



TARGET MARKET OPPORTUNITIES IN ASIA FOR ANIMAL PELLETS

Part of Asia Market Success, April 2016



INHERENT LIMITATIONS

This work was commissioned by the Department of Agriculture and Food Western Australia (DAFWA), with funding through the State Government's Royalties for Regions program and prepared by Coriolis. This work is based on secondary market research, analysis of information available or provided to Coriolis by our client, and a range of interviews with industry participants and industry experts. Coriolis have not independently verified this information and make no representation or warranty, express or implied, that such information is accurate or complete.

Projected market information, analyses and conclusions contained herein are based (unless sourced otherwise) on the information described above and on Coriolis' judgement, and should not be construed as definitive forecasts or guarantees of future performance or results. Neither Coriolis nor its officers, directors, shareholders, employees or agents accept any responsibility or liability to readers or recipients of this report other than DAFWA or people other than DAFWA who rely upon it (described below as Recipients) with respect to this document.

Coriolis wishes to draw Recipients' attention to the following limitations of the Coriolis document "Target Market Opportunities in Asia for the Western Australian Premium Products" (the Coriolis Document) including any accompanying presentation, appendices and commentary (the Coriolis Commentary):

- a. Coriolis has not been asked to independently verify or audit the information or material provided to it by or on behalf of the Client or any of the parties involved in the project;
- b. the information contained in the Coriolis Document or any Coriolis Commentary has been compiled from information and material supplied by third party sources and publicly available information which may (in part) be inaccurate or incomplete;
- c. Coriolis makes no representation, warranty or guarantee to Recipients, whether express or implied, as to the quality, accuracy, reliability, currency or completeness of the information provided in the Coriolis Document and any Coriolis Commentary or that reasonable care has been taken in compiling or preparing them;
- d. the analysis contained in the Coriolis Document and any Coriolis Commentary are subject to the key assumptions, further

qualifications and limitations included in the Coriolis Document and Coriolis Commentary, and are subject to significant uncertainties and contingencies, some of which, if not all, are outside the control of Coriolis; and

e. any Coriolis Commentary accompanying the Coriolis document is an integral part of interpreting the Coriolis document. Consideration of the Coriolis document will be incomplete if it is reviewed in the absence of the Coriolis Commentary and Coriolis conclusions may be misinterpreted if the Coriolis document is reviewed in absence of the Coriolis Commentary.

Coriolis is not responsible or liable in any way for any loss or damage incurred by any person or entity other than DAFWA relying on the information in, and the Recipient unconditionally and irrevocably releases Coriolis from liability for loss or damage of any kind whatsoever arising from, the Coriolis document or Coriolis Commentary including without limitation judgements, opinions, hypothesis, views, forecasts or any other outputs therein and any interpretation, opinion or conclusion that the Recipient may form as a result of examining the Coriolis document or Coriolis Commentary.

The Coriolis document and any Coriolis Commentary may not be relied upon by the Recipient, and any use of, or reliance on that material by the Recipient is entirely at their own risk. Coriolis shall have no liability for any loss or damage arising out of any such use.

ACCESSIBILITY

Coriolis seeks to support the widest possible audience for this research. This document has been designed to be as accessible to as many users as possible.

Any person - with or without any form of disability - should feel free to call the authors if any of the material cannot be understood or accessed.

We welcome the opportunities to discuss our research with our readers and users.

All photos used in this discussion document were either (1) purchased by Coriolis from a range of stock photography providers as documented, (2) received written permission to use Southern

Forest Food Council photo or (3) are low resolution, complete product/brand for illustrative purposes used under fair dealing/fair use for both "research and study" and "review and criticism". Our usage of them complies with Australian law or their various license agreements (© Dollar Photo Club).

COPYRIGHT

Copyright © Western Australian Agriculture Authority, 2016

IMPORTANT DAFWA DISCLAIMER

The Chief Executive Officer of the Department of Agriculture and Food and the State of Western Australia and their employees and agents (collectively and individually referred to below as DAFWA) accept no liability whatsoever, by reason of negligence or otherwise, arising from any use or release of information in this report or any error, inaccuracy or omission in the information.

DAFWA does not make any representations or warranties about its quality, accuracy, reliability, currency, completeness or suitability for any particular purpose. Before using the information, you should carefully evaluate these things.

The information is general in nature, is not tailored to the circumstances of individuals or businesses, and does not constitute financial, taxation, legal, business or management advice. We recommend before making any significant financial or business decisions, you obtain such advice from appropriate professionals who have taken into account your individual circumstances and objectives.

The information in this report should not be presumed to reflect or indicate any present or future policies or decisions by the Government of Western Australia.

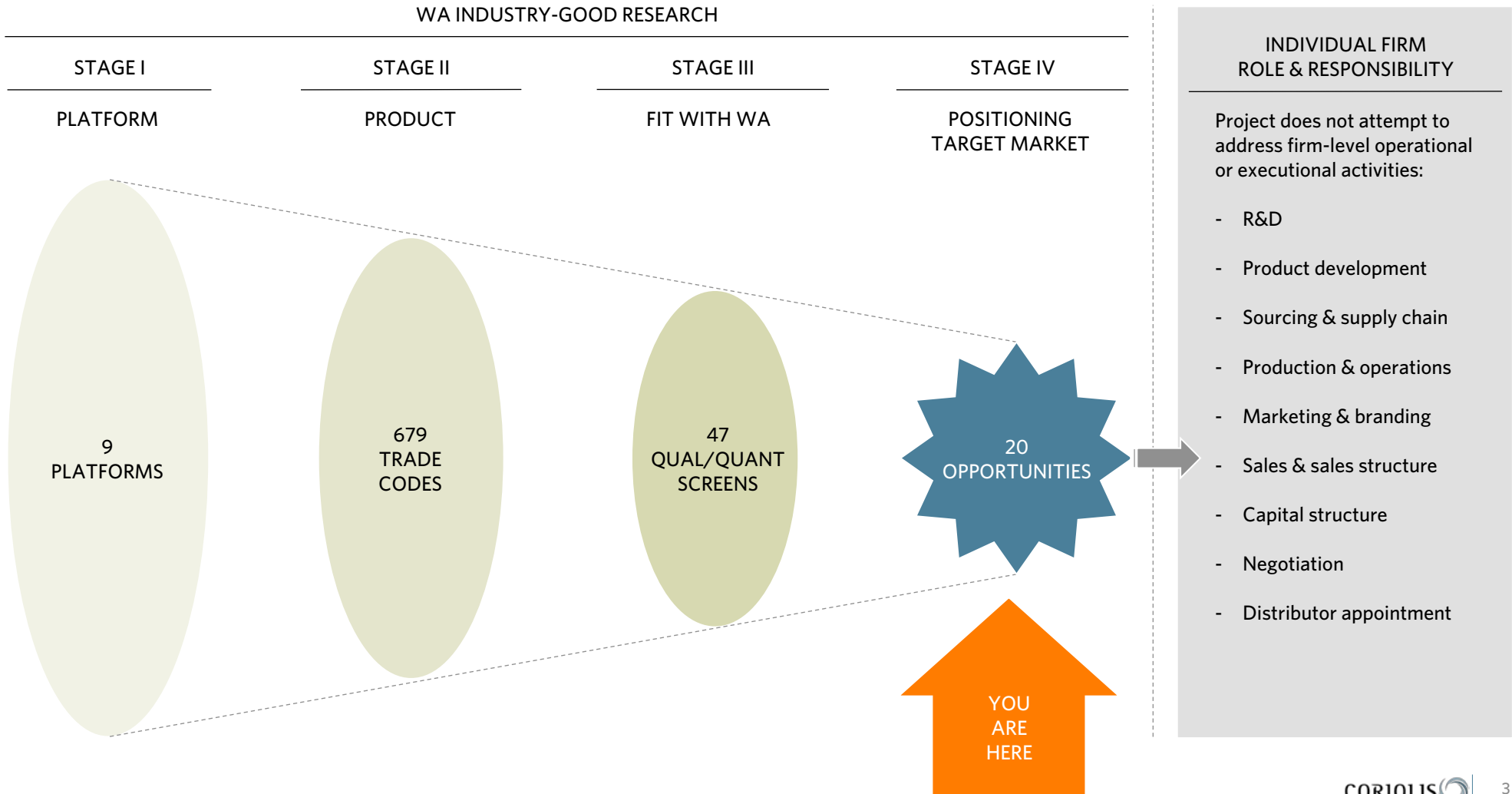
FINAL v100; April 2016

SCREENING OVERVIEW

In Phase One of the Target Market Opportunities in Asia for WA Premium Products Report (TMO Report), extensive import/export trade data was fed through a multi-stage screening process to “hone-in” on potential opportunities for Western Australia; stakeholder interviews also fed into this process

STRUCTURE OF MULTI-STAGE SCREENING PROCESS USED IN THIS PROJECT

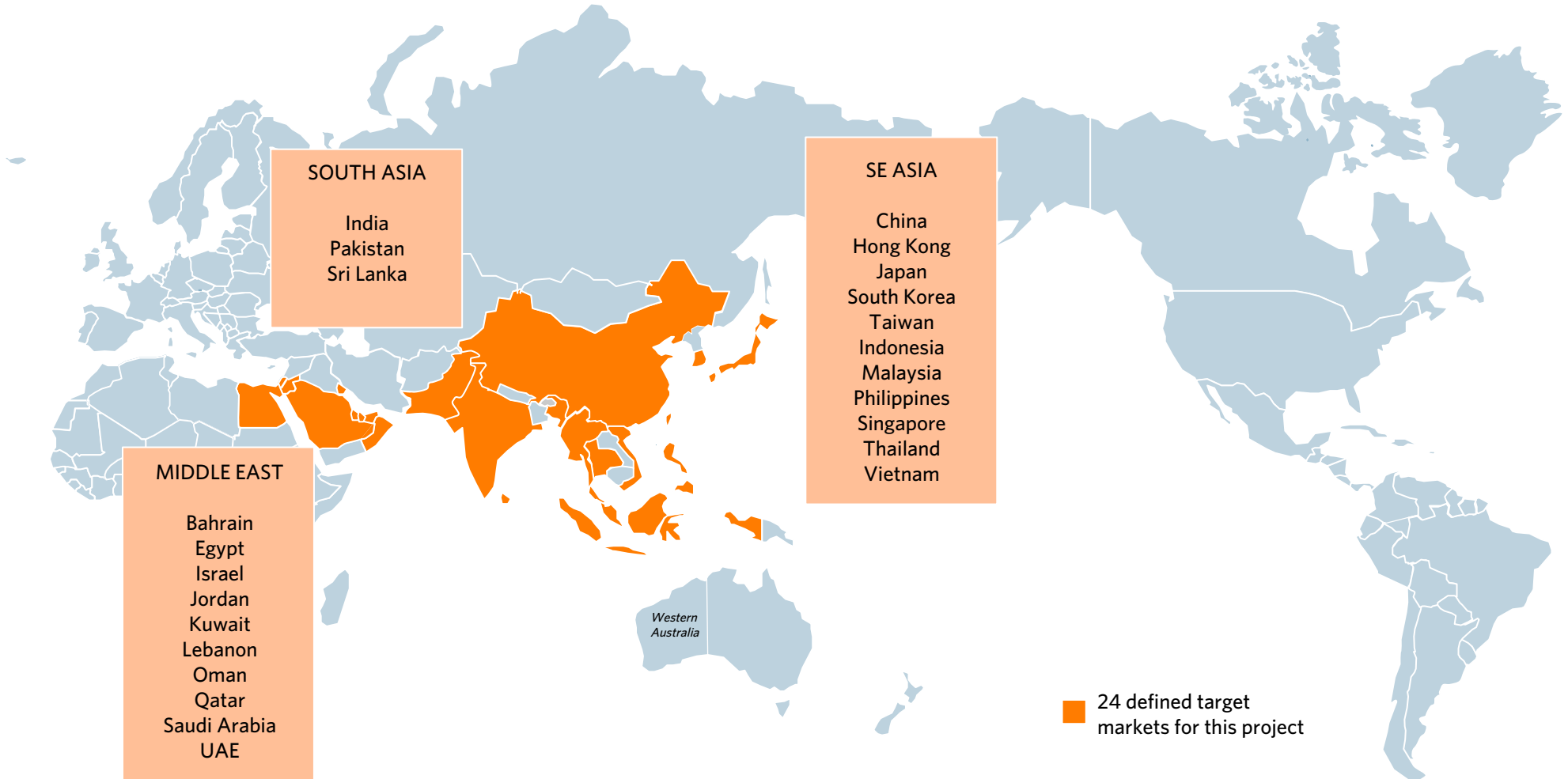
Model; 2016



This project is focused on “market demand” from the following twenty-four Asian/Middle Eastern markets

24 COUNTRIES DEFINED AS HIGH POTENTIAL TARGET MARKETS FOR WESTERN AUSTRALIA

Target markets; 2015



Note: Complete list for analysis purposes, some countries excluded from list if no/limited trade data available (e.g. Iran)

WHAT IS THE PRODUCT?

