

# Global Animal Protein Outlook **2018**



*Production  
Growth  
Continues...*



*Bringing  
Increased  
Competition*





# Global Outlook



Rabobank

## **Market**

Global production is expanding—  
competition is increasing

## **Production outlook**

Ongoing expansion

Beef joins pork as strong  
contributor to global expansion

## **Seafood**

Aquaculture continues to drive  
seafood supply growth

## **Trade scorecard 2018**

Many looking to increase exports

1

# Market summary

Production is expanding around the world, and increasing competition—between the species and in trade flows—is creating many areas of opportunity in global animal protein



Rabobank

## North America

- Pork and beef lead the production expansion, with poultry also growing
- Domestic consumption will rise, but exports will be in much sharper focus to maintain market balance

## Europe

- Overall production will increase marginally, led by poultry
- Structural imbalance in pork unchanged in 2018
- New export markets and addressing social issues are critical to maintain a market balance

## China

- Pork production expanding in 2018, but at a slower rate than in 2017. Prices will remain under pressure, supporting consumption
- AI remains a major uncertainty for poultry
- Imports for beef and pork are expected to rise

## South-East Asia

- Poultry, pork, and beef production are all slowing down in 2018, as markets seek a sustainable balance
- Import opportunities exist across the region, alongside local expansion

## Australia and New Zealand

- Australian beef and sheepmeat production will bounce back to expansion, although beef may see downward pricing pressure
- New Zealand sheepmeat up, but beef down marginally, with sheepmeat prices expected to remain firm

## Brazil

- Beef leads production growth, but growth expected for all species
- Increasing domestic consumption as conditions improve
- Exports are critically important to support production expansion



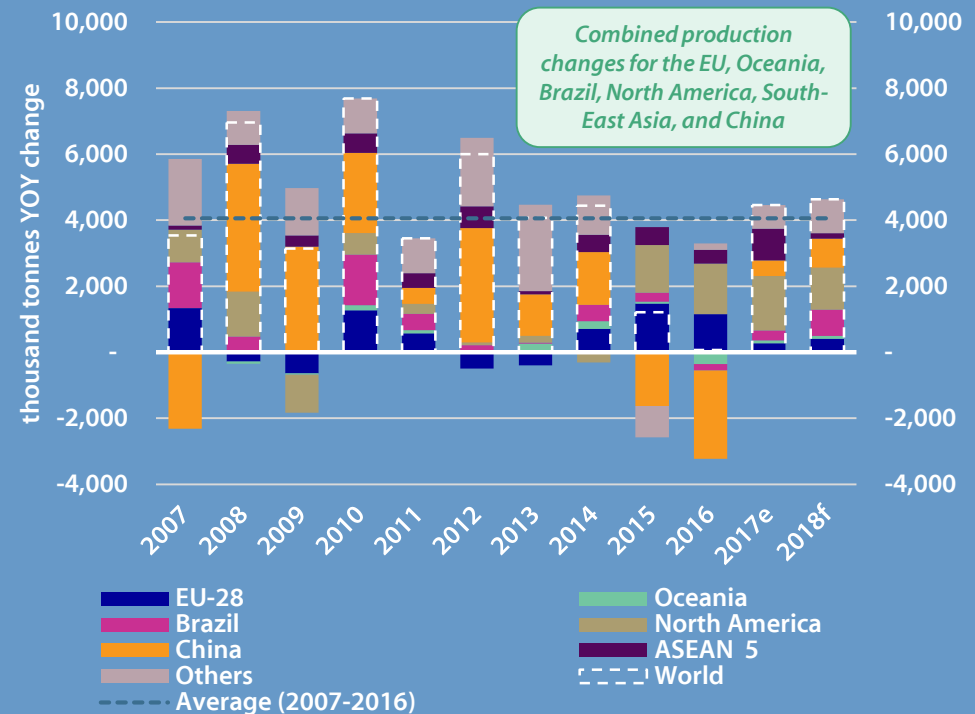


## Production outlook for 2018

### Ongoing expansion

Expectations are for production increases in all regions, with total production growth once again surpassing the ten-year average

*Strong production increase being driven by Brazil, China, and the US*



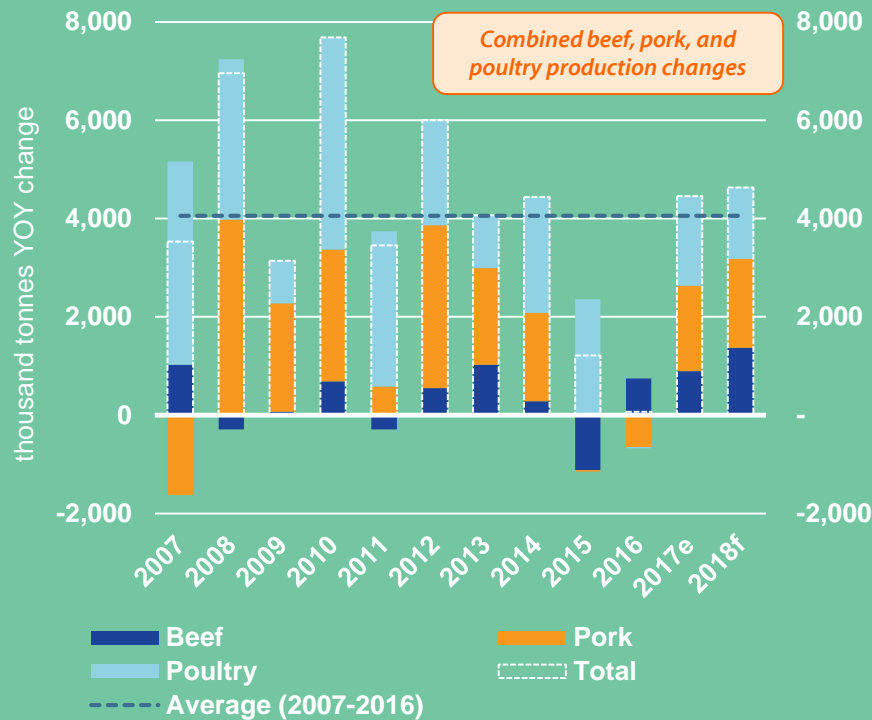
- Expected production increases in North America, Brazil, and China will once again keep global production above the ten-year average in 2018
- In the EU, a small expansion in production is expected, while production in Australia and New Zealand is expected to be unchanged from 2017, and production in South-East Asia is expected to expand only marginally in 2018

Source: USDA, Eurostat, Rabobank 2017



Rabobank

## Beef and pork production are the main drivers of the expanding global balance



- Global beef production is expected to expand for a third consecutive year in 2018
- Global pork production is expected to see another year of significant expansion in 2018, with almost all regions expecting growth
- Global poultry production is also expected to grow, but will be down slightly on 2017

Source: USDA, Eurostat, Rabobank 2017

## Production outlook for 2018

Beef joins pork as a strong contributor to global expansion

Production increases are expected across the species



Rabobank



# Aquaculture continues to drive seafood supply growth

Sustainable growth in the seafood industry solely depends on aquaculture, although we expect the wild catch industry to recover after El Niño recedes in 2017



Rabobank

## ***Aquaculture drives growth of seafood, but is slowing down***

Aquaculture is expected to continue its growth in 2018, albeit at a gradually declining rate. Growth in both 2017 and 2018 is estimated to be in the range of 3% to 4% in volume terms. Despite good growth, persistent risks—such as disease issues, trade policies, and weather problems—continue, especially in Asia, which is the most important producer of farmed seafood.

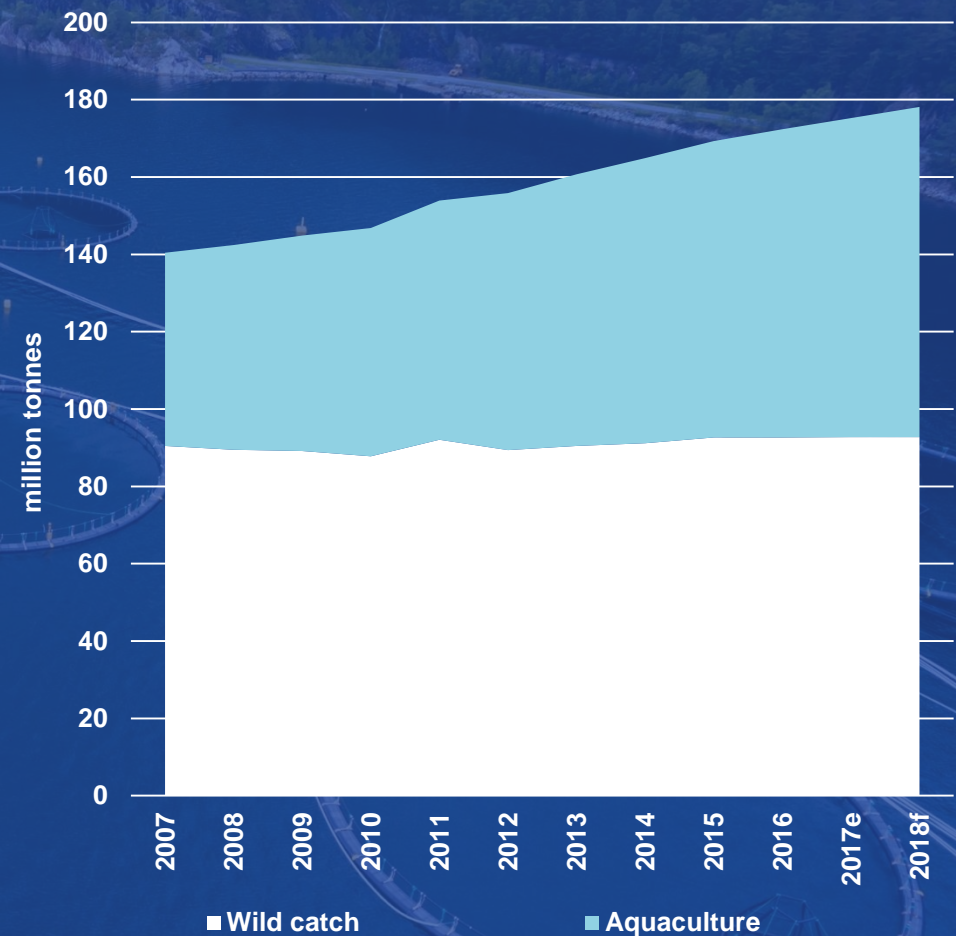
An expected slowing or stagnation of production in China, the largest producer, is more than offset by new growth regions, especially in South-East Asia, Latin America, and Africa. India is an example of a rapidly growing export-oriented aquaculture industry which has been doing very well in 2017.

## ***Wild catch to show a mild recovery as El Niño recedes***

The wild catch sector is fairly stable in global harvest volumes, with increasingly well-managed fisheries. Overall wild catch in 2017 should recover by 1% to 2% and remain at this level of production in 2018.

One of the longest and most severe El Niño periods ever recorded came to an end in 2017. This negatively affected fishing in the period 2014 to 2016 in the Western Pacific—from Patagonia in Chile to California in the US. These fisheries are recovering in 2017, generating a catch a few million tonnes higher than in 2016. This recovery should continue, at least in the first half of 2018. The most significant recovery is in Peruvian anchovy, the world's largest fishery in volume terms, and the main global source of fishmeal and fish oil.

