GLOBEFISH HIGHLIGHTS
A QUARTERLY UPDATE ON WORLD SEAFOOD MARKETS

QUARTERLY ISSUE, including Jan—Sept 2016 Statistics
GLOBEFISH forms part of the Products, Trade and Marketing Branch of the FAO Fisheries and Aquaculture Department and is part of the FISH INFOnetwork. It collects information from the main market areas in developed countries for the benefit of the world’s producers and exporters. Part of its services is an electronic databank and the distribution of information through the European Fish Price Report, the GLOBEFISH Highlights, the GLOBEFISH Research Programme and the Commodity Updates.

The GLOBEFISH Highlights is based on information available in the databank, supplemented by market information from industry correspondents and from six regional services which form the FISH INFOnetwork: INFOfish (Asia and the Pacific), INFOPESCA (Latin America and the Caribbean), INFOPECHE (Africa), INFOSAMAK (Arab countries), EUROFISH (Central and Eastern Europe) and INFOYU (China).

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO) concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO in preference to others of a similar nature that are not mentioned.

The views expressed in this information product are those of the author(s) and do not necessarily reflect the views or policies of FAO.

© FAO, 2017

FAO encourages the use, reproduction and dissemination of material in this information product. Except where otherwise indicated, material may be copied, downloaded and printed for private study, research and teaching purposes, or for use in non-commercial products or services, provided that appropriate acknowledgement of FAO as the source and copyright holder is given and that FAO’s endorsement of users’ views, products or services is not implied in any way.

All requests for translation and adaptation rights, and for resale and other commercial use rights should be made via www.fao.org/contact-us/licence-request or addressed to copyright@fao.org.

FAO information products are available on the FAO website (www.fao.org/publications) and can be purchased through publications-sales@fao.org.

Cover photography ©Jakob Owens
GLOBEFISH HIGHLIGHTS
A QUARTERLY UPDATE ON WORLD SEAFOOD MARKETS
ACKNOWLEDGEMENTS

This issue of GLOBEFISH Highlights has been prepared by Anna Child, Silvio Alejandro R. Catalano Garcia, Helga Josupeit, Shen Nianjun, Turan Rahimzadeh, Paola Sabatini and Weiwei Wang with contributions by Shirlene M. Anthonysamy (Pangasius & Tilapia), Victoria Chomo (Seafood Expo North America Event), Felix Dent (Salmon & Seabass/bream), Fatima Ferdouse (Shrimp & Tuna), Erik Hempel (Cephalopods, Crab, Groundfish, Lobster & Small Pelagics), Helga Josupeit (Bivalves), Rodrigo Misa (Salmon & Shrimp regional contributions), Tipparat Pongthanapanich, Kim Anh Thi Nguyen and Yuan Xinhua (Special Feature), Ferit Rad (Seabass/bream regional contributions), Turan Rahimzadeh (NASF Event), Katia Tribilustova (Seabass/bream regional contributions) and Weiwei Wang (Fishmeal/oil). For full bios on all of our contributors, please visit www.fao.org/in-action/globefish/background/publication-contributors/en/.

Anna Child provided coordination and editing services, Silvio Alejandro R. Catalano Garcia directed the graphic design, Helga Josupeit and Shen Nianjun were responsible for quality content checks, Turan Rahimzadeh was responsible for the layout, and Fatima Ferdouse, Paola Sabatini and Weiwei Wang created statistical figures. The Norwegian Seafood Council provided data support for the FAO Fish Price Index. Illustrations were sourced from the Food and Agriculture Organization of the United Nations, Original Scientific Illustrations Archive.

For more information please contact:

GLOBEFISH, FIAM/FAO Tel: (39-06) 5705 2884
Viale delle Terme di Caracalla Fax: (39-06) 5705 3020
00153 Rome, Italy
Email: globefish@fao.org

www.fao.org/in-action/globefish
ACRONYMS AND ABBREVIATIONS

THE ALASKA SEAFOOD MARKETING INSTITUTE (ASMI)
ASSOCIATION OF SOUTHEAST ASIAN NATIONS (ASEAN)
ATLANTIC STATES MARINE FISHERIES COMMISSION (ASMFC)
COST AND FREIGHT (CFR)
EARLY MORTALITY SYNDROME (EMS)
EX-WAREHOUSE (EXW)
FISH AGGREGATING DEVICE (FAD)
FREE ON BOARD (FOB)
FROZEN AT SEA (FAS)
HEADED AND GUTTED (H&G)
ILLEGAL, UNREPORTED AND UNREGULATED (IUU)
INSTITUTE OF MARINE RESEARCH (IMR)
THE INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA (ICES)
MILLENNIUM DEVELOPMENT GOAL (MDG)
NATIONAL INSTITUTION FOR NUTRITION AND SEAFOOD RESEARCH (NIFES)
NATIONAL MARINE FISHERIES SERVICE (NMFS)
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)
NORTH ATLANTIC SEAFOOD FORUM (NASF)
NORWEGIAN SEAFOOD COUNCIL (NSC)
THE STATE OF WORLD FISHERIES AND AQUACULTURE (SOFIA)
SUSTAINABLE DEVELOPMENT GOAL (SDG)
TOTAL ALLOWABLE CATCH (TAC)
VIETNAM ASSOCIATION OF SEAFOOD EXPORTERS AND PROCESSORS (VASEP)
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>TABLE OF CONTENTS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GLOBEFISH HIGHLIGHTS</td>
<td></td>
</tr>
<tr>
<td><strong>GLOBAL FISH ECONOMY</strong></td>
<td>12</td>
</tr>
<tr>
<td>Global seafood trade expansion slows despite continuing production growth.</td>
<td></td>
</tr>
</tbody>
</table>

| **SHRIMP** | 14 |
| Global farmed shrimp production in 2016 remains stagnant or lessens                     |

| **TUNA**  | 18 |
| Global market trends for raw and processed tuna remained uncertain throughout 2016      |

| **GROUNDFISH** | 23 |
| Strong supply situation, high cod prices and weak Alaska pollock prices                  |

| **CEPHALOPODS** | 28 |
| Tight squid supplies with high prices resulting                                         |

| **TILAPIA**  | 32 |
| Major markets slow, global demand driven by new markets                                  |

| **PANGASIAS** | 35 |
| With rising demand in China, supplies improve and prices strengthen                      |

| **BASS & BREAM** | 37 |
| Seabass and seabream sector under threat with expected supply growth                    |

| **SALMON**  | 41 |
| A return to production growth in 2017 but global salmon shortage here to stay           |

| **SMALL PELAGICS** | 46 |
| Higher quotas may lead to price weakening                                               |
High juvenile presence in Peru ends an already tough year for fishmeal production

Strong supplies may put pressure on prices

Production for bivalves lower in 2016

Quota cuts in the USA, increases in the Russian Federation

Insuring small-scale farms adds resilience to the aquaculture value chain

Experts at NASF 2017 to discuss the prospects for increased sustainable harvest from the ocean

FAO organizes panel session at the Seafood Expo North America 2017
TABLES, FIGURES AND NEWS

GLOBEFISH HIGHLIGHTS

TABLES

World fish market at a glance 13

SHRIMP
Japanese imports of shrimp (by product) 16
US imports of shrimp (by product) 16
EU imports/exports of shrimp 16

TUNA
Japanese tuna landings (by species and fresh/frozen) 19

GROUNDISH
Groundfish Forum catch estimated 2014—2017 24
US imports of cod-like groundfish (by product and origin) 25

TILAPIA
US imports of tilapia (by product and origin) 33

PANGASISUS
US imports of frozen catfish fillets 35

SALMON
Norwegian exports of salmon (by product) 43
Chile exports of salmon (by product and destination) 43
UK exports of salmon (by product and destination) 43
French imports of salmon (by product) 44
German imports of salmon (by product and origin) 44
Japanese imports of salmon (by product and origin) 44
US imports of salmon (by product and origin) 44

SMALL PELAGICS
Norwegian exports of small pelagics (by product and destination) 46
German imports of small pelagics (by product and origin) 46

BIVALVES
World imports/exports of oysters 58
World imports/exports of scallops 58
World imports/exports of mussels 59
World imports/exports of clams, cockles, arkshells 60

Fish and fishery products statistics 72

GRAPHS

FAO Fish Price Index 13

SHRIMP
Shrimp production by species, both wild and farmed (2014) 14
Top exporters of shrimp from India 15
USA imports shrimp: top three origins 16
Prices, Shrimp: USA 17
**TUNA**
- Tuna production by species (2014) 18
- US imports of fresh tuna (by species) 19
- Japanese imports of frozen tuna (by species) 19
- Japanese imports of fresh/chilled tuna (by species) 20
- Top exporters of canned/prepared tuna to the USA 21
- Top exporters of canned tuna to Germany 21
- Top exporters of canned tuna to UK 21
- Top exporters of cooked canned tuna loins to Spain 21
- Top importers of canned/process tuna from Thailand 21
- Prices skipjack: Thailand 22

**GROUNDFISH**
- Groundfish production by selected species (2014) 23
- Top exporters of frozen Alaska pollock fillets to Germany 25
- Top exporters of frozen cod fillets to UK 25
- Top exporters of frozen cod fillets to China 25
- Top importers of frozen cod fillets from China 25
- Top exporters of whole frozen Alaska Pollock to China 26
- Top exporters of frozen Alaska pollock fillets to China 26
- Top importers of Alaska pollock from Russian Federation 26
- Top importers of Pacific cod from Russian Federation 26
- Wholesale prices, Groundfish: USA 26
- Export prices, Cod: Norway 25

**CEPHALOPODS**
- Cephalopods production (2014) 28
- Top exporters of octopus to Japan 29
- Top exporters of octopus to Spain 29
- Top exporters of squid to Japan 30
- Top exporters of squid to Republic of Korea 30
- Top exporters of squid to Spain 31
- Top exporters of squid to the USA 31
- Prices, Squid: Italy 30
- Top exporters of cuttlefish to Japan 31
- Top exporters of cuttlefish to Spain 31

**TILAPIA**
- Top importers of frozen tilapia from China 32
- Prices, Tilapia USA 33

**PANGASIOUS**
- Top exporters of pangasius frozen fillets to Spain 36

**BASS & BREAM**
- Bass and bream production (2014) 37
- Top global producers of seabass 37
- Top global producers of seabream 37
- Top importers of fresh seabass from Greece 38
- Top importers of fresh seabream from Greece 38
- Top importers of fresh seabass from Turkey 38
- Top importers of fresh seabream from Turkey 39
- Top importers of fresh seabass from Italy 39
- Top importers of fresh seabream from Italy 39

**SALMON**
- Salmon production by species, both wild and farmed (2014) 41
- Top three global producers of Atlantic salmon 41
- Top importers of salmon to Chile 43
- Prices, Salmon: France 44
- Prices, Trout: Italy 45
In line with the upward trend in production volumes, global annual per capita consumption of fish has been increasing at around 1 percent per year, and is set to reach 20.5 kg per capita per year in 2016. However, due to the significant strengthening of the US currency versus many other major currencies over this timeframe, these US dollar figures must be interpreted with caution when attempting to identify underlying supply and demand trends. Indeed, the rate of increase in global production of fish and fishery products is expected to remain steady at 5 percent in 2016, suggesting that growth in the world’s appetite for seafood is continuing unabated. Aquaculture is still responsible for the entirety of production growth, already accounting for the majority (53 percent) of the fish we eat directly and, if current trends continue, set to overtake capture fisheries in absolute production terms by the year 2020.

Global trade in fish and fishery products is expected to show a return to growth for 2016, although the forecasted total of US$140 billion traded is still below the 2014 total of US$148.3 billion. However, the reservation of the costal regions of anchoveta fisheries for artisanal fleets in Peru and the Nigerian issuing of seafood import quotas are examples of such policies.

However, as expansion in seafood trade in developing countries slows, developed markets and producers are once again leading growth as both importers and exporters. Europe, in particular, is expected to show significant increases in total value traded in 2016, reflecting revitalized consumer demand as slow but steady economic growth is maintained. Another factor driving up value is high prices for some key species such as cod, salmon, cephalopods and small pelagics. The vote in the UK to exit the EU has not had a significant impact on the country’s seafood trade yet, although the depreciation of the pound has inevitably decreased the purchasing power of importers and boosted competitiveness for exporters.

On the exporter side, Norway is the major beneficiary of the improved economic situation and the upward price trends, given its position as a top supplier to the EU market and a major producer of cod, salmon, herring and mackerel. Meanwhile, prices for tuna and shrimp, two key export species of developing countries, have demonstrated some upward tendencies on global markets but are still well below historical highs. Price trends for other highly-traded species have been mixed in 2016, with cephalopods continuing a strong upward trend and scallop prices soaring while tilapia prices declined. In Peru, El Niño has negatively impacted the anchoveta fishery with exports for fishmeal and fish oil dropping in 2016. The net result is a projected 3 percent increase in total export value out of developing countries, and a 5 percent increase for Asia.

Going into 2017, environmental factors have limited the supply of a number of important species, both wild and farmed, and this should keep prices up in international trade, particularly considering the global demand outlook. Analysts are predicting a continuing slow economic recovery in the euro zone and relatively low but steady growth in the USA and Japan, while the Russian Federation and Brazil are also seemingly on track to lift themselves out of recession.

Combined with strong regional demand in other emerging economies around the world, the outlook for the world’s seafood markets in 2017 can be
described as cautiously positive. However, demand is also a function of the marketing efforts of the relevant stakeholders, and industry leaders from a number of seafood sectors in different parts of the world are increasingly calling for more coordinated and focused marketing and product development strategies at a national and/or regional levels. The importance of this kind of collective cooperation has long been understood at the resource management level, but there is still scope to fully realize the benefits of this approach on the market side as well.

<table>
<thead>
<tr>
<th>WORLD BALANCE</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>Change: 2016 over 2015 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>167.2</td>
<td>171.0</td>
<td>174.1</td>
<td>1.8 ▲</td>
</tr>
<tr>
<td>Capture fisheries</td>
<td>91.4</td>
<td>63.5</td>
<td>92.7</td>
<td>-0.9 ▼</td>
</tr>
<tr>
<td>Aquaculture</td>
<td>73.8</td>
<td>77.5</td>
<td>81.4</td>
<td>5.0 ▲</td>
</tr>
<tr>
<td>Trade value (exports US$ billion)</td>
<td>148.3</td>
<td>134.1</td>
<td>140.0</td>
<td>4.4 ▲</td>
</tr>
<tr>
<td>Trade volume (live weight)</td>
<td>60.0</td>
<td>59.9</td>
<td>60.0</td>
<td>0.2 ▲</td>
</tr>
<tr>
<td>Total utilization</td>
<td>167.2</td>
<td>171.0</td>
<td>174.1</td>
<td>1.8 ▲</td>
</tr>
<tr>
<td>Food</td>
<td>140.3</td>
<td>149.4</td>
<td>152.8</td>
<td>2.3 ▲</td>
</tr>
<tr>
<td>Feed</td>
<td>15.8</td>
<td>16.5</td>
<td>16.2</td>
<td>-1.8 ▼</td>
</tr>
<tr>
<td>Other uses</td>
<td>5.1</td>
<td>5.1</td>
<td>5.1</td>
<td>0.0 ▼</td>
</tr>
</tbody>
</table>

### SUPPLY AND DEMAND INDICATORS

<table>
<thead>
<tr>
<th>Per capita food consumption</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>Change: Jan-Jun 2016 over Jan-Jun 2015 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food fish (kg/year)</td>
<td>20.1</td>
<td>20.3</td>
<td>20.5</td>
<td>1.1 ▲</td>
</tr>
<tr>
<td>From capture fisheries (kg/year)</td>
<td>10.0</td>
<td>9.8</td>
<td>9.6</td>
<td>-1.8 ▼</td>
</tr>
<tr>
<td>From aquaculture (kg/year)</td>
<td>10.1</td>
<td>10.5</td>
<td>10.9</td>
<td>3.9 ▲</td>
</tr>
</tbody>
</table>

### FAO FISH PRICE INDEX

<table>
<thead>
<tr>
<th>Year</th>
<th>Index 2002-2004=100</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>157</td>
</tr>
<tr>
<td>2015</td>
<td>143</td>
</tr>
<tr>
<td>2016</td>
<td>143</td>
</tr>
<tr>
<td>Change: Jan-Jun 2016 over Jan-Jun 2015</td>
<td>-1.0 ▼</td>
</tr>
</tbody>
</table>

Source: Norwegian Seafood Council

Totals may not match due to rounding.

---

**Source:** Norwegian Seafood Council
Global farmed shrimp production in 2016 remains stagnant or lessens

Affected by lower international prices and disease in some leading producing countries, global production of farmed shrimp in 2016 is likely to have remained stagnant at the 2015 level, if not lower. Overall, import trends remained moderate during the first nine months of 2016.

Supply

The main season for farmed shrimp in Asia ended in November 2016 in most countries, with an overall sluggish trend in production. This went against the earlier forecast of increased production in 2016.

Preliminary reports of 2016 production data for farmed shrimp suggest that recovery in Thailand and strong harvests in Ecuador were not enough to offset the falling production of farmed shrimp in China and Viet Nam due to persistent shrimp disease and related issues. The average per hectare harvest in Viet Nam reportedly declined by 50 percent due to poor quality shrimp fry and slow growth. Due to production issues, both China and Viet Nam had to import large quantities of shrimp for reprocessing and export.

Overall 2016 production in India and Indonesia, the two other large producers of farmed shrimp in Asia, is expected to be lower than the early 2016 forecast.

In Latin America, farmed shrimp production increased moderately in Ecuador, but in Mexico disease and premature harvests negatively impacted volume growth. Farmed shrimp supplies also did not improve in other countries in the Central and South American region.

In terms of wild-caught fish, Argentina had another record year of catches of *Pleoticus muelleri* in 2016, with annual landings expected to exceed 150 000 tonnes compared with 140 000 tonnes in 2015. In contrast, in the USA, landings from the Gulf of Mexico declined by 18 percent during January–October 2016 (36 000 tonnes) compared with the same period in 2015, keeping (EXW) prices strong at higher levels compared with imported vannamei shrimp.