Animal pellets emerged in Phase I as one of twenty “high growth, high potential” opportunities for Western Australia; animal pellets are pre-prepared, nutritionally complete food for animals (including aquaculture)

PRODUCT OVERVIEW

Example; 2016



PRODUCT PROFILE	
HS Codes	230110
Product	Flour or meal, pellet of meat or offal for animal feed; for use in home (pet), recreational (horse), and intensive agriculture/aquaculture; product is defined a processed mixture of ingredients
Out-of-scope	Raw material/ingredient grains and meats, compressed hay, other single ingredient feeds
Origin	Emerged in early 20 th century with growth of domestic animals and intensive agriculture; spread to intensive aquaculture in 1950's+
Example ingredients	Processed grain by-products, grain products, plant protein products, animal protein products, roughage products, animal fat (preserved with BHA), calcium carbonate, natural chicken flavouring, ascorbic acid, vitamin A supplement, vitamin D supplement, vitamin E supplement, vitamin B12 supplement, riboflavin supplement, niacin supplement, d-Calcium pantothenate, pyridoxine hydrochloride, folic acid, menadione dimethylpyrimidinol bisulfite (source of vitamin K activity), thiamine mononitrate, biotin, choline chloride, salt, manganous oxide, manganese sulfate, ferrous sulfate, copper chloride, copper sulfacte, zinc oxide, zinc sulfate, potassium chloride, iron oxide, ethylenediamine dihydroiodide, sodium selenite, zinc, amino acid complex, manganese amino acid complex, iron amino acid complex, mineral oil, and propionic acid (a preservative).
Forms/usage	- Pellets
Drivers of consumer/market success	<ul style="list-style-type: none"> - Growing demand for protein in Asia driving growing demand for land and water animals produced under intensive production systems - Growth of pet ownership in urban Asia

DOCUMENT STRUCTURE

What is the global situation?

What is the strategic situation in the market?

In this environment, what is the opportunity for Western Australia?

Who are the potential in-market partners?

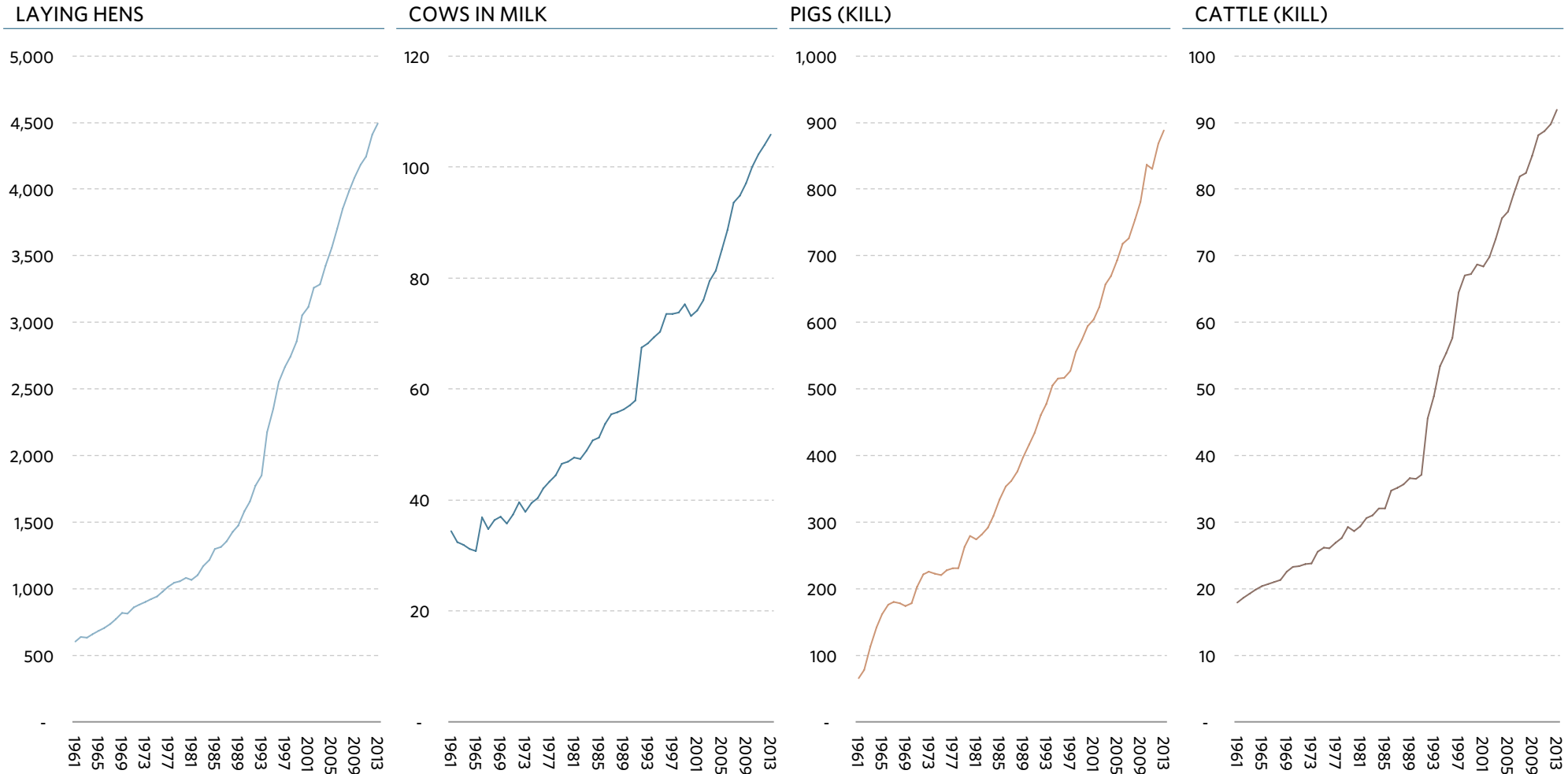
Who are the key firms in Western Australia capable of delivering?



Asia has growing animal protein production; this growth has driven an increased demand for imported feedstuffs, including animal pellets targeting intensive production systems

NUMBER OF PRODUCING ANIMALS IN ASIA: SELECT TYPES

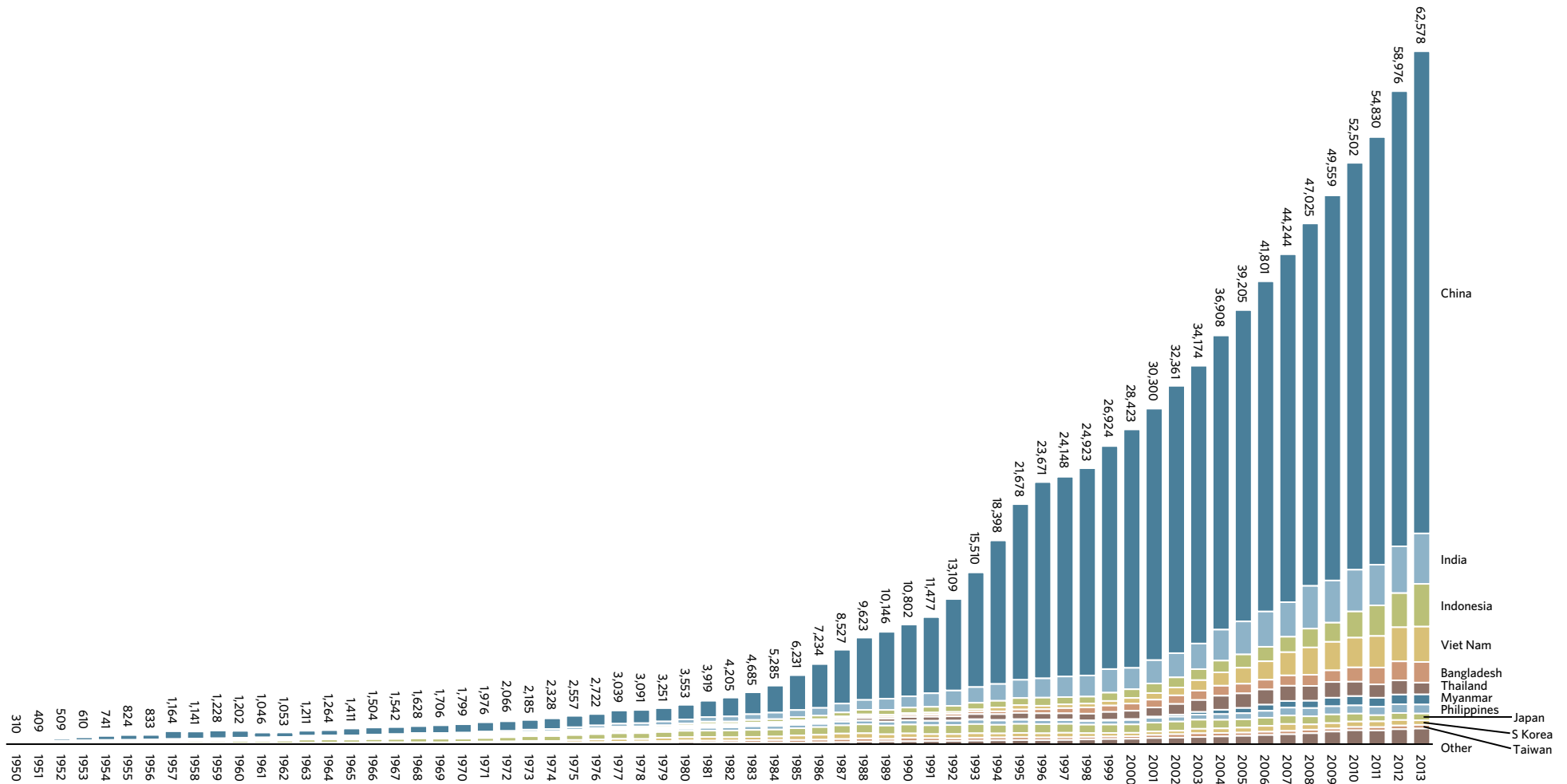
Number of animals; m; 1961-2013



Asia has growing aquaculture production; this expansion has driven an increased demand for animal feedstuffs, including animal pellets targeting aquaculture (e.g. prawns)

AQUACULTURE PRODUCTION VOLUME IN ASIA

Tonnes; 000; 1950-2013



DOCUMENT STRUCTURE

What is the global situation?

What is the strategic situation in the market?

In this environment, what is the opportunity for Western Australia?

Who are the potential in-market partners?

Who are the key firms in Western Australia capable of delivering?



