

PATHWAY TO **COMPETITIVENESS** WA AGRICULTURE

A Project Under the **AgSciences R&D** Fund
July 2016

CORIOLIS 

FOR



Department of
Primary Industries and
Regional Development

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PROJECT BRIEF

This project is driven by the following client brief and specified required output

PURPOSE AND CONTEXT

The Department of Agriculture and Food, Western Australia (DAFWA) has commenced the Agricultural Sciences R&D Fund (ASR&DF) project. This four year, \$22.1 million project is funded by the State Government's Royalties for Regions program. This investment will generate growth and productivity improvements for the Western Australia economy.

The Asian Century presents a clear opportunity for Western Australia's agrifood sector. However, Western Australian agrifood businesses are being outperformed. Businesses from other competing countries and regions are growing faster in Asian markets. Western Australia needs to improve its competitiveness. Western Australia must shift from the production of low value ingredients to high value consumer products.

Pathways to Competitiveness will be a key plank of the ASR&DF project. It will identify opportunities, constraints and drivers for growth and investment. There is no consolidated research on this subject for Western Australia.

The project is cross-sectoral, reaching along the value chain from farms through to key markets worldwide. It includes grains, livestock, horticulture and irrigated agriculture, aquaculture, and food manufacturing. It also includes producers, processors, distributors, retailers, exporters, agribusiness service providers, marketers, investors and other supply chain participants.

The project is targeted at industry, grower groups and the Grower Group Alliance. The focus will be on industries, businesses and products most likely to contribute to repositioning the Western Australian agrifood industry. As agrifood production is predominantly a regional activity, this will drive prosperity for regional communities.

PROBLEM

Western Australia has a handful of agrifood sectors that are internationally competitive and at global scale, for example grains. Beyond these, Western Australian agrifood sector businesses are mostly below scale and focused on domestic markets. As a result, such businesses have low productivity and are uncompetitive in

world markets.

In addition, Western Australia still predominantly produces and exports bulk, raw material ingredients. Western Australia's ingredient exports are then transformed into finished goods by firms elsewhere. Benchmarking with other high-income, developed countries, such as Denmark or Switzerland, implies Western Australia is underachieving in transforming its ingredients into products sold direct to consumers through retail and foodservice channels.

DESIRED FUTURE

The Western Australian agrifood industry of the future will be acknowledged as amongst the world-leaders. Western Australia will rate with the trend setters in agrifood productivity, marketing and innovation. Western Australia will be compared against current agrifood leaders, including Denmark and the Netherlands.

The WA agrifood sector of the future will be led by businesses that have:

- ✓ World-class productivity
- ✓ Scalable, global competitive business models
- ✓ Strong and growing exports focused on Asia and the Middle East
- ✓ Excellent profitability, making capital available for reinvestment
- ✓ Differentiated products competing on more than price
- ✓ Integrated value chains reaching further into markets
- ✓ Highly capable leaders.

The growth performance and investment returns delivered by such businesses will help create a sustained flow of investment to underpin economic development in Western Australia.

The agrifood sector will offer a large number of high quality jobs in Western Australia. An internationally competitive agrifood sector will encourage young Western Australians to seek careers in the industry. The agrifood sector will be actively competing in the world's most attractive markets.

MEASURES OF SUCCESS

Industry sectors that have achieved international competitiveness demonstrate the following characteristics:

- ✓ Strong export value and volume growth
- ✓ High export as a proportion of total business turnover
- ✓ Large and growing contribution to the state and national economy
- ✓ Growing investment in R&D and innovation
- ✓ Increasing investment in international growth
- ✓ More integrated value chains through to the final consumer
- ✓ Growing wages in Western Australia and more high quality jobs
- ✓ Greater international recognition
- ✓ Greater revealed comparative advantage

REQUIRED OUTPUT

To support Western Australia in achieving this success, this project will:

- ✓ Identify and describe international competitiveness
- ✓ Document the practices that characterise international competitiveness
- ✓ Define mechanisms to promote achievement of international competitiveness
- ✓ Recommend how DAFWA will support WA agrifood businesses to implement the key findings of the investigation to improve and achieve international competitiveness.

The results of this project will:

- ✓ Inform state government policy
- ✓ Improve state government co-investment in the agrifood sector
- ✓ Create wider awareness of the competitiveness challenge facing WA agrifoods
- ✓ Empower agrifood leaders to drive change
- ✓ Inform industry investment and strategy.

DOCUMENT STRUCTURE

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| Document the practices that characterise international competitiveness | 37 |
| Define mechanisms to promote achievement of international competitiveness | 66 |
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EXECUTIVE SUMMARY

Western Australia has a handful of agrifood sectors that are internationally competitive and at global scale, for example wheat, oats, canola. These sectors successfully export to the global market. Beyond these, Western Australian agrifood sector businesses are mostly below scale and focused on domestic markets or premium niche export markets. While these are legitimate positions, the sectors will struggle to contribute to the goal of doubling the value of the Western Australia agrifoods industry.

What is required to become globally competitive? How did peer countries or industries transform their industries? What is the Pathway to Competitiveness? What is required for Western Australia to expand beyond a handful of key sectors?

Western Australia is a trusted, modern, safe business environment with the climate, resources and know-how to successfully grow Agrifoods exports. What is required is a joint vision and a clear understanding of what is necessary for success.

This report identifies the key drivers of global competitiveness, highlights the practices that characterise international competitiveness and defines mechanisms to promote international competitiveness. It draws lessons from peer regions that have significantly increased production and competitiveness over a relatively short time period. Dairy activity in New Mexico, pork industry growth in Chile and agrifood growth in Peru all highlight what is possible.

International competitiveness is created by a range of key drivers:

1. available resources
2. world class production systems
3. efficient primary processing, efficient value added processing
4. accessible markets

Industry and government can't impact all of these drivers individually. It is essential that all parts of the system work in unison, necessitating a holistic, whole-of-sector approach to achieving competitiveness.

EXECUTIVE SUMMARY

The basis of agrifood competitiveness is having world-class production systems, achieving high yields from large operations using proven and scalable systems with a deep pool of skills and experience. Primary and value-added processing will in turn become more efficient as a flow on effect.

The report identifies solutions and activities for three groups: Firms, Industry/Grower Groups and Government.

Three potential positions exist for agrifoods firms going forward - Rockets, Sharks, Castles. Solutions and strategies for each will vary.

- Rockets embrace world-class operational systems and grow and change rapidly to achieve success at the front of the pack.
- Sharks continue with their existing models. These firms still require constant improvement but are under increasing pressure as they fight it out in the shark tank.

- Castles retreat to a niche position, defended through innovation and careful branding.

Industry groups can influence the world-class production system drivers through a range of mechanisms, as peer regions demonstrate.

Government mechanisms and solutions vary depending on economic worldview, potential options under all of the classes of drivers are given, under three options ranging from free market laissez-faire to an interventionist position.

The report deep-dives into five case studies to highlight and validate the reports's observations. The Western Australian pork, dairy, potato, citrus and oat industries are assessed and benchmarked against peer regions who are achieving international competitiveness. This generates key insights and lessons towards achieving a Pathway to Competitiveness.