Export summary

Even with lower than expected growth in shrimp aquaculture, India moved to the leading exporter in international shrimp trade during the first nine months of 2016, followed by Ecuador, Thailand, Indonesia and China. Compared with the same period in 2015, exports from India increased by 11.6 percent, totaling 315 400 tonnes. Ecuador also increased exports by 7.5 percent (276 000 tonnes) during this period with increased sales to East Asia, the Russian Federation and Latin America.
Improved farmed shrimp production in Thailand facilitated a 28 percent rise in exports to 150 000 tonnes during the review period and secured the country its third position in the global shrimp export market. More than 40 percent of these exports consisted of processed/value-added products.

With two-digit rises in Chinese export volumes to the Republic of Korea (+17.3 percent), Hong Kong SAR (+18.9 percent) and Taiwan Province of China (+18.3 percent), total Chinese exports of shrimp increased by 9 percent to total 136 000 tonnes.

Shrimp export volumes from Viet Nam posted growth in the USA (+10 percent), Japan (+5.5 percent), EU (+12 percent) and other East Asian markets during January–September 2016 compared with the same period in 2015.

In terms of prices, prices remained soft in global export trade during the review period, dominated by vannamei shrimp. However, exporters of black tiger (Bangladesh, Myanmar and Indonesia) reported firmer price trends following strong demand from the USA and Japan. Supplies of this species have tapered over the years from India, Viet Nam and Indonesia.

Despite limited supply of large-sized shrimp in Indonesia, prices have fallen due to weak demand from key markets, particularly from the USA.

Import summary

Among the top three traditional markets, shrimp demand has improved in the USA and in Japan in 2016, especially during the summer and school holiday seasons. This good demand has been supported by the lower import prices. In the European markets, consumer demand has remained flat.

During the review period, shrimp imports increased by 3.5 percent into the USA, by 5 percent into Japan and by 3.4 percent into the EU compared with the same time in 2015. High inventories are reported with European importers and distributors due to slow summer demand from end consumers. There were lower imports to Norway (-22 percent) and Switzerland (-10 percent). In contrast, strong import growth persisted in the Russian Federation (+44 percent) following the lifting of the food embargo, though this volume remains below January—September 2014 imports of 37 000 tonnes.

Positive import trends continue into East Asian emerging markets, including China (+14 percent), Republic of Korea (+7.7 percent), Hong Kong SAR (12 percent), Singapore and in the Middle East.

During the reporting period, Vietnamese imports of raw frozen shrimp, mostly meant for re-exports, exceeded 200 000 tonnes with an estimated value of almost US$1 billion.

Japan

Both retail and catering demand for shrimp improved in Japan during 2016, as the product group remains more affordable to consumers compared with other seafood such as tuna, salmon, white meat marine fish and cuttlefish. In general, market demand for the high-end market segment of head-on, sea-tiger and farmed, black tiger shrimp improved; sales of semi-processed, peeled, tail-on shrimp (nobashi) and processed shrimp also increased during the 2016 reporting period compared with 2015.

For the first time since 2013, Japanese total shrimp imports increased during January–September 2016 reaching nearly 155 000 tonnes. Viet Nam, Thailand, India, Indonesia and China were the top five exporters. In this total, 27 percent consisted of processed/value-added products such as cooked and peeled shrimp, ready-to-cook tempura shrimp, sushi
shrimp and other types of shrimp-based products. Raw, frozen, shell-on and PTO shrimp also followed the same import pattern supported by good demand from supermarkets and domestic processors of tempura shrimp.

USA

Shrimp remains US consumers’ top choice for seafood. Lower import prices, which trickled down to the consumer level by mid-2016, and increased disposable income created this needed rise in US demand. Sales increased in the retail and catering trade, thus reducing domestic inventories. As the single largest shrimp importer, the USA continues to influence international shrimp trade.

Import volumes into the market increased by 3.4 percent during January–September 2016 against the same period in 2015 with a value rise of 1.3 percent to total US$4 billion. During this period, the average import price was 2 percent lower than the same period a year ago. There were increased imports of raw, shell-on and peeled shrimp but lesser volumes for processed products (breaded shrimp and other preparations). Processed products comprised 20 percent of US shrimp imports.

In total imports, India replaced Indonesia as the leading supplier to the USA followed by Ecuador, Thailand and Viet Nam. There was a significant rise in exports from Thailand (+16 percent). Supplies from Ecuador continued to be lower (-17 percent) to the US market as Ecuador has been increasingly targeting non-traditional markets.

Demand for black tiger shrimp also increased during the reported period; imports increased from Bangladesh by almost 55 percent to 2 600 tonnes.

EU

In general, the price softening of shrimp supports higher imports. However, European consumers have been conservative in their spending due to the financial difficulties in the EU economy. The 5.3 percent growth rate in EU shrimp imports from extra-EU countries during January–June 2016 narrowed to 3 percent during January–September 2016 to total 410 500 tonnes. Supplies from extra-EU sources were close to 74 percent of total shrimp imports into the EU during the period. Interestingly, imports of the cheaper, cold-water shrimp from Argentina and Greenland were higher by 17 percent and 21 percent respectively. Tropical shrimp imports grew from Ecuador (+0.27 percent), India (+4 percent) and Viet Nam (+11.7 percent).

Imports from Bangladesh, generally consisting of wild-caught white and brown shrimp and farmed black tiger, declined due to price competition with cheaper vannamei shrimp.

Among the top five single markets in the EU, Spain imported 112 600 tonnes (+2 percent), France 81 200 tonnes (+3.9 percent), Denmark 61 000 tonnes (+7.4 percent), and the UK 57 800 tonnes (+7.36 percent) during the first nine months of 2016 compared with the corresponding period in 2015. There was a 4.5 percent rise in intra-EU trading (exports), a large proportion of which originally came from extra-EU countries.

Strong import growth persisted in the Russian Federation (+44 percent) following the lifting of the food embargo, though this volume remains below the highest imports of 37 000 tonnes of the corresponding period in 2014.

Asia and other markets

Viet Nam continues to be an attractive market for Asian and Latin American shrimp exporters. Vietnamese shrimp imports during the first nine months of 2016 exceeded 200 000 tonnes, largely supplied by Ecuador (118 000 tonnes) and India (68 700 tonnes).
76 300 tonnes of shrimp were imported into China during January–September 2016, which is 14 percent higher than the same time period in 2015. However, there were reduced imports from Canada, Ecuador and India. The top Chinese suppliers were Argentina (20 700 tonnes), Canada (14 800 tonnes), Ecuador (11 200 tonnes) and Thailand (8 000 tonnes). Due to the weaker Chinese currency against the US dollar and high tariffs on imported shrimp for domestic consumption, direct imports declined from Ecuador (-26 percent) and India (-17 percent). Imports from Viet Nam through border trade remained strong for the same reasons.

In the Republic of Korea, shrimp imports increased by 17 percent, totalling 3 500 tonnes. In Hong Kong SAR imports increased by 11.9 percent (38 600 tonnes) and in Singapore by 6.6 percent (18 000 tonnes). Imports to Taiwan Province of China were marginally lower (-1 percent) to total 24 500 tonnes.

In the Pacific, imports increased into Australia (+3 percent) to total 21 400 tonnes and in New Zealand by 12 percent (3 200 tonnes) during the reporting period.

**Outlook**

Shrimp production will be seasonally low in most of Asia until April, but is expected to be stable in Indonesia and Ecuador. Raw material prices are already moving up in India and packers are facing competition from Indonesia.

In the western import markets, sporadic purchases are expected until the new season's harvest is available in May from Asia. However, in the EU, higher imports from Ecuador will commence in January 2017 as shrimp from this source are now given duty-free access to the EU market. In 2016, EU tariffs for Ecuadorian shrimp were between 3 and 5 percent.
Global market trends for raw and processed tuna remained uncertain throughout 2016

Demand was slow in the traditional canned tuna markets worldwide during January–September 2016, which led to lower imports in the western markets. Developing markets in the Middle East, East Asia and Latin America, however, maintained reasonable canned tuna import growth during the review period. Raw material prices, particularly for skipjack, weakened during October—November 2016. However, from December 2016, both skipjack and yellowfin prices started to move up, as supply recovery remains slow and demand improved in the traditional markets.

Supply

The fish aggregating device (FAD) fishing closure in the Western Central Pacific (WCP) ran from July to October 2016, however, even after reopening, fishing remained slow. Frozen inventories in Thai canneries were more than adequate, as there were strong arrivals from the Indian Ocean during the WCP FAD closing period. Lack of demand has pushed skipjack prices down to US$1 400 per tonne, cost and freight (CFR) Thailand in November 2016, though this is still US$300–400 higher than in November 2015. Prices have started to move up in early December 2016.

In the Eastern Pacific, the second fishing ban (veda) began on 18 November 2016 and will go through 31 January 2017. Catches of skipjack have been moderate but poor for yellowfin. Prices are weakening for both because of sufficient raw material stocks with canneries in Ecuador.

Japanese tuna landings (by species)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(1,000 tonnes)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bluefin</td>
<td>2.0</td>
<td>2.8</td>
<td>3.5</td>
<td>4.7</td>
<td>5.2</td>
</tr>
<tr>
<td>Bigeye</td>
<td>17.7</td>
<td>19.6</td>
<td>20.6</td>
<td>22.9</td>
<td>20.6</td>
</tr>
<tr>
<td>Yellowfin</td>
<td>34.3</td>
<td>34.3</td>
<td>25.4</td>
<td>29.0</td>
<td>30.7</td>
</tr>
<tr>
<td>Skipjack</td>
<td>204.3</td>
<td>216.4</td>
<td>198.2</td>
<td>185.6</td>
<td>170.3</td>
</tr>
<tr>
<td>Albacore</td>
<td>58.3</td>
<td>51.8</td>
<td>47.1</td>
<td>41.0</td>
<td>33.1</td>
</tr>
<tr>
<td>Total</td>
<td>316.6</td>
<td>313</td>
<td>294.8</td>
<td>283.2</td>
<td>259.9</td>
</tr>
</tbody>
</table>

Source: MAFF, Japan/INFOFISH (Note: includes distant water catches)
Catches have declined in the Indian Ocean to a moderate level where regional canneries are holding ample stocks of frozen raw material. Trans-shipment activities remain high to Thailand and higher offers from Bangkok have driven prices up for both skipjack and yellowfin.

Fishing in the Atlantic Ocean has been moderate-to-poor and raw material inventories at local canneries have fallen to moderate levels. Subsequently, skipjack and yellowfin prices have increased.

Lower catches in the Indian and Atlantic Oceans have pushed up the European prices for skipjack and yellowfin. The price of semi-processed, double-cleaned and cooked yellowfin loins has stayed stable at a high level.

Fresh and frozen tuna market (non-canned)

Trade summary

Demand for non-canned tuna was positive both in the Japanese and US markets during the first nine months of 2016 with imports increasing during this period compared with the same time in 2015. Fresh tuna imports increased by 11 percent into Japan, while US imports increased by 4 percent. Import demand for frozen tuna fillets (which have longer shelf life), also increased into both markets.

USA

In contrast to the declining canned tuna demand, the positive market trends persisted for non-canned tuna products during 2016 in the USA. The market imported nearly 42 400 tonnes of fresh and frozen tuna during January–September 2016, at a value of US$439.2 million, demonstrating volume growth of 8.7 percent. Within these imports, frozen tuna fillets took a 51 percent share, followed by whole, dressed and fresh/chilled tuna (43 percent). The balance was mainly made up of headed and gutted (H&G) frozen bluefin, bigeye and yellowfin tuna.

US imports of raw frozen loins/fillets increased by 12.6 percent to 21 600 tonnes compared with the same period in 2015 while the average import price was stable at US$11 per kg. Supplies increased from the Philippines, Thailand and China but declined by 14 percent from the leading exporter, Indonesia, due to raw material shortages following strict implementation of illegal, unreported and unregulated (IUU) fishing regulations in this country.

Japan

Japanese consumer demand for sashimi tuna, both high-end bluefin and mid-value bigeye has improved in 2016. However, there was a 5 percent fall in total imports of whole frozen tuna due to lower catches of bigeye and skipjack. Demand for frozen tuna loins was also stable with imports increasing year-on-year by 3 percent to total 31 200 tonnes. Frozen tuna loins are often preferred by wholesalers and retailers due to its longer shelf life.

Autumn promotions and discounts by supermarkets for bigeye and bluefin tuna are driving the improved consumer demand for sashimi. Consumer demand improved further towards the end of 2016 as this is the traditional period for sashimi tuna consumption.
Canned tuna market

Trade summary

During the first nine months of 2016, Thailand, Ecuador, Spain, China and Indonesia remained the top five exporters of processed and canned tuna to the global market. Thailand reported falling exports, whereas all other countries reported positive trends.

During the first nine months of 2016, Ecuador maintained its export growth but only with less than a 1 percent rise in volume, as supplies to Spain, the main market in the EU, suffered a 13.3 percent decline due to weaker demand for cooked loins from tuna canneries. However, Ecuador’s exports increased to the Netherlands (+24 percent) and Germany (+5.3 percent). In November 2016, Ecuador and the EU signed a new trade agreement that allows for the continued export of tuna from Ecuador at zero-duty rates over the coming years, bringing a degree of stability to the market.

Spanish prepared tuna exports, which are mostly higher-value products, increased by 5 percent in quantity but declined by the same percentage in value due to weak market prices. Exports to the UK and Germany were 2 percent and 52 percent below 2015’s.

Through greater focus on cooked loin production, China increased exports by 8.5 percent to total 64 100 tonnes during the first nine months of 2016 compared with the same period in 2015. Exports weakened by 12.6 percent to the US market, though this decline was compensated for by 62 and 77 percent rises in supply to Portugal and Spain respectively.

In Mauritius, which is largely dependent on the EU and US markets, canned tuna exports suffered a 6 percent decline during January–September 2016 compared with the same period in 2015.

Lackluster consumer demand for canned tuna in the large traditional markets of North America and the EU extended uncertainty into the global canned tuna trade. Imports of cooked loins also suffered as reprocessors in the USA and EU remained conservative in raw material procurement throughout 2016.

North America

During the first nine months of 2016, US and Canadian imports of canned and processed tuna declined by 11 percent and 8 percent respectively compared with the same time period in 2015. The weak demand pattern observed for processed tuna during the first half of 2016 persisted through the third quarter in 2016. Overall, US imports of processed tuna were down year-on-year by 10.4 percent for the first nine months of 2016, with declining volumes from the top five suppliers.

Imports of cooked loins for reprocessing into higher-value products fell by 9 percent to 47 400 tonnes. Supplies of imported light meat tuna in brine were also down by 17 percent to 57 400 tonnes, and for tuna-in-pouch down by 7 percent to 25 000 tonnes. Only canned white meat imports (albacore) increased to 21 000 tonnes compared with 20 500 tonnes imported during the same period in 2015.

EU

In the EU, the canned tuna sector showed little buying interest during 2016’s entirety. Although total EU trade data is not available for January–September 2016 as of this writing, individual country data on Spain, France and Germany indicated declining imports during the review period.

British canned tuna imports posted a 4 percent rise during the review period. However, demand for canned tuna seems to have tapered in the retail trade. According to the latest survey conducted by the market research firm Nielsen, leading supermarkets Tesco, Asda, Sainsbury and Marrison, indicated falling household demand for canned tuna during the last year. Despite these findings, some retail stores reported increased sales, which highlights the price sensitive demand pattern in the market. Tuna is the second largest fish species consumed in the UK after salmon.

Europe

Import trends were mixed in the non-EU countries in Europe. Canned tuna imports in Norway were higher by 17 percent at 2 655 tonnes and in the Russian Federation by 10 percent to total 4 000 tonnes.
During the first nine months of 2016 compared with the same period in 2015. Switzerland posted a 5 percent decline to 7 300 tonnes.

**Australia and Asia**

In Australia, a high-value import market, imports decreased by 13 percent to total 33 000 tonnes due to the weak Australian currency against the US dollar. Imports from Thailand, Indonesia and the Philippines declined in Australia during the first nine months of 2016 compared with the same period in 2015.

During the first nine months of 2016, Asian canned tuna exporters enjoyed improved sales opportunities into East Asia and the Middle East.

Japan is an important market for processed and canned tuna in Asia. Imports increased in Japan (+6 percent) and among the 44 300 tonnes of processed...
tuna imported into Japan, 3,700 tonnes were cooked dried *katsuobushi* products imported from the Philippines, China, Viet Nam and Maldives.

Thailand, the largest importer of tuna raw material, bought 13 percent more cooked loins at 26,000 tonnes for reprocessing during the review period. China, Viet Nam and Indonesia were the main suppliers.

Canned tuna imports for direct consumption also increased by 10 percent into China and 12 percent into Singapore compared with January–September 2015.

**Outlook**

The anticipated rise in raw material supply starting in November 2016 did not really take place in the main fishing regions, which, along with improved demand from canneries in Thailand, have contributed to price strengthening of skipjack in December 2016. It is still unclear whether the expected price adjustment for skipjack to US$1,300–1,350 per tonne will happen soon, while Asian tuna packers are likely to increase production in the coming months.

In import trade, US buying will improve in January to take advantage of the lower duty status under the quota. For the EU, winter is not a very strong sales period for canned tuna and demand is unlikely to improve before March 2017. Annual imports into many emerging markets are likely to show positive growth in 2017.
Strong supply situation, high cod prices and weak Alaska pollock prices

Supplies are expected to be strong in 2017, with relatively high quotas for cod and higher quotas for Alaska pollock. Cod is predicted to do well in the market, fetching high prices, while Alaska pollock prices will remain low.

Resources

The European Commission has proposed to cut the quota for Baltic cod by a dramatic 39 percent for 2017, to 24,927 tonnes. This is based on scientific advice and is in line with the newly adopted Baltic management plan. Fishers in the area are upset over the cut, claiming that the quota reduction will particularly affect small-scale fishers. The cod stocks in the Baltic have been in trouble for years, but as a result of management initiatives the resource now seems to be on the right path again. Nevertheless, the EU Commission feels preservation measures should continue in 2017.