Western Australia has the potential to grow animal pellet exports to Asia

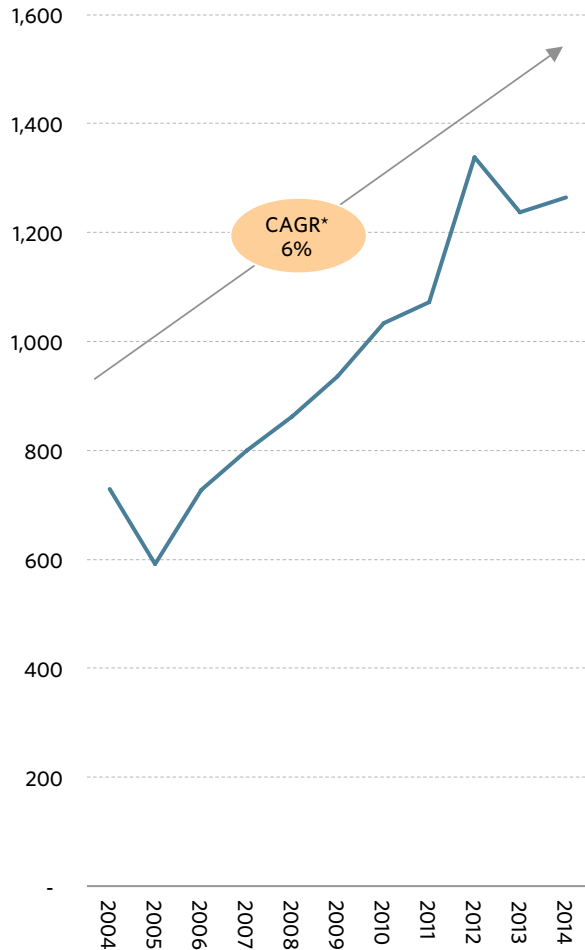
- Asian and Middle Eastern animal pellets import value is growing, driven by a combination of increasing volumes and rising prices
- Asian/Middle East animal pellet import supply is currently dominated by Australia, the USA and Europe
 - Regional animal pellet imports have been growing rapidly over the past decade and Australia, the USA and the Netherlands have been capturing much of the value growth
 - While Australia stands out for absolute growth over the past five years, a range of other countries are achieving strong rates of growth
 - Average FOB price to target Asian markets varies by supplier, with Australia and the Anglo-sphere getting more than the Europeans
- Animal pellets go primarily to SE Asia, particularly Indonesia, Vietnam and Thailand, followed by East Asia, particularly China and Taiwan
 - Over the past ten years, Vietnam, Indonesia, Thailand and China have driven import value growth
 - Vietnam, Thailand, China and Taiwan have been driving growth over the past five years
 - Average animal pellet import prices vary across a relatively narrow range across most large markets; Taiwan, Malaysia and Indonesia stand out as larger markets paying premium prices
 - Imported animal pellets consumption and aggregate animal pellet imports appear almost inversely correlated with income per capita in SE Asia; unlinked elsewhere
- Market share varies by country; Australia is strong in Indonesia, Malaysia, Taiwan, China and much of SE Asia; extensive opportunities elsewhere
- Australia has a strong position across a range of markets, on which to build
- Data supports new high value, premium animal pellets opportunities being initially launched in Indonesia
- As a "Straw Man" for discussion, we identify an export market roll-out plan

Asian and Middle Eastern animal pellets import value is growing, driven by a combination of increasing volumes and rising prices

TOTAL IMPORTS TO ASIA/MIDDLE EAST TARGET REGION (24 COUNTRIES)

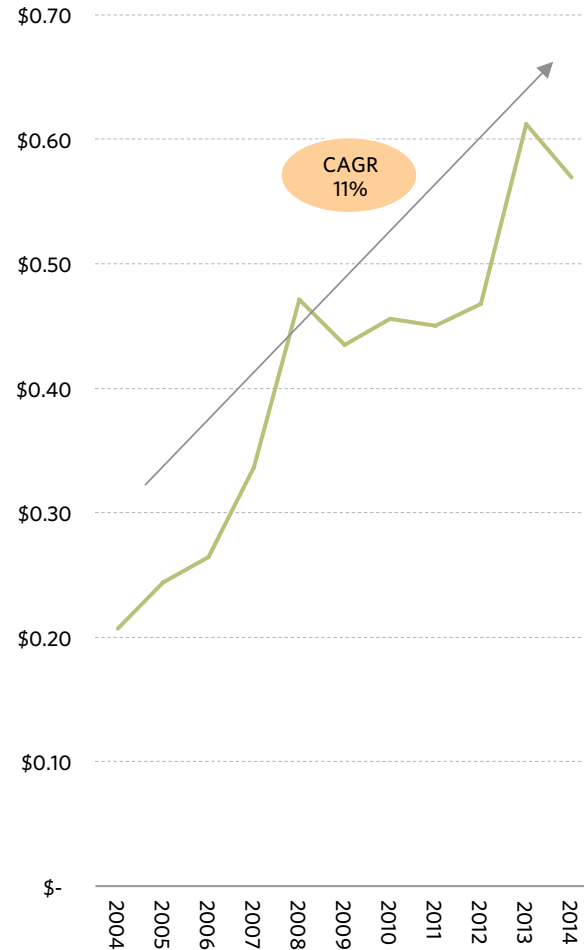
VOLUME

T; 000; 2004-2014



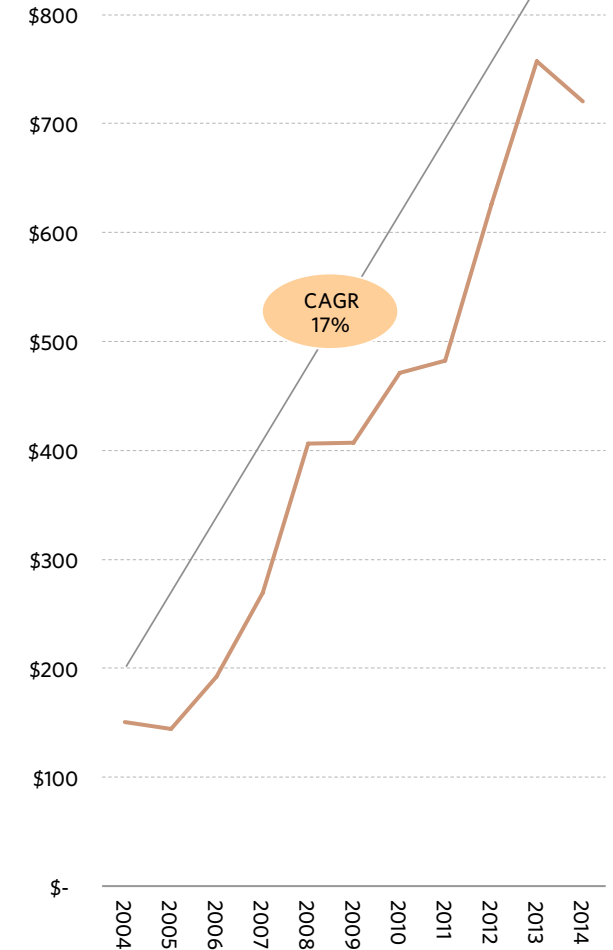
AVERAGE PRICE PER KILOGRAM

US\$; 2004-2014



VALUE

US\$m; 2004-2014

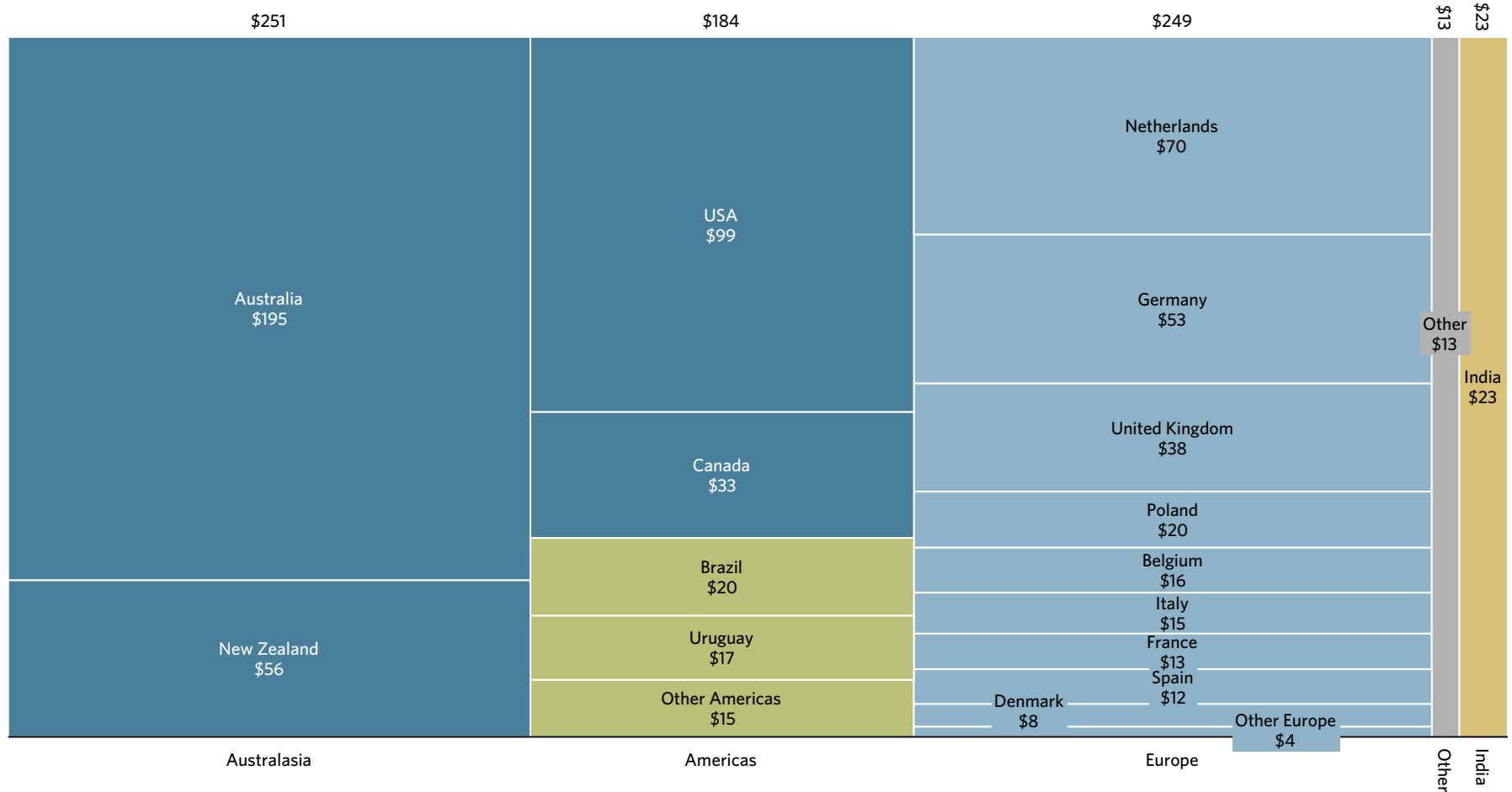


* Compound Annual Growth Rate; Source: UN Comtrade database; Coriolis analysis and classifications

Asian/Middle East animal pellet import supply is currently dominated by Australia, the USA and Europe