DOCUMENT STRUCTURE

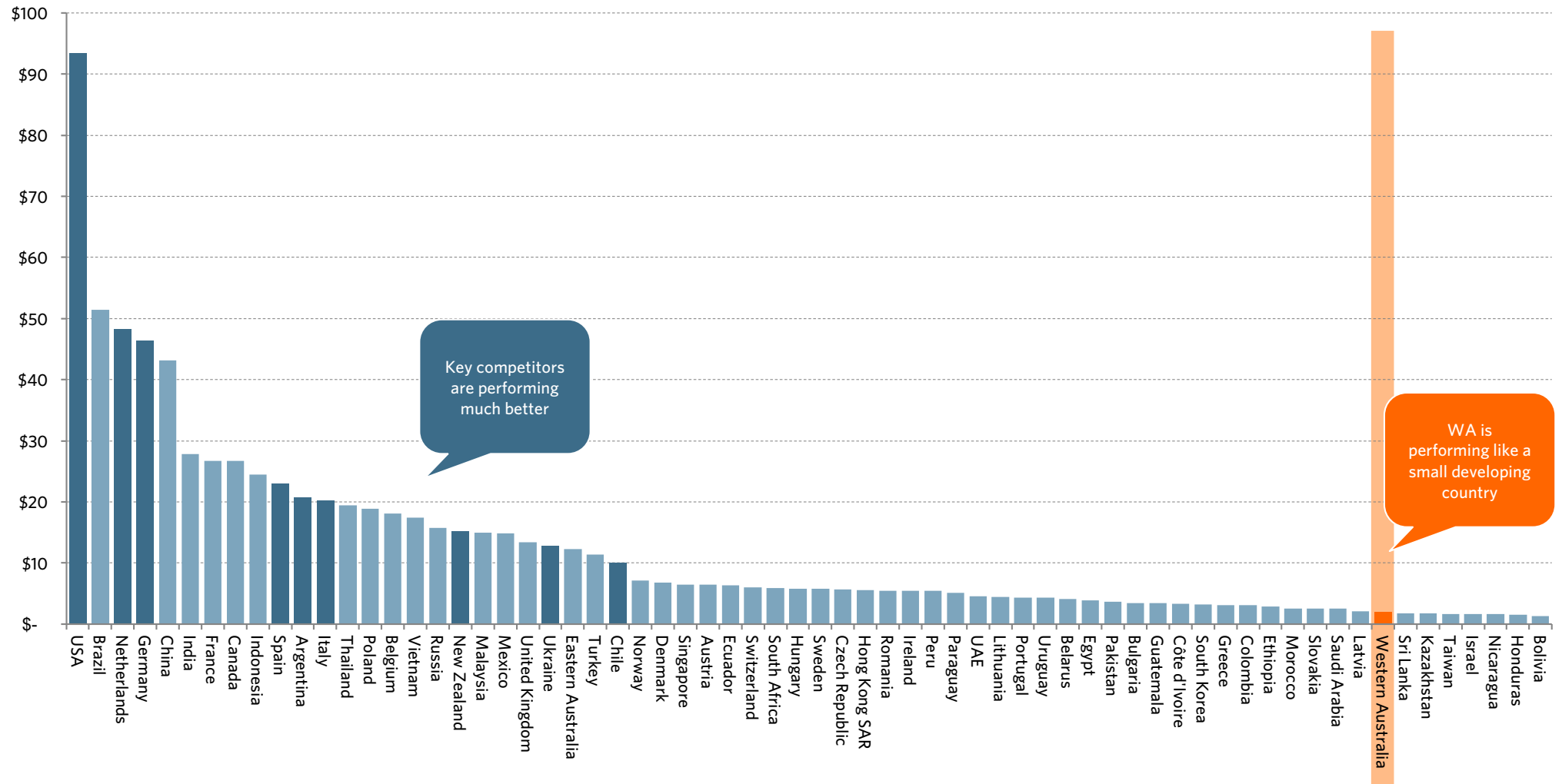
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Western Australian agrifood export growth over the past decade has been poor

TEN YEAR GROWTH IN TOTAL FOOD & BEVERAGE EXPORT VALUE: WA VS. WIDE PEER GROUP

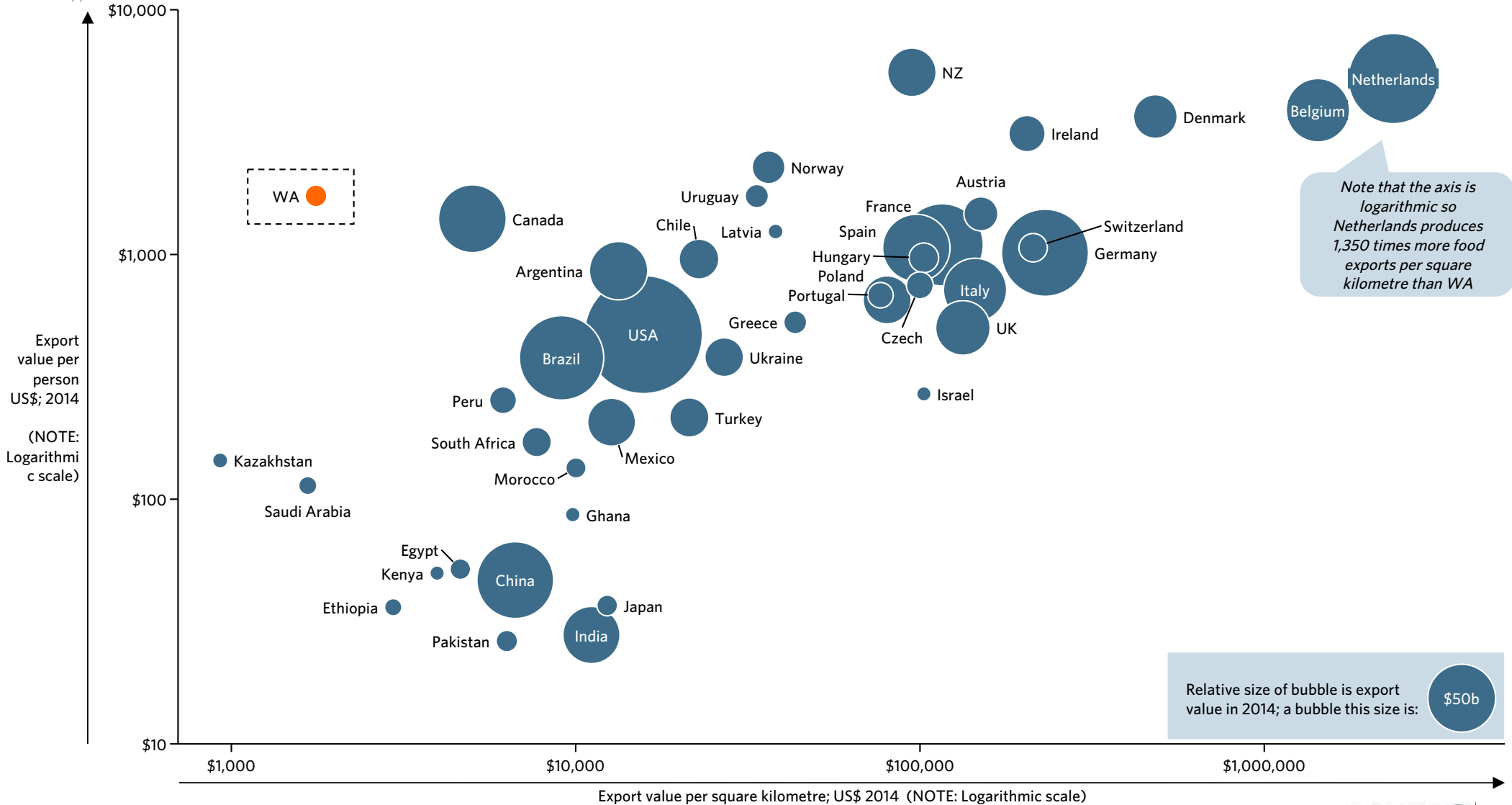
US\$b; 2004 vs. 2014



Western Australia is not intensively farmed and peers suggest it has clear untapped capacity to produce and export more