## ***Aquaculture remains the driver of global seafood supply***



Source: Food and Agriculture Organization of the United Nations, Rabobank 2017



# Trade scorecard for 2018: many looking to increase exports

Trade outcomes will reflect growing demand, access issues, and competitiveness dynamics, as availability is not expected to be an issue in 2018

## Increasing exports

- **US** – beef, pork, and poultry
- **Mexico** – beef and pork
- **Brazil** – beef, poultry, and pork
- **Argentina** – beef
- **Australia** – beef
- **Norway** – salmon
- **Chile** – salmon
- **Peru** – fishmeal and fish oil
- **India** – shrimp
- **Thailand** – poultry

## Increasing imports

- **Mexico** – pork
- **China** – pork, beef, salmon, shrimp, fishmeal, and fish oil
- **Indonesia** – poultry and beef
- **Vietnam** – beef and poultry
- **Malaysia** – beef
- **Philippines** – beef, pork, and poultry
- **Thailand** – beef

## FX will influence competitiveness in export markets

	17 Nov	1 month	3 months	6 months	9 months	12 months
EUR-USD	1.18	1.17	1.18	1.20	1.22	1.22
USD-BRL	3.27	3.15	3.20	3.30	3.35	3.40
USD-CAD	1.27	1.28	1.29	1.28	1.28	1.26
USD-MXN	19.0	19.5	20.0	20.0	19.8	19.8
USD-JPY	113	113	114	115	115	116
USD-CNY	6.63	6.60	6.80	6.95	7.25	7.50
AUD-USD	0.75	0.76	0.75	0.74	0.74	0.73
NZD-USD	0.68	0.68	0.67	0.66	0.66	0.65
USD-IDR	13,531	13,450	13,550	13,500	13,600	13,700
EUR-GBP	0.89	0.88	0.89	0.91	0.93	0.95





# Key Animal Protein Markets in 2018

## ***North America***

Production continues to grow

## ***China***

Pork supply will increase, poultry will stay flat

## ***Brazil & Argentina***

Beef supply will increase in 2018

## ***South-East Asia***

Production growth will decelerate

## ***EU***

Exports are key in a challenging market

## ***Australia & New Zealand***

Beef and lamb production will remain steady

## ***Seafood***

Salmon market is recovering

Fishmeal prices will stabilise

Shrimp industry is likely to continue growing

# 2



Rabobank



# North America: production continues to grow

Ongoing production expansion increases the dependence on trade, yet trade outcomes will reflect how the range of opportunities and uncertainties settle during 2018



Rabobank

## US per capita consumption rising, beef leading the growth in 2018

US protein consumption is set to grow, with the expansion of animal numbers in 2018 and attractive prices for the consumer. Total animal protein per capita consumption is expected to increase by 1.3% in 2018.

Beef consumption per capita will lead consumption growth in 2018, with a 2% increase, while chicken consumption will increase at a slower pace than in 2017, rising ~1% in 2018. Pork consumption is expected to grow by 1%, with the majority of the production increase absorbed by export markets.

Mexico continues to see per capita consumption growth, with poultry consumption flat, and beef and pork increasing at ~1.2%. Overall, we expect a total growth of ~1% in these three proteins.

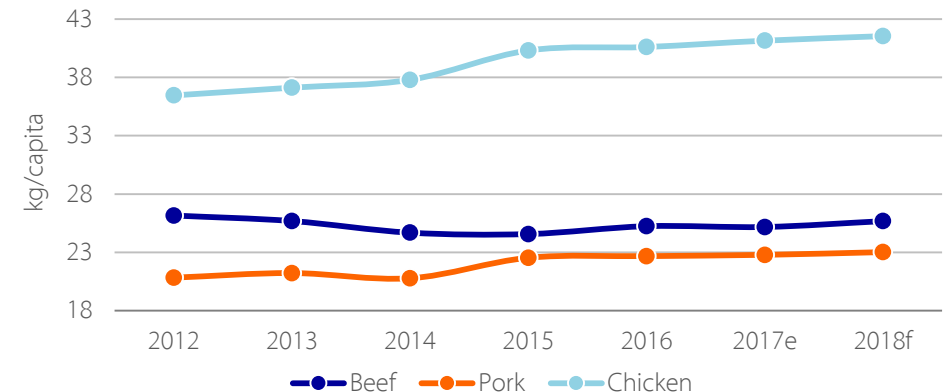
## North America: herd expansion continues, but at a slower pace

Following three years of aggressive growth, US cow herd expansion is expected to slow to near equilibrium in 2018. Beef production is expected to be up (at least) 3% in 2018, largely driven by increased carcass weights.

Over 72% of US beef carcasses are graded choice in 2017, and almost 6% are graded prime, representing a significant improvement over the past decade. Further improvements in grading rates are expected across North America in 2018, supporting beef sales.

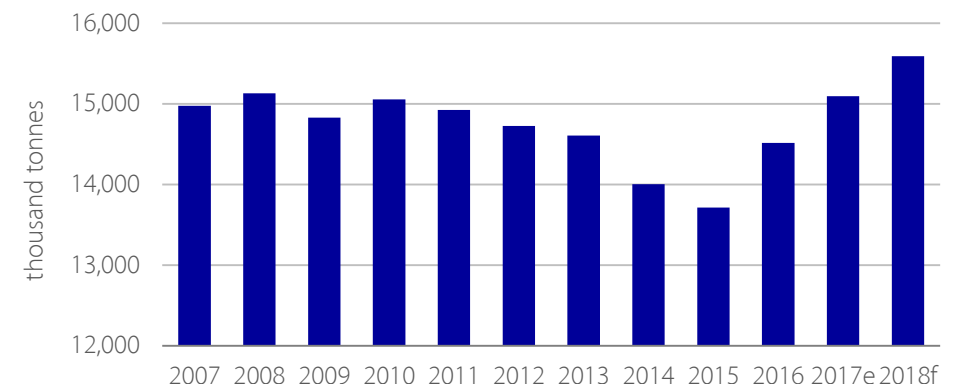
Over 10% of US beef production will be exported in 2017, and exports are expected to continue to grow in 2018. US trade agreements in North America and with South Korea and Japan remain major uncertainties for 2018 exports.

## Per capita consumption in the US to be higher in 2018



Source: USDA, Rabobank 2017

## North American beef production expected to be higher in 2017 and 2018



Source: USDA, Rabobank 2017

# North America: pork and poultry production growth expected

Pork will lead expansion in the US and Mexico in 2018, with poultry just behind. Domestic consumption will also grow, but more exports will be needed

## ***Poultry: productivity challenges moderate growth, boosts profit outlook***

US poultry production will continue to grow in 2018, but will be tempered by ongoing productivity challenges. We expect 1.8% YOY growth in slaughter levels, modestly below historical trends. Meat quality issues are limiting supply as producers reduce bird weights to improve breast meat quality—we expect little to no growth in bird weights in 2018. Constrained production growth should remain supportive to price and broiler profitability.

Domestic poultry demand is expected to show modest growth, driven largely by foodservice sales and favourable pricing relative to other proteins.

Mexican poultry production is expected to expand 2.4% to 2.8% in 2018. Declining poultry imports from the US allow local producers to recover some market share and strengthen production margins.

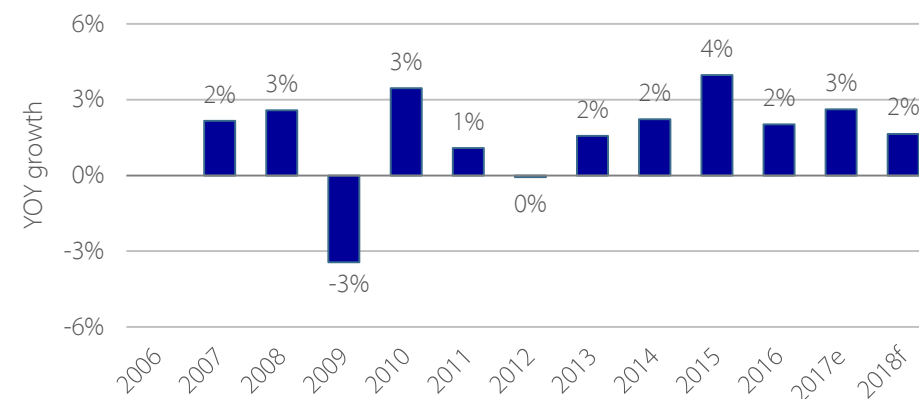
## ***North American pork supply climbing across the board***

North American pork production is in expansion mode. New slaughter capacity remains supportive of US herd growth, and we expect a 3.8% increase in hog production in 2018. Favourable returns in Mexico and larger farms will drive expansion of the Mexican sow herd (+3.2% YOY). With the rebalancing of supply and demand, we expect producers to take margin from packers in 2018.

Demand for US pork will remain strong in both retail and export markets in 2018. US domestic demand will continue to hinge on competing meat supplies, yet good foodservice demand for shoulders and bellies should be supportive to price.

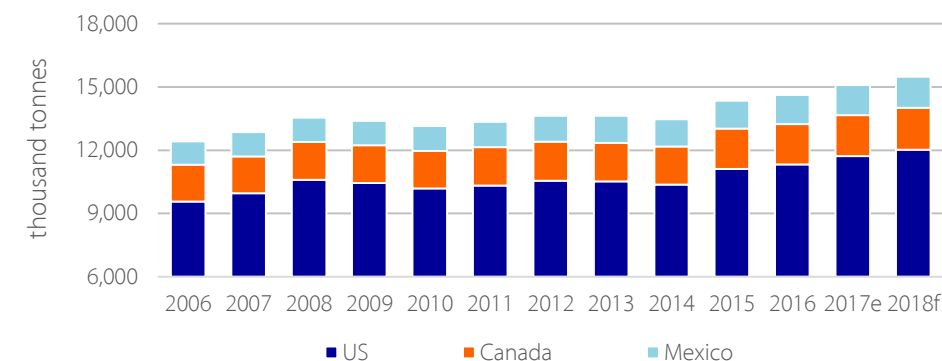
With 30% of US pork entering NAFTA-related markets, the result of ongoing renegotiations will be key to profitability and supply continuity in all three markets in 2018.

## ***North American poultry production slows after a strong 2017***



Source: USDA, Rabobank 2017

## ***North American pork production enters a fifth consecutive year of expansion***



Source: USDA, Rabobank 2017



# Brazil: local demand recovery to support poultry and pork sectors

Poultry and pork production are set to increase by about 2% in 2018

## Brazilian poultry and pork to continue growing

**Domestic market:** Given the improved economic outlook for 2018, Rabobank expects a recovery in Brazilian meat consumption. This additional demand will be more than welcome, as poultry and pork supply in Brazil are expected to increase by 1.7% and 2.4%, respectively, in 2018.

**Feed costs:** Feed prices are expected to remain flat in Q1 2018. However, it is too soon to predict the second corn crop (southern hemisphere winter), which usually has the biggest impact on feed prices. If it disappoints, corn prices could trend upwards in Q2 2018, although current stock levels should limit any rise in corn prices.

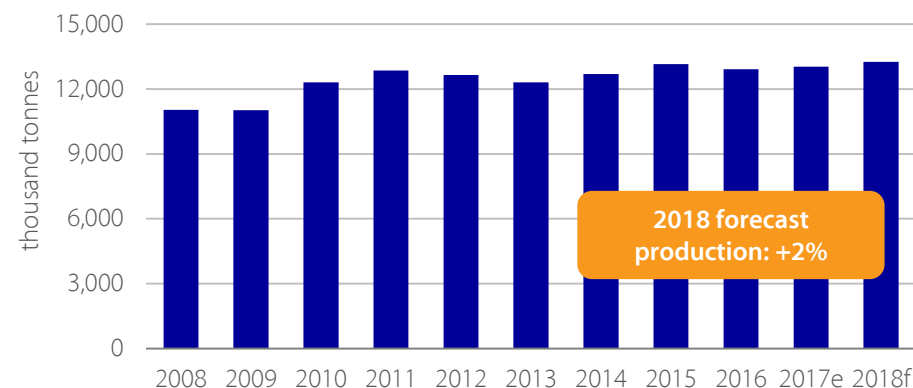
**Brazilian poultry trade:** Brazil is the largest global poultry exporter and has never been affected by a single case of avian influenza (AI). This helps to support the view that the country is well-placed to recover its good reputation in the international market. Therefore, after a challenging 2017, Brazilian poultry exports are expected to increase by 2% in 2018.

Saudi Arabia is likely to continue to be the largest destination for Brazilian poultry, followed by Japan, China, and the EU.