EXPORT VALUE BY SUPPLIER TO TARGET REGION
US\$m; FOB; 2014

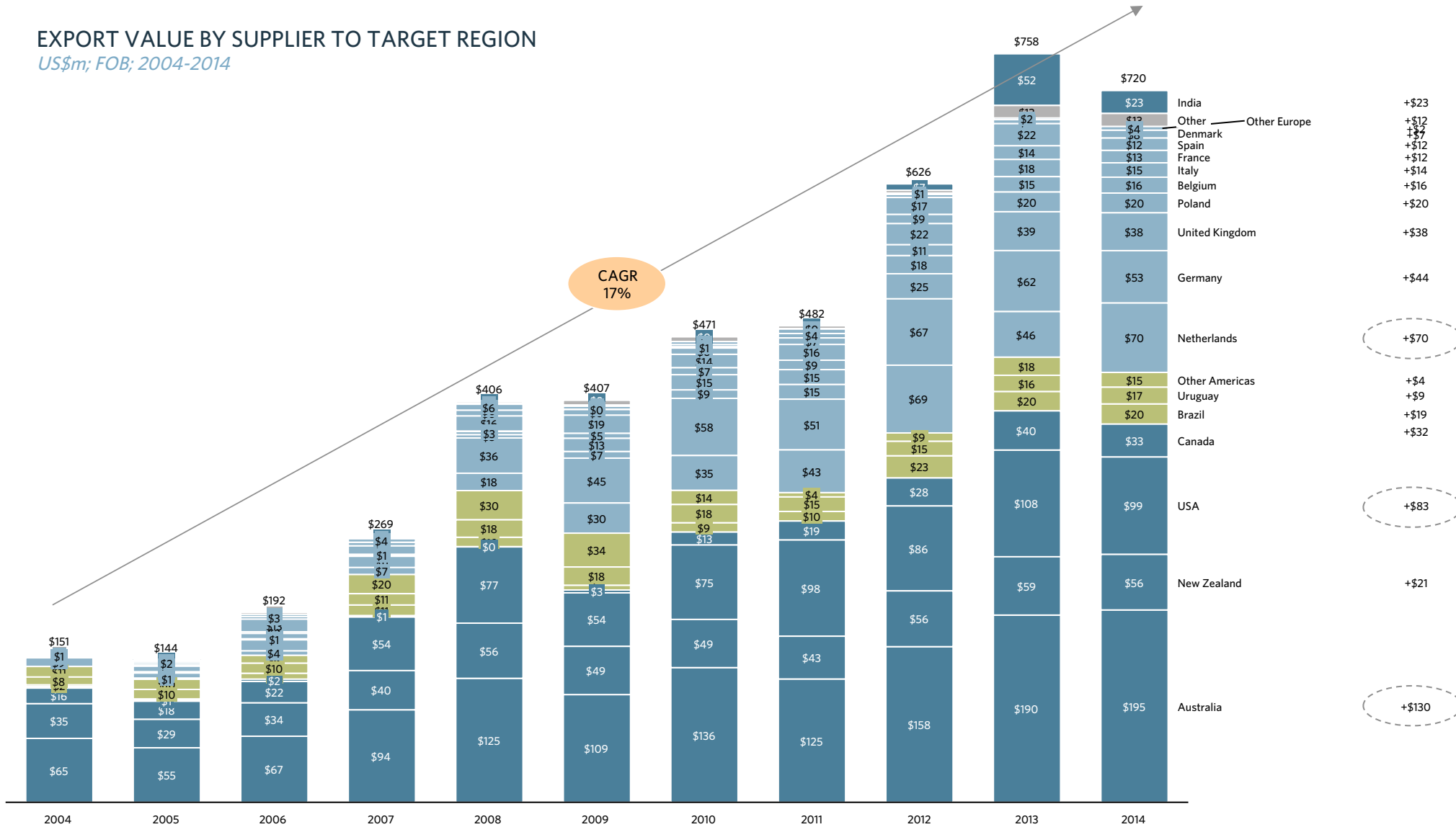
TOTAL = US\$720m



Regional animal pellet imports have been growing rapidly over the past decade and Australia, the USA and the Netherlands have been capturing much of the value growth

10y ABS

EXPORT VALUE BY SUPPLIER TO TARGET REGION
US\$m; FOB; 2004-2014

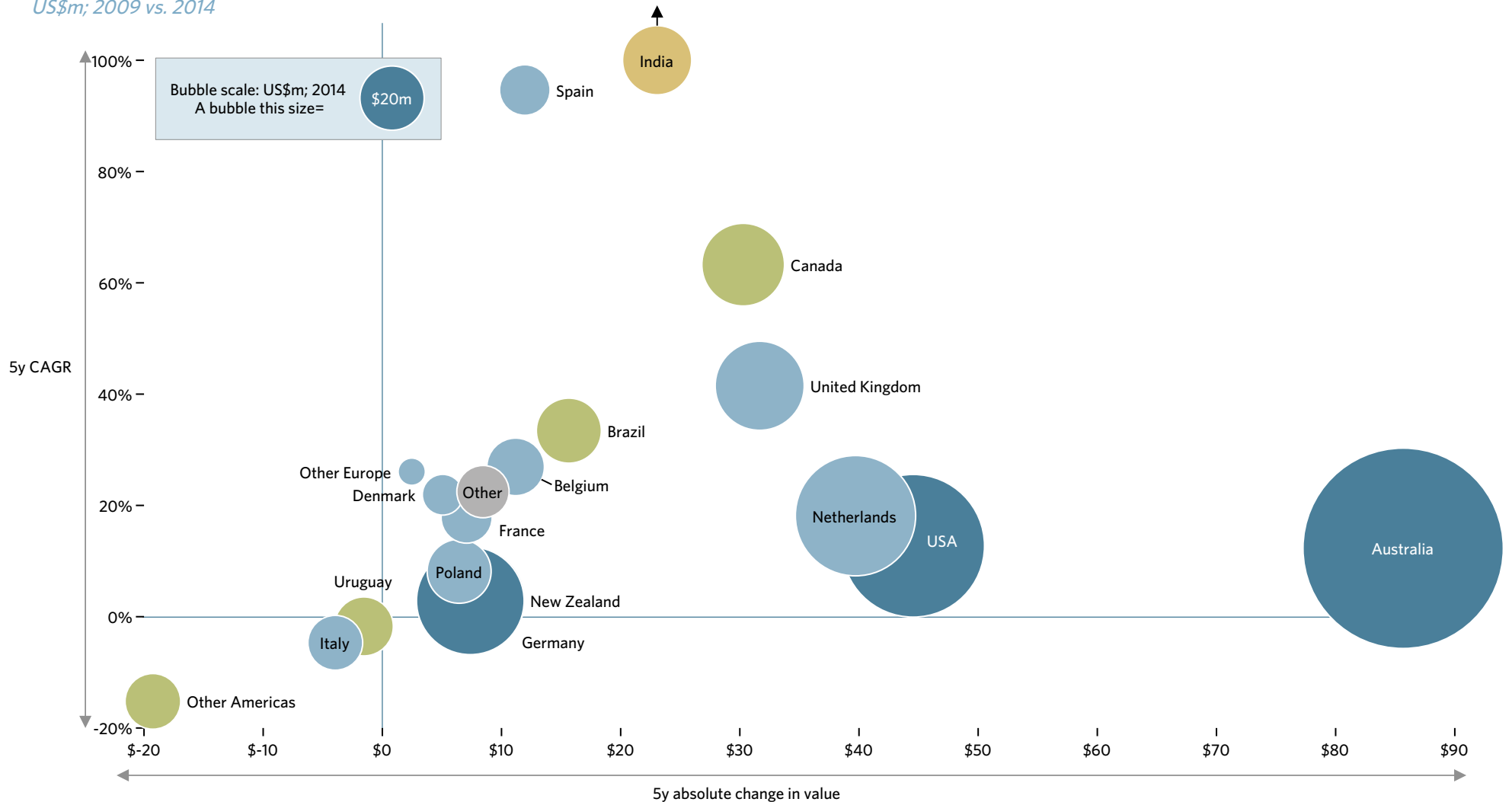


Note: data is as reported by sender (FOB), not receiver; Source: UN Comtrade database; Coriolis analysis and classifications

While Australia stands out for absolute growth over the past five years, a range of other countries are achieving strong rates of growth

FIVE YEAR EXPORT GROWTH MATRIX: CHANGE IN VALUE VS. RATE OF GROWTH VS. ABSOLUTE VALUE

US\$m; 2009 vs. 2014

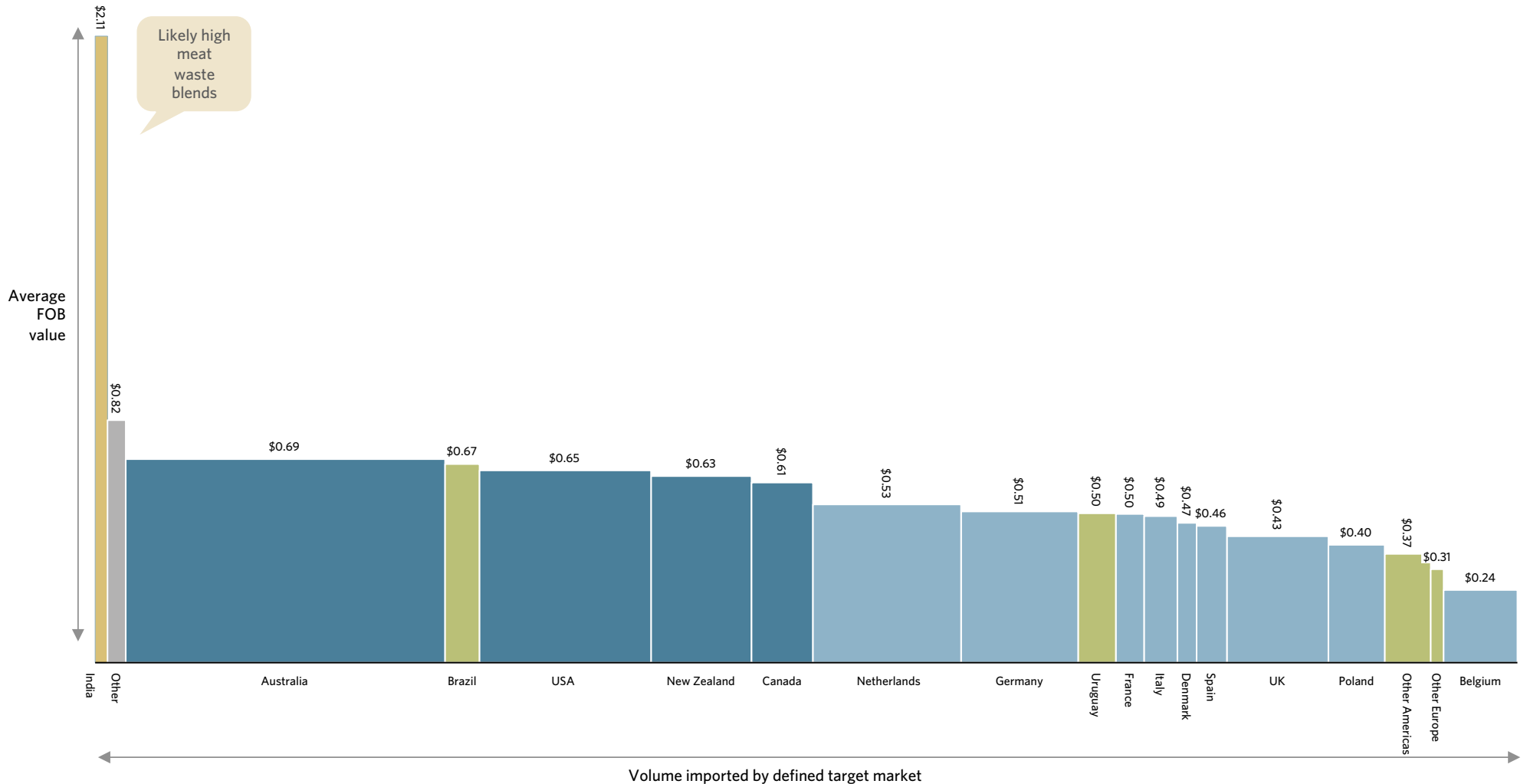


Note: data is as reported by sender (FOB), not receiver; Source: UN Comtrade database; Coriolis analysis and classifications

Average FOB price to target Asian markets vary by supplier, with Australia and the Anglo-sphere getting more than the Europeans

AVERAGE EXPORT VALUE COST CURVE BY SUPPLIER

US\$/kg; t; FOB; 2014



Note: data is as reported by sender (FOB), not receiver; Source: UN Comtrade database; Coriolis analysis and classifications

Animal pellets go primarily to SE Asia, particularly Indonesia, Vietnam and Thailand, followed by East Asia, particularly China and Taiwan