EXPORT VALUE PER KM² VS. EXPORT VALUE PER PERSON VS. OVERALL EXPORT VALUE

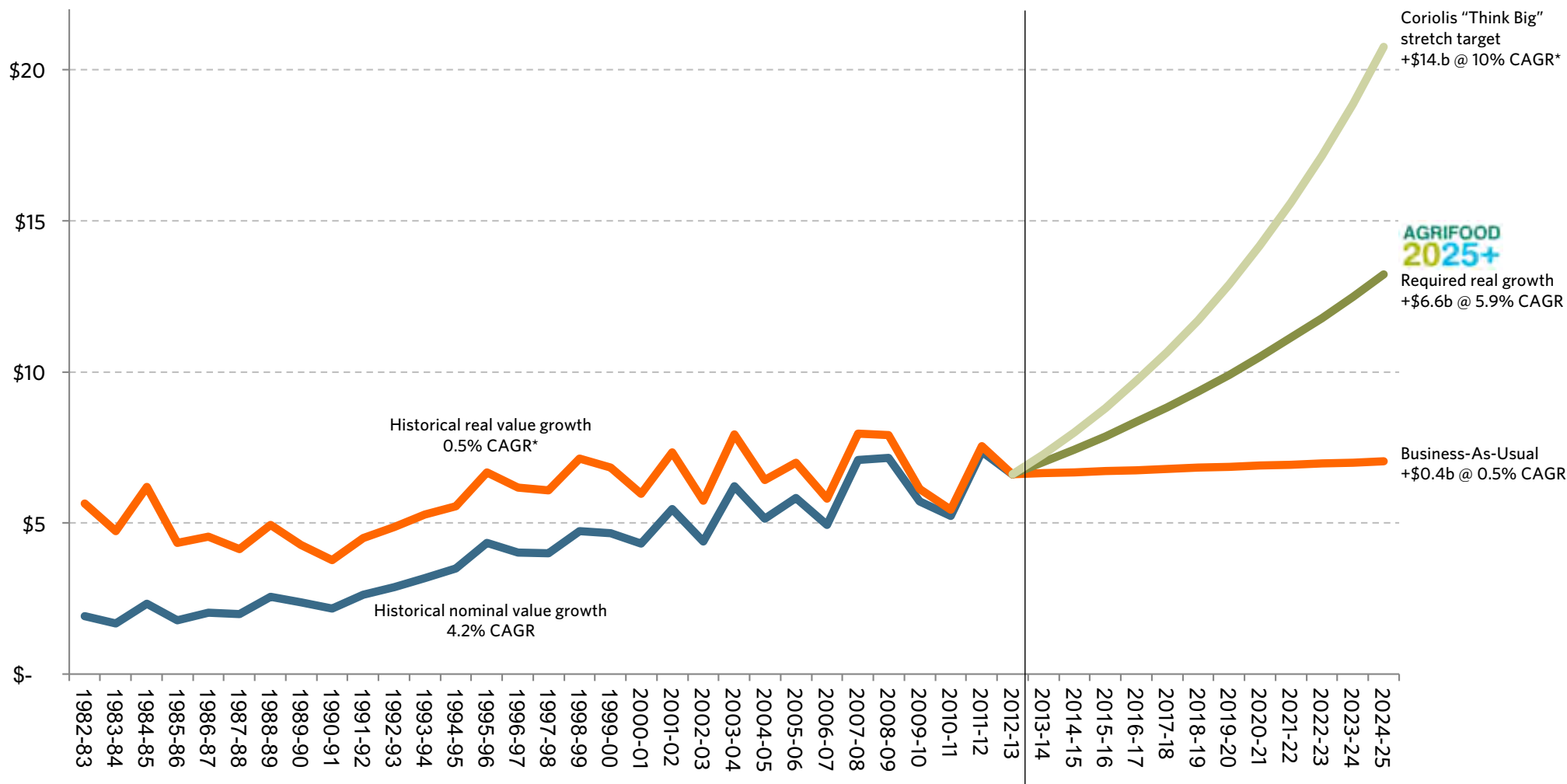
US\$; 2014



The government has set the goal of doubling agrifood value in real terms by 2025

VALUE OF AGRIFOOD PRODUCTION IN WESTERN AUSTRALIA: HISTORICAL ACTUAL AND THREE MODELS FOR GROWTH

A\$b; 82/83-12/13 actual; 12/13-24/25 model

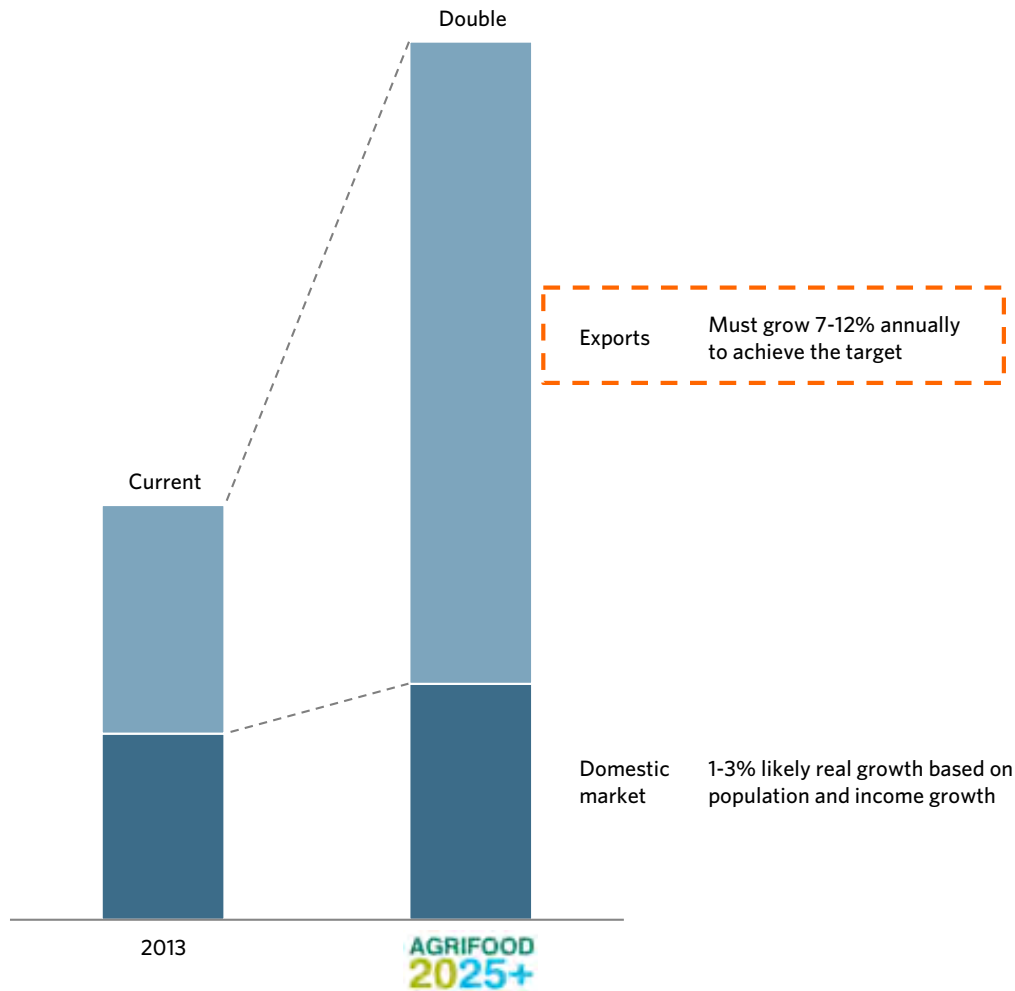


*Compound Annual Growth Rate; ABS 7503.0 Value of Agricultural Commodities Produced (various); ABS 7501.0 Value of Principal Ag Commodities Preliminary (various); ABARE Australian Fisheries Statistics (various years); WA Statistical Yearbook (various years); ABS 6401.0 Consumer Price Index; DAFWA Agrifood 2025+ material (various); Coriolis analysis

Western Australia's relatively small domestic market means this growth will need to come from growing exports

MODEL OF GROWTH REQUIRED TO DOUBLE AGRIFOOD BY 2025+

Model; A\$b; 2013-2025



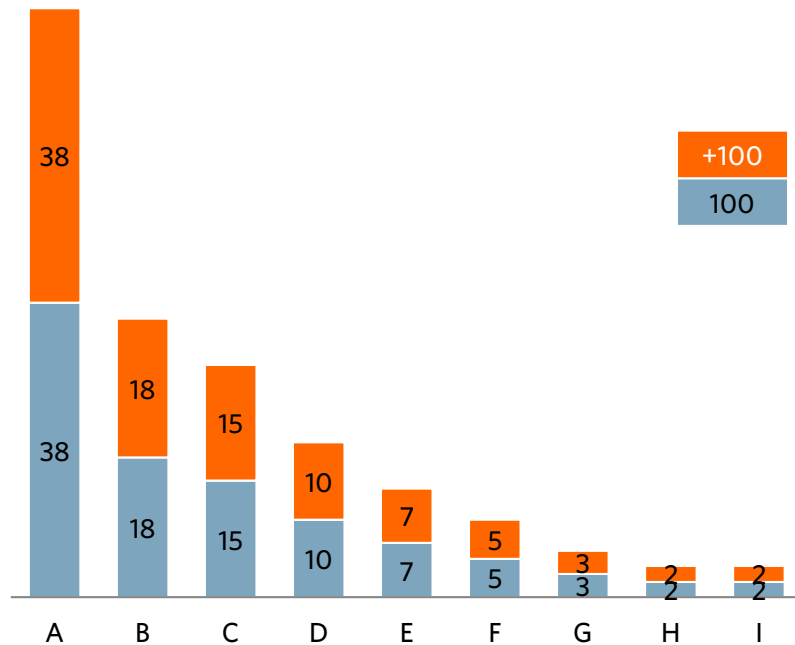
POPULATION OF AU RELATIVE TO SELECT TARGET MARKETS