The International Council for the Exploration of the Sea (ICES) has recommended that Norway and the Russian Federation cut the 2017 quota for cod to 805,000 tonnes, down from 894,000 tonnes in 2016, which would be nearly a 10 percent cut compared with 2016. However, Norwegian and Russian Federation authorities, who jointly manage this resource, were inclined to increase the 2017 quota by 10 percent, to 983,000 tonnes. In the end, the two countries settled on a 2017 quota of 890,000 tonnes, just a slight reduction compared with 2016.

The haddock quota for the Barents Sea for 2017 was set at 233,000 tonnes, which represents a reduction of 10,000 tonnes compared with 2016.

The Russian Federation has decided to increase its 2017 quota for Alaska pollock by 3 percent to 1.89 million tonnes. Of this, 1.07 million tonnes will be allocated to the Sea of Okhotsk and 807,100 tonnes to east Kamchatka and the Kirill Islands.

For the overall forecast for 2017, the Groundfish Forum meeting in Hamburg in October 2016 portrayed a strong supply of wild whitefish, which is expected to amount to just over 7.2 million tonnes. This is a slight (-1.4 percent) reduction compared with 2016, but a 3.9 percent increase compared with 2015.

A continuing issue for 2017 and beyond will be the growing competition from farmed whitefish. According to estimates published by Rabobank in November, farmed whitefish production will grow to 12 million tonnes by 2020. The main species will be Vietnamese pangasius and Chinese tilapia, and the main target markets will be the USA and Europe. However, as much as half of the production is estimated to be consumed locally in Asia.
Groundfish Forum catch estimates 2014–2017

<table>
<thead>
<tr>
<th>Species</th>
<th>FAO 2014</th>
<th>WGF 2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alaska pollock</td>
<td>3 148</td>
<td>3 213</td>
<td>3 281</td>
<td>3 405</td>
<td>3 395</td>
</tr>
<tr>
<td>Atlantic cod</td>
<td>1 373</td>
<td>1 380</td>
<td>1 298</td>
<td>1 306</td>
<td>1 186</td>
</tr>
<tr>
<td>Haddock</td>
<td>288</td>
<td>287</td>
<td>307</td>
<td>385</td>
<td>376</td>
</tr>
<tr>
<td>Saithe</td>
<td>289</td>
<td>290</td>
<td>290</td>
<td>305</td>
<td>317</td>
</tr>
<tr>
<td>Redfish</td>
<td>149</td>
<td>149</td>
<td>166</td>
<td>170</td>
<td>175</td>
</tr>
<tr>
<td>Pacific cod</td>
<td>474</td>
<td>479</td>
<td>459</td>
<td>465</td>
<td>463</td>
</tr>
<tr>
<td>North Pacific hake</td>
<td>298</td>
<td>301</td>
<td>191</td>
<td>335</td>
<td>335</td>
</tr>
<tr>
<td>Cape hake</td>
<td>268</td>
<td>284</td>
<td>277</td>
<td>287</td>
<td>285</td>
</tr>
<tr>
<td>South American hake</td>
<td>374</td>
<td>369</td>
<td>377</td>
<td>381</td>
<td>392</td>
</tr>
<tr>
<td>Hoki</td>
<td>260</td>
<td>244</td>
<td>250</td>
<td>241</td>
<td>240</td>
</tr>
<tr>
<td>Southern blue whiting</td>
<td>55</td>
<td>57</td>
<td>58</td>
<td>52</td>
<td>62</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6 976</strong></td>
<td><strong>7 053</strong></td>
<td><strong>6 954</strong></td>
<td><strong>7 322</strong></td>
<td><strong>7 225</strong></td>
</tr>
</tbody>
</table>

Source: Groundfish Forum, 2016

Over the past few years, it is becoming clear that farmed whitefish does not majorly compete with wild-caught whitefish, as these products target different market niches. However, the lower end of the wild-caught whitefish market (such as cheap whitefish fillets and blocks) seem to be somewhat affected by farmed whitefish. Thus, farmed whitefish production will likely put some pressure on the global whitefish market, probably resulting in the weakening of some wild-caught whitefish prices.

It is also important not to overlook the possibility of further diversification of the whitefish market. For example, growing demand for high-quality whitefish, both in the USA and Europe, and recently also in Asia, could be a major opportunity for wild-caught cod. This could also lead to a wider diversification of prices.

**Landings and processing**

Beginning in early 2000, an increasing amount of whitefish was landed frozen in Norway, with this trend peaking in 2013. Since then, the trend seems to have reversed with Norwegian vessels now landing more fresh fish, especially the coastal fleet. The large, ocean-going fleet is freezing on board and after landing has contributed to the increased landings of fresh fish. The trend is certainly benefitting the on-shore industry, which normally has problems obtaining enough raw materials for production.

**Trade**

Germany remains a main market for Alaska pollock, and the Genuine Alaska Pollock Producers Organization has launched a campaign to further promote Alaska pollock in Germany. The initiative includes a broad information campaign, including the launch of a new website (www.alaska-seelachs.de). The campaign hit the media in January and will to a large extent focus on health benefits, sustainability and quality.

Inspired by the country’s salmon industry, Norwegian whitefish catchers are now focusing more on downstream activities. Whitefish catchers like Havfisk, which holds the largest whitefish quota in Norway, are joining forces with major salmon exporting companies, like Lerøy Seafood Group, to fine-tune their sales of whitefish. The focus is very much on quality, and the whitefish catchers have been successful in introducing their FAS products, which compete favourably on quality with fresh fish. This new diversification may lead to higher prices for a number of high-quality, FAS whitefish products.

It was expected that Brexit would make it more difficult for Norwegian exporters of whitefish to operate in the UK market. However, no change has yet been registered. The weakening of the British pound, which has fallen nearly 20 percent against the US dollar, has made Norwegian cod more expensive in Britain, but apparently sales have not really been affected yet. Instead, the amount of fish going from Norway to be processed in the UK, or being shipped by way of east European countries with the UK as the final destination, is actually increasing.

Asia is waking up to the benefits of cod, both for Atlantic and Pacific. For instance, The Alaska Seafood Marketing Institute (ASMI) sees opportunities to market cod and Alaska pollock in the Republic of Korea. The Norwegian Seafood Council (NSC) is reporting growing interest in Atlantic cod in China as well as in Southeast Asia. ASMI recently headed a US trade mission to the Republic of Korea, where cod and Alaska pollock were promoted. At a conference in Qingdao, China, the NSC recently marketed cod. According to the NSC, Norwegian exports of cod to China increased by 50 percent during the first nine months of 2016 compared with the same period in 2015.

In the USA, imports of cod-like groundfish have stagnated during 2016. The total import volume during the first three quarters of 2016 was exactly the same as in 2015. However, while imports of fillets increased by 8 percent, imports of blocks and slabs declined by 26.3 percent.

German imports of Alaska pollock fillets declined slightly (-5.6 percent) during the first three quarters of 2016, but German imports of frozen cod fillets increased from 25 700 tonnes to 28 300 tonnes (+10.1 percent).

In the UK, there was only a very moderate increase in imports of frozen cod during the first three quarters, from 68 200 tonnes to 69 900 tonnes (+2.5 percent).

China’s role in the whitefish trade has grown rapidly over the past decade, and it appears that it is still growing, at least with respect to cod. During the first three quarters of 2016, China’s imports of whole frozen cod increased by 15.6 percent to 156 100 tonnes. Main suppliers included the Russian
US imports of cod-like groundfish (by product and origin) | January–September

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>58.9</td>
<td>59.8</td>
<td>61.7</td>
<td>56.6</td>
<td>61.4</td>
</tr>
<tr>
<td>Iceland</td>
<td>6.5</td>
<td>8.2</td>
<td>7.6</td>
<td>6.9</td>
<td>9.2</td>
</tr>
<tr>
<td>Russian Fed.</td>
<td>3.2</td>
<td>4.8</td>
<td>3.9</td>
<td>3.6</td>
<td>4.1</td>
</tr>
<tr>
<td>Others</td>
<td>12.8</td>
<td>15.1</td>
<td>15.4</td>
<td>12.8</td>
<td>11.6</td>
</tr>
<tr>
<td>Subtotal</td>
<td>81.4</td>
<td>87.9</td>
<td>98.8</td>
<td>79.9</td>
<td>86.3</td>
</tr>
</tbody>
</table>

China 24.5 22.3 24.8 19.9 13.5
Argentina 0.8 1.1 0.9 1.1 2.4
Iceland 0.6 1.3 1.1 1.1 0.6
Others 2.9 2.4 1.8 2.2 1.4
Subtotal 28.8 27.1 28.6 24.3 17.9
Total 110.2 115.0 117.2 104.2 104.2

Source: NMFS

Federation, Norway and Greenland, all showing increased shipments to China, while there was a decline in shipments from the USA. China’s exports of frozen cod fillets during the same period increased by 7.7 percent, to 98 100 tonnes. The main markets were the USA and the UK.

For Alaska pollock into China, there was a moderate decline in activity. Overall, Alaska pollock imports into the country fell by 6.3 percent, and exports of frozen Alaska pollock fillets fell by 1.2 percent.

The Russian Federation exported less frozen Alaska pollock in the first nine months of 2016 compared with the same period in 2015. Exports fell by 2.8 percent to 593 900 tonnes. At the same time, Russian Federation exports of whole Pacific cod increased markedly from 48 400 tonnes to 76 200 tonnes (+57.4 percent).
### China | Imports | Alaska pollock | Whole frozen

**Top three origins**  
Unit: 1 000 tonnes, Jan–Sep

- **Russian Fed.**
- **USA**
- **Japan**
- **Other countries**
- **Total imports**

**Source:** China Customs

### Russian Fed. | Exports | Pacific cod

**Top three destinations**  
Unit: 1 000 tonnes, Jan–Sep

- **Netherlands**
- **China**
- **Republic of Korea**
- **Other countries**
- **Total exports**

**Source:** Russia Customs

### China | Exports | Alaska pollock | Frozen fillets

**Top three destinations**  
Unit: 1 000 tonnes, Jan–Sep

- **Germany**
- **USA**
- **France**
- **Other countries**
- **Total exports**

**Source:** China Customs

### Wholesale prices

**Groundfish: USA**

- **Cod fillets**  
  - Dec-14: 3  
  - Jan-15: 3  
  - Feb-15: 3  
  - Mar-15: 3

- **Alaska pollock**  
  - Dec-14: 2.5  
  - Jan-15: 2.5  
  - Feb-15: 2.5  
  - Mar-15: 2.5

**Source:** INFOFISH Trade News

### Russian Fed. | Exports | Alaska pollock | Whole frozen

**Top three destinations**  
Unit: 1 000 tonnes, Jan–Sep

- **China**
- **Republic of Korea**
- **Belarus**
- **Other countries**
- **Total exports**

**Source:** Russia Customs

### Export price

**Cod: Norway**

- **Fresh cod fillets**  
  - Oct-12: 80  
  - Nov-12: 85  
  - Dec-12: 90

- **Frozen cod fillets**  
  - Oct-12: 60  
  - Nov-12: 65  
  - Dec-12: 70

**Source:** Norwegian Seafood Council
Prices

After a long period of stagnation, the Alaska pollock industry is concerned about low prices. Inventories are building, and the Americans are also expecting stronger competition from the Russian Federation as they have been improving the quality of their Alaska pollock. The increased quotas are not aiding the situation as more Alaska pollock will be landed, and will likely end up in cold storage for some time. The US total allowable catch (TAC) increased from 1.39 million tonnes in 2013 to 1.61 million tonnes in 2016.

In an effort to improve prices for Alaska pollock, producers are now looking at the potential for developing and introducing new products.

For Atlantic cod, prices for H&G are edging upwards as the 2017 quota for the Russian Federation and Norway has been set at 890 000 tonnes. This means there will be no increase in cod from these two suppliers, and since demand for cod is strong, prices will probably creep further upwards.

Prices are also on the rise for Pacific cod. Prices firmed up during the B season and observers are expecting these Pacific cod price increases to be a longer-term trend as the market seems to accept the growing prices without issue. In addition, both Barents Sea cod quotas and Pacific cod quotas will be reduced in coming years, while demand will continue to be strong.

Outlook

The groundfish outlook for 2017 appears to be bright. Total supplies will remain relatively strong, and cod prices are expected to be high, while Alaska pollock prices are low and expected to remain so. New product development is now sorely needed, especially for the Alaska pollock sector. In the longer term, some competition from farmed whitefish is expected, although this will be varied by product type. In addition, farmers of freshwater whitefish will have their own issues to focus on, including pollution, drug use and quality.
Global demand for cephalopods continues its growing trend into the third quarter of 2016.

The last GH Issue (October 2016) reported that China as a processor of cephalopods was having problems securing enough raw materials for its processing industry, and some operators are now taking steps to rectify this. For years China has been exploring Africa as a promising source of raw material for its seafood industry, and recently, Chinese investors have heavily invested in seafood operations in Mauritania to secure cephalopod supplies.

**Octopus**

According to FIS.com, a Chinese company (Guangxi Crown Fisheries) has joined forces with a Mauritanian company to fish along the Mauritanian coastline for pelagics as well as cephalopods. It is reported that the Chinese company will invest about US$150 million in a processing facility as well as 20 new fishing vessels.

In Mexico, the octopus fishing season started on 1 August, and it is expected that landings will reach some 10,000 tonnes this season. The National Commission of Aquaculture and Fisheries (Conapesca) says the biological assessment is positive and that a good season is expected. Fishing was interrupted by Hurricane Earl at the end of August 2016, but resumed a month later, and by late 2016 was reported to be back to normal in the Yucatan region.

In contrast, in Chile, octopus fishing was suspended for a period of five months starting in mid-October 2016. The ban is in effect between the regions of Los Rios and Magellanes. The reason for the ban is to protect the resource during the period of sexual maturity in an effort to rebuild the stocks.

Landings of octopus in Spain’s Galicia province almost tripled during the first nine months of 2016 compared with 2015. By the end of September, roughly 700 tonnes had been landed, compared with just 250 tonnes during the same period in 2015.

During the first three quarters of the year, Japanese octopus imports dropped by 15.4 percent to 33,500 tonnes. The two largest suppliers to the Japanese market (Morocco and Mauritania) experienced a decline in shipments (-15 percent and -32 percent, respectively), while the third largest supplier (China) saw an 18 percent increase in shipments to Japan.
compared with 2015. Demand for steamed and cooked octopus is particularly growing. Octopus prices were further lowered by a drop in the US dollar, which translated into a weakening in yen prices for octopus in Japan. As many other seafood prices were high, octopus products have become an affordable consumer choice.

For the Republic of Korea, imports of octopus declined during the first nine months of 2016 compared with the same period in 2015 by 12.3 percent to 47 600 tonnes. Both major suppliers saw a moderate decline in their exports: China dropped by 6.7 percent, and Viet Nam by 8.7 percent. Spanish octopus imports during this period declined slightly by 3.7 percent to 38 600 tonnes. The main supplier by far was Morocco, which accounted for 56.7 percent of the total. Morocco experienced a small increase in shipments to Spain during this period.

In spite of the largest sales season at the end of 2016, octopus sales in Japan stagnated somewhat in late December 2016. Retailers did not have as many bargain offers as usual and octopus consumption has been slightly down since August because of competition from Pacific saury, which came on the market in greater quantity.

Argentina is researching the possibility of farming octopus (Octopus tehuolchus) in the future. The Mariculture Experimental Station of the National Institute for Fisheries Research and Development in Mar del Plata is currently conducting experiments with juvenile octopus. The objective is to obtain juveniles from eggs with embryos for acclimatization to captivity. The experiment is using wild-caught octopus as the starting point. According to researchers, the main difficulty is the feeding of juveniles, but so far, the results are promising.

In general, a declining yen value is pushing up Japanese seafood prices, but apparently octopus prices have not been affected to the same extent as other seafood products have been. Instead, octopus has seen moderate prices, helped by strong landings in West Africa. These affordable prices have resulted in increased Japanese demand for octopus in 2016 compared with 2015. Demand for steamed and cooked octopus is particularly growing. Octopus prices were further lowered by a drop in the US dollar, which translated into a weakening in yen prices for octopus in Japan. As many other seafood prices were high, octopus products have become an affordable consumer choice.

For the Republic of Korea, imports of octopus declined during the first nine months of 2016 compared with the same period in 2015 by 12.3 percent to 47 600 tonnes. Both major suppliers saw a moderate decline in their exports: China dropped by 6.7 percent, and Viet Nam by 8.7 percent.

Spanish octopus imports during this period declined slightly by 3.7 percent to 38 600 tonnes. The main supplier by far was Morocco, which accounted for 56.7 percent of the total. Morocco experienced a small increase in shipments to Spain during this period.

Octopus is increasing in popularity on the US market. US imports of octopus reached a record level in 2015, with just over 22 800 tonnes imported. Spain is taking a fair share of this trade, and now accounts for about 24 percent of total US octopus imports. The USA provides a welcome alternative to European markets for Spanish octopus exporters, as the problems in the European economies have created issues for this trade. To some extent, the Spanish octopus is replacing product from the Philippines on the US market.

Squid

The Republic of Korea’s landings of squid from the East Sea have declined over the past decade. In 2012, a total of 83 566 tonnes were landed, but this dropped to 75 660 tonnes in 2013. Further decline was registered in the following years, including 2016.
Some are attributing this gradual decline to overfishing by Chinese vessels in the same area. The number of Chinese vessels fishing in the area has exploded, from just 140 vessels in 2004 to 1 900 vessels a decade later. The vessels, which are typically over 200 tonnes, are operating in the area under Republic of Korean licences, as the Chinese are paying fees to the Republic of Korean Government. However, the activity has created substantial tension between Chinese and Republic of Korean authorities as well as resentment among Republic of Korean fishermen. A recent incident, in which a Republic of Korean Coast Guard speedboat was sunk by a Chinese vessel, further aggravated the situation.