Predominantly for aquaculture

TOTAL = US\$720m

IMPORT VALUE BY MARKET BY REGION

US\$m; FOB; 2014

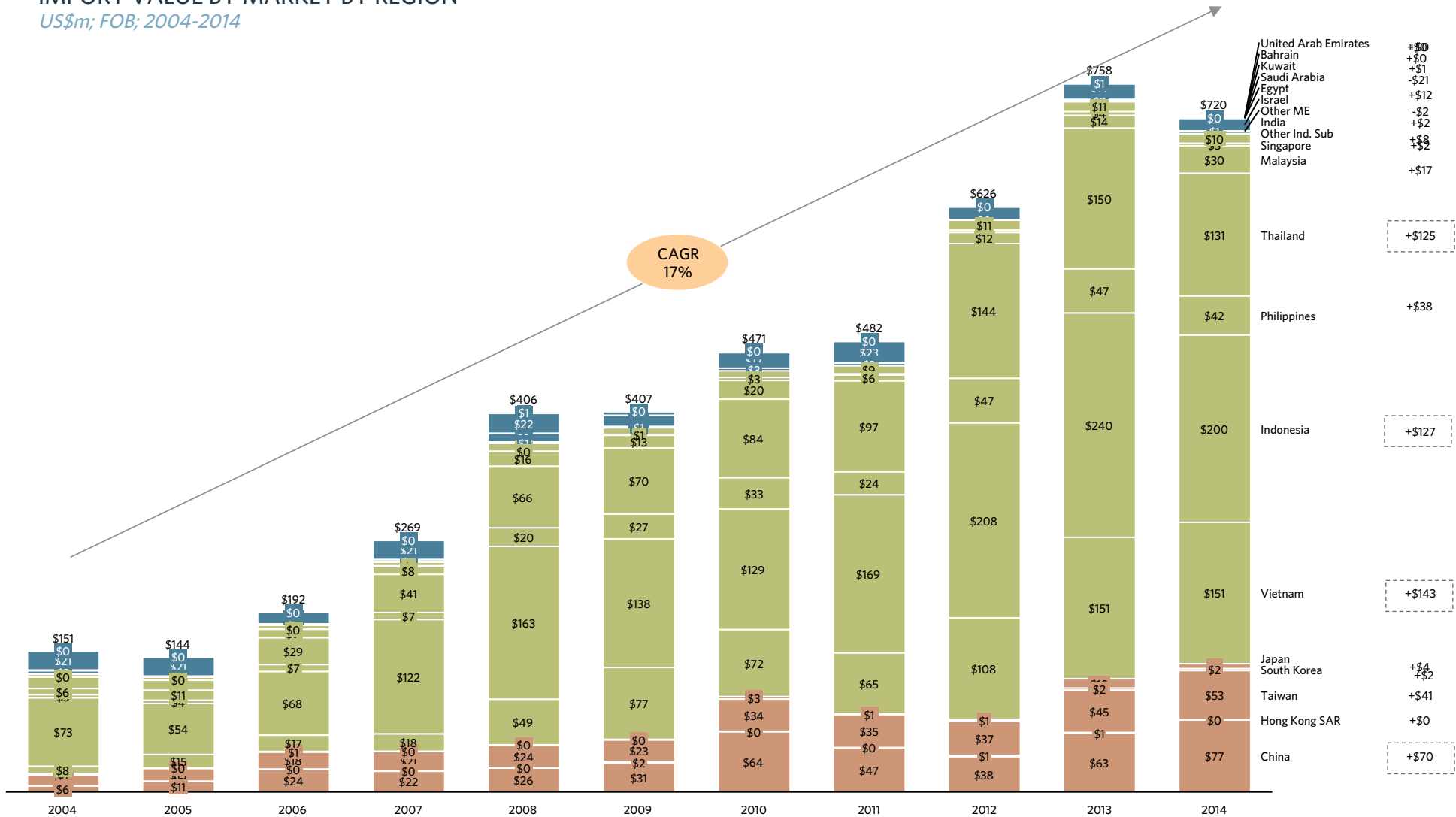


Note: data is as reported by sender (FOB), not receiver; Source: UN Comtrade database; Coriolis analysis and classifications

Over the past ten years, Vietnam, Indonesia, Thailand and China have driven import value growth

IMPORT VALUE BY MARKET BY REGION
 US\$m; FOB; 2004-2014

10y ABS

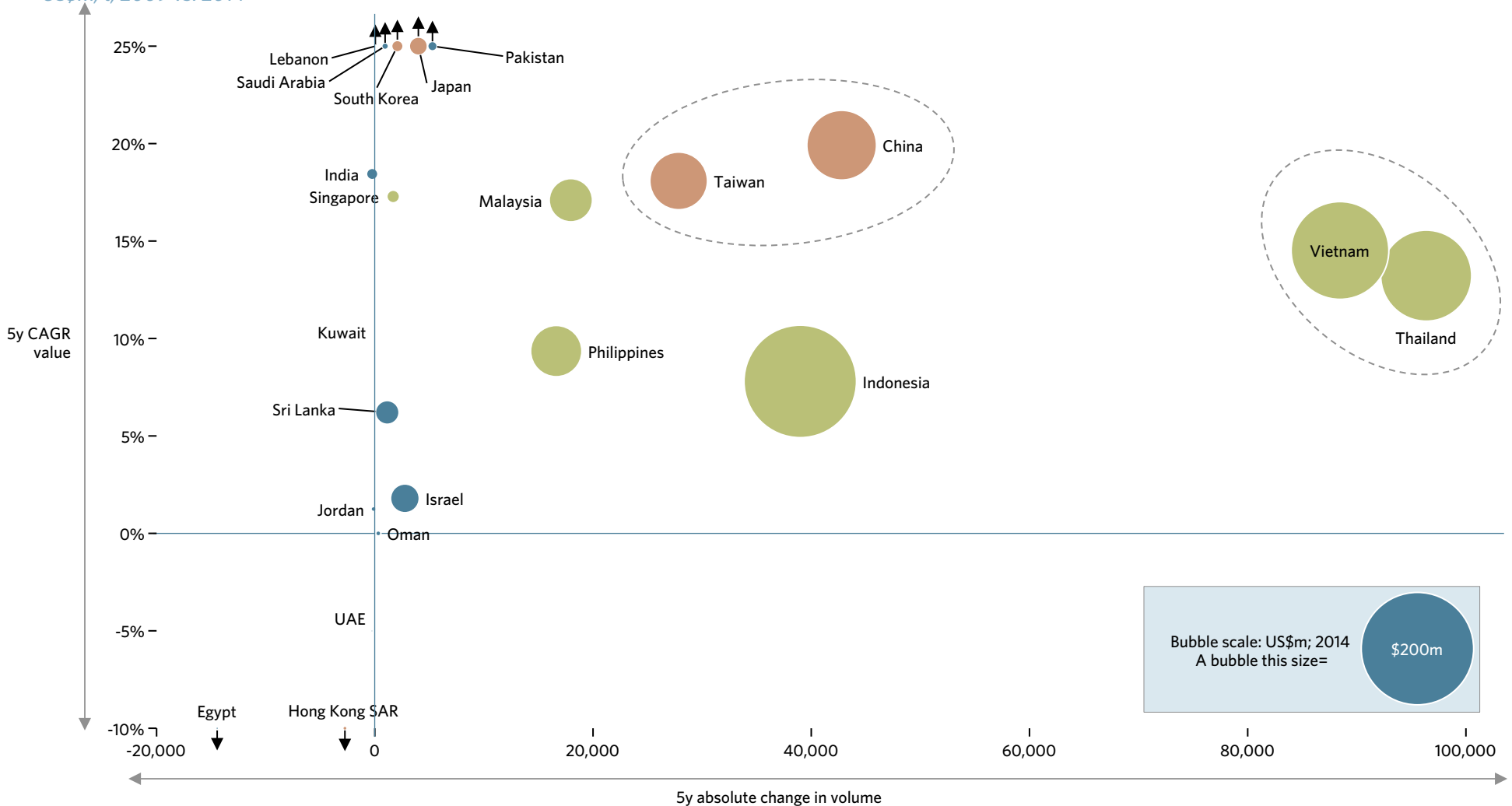


Note: data is as reported by sender (FOB), not receiver; Source: UN Comtrade database; Coriolis analysis and classifications

Vietnam, Thailand, China and Taiwan have been driving growth over the past five years

FIVE YEAR IMPORT GROWTH MATRIX: CHANGE IN VOLUME VS. RATE OF GROWTH VS. ABSOLUTE VALUE

US\$m; t; 2009 vs. 2014

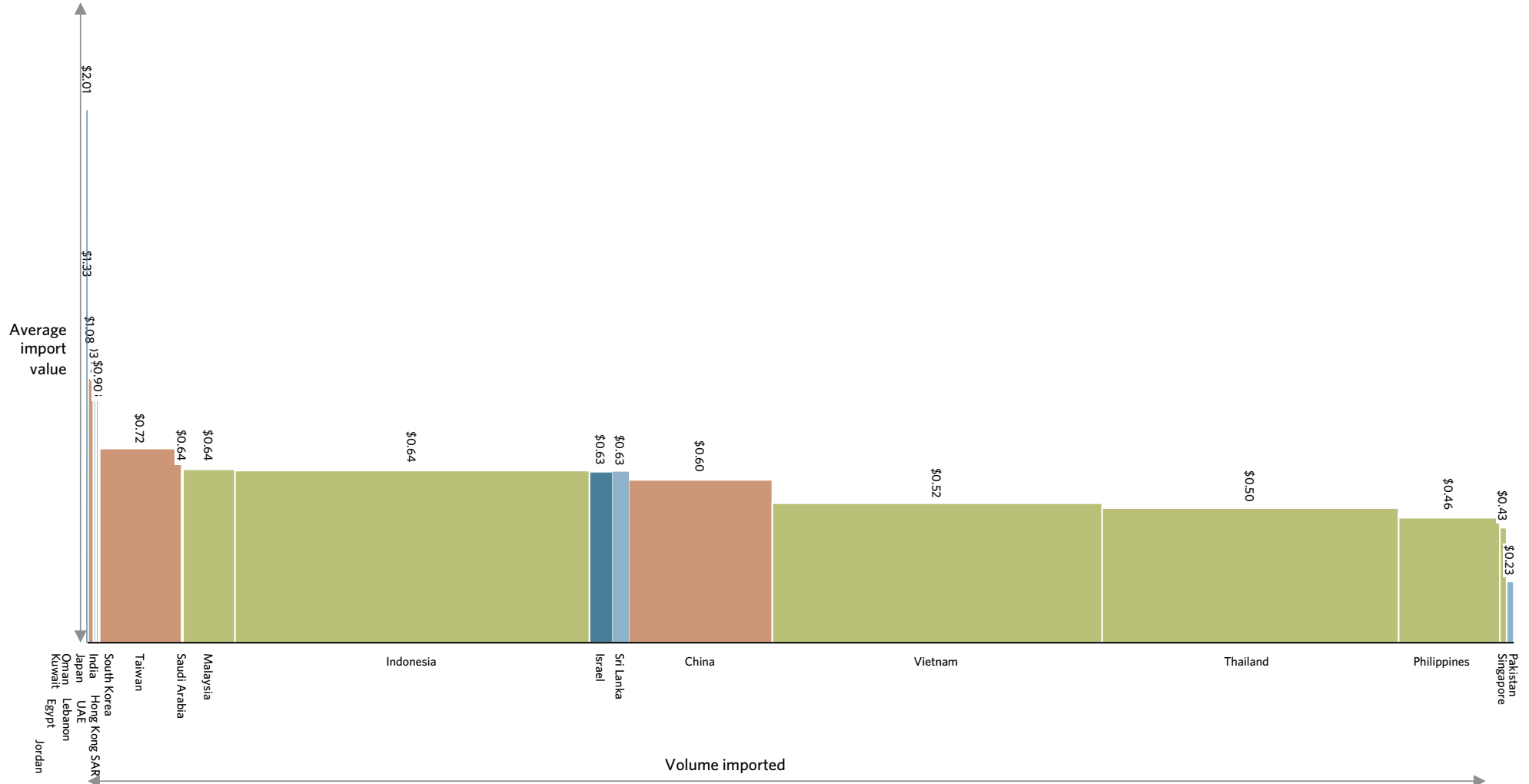


Note: data is as reported by sender (FOB), not receiver; Source: UN Comtrade database; Coriolis analysis and classifications