**Brazilian pork trade:** Russia, Hong Kong, and China will continue to be key for Brazilian pork exports in 2018. Additionally, Brazilian pork is expected to increase its presence in other Asian markets—Brazilian pork plants recently gained approval to export to South Korea. This export flow is likely to start in early 2018, after Brazil has met some sanitary protocols.

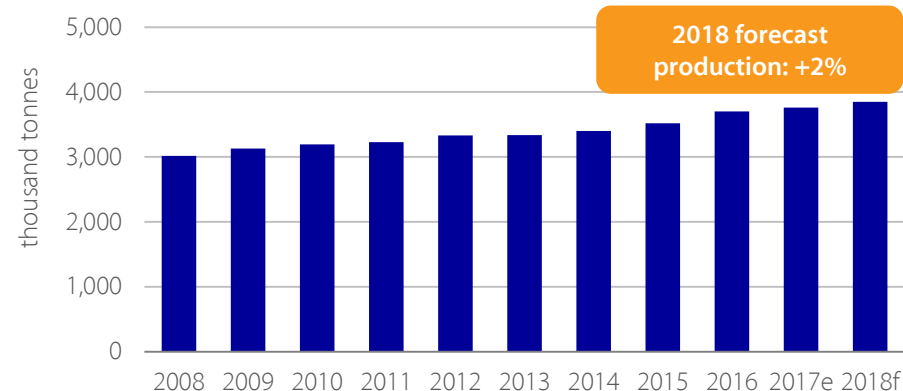
All in all, Brazilian pork exports are expected to increase by around 4% in 2018.

## Brazilian chicken production to increase in 2018



Source: USDA, Rabobank 2017

## Brazilian pork production will continue to increase in 2018



Source: USDA, Rabobank 2017

# Brazil & Argentina: beef supply to increase in 2018

Brazil & Argentina are set to increase beef production by 5% and 4%, respectively

## Brazilian beef sector

After having decreased for two years, Rabobank expects an increase in the Brazilian beef supply in 2017. Beef production is likely to gain further strength during 2018, when it should increase by 5%. Additionally, relatively low feeder cattle prices are expected to benefit feedlots during 2018.

**Trade:** Despite the challenges that the Brazilian beef industry faced in 2017, exports have performed above 2016 levels. For 2018, exports are expected to increase by an additional 5%, which should keep local availability of beef in balance. However, if demand disappoints, prices could be pressured.

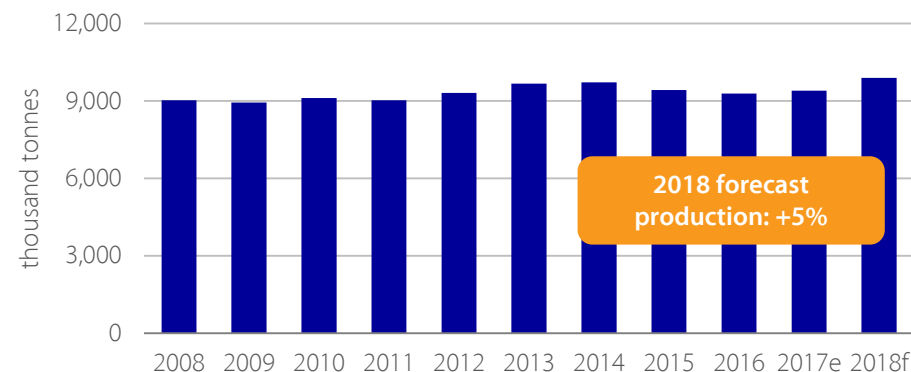
**Domestic market:** After two years in recession, Brazilian GDP finally started growing again in 2017. With improving economic conditions, it is expected to increase by around 2% in 2018, which, in turn, will support a consistent recovery in domestic beef consumption, which declined by around 4kg per capita during the recession.

## Argentine beef sector

Favourable government policies for exports over the past two years have benefited the Argentine beef sector. Consequently, beef cattle producers have been encouraged to increase their herd, which should result in an increase of beef production in 2018 of around 4%, reaching almost 2.9m tonnes.

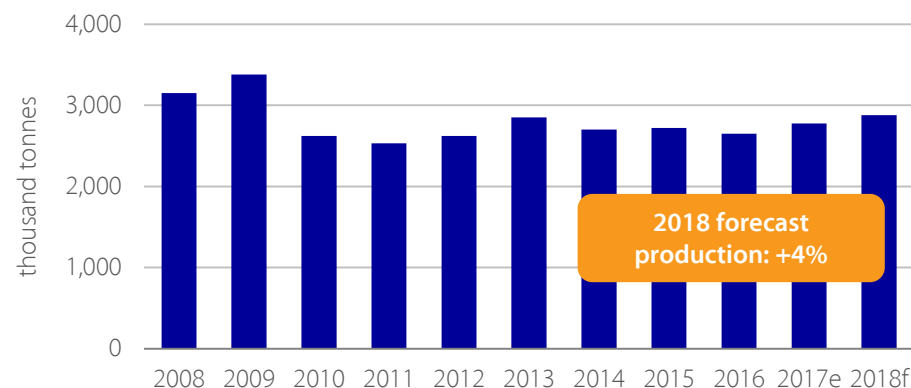
**Trade:** Exports are projected to reach some 380,000 tonnes in 2018, on the back of the positive reputation that Argentina has as a high-quality beef producer.

## Brazilian beef production to increase in 2018



Source: USDA, Rabobank 2017

## Argentine beef production to also increase in 2018



Source: USDA, Rabobank 2017



# EU: exports key in a challenging market

Access to export markets is increasingly important for processors. Social issues remain top of mind for domestic consumers

## Trade remains increasingly important for EU animal protein



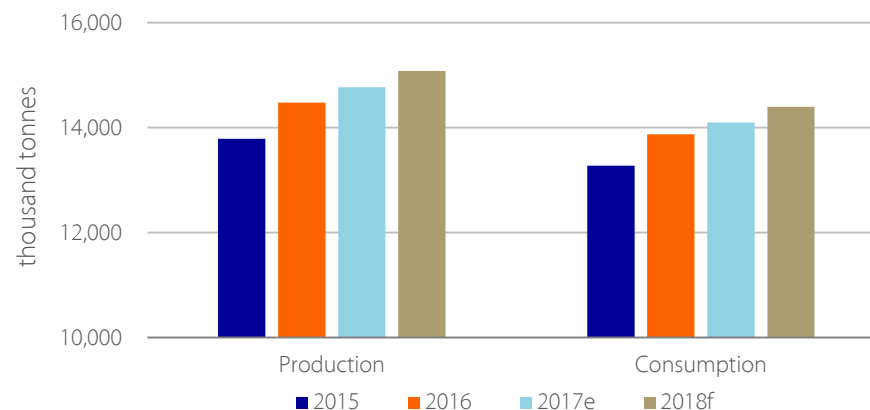
Animal protein consumption in the EU will increase marginally, with production rising at a slightly higher rate, making exports more important. Disease pressures remain a risk to exports.

Pork exports have dipped in 2017, due to a reduced flow to China, although exports to other destinations have grown in 2017—and this is expected to continue in 2018.

Poultry exports have been challenged by AI-related trade bans in 2017, but have been growing into alternative markets—and should continue to do so.

Beef exports have been strong, mainly to the MENA region, and are expected to keep growing in 2018.

## Poultry: ongoing growth despite avian influenza challenge



The EU poultry industry has gone through a few turbulent years, with more than 1,000 cases of AI. Despite this, the industry is still performing well, amid well-balanced supply thanks to ongoing strong demand (+1.6%) and flexibility in export markets (+1.1%).

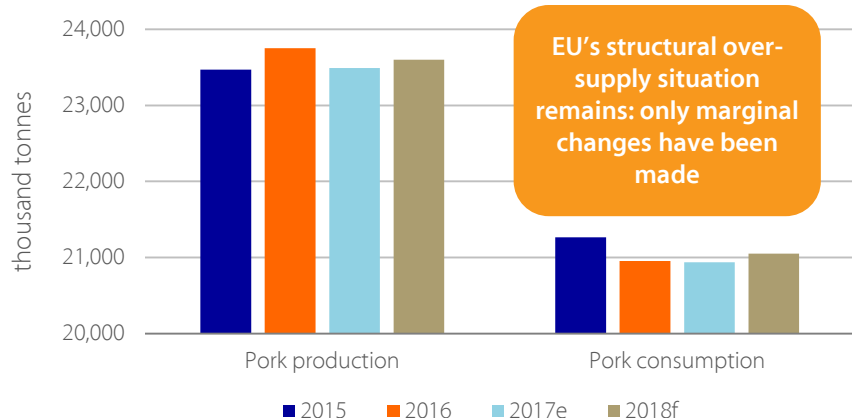
2018 will show ongoing growth in demand (+2.1%) and hopefully some recovery in export markets, depending on the development of AI in winter.

Depending on export developments and especially AI, the industry will keep growing by at least 2% in 2018, supporting further expansion in Eastern Europe, while Western European countries focus on concepts.

# EU: marginal changes in production and consumption

Pork's main challenge ahead is effectively addressing the structural imbalance, while the beef cycle is turning, with lower production ahead

## Pork: structural imbalance remains for EU's pork supply chain

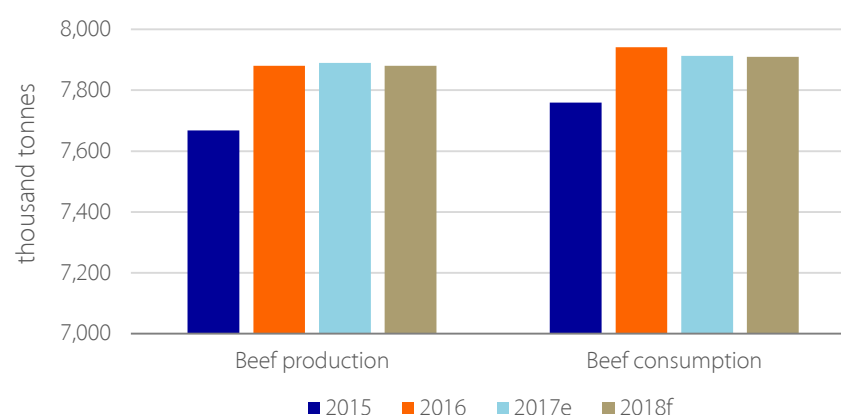


High prices in 1H 2017 caused a consumption slowdown and created momentum for expansion. Total consumption is expected to be down marginally in 2017, despite a 2H correction in prices.

The positive momentum will carry through into 2018, with production expected to grow marginally.

The expected slight improvement in local consumption in 2018 will help, but competing successfully in export markets remains the key issue for the pork supply chain. No market will be more important for EU exporters than China—and, in particular, Europe's competitiveness in this market.

## Beef: production has plateaued, but exports continue growing



Beef production reached the top of the cycle in 2017, after years of expansion driven by adjustments in the dairy industry.

Exports have grown strongly in 2017 and are expected to remain relatively strong in 2018, principally to the MENA region and selected South-East Asian countries.

The resulting slight decline in beef availability has meant consumption has been declining.

Although imports are expected to grow in 2018, this growth is not expected to lift consumption, especially given the increased availability of other animal proteins.



# China: pork supply to increase, albeit at a slower pace

China's pork market is entering a downcycle. Stricter environmental policies will slow production growth in 2018, and pork imports will likely increase from 2017 levels

## Chinese pork prices will likely stay above the low point in the last cycle

Over the past two years, implementation of ever-stricter environmental policy has resulted in the closure of many small to medium-sized farms. At the same time, China's pork production from industrialised farms has increased rapidly due to ongoing investment. The environmental policy creates a high barrier to entry, which will slow down future expansion.

