



Global protein market outlook

Investment opportunities in a fast changing world

Nan-Dirk Mulder, 26 June 2019



Rabobank

Rabobank: The financial link in the Food and Agri industry with animal protein as a key focus industry



of Rabobank relationships
with global Animal Protein
companies:

135

Clients around the globe



14/20

14 of the **Top 20** global Animal Protein
companies are Rabobank clients



53

Pork & Beef



40

Poultry



42

Seafood

RaboResearch Food & Agribusiness

A *global* network...

One of the **largest** F&A research hubs in the world and the world's **leading** F&A financial services provider

Broad knowledge of innovation, strategic development and risk-reward balances along the value chain

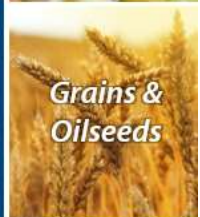
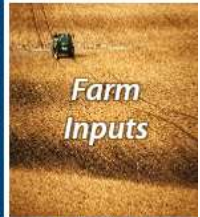
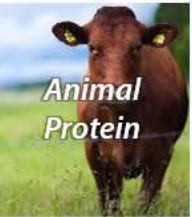
Unique combination
of **strategic** business
development and
in-depth **research**

**Vast global network
with access to all
players in the market**

F&A coverage from farm to fork, across rural and wholesale sectors

Global team of experts
with real-time insights
into **local** markets

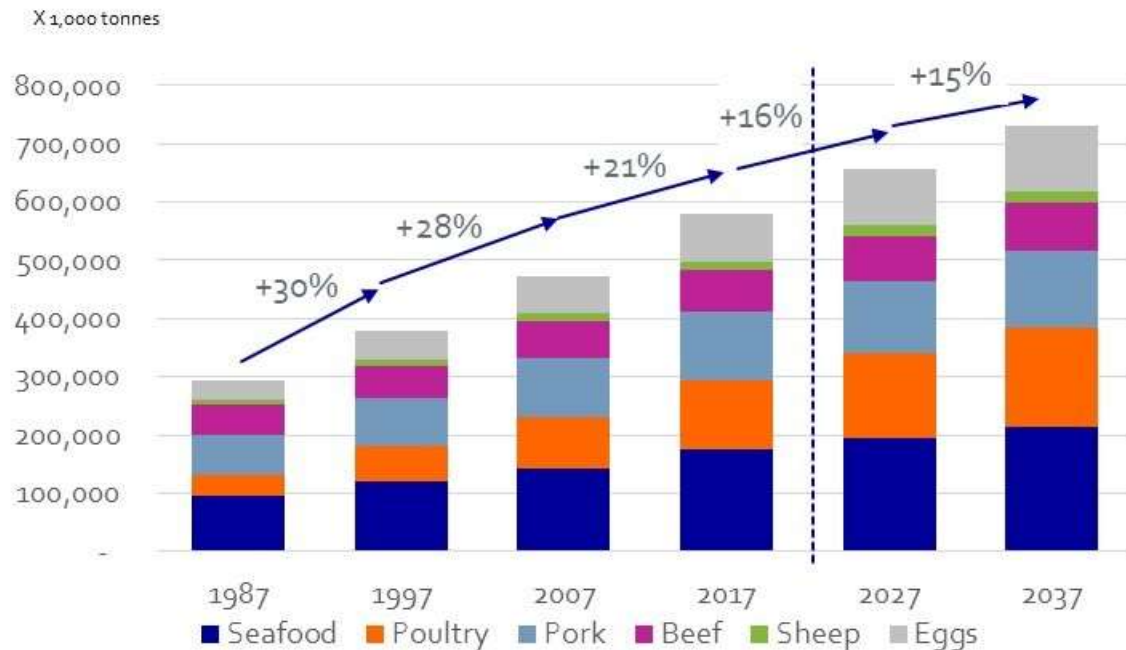
of local experts



Worldwide 35% more demand for animal protein in next 20 years



Global animal protein demand projections 2017-2037f



CAGR: 2017-2037f

Eggs: CAGR +1.6%

Beef: CAGR +1.1%

Pork: CAGR +1.0%

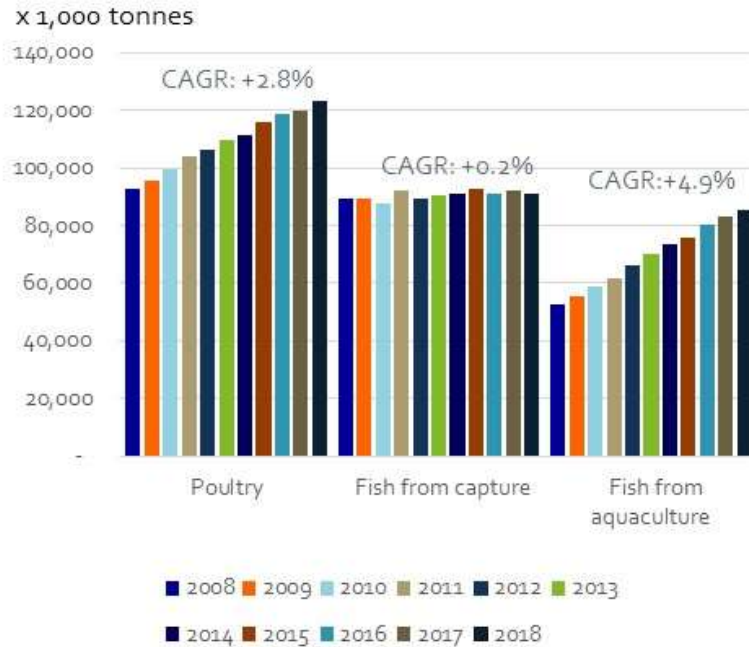
Poultry: CAGR +2.0%

Seafood: CAGR +1.2%

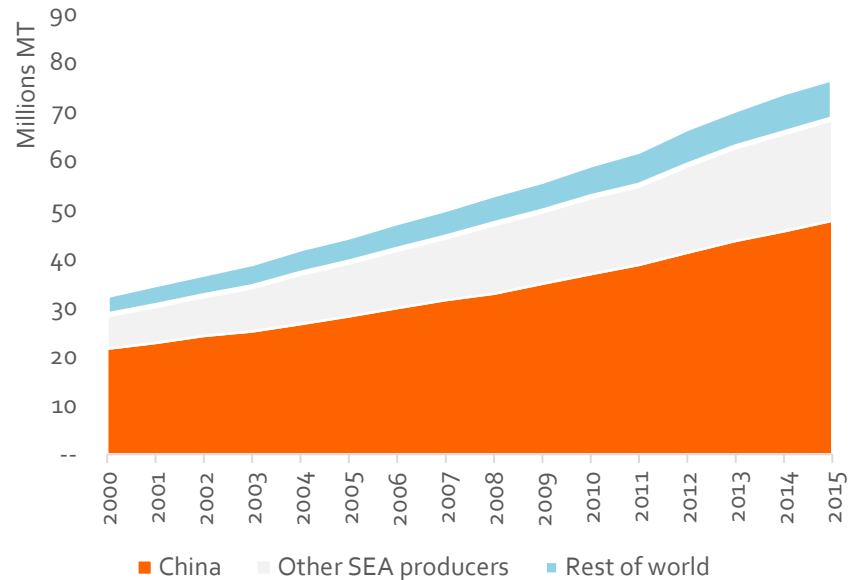
Aquaculture is the fastest growing animal protein industry and 2/3 Asia based