Average animal pellet import prices vary across a relatively narrow range across most large markets; Taiwan, Malaysia and Indonesia stand out as larger markets paying premium prices

AVERAGE IMPORT VALUE COST CURVE BY MARKET/REGION

US\$/kg; t; FOB; 2014

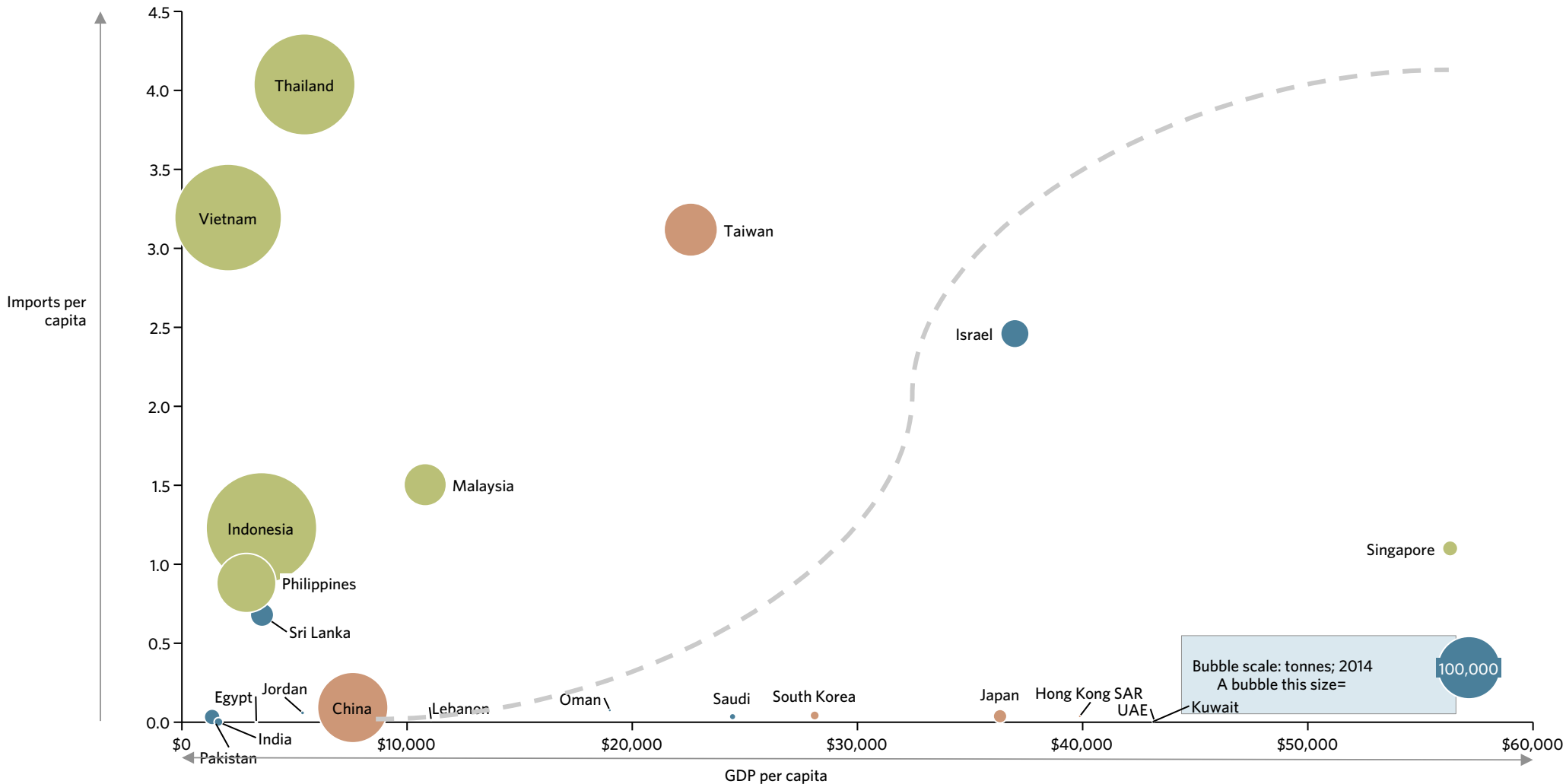


Note: data is as reported by sender (FOB), not receiver; Source: UN Comtrade database; Coriolis analysis and classifications

Imported animal pellets consumption and aggregate animal pellet imports appear almost inversely correlated with income per capita in SE Asia; unlinked elsewhere

MARKET SIZE DRIVERS: GDP PER CAPITA VS. IMPORTS PER CAPITA VS. MARKET SIZE

Kg; US\$; t; 2014



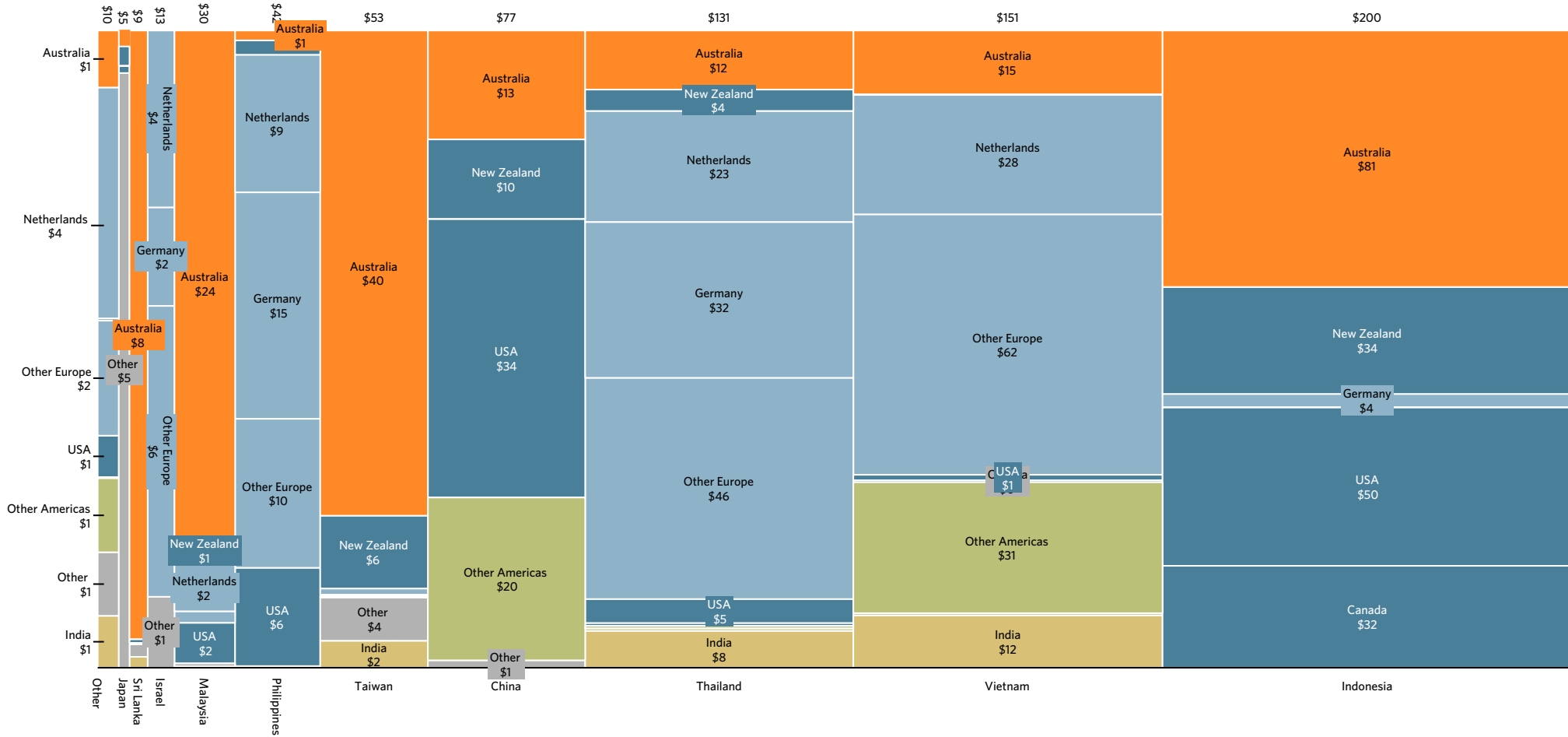
Note: data is as reported by sender (FOB), not receiver; Source: UN Comtrade database; Wikipedia (GDP/capita); Coriolis analysis and classifications

Market share varies by country; Australia is strong in Indonesia, Malaysia, Taiwan, China and much of SE Asia; extensive opportunities elsewhere

IMPORT VALUE MARKET SHARE BY MARKET BY KEY SUPPLIER

% of value in US\$m; FOB; 2014

TOTAL = US\$720m

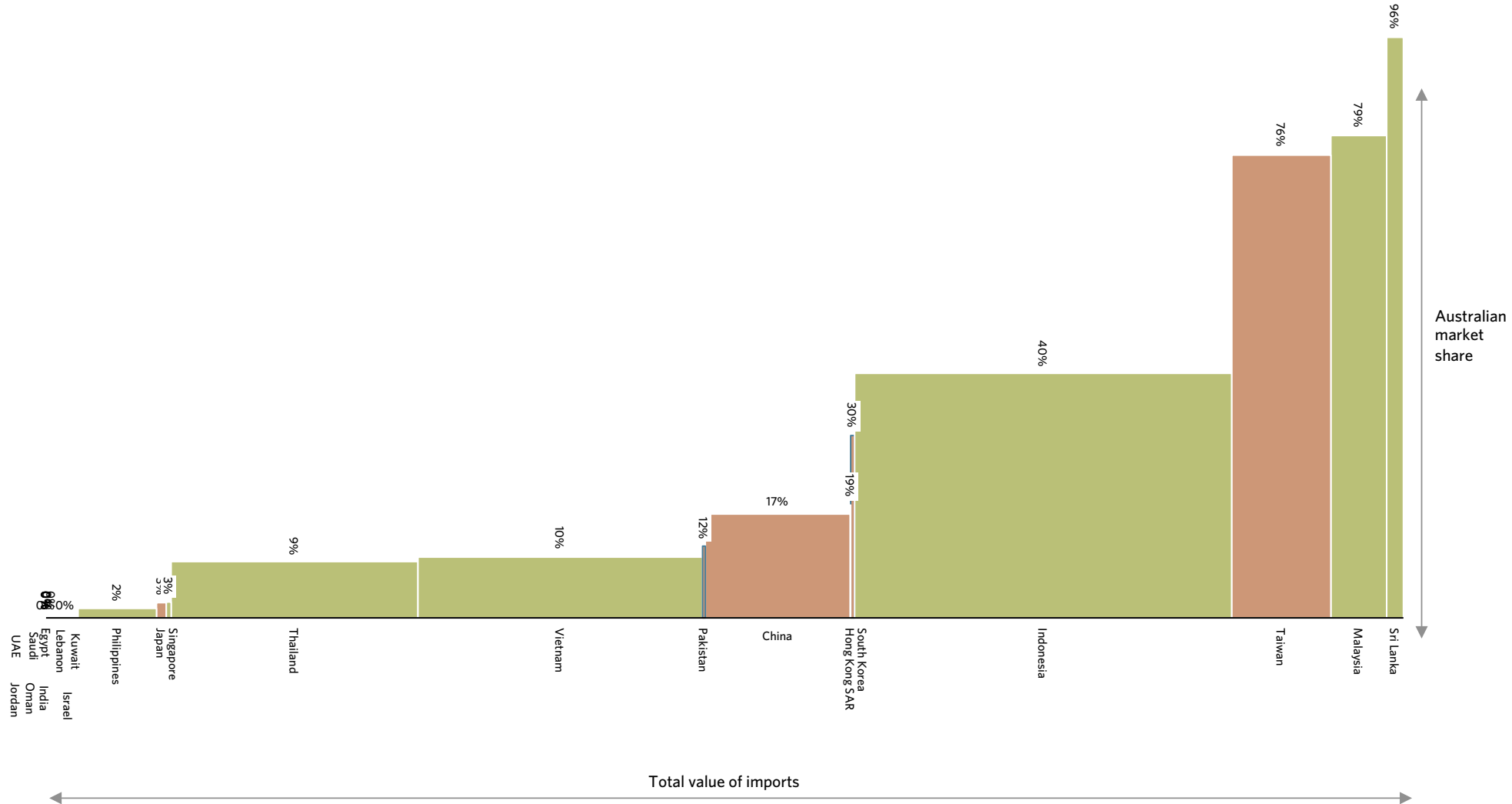


Note: data is as reported by sender (FOB), not receiver; Source: UN Comtrade database; Coriolis analysis and classifications