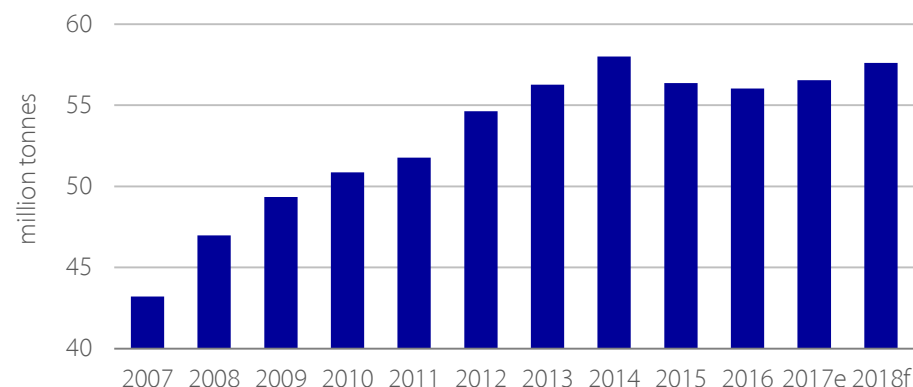
Under these conflicting forces, we expect overall production to increase, but at a slower pace. We forecast growth in 2018 to be less than 1.5% YOY.

With production recovering, the pork market has entered a downcycle in 2017. In 2018, prices are expected to fluctuate above the lowest point of previous downcycles, which was CNY 11/kg in April 2014. Well-managed farms, particularly large industrialised farms, will likely continue to be profitable throughout 2018.

Pork demand is expected to improve in 2018 due to lower prices. However, the volume growth will be modest, given the saturation of pork consumption in large cities. Dining out and ready-to-eat products will grow faster than the average market.

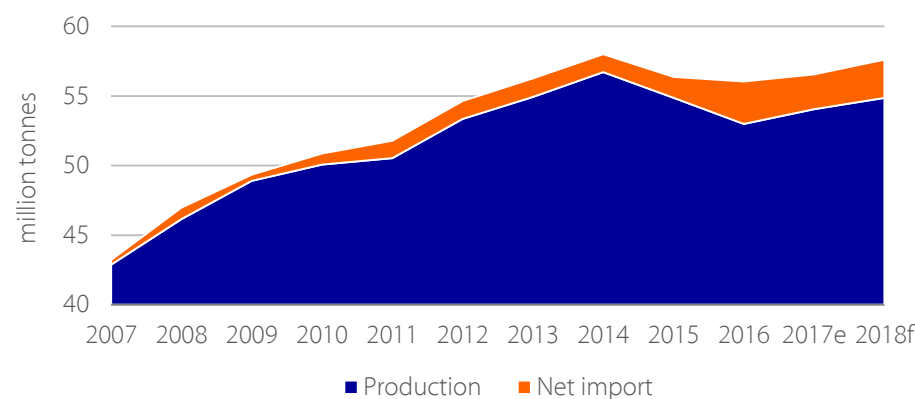
Pork imports will likely increase in 2018, after a significant drop in 2017 from the record levels of 2016. Specifically, the decline in pork production in eastern and southern parts of China, due to environmental policies, will support imports into these regions, as domestic logistics over long distances are not yet competitive due to the lack of cold chains and high transportation costs.

## China's pork production will increase slowly



Source: National Bureau of Statistics of China, Rabobank 2017

## Pork imports will increase slightly from 2017 levels



Source: National Bureau of Statistics of China, China Customs, Rabobank 2017

# China: poultry supply flat, while beef imports grow

Overall poultry supply will be flat, with white bird declining and other species rising. Beef supply will grow steadily, with imports the main driving force

## China's white-feathered bird production will decline further

China white-feathered bird production will likely continue to decline in 2018, due to low breeding stock in 2016 and 2017.

Yellow-feathered bird production may bottom out from the 2017 situation, when it was hit hard by AI. The negative impact of closing live bird markets—which were the major channel for yellow bird before 2017 and were partially responsible for human infection by AI—is slowly fading as consumers are starting to accept chilled meat.

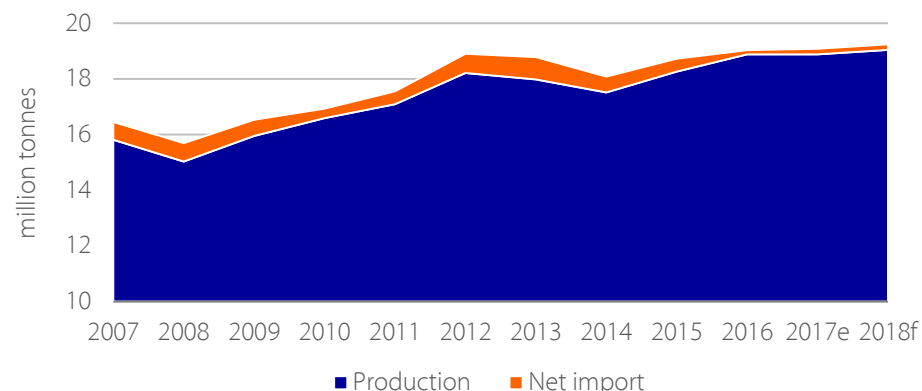
AI will continue to be the major uncertainty for the market in 2018. The disease outbreak showed a new pattern in 2017, with the virus active throughout the year, instead of only in cold months. This suggests disease control will be more challenging in 2018.

## China's beef imports will continue to increase in 2018

China's domestic beef production will likely increase marginally in 2018. Some regional governments, such as Inner Mongolia and Heilongjiang, have launched measures to promote local beef production. But in other regions, beef production will continue to face resource challenges and competition from low-priced beef imports. With domestic supply slowing, beef imports will continue to rise.

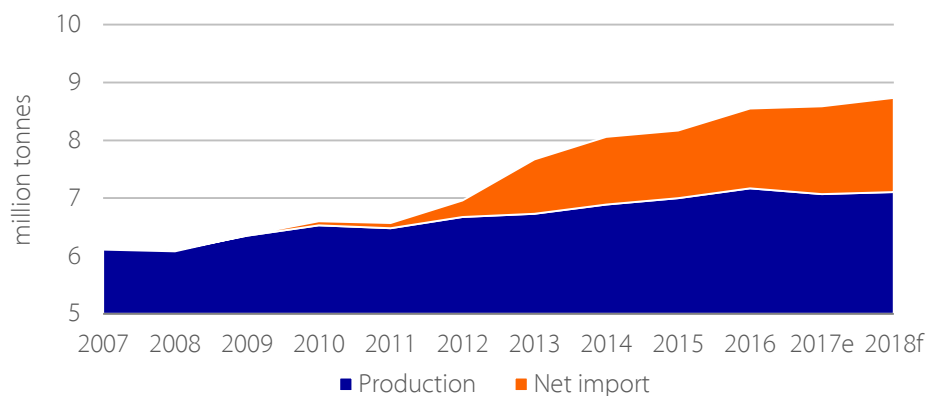
China has added more countries to the list of beef importers. With the return of US beef, competition for China's premium beef market will be more intense in 2018. But, as the major demand for beef import is still commodity-driven, South American countries will continue to benefit due to their competitive prices.

## Poultry supply will recover slightly, with marginal net imports



Source: National Bureau of Statistics of China, China Customs, Rabobank 2017

## Beef imports will increase steadily, as production remains flat



Source: National Bureau of Statistics of China, China Customs, Rabobank 2017



# South-East Asia: production growth to decelerate

Poultry production is tapering off in response to oversupply. Beef demand will continue to be met by imports, with a focus on price

## South-East Asian poultry, beef, and pork production growth slows

Pork, beef, and poultry production growth in ASEAN-5 (Indonesia, Malaysia, the Philippines, Thailand, and Vietnam) is due to decelerate to 1.1% in 2018, to 15.5m tonnes, down from 6.7% in 2017.

The slowdown is mainly attributable to lower broiler output in Indonesia, following day-old chick overproduction, which prompted the culling of 3m parent stock this year. Production curbs were meant to push prices above breakeven cost for most commercial farms and to match demand, which, in 2018, should reach 2.12m tonnes rtc. Indonesian broiler output is forecast to decline by 0.16m tonnes rtc, to 2.11m tonnes rtc, offsetting output growth in other countries.

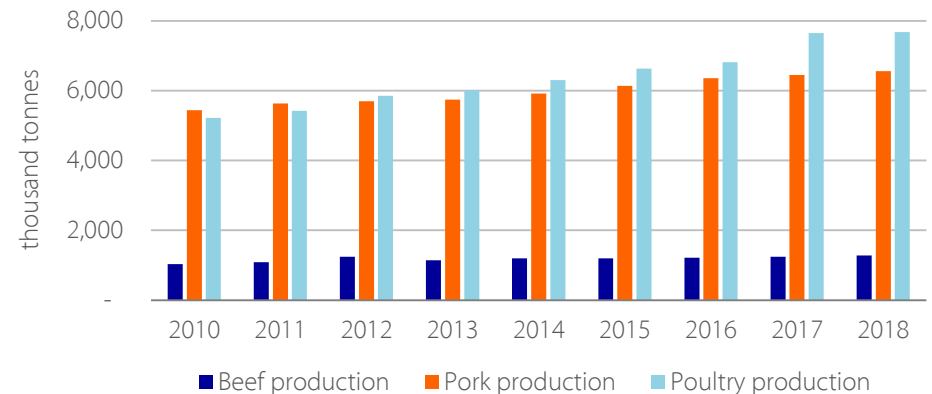
ASEAN-5 pork production is forecast to expand by 1.6%, to 6.6m tonnes cwt. The fastest growth will be in the Philippines (rising 3.2% YOY, to 1.8m tonnes cwt), potentially lowering imports to 84,000 tonnes cwt (-18.7% YOY).

ASEAN-5 beef production is forecast to expand by 2.9%, to 1.3m tonnes cwt. Indonesia is expected to have the fastest growth (+5.6% YOY) on slightly higher slaughter rates, although high Australian cattle prices could limit feeder imports, at around 0.5m head or potentially higher. Boxed beef imports into Indonesia (mostly from Australia) are forecast at 234,000 tonnes cwt (-5% YOY) in 2018.

## Oversupply issues in key markets to ease gradually

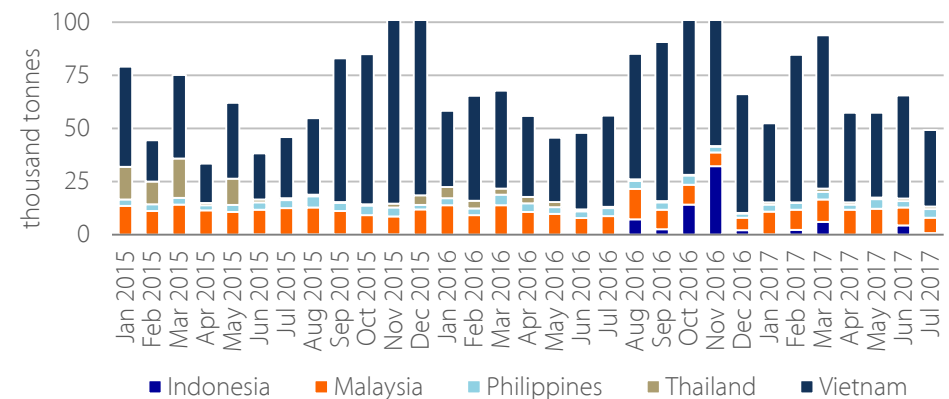
Implied imports of broiler grandparent and parent stock into Indonesia were strong in 1H 2017—risking higher production than forecast if imports are not reduced substantially for the remainder of 2017.

## Poultry drives protein production in ASEAN-5



Source: USDA, OECD-FAO Agricultural Outlook, Rabobank 2017

## Malaysia depends heavily on Indian carabeef imports



Source: APEDA, Rabobank 2017

# South-East Asia: supply risks prevail

Trade issues will take centrestage as pressures to open up markets will increase, while new regulation to remove feed antibiotics increases risk of supply disruptions

## Oversupply issues in key markets to ease gradually (continued)

In Vietnam, hog oversupply may spill over into 2018 amid lacklustre demand—not only domestically, but also in neighbouring countries, including China and Cambodia. Slow reduction in the sow population and small hog farm closures are expected to continue, which will reduce supply pressures.