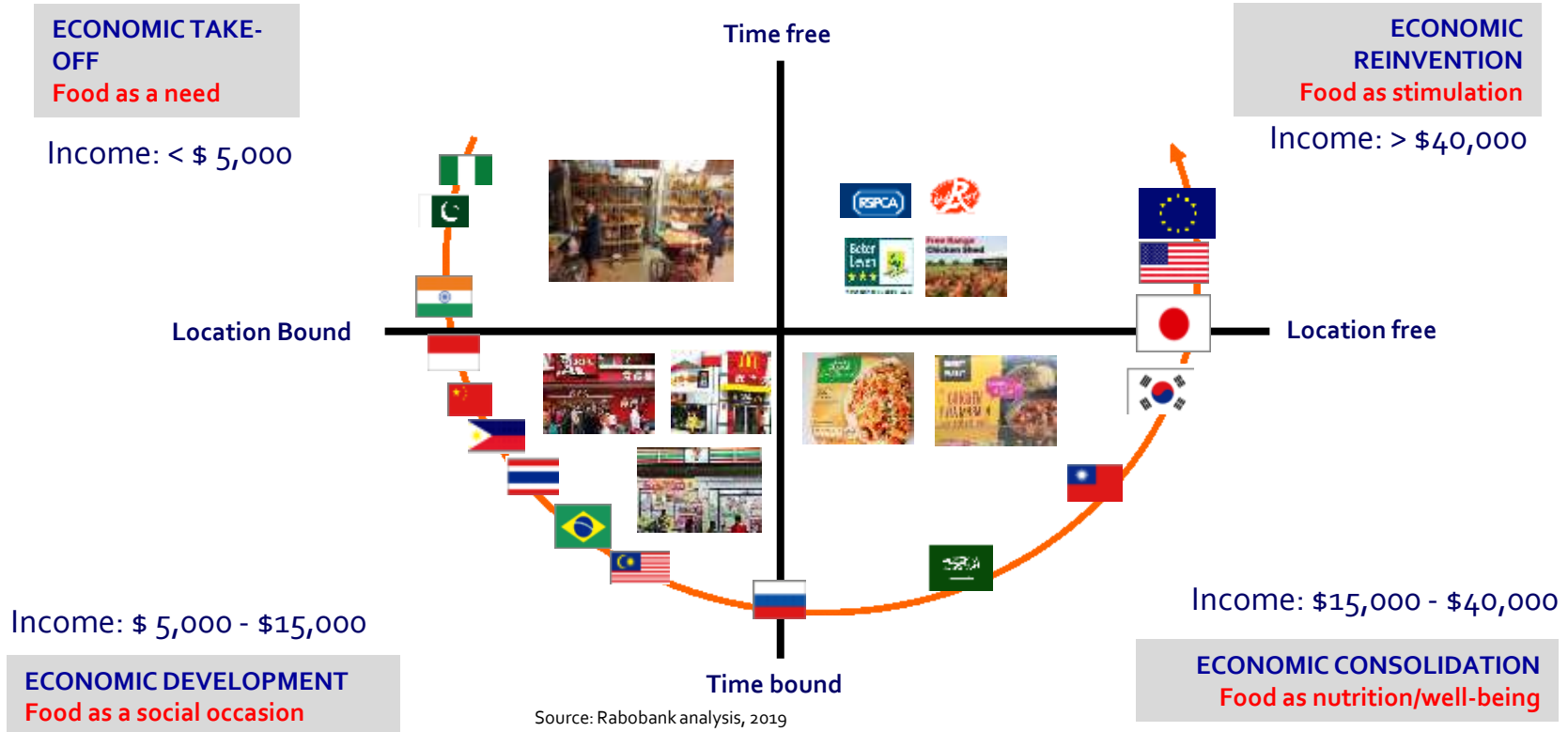
Poultry and aquaculture: key drivers



Global aquaculture¹ supply by region



Consumer demand is changing when economies develop further

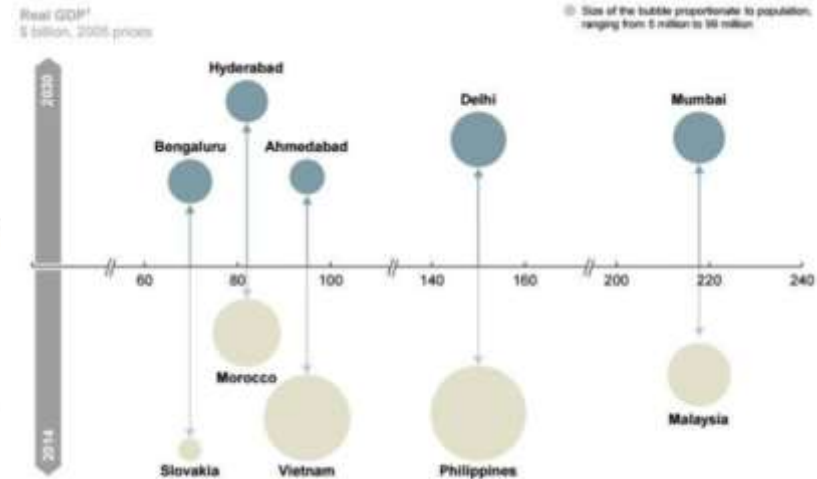


The expansion of the new mega cities



*Global urbanisation:
many of the leading cities in Asia*

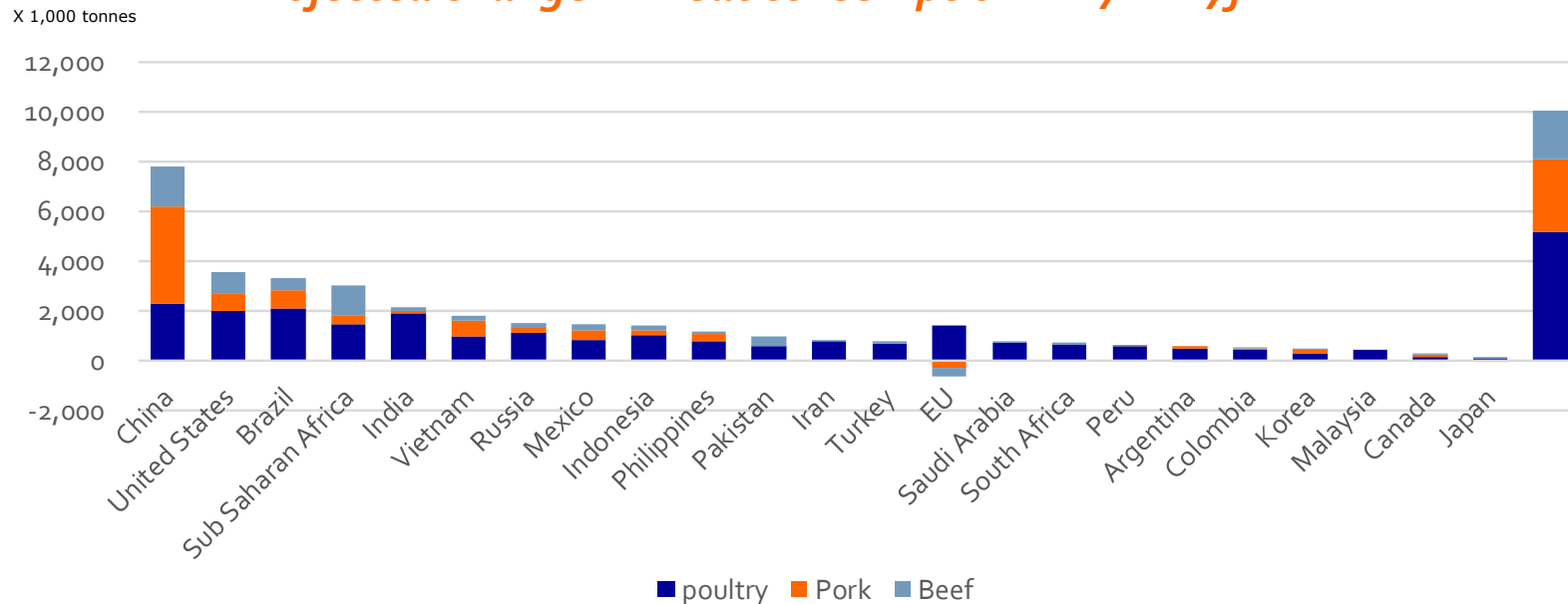
*India's mega city 2030 economy
compared to mid-income economies*