Australia has a strong position across a range of markets on which to build

AUSTRALIAN IMPORT VALUE MARKET VS. MARKET VALUE

US\$m; FOB; 2014

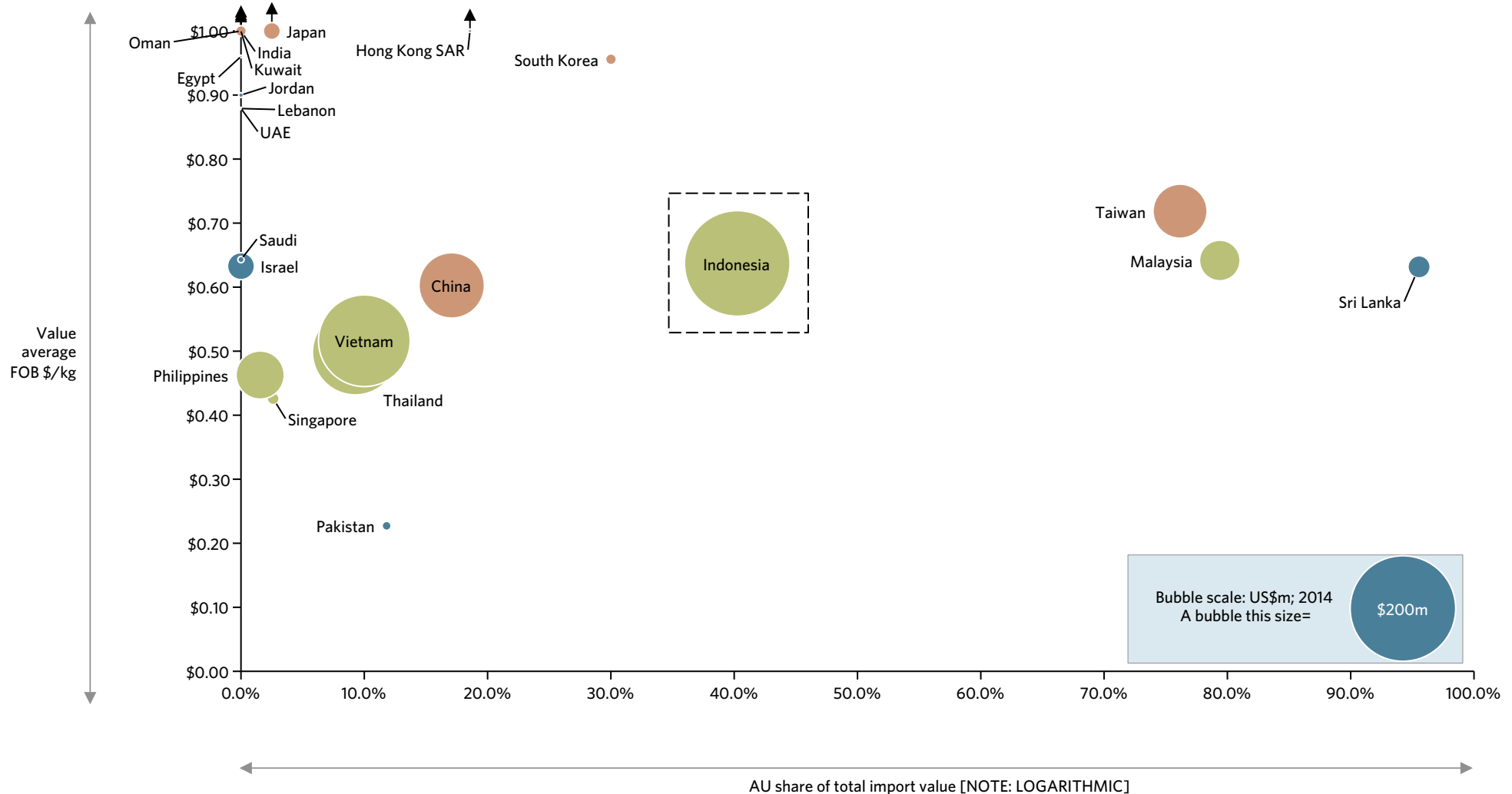


Note: data is as reported by sender (FOB), not receiver; Source: UN Comtrade database; Coriolis analysis and classifications

Data supports new high value, premium animal pellet opportunities being initially launched in Indonesia

WHERE TO FOCUS FOR NEW HIGH VALUE, PREMIUM PRODUCTS: AU SHARE VS. AVERAGE VALUE VS. MARKET SIZE

% of value; US\$; US\$m; 2014



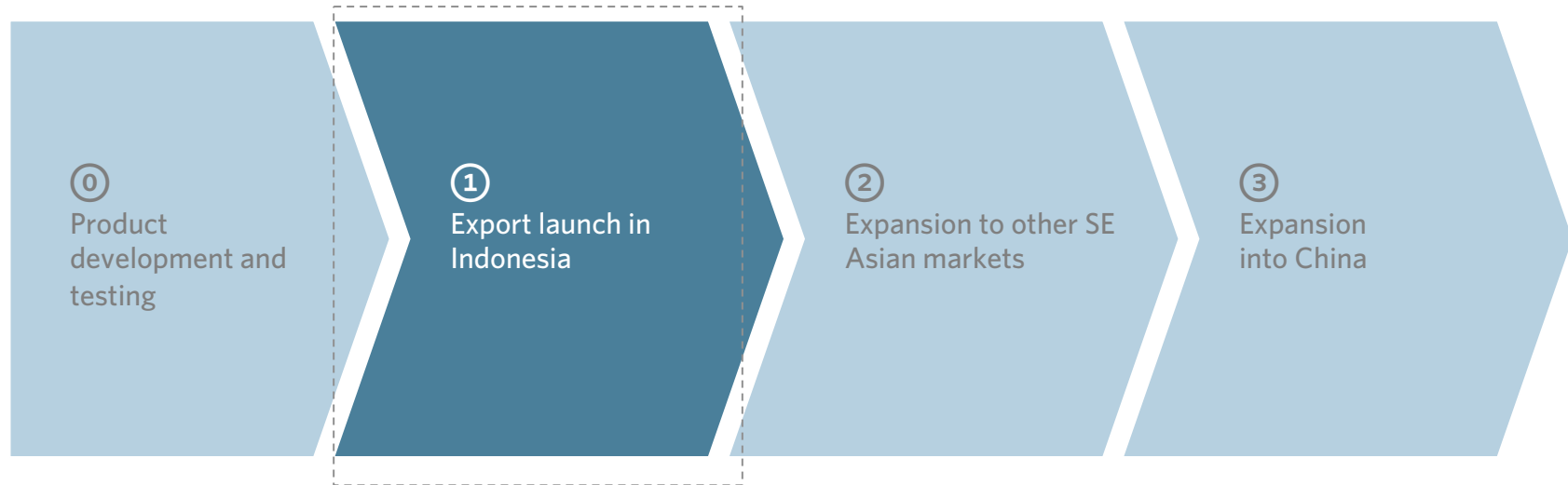
Note: data is as reported by sender (FOB), not receiver; Source: UN Comtrade database; Coriolis analysis and classifications

As a "Straw Man" for discussion, we identify an export market roll-out plan

PRELIMINARY "STRAW MAN" DEVELOPMENT & ROLLOUT PLAN FOR ANIMAL FEED OPPORTUNITY

Model; 2016

THOUGHT STARTER
"STRAW MAN" MODEL
FOR DISCUSSION



DOCUMENT STRUCTURE

What is the global situation?

What is the strategic situation in the market?

In this environment, what is the opportunity for Western Australia?

Who are the potential in-market partners?

Who are the key firms in Western Australia capable of delivering?



Western Australia is well-positioned to grow animal feed exports to Asia

IS THE MARKET DEVELOPED & COMPETITIVE?

- The flow of animal pellets, from production to the farmer in Asia, is relatively straight-forward; complexity comes from needing to distribute the product to a large number of small producers across a large area

WHAT IS WA CAPABLE OF DELIVERING?

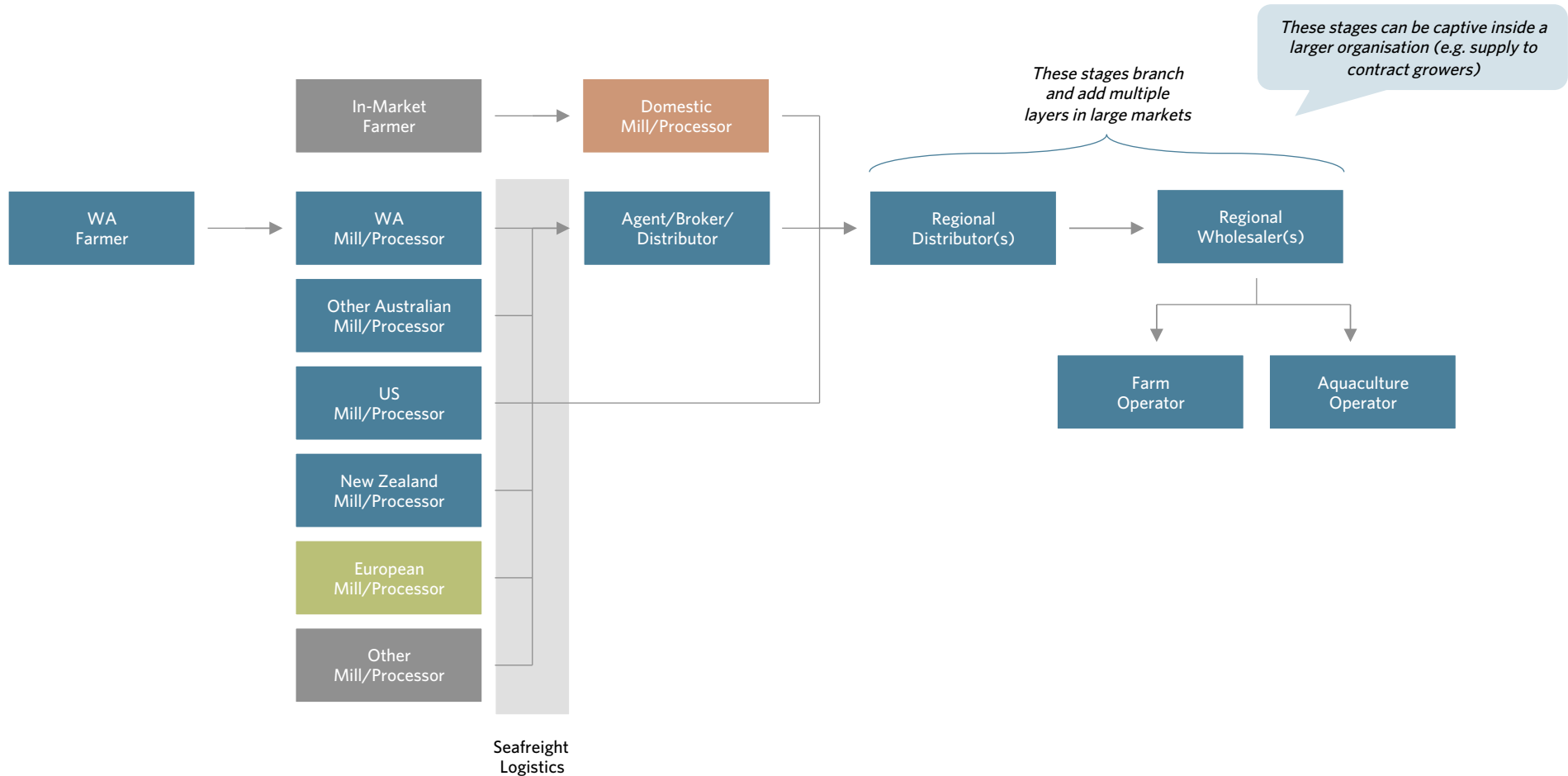
- Western Australian animal pellet producers need to continue to move forward and improve through improved product development and presentation
- Western Australian animal feeds are a premium product for which a wide range of potential positions or claims exist to develop a more differentiated offer for Asia
- As a "Straw Man" for discussion, we identify an opportunity to further develop Western Australian animal feed by developing and marketing select characteristics

HOW IS THE MARKET STRUCTURED?