On the other hand, strong export demand boosted demand and prices for day-old chicks in Thailand, partially offsetting tailwinds from lower feed costs. Thai poultry export volume is expected to grow by 4% in 2018.

## Trade issues to be centre stage

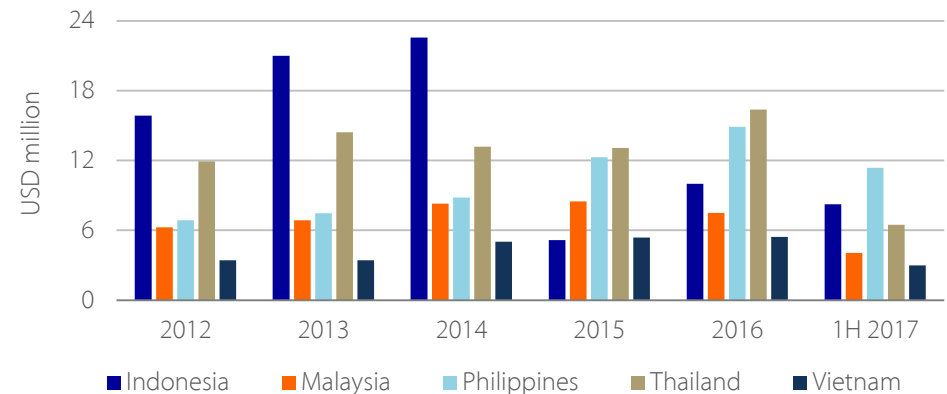
Discussions of opening Thailand's pork market were left out of the recent summit with the US. But if trade tensions with Mexico were to escalate, US pork/poultry exports would need to find new destinations, and South-East Asia could become a focus area.

In October/November 2017, Indonesia lost the WTO case brought by Brazil on imports of chicken meat/products, as well as its appeals in WTO cases brought by New Zealand and the US on imports of horticultural products, animals, and animal products. Similar to the situation in South Africa, we believe negotiations towards import quotas may be pursued.

## Removal of AGP is an added supply risk

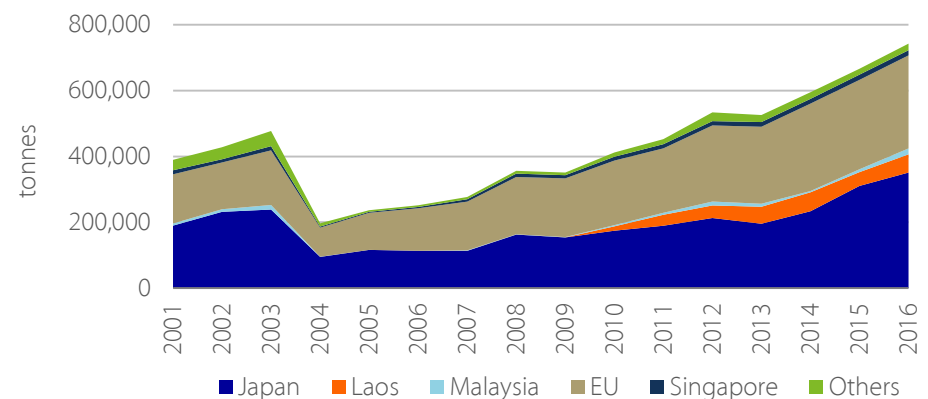
Antimicrobial growth promoter (AGP) is due to be removed from animal feed in Indonesia and Vietnam in 2018. In Indonesia, the ban applies to all feed, but in Vietnam, it does not apply to starter feed or to disease treatment, which will come into effect in 2021. AGP removal will likely cause higher mortality rates in open-house broiler farms. In Indonesia, each percentage increase is estimated to lower nationwide production by 22,000 tonnes etc to 29,000 tonnes etc.

## Grandparent and parent stock imports have recovered in Indonesia



Source: UN Comtrade, Rabobank 2017

## Thai poultry exports by destination: 79% go to Japan and the EU



Source: UN Comtrade, Rabobank 2017



# Australia: beef rebuilding continues, lamb production steady

Improved seasonal conditions support local producer demand for cattle amid softer export markets. Domestic lamb prices will be challenged by falling prices of other proteins



Rabobank

## Beef continuing to rebuild

With a return to more favourable seasonal conditions, beef production in 2018 is expected to see the first YOY increase since the high cattle slaughter in 2014. The forecast 3% growth will push total production back up near the longer-term average of around 2.1m tonnes cwt.

Slaughter numbers are expected to be slightly below the long-term average. This reflects the lower cattle inventory of 27.5m head and heavier average carcass weights (close to 300kg), following improved seasonal conditions and increased numbers of cattle on feed.

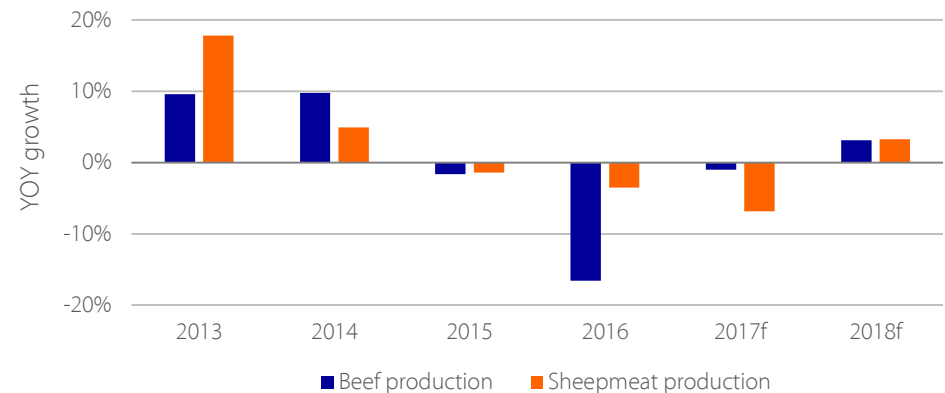
The large volumes of beef in the global market will put downward pressure on Australian prices. This will be countered by limited supplies of young cattle for rebuilding. Prices have declined from their record highs of late 2016—and notwithstanding a sudden deterioration in the season, prices are expected to ease slightly from current levels, as cattle numbers increase.

## Lamb market fundamentals strong

Lamb production in 2018 is expected to be similar to 2017, at an estimated 495,000 tonnes cwt. Mutton production is expected to increase by about 14%, after 2017 saw lower slaughter numbers, given a reduced flock and improved seasonal conditions. Improved wool prices also support retention. Overall sheepmeat production is expected to increase 3%.

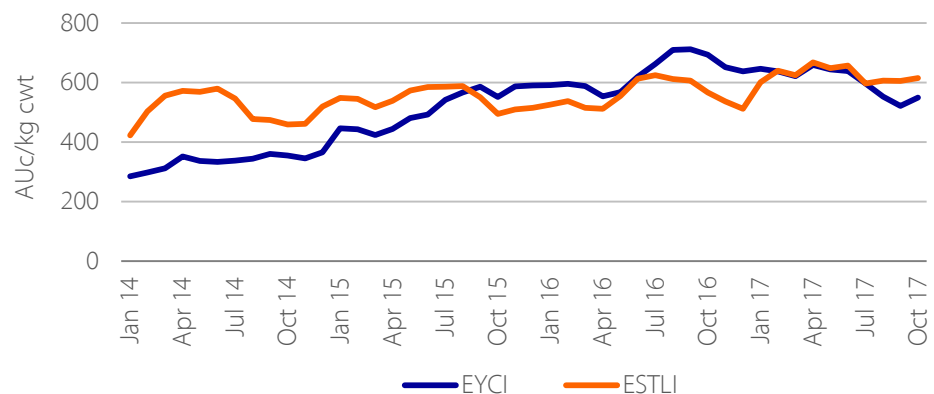
Lamb and sheep prices have been strong through 2017 and are expected to remain strong through 2018. However, they will be challenged domestically by falls in other protein prices. Demand from export markets is expected to remain strong, given the lower New Zealand production.

## Beef and sheep production back in positive territory



Source: Meat & Livestock Australia, Rabobank 2017

## Lamb prices firm, cattle prices to ease



Source: Meat & Livestock Australia, Rabobank 2017

# New Zealand: beef and sheepmeat production to remain steady

Beef exporters reliant on continued demand growth in key export markets to counter headwinds.  
Global shortage in export lamb supply expected to support strong market returns

## Beef production to stabilise

New Zealand's 2018 cattle slaughter is expected to be similar to 2017 levels, following two years of declining slaughter numbers. Overall production is forecast to decrease slightly (-0.9%), to 592,000 tonnes, due to lighter carcass weights (resulting from increased cow numbers in the total kill).

Domestic prices are likely to come under downward pressure as rising global beef production increases competition through 2018. Japan's temporary 50% tariff duty on frozen beef imports—effectively closing this lucrative market to New Zealand exporters—will also pose a challenge early in 2018. However, provided consumer demand remains positive in New Zealand's key export markets of the US and China, cattle prices are expected to remain firm and sit above long-term average returns.

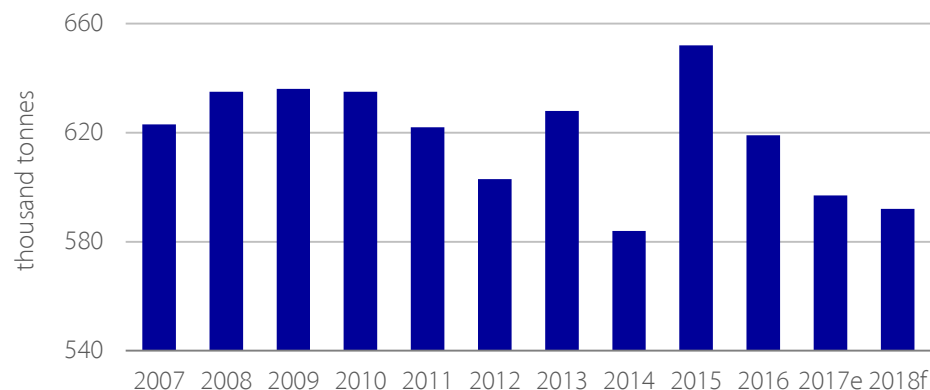
## Positive market outlook for sheepmeat

While the rate of decline of New Zealand's sheep flock has levelled, flock numbers are still forecast to be down (-1%) in 2018. However, favourable breeding and lambing conditions during 2017 are expected to marginally increase the supply of New Zealand lambs onto the global market in 2018.

Low levels of global lamb inventory are expected to support strong market prices into 2018. The challenge for lamb exporters will be maintaining the current level of consumer demand, at near-record prices, in the face of less-expensive animal protein alternatives.

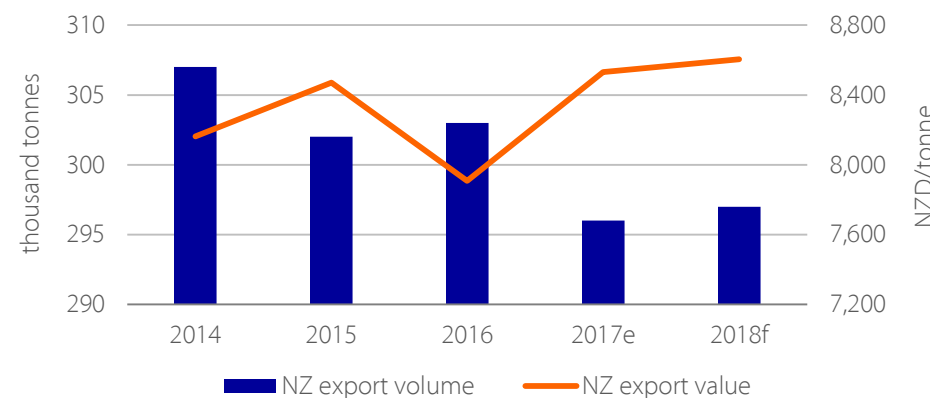
Mutton prices are also expected to continue their strong performance, with particularly high demand out of China and a forecast reduction (-9%) in New Zealand's mutton export volumes as the national flock stabilises.