Squid catches off of Peru have dropped dramatically in 2016 due to El Niño. Catches in some areas are down by as much as 70 percent compared with 2015. This development has forced some producers to focus on value-added production. Instead of selling raw squid and giant squid, some companies are now turning to processing and producing products such as cooked fins, boiled fillets, cooked tentacles and rings. By turning to these products, suppliers can increase prices by as much as 30 percent, thus compensating for some of the loss caused by the lower volumes landed.

Previously, Chinese processors were buying raw materials from Peru and turning it into processed products, but in 2016, fewer raw materials were available for Chinese importers as more processing was done in Peru. At the same time, prices for processed products have increased sharply due to the low supply, and in some cases have grown by as much as 100 percent.

These high squid prices are hitting the Chinese squid industry significantly. Chinese processors are finding supplies extremely difficult to come by, and import figures indicate an 80 percent drop in 2016 imports as a result. Furthermore, global demand for cephalopods is growing, thus putting even more pressure on prices.

“Daruma”, a Peruvian squid product sold in China was sold at an average of US$4.30–5.00 per kg in 2016, dramatically up from US$1.50 per kg in 2015. These high prices are not compensating for the lower volumes, and as a consequence, several Peruvian companies are struggling financially.

While global octopus trade was marked by a moderate decline in volumes traded during the first three quarters of 2016 compared with the same period in 2015, international squid trade saw some gains. Japan imported 3.6 percent more squid. The main supplier, China, held its position with 44 percent of the total, while the second largest supplier, Chile, shipped 50 percent more in 2016 (11 400 tonnes). Shipments from Peru to Japan dropped by 20 percent, while the Republic of Korea saw an upsurge in shipments to Japan: from 600 tonnes in 2015 to 4 500 tonnes in 2016.

In Spain, imports increased by 14.7 percent to 72 500 tonnes during the first three quarters of 2016. The main squid suppliers to Spain, Falkland Islands (Malvinas), India and Morocco, held their relative positions, although the Falkland Islands (Malvinas) lost market share while the other two gained.

There was little change in the volume of squid imported into the USA during the first three quarters of 2016, with the total reaching 52 200 tonnes, slightly down from 2015’s 53 800 tonnes. China is completely dominating this trade, accounting for 31 500 tonnes or 60.3 percent of the total.
Cuttlefish

In cuttlefish trade, there was little change from 2015. Japan imported slightly less during the first nine months (8 800 tonnes in 2015 compared with 9 100 tonnes in 2015), and Spain imported slightly more (23 900 tonnes versus 22 500 tonnes). For Japan, the main suppliers were Thailand and Morocco, while for Spain the main suppliers were Morocco and France.

Outlook

Squid supplies will continue to be very tight due to the poor landings in South America. Even so, trade volumes are still moderately up in spite of high prices. For octopus, demand is strong and growing.
TILAPIA

GLOBEFISH HIGHLIGHTS

Major markets slow, global demand driven by new markets

During the first nine months of the year, Asia exported almost one third of the total global tilapia supplies, which came to nearly 310,000 tonnes. In terms of growing markets, African countries imported a total of 80,000 tonnes of tilapia (mostly whole frozen) while the Middle Eastern and Latin American markets also continue expanding. In contrast, the USA, still the major market of tilapia, showed sharply declining imports.

Asia

Industry sources report that the likely decline in production during 2016 is due to the continuous decline in prices as well as adverse weather conditions. On average, export prices in US dollar per kg declined by 10.7 percent for frozen fillets, 6 percent for breaded tilapia and 4.3 percent for whole frozen products. According to China Customs, during January–September 2016, the country exported over 281,600 tonnes of frozen tilapia (whole, fillets and breaded) an increase of +3.4 percent compared with the same time period last year.

USA

The USA remains the single largest market for Chinese tilapia. In the long-term, African markets will be increasingly absorbing more tilapia, although for the first nine months of 2016 Chinese exports to African countries overall remained stagnant (-0.1 percent lower compared with the same period in 2015). Nearly 80 percent of Chinese exports to Africa were comprised of whole frozen tilapia followed by 17 percent breaded tilapia and the remaining frozen fillets. The largest importing countries in Africa were Côte d’Ivoire, Kenya, Zambia and Cameroon.

The demand for whole frozen tilapia appears to be picking up elsewhere with supplies increasing from China as well as from Taiwan Province of China. These supplies fulfill Asian and Latin American consumer demand.

The USA imported nearly 10 percent less tilapia during the first nine months of 2016 compared with the same time period last year. This decline is mostly for lower imports of frozen fillets, particularly from China. Although imports for Chinese whole frozen increased, this did not make up for the overall decline. In addition, wholesale prices of frozen fillets from China have been on the decline, 2.6 percent down from a year ago and about 20 percent down from 2014 due to the weakening of the yuan against the US dollar.

Interestingly, the USA also reported increasing whole frozen tilapia imports from Mexico and the Philippines.

China | Exports | Tilapia | Frozen Top three destinations Unit: 1,000 tonnes, Jan–Sep

<table>
<thead>
<tr>
<th>Year</th>
<th>USA</th>
<th>Côte d’Ivoire</th>
<th>Mexico</th>
<th>Other countries</th>
<th>Total exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>215</td>
<td>215</td>
<td>195</td>
<td>195</td>
<td>215</td>
</tr>
<tr>
<td>2015</td>
<td>210</td>
<td>210</td>
<td>195</td>
<td>195</td>
<td>210</td>
</tr>
<tr>
<td>2016</td>
<td>205</td>
<td>205</td>
<td>195</td>
<td>195</td>
<td>205</td>
</tr>
</tbody>
</table>

Source: China Customs
Latin America

As with other international trade sectors, Latin American tilapia exporters are now poised for great uncertainty with the seemingly protectionist speech of the new US President, Donald Trump. The USA is one of the top importers of fresh tilapia from the region, mainly from Costa Rica, Ecuador and Honduras. Concurrently, there is also concern in Latin America about the competition from Asian tilapia products in their domestic market. In terms of supplies, Ecuador has seen a significant decline in tilapia production, largely due to the lower prices of tilapia from other Central American countries offered in the USA. Ecuador projects that its tilapia sector, which generated US$60 million in 2007, may not reach US$15 million by the close of 2016.

In Honduras, fresh tilapia exports to the USA, Europe and Asia are predicted to total over 9 500 tonnes in 2016, valued at about US$70 million.

### RECENT NEWS

**AquaChile negotiating entrance to Mexico**

In business developments, the company AquaChile, which farms tilapia in Costa Rica and Panama, is currently negotiating its entrance into Mexico to produce tilapia. AquaChile hopes to work in conjunction with a local company in order to take advantage of the large and regionally close US tilapia demand.

The growing import strength of Latin America, largely influenced by developments on the North American market, will be one of the main drivers to keep worldwide demand for tilapia expanding in 2017.

### EU

From January to September 2016, the market for tilapia in the EU continued to weaken as total imports (whole frozen and frozen fillets) fell nearly 12 percent from the same time period a year ago and 19 percent from 2014, totaling 19 300 tonnes of tilapia. Supplies declined from almost all major sources (primarily Asia) except for increases from Taiwan Province of China.

### Asia

Overall tilapia exports from Taiwan Province of China were up 7.5 percent during the period, with supplies channeled to the USA, Canada, Kuwait and the United Arab Emirates. Taiwan Province of China supplied 18.5 percent more whole frozen tilapia to the USA than during the same time period last year.

Saudi Arabia is Taiwan Province of China’s second largest market for tilapia, importing a total of 1 300 tonnes of tilapia during the January–September 2016 review period.

According to the Vietnam Association of Seafood Exporters and Processors (VASEP), tilapia exports are expected to increase significantly in 2016, possibly recording revenues of US$45 million, 32 percent more over 2015. This climbing trend is...
expected to continue in the coming years. The USA is being targeted as the largest market, taking a 23 percent market share, while Africa and Latin America are other potential markets to be reached. Although tilapia accounts for a modest percentage in the country’s fishery exports overall, its room for growth and positive forecasts make it a possible major fishery export product for the future. Indeed, in June 2016 the Directorate of Fisheries announced that Viet Nam was planning to develop tilapia into a major fishery export product, given the country’s advantages in raising this type of fish and anticipated high consumption demand at home and in global markets.

The Ministry of Agriculture and Ministry of Rural Development in Viet Nam recently announced a plan of achieving a tilapia output of around 300,000 tonnes by 2020, 50–60 percent of which will be destined for exports.

**Outlook**

The market trend remains positive for Asia, Latin America and Africa. Supplies will be limited from China but will be increasing from other producers. Prices will possibly strengthen when demand strengthens for the Chinese New Year.

It unlikely that any improvement will be seen in the EU market while the upcoming Lent demand may possibly show increases in the frozen fillet imports into the USA.
PANGASIOUS

GLOBEFISH HIGHLIGHTS

With rising demand in China, supplies improve and prices strengthen

During the January to September 2016 review period, an estimated 330 000 tonnes of pangasius (whole frozen and frozen fillets) were imported by more than 40 countries worldwide. This total was down by about 27 000 tonnes (-8 percent) from the same period last year. Despite this overall drop, Latin America and Asia, the two largest markets for pangasius, imported 14 percent more during the review period.

Viet Nam

Production is reported to be increasing in the Mekong Delta as demand increases from China. Indeed, since 2015, monthly Vietnamese imports of pangasius into China have doubled, now totalling an average of about 2 000 tonnes per month. Farming areas for pangasius increased by 4 percent in 2016 bringing production close to 1 million tonnes from approximately 910 000 tonnes in 2015. As a result of the strong demand from China, prices have strengthened.

According to the VASEP, pangasius exports during January–September 2016 reached US$1.2 billion, 6.2 percent more than the same time period in 2015. Exports increased into the USA, the largest market, China and the Association of Southeast Asian Nations (ASEAN). A total of 97 200 tonnes of Vietnamese frozen pangasius were imported into the USA during the time period. With expected high anti-dumping duties and a strengthened inspection program in 2017, US pangasius imports are expected to not be as high during the coming year. China imported over 22 500 tonnes from Viet Nam during the review period, nearly doubling their imports compared with the same time period last year, with this trend largely being driven by affordable prices. For 2017, the USA may lose some of its market share of Vietnamese pangasius to China.

USA

During January–September 2016, the US market appeared to be gaining back its momentum following declines that began in 2013. This growth is clearly due to increased supplies from Viet Nam, the primary global source of pangasius. Nearly 97 percent of the 97 200 tonnes of catfish imported into the USA during the review period was comprised of frozen pangasius fillets from Viet Nam. Imports are also increasing from China, with China supplying close to 3 000 tonnes of frozen catfish fillets and 223 tonnes of fresh catfish fillets, with the latter showing notable growth of 45% from 2015.

EU

The market appears to be firm although total imports of pangasius (whole and frozen) into the EU declined marginally by 2.6 percent, reaching a total of 81 800 tonnes during January–September 2016. Imports decreased from the leading supplier, Viet Nam (-2.6%), though grew from the smaller supplying country of Indonesia (+13%). Within the EU, Spain and the UK are the largest markets.

<table>
<thead>
<tr>
<th>US imports of frozen catfish fillets (by origin)</th>
<th>January-September</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1 000 tonnes)</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>75.8</td>
</tr>
<tr>
<td>China</td>
<td>2.6</td>
</tr>
<tr>
<td>Others</td>
<td>0.1</td>
</tr>
<tr>
<td>Total</td>
<td>78.9</td>
</tr>
</tbody>
</table>

Source: U.S. Department of Commerce, Bureau of Census
Latin America

During the first nine months of 2016, Latin America absorbed about 26 percent of the total amount of pangasius that entered the international market, demonstrating growth of 6.1 percent compared with the same period last year. Latin American imports totalled approximately 86,000 tonnes, of which almost 90 percent were frozen fillets with the remaining 10 percent whole frozen. Within the region, the largest markets are Mexico, Brazil and Colombia. The Latin American market has been a success story for Vietnamese pangasius, which has largely been achieved by intensive marketing and promotion, as well as by the very low price.

Asia

In a region where consumption of fish is generally in whole form, imports of frozen pangasius fillets during the first nine months of 2016 totalled nearly 68,000 tonnes the growth of (+24 percent). By these imports has been driven in part by the fact that consumers are demanding more convenient and affordable food.

During the review period, Thailand was the leading importer of frozen fillets (18,600 tonnes), followed closely by China (17,400 tonnes) and Singapore (12,400 tonnes). Considering the growing demand in China, it is highly probable that China will soon become the leading importer in Asia overtaking Thailand.

Outlook

Production from Viet Nam seems to be getting back momentum, helped by strong demand from China. In the coming months of purchases for the Chinese New Year, China will be an important player on the global market considering its robust purchasing power. Strong Chinese demand coupled with a firm demand from Latin America and Asia, demonstrates a positive outlook for a steady market. In addition, the European market seems to be in recovery after years of disappointing sales.
Seabass and seabream sector under threat with expected supply growth

Initial projections for a reduction in farmed bass and bream production in 2016 appear to have been confounded by the reported export volumes of major Mediterranean producing countries. Volumes have surpassed 2015’s figures by a significant margin, with the oversupply pushing prices down. With further supply increases expected for 2017, the sector must race to ensure that profitability is maintained.

Comparing the total volumes of bass supplied to the market by the key producers with those of bream, it is clear that the latter species have seen a relatively greater increase in 2016 compared with the figures reported in 2015, particularly in Turkey. The greater increase in bream has led to a correspondingly steeper decline in bream prices, with December 2016 price levels for Greek product on the Italian market some 10 percent lower for bream compared with December 2015. For bass, prices remain approximately flat. Indeed, in 2016, for the first time in a number of years, average bass prices were higher than those of bream of equivalent sizes.
For Greek aquaculture companies, a combination of good bass prices and higher volumes sold overall have taken some pressure off the sector as a whole, although profitability is still far from assured for many players. Demand from core markets such as Italy is strong, but with the parallel expansion of Greek, Spanish and Turkish production, the increasing diversity of choice has given buyers the upper hand.

After economic struggles, low prices and sustained heavy losses by the bass and bream farming sector, Greek production reached its peak some six to seven years ago and has fallen significantly since then. Recently, however, following bankruptcies and the subsequent takeovers and restructuring, it appears that the industry is stabilising, though still fragile. This has been encouraged by 2015’s brief return to sustainable price levels, and Greek companies are now looking to again pursue volume growth in order to re-establish its share of the market that has been lost to Turkish competitors. Juvenile production is now on the rise again and the upward trend in export volumes for 2016 can be expected to continue over the next two years at least.

In Turkey, which has been responsible for the majority of supply growth in recent years, the same price effects of higher volumes are now being felt. During the fourth quarter of 2016, bream prices for 400–600 and 600–800 g fish were down from US$4.00 per kg in September to US$3.64 per kg in November. This short-term decline was partially due to producers having to unload 2015 generation bream from cages to create room for 2016 generation fish, which led to an excess of bream on the market. For Turkish bass, however, stronger export prices strengthened domestic prices and prevented a downward trend.

The Turkish lira has been weakening further against the US dollar and euro in the last quarter of 2016. Although exporters do benefit from a weak lira as it makes their product more competitive on international markets, it also means higher feed costs as the local fish feed manufacturing sector is largely dependent on imported fishmeal and oil. Producers are already expressing concern over these rising production costs.

Turkish expansion, after slowing somewhat in 2015, is seemingly set to continue in 2017 with industry sources pointing to the emergence of new operational production sites on the Aegean coast of Turkey. These sources predict that with these expansion efforts, there could be a total stocking of around 400–450 million fry in cages in 2017, which is likely to mean a higher level of marketable fish production compared with 2016. In 2016, 400 million fry were used in growing operations in Turkey.
In Italy, the most important market for bass and bream, demand is strong and growing. While domestic production has largely remained stable over recent years, import volumes of both fresh whole bream and fresh whole bass have been growing consistently, undeterred by the upward price trends in 2015. According to estimates by a market research firm, the total size of the Italian market including domestic production is about 66 500 tonnes, 47 percent of which is accounted for by bass and the remainder by bream. Greece is still Italy’s top supplier with a 56 percent share, but after rapid growth Turkish fish now accounts for about 25 percent of Italian supply.

After starting out 2016 with prices above 2015’s levels, prices at wholesale markets in Spain have since fallen back significantly, particularly in the case of bream, especially for small to medium sizes. The majority of Spanish supply is made up of domestic production, and thus trade statistics have limited significance. However, rising import volumes combined with absorption of increased volumes from an expanding domestic industry suggests that Spanish consumers’ demand for farmed bass and bream is strengthening.

The French market for bass and bream has developed similarly to its Mediterranean neighbours in 2016, with higher volumes and lower prices. France has a small domestic bass and bream farming sector, which provides premium product for the market, but the major proportion of supply is imported, primarily from Greece and Spain. French consumers have still not accepted cheaper Turkish product and are unlikely to do so as long as supply from Greece and Spain are plentiful.

As of December 2016, Russian Federation imports of fresh bream and bass amounted to about 2 200 tonnes and 1 700 tonnes since the start of 2016, respectively. Compared with the same period in 2015, these figures reflect decreases of 22 percent and 34 percent, likely due to sluggish demand and good domestic catches of other species. Nearly all of the volume of bass and bream was imported from Turkey (99.9 percent).
In the UK, the depreciation of the British pound following the Brexit vote has effectively made all imported seafood more expensive for British buyers, which is likely to increase their dependence on cheaper Turkish fish traded through the Netherlands.

Aside from the traditional markets, bass and bream are becoming increasingly popular in a wide variety of markets. On the US market, imports of farmed Turkish bass are growing each year, while Turkish exporters are also fast developing markets across the Middle East. Some countries, such as Lebanon, now represent relatively large markets in their own right.