2015



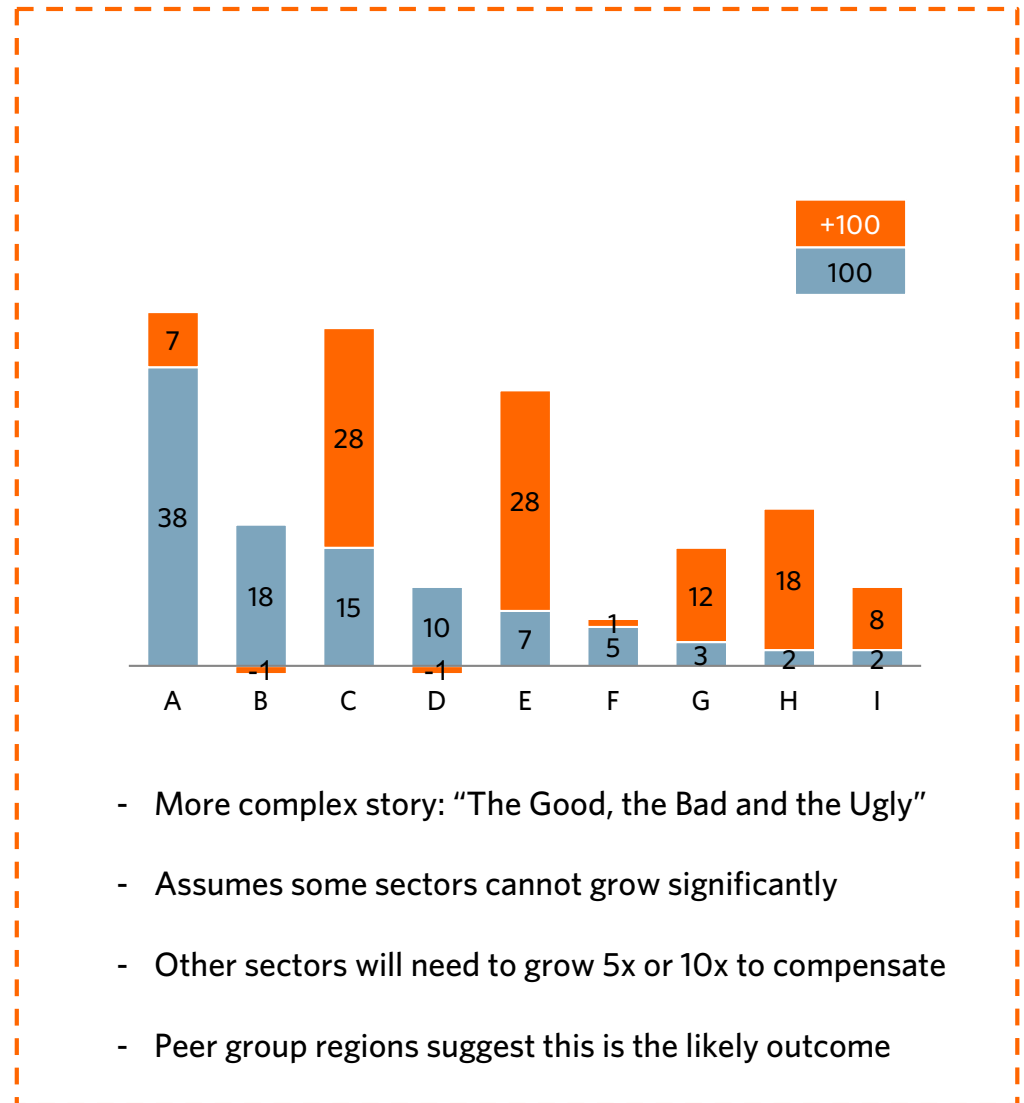
In practice, growth will require some sectors to grow much larger, as other sectors have growth constraints

MODEL 1 - EVERYTHING DOUBLES



- Simple story: "Rising tide lifts all ships"
- Assumes all sectors can double in the timeframe
- Unlikely in reality

MODEL 2 - UNEVEN GROWTH TO ACHIEVE DOUBLE

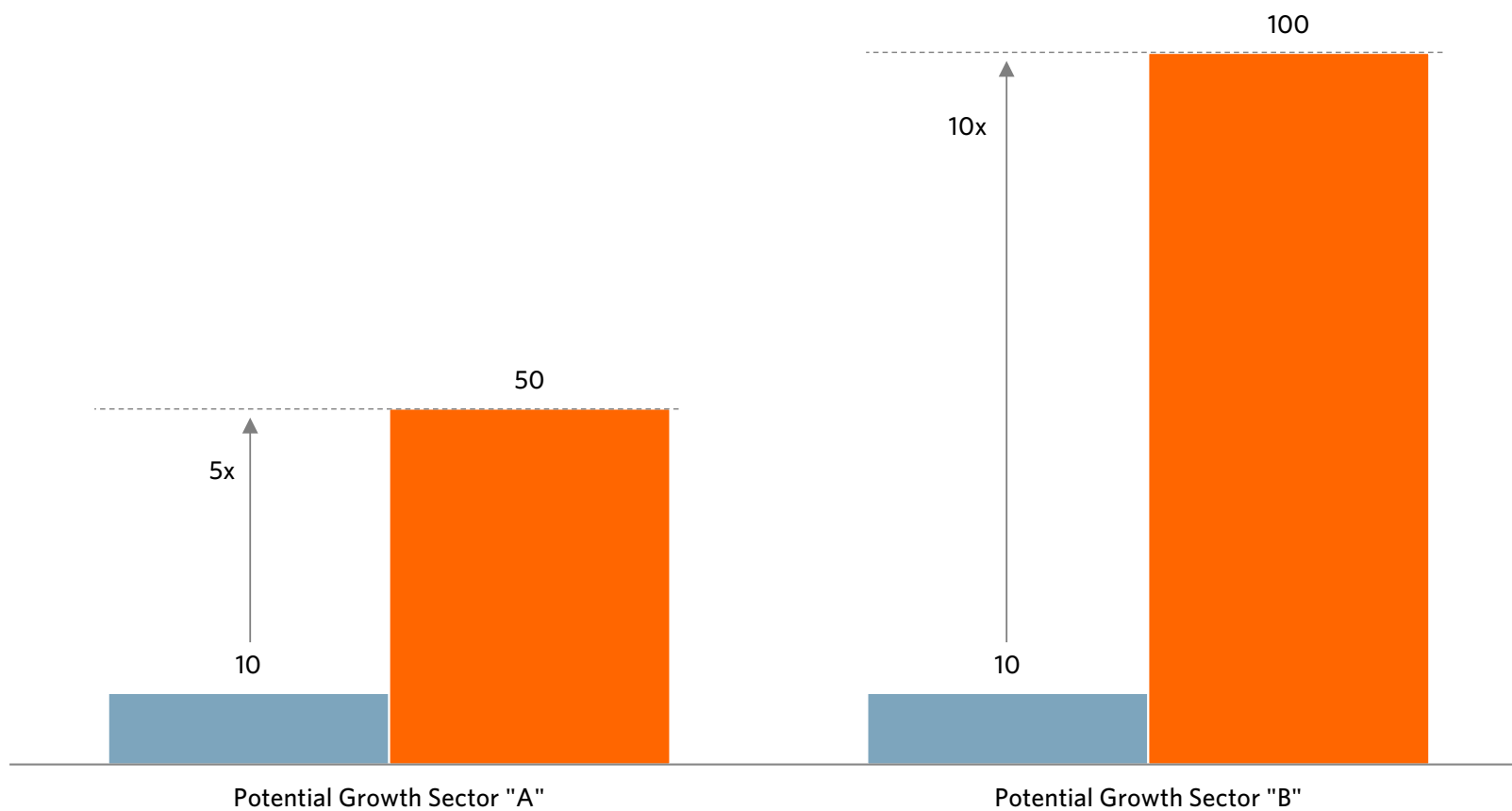


- More complex story: "The Good, the Bad and the Ugly"
- Assumes some sectors cannot grow significantly
- Other sectors will need to grow 5x or 10x to compensate
- Peer group regions suggest this is the likely outcome

This project is targeted at agrifood sectors with the potential to grow five or ten times larger through a rapid expansion of exports to Asia