## NZ beef production forecast to stabilise after consecutive declines



Source: Beef + Lamb New Zealand, New Zealand Meat Board, Rabobank 2017

## Restricted NZ lamb supply driving higher export returns



Source: Beef + Lamb New Zealand, Statistics New Zealand, Rabobank 2017



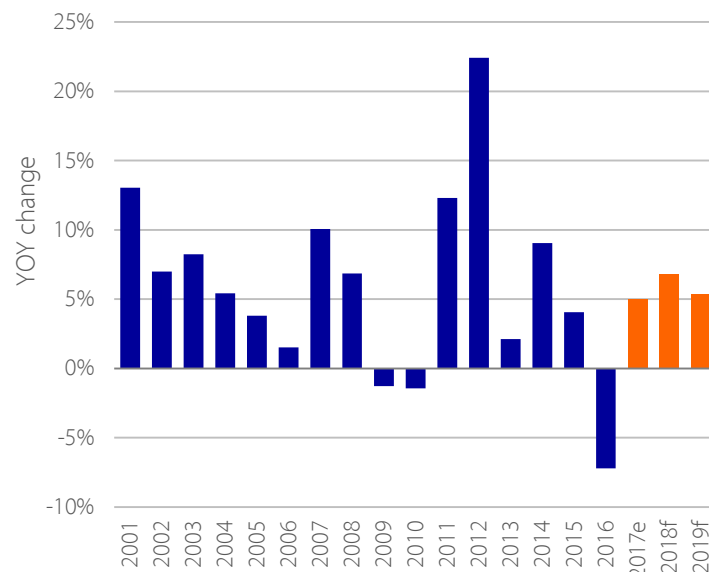
# The salmon market is in recovery mode

After a record contraction in 2016, major producers Norway and Chile recovered strongly in 2017, but this growth will not persist beyond 2018



Rabobank

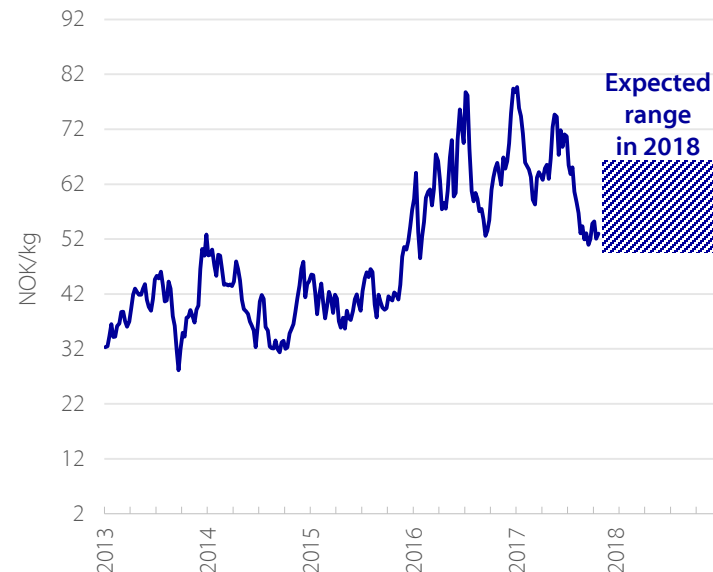
## Global supply of Atlantic salmon to continue recovery in 2018



In 2017, both Chile and Norway experienced a reversal of fortunes, with growth resuming after a record contraction due to an algae bloom in Chile and lice resistance in 2016. We expect supply growth of about 5% in 2017, with slightly higher growth projected for 2018.

The last quarter of 2017 and the first half of 2018 are expected to see strong supply growth, but this will not persist. Some months could reach double-digit growth. However, legislative constraints (especially in Chile) will cause supply to drop below long-term demand before the end of 2018.

## Salmon prices temporarily contracting after record highs



The first half of 2017 saw new record salmon prices globally (breaching the NOK 70/kg mark for a second and third time), but by the end of summer, prices were back below 2016 levels. The peak of the cycle has now passed. We expect somewhat lower prices for 2018. Nevertheless, we are still in a long-term supply-constrained environment with good demand globally.

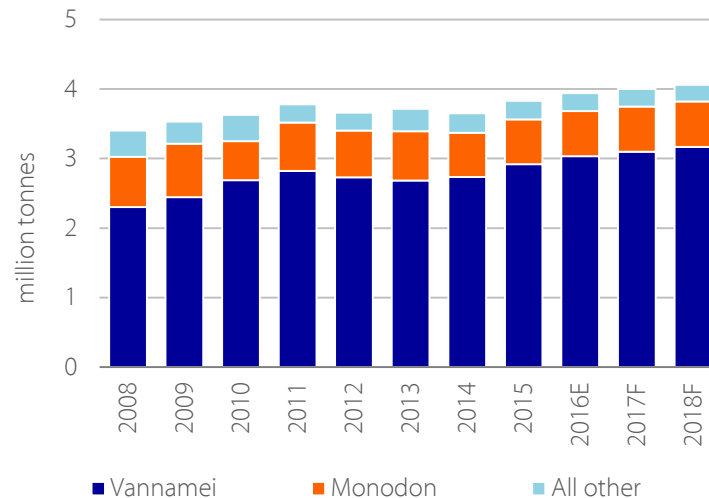
We do not expect prices to fall to historical averages. If there is a price correction, it will probably occur in late summer 2018 and be short-lived. We expect salmon prices to be in the range of NOK 50/kg to NOK 65/kg in 2018, and to remain as volatile and unpredictable as they have been in recent years.

# The shrimp industry is likely to continue growing

We expect the gradual growth of 2017 to persist, as a number of regions, such as India and Ecuador, continue expanding supply, provided EMS and EHP pressures remain under control



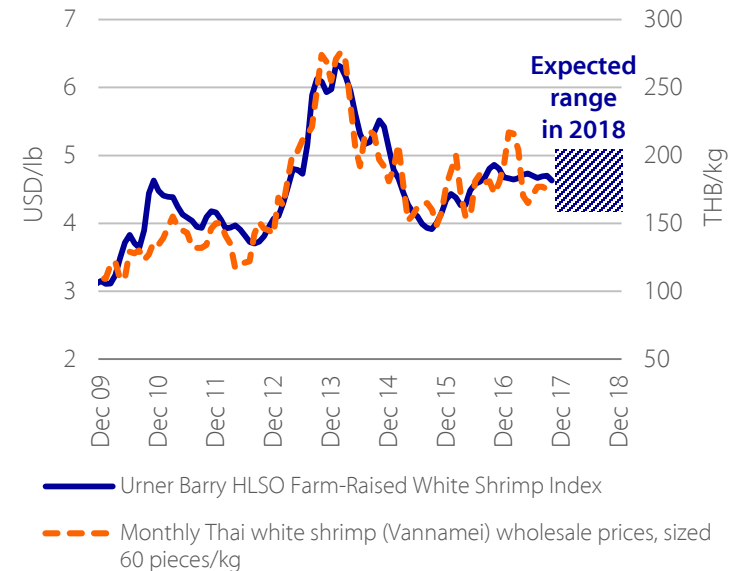
## Supply of marine shrimp continues to improve after EMS in 2014



The shrimp industry resumed moderate growth in 2017, with India and Ecuador being the main drivers. China and Thailand did not show the recovery expected during 2017, with EHP in these countries now emerging as an equal, or even greater, threat than EMS.

We expect the good momentum in supply growth to continue in India and Ecuador in 2018, with some hopes that Indonesia could join these countries as a significant growth driver.

## Shrimp prices to experience relative stability in 2018



Supply growth in 2017 was matched with demand growth, resulting in fairly stable prices at a level only slightly higher than the long-term average.

This comes at a time when a number of high-end seafood and meat products have reached—or are close to reaching—historical highs. We believe this to be demand-creating for the shrimp industry, and at current price levels, we expect good demand for shrimp in 2018. If some of the bullish supply expectations materialise, 2018 will be a good year for the sector, with firm prices but no excessive price volatility.



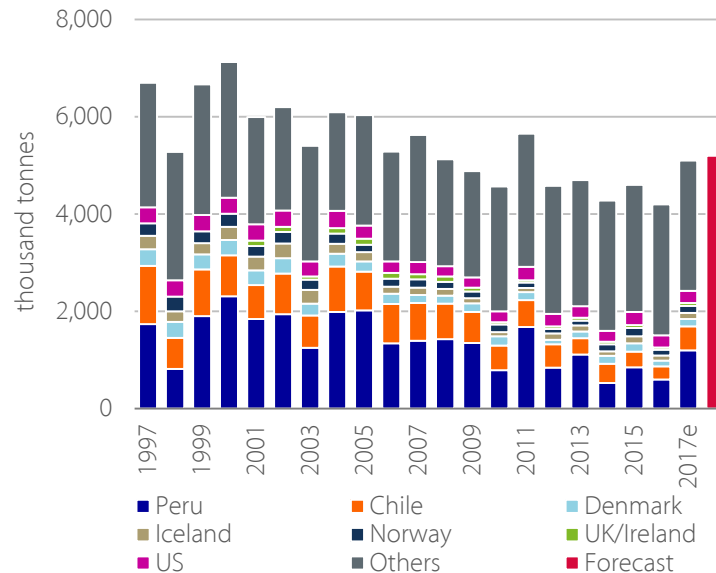


# Fishmeal prices set to stabilise as supply improves

The lack of El Niño and improving wild biomass have halted the long-term supply decline



## Fishmeal supply has been on an increasing trend since 2017

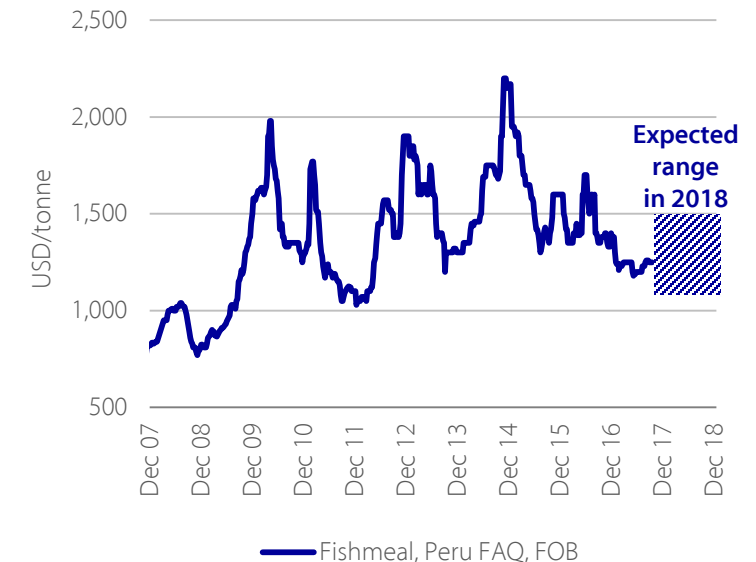


Fishmeal production was historically low in 2014, 2015, and 2016—however, in 2017, supply normalised. Rabobank expects a similar level of fishmeal production in 2018.

Total allowable catch (TAC) for the first anchovy fishing season of 2017 in Peru was set at 2.8m tonnes, and 1.5m tonnes for the second season, which was below expectations.

Although there is always volatility, we do not expect a return to the low production levels of 2014 to 2016, and we expect the current quotas to be reasonably good for the industry.

## Fishmeal prices are assumed to have reached a relative low point in 2017



The supply recovery in late 2016 has limited the historical price growth trend. In 2018, fishmeal prices are likely to fluctuate between USD 1,100/tonne and USD 1,500/tonne (FOB Peru 64% protein).

Larger TACs and higher catch rates in Peru could cause further price weakness, although the recent two seasons were close to the maximum possible in the current fishery management system. Also, fishmeal imports to China grew significantly in 2017, and, despite the supply increase, no fishmeal was left unsold at the end of the season. We consider the current price level to be demand-creating for fishmeal.