Outlook

The continuation, and even intensification, of alternative market development will be an essential ingredient to the success of the Mediterranean bass and bream industry over the next few years. Current juvenile production levels have put the sector on a supply trajectory that will potentially see the market swamped by excess volumes unless substantial effort is put into ensuring that there are enough buyers ready and waiting to absorb the full production. Market development is not only about geographic expansion, however, and the industry must also seek to build on the progress that has already been made in terms of diversifying products, particularly to target the growing convenience-focused consumer base. Further advances in cost-reducing technologies and practices at the farm level will also be necessary to preserve margins, while horizontal consolidation is another likely avenue for cost-savings through economies of scale.

When delayed production responses to price increases are combined with a lack of coordination between the key players, aquaculture sectors are vulnerable to repetitive boom and bust cycles. With Turkish subsidies now ending, all producers will be scrambling to secure sales and push down costs to ensure that the bass and bream sector does not fall into the same trap.
A return to production growth in 2017 but global salmon shortage here to stay

A severe algal bloom in Chile, combined with biological challenges in Norway, have seen global production of farmed Atlantic salmon drop by some 7 percent in 2016, while Chilean harvests of farmed Pacific have also been negatively affected. With wild salmon harvests in Alaska down, and demand strong and growing, global salmon prices have soared to new heights. Even a return to supply growth over the next two years is unlikely to be sufficient to bring prices back down to 2015 levels.

Wild salmon catches

Alaskan wild salmon harvests fell significantly in 2016, to 270 570 tonnes from 462 250 tonnes in 2015. This drop in total volumes was driven entirely by a large reduction in pink salmon catches, which dropped from 295 420 tonnes in 2015 to only 72 680 tonnes in 2016. This figure is also well below the last even year in 2014, in which Alaskan pink salmon harvest volumes reached 149 270 tonnes (this is a more appropriate comparison as the pink salmon populations returning in odd and even years are generally distinct from one another). In line with the general market trend, reduced supply has seen wild salmon prices increase for all species. However, globally the Alaskan shortfall has been offset somewhat by Russian Federation wild catches this year, which were the fourth highest they have been in the last 15 years to total 437 000 tonnes. Pink salmon catches accounted for 264 700 tonnes of the Russian Federation total.

Norway

Starting in late 2015, a variety of developments have together created an almost perfect set of market conditions from the perspective of the farmed Atlantic salmon sector in Norway. Firstly, the algal bloom and the subsequent mass mortalities in Chile exasperated an already tight supply situation. Meanwhile, on the demand side, major US retailers turned to Norwegian product to counter consumer fears about antibiotic use at Chilean farms, while...
French demand has recovered after a long lull following negative media coverage. Lastly, the krone has remained weak against the euro and the US dollar. The net result has been soaring prices, record export revenues and healthy profit margins for Norwegian aquaculture companies.

According to figures published by the NSC, total salmon exports in the first nine months of 2016 were worth NKr44 billion (US$5.2 billion), 30 percent higher than the same period in 2015. By October 2016, the total year-to-date export value had surpassed that of the full year of 2015, despite a substantial drop in volumes. These figures are the result of an average export price some 44 percent higher than the same period in 2015, supported by buyers scrambling to secure the limited volumes available. The major EU markets of Poland and France again took the largest shares of Norwegian exports, but there was also significant growth in the USA, with a preference for fresh fillets. Major growth was also reported in East and Southeast Asian markets, particularly the Republic of Korea and Viet Nam.

The extreme price levels seen in the first half of 2016 for Norwegian farmed Atlantics softened somewhat in the last quarter of the year as late-summer harvest volumes restored some degree of balance to the market. Biomasses at Norwegian farms in the last quarter were almost at 2014 levels as improved water temperatures boosted growth in the pens. However, in an integrated global market, it is the total available supply which determines prices, and the 17 percent drop in production in the second largest supplying country, Chile, will continue to keep prices high for Norwegian farmers and exporters for at least the first half of 2017.

### Trout

The farmed trout industry in Norway saw even more impressive gains in export revenue in 2016 than the salmon sector, almost doubling its total export value in the first nine months of 2016. However, it should be noted that the impact of the loss of the Russian Federation market in 2014 hit trout producers relatively harder than salmon producers and these growth figures partly reflect a recovery.

Nevertheless, boosted by booming demand in Belarus and Japan, among other growing markets, trout prices have risen in line with those of salmon. Indeed, the NSC reported that prices for fresh whole trout actually surpassed those of fresh whole salmon in the last quarter of 2016. In contrast to salmon, trout biomasses are still well below levels seen in the last two years and there is little prospect of a price decline in the current supply-demand balance.

### Chile

A report requested by the government to a scientific committee about the Chilean algal bloom and released in November 2016, proposes several recommendations for the industry in order to mitigate the effects of a future algal bloom. These recommendations include more monitoring stations and an aerial surveillance of the country in order to better anticipate such an event occurring again as well as improved public-private coordination. Experts predict that the phenomenon occurring in January–April 2016 that produced large losses for the industry has a high probability of repeating itself again in 2017 or 2018. Thus, there is currently strong collaborative work taking place between all actors in the sector to mitigate future impacts.

The Chilean government is also looking to improve stability by introducing limits on capacity growth, for a maximum of 3 percent per year at any single farm, conditional on sanitary requirements being met. The specifics of these regulations are still a matter of contention amongst industry stakeholders, but the overarching aim is to prevent a repeat of the violent swings in production and price that have characterized the Chilean industry in recent years.

During the first nine months of the year, Chilean harvests of salmon and trout combined recorded a 15.4 percent drop compared with the same period in 2015. Atlantic salmon was the main resource, with a harvest level of 376 000 tonnes during the period (-13.7 percent). In terms of rainbow trout, 53 500 tonnes were produced, a 31.6 percent reduction compared with the first nine months of 2015, with this drop mostly a result of the shift towards farming Atlantic salmon.

Also during the review period, an estimated 511 million roe were produced, of which 61 percent will come from Atlantic salmon, 24 percent from Pacific salmon and 14 percent from rainbow trout. This overall production figure is 11 percent higher than the same period in 2015.

### UK

As the next largest European producer of farmed Atlantic salmon after Norway, the UK industry also benefited significantly from the extreme price levels reached in 2016 as UK production volumes rose while supply for its major competitors dropped.

The referendum vote to exit the EU and the subsequent drop in the value of the pound has served to push prices up further for both importers and exporters although this appears to have neither stimulated export volumes nor dampened UK importer demand. In fact, import volumes increased in the first nine months of the year while exports
fell, with no noticeable reversal following the Brexit vote. At the retail level, consumer interest is still strong, with Nielsen reporting a 4 percent increase in retail sales value year-on-year.

Markets

In the current supply shortage situation and the exceptionally high price levels that all buyers must now grapple with, import volumes by different markets are determined by both the underlying demand and the diversity of supply options available to them. For instance, the Russian Federation and Brazil, two markets which were growing rapidly until relatively recently, are constrained by their dependence on a limited selection of suppliers, primarily Chile. When added to the weakening of underlying demand due to economic struggles, this has caused import volume declines in both countries. Meanwhile, the USA and China, and to a lesser extent the EU, have a range of suppliers to choose from, and have been able to secure a relatively greater share of the global production.

France

Demand for salmon in France, Europe’s largest consumer market, has remained strong even in the face of ever climbing prices. Total import volume has been growing since 2014, with Norwegian product increasingly in favour once again with French buyers. However, smoked salmon is a popular product with French consumers, particularly during the holiday season, and the cost of raw material is creating major challenges for smokers. As supply chain intermediaries, the extent to which smoking processor profit margins are squeezed by spiking prices is dependent on whether high raw material costs can be passed onto retailers before having a major impact on cash flow. With consolidated suppliers on one side and consolidated retailers on the other, both of which have relatively greater market power to decide prices, this can be very difficult to do for smokers and other smaller processors, particularly when contracts have been signed at sales prices below the current spot level. Another implication of dependence on predetermined contract prices throughout the supply chain is that consumers have not yet felt the full impact of the spiking spot prices, and it is thus likely that the dampening effect on demand has not yet been fully realized.

Germany

Germany is another market where smoked salmon is very popular, and reports from the industry indicate that smokers’ margins are being severely impacted by the current price level, similarly to their French counterparts. The expected drop in sales after these prices are passed onto consumers is a concern in the German market also, but this effect is expected only after seasonal demand has subsided. In the first nine months of 2016, import volumes rose some 7 percent compared with the same period in 2015, and value was up by 19 percent, with the smoked, canned and frozen fillet segments leading growth. The German market has been showing an increasing preference for fresh salmon in recent years, sold largely through discount retailers, though fresh import volumes fell slightly in 2016.
USA

During the first three quarters of 2016, the USA imported 264 600 tonnes of salmon (+3.4 percent) worth US$2 333 million (+13 percent). Chile continued to be the USA’s main salmon supplier during this period, having exported almost 100 000 tonnes, demonstrating over 3 percent growth in volume and 12.1 percent in value to total US$985.2 million. Canada was the second largest supplier to the USA, exporting 76 000 tonnes worth US$579.3 million. In the wild salmon market, sockeye raw material prices remain stable, meaning a firm market on finished goods.

For US exports of salmon, there was a considerable decrease (-23.5 percent) in shipments, dropping 9.4 percent in value terms. Frozen sockeye salmon was the most exported product, followed by frozen pink salmon. However, the overall outlook for the Alaska wild salmon market in 2017 seems positive, with wholesale prices continuing to grow, especially for fresh product.

Japan

The large Japanese market for frozen farmed coho from Chile was helped in 2016 by a significant recovery of the yen after a long downward trend. However, due to the algal bloom and the resulting mass mortalities, available supply was limited and import volumes did not increase. The strengthening currency mitigated the price effect of tight supply for most of the year but the price trend turned upwards towards the end of the year. These increased prices were likely a result of inventories running low and slim domestic catches of chum salmon. In addition to chum, wild sockeye and farmed coho, Norwegian farmed Atlantics also remain popular amongst Japanese consumers, and volumes have stayed stable despite the high price levels.

### German imports of salmon (by product)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh</td>
<td>33.2</td>
<td>34.5</td>
<td>45.3</td>
<td>44.9</td>
<td>42.1</td>
</tr>
<tr>
<td>Frozen</td>
<td>2.8</td>
<td>5.5</td>
<td>4.8</td>
<td>3.8</td>
<td>5.6</td>
</tr>
<tr>
<td>Smoked</td>
<td>23.2</td>
<td>26.4</td>
<td>25.7</td>
<td>28.8</td>
<td>32.0</td>
</tr>
<tr>
<td>Fresh fillets</td>
<td>5.4</td>
<td>6.7</td>
<td>7.7</td>
<td>10.6</td>
<td>11.1</td>
</tr>
<tr>
<td>Frozen fillets</td>
<td>19.2</td>
<td>23.4</td>
<td>27.7</td>
<td>21.5</td>
<td>26.1</td>
</tr>
<tr>
<td>Total</td>
<td>89.6</td>
<td>108.7</td>
<td>121.5</td>
<td>119.1</td>
<td>127.8</td>
</tr>
</tbody>
</table>

Source: Germany Customs (small shares of product types like canned, salted not included)

### French imports of salmon (by product)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh whole</td>
<td>85.6</td>
<td>77.6</td>
<td>72.9</td>
<td>74.0</td>
<td>79.1</td>
</tr>
<tr>
<td>Fresh fillets</td>
<td>13.6</td>
<td>14.1</td>
<td>12.9</td>
<td>13.8</td>
<td>10.9</td>
</tr>
<tr>
<td>Frozen fillets</td>
<td>13.8</td>
<td>17.0</td>
<td>17.7</td>
<td>14.8</td>
<td>16.2</td>
</tr>
<tr>
<td>Smoked</td>
<td>6.0</td>
<td>5.9</td>
<td>5.1</td>
<td>5.7</td>
<td>5.3</td>
</tr>
<tr>
<td>Total</td>
<td>122.6</td>
<td>118.8</td>
<td>112.1</td>
<td>112.6</td>
<td>115.5</td>
</tr>
</tbody>
</table>

Source: DNSCE (small shares of product type like canned, salted not included)
Outlook

The consensus forecast for 2017 is for farmed Atlantic prices to remain at elevated levels for at least the first half of the year, as global supply is likely to remain tight even if further algal blooms do not occur. This is because the majority of the expected 4–5 percent rise in production is predicted to hit the markets only in the second half of the year, particularly towards the end of the third quarter with the late summer harvest. The fresh salmon market is vulnerable to such short-term fluctuations in supply, and the forward market suggests prices could drop to NKr60 per kg (US$7.08 per kg) over this period. This is only low when compared with the current extremes, however, as demand growth in markets around the world continues to outpace the growth of production capacity in the key producer countries.

Although discussions and negotiations between stakeholders in Chile as to the exact form of the revised regulatory framework are ongoing, it seems that much stricter limits on volume growth will be placed on farm license holders. This is more similar to the Norwegian approach, and is intended to address the extreme volatility that has affected the industry in recent years. With the prevailing supply shortage, it should also boost Chilean profitability in the long-term. For consumers and processors, however, the prospect of a new price norm at current levels is not so appealing.
Higher quotas may lead to price weakening

Quotas for both mackerel and herring have increased for 2017, and this could put downward pressure on high prices. A decline in prices could bring some relief to actors in the value chain as high first-hand prices in 2016 made it difficult for exporters and processors to make a profit.

News

In the Norwegian pelagic industry, some operators are calling for a structural change in the industry, while also proposing that the industry take after the salmon sector when it comes to product development and marketing.

The Norwegian pelagic sector is regulated through a network of laws and regulations, dating back to the 1920s, which some believe limit the industry in terms of innovation and structural development. For example, no vessel owner can also own on-land processing facilities, and no company can own more than 5 percent of the total quota. The quota is linked to the vessels, and according to critics, this regulation prohibits better utilization of the fleet. At present there are 79 purse seiners in the Norwegian pelagic fleet, and to critics this number demonstrates an over-capacity. According to some industry spokesmen, fewer vessels with larger quotas would benefit the sector by making it more profitable. Others advocate that the current regulation helps to avoid an overly concentrated industry with only a few vessels having a great amount of quota ownership.

In terms of marketing, the pelagic sector in Norway as well as worldwide has fallen far behind seafood sectors such as salmon. In Norway, salmon has succeeded admirably in building a whole brand around the concept “Norwegian salmon”. The salmon sector has also developed new products, such as sushi and sashimi, which in the beginning were rejected by the Japanese. Today, salmon sushi and salmon sashimi are top sellers, worldwide as well as in Japan. According to the Norwegian pelagic industry, its sector now needs a similar burst of innovation in product development.

Viet Nam is giving China strong competition in the field of processing imported raw material. The VASEP states that the low labour costs and the large number of modern processing plants in Viet Nam give it an advantage in this field. Foreign producers have shifted their processing operations from Europe, North America and even China to Viet Nam, with the country now processing value-added products based on whitefish, small pelagics and...
salmon originating from other countries. Much of this activity started with the pangasius sector, which gave the Vietnamese the necessary experience and expertise to take on tasks for foreign operators.

**Mackerel**

At the end of October, the Peruvian Ministry of Production announced that it had decided to expand the catch limit for mackerel (*Scomber japonicus peruanus*) for the rest of 2016 from 114 000 tonnes to 146 000 tonnes. The catch limit for jack mackerel (*Trachurus murphyi*) was maintained at 93 000 tonnes.

The 2017 mackerel quota for the North Sea and the North Atlantic has been set by the three-party negotiations between the EU, Norway and the Faroe Islands. The total TAC was set at 1 054 000 tonnes, which is an increase of 14 percent compared with 2016. Of the total, the EU will get 503 245 tonnes, Norway 229 821 tonnes and the Faroe Islands 128 655 tonnes. The rest, 15.5 percent, was reserved for others, such as Iceland and Greenland. While the quota agreement includes Norway, the EU and the Faroe Islands, it is an issue that Iceland and Greenland do not take part, as both countries have a history of fishing large amounts. According to the three countries that are part of the agreement, Iceland and Greenland have in the past been in violation of the total quota. In terms of its impact on trade, the increased volumes will hit the market and put weakening pressure on prices.

With a 14 percent increase in the mackerel quota, Norwegian pelagic analysts are advocating to develop new products and markets as mentioned. Japan has been the top buyer of Norwegian mackerel, but it is now vital to seek alternative buyers in order to maintain prices. If Japan is the only buyer, prices will inevitably begin a downward trend.

Norwegian mackerel prices were high for all of 2016. This has resulted in Norwegian fishers happy with the first-hand prices for mackerel. On average, they received Nkr12.00–14.00 per kg, depending on the size and fat content of the fish. Prices have been high due to strong demand and the Japanese yen strengthening against the Norwegian krone. For others in the mackerel value chain, high mackerel prices have been a cause for concern, with exporters reporting slim profit margins due to the high cost of the product. This trend could change in 2017 due to the increased quotas. In addition to more mackerel on the market, at the end of 2016, Japanese cold storage holdings were 10 000 tonnes higher than last year, indicating that prices are likely to come down.

Slim exporting margins in 2016 have led to reduced mackerel processing and exporting activity in parts of Norway. With a first-hand price of Nkr12.50–13.50 per kg and an average export price, free on board (FOB) of Nkr14.50, there is not much room for profit. According to exporters, the only market that pays a decent price is Japan, though the country is mainly interested in large fish (<600 g). During the first ten months of 2016, mackerel of this size were exported to Japan for an average price of Nkr30.42 per kg FOB Norway, while the average export price to the rest of the world for the same sized fish was Nkr26.99 per kg. Therefore, most of the large mackerel went to Japan. Emerging markets for Norwegian mackerel, such as Egypt and Turkey, are importing smaller fish (>600 g), and paid much more minor prices such as Nkr9.32 and Nkr9.90 per kg, respectively. Atlantic Canadian fishers want to fish more mackerel, and therefore were quite unhappy with the early closure of the fishery on 14 October 2016. At the same time, they have to follow a significantly lower quota than their US neighbours. In 2016, the Atlantic Canadian mackerel quota was 8 000 tonnes, while the Atlantic US quota was 20 000 tonnes.