90% of global growth is in emerging markets; 60% in Asia



Projected change in meat consumption 2017-2027f

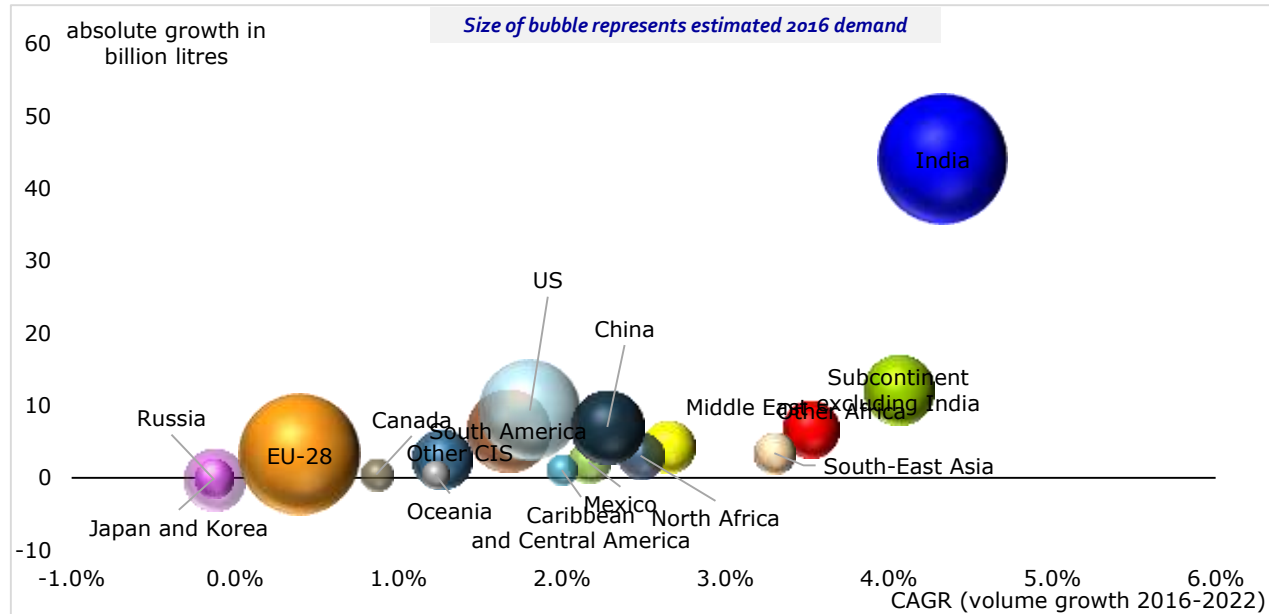


Source: Rabobank analysis based on USDA, FAO and local statistics, 2019

Dairy demand growth is very much Asia focussed



Global dairy demand outlook 2018-2023

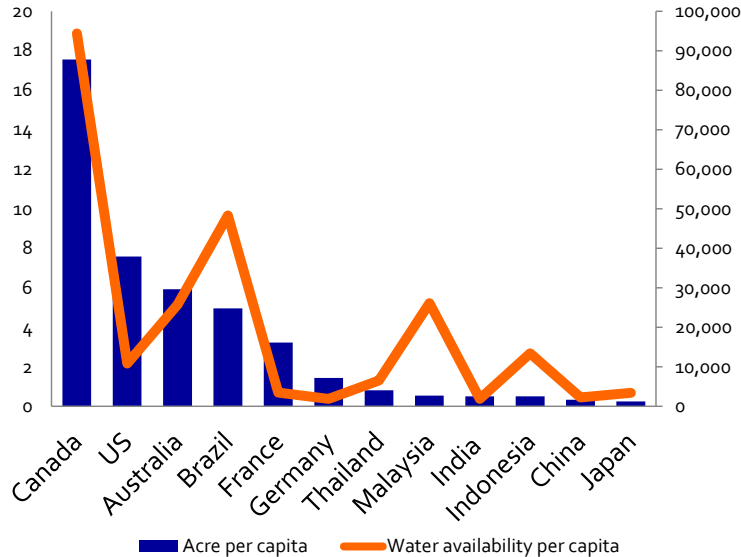


- Source: Various sources, Rabobank
- China include Taiwan and Hong Kong

Global agricultural land use is declining; while especially Asia has limited resources