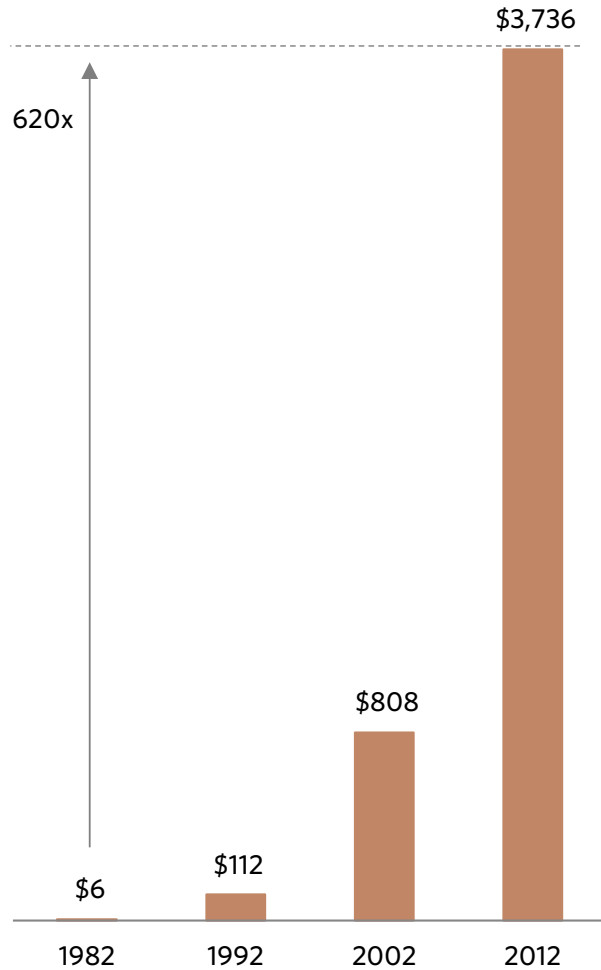
SIMPLE GROWTH MODEL SHOWING 5X OR 10X GROWTH

Model; 2016

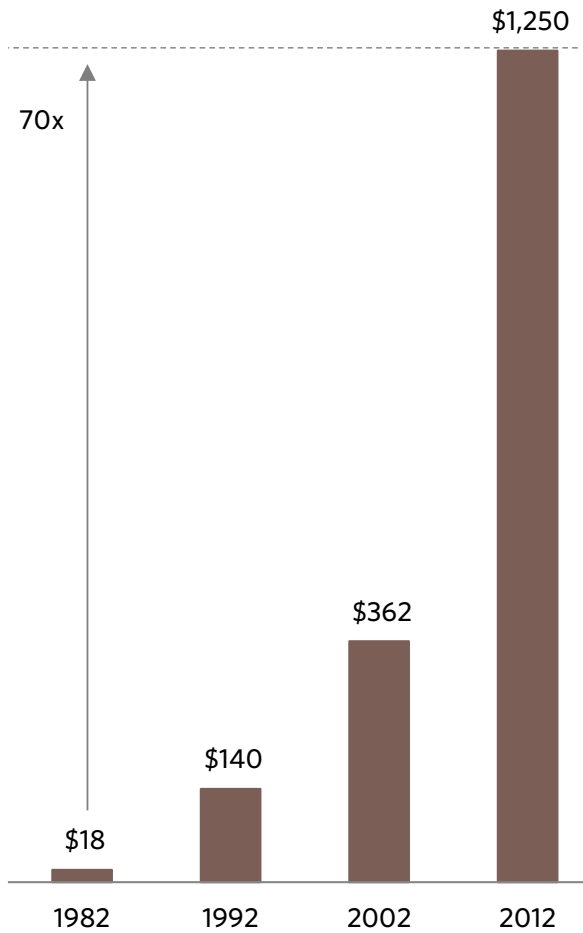


Peer group regions demonstrate this level of growth is possible

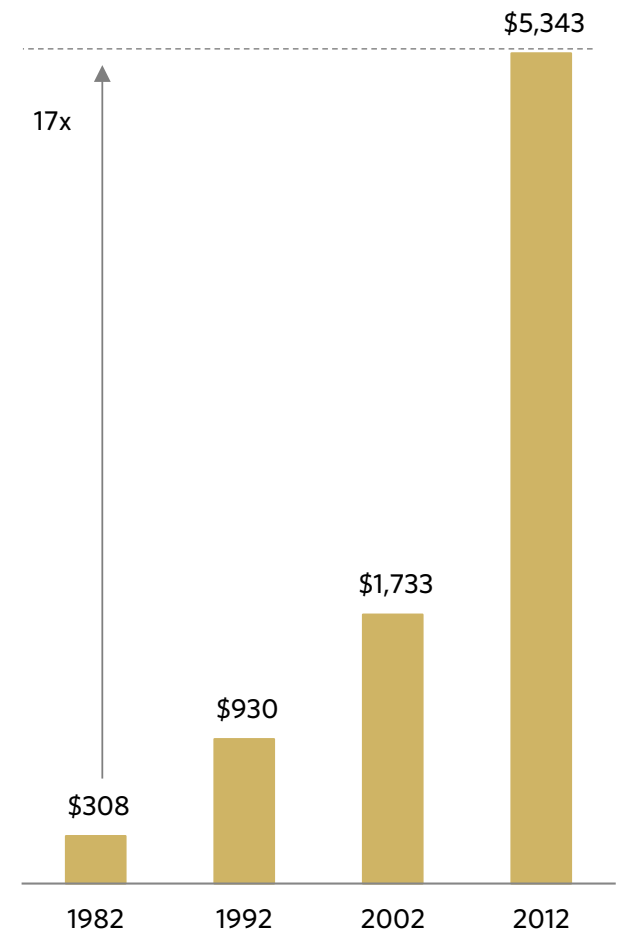
PORK EXPORTS: SPAIN
US\$m; 1982-2012



FROZEN POTATO EXPORTS: BELGIUM
US\$m; 1982-2012



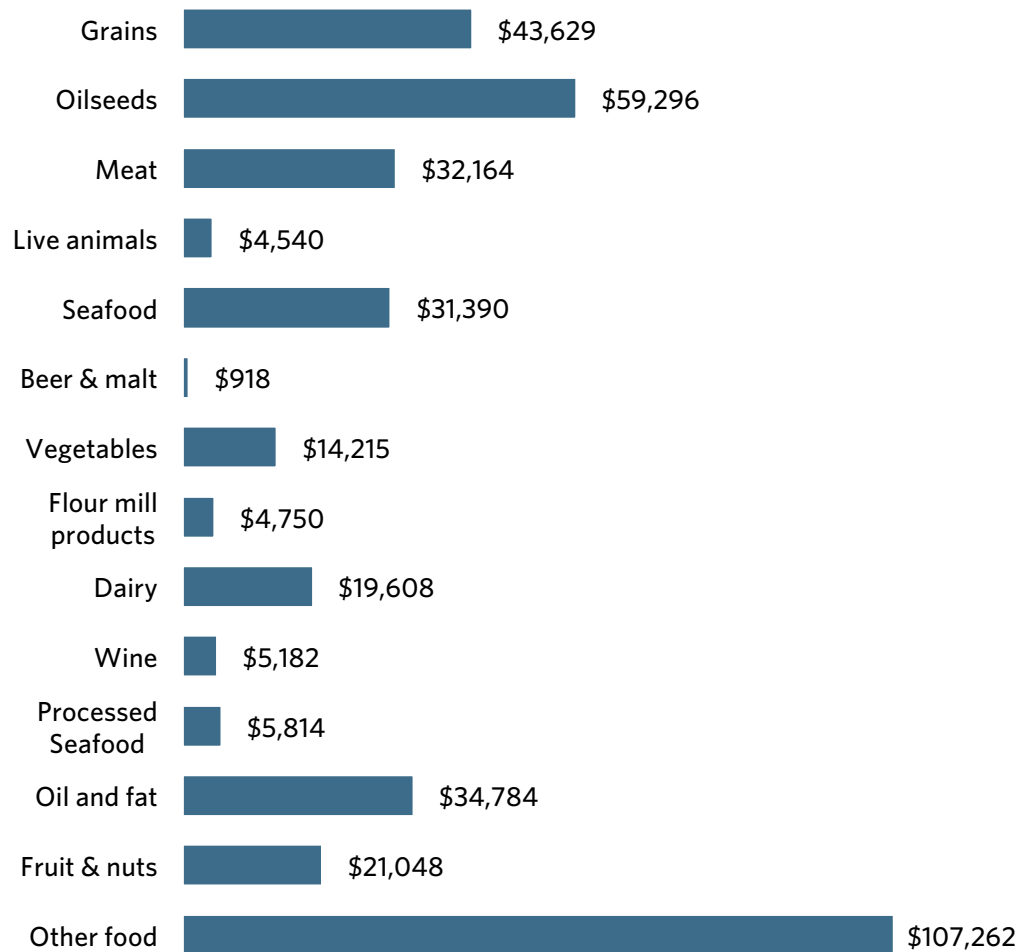
POULTRY MEAT EXPORTS: USA
US\$m; 1982-2012



Market demand is not a challenge; key markets want everything Western Australia produces