**Trade**

Norwegian frozen mackerel exports during the first nine months of 2016 showed only moderate increases, from 142 500 tonnes to 145 300 tonnes (+2 percent). There were, however, major increases in shipments to the two largest markets, Japan (+34 percent) and China (+11.7 percent), while exports to the third largest market, Nigeria, dropped by almost 42 percent. The Republic of Korea, Ghana and Benin imported more frozen mackerel from Norway. The average FOB export prices for frozen mackerel increased from Nkr21.07 per kg in 2015 to Nkr24.58 per kg in 2016.

German frozen mackerel imports dropped from 13 400 tonnes during the first nine months of 2015 to 8 800 tonnes during the same period in 2016, likely due to high prices. In contrast, Russian Federation frozen mackerel imports increased significantly during the period, from 41 700 tonnes in 2015 to 53 200 tonnes in 2016. As much as 36 200 tonnes of this came from the Faroe Islands (68 percent of the total).

China’s exports of frozen mackerel increased markedly, from 123 900 tonnes in 2015 to 167 500 tonnes in 2016 (+35.2 percent). The main markets for Chinese frozen mackerel were the Philippines, Thailand and Indonesia.

**Herring**

Norwegian marine researchers have proposed a massive increase in the herring quota for 2017. The proposal is to increase the quota by 72 percent, from 376 000 tonnes in 2016 to 646 000 tonnes in 2017. Such an increase would mean that on-shore
Norwegian exports of small pelagics (by product and destination)

<table>
<thead>
<tr>
<th></th>
<th>January–September</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1 000 tonnes)</td>
</tr>
<tr>
<td>Japan</td>
<td>13.1</td>
</tr>
<tr>
<td>China</td>
<td>19.7</td>
</tr>
<tr>
<td>Nigeria</td>
<td>7.5</td>
</tr>
<tr>
<td>Others</td>
<td>75.2</td>
</tr>
<tr>
<td>Subtotal</td>
<td>115.5</td>
</tr>
<tr>
<td>Ukraine</td>
<td>33.6</td>
</tr>
<tr>
<td>Egypt</td>
<td>14.2</td>
</tr>
<tr>
<td>Lithuania</td>
<td>13.0</td>
</tr>
<tr>
<td>Others</td>
<td>81.5</td>
</tr>
<tr>
<td>Subtotal</td>
<td>142.3</td>
</tr>
<tr>
<td>Total</td>
<td>257.8</td>
</tr>
</tbody>
</table>

Source: Statistics Norway

German imports of small pelagics (by product and origin)

<table>
<thead>
<tr>
<th></th>
<th>January–September</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1 000 tonnes)</td>
</tr>
<tr>
<td>Faroe Islands</td>
<td>2.9</td>
</tr>
<tr>
<td>Netherlands</td>
<td>3.2</td>
</tr>
<tr>
<td>UK</td>
<td>2.2</td>
</tr>
<tr>
<td>Others</td>
<td>2.9</td>
</tr>
<tr>
<td>Subtotal</td>
<td>11.2</td>
</tr>
<tr>
<td>Norway</td>
<td>8.7</td>
</tr>
<tr>
<td>Denmark</td>
<td>4.2</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.8</td>
</tr>
<tr>
<td>Others</td>
<td>9.4</td>
</tr>
<tr>
<td>Subtotal</td>
<td>13.9</td>
</tr>
<tr>
<td>Total</td>
<td>34.3</td>
</tr>
</tbody>
</table>

Source: Germany customs (small shares of product type like canned not included)

Norwegian exports of whole frozen herring increased by 10.8 percent during the first three quarters of 2016, to 72 900 tonnes. With the Russian Federation still closed to Norwegian seafood, the largest importer was Ukraine, with 23 400 tonnes, up from 16 100 tonnes during the same period in 2015 (+68.8 percent). Frozen herring prices also went up; the average FOB export price increased from Nkr8.64 per kg in 2015 to Nkr9.77 per kg in 2016.

Japanese imports of fresh and frozen herring, however, dropped by 16.5 percent during the period, to 21 200 tonnes. Main suppliers to Japan were the USA, the Russian Federation and Canada, which together accounted for almost 90 percent of total imports.

US imports of canned sardines increased moderately (+10 percent) during the first nine months, to 23 200 tonnes. The main suppliers were Poland, Morocco and China.

Quota increases for both mackerel and herring will grow supplies in 2017, and this could lead to weakening prices, starting from the first hand price. For some value chain actors, this is welcome as processors and exporters are reporting difficulties from too high prices.
**Japan | Imports | Herring | Fresh and frozen**

**Top three origins**

Unit: 1,000 tonnes, Jan–Sep

![Graph showing top three origins for Japan imports of herring in 2014, 2015, and 2016.](source: Japan Customs)

**Netherlands | Exports | Herring | Frozen**

**Top three destinations**

Unit: 1,000 tonnes, Jan–Sep

![Graph showing top three destinations for Netherlands exports of herring in 2014, 2015, and 2016.](source: Eurostat)

**USA | Imports | Sardines | Canned**

**Top three origins**

Unit: 1,000 tonnes, Jan–Sep

![Graph showing top three origins for USA imports of sardines in 2014, 2015, and 2016.](source: NMFS)
High juvenile presence in Peru ends an already tough year for fishmeal production

In Peru, the quota announcement in November 2016 for the second anchovy fishing season initially revived the market, however, subsequent closures due to the high juvenile presence halted fishing activities. The raw material supply has thus been poor, and it is likely that prices of fishmeal and fish oil will trend upwards, at least until the Peruvian government announces the new total allowable catch TAC for the first season in 2017.

Nevertheless, some analysts are forecasting a high probability of a bumper harvest for anchovy fishing in Peru in 2017, which could possibly be ascribed to expected larger anchovy schools. With this prediction, it is unclear whether the price of fishmeal and fish oil will increase or decline in 2017.

Production

Peru finally formalized its TAC for the second anchovy fishing season in 2016 at two million tonnes, a significant increase of 81 percent compared with the 2015 TAC. Industrial fishing vessels were able to start fishing activities on 15 November 2016. Hence, the total TAC for 2016 totaled 3.8 million tonnes.

However, the allocated TAC is far from reality and stock surveys conducted by Imarpe in the first half of 2016 resulted in a record short first fishing season in Peru. Merely 50 percent of the designated quota was caught, amounting to only 900 000 tonnes of landings. The entire industry was then waiting for the release of the second fishing season quota to see how 2016 would develop.

During the second fishing season, the Peruvian Government ordered the preemptive closure of eight fishing areas due to the high presence of juvenile fish. Whether the season will be extended to fulfill the quotas is still unknown, but the current scenario makes reaching the TAC extremely challenging.

The combined production of fishmeal from Peru and Chile for the first three quarters of 2016 amounted to only 491 000 tonnes, a decrease of 34 percent
compared with the same period in 2015. Not surprisingly, this was the lowest volume registered in the past five years. For fish oil, the total output from Peru and Chile in the first nine months was less than half of the same amount in 2015. Nordic countries saw fishmeal and fish oil production remain stable during the review period.

Exports

With relatively good stocks carried over from 2015, Peru saw stable fishmeal exports during the first nine months of 2016, even in the context of poor landings. However, for fish oil, which can easily become oxidized over time and therefore cannot stock as well, the total export amount decreased by more than 25 percent.

In the USA, the Atlantic States Marine Fisheries Commission and National Oceanic and Atmospheric Administration (NOAA) confirmed the menhaden fishery’s sustainability. Based on scientific surveys, the commission approved a TAC for the 2017 season with a 6.45 percent increase to total 200 000 tonnes. In view of this optimistic TAC, the USA is catching up quickly as a significant exporter of fish oil, with volumes amounting to 59 300 tonnes during the first nine months of 2016, 26 percent higher than the same period of 2015.
China and other Asian countries continue to absorb most of South America’s fishmeal production, not only for aquaculture but also for their terrestrial farming sector, particularly the hog industry. 70 percent of total Peruvian fishmeal exports in 2016 were destined for China. It is also similar for Chile, with more than 60 percent of Chilean exports going to Asia in preparation for high consumption periods such as Chinese New Year and the Spring Festival.

The toxic algae bloom that occurred early in 2016 in Chile led to a global supply shortage of salmon. With lesser salmon volumes to feed during the review period, Chile reported its lowest import volumes of fishmeal from Peru in the past five years. Total import volumes from Chile declined by a remarkable 35 percent, totaling only 13 200 tonnes. According to the latest news, Chile is now trying to revive the farming sector with more preparatory regulations, of which the first priority lies in preventing the algae bloom from occurring again. It is expected that there will gradually be larger import volumes of fishmeal from Peru in 2017 as the Chilean salmon industry recovers.

For the Norwegian aquaculture sector, 2016 was an impeccable year due to the relatively weak krone against the euro and US dollar, high mortality of farmed salmon in Chile and strong US market demand. The soaring price of Norwegian salmon in 2016 stimulated the farming sector, leading to a larger import quantity of fishmeal and fish oil, both of which serves as salmon feed. Indeed, in the first three quarters of 2016, a five percent increase in fishmeal imports into Norway and a ten percent increase in fish oil imports into Norway was reported.
Price

As stated by The Marine Ingredients Organization (formally the International Fishmeal and Fish Oil Organization) report, the monthly average FOB Peruvian super prime fishmeal price began to bounce back in September 2016 after a continuing decline from mid-2016, which was explained by the demand and supply gap.

Poor landings in Peru for the first season pushed a large amount of companies to presell their stocks in order to pull through the raw material shortage and maintain their balance sheet performance, thus price conceded as a compromise. However, from September 2016 until early 2017, the market is likely to see prices trending upward as fishing activities in Peru were disrupted. Combined with poor landings in the first season and the overall low supply in 2016, the first half of 2017 will likely be a time of raw material shortage and price increases.

Outlook

As of January 2017, global fishmeal and fish oil production has definitely hit a rock bottom supply level. With an optimistic stock prediction for 2017 coupled with better climate conditions, the tight supply is likely to be eased in late 2017. For the coming months, however, the poor landings will continue with further price increases expected, at least until the Peruvian Government announces the new TAC for 2017.
strong supplies may put pressure on prices

Good catches in Canada and the US Northeast as well as in Australia may increase supplies to the North American market and consequently put pressure on prices. In Europe and China, demand for lobster appears to be growing.

North American lobster exporters can breathe easily again, as the European Commission has informed Sweden that it will not propose that American lobster (Homarus americanus) be listed as an invasive species and thus be banned on the European market. The dispute, which was initiated by Sweden after 32 American lobsters were found in its waters, has been ongoing for most of 2016, and has now apparently been put to rest. However, Swedish officials say they will continue pursuing this issue regionally.

In the UK, the popularity of lobster is increasing, partially as a result of the successful launch of the inexpensive 'Burger & Lobster' restaurant chains. The consequence, according to The Financial Times, may be that lobster prices will increase. The Burger & Lobster restaurant chain was launched in London in 2011, and has been a success with its affordable lobster prices, especially for its lobster roll. The strong demand is helping push prices upwards, and lobster prices are currently at an 11-year high. Paradoxically, it was the 2008–2009 lobster crisis in the USA that prompted the development of affordable lobster in restaurant chains. In 2009, lobster prices fell to US$3.70 per lb, and this triggered growth in demand in Europe and particularly in Asia.

Supplies

According to Australian marine researchers, Western Australian lobster stocks appear to be at record high levels. A three-year research project, which tagged 15,000 lobsters, suggests that stocks have not been this high for almost 50 years. This is good news and could lead to higher quotas for lobster fishers. Western Australia moved to a quota-based fishery in 2010–2011, and the research will be used as a basis for setting future quotas.

RECENT NEWS

Breakthrough in aquaculture production of rock lobster

Profitable aquaculture production of rock lobster (Panulirus ornatus) has been difficult to achieve, but a recent breakthrough in Australia gives hope that it may be possible to produce rock lobsters less expensively, and thus create an important new industry.

The breakthrough involves a unique, new aquaculture system that makes it possible to control the long and complex life cycle of the rock lobster. The University of Tasmania has been central in the conduct of this research, which has been ongoing for 17 years and has significantly reduced disease, shortened larval duration, and overcome density and metamorphosis challenges. The processes and techniques are now being transferred to commercial operators to produce rock lobster on a large, commercial scale.
In North America, New Brunswick lobster landings in Grand Manan are up by as much as 10 percent this year, according to the Grand Manan Fishermen’s Association. The catches in inshore areas have been of good quality hardshell lobster. Offshore catches have been weaker. Prices are also strong, but this has been helped by the high value of the US dollar.

Lobster represented the highest value catch of the USA in 2015, according to a new report released by the National Marine Fisheries Service (NMFS). The value of lobsters landed amounted to US$679.2 million, followed by crab (US$678.7 million), and shrimp (US$488.4 million).

International trade

During the first three quarters of 2016, global trade in lobsters dropped by about 5 percent, to just under 100 000 tonnes. The largest importers were the USA, which imported 35 900 tonnes during this period, followed by Canada (19 600 tonnes) and China (15 200). Both Canada and China showed increasing imports compared with the same period in 2015, while the USA registered a 9.1 percent decline.

As in all previous years, the main supplier to the USA was Canada, however Canadian exports to the USA dropped from 33 600 tonnes to 30 400 tonnes. China exported 260 percent more lobsters to the USA, albeit from a low base of just 500 tonnes in the first three quarters of 2015.

Canada and the EU signed the Comprehensive Economic and Trade Agreement in October 2016, and this is expected to lead to a boost in exports of a number of products from Canada to the EU, including lobsters. EU import tariffs on seafood will be greatly reduced, and tariffs will be zero, which means a significant drop from 20 percent on processed lobster, from 16 percent on frozen lobster and from 8 percent on live lobster. Thus, Canadian exporters will gain access to a market of more than 435 million consumers at greatly improved conditions.
Prices

Prices for Newfoundland and Labrador lobster remain high and thus the high price trend over the past two years for this lobster continues. In early November 2016 there was a slight reduction in prices, but they bounced back and as of December 2016, are US$0.96 higher than at the same time in December 2015. At the end of November the price was US$5.39 per lb.

In Europe, lobster prices follow a very seasonal pattern, peaking just before Christmas. This is also the case for 2016, although prices have not yet reached quite the same level as 2015’s.

Outlook

Lobster demand appears to be on the rise, as lobster supplies are made more available to consumers. However, prices, which have been high and rising for the past two years, may now be about to turn, at least in the USA. Larger supplies from Canada are expected, and this would push prices down in the coming months. Demand in China appears to be improving.
BIVALVES

GLOBEFISH HIGHLIGHTS

Production for bivalves lower in 2016

Toxins in seawater and disease put a stress on bivalve supplies in 2016. Though no official statistics are yet available, it is likely that the main producing countries have experienced output declines. Prices have been sky high. Demand during the Christmas season was strong in Southern Europe. Everything will come to a halt in the opening months of 2017, as bivalves are not a traditional item for the Chinese New Year.

For 2016, several toxin occurrences in bivalves troubled the markets. These started with a red tide in Chile, so called because of the distinct colour of the seawater – red or purple – indicating the presence of toxins, which can accumulate in molluscan filter-feeders such as oysters and clams. If contaminated bivalves are ingested, this toxin can lead to an illness called Neurotoxic Shellfish Poisoning. The red tide severely impacted mussel production in the south of Chile during the June–August period. During this phenomenon, the collection of bivalves was prohibited, creating a strong economic loss for Chilean producers.

In September and October 2016, the US East Coast experienced an unprecedented wave of closures from high levels of toxins in the waters. At the end of September, Maine’s mussels and clams were impacted by a widespread and abundant bloom of phytoplankton, commonly known by the name of domoic acid. This is the first time in history that this type of toxin occurred on the East Coast, while the US West Coast is quite familiar with this type of outbreak. Fortunately, the water could be reopened in mid-October, but consumers were scared away, and the sector reported economic losses.

Apart from toxins and red tides, which are well-known problems the bivalve industry has been facing for centuries, there are some more recent problems that have impacted bivalve production. Disease in oyster aquaculture wiped out production in France six years ago, and production there remains far below what it used to be. In the long-term, ocean acidification from climate change will impact bivalve production, with studies demonstrating that natural mussel beds will disappear due to ocean acidification.

RECENT NEWS

FAO assisting clam collectors in Tunisia

For several years, FAO has been working with local associations of female clam collectors to help get them organized and be able to obtain a better price margin on their collected clams. Currently, the collectors only get 5 percent of the final consumer price. The end goal of these efforts is for the clams they collect to become certified as a fair-trade product and enter the Italian market with this important certificate.

For 2016, several toxin occurrences in bivalves troubled the markets. These started with a red tide in Chile, so called because of the distinct colour of the seawater – red or purple – indicating the presence of toxins, which can accumulate in molluscan filter-feeders such as oysters and clams. If contaminated bivalves are ingested, this toxin can lead to an illness called Neurotoxic Shellfish Poisoning. The red tide severely impacted mussel production in the south of Chile during the June–August period. During this phenomenon, the collection of bivalves was prohibited, creating a strong economic loss for Chilean producers.

In September and October 2016, the US East Coast experienced an unprecedented wave of closures from high levels of toxins in the waters. At the end of September, Maine’s mussels and clams were impacted by a widespread and abundant bloom of phytoplankton, commonly known by the name of domoic acid. This is the first time in history that this type of toxin occurred on the East Coast, while the US West Coast is quite familiar with this type of outbreak. Fortunately, the water could be reopened in mid-October, but consumers were scared away, and the sector reported economic losses.

Apart from toxins and red tides, which are well-known problems the bivalve industry has been facing for centuries, there are some more recent problems that have impacted bivalve production. Disease in oyster aquaculture wiped out production in France six years ago, and production there remains far below what it used to be. In the long-term, ocean acidification from climate change will impact bivalve production, with studies demonstrating that natural mussel beds will disappear due to ocean acidification.
**FOCUS ON BIVALVES**  
**Good for human environmental health**

Bivalves are a highly nutritious food source, as they are rich in protein, minerals and healthy fats. They are also beneficial for the health of the oceans as bivalves are actually filter-feeders that make water cleaner. And because they strain water for food — eating both microscopic plants and animals — they do not require supplements to their diet like fishmeal or fish oil, when they are grown in aquaculture. However, as they are cleaning the water, they can also be dangerous in terms of public health. Bivalves can accumulate toxins, which can lead to sickness and in severe cases, even death. In developed countries, the water quality of areas where bivalves are taken or grown is closely monitored and in case the water contains toxins, the sale of bivalves from these waters are prohibited. This is also the reason why only a handful of countries are allowed to sell live bivalves to the EU. Another concern when it comes to farming bivalves is that in some places, non-native shellfish can become invasive and upset local ecosystems.