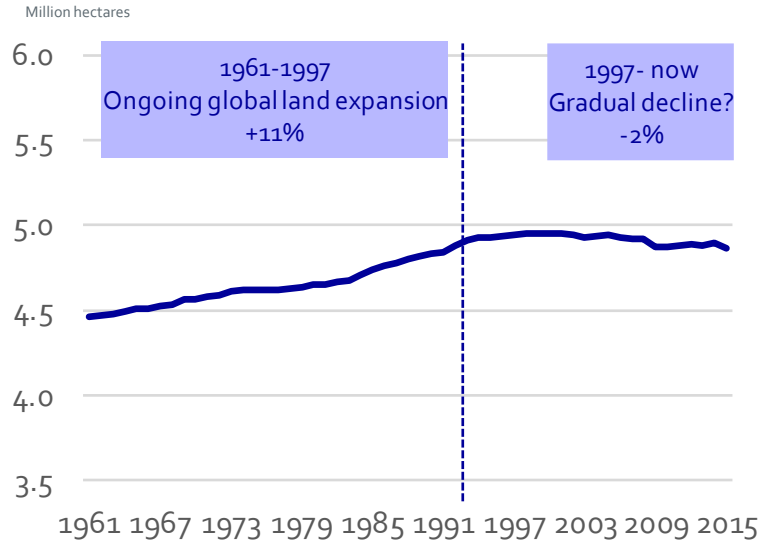


Available land and water per capita



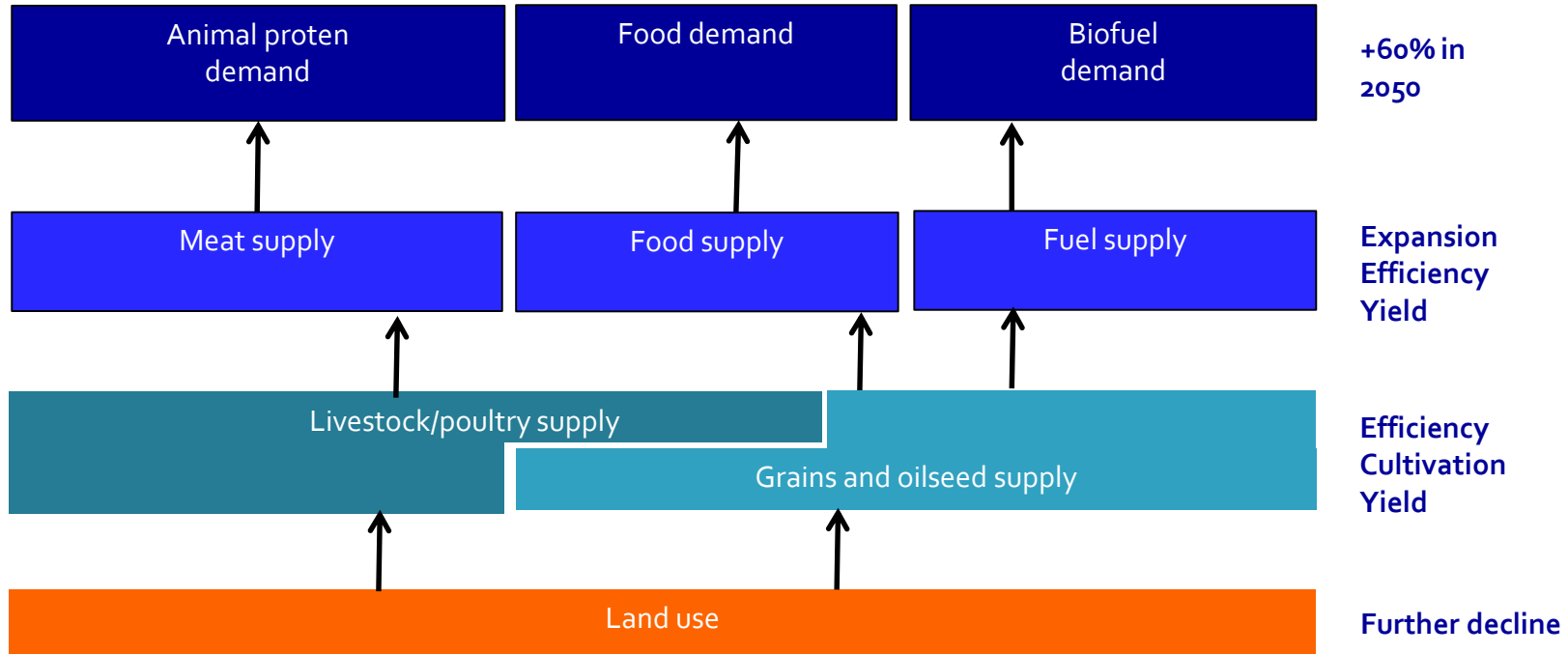
Source: Rabobank, FAO 2019

Worldwide land use 1961-2015



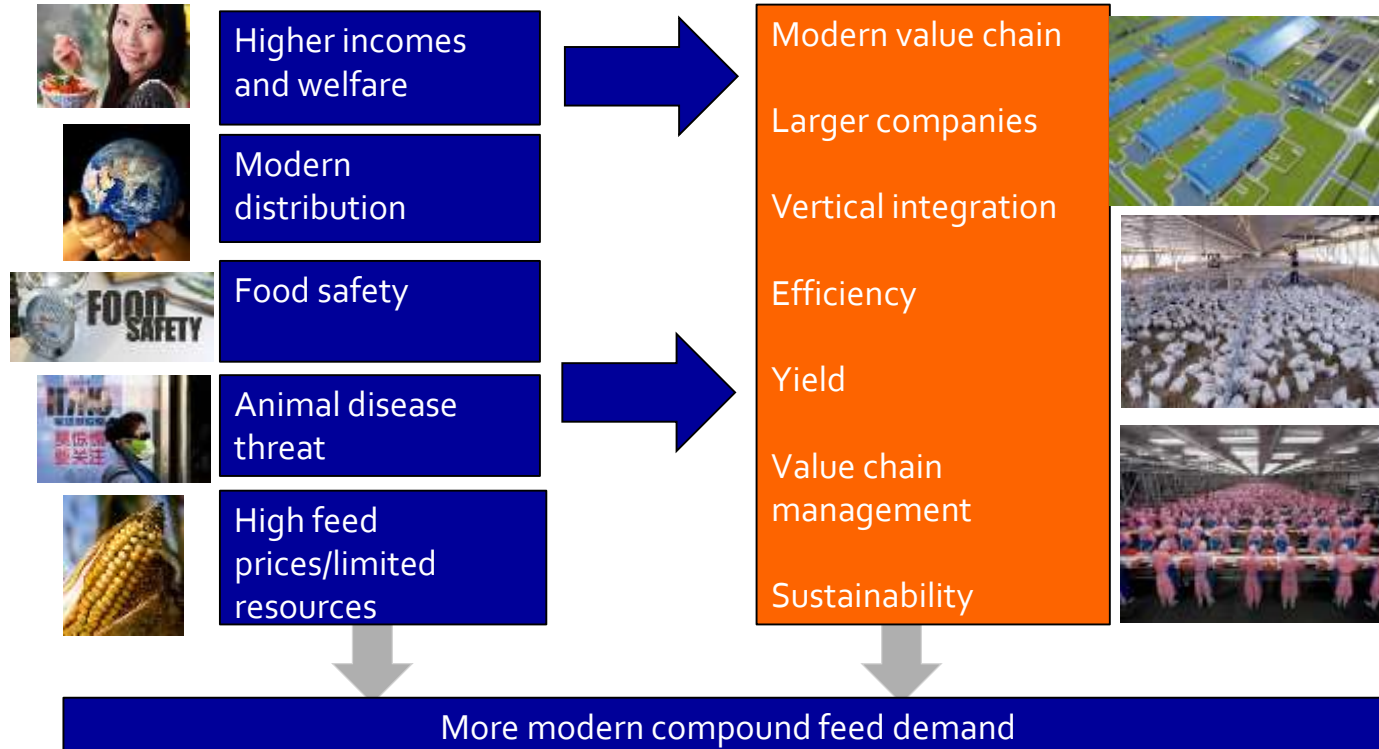
Source: FAO/Rabobank analysis 2019

Global food supply challenge: more focus on yield and efficiency



Source: Rabobank, 2019

Emerging market growth and challenges are driving to modern farming



Efficiency improvement is and will remain a key focus of the industry

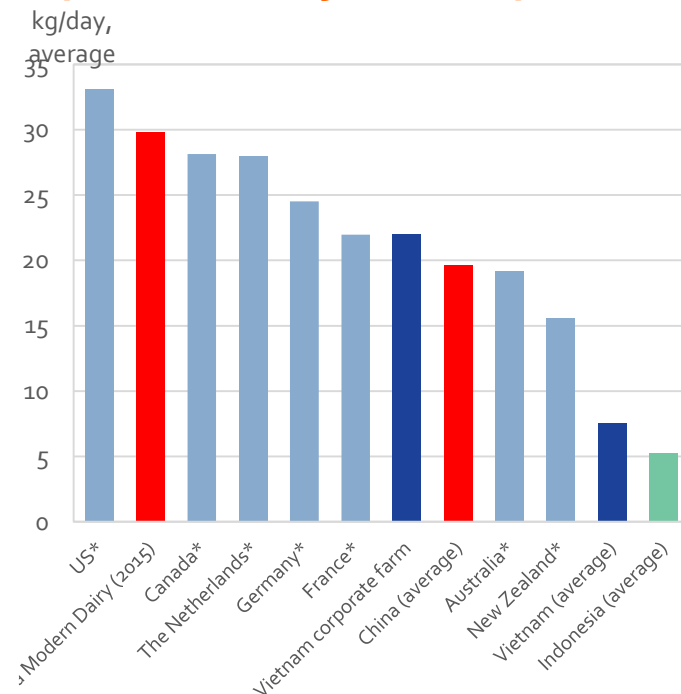


Benchmark costs in broiler production in 2017

	Feed price (EURct/kg)	DOC (EURct/kg)	Feed conversion	Weight	Wage EUR/hour	Processing costs	Total cost whole chicken
China	37.5	23.5	1.85	2.0	3	19	154
France	29.2	30.3	1.67	1.9	20	31	154
Netherlands	31.1	31.1	1.58	2.4	22	33	147
Spain	31.5	32.0	1.72	2.6	14	27	144
Hungary	30.2	30.9	1.63	2.3	5	21	136
Poland	31.4	31.5	1.62	2.3	6	22	134
Thailand	29.6	28.9	1.68	2.4	2	17	120
US	24.1	27.0	1.83	2.7	14	25	117
Ukraine	24.2	32.0	1.74	2.5	2	18	112
Brazil	24.4	22.3	1.79	2.6	3	17	108

Source: Rabobank analysis based on WUR/LEI, 2019

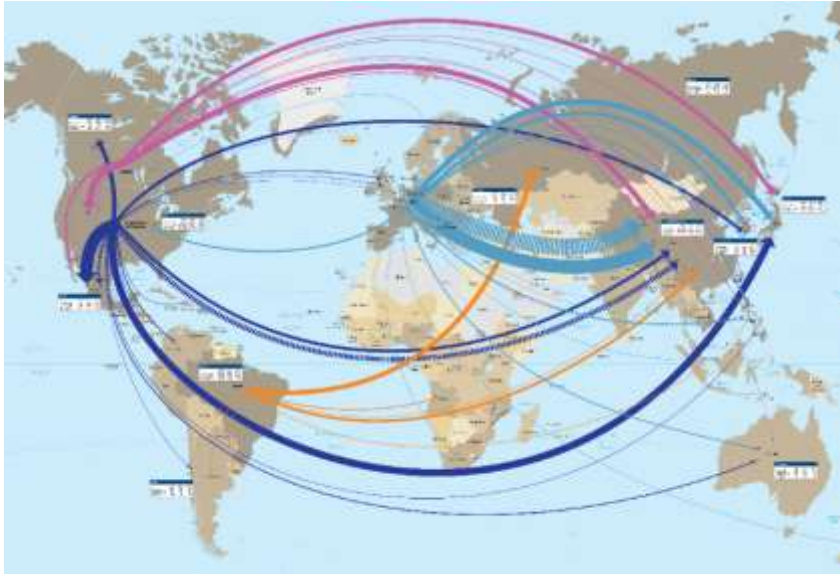
Upside in milk yield comparison



More West – East trade flows to supply Asian markets



Rabobank 2018 global pork trade map



Source: Rabobank, 2019

Rabobank 2018 global poultry trade map

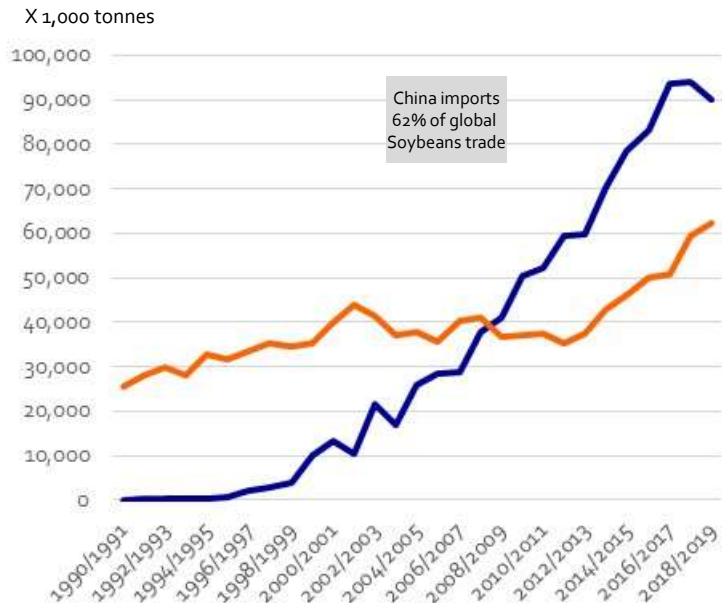


Source: Rabobank, 2019

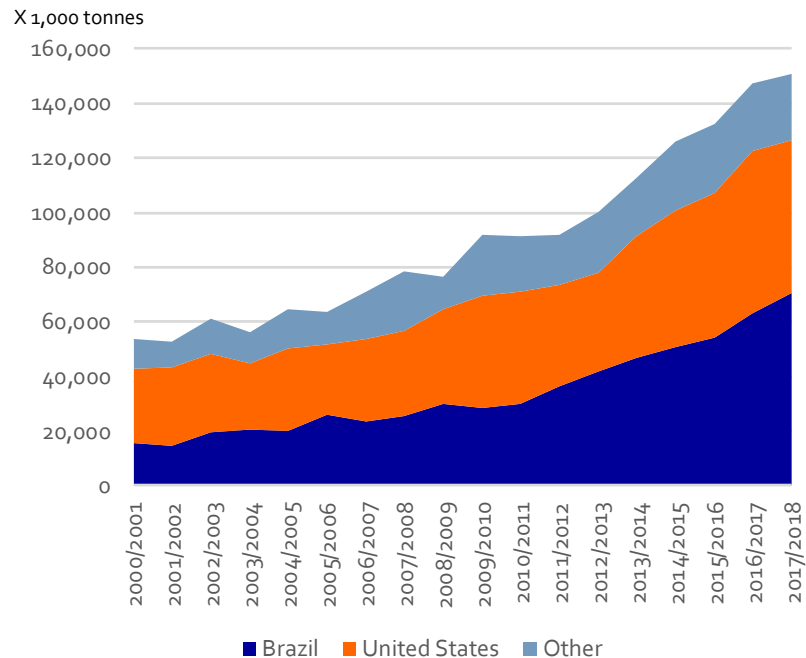
Global grains and oilseed markets: China ASF, US-China trade war, improved supply