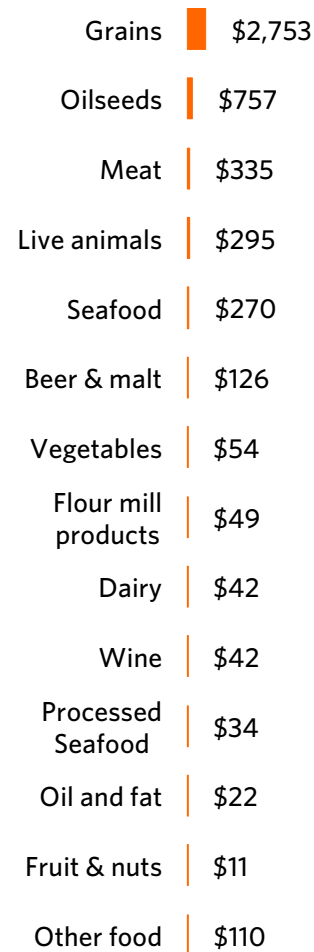
EA/SEA/SA/ME FOOD IMPORT VALUE FROM ALL SOURCES

US\$m; 2013



WESTERN AUSTRALIA FOOD EXPORT VALUE TO ALL DESTINATIONS










A\$m; 2012-13



Note: Other food includes animal feeds; dairy excludes HS3501+; live animals includes non-food animals; will include inter-regional trade and products WA cannot produce

Source: UN Comtrade database (custom job); DAFF Food Statistics 2012-13 (Table 5.8); Coriolis analysis

Western Australia has nine broad food & beverage platforms

| | Platform | Definition/Description | Example product categories | | | |
|--|-----------------------|---|------------------------------|----------------------------------|--|--------------------------|
| | | | Exported in quantity from WA | Not exported in quantity from WA | Defined HS trade codes | Defined SITC trade codes |
|  | Beverages | Liquids produced and packaged for human consumption | Beer Wine | Whiskey Bottled water | 2009, 22 | 11 |
|  | Processed foods | Highly processed and transformed foods, typically packaged & consumer-ready; also other foods that do not fit elsewhere | ? | Frozen pastry Chocolate | 09, 15, 16, 17, 18, 19, 21, 2001- 2008, 0409- 0410 | 06, 07, 09 |
|  | Dairy & eggs | Products made from animal milk; eggs produced by poultry | UHT milk | Cheese Butter | 0401-0408, 3501, 3502 | 02 |
|  | Produce | Fruits, vegetables and nuts produced from plants in horticulture | Carrots | Almonds Strawberries | 07, 08 | 05 |
|  | Seafood | Sea life from wild capture and aquaculture; for human consumption | Rock lobster Prawns | Salmon Abalone | 03 | 03 |
|  | Meat | Animal flesh eaten as food; live animals exported for slaughter | Live cattle Beef Lamb | Chicken Duck | 0102-0105, 02 | 00, 01 |
|  | Oilseeds, oils & fats | Grains and pulses grown primarily for the extract of their edible oils; processed oils and animal fats | Canola Tallow | Safflower Soya beans | 12 | 22, 41, 42, 43 |
|  | Animal foods & feed | Animal fodder, animal feed preparations; excluding grains for animal foods | Hay | Canned pet food | 0511, 1213, 1214, 23 | 08 |
|  | Grains | Cereal seeds harvested for human or animal consumption; including dry pulses | Wheat Barley Oats | Rice Maize Sorghum | 10, 11 | 04 |

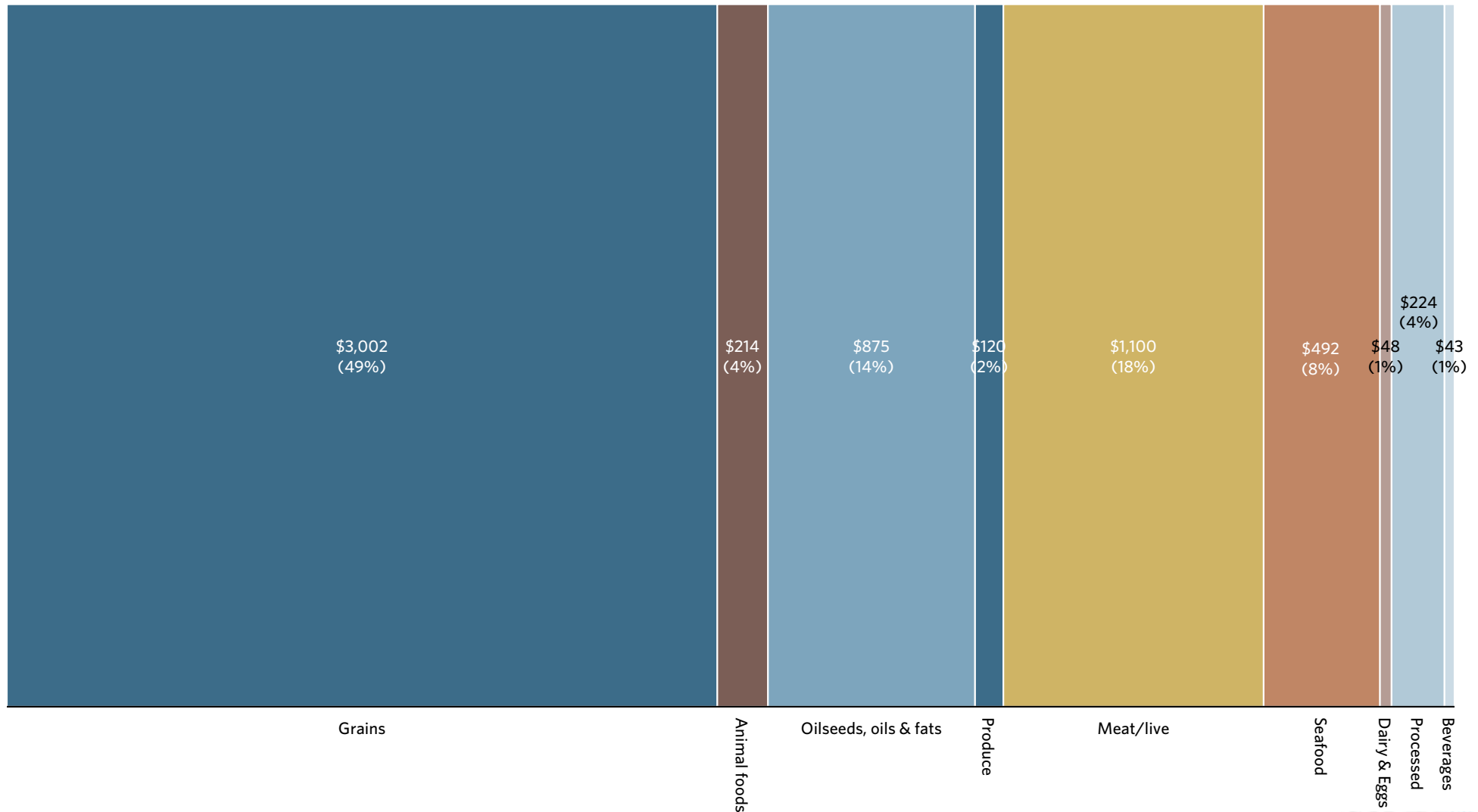
Western Australian agrifood exports are dominated by grains, oilseeds, meat and seafood platforms; with other platforms emerging

WESTERN AUSTRALIAN FOOD & BEVERAGE EXPORT VALUE BY PLATFORM

A\$m; MAT 9/2015 (% of total)