The flow of animal pellets, from production to the farmer in Asia, is relatively straight-forward; complexity comes from needing to distribute the product to a large number of small producers across a large area

SIMPLIFIED MODEL OF SUPPLY CHAIN: ANIMAL PELLETS

Model; 2016



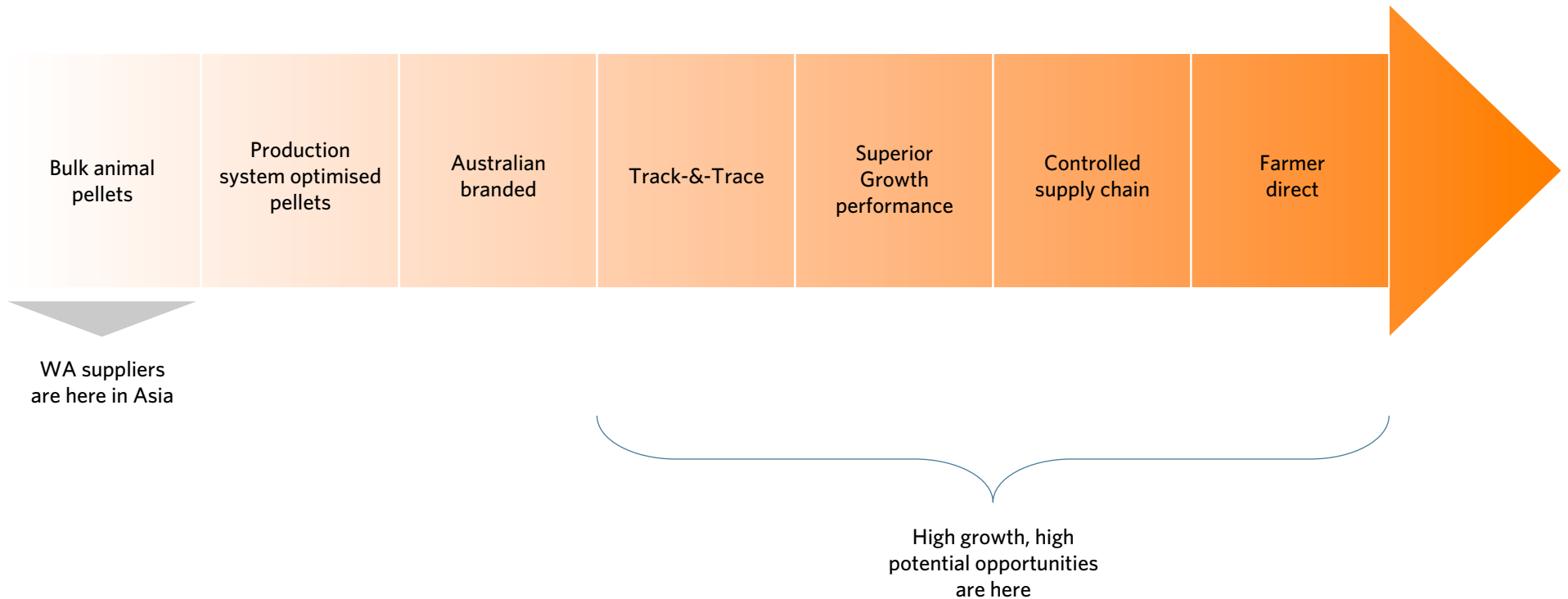
WHAT IS WA CAPABLE OF DELIVERING? STRATEGIC DIRECTION

Western Australian animal pellet producers need to continue to move forward and improve through improved product development and presentation

SUGGESTED STRATEGIC DIRECTION: WESTERN AUSTRALIAN ANIMAL PELLETS

Model; 2016

PRELIMINARY
FOR DISCUSSION



WHAT IS WA CAPABLE OF DELIVERING? CLAIMS

Western Australian animal feeds are a premium product for which a wide range of potential positions or claims exist to develop a more differentiated offer for Asia

IDENTIFIED POTENTIAL PREMIUM POSITIONS

Model; 2016

PRELIMINARY FOR DISCUSSION



HEALTH



PROVENANCE



INDULGENCE



CONVENIENCE

High in protein

Quality assured

Human grade food safety

Added nutrients

Antibiotic free

No added hormones

Strong biosecurity

Disease free environment

Identified source region

Track & trace

Sustainable

Faster animal growth

Improved quality

In-market technical staff

Nutritionally complete

"Farm"-ready

Added antibiotics

WHAT IS A POTENTIAL WA OFFER?

As a "Straw Man" for discussion, we identify an opportunity to further develop Western Australian animal feed by developing and marketing select characteristics

PRELIMINARY FOR DISCUSSION

HYPOTHETICAL EXAMPLE OF POTENTIAL PREMIUM PRODUCT FROM WA

Model; 2016



High in protein

Safety & quality assured

Strong biosecurity



From Western Australia

Sustainable

Track-&-Trace code



Ensured quality



Nutritionally complete

DOCUMENT STRUCTURE

What is the global situation?

What is the strategic situation in the market?

In this environment, what is the opportunity for Western Australia?

Who are the potential in-market partners?

Who are the key firms in Western Australia capable of delivering?



FOCUS MARKET - INDONESIA

Five potential in-market partners are identified for Western Australian animal pellet firms in Indonesia

POTENTIAL IN-MARKET PARTNERS - INDONESIA

2015 or as available



CHAROEN POKPHAND INDONESIA



JAPFA



Firm	PT Charoen Pokphand Indonesia Tbk	PT Japfa Comfeed Indonesia TBK PT Suri Tani Pemuka	Cheiljedang Indonesia PT. Cheil Jedang Superfeed PT. Cheil Jedang Indonesia PT. Super Unggas Jaya	PT Malindo Feedmill	PT Sierad Produce Tbk
Ownership	Public; listed; Indonesia Partial owner/parent is private; Thailand	Public; listed Indonesia	Private; Korea (Lee family) South Korea	Public; listed Indonesia	Public; listed Indonesia
Website	www.cpfworldwide.com www.cpgroupglobal.com	www.japfacomfeed.co.id	english.cj.net www.cj.net	www.malindofeedmill.com/	www.sieradproduce.com
Annual sales	Indo: US\$3.1b (14) Global: US\$46.5 (13)	US\$2.53b (14)	Global: US\$10.4b (13)	US\$480m (14)	US\$235m (14)
# of employees	4,860 (Indonesia) 300,000 (Global)	19,120 (14)	2,500-5,000 (Indonesia) 5,991 (Korea)	3,730 (Indonesia)	1,810 (Indonesia)
% of Indonesian animal feed capacity	31%	22%	6%	4%	3%
Products	Animal feeds (76% of sales) Day-old-chickens Chicken processing	Animal feed production Chicken production Aquaculture Value added processing	Animal feed Day-old-chickens Chicken processing	Animal feed production	Animal feed production
Notes	-	-	Parent historically invested in sugar in the Ord	-	-

DOCUMENT STRUCTURE

What is the global situation?

What is the strategic situation in the market?

In this environment, what is the opportunity for Western Australia?

Who are the potential in-market partners?

Who are the key firms in Western Australia capable of delivering?



IDENTIFIED WA COMPANIES

GILMAC MACKIE HAY 	KETTRIDGES 	MILNE AGRIGROUP 
ADDRESS: Level 3, 3 Ord St , West Perth WA 6005	ADDRESS: Cnr Harris Road & Golding Crescent, Picton WA	ADDRESS: 2 Alumina Road, East Rockingham, WA 6168
PHONE: 08 9429 4900	PHONE: 08 9724 6800	PHONE: 08 9351 0750
WEBSITE: www.gilmac.com.au	WEBSITE: www.kettridges.com.au	WEBSITE: www.milne.com.au

THOMPSON AND REDWOOD /PREMIUM GRAIN HANDLERS 	UNIGRAIN 	WELLARD GROUP 
ADDRESS: 220 Almeria Parade, Upper Swan WA 6069	ADDRESS: 28 Howson Way, Bibra Lake, WA 6163	ADDRESS: 1A Pakenham Street, Fremantle, WA 6160
PHONE: 08 9296 4767	PHONE: 08 9418 6126	PHONE: 08 9432 2800
WEBSITE: www.thompsonandredwood.com.au	WEBSITE: www.unigrain.com.au	WEBSITE: www.wellard.com.au

WESTON MILLING ANIMAL NUTRITION 		
ADDRESS: 31 Sevenoaks St, Bentley, WA 6102		
PHONE: 08 9350 7000		
WEBSITE: www.westonanimalnutrition.com.au		

AUSTRALIA

Coriolis Australia Pty Ltd
PO Box 5831
St Georges Terrace
Perth, WA 6831
Australia
+61 8 9468 4691

NEW ZEALAND

Coriolis (New Zealand) Limited
PO Box 90-509
Victoria Street West
Auckland, 1142
New Zealand
+64 9 623 1848

www.coriolisresearch.com

Coriolis is the leading Australasian management consulting firm specialising in the wider food value chain. We work on projects in agriculture, food and beverages, consumer packaged goods, retailing & foodservice. In other words, things you put in your mouth and places that sell them.

WHERE WE WORK

We focus on the Asia Pacific region, but look at problems with a global point-of-view. We have strong understanding of, and experience in, markets and systems in Australia, China, Japan, Malaysia, New Zealand, Singapore, South Korea, Thailand, the United Kingdom and the U.S. We regularly conduct international market evaluations and benchmarking.

WHAT WE DO

We help our clients assemble the facts needed to guide their big decisions. We develop practical, fact-based insights grounded in the real world that guide our clients decisions and actions. We make practical recommendations. We work with clients to make change happen. We assume leadership positions to implement change as necessary.

HOW WE DO IT

All of our team have worked across one-or-more parts of the wider food value chain, from farm-to-plate. As a result, our recommendations are grounded in the real world. Our style is practical and down-to-earth. We try to put ourselves in our clients' shoes and focus on actions. We listen hard, but we are suspicious of the consensus. We provide an external, objective perspective. We are happy to link our fees to results.

WHO WE WORK WITH

We only work with a select group of clients we trust. We build long term relationships with our clients and more than 80% of our work comes from existing clients. Our clients trust our experience, advice and integrity.

Coriolis advises clients on growth strategy, mergers and acquisitions, operational improvement and organisational change. Typical assignments for clients include...

FIRM STRATEGY & OPERATIONS

We help clients develop their own strategy for growing sales and profits. We have a strong bias towards growth driven by new products, new channels and new markets.

MARKET ENTRY

We help clients identify which countries are the most attractive - from a consumer, a competition and a channel point-of-view. Following this we assist in developing a plan for market entry and growth.

VALUE CREATION

We help clients create value through revenue growth and cost reduction.

TARGET IDENTIFICATION

We help clients identify high potential acquisition targets by profiling industries, screening companies and devising a plan to approach targets.

DUE DILIGENCE

We help organisations make better decisions by performing consumer and market-focused due diligence and assessing performance improvement opportunities.

EXPERT WITNESS

We provide expert witness support to clients in legal cases and insurance claims. We assist with applications under competition/fair trade laws and regulations.