Global soybean imports



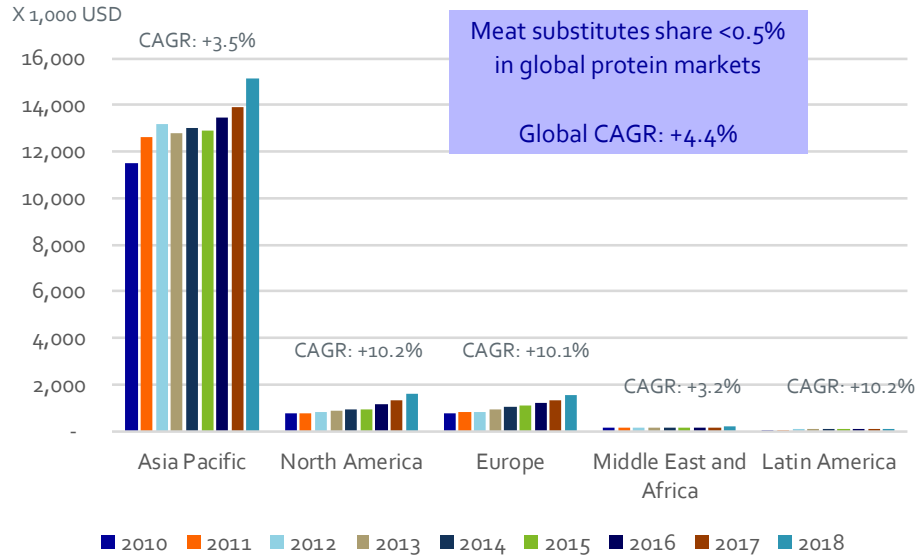
Global Soybean exports



Social changes can impact the outlook for animal protein markets

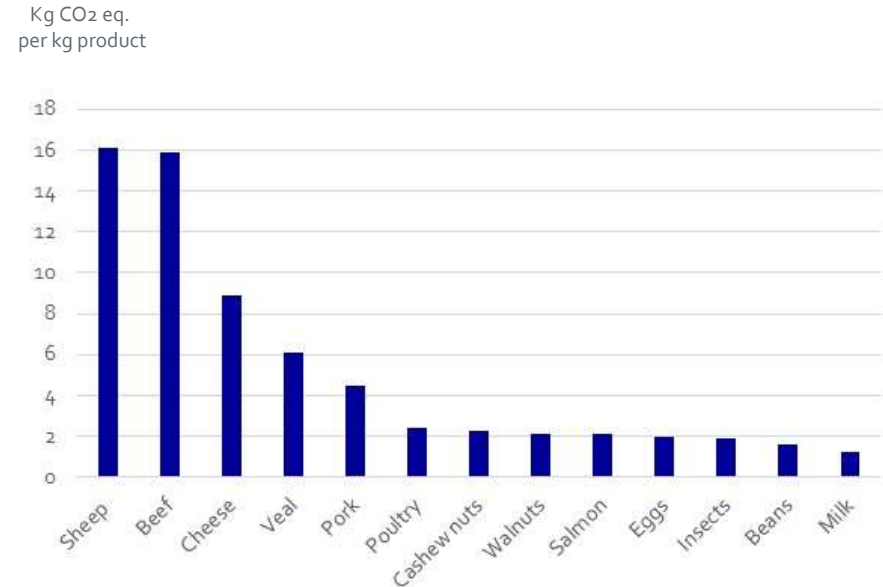


Meat substitutes retail sales



Source: Rabobank analysis based on Euromonitor, 2019

Carbon footprint of food products

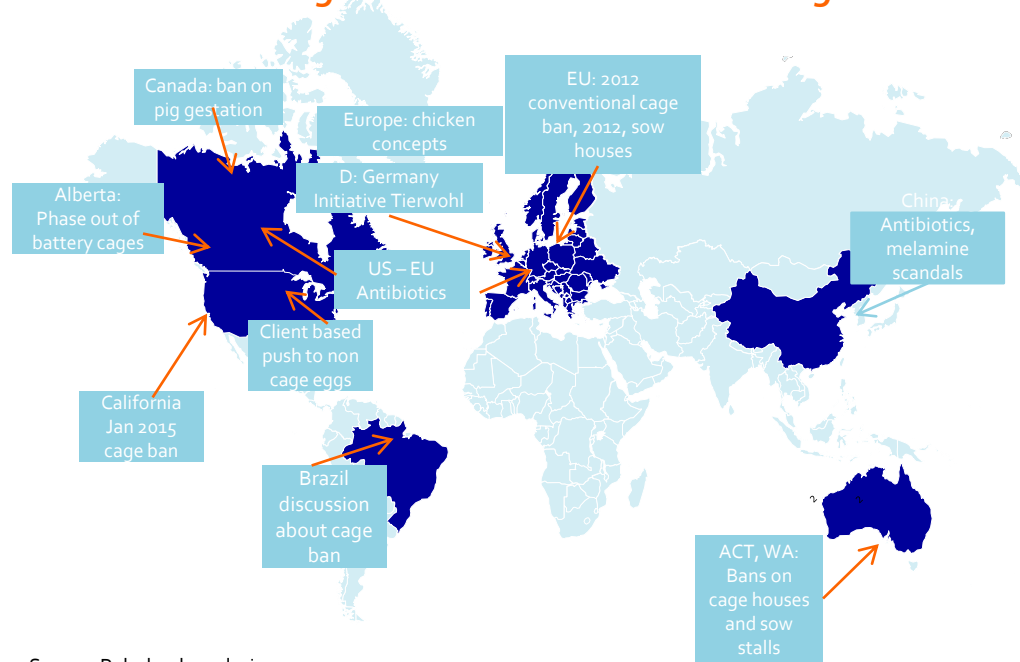


Source: Rabobank analysis based on WUR, 2019

Social concern driven changes are rising globally and impact industry



Selected regional social concern driven changes



Source: Rabobank analysis, 2019

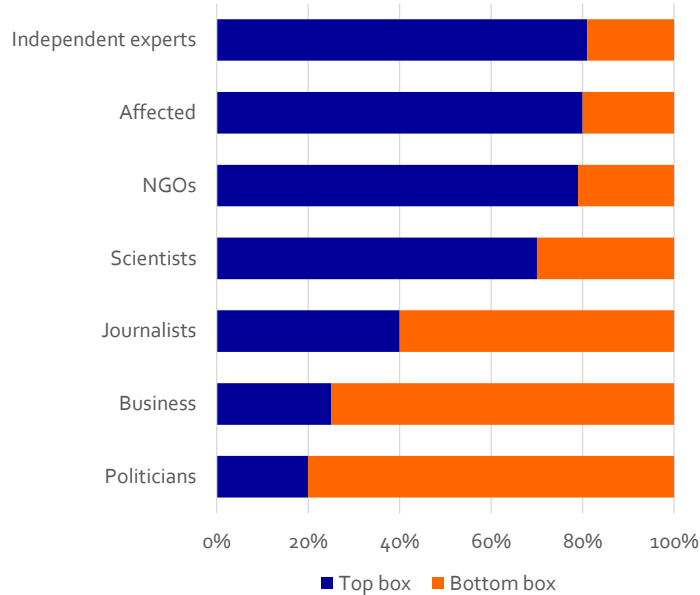
Themes with big global impact



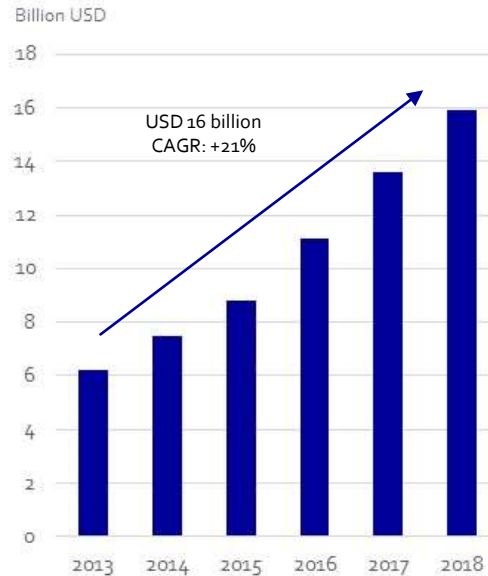
Online is changing the food industry more than ever