# What's on the grill?

The issues we expect to be talking about most in 2018

*Consolidation*

*Trade*

*Evolving retail  
landscape*

*Alternative  
proteins*

*Technology*

3



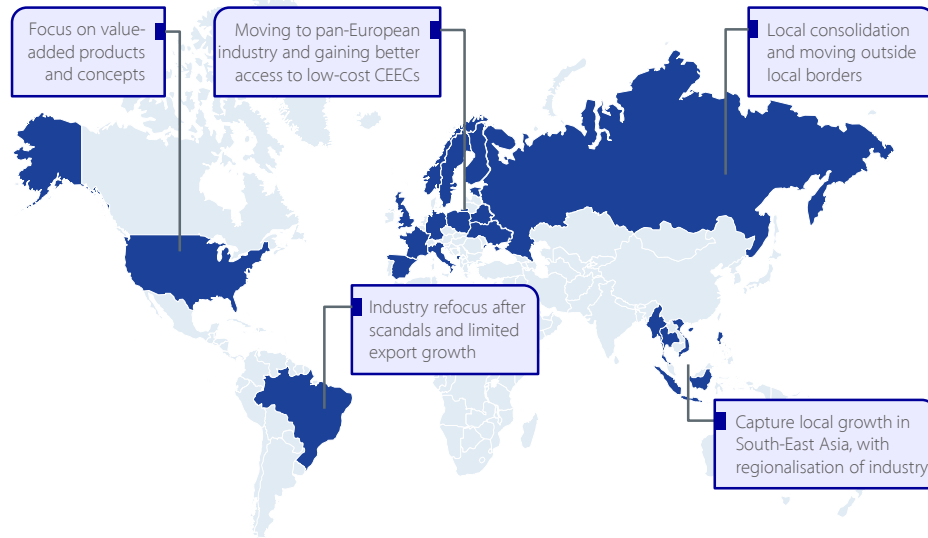
# Consolidation to continue, driven by increased competition

The nature of consolidation will vary between regions and species, and given reasonable profitability and high valuations, the pace is likely to ease in 2018



Rabobank

## Ongoing consolidation in the global poultry industry



### Industry's fast move to a more global basis will continue in 2018

The poultry industry is changing—from a very nationally organised industry to a more regional and global industry.

This is especially the case in South-East Asia and Europe, where the poultry industry is consolidating and moving into fast-growing regions such as Eastern Europe, the Philippines, Indonesia, Vietnam, and Myanmar, which is also attracting global investors.

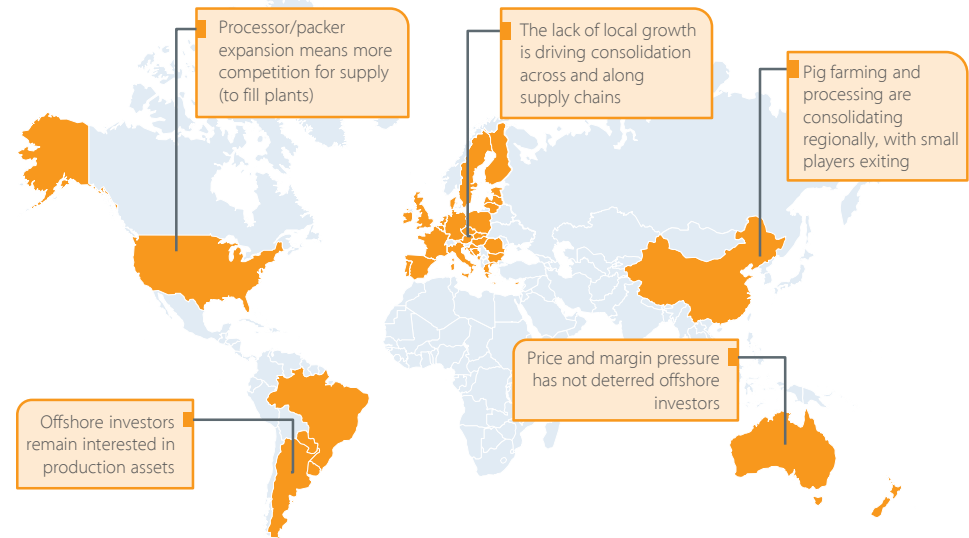
The US industry is currently developing its position as a value-added food industry via selective investments in added-value concepts.

Brazilian poultry has been constrained by domestic challenges, and limited local and export growth.

Russia and Ukraine are moving to a more locally consolidated industry and also increasing their global footprint via selective international investments.

Source: Rabobank 2017

## Steady pace of consolidation in the red meat industry



### Consolidation opportunities are in three main areas

The beef industry has been expanding steadily, with growth in exports one of the main drivers in traditional production regions. Importing countries have been looking to invest upstream in beef supply, and we expect this trend to continue in 2018. Some exporters are looking for regional diversification of production—to ensure supply is not interrupted and to capitalise on different regional advantages.

In Europe, domestic consumption remains relatively flat, although production is expanding. This imbalance is creating consolidation opportunities horizontally, to build market share, and along supply chains, to capture more margin share.

China's pork sector is being transformed, with smaller players exiting in the south and east, and larger players growing in the north. Consolidation opportunities may arise if new investments do not run smoothly.

# Global meat trade to drive pricing in local markets in 2018

Expanding production in most regions means exports become (even) more important in 2018. We expect competition in key importing markets—and in particular China—to intensify

## *The Chinese market will continue to be key*

Due to China's rising imports in recent years, many exporters are turning to the country to grow trade business.

While we expect China to import more meat in 2018, uncertainty over domestic policy suggests the trade volume could be volatile. Technical trade barriers will continue to heavily impact trade flow. For example, China's anti-dumping investigation into Brazilian poultry imports and ongoing ban on poultry products from the US and EU adds a lot of uncertainty to global poultry trade in 2018.

## *Increased exports from Brazil and the US*

US meat exports need to rise, as beef, pork, and poultry will continue to expand through 2018. Total exports are expected to grow by 194,000 tonnes YOY, up 2.8%. Exports to China, Mexico, and Japan will be most important—and also most challenging, given geopolitical tensions and potential changes to trade policy, which could constrain US exports.

After facing some challenges during 2017, Brazil is likely to increase beef (5%), poultry (2%), and pork (4%) exports in 2018. This trend will be supported by increased supply and access to new markets (e.g. South Korea for pork).

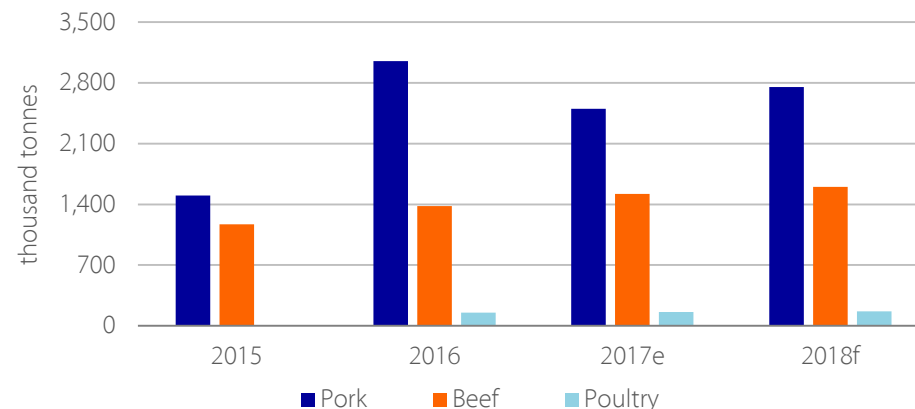
## *Seafood trade remains high, but volatile*

Global seafood trade is estimated to be USD 140bn/year (60m tonnes in live weight), but has seen considerable variation in recent years.

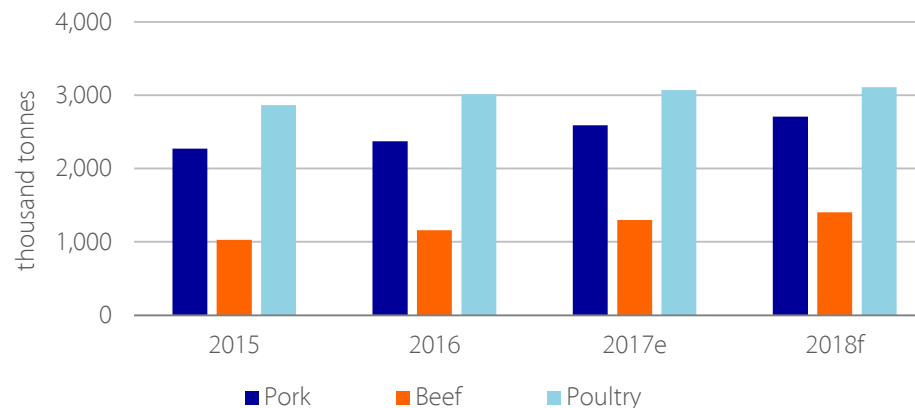
The growth of aquaculture is the primary driver of seafood trade in the long term.

Rising domestic demand in key exporting countries, such as China, will start to shift trade patterns in 2018. In some species, such as shrimp, China has now become a net importer, just a few years after being a leading exporter.

## *China's net imports are set to rise across the species in 2018*



## *US exports have risen since 2015, to reach record levels*





# The evolving food retail landscape brings opportunities and threats

More channels, more product options, and more velocity. Animal protein supply chains that keep up with the changes in retail will see new opportunities for value and volume growth.

## More velocity: the Amazon/Whole Foods deal typifies the changes

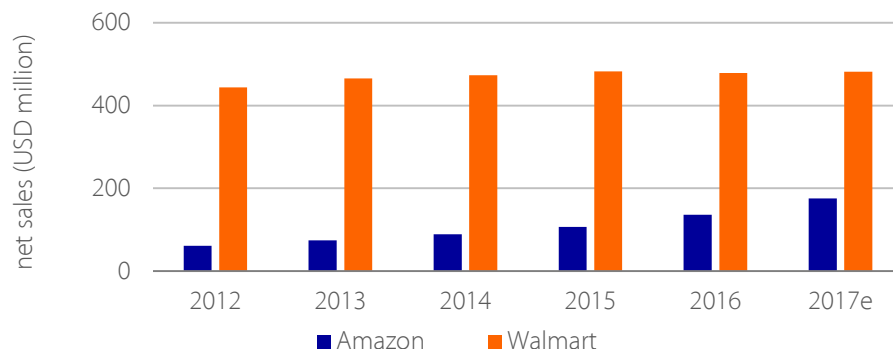
The Amazon/Whole Foods deal is a great example of the changes that are reshaping food retail. This deal—and similar changes that are blurring retail channels in other markets—is likely to result in two main areas of opportunity (and threat) to animal protein:

- A new product development accelerator. The online world is an ideal testing ground for new products: They are faster to succeed and faster to fail. With many animal protein companies increasing their investments in product innovation, this is welcome.
- Supply chain (cost) management par excellence. Costs will go down through better inventory planning, higher volumes, more automation, and improved end-to-end supply chain visibility. The leaders in this process may capture more margin.

Food retailers who are harnessing these opportunities stand to gain ground. Other changes in retail are also bringing opportunities and threats to animal protein, including:

- Blockchain technology, to track products along supply chains, which is being trialled across the species and across regions.
- Rejuvenating traditional food retail. Some retailers are turning themselves into 'lifestyle spaces' to attract shoppers who also have time to enjoy a snack, meal, and drink.