### Scallops

Atlantic scallop fishers in the USA are looking towards an optimistic future. It is estimated that for 2017, production will achieve 21 500 tonnes, 18 percent ahead of 2016 landings. During 2018, the prospects are even better, as catches are projected to be 32 000 tonnes, a notable 51 percent jump from 2017. With this quick supply growth, prices are expecting to decline, with total economic benefits in the range of US$585 million in 2017, about 12 percent ahead of 2016 values. Most of this additional production will stay domestic, although some quantities will reach the export sector, with France as the main market.

World trade of scallops declined slightly in the first nine months of 2016, mainly due to lower buying interest from China and France. Despite the decline of imports, (totaling 37 400 tonnes, down from 51 000 tonnes in January to September 2015) China continues to be the main importer of scallops in the world, mainly in frozen form from Japan. Indeed, 96 percent of Chinese scallop imports are from Japan. The USA is the second major import market for scallops, despite the strong domestic production, with 18 700 tonnes imported in the first nine months of the year, a 20 percent increase over the same period of 2015.

### Oysters

2016 has been a very difficult production year for France, the main oyster culturing country in Europe. In some areas, oyster production has fallen by as much as 80 percent compared with six years ago. As a result, wholesale prices of oysters are at a record high at €10.00 per dozen, which compares with less than €6.00 per dozen in 2008, when the oyster crisis began in France. France remains the main oyster exporter in the EU, mainly supplying neighbouring countries. Oysters continue to be a luxury item, and the present price hike has not led to a decline in demand. In contrast, demand has only strengthened. Despite the difficulties of the industry with respect to production, exports increased by 20 percent in the first nine months of the year when compared with the same period of 2015.

---

**World imports/exports of oysters**  
**January-September**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>6.3</td>
<td>7.5</td>
<td>7.7</td>
<td>8.9</td>
<td>8.7</td>
</tr>
<tr>
<td>France</td>
<td>2.2</td>
<td>2.3</td>
<td>3.0</td>
<td>3.3</td>
<td>4.8</td>
</tr>
<tr>
<td>Hong Kong SAR</td>
<td>4.1</td>
<td>4.9</td>
<td>5.3</td>
<td>4.5</td>
<td>4.7</td>
</tr>
<tr>
<td>Others</td>
<td>21.6</td>
<td>21.5</td>
<td>23.3</td>
<td>28.6</td>
<td>22.4</td>
</tr>
<tr>
<td>Total</td>
<td>34.2</td>
<td>36.2</td>
<td>39.3</td>
<td>45.3</td>
<td>40.7</td>
</tr>
</tbody>
</table>

|          | 6.8   | 6.7   | 6.2   | 6.6   | 7.2   |
| France   | 4.8   | 5.3   | 5.7   | 7.1   | 7.1   |
| Republic of Korea | 6.0 | 8.1   | 8.1   | 11.6  | 6.4   |
| Others   | 15.2  | 16.0  | 18.6  | 16.5  | 15.6  |
| Total    | 32.9  | 36.1  | 38.6  | 41.7  | 36.3  |

Source: GTIS

**World imports/exports of scallops**  
**January-September**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>12.4</td>
<td>22.4</td>
<td>27.2</td>
<td>51.9</td>
<td>37.4</td>
</tr>
<tr>
<td>USA</td>
<td>11.2</td>
<td>19.6</td>
<td>22.1</td>
<td>16.8</td>
<td>18.7</td>
</tr>
<tr>
<td>France</td>
<td>13.6</td>
<td>14.3</td>
<td>14.8</td>
<td>12.9</td>
<td>9.4</td>
</tr>
<tr>
<td>Others</td>
<td>52.6</td>
<td>56.0</td>
<td>56.6</td>
<td>55.1</td>
<td>48.1</td>
</tr>
<tr>
<td>Total</td>
<td>89.8</td>
<td>112.3</td>
<td>120.7</td>
<td>136.8</td>
<td>113.7</td>
</tr>
</tbody>
</table>

|          | 20.6  | 21.4  | 28.1  | 24.9  | 25.3  |
| USA      | 10.0  | 8.5   | 8.1   | 8.1   | 9.4   |
| Others   | 10.9  | 9.2   | 9.0   | 7.8   | 8.1   |
| Total    | 35.6  | 41.2  | 43.7  | 40.5  | 32.6  |

Source: GTIS
Clams

The price differential between farmed and wild-caught clams is significant, with the majority of clams now coming from aquaculture. Tunisia is one of the main supplying countries of wild clams to the Italian market. During the Christmas period, when clams are an integral part of traditional Italian dishes, these clams can reach a price of EUR 24 per kg, while the competing cultured clam is selling at about EUR 5 per kg.

Mussels

Chile is one of the main mussel producing countries in the world. As earlier reported, the red tide created difficulties for the industry in 2016, which was closed for almost a month during the Chilean winter. Total production during the first nine months of 2016 totaled 230,000 tonnes, 5 percent less than in the same period of 2015. Chile exports almost all of its mussel production, between 65,000 and 70,000 tonnes per year.

Spain is still the main importer of frozen mussels from Chile, but in recent years, Chile has diversified its markets, with the USA, France and Italy recently emerging as strong importers of Chilean mussels. The reduction in production in 2016 obviously resulted in lower exports, thus Chile lost its market share in the Spanish import market. Total Chilean mussel exports to Spain in the first nine months of the year were 10,500 tonnes, down 6 percent from the same period of 2015. Consequently, Chile’s market share in Spain declined from 66 to 57 percent.
Outlook

Bivalve prices will be relatively low during the first quarter of 2017, as this is a period with very limited demand. Oyster prices are expected to come down from their present sky-high levels. The bivalve sector is still not doing enough to promote its very healthy product and further collaborative efforts are needed.
Skhira, Port Zabbusa, Gulf of Gabes, Tunisia: Women collecting clams in the shallow sea.
CRAB

GLOBEFISH HIGHLIGHTS

Quota cuts in the USA, increases in the Russian Federation

Whereas the USA is cutting king and snow crab quotas dramatically, the Russian Federation quotas are increasing. Overall, global supplies will decrease, with prices at record levels.

Supplies

The TAC for snow crab (Chionoecetes opilio) in the Bering Sea District has been set at 8 784 tonnes for the 2016/17 season. This represents a reduction of over 53 percent compared with the 2015/16 season. Since the 2007/08 season, landings of snow crab in this region have declined, and the TAC for the coming season was based on recent surveys of the resource. Alaska quotas for king crab have also been cut considerably. In contrast, Russian Federation quotas for king crab increased by 27 percent to 13 022 tonnes, the snow crab quota by 16 percent to 25 674 tonnes, and the tanner crab quota by 15 percent to 5 191 tonnes.

Snow crab fishing in the Barents Sea was closed for the end of 2016 and will stay closed for some time well into 2017. Norway and the Russian Federation are managing this resource jointly, and have agreed to take measures that will make the resource healthy again in order to allow for 150 000 tonnes of harvest annually from the area. The details of the agreement are still being discussed.

International trade

All the major importers of crab are showing increased imports during the first nine months of 2016, reflecting the increasing popularity of crab on major markets. Total world imports of crab increased by 11 percent, to 241 700 tonnes, with trade value increasing as well. The largest importers were the USA (68 800 tonnes), China (47 600 tonnes), Republic of Korea (32 200 tonnes) and Japan (26 600 tonnes).
Two of the most significant exporters of crab were the Russian Federation and China. While the Russian Federation showed an increase, from 31 200 tonnes during the first nine months of 2015 to 34 400 tonnes during the same period in 2016 (+10.3 percent), China’s exports were at a standstill at 29 100 tonnes. For both countries, the main market was the Republic of Korea.

US imports during the period increased by 5.6 percent. Main suppliers to the USA were Canada, the Russian Federation and China.

Japan’s imports of crab were up by 18.2 percent. The main suppliers to Japan were the Russian Federation, Canada and the USA. Japanese imports of Russian Federation snow crab have been dramatically reduced since 2014, when Japan and the Russian Federation entered into an agreement to curb crab poaching and smuggling. Most (95 percent) of the snow crab in Japan is used for processing into stick products and sushi products though recently, whole crab is also increasing in popularity.

**Prices**

The low red king crab supplies this year have led to pressure on prices. The Russian Federation is making less red crab available for the US market, as some of its supplies are now being sold to China. Thus, prices for red crab in the USA have gone up. Ex-vessel prices are around US$10.00–11.00 per pound, compared with US$8.00 per pound last year.

Snow crab prices are also high, pushing to record levels as a result of the quota cuts in Alaska. Total supplies for 2016 are expected to be at least 40 percent below 2015's figures, and traders are struggling to get the volumes they need. Canadian quotas may also be cut, although only by about 11 percent. As a result, EXW prices have been pushed up to US$8.00 per lb, which is very high for snow crab.

The high prices for *japonicus* snow crab are likely to continue this season. With low Alaska quotas and expected lower exports from the Russian Federation to the USA, supplies will be tight. Red snow crab (*Chionoecetes opilio*) prices on the Japanese market are also high as a result.

Bristol Bay king crab prices are at record levels, equal to prices during 2011. Prices in Seattle have reached US$20.10 per pound, while in Japan it is reported that C&F prices of US$19.75 have been paid. The main reason for this price hike is growing demand, with the strong demand on the US market the main price driver in the market.
Outlook

Although total quotas are only down slightly, there are great differences between the USA and the Russian Federation. As US quotas are dramatically down and demand is growing healthily, the resulting tight supplies and strong demand will combine to push prices to record levels. Not much help is expected from the Barents Sea, as the Russian Federation and Norway are taking a precautionary approach in their management of the king and snow crab resources in that area. Thus, for 2017, supplies will remain tight and prices high.
SPECIAL FEATURE

GLOBEFISH HIGHLIGHTS

Insuring small-scale farms adds resilience to the aquaculture value chain

Aquaculture insurance has a broader effect than mitigating direct climate-risk impacts to primary producers. One such broader effect is that it spurs the adoption of better farm management practices and new technology, which contributes to reducing disease risks and thus boosts credit worthiness of farmers. Another impact is that it enables farmers to become better organized and participate actively in risk management programmes in a more cost-effective manner. These benefits from insurance enhance the adaptive capacities of fish farm enterprises to changes and impart more resilience on the overall value chain.

Aquaculture insurance should be seen as a public investment and partnership between government, insurers, farmer groups and other value chain players. As such, a well-designed insurance programme would lighten the governments’ burden of disaster recovery and rehabilitation efforts. Some governments have made it part of their climate change adaptation strategy and use aquaculture insurance as a policy instrument for social protection of small, resource-poor farmers.

Almost 90 percent of the world’s aquaculture production comes from Asia. The applications of aquaculture insurance and its positive effects assume great significance with the fact that 80 percent of the fish farmers in Asia are small-scale, many are resource poor, operating in areas that are usually sited in or near fragile ecosystems or exposed environments, and are probably the world’s most vulnerable to disasters.

Experiences gleaned from recent studies carried out by FAO and national research and development institutions as well as a 2016 workshop illustrate the above-mentioned effects. These recent studies include a review of the national pilot programme on agriculture insurance in Viet Nam (Nguyen & Pongthanapanich, 2016) and a review of fishery and aquaculture insurance in China (Xinhua et al., 2017). The regional workshop was held in Bangkok, Thailand on the development of national aquaculture insurance.


These studies and workshop also demonstrate challenges and conditions to take into consideration when developing this type of financial service and making it accessible to small-scale farmers. This Special Feature article will summarize aspects of these findings to highlight the benefits of aquaculture insurance, some of its challenges, and how insurance can ultimately empower small-scale aquaculture farmers.

Experiences with aquaculture insurance in Asia

China

China produces more than 60 percent of the world’s aquaculture output. Every year from 2009 to 2014, its disaster-affected aquaculture area was estimated to total 815,000 to more than a million hectares. China strongly promotes and subsidizes aquaculture and fishery insurance and encourages commercial insurers to work with mutual insurance associations and producers’ cooperatives.

Insured and insurers in China have in particular experienced the advantages and benefits of weather-indexed insurance (or parametric insurance) over the more common indemnity-based policy. Covered under such schemes are a number of commodities such as laver, scallops and sea cucumber (for wind speeds exceeding certain velocities) as well as mitten crabs and oysters (for air temperatures reaching a certain elevated level over a number of consecutive days). A major advantage of having weather-indexed insurance is the avoidance of adverse selection and moral hazard, two common pitfalls of traditional indemnity-based insurance to insurers. The other significant advantage is it does away with a loss adjustment, which reduces the insurer’s cost and speeds up payment of compensation. Instead, payout is triggered when the index goes above or falls below a pre-specified threshold. The critical technical service support for weather-indexed insurance is a competent meteorological station that provides timely, secure and reliable records of the required weather parameters.

Viet Nam

In Viet Nam, there was a pilot agriculture insurance programme carried out between 2011–2013, which was part of the government’s social protection policy for farmers. It was meant to help them recover from natural disaster and disease outbreaks. Of the three components (crop, livestock, aquaculture) in the pilot, aquaculture insurance was deemed unsuccessful. That said, US$30 million was paid out, mostly to shrimp farmers in the five pilot provinces, which enabled them to immediately resume farming after suffering from the ravages of Early Mortality Syndrome (EMS). The insurers reported high levels of financial loss, which was part of the reason why the aquaculture programme was deemed unsuccessful. The reasons for this loss can be instructive for developing aquaculture insurance schemes in the future. In Viet Nam’s case, some crucial strategic measures and institutional services were overlooked that would have strengthened the technical capacities of farmers to reduce the risks that caused huge crop losses. One strategic omission was the lack of consultation with farmer associations, rural credit institutions, and cooperatives to design insurance products that would have been more suitable to the farmers’ needs and circumstances.

In Viet Nam, premium subsidies are based on the farm household’s income. A poor household’s premium is subsidized completely at 100 percent. However, the programme assessment demonstrated that this caused an issue: without having to pay anything themselves, farmers tended to ignore the prescribed technical and management guidelines with the subsidy becoming a perverse incentive. Thus, the assessment recommended reducing the subsidy for the next pilot programme in order to give the farmer a greater sense of responsibility and to promote more vigorous compliance with technical guidelines for disease control and adhere to better farming practices. Both China and Viet Nam’s insurance programmes provide generous subsidies to farmers for premium payments. The key distinction is that the farmers in China are organized into well-managed cooperatives and insurance mutuals that adopt risk management strategies and encourage their members to take up good farm management practices as part of the conditions for being insured.

Thailand

In Thailand, EMS outbreaks from 2012 to 2015 have caused economic losses throughout the shrimp value chain that total more than US$12 billion. Most shrimp farmers in Thailand are small-scale, operating an average of 1–2 ponds (usually less than a hectare) per farm but are stocked at high density. The industry has periodically suffered

3 Organized by FAO and the Center for Applied Economics Research of Kasetsart University in Bangkok, the workshop included 62 participants from government agriculture and fishery agencies, insurance and reinsurance companies, insurance brokers, development financing institutions, regional and international development organizations, research institutes and universities, the National Farmers Council of Thailand, and representatives of shrimp farmers’ cooperatives in Thailand. Participants were from China, the Philippines, Singapore, Thailand and Viet Nam.
from disease, but in recent years, stakeholders have worked together to develop innovations to combat old and new diseases. Extensive laboratory services and inspection mechanisms are now in place to support the adoption of good aquaculture practices and product traceability and certification. Farmers are preparing to become insurance-ready through a shrimp cluster model, a type of collective action model. The initiative is led by the Thai National Farmers Council in collaboration with the Thai Chamber of Commerce. It operates by linking institutionalized farmer groups with other stakeholders – seed and feed producers, buyers, processors, exporters, credit institutions, government regulatory and technical agencies, and insurers.

At the farm level, the shrimp farmers’ cluster cooperatives should adhere to good aquaculture practices and product certification standards. They also would have to comply, should it be required of them, with buyers’ own product quality standards. From a risk management perspective, these attributes add up to the member farmers becoming more insurance-worthy, which is a necessary condition for aquaculture insurance being a viable business. The ups and downs experienced by the Thai shrimp industry in more than 30 years since it started have driven home the lesson that managing the sector should be inclusive by involving all the stakeholders along the value chain. Thus, insurance as a risk management tool cannot be a stand-alone tool. Rather, it needs to be integrated with other value chain management mechanisms.

**Conclusion**

Having been accepted by policy makers as a climate change adaptation strategy, insurance initiatives have moved to the practical issue of making aquaculture insurance a viable and sustainable business. This outcome is predicated on farmers being able to participate continuously in an insurance programme. The biggest hurdle currently is the fact that 80 percent of fish farmers in Asia, where the majority of aquaculture is produced, are small-scale. Models such as the Thai shrimp sector’s cluster form and the Chinese insurance mutuals and cooperatives can help small-scale farmers become insurance-ready by becoming better organized. Such models also impart economy of scale, which translates to a stronger transaction power – based on trust – with input suppliers and product buyers. It also gives farmers better leverage with government and other institutional providers of services. That leverage is anchored on their capacity and reliability to comply with conditions attached to a service such as a loan and an insurance contract.

Ultimately, the key to farmers being able to participate continuously in an insurance programme and the insurance companies finding insuring small-scale farmers a viable business, is for farmers to be well organized, strengthened and empowered. The empowerment of small-scale fish farmers – usually the most vulnerable and weakest link in the value chain – makes the entire value chain more resilient. Insurance, by reducing farmers’ vulnerabilities, can help.