AREA FILLED IN = EXPORT VALUE

TOTAL = \$6,120m

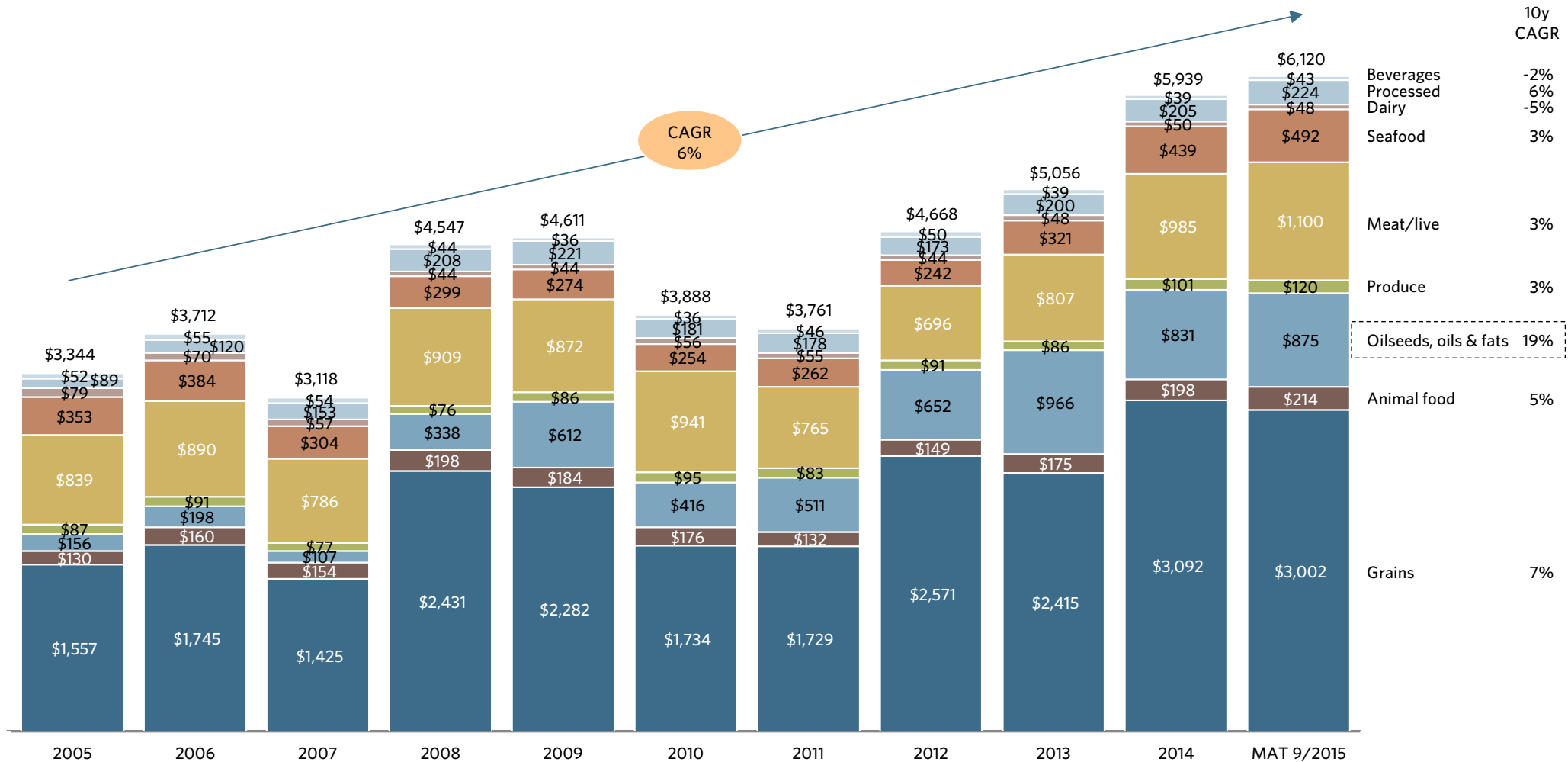


NOTE: Does not include beer, for confidentiality reasons; Source: Australian Bureau of Statistics (stat.abs.gov.au) (custom job/raw data); Coriolis analysis and classifications

Export performance has varied by platform, with oilseeds standing out for rate of growth

WESTERN AUSTRALIAN FOOD & BEVERAGE EXPORT VALUE

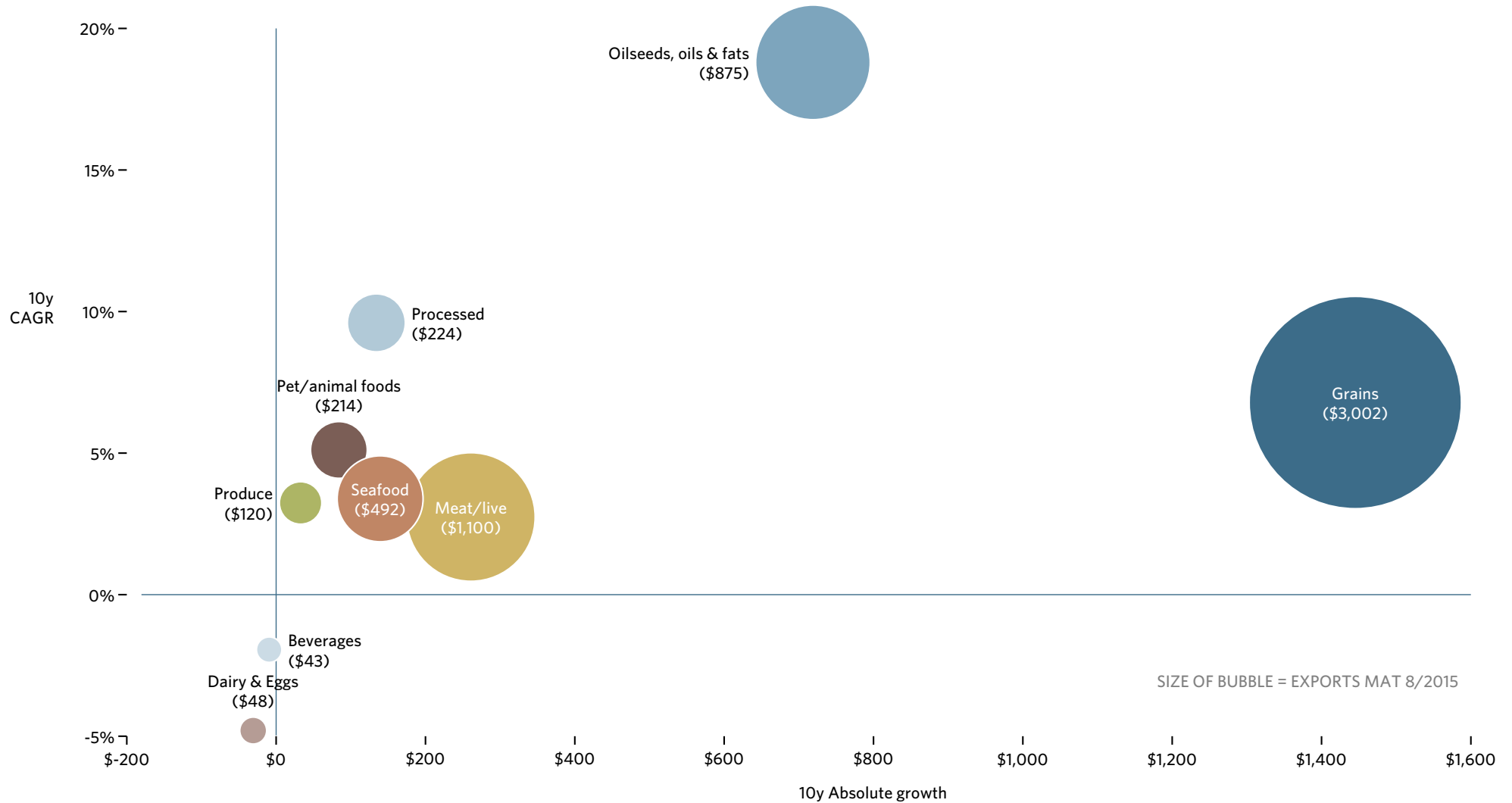
A\$m; nominal/non-inflation adjusted; 2005-MAT 9/2015



NOTE: Does not include beer, for confidentiality reasons; Source: Australian Bureau of Statistics (stat.abs.gov.au) (custom job/raw data); Coriolis analysis and classifications