## Amazon, an online king, has outpaced Walmart's growth



Source: Amazon, Walmart, Euromonitor, iResearch, Rabobank 2017

## Premium product growth: opportunities in online fresh food in China

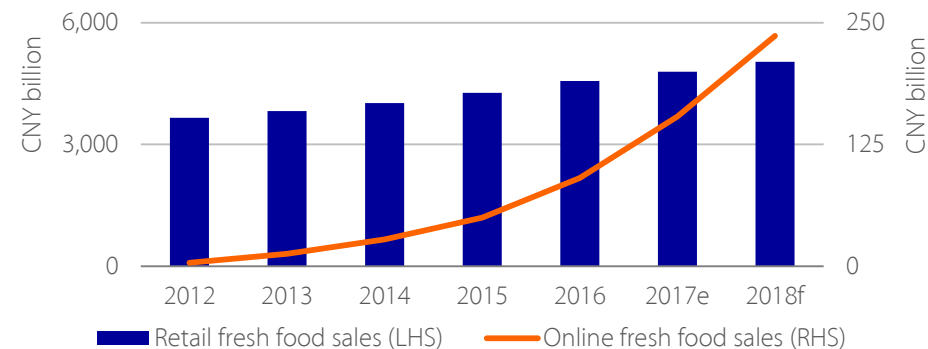
Online fresh food sales in China are accelerating. This category includes animal protein, dairy, and fresh produce, with animal protein the highest contributor in terms of value.

Products at all price points are being sold online in China, and this platform provides a particular opportunity to reach consumers who are willing and able to pay for imported products, due to food safety concerns, product quality attributes, and brands.

Australian beef and seafood have been among the early leaders in marketing premium products to Chinese consumers via online platforms, but many others are now involved, including North American and European animal protein companies.

We expect the online channel to continue its rapid growth in China and for sales of animal protein to be a major beneficiary of this growth. This growth will challenge the cold chain logistics systems of the online platforms—but thus far, they have been keeping pace with the growth in sales.

## Online fresh food sales in China are accelerating



# Alternative proteins will grow further

Drivers of growth are growing consumer interest in alternative proteins as food, changes in legislation regarding alternative proteins in animal feed, and general interest in innovation



Rabobank

## Alternative proteins have broken out of the niche of vegetarian products

Alternative proteins have captured the attention of flexitarians, along with the interest of sustainability and animal welfare-minded consumers, the curious, and investors.

Plant-based meat substitutes will remain dominant in the market, while emerging alternatives such as insect- or algae-based and lab-grown meat products, still need to gain consumers' trust and generate structural demand.

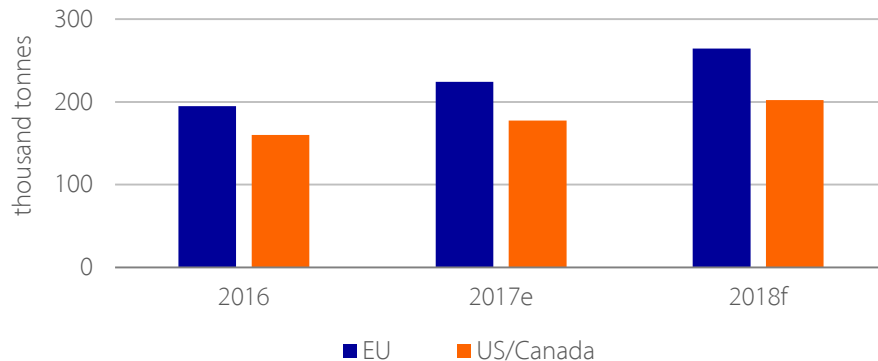
Emerging alternatives are gaining regulatory approvals, which will support growth. The greater use of alternative proteins as food ingredients also supports category growth.

## Alternative proteins are 'stealing' growth in Europe

The current market for alternative protein products is biggest in Europe, followed by North America. However, it is still much smaller than the total animal protein market.

It is not the total market size, but the high growth rates that alternative protein products are witnessing that commands so much attention.

## The EU and North America dominate the market for alternative protein products and food ingredients for human consumption



Source: Rabobank 2017

## High prices and an unstable supply of fishmeal and fish oil have driven interest in alternative proteins as feed ingredients

Plant-based proteins, fish trimmings, PAPs, and animal by-products have all been widely used as alternatives to fishmeal in aquatic feed. Currently unconventional ingredients are attracting more attention.

Bacterial and insect-based proteins show the highest potential as alternatives to fishmeal, while algal oil is considered a potential alternative to fish oil.

We expect 20% to 30% of the non-vegetable source oil used in aquatic feeds to come from algae sources in the long term.

A major project producing significant volumes of bacterial protein meals will start production in 2018.

At the same time, we expect insect-based proteins, such as black soldier flies and mealworms, to step up growth in 2018, supported by recent regulatory changes in the EU.





### *Changing how animal protein is being farmed*

- Aquaculture: Genomic selection tools are used to improve breeding and vaccine development, and to reduce use of antibiotics. Technology is helping to perfect recirculating aquaculture systems to allow land-based aquaculture, connecting production with markets. Offshore aquaculture systems are being developed to utilise the vast oceans.
- Livestock: Digitised farming systems, which collect and interpret big data, are increasingly adopted on-farm, with tools such as electronic identification of stock improving productivity, and nutrition supplements reducing antibiotics use. Technologies used in retailing are improving the ability to trace and reward quality and provenance on-farm.

*Technology also offers the potential for significant gains to be realised post-farm*

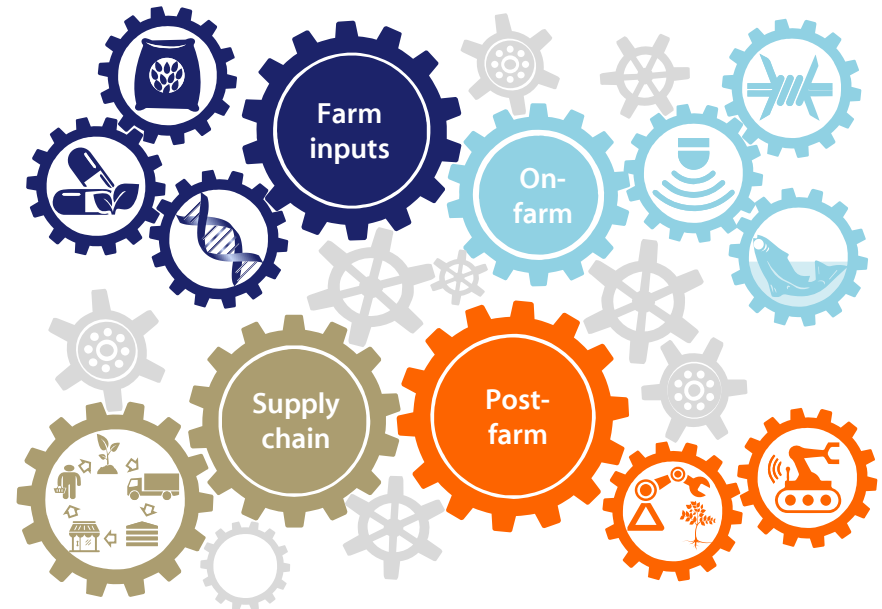
Scanning and automated robotic technologies allow processors to increase meat yields, improve cut quality, reduce costs, and fill gaps in the workforce. This latter benefit is of increasing value, as labour availability is constrained in some markets. The current suitability and adoption of this technology still varies across the proteins, but is improving in all cases.

### Key drivers behind the increased use of technology in 2018

**Key drivers**

- Increasing farm/business scale and complexity
- Reducing environmental footprint
- Need for cost efficiency
- Improving productivity
- Addressing societal concerns
- Shortage of access to skilled labour

## The cogs of technology are driving value



### Barriers to widespread adoption remain

- Lack of clear value proposition
- Lack of necessary technological infrastructure
- Cost
- Too complex, not user-friendly
- Question of data ownership



Rabobank

Expanding **production**, for another year, will see increased availability in most regions

Expect **more competition**—between species for share of consumer wallet, and between exporters for access to import destinations

Expect **downward pressure on prices**—the consumer should be the winner in most regions

Expect **margin pressure** along the supply chain—with food retailers and foodservice companies best placed to benefit

Expect **new areas of opportunity** to open up in all markets—with animal protein companies and supply chains that are most agile and innovative in responding to these opportunities best placed to benefit

## *Our takeaway messages*

How we see global animal protein in 2018



# Rabobank's Global Coverage of Animal Protein



# Contact details for Rabobank's global Animal Protein team



## Rabobank Wholesale Rural and Retail

RaboResearch Food &  
Agribusiness  
Animal Protein sector  
team

Utrecht office:  
Croeselaan 18  
3521 CB Utrecht  
The Netherlands

New York office:  
36<sup>th</sup> floor, 245 Park Ave  
New York, NY 10167  
United States

**Rabobank**

**Justin Sherrard**  
Global Strategist – Animal Protein  
RaboResearch Food & Agribusiness

Telephone +31 (0)30 71 23182  
Mobile +31 (0)6 13 759 411  
Email [Justin.Sherrard@rabobank.com](mailto:Justin.Sherrard@rabobank.com)

**Rabobank**

**Bill Cordingley**  
Global Sector Head – Animal Protein  
Corporate Clients Management

Telephone +1 (0) 212 808 6838  
Mobile +1 (0)347 556 0525  
Email [Bill.Cordingley@rabobank.com](mailto:Bill.Cordingley@rabobank.com)

## RaboResearch Food & Agribusiness Animal Protein Team

Europe – Nan-Dirk Mulder  
[nan-dirk.mulder@rabobank.com](mailto:nan-dirk.mulder@rabobank.com)

Europe – Gorjan Nikolik  
[gorjan.nikolik@rabobank.com](mailto:gorjan.nikolik@rabobank.com)

Europe – Beyhan de Jong  
[beyhan.de.jong@rabobank.com](mailto:beyhan.de.jong@rabobank.com)

US – Don Close  
[don.close@rabobank.com](mailto:don.close@rabobank.com)

US – Christine McCracken  
[christine.mccracken@Rabobank.com](mailto:christine.mccracken@Rabobank.com)

Mexico – Andrick Payen  
[andrick.payen@Rabobank.com](mailto:andrick.payen@Rabobank.com)

Brazil – Adolfo Fontes  
[adolfo.fontes@rabobank.com](mailto:adolfo.fontes@rabobank.com)

China – Chenjun Pan  
[chenjun.pan@rabobank.com](mailto:chenjun.pan@rabobank.com)

South-East Asia – Ben Santoso  
[ben.santoso@Rabobank.com](mailto:ben.santoso@Rabobank.com)

Australia – Angus Gidley-Baird  
[angus.gidley-baird@rabobank.com](mailto:angus.gidley-baird@rabobank.com)

New Zealand – Blake Holgate  
[blake.holgate@rabobank.com](mailto:blake.holgate@rabobank.com)





*Banking for Food is Rabobank's vision on global food security and the role of the bank. As a consequence of a growing and wealthier global population, the demand for food is expected to rise considerably. The food and agri value chains have to produce more with fewer natural resources. As a leading international food and agri bank, Rabobank aims to support and facilitate in meeting this challenge—by providing access to finance, knowledge, and networks to clients and their communities.*



**Rabobank**

This document is meant exclusively for you and does not carry any right of publication or disclosure other than to Coöperatieve Rabobank U.A. ("Rabobank"), registered in Amsterdam. Neither this document nor any of its contents may be distributed, reproduced, or used for any other purpose without the prior written consent of Rabobank. The information in this document reflects prevailing market conditions and our judgement as of this date, all of which may be subject to change. This document is based on public information. The information and opinions contained in this document have been compiled or derived from sources believed to be reliable; however, Rabobank does not guarantee the correctness or completeness of this document, and does not accept any liability in this respect. The information and opinions contained in this document are indicative and for discussion purposes only. No rights may be derived from any potential offers, transactions, commercial ideas, et cetera contained in this document. This document does not constitute an offer, invitation, or recommendation. This document shall not form the basis of, or cannot be relied upon in connection with, any contract or commitment whatsoever. The information in this document is not intended, and may not be understood, as an advice (including, without limitation, an advice within the meaning of article 1:1 and article 4:23 of the Dutch Financial Supervision Act). This document is governed by Dutch law. The competent court in Amsterdam, the Netherlands has exclusive jurisdiction to settle any dispute which may arise out of, or in connection with, this document and/or any discussions or negotiations based on it. This report has been published in line with Rabobank's long-term commitment to international food and agribusiness. It is one of a series of publications undertaken by the global department of RaboResearch Food & Agribusiness.

©2017 - All Rights Reserved.