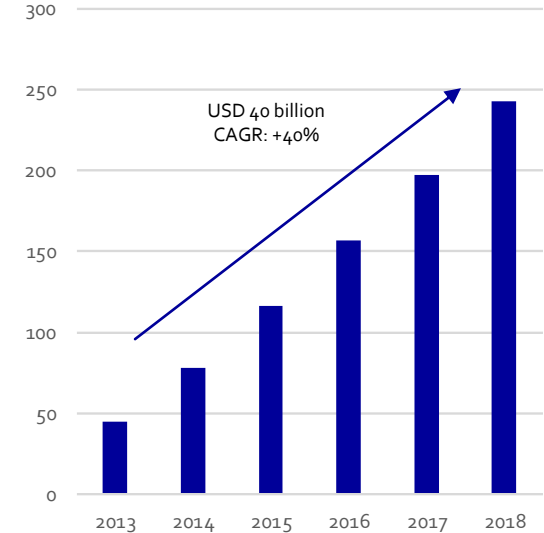
*Confidence in opinion
leaders in Germany, 2017*



*On-line food sales
in United States*



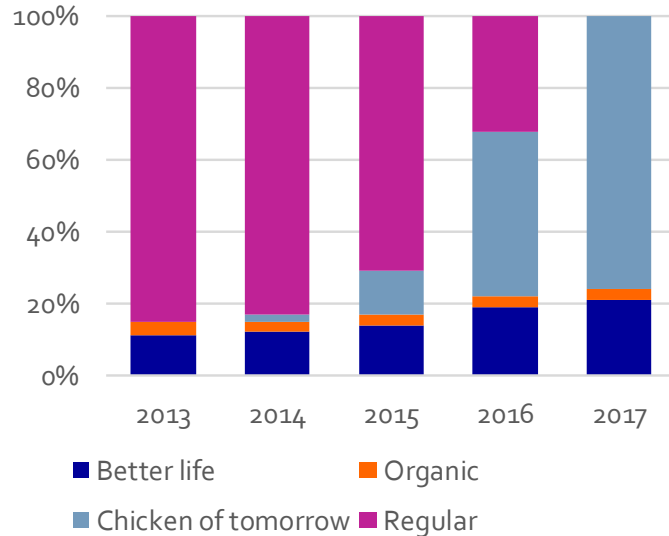
*On-line food sales
in China (CNY million)*



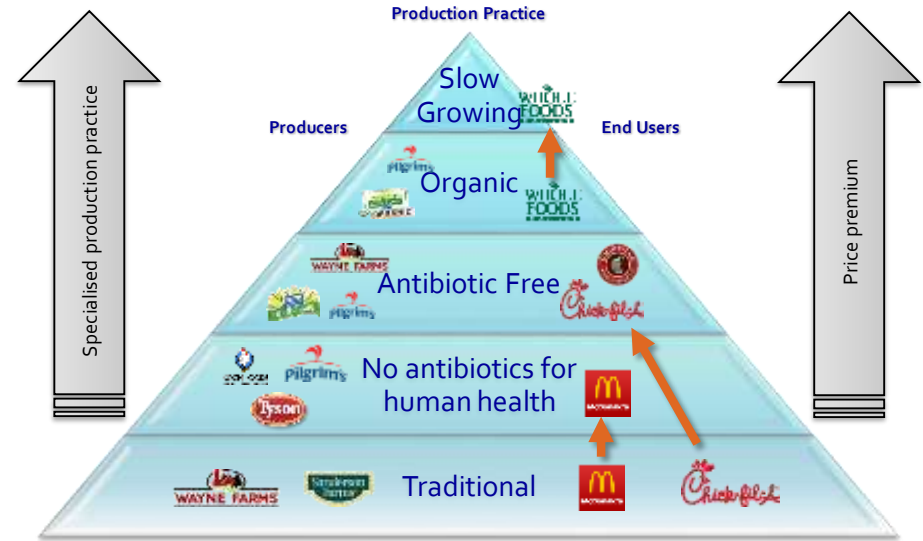
Market demand is changing; more concepts and higher standards



Europe: animal welfare driven change; NL example



US: Customer driven shift to concepts



Rising investment opportunities in alternative protein segment



Alternative proteins market segmentation



Alternative protein investments

	Startup	Funding	Protein industry investor
JUST	2011	\$387 m	TERMASEK HOLDINGS
IMPOSSIBLE	2011	\$220 m	TERMASEK HOLDINGS, PRIMA
CALYSTA	2012	\$ 85 m	TERMASEK HOLDINGS, Cargill, PRIMA
BEYOND MEAT	2009	\$ 72 m	Tyson
NEMPHIS BUILT	2015	\$ 20 m	Tyson, Cargill
SuperMeat	2015	\$ 4 m	Tyson, PRIMA

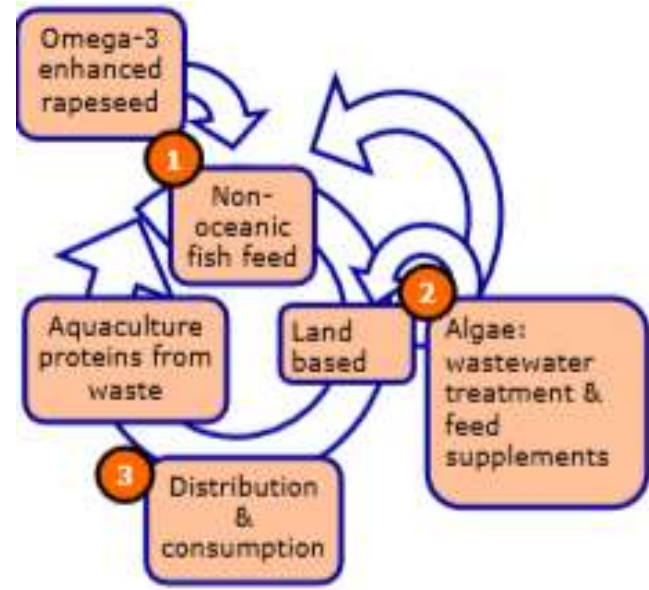
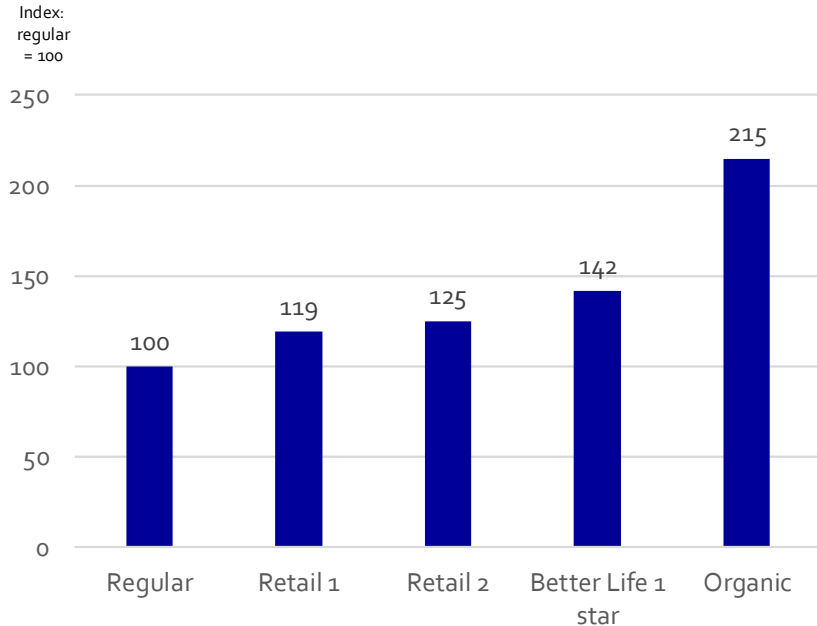
Source: Rabobank analysis, 2019