---

**FOCUS**

*A cooperative plus commercial insurance model in China*

In Shanghai, a shrimp farmers’ cooperative and the Anxin Agriculture Insurance Company has developed a cooperative plus commercial model by which the company provides a professional insurance service to the cooperative while the cooperative lends technical support to the company. This partnership offers several advantages. The insurer enters into a contract only with the cooperative, which in turn contracts its members. This simplifies the administration of the policy. The cooperatives usually have experienced members to help the insurer in the identification, characterization and technical assessment of risks, which avoids moral hazard and reduces the insurer’s cost. As the members farm the same species, it is easy for them to share information and technology on better farm management practices, which collectively increases their ability to manage production risks.

In this model, the cooperative introduced the adoption of good shrimp aquaculture standards and the closed system to members, which prevented pathogen entry and reduced the use of drugs and chemicals. The insurance company provided a bonus to the cooperative for a low loss ratio, i.e. 60 percent or lower, as an incentive for its members to adopt good farm management practices. In the 2015 crop, the loss ratio was a low 53 percent. As it had promised, the insurer returned 7 percent of the premium income to the cooperative, which the members spent on materials for water quality improvement.

---

4 Loss ratio is the total compensation paid out divided by the total premium collected by the insurer.
EVENTS

GLOBEFISH HIGHLIGHTS

Experts at NASF 2017 to discuss the prospects for increased sustainable harvest from the ocean

The North Atlantic Seafood Forum (NASF) is a well-established annual forum for fisheries stakeholders in the Northern Hemisphere to meet and discuss major industry issues such as conservation, technology, financing, trade and marketing. The forum serves as an international platform for strategic dialogue.

Now in its twelfth year, the three-day event, from 7 to 9 March 2017, will include 100 speakers from around the world. The forum will be organized by 11 seminars, each focused on key messages about the current direction of the industry and the challenges to be faced in the future.

FAO will participate in a side event during the event, co-organized by the Institute of Marine Research (IMR), along with the National Institute for Nutrition and Seafood Research (NIFES) and the Norwegian Directorate of Fisheries. Titled “The prospects for increased sustainable harvest from the ocean”, the side event will convene experts to discuss the possibilities for increased food supply from the ocean through utilization of discards, mesopelagic fish and plankton.

With a world population expected to reach 9 billion by 2050, the greatest challenge is how to produce enough food from diversified sources to fulfill the increased population’s need. Of course the ocean is already a valuable resource, with FAO The State of World Fisheries and Aquaculture (SOFIA) 2014 estimating its annual food contribution to total 108 million tonnes, both from wild-caught landings (81 million tonnes) and marine aquaculture (27 million tonnes). Fish also provides 20 percent of protein intake to more than 3.1 billion people. Nevertheless, there are nutrient rich resources from the ocean that are currently not being utilized, and in some cases are actually being wasted.

One such potential is discards, defined as species accidentally caught and then thrown away at sea. FAO estimates the global average yearly discards at 7.3 million tonnes. Discards can also often be rich in protein. Another possible source are mesopelagic fish, which are a large group of fish species living between 200 and 1 000 meters deep. The species is actually the most numerous of vertebrates in this biosphere, with a recently estimated stock level of about 10 000 million tonnes. With such a healthy stock estimate, mesopelagic fish could potentially provide an alternative source of raw material for aquaculture feed.

Plankton is also an un-utilized resource largely available from the seas. Krill (e.g. Euphausia superba) and copepods represent a significant biomass rich in proteins, lipids and fatty acids that could supply nutrients to our diets. These same nutrients can also be found in other farmed organisms, such as seaweed and mussels.
Increase harvesting sustainability to meet the 2030 SDGs

The health of our oceans is one of the objectives of the 2030 Agenda for Sustainable Development, an agreement adopted by the United Nations General Assembly on 25 September 2015 to mobilize efforts to end all forms of poverty, fight inequalities and tackle climate change.

One of them, namely the Sustainable Development Goal (SDG) 14 “Conserve and sustainably use the oceans, seas and marine resources for sustainable development”, states its target in section 14.2: (By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.)

Recognizing the importance of the oceans as an undeniable resource of welfare to be protected from destructive human activities, the United Nations have organized The Ocean Conference, to be held 5–9 June 2017 in New York. More information can be found here: https://sustainabledevelopment.un.org/oceanconference/

INFO POINT

12TH NORTH ATLANTIC SEAFOOD FORUM
Date: 7–9 March 2017
Location: Bergen, Norway
Event page: http://www.nor-seafood.com/

Side event: Prospects for increased sustainable harvest from the ocean
Date: 7 March 2017
EVENTS

GLOBEFISH HIGHLIGHTS

FAO organizes panel session at the Seafood Expo North America 2017

How can market measures promote sustainable seafood production and consumption?

The Seafood Expo North America, held every March in Boston, Massachusetts, USA, is the largest seafood exposition in North America. This three-day, annual event brings together thousands of buyers and sellers from around the world to do business, network and learn about emerging issues at the conference sessions that are held consecutively with the exposition hall. This year, the Products, Trade and Marketing Branch (FIAM) of FAO is organizing a panel session titled “How can market measures promote sustainable seafood production and consumption”, to be held on 19 March 2017 from 2:00 to 3:15pm.

What is the current situation, where are we headed, and how can we insure that sustainable practices are adopted globally to meet future demand? The goal of the FAO session is to raise awareness on market means and tools for stakeholders to improve efficiency and sustainability along fish value chains, thus contributing to achievement of the UN Sustainable Development Goals (SDGs) to eliminate poverty and hunger and ensure supplies of fish and fishery products for future generations. To address these topics, the FAO session speakers will present on the following topics:

- An overview of the state of global fisheries and market measures as a means to facilitate sustainable value chains
- US import regulation to prevent IUU fish entering markets
- A public-private partnership to develop a benchmarking tool for third party certification schemes
- Private sector efforts to promote sustainable production and exports from developing countries
- Encouraging sustainable consumption through raising consumer awareness of underutilized fish species
Under the auspices of the 2030 Agenda for Sustainable Development, an intergovernmental agreement, 17 SDGs were adopted by the United Nations General Assembly on 25 September 2015. The UN Agenda 2030 was built upon the structure of the Millennium Development Goals (MDGs) of the 2015 Development Agenda and has significantly raised the bar from halving the number of people in poverty by 2015 to ending poverty and hunger by 2030. The ability of governments to achieve the SDGs requires cooperation with and active participation from all stakeholders along the value chain, namely: governments, fishers and fish farmers, private sector, civil society and academics. In particular, SDG 12 – Responsible Production and Consumption – which is aimed at the development of sustainable production and consumption practices along value chains, will require complimentary action on the part of industry and civil society stakeholders to meet the rising global demand for fish and fishery products in a sustainable way.

Fish as food makes an important contribution to food security and livelihoods, and the fisheries and aquaculture sector will make a vital difference in achievement of the SDGs. Thus, it is important to raise awareness about the SDG 12 for all stakeholders. The Seafood Expo North America is an ideal venue to raise awareness and to open the discussion on challenges and opportunities for promoting sustainable production and consumption along the fisheries and aquaculture value chains.

More information about the conference programme, panel speakers and their biographies, and logistics for the Seafood Expo North American can be found on their website: http://www.seafoodexpo.com/north-america/conference-program/
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ASIA</td>
<td>50.8</td>
<td>62.6</td>
<td>57.8</td>
<td>53.1</td>
<td>55.8</td>
<td>43.4</td>
<td>41.8</td>
<td>42.7</td>
</tr>
<tr>
<td>China</td>
<td>17.4</td>
<td>18.3</td>
<td>43.9</td>
<td>45.8</td>
<td>23.8</td>
<td>22.1</td>
<td>22.3</td>
<td>13.5</td>
</tr>
<tr>
<td>of which China. Hong Kong SAR</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>1.0</td>
<td>0.8</td>
<td>0.7</td>
<td>3.6</td>
</tr>
<tr>
<td>&amp; Taiwan Province of China</td>
<td>0.9</td>
<td>1.1</td>
<td>0.3</td>
<td>0.3</td>
<td>1.8</td>
<td>1.6</td>
<td>1.5</td>
<td>1.2</td>
</tr>
<tr>
<td>India</td>
<td>4.6</td>
<td>4.7</td>
<td>4.6</td>
<td>4.9</td>
<td>5.6</td>
<td>4.9</td>
<td>5.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Indonesia</td>
<td>6.0</td>
<td>6.4</td>
<td>4.0</td>
<td>4.3</td>
<td>4.2</td>
<td>3.6</td>
<td>3.7</td>
<td>0.3</td>
</tr>
<tr>
<td>Japan</td>
<td>3.7</td>
<td>3.7</td>
<td>0.6</td>
<td>0.7</td>
<td>1.9</td>
<td>1.9</td>
<td>1.8</td>
<td>14.8</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>1.6</td>
<td>1.7</td>
<td>0.4</td>
<td>0.5</td>
<td>1.7</td>
<td>1.5</td>
<td>1.6</td>
<td>4.3</td>
</tr>
<tr>
<td>Philippines</td>
<td>2.3</td>
<td>2.4</td>
<td>0.8</td>
<td>0.8</td>
<td>1.0</td>
<td>0.8</td>
<td>0.5</td>
<td>0.3</td>
</tr>
<tr>
<td>Thailand</td>
<td>1.8</td>
<td>1.8</td>
<td>1.0</td>
<td>0.9</td>
<td>6.6</td>
<td>5.6</td>
<td>5.6</td>
<td>2.7</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>2.8</td>
<td>2.9</td>
<td>3.2</td>
<td>3.4</td>
<td>8.0</td>
<td>8.0</td>
<td>8.1</td>
<td>1.3</td>
</tr>
<tr>
<td>AFRICA</td>
<td>8.4</td>
<td>8.6</td>
<td>1.6</td>
<td>1.7</td>
<td>6.1</td>
<td>5.9</td>
<td>5.9</td>
<td>5.6</td>
</tr>
<tr>
<td>Ghana</td>
<td>0.4</td>
<td>0.3</td>
<td>1.1</td>
<td>1.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.7</td>
</tr>
<tr>
<td>Morocco</td>
<td>1.3</td>
<td>1.4</td>
<td>0.0</td>
<td>0.0</td>
<td>2.0</td>
<td>1.9</td>
<td>2.0</td>
<td>0.2</td>
</tr>
<tr>
<td>Namibia</td>
<td>0.5</td>
<td>0.4</td>
<td>0.0</td>
<td>0.0</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.1</td>
</tr>
<tr>
<td>Nigeria</td>
<td>0.7</td>
<td>0.8</td>
<td>0.3</td>
<td>0.3</td>
<td>0.1</td>
<td>0.1</td>
<td>0.0</td>
<td>1.3</td>
</tr>
<tr>
<td>Senegal</td>
<td>0.5</td>
<td>0.5</td>
<td>0.0</td>
<td>0.0</td>
<td>0.4</td>
<td>0.4</td>
<td>0.4</td>
<td>0.0</td>
</tr>
<tr>
<td>South Africa</td>
<td>0.4</td>
<td>0.6</td>
<td>0.0</td>
<td>0.0</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
<td>0.4</td>
</tr>
<tr>
<td>CENTRAL AMERICA</td>
<td>2.2</td>
<td>2.2</td>
<td>0.4</td>
<td>0.4</td>
<td>2.8</td>
<td>2.5</td>
<td>2.1</td>
<td>1.8</td>
</tr>
<tr>
<td>Mexico</td>
<td>1.6</td>
<td>1.5</td>
<td>0.2</td>
<td>0.2</td>
<td>1.2</td>
<td>1.0</td>
<td>0.9</td>
<td>0.9</td>
</tr>
<tr>
<td>Panama</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.1</td>
</tr>
<tr>
<td>SOUTH AMERICA</td>
<td>10.3</td>
<td>8.6</td>
<td>2.1</td>
<td>2.4</td>
<td>15.5</td>
<td>13.2</td>
<td>12.9</td>
<td>3.4</td>
</tr>
<tr>
<td>Argentina</td>
<td>0.9</td>
<td>0.8</td>
<td>0.0</td>
<td>0.0</td>
<td>1.6</td>
<td>1.5</td>
<td>1.6</td>
<td>0.2</td>
</tr>
<tr>
<td>Brazil</td>
<td>0.8</td>
<td>0.8</td>
<td>0.5</td>
<td>0.6</td>
<td>0.2</td>
<td>0.2</td>
<td>0.3</td>
<td>1.6</td>
</tr>
<tr>
<td>Chile</td>
<td>1.8</td>
<td>2.2</td>
<td>1.0</td>
<td>1.2</td>
<td>5.9</td>
<td>4.8</td>
<td>4.8</td>
<td>0.4</td>
</tr>
<tr>
<td>Ecuador</td>
<td>0.5</td>
<td>0.7</td>
<td>0.3</td>
<td>0.4</td>
<td>4.3</td>
<td>3.7</td>
<td>3.6</td>
<td>0.1</td>
</tr>
<tr>
<td>Peru</td>
<td>5.9</td>
<td>3.6</td>
<td>0.1</td>
<td>0.1</td>
<td>2.9</td>
<td>2.4</td>
<td>2.1</td>
<td>0.2</td>
</tr>
<tr>
<td>NORTH AMERICA</td>
<td>6.3</td>
<td>6.1</td>
<td>0.6</td>
<td>0.6</td>
<td>11.2</td>
<td>11.1</td>
<td>11.4</td>
<td>23.3</td>
</tr>
<tr>
<td>Canada</td>
<td>0.9</td>
<td>0.9</td>
<td>0.2</td>
<td>0.2</td>
<td>4.5</td>
<td>4.7</td>
<td>4.9</td>
<td>3.0</td>
</tr>
<tr>
<td>United States of America</td>
<td>5.1</td>
<td>5.0</td>
<td>0.4</td>
<td>0.4</td>
<td>6.1</td>
<td>5.9</td>
<td>6.0</td>
<td>20.3</td>
</tr>
<tr>
<td>EUROPE</td>
<td>13.5</td>
<td>13.7</td>
<td>2.8</td>
<td>2.9</td>
<td>51.8</td>
<td>45.5</td>
<td>49.1</td>
<td>60.8</td>
</tr>
<tr>
<td>European Union</td>
<td>5.0</td>
<td>5.5</td>
<td>1.2</td>
<td>1.3</td>
<td>33.5</td>
<td>29.9</td>
<td>32.5</td>
<td>54.1</td>
</tr>
<tr>
<td>of which Extra-EU</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>6.1</td>
<td>5.4</td>
<td>5.5</td>
<td>28.2</td>
</tr>
<tr>
<td>Iceland</td>
<td>1.4</td>
<td>1.1</td>
<td>0.0</td>
<td>0.0</td>
<td>2.1</td>
<td>2.1</td>
<td>1.9</td>
<td>0.1</td>
</tr>
<tr>
<td>Norway</td>
<td>2.1</td>
<td>2.3</td>
<td>1.2</td>
<td>1.3</td>
<td>10.8</td>
<td>9.1</td>
<td>10.4</td>
<td>1.4</td>
</tr>
<tr>
<td>Russia</td>
<td>4.3</td>
<td>4.2</td>
<td>0.2</td>
<td>0.2</td>
<td>3.8</td>
<td>3.1</td>
<td>2.9</td>
<td>3.0</td>
</tr>
<tr>
<td>OCEANIA</td>
<td>1.2</td>
<td>1.3</td>
<td>0.2</td>
<td>0.2</td>
<td>3.1</td>
<td>2.9</td>
<td>2.9</td>
<td>2.8</td>
</tr>
<tr>
<td>Australia</td>
<td>0.2</td>
<td>0.2</td>
<td>0.1</td>
<td>0.1</td>
<td>1.1</td>
<td>1.1</td>
<td>1.0</td>
<td>1.7</td>
</tr>
<tr>
<td>New Zealand</td>
<td>0.4</td>
<td>0.4</td>
<td>0.1</td>
<td>0.1</td>
<td>1.2</td>
<td>1.1</td>
<td>1.2</td>
<td>0.2</td>
</tr>
<tr>
<td>WORLD</td>
<td>92.7</td>
<td>93.4</td>
<td>70.3</td>
<td>73.8</td>
<td>148.3</td>
<td>134.1</td>
<td>140.0</td>
<td>141.3</td>
</tr>
<tr>
<td>World excluding Intra-EU</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>&quot;</td>
<td>120.9</td>
<td>109.5</td>
<td>112.9</td>
<td>115.4</td>
</tr>
<tr>
<td>Developing countries</td>
<td>68.4</td>
<td>68.9</td>
<td>66.1</td>
<td>69.4</td>
<td>80.8</td>
<td>73.2</td>
<td>75.3</td>
<td>38.7</td>
</tr>
<tr>
<td>Developed countries</td>
<td>24.3</td>
<td>24.5</td>
<td>4.2</td>
<td>4.4</td>
<td>67.4</td>
<td>60.8</td>
<td>64.0</td>
<td>102.0</td>
</tr>
<tr>
<td>LIFDCs</td>
<td>11.8</td>
<td>12.1</td>
<td>7.1</td>
<td>7.6</td>
<td>9.1</td>
<td>8.2</td>
<td>8.1</td>
<td>3.3</td>
</tr>
<tr>
<td>LDCs</td>
<td>10.3</td>
<td>10.7</td>
<td>3.2</td>
<td>3.4</td>
<td>2.9</td>
<td>2.9</td>
<td>2.9</td>
<td>1.1</td>
</tr>
<tr>
<td>NFIDCs</td>
<td>20.2</td>
<td>18.5</td>
<td>4.8</td>
<td>5.0</td>
<td>10.8</td>
<td>10.0</td>
<td>9.6</td>
<td>4.0</td>
</tr>
</tbody>
</table>

1 Production and trade data exclude whales, seals, other aquatic mammals and aquatic plants. Trade data include fish meal and fish oil.
2 Including intra-trade. Cyprus is included in Asia as well as in the European Union.
3 For capture fisheries production, the aggregate includes also 22 155 tonnes in 2013 and 7 999 tonnes in 2014 of not identified countries, data not included in any other aggregates. Totals may not match due to rounding.

*photo ©FAO/Giulio Napolitano*