - 2015: First certification – A 25 Gøtuvík
  - 2016: A-06 Gulin – already audited, expected certification mid 2016
  - 2017: A-57 Fuglafjørður og A-71 Funningsfjørður
  - 2018: A-12 Kunoyarnes

ASC SERTIFICATION PROCESS

- The standard has 7 main principles/criteria – with key indicators
  1. Legal compliance (obeying the law, the legal right to operate)
  2. Preservation of the natural environment and biodiversity
  3. Preservation of water resources
  4. Preservation of diversity of species and wild populations, e.g. preventing escapes
  5. Responsible use of animal feed and other resources
  6. Animal health - no unnecessary use of antibiotics and chemicals
  7. Social responsibility, e.g. no child labour, health and safety of workers, freedom of assembly, community relations
- Main practical implementation challenges/process changes include:
  - Compliance to threshold of 9 lethal incidents marine mammals/birds per 2 years
    - Requires diligence wrt. entaglement etc.
  - Reduce copper levels by discontinuing copper impregnation of nets
  - Compliance to tight upper limit for parasitic treatment index through:
    - Bigger smolt size to reduce exposure to biological threats in sea water stage
    - Non medicinal solution, e.g. fresh water treatment in new well boat, lumpfish, thermolicer

QUALITY MANAGEMENT INTEGRATED IN ON-GOING INVESTMENTS

- The construction teams have had quality management as an integral part of the ongoing construction projects in order to secure optimal adaptation to the various certification criteria
  - Bakkafrost has a central quality management team, which has supported the implementation
- Bakkafrost has initiated a number of investments aimed at improving quality, biosecurity and ability to rapidly solve undesired events. Investments are also aimed at reducing emissions and improving HES factors and general efficiency
- **Examples within farming and fish transport:**
  - Larger sea water farming cages resulting in lower density
  - Central surveillance of oxygen measurement including alarms, in order to improve reaction time when low oxygen levels are measured
  - Gradual phasing out the use of cobber impregnated nets
  - Improved well boat capacity
    - Reduced handling of fish, which in turn reduces stress levels and improves the quality of animal welfare and the quality of the product
    - Efficient lice filters

QUALITY MANAGMENT INTEGRATED IN ONGOING INVESTMENTS

- Examples within primary processing and VAP:
  - New electric stunning system
  - Improved cooling chain
  - Optimal utilisation of gutting machines through sorting of based on sizes
  - Reduced risk of microbiological contamination through securing appropriate production flow
    - Hygienic design
    - CIP cleaning
    - In house styropor box production
  - Integrated Innova quality module
    - Electronic registration
    - Eases possibility to run trend analysis for optimisation, focus areas and traceability
  - Green profile
    - No transport of flamingo boxes and plastic fish boxes between sites
    - Use of surplus heat from the styrofoam plant
    - Disinfection of surplus water

BAKKAFROST

ESTABLISHED 1968