The move to concept poultry and other proteins leads to different costs



Broiler concepts cost price comparison in NL

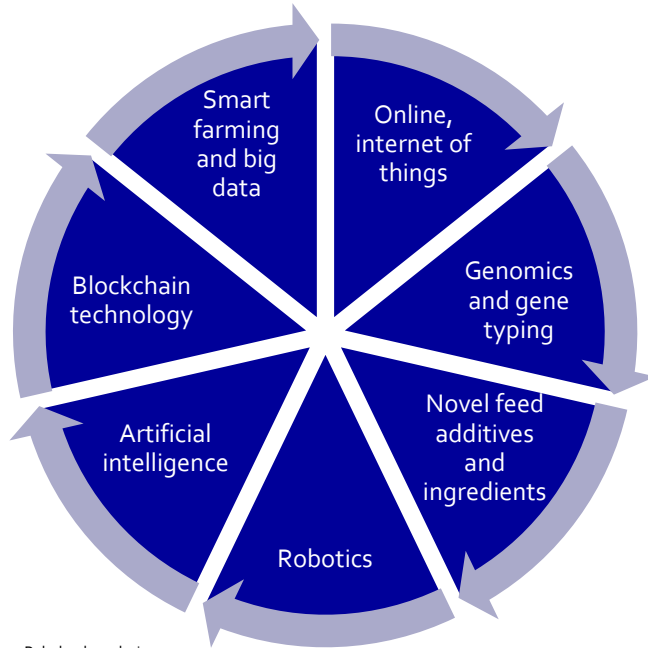
A smarter food chain: more circular



New technology will help to solve key supply and social challenges

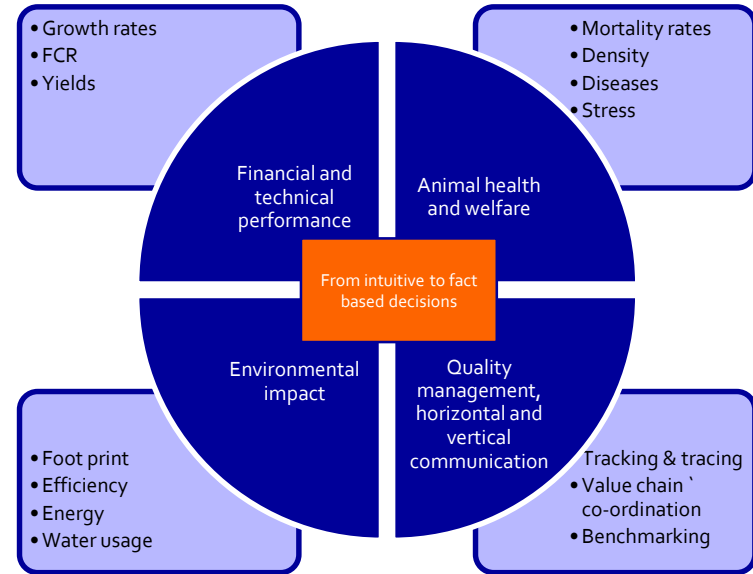


Upcoming new technology



Source: Rabobank analysis, 2019

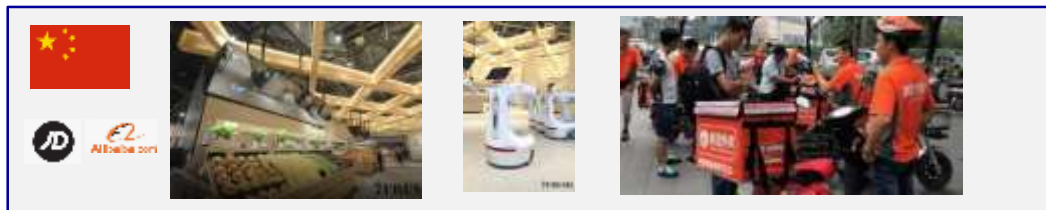
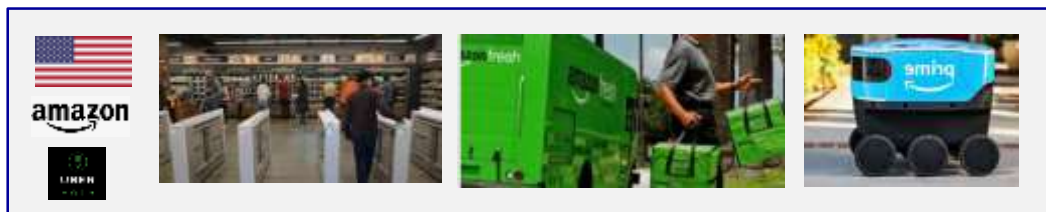
From intuitive to more fact based decisions



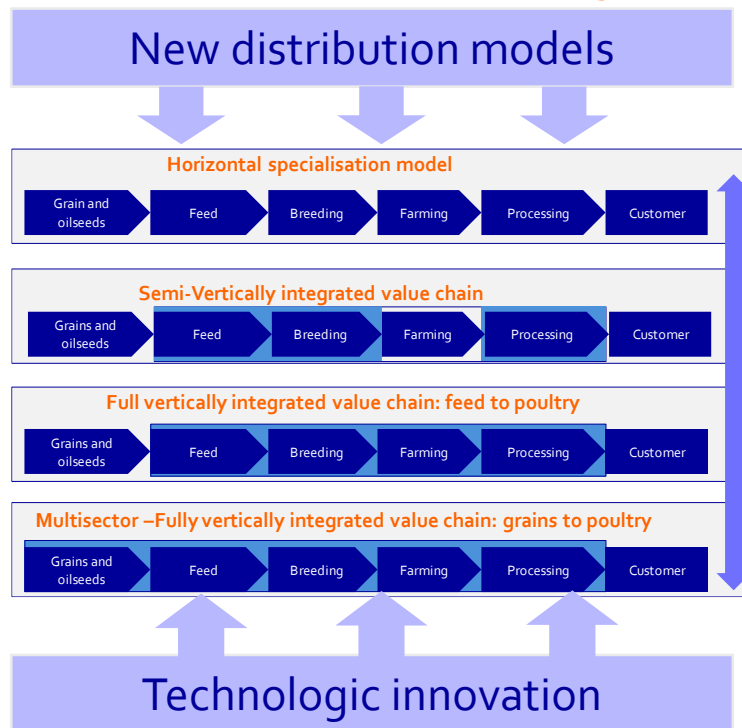
Animal protein supply chains will change fundamentally in next decade



Food distribution: a future revolution



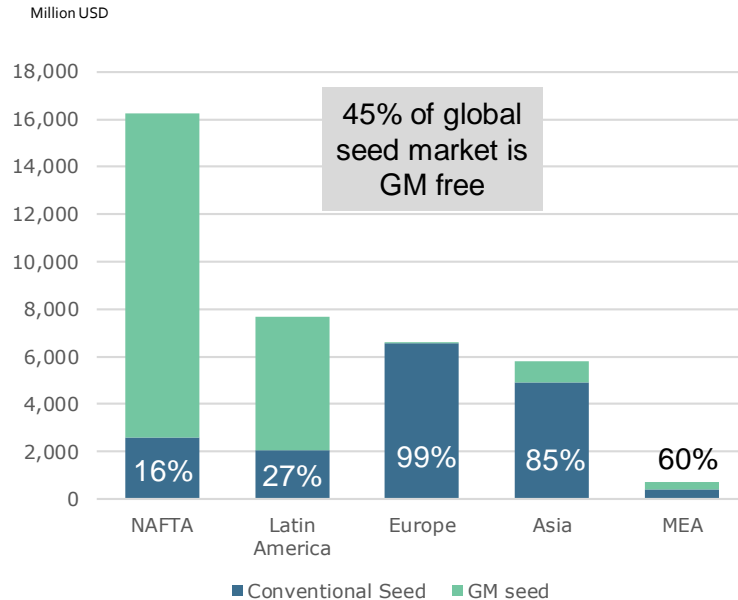
Value chain models need to change



How to supply adequate protein crops to feed rising population?

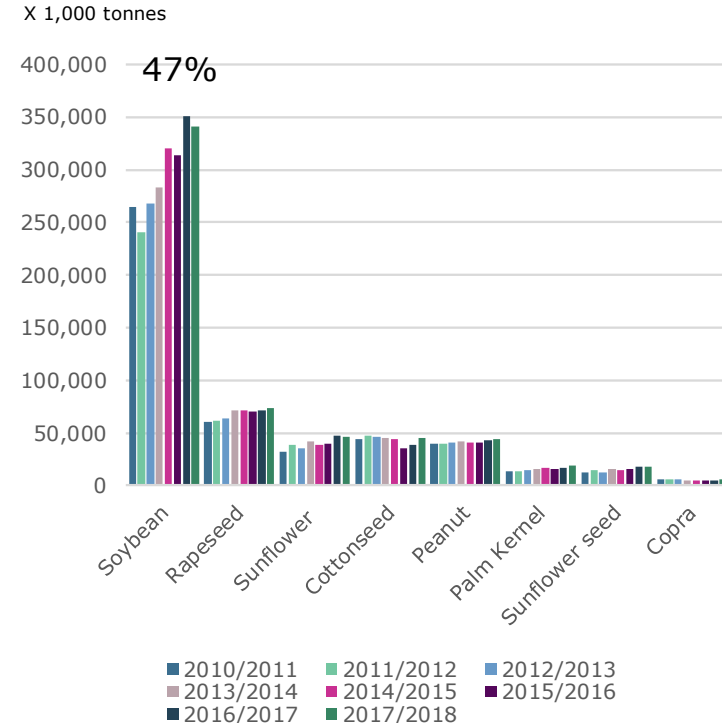


Global GM/GM free seed market by region

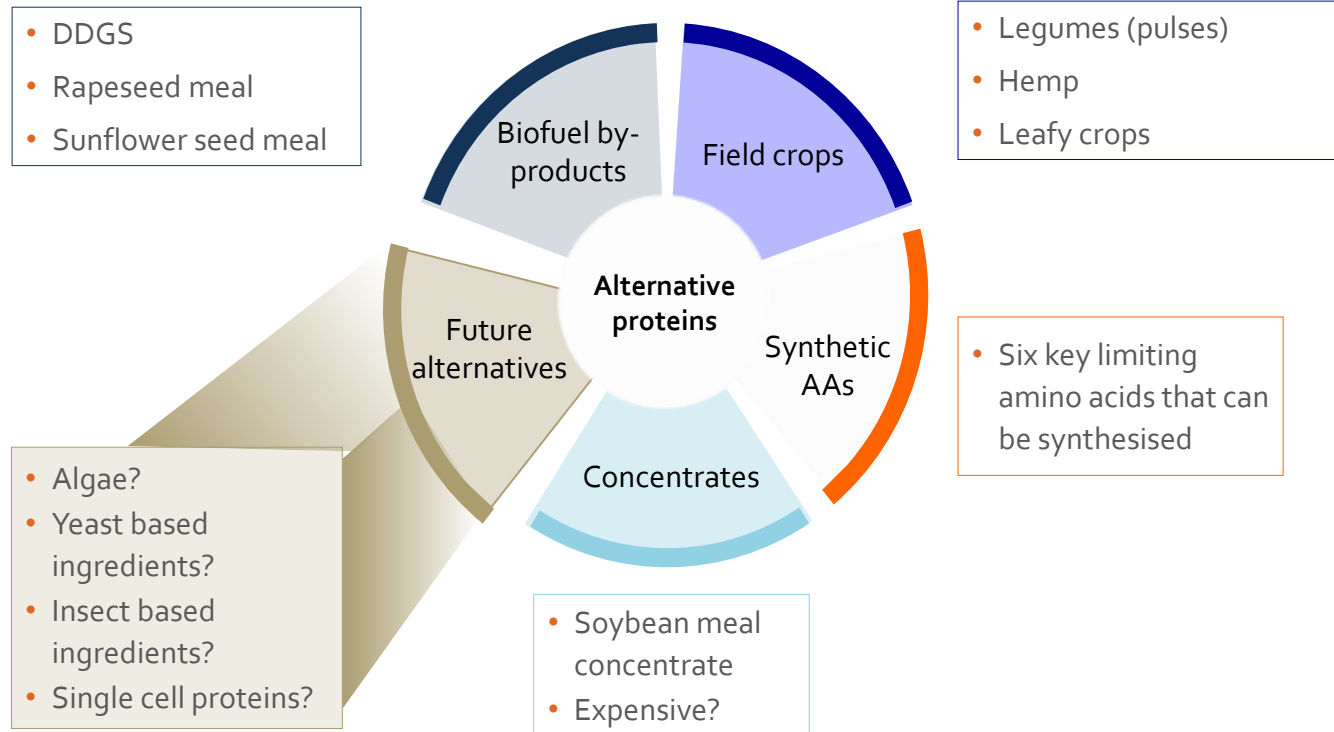


Source: Rabobank analysis, Philip McDougall, 2019

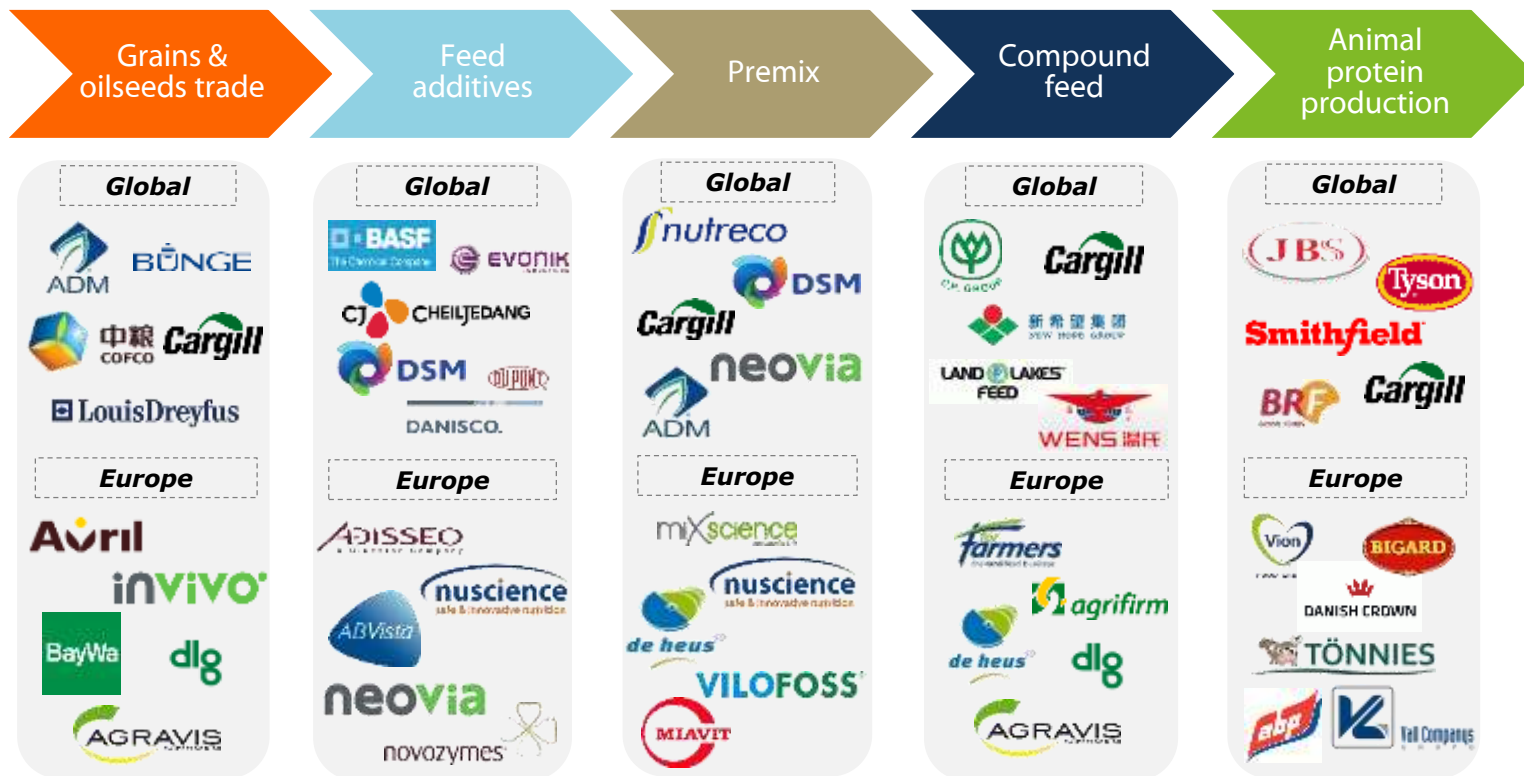
Global protein crop production: alternatives for soy bean?



Alternative protein sources are promising, but not competitive yet



Closer linkages between G&O production and (animal) protein



Conclusions



Markets

- 35% global growth; 90% in emerging markets
- More poultry and aquaculture
- On-line will change industries
- Alternative and concept protein market to grow significantly

Supply

- Feeding the world requires efficient supply
- Social concerns to drive concept poultry growth
- Need for alternative feed protein sources
- Global reduction of antibiotics use

Technology

- New technology to support industry challenges
- Big new pending innovation can support industry to solve social challenges



Thanks for your attention

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