Platforms beyond cereals and oilseeds need to become more export driven

TEN YEAR WA EXPORT GROWTH MATRIX: ABSOLUTE GROWTH VS. COMPOUND GROWTH RATE VS. VALUE 2015
A\$m; 2005 vs. MAT 8/2015

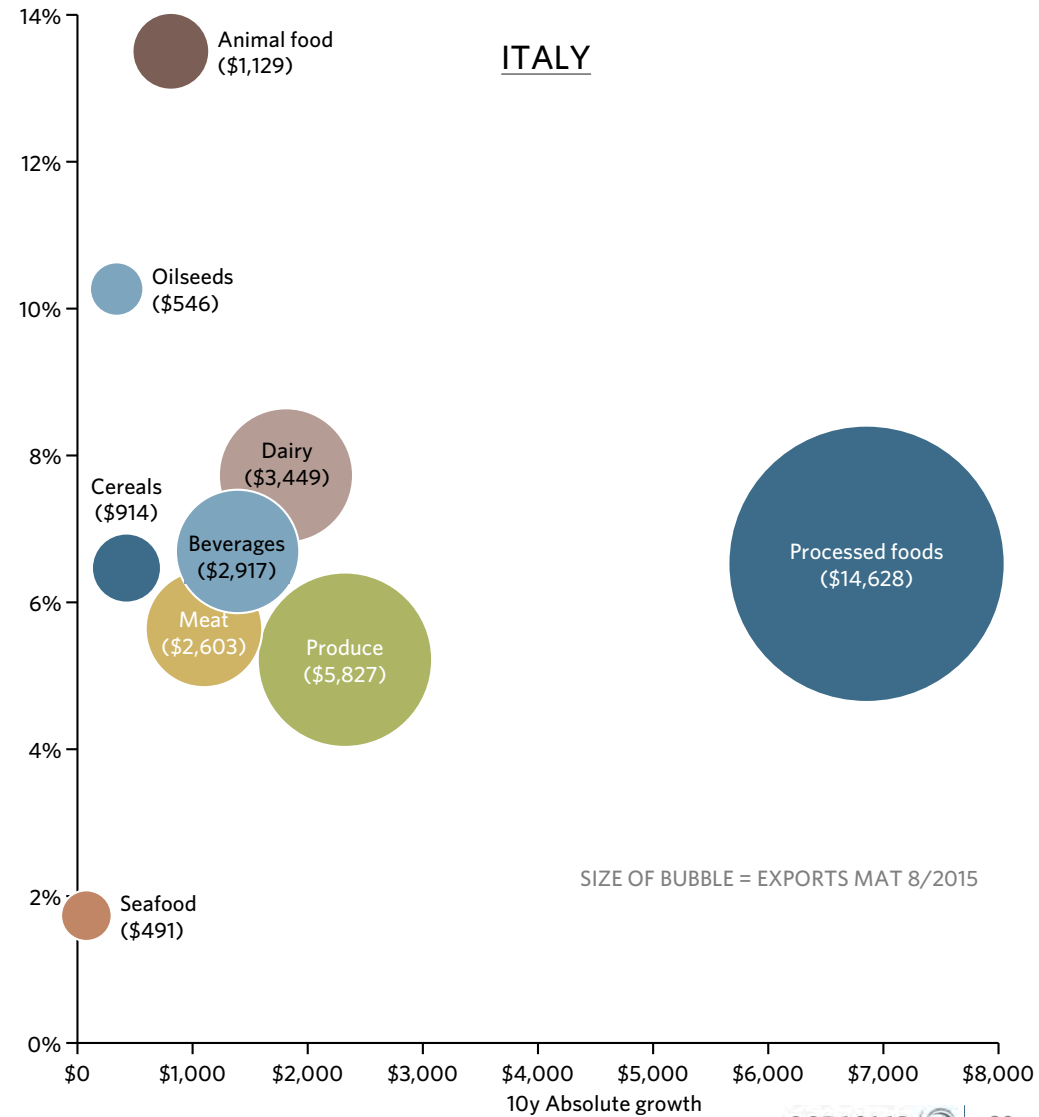
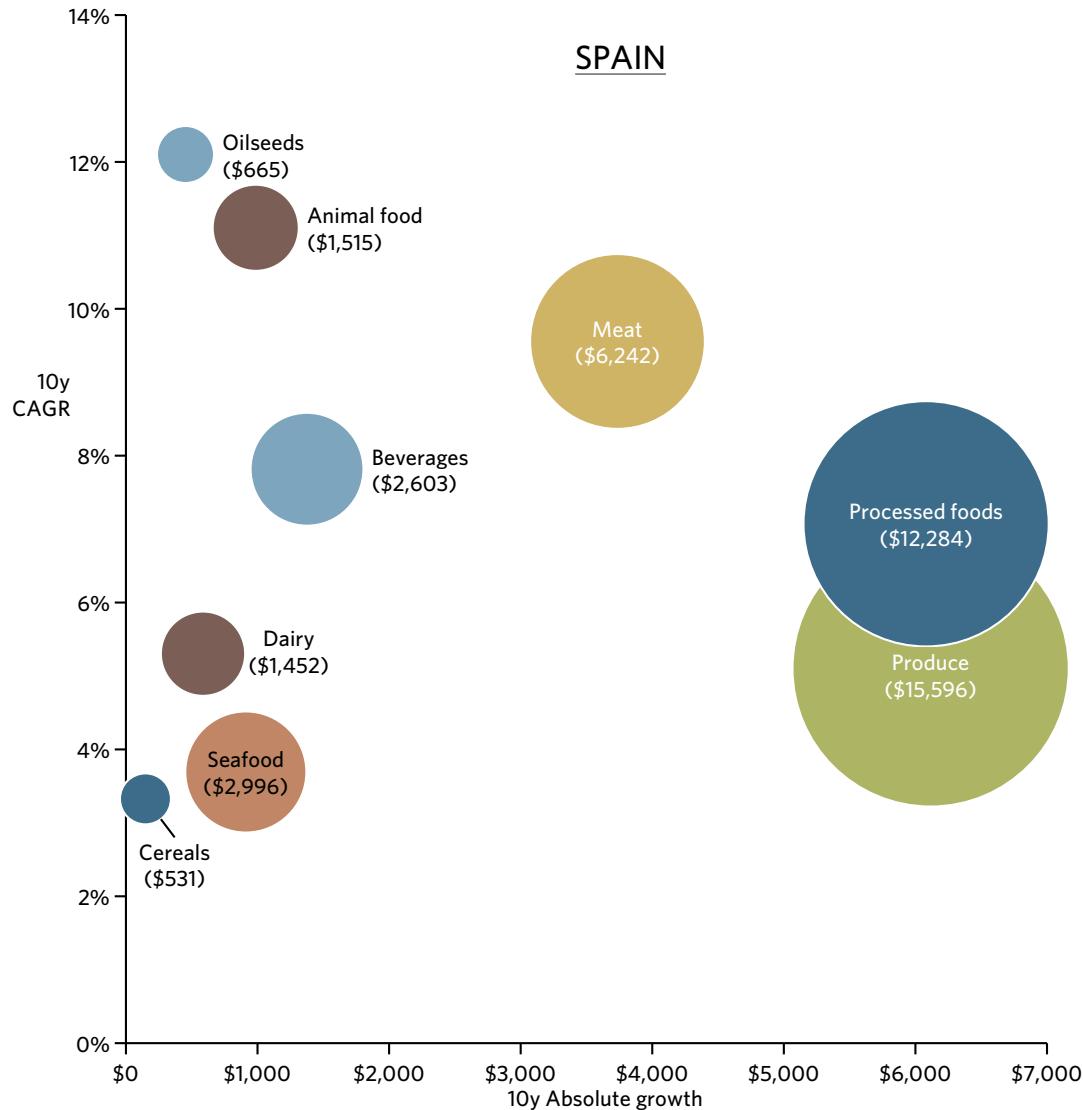


NOTE: Does not include beer, for confidentiality reasons; Source: Australian Bureau of Statistics (stat.abs.gov.au) (custom job/raw data); Coriolis analysis and classifications

Peer group countries demonstrate broad based growth across multiple platforms is possible

TEN YEAR EXPORT GROWTH MATRIX: ABSOLUTE GROWTH VS. COMPOUND GROWTH RATE VS. VALUE 2015

US\$m; 2005 vs. MAT 8/2015



Source: UN FAO Agstat database (custom job/raw data); Coriolis analysis and classifications

This project is focused on Western Australian agrifood sectors that are seeking a path to competitiveness

ILLUSTRATIVE EXAMPLES
Not a complete list

| SMALLER CATEGORIES | | SEEKING COMPETITIVENESS | | BROADLY COMPETITIVE | |
|--------------------|---------------|-------------------------|---------------------|---------------------|--------------|
| CHOKO | CAMEL MILK | DAIRY PRODUCTS | POTATOES & PRODUCTS | WHEAT | BEEF |
| BUSH FOODS | ARTICHOKE | PORK | AVOCADOS | LAMB | CANOLA |
| CAPERS | KANGAROO MEAT | CITRUS | OATS | CARROTS | ROCK LOBSTER |

Sectors seeking a pathway to competitiveness share a range of characteristics in common

INDICATORS OF AGRIFOOD SECTOR COMPETITIVENESS

Model; 2016

| | SMALLER CATEGORIES | SEEKING | BROADLY COMPETITIVE |
|------------------------------------|---|---|---|
| Producers | <ul style="list-style-type: none"> - Small scale enthusiasts and hobbyists - Growing number of producers - Protected by biosecurity and distance | <ul style="list-style-type: none"> - Producers are low/mid-scale by global standards - Clear winners-and-losers emerging - Protected by biosecurity | <ul style="list-style-type: none"> - Corporate agribusiness - Operational units at or above global scale - Falling number of operational units - Globally competitive yields - Biosecurity irrelevant to competitive dynamic |
| Production system & business model | <ul style="list-style-type: none"> - Lack of proven production systems - Selling breeding stock and genetics | <ul style="list-style-type: none"> - Most operators using an older or less efficient production system - More successful operators are beginning to transition to "best practice" global production model | <ul style="list-style-type: none"> - "Best practice" global production model being implemented locally at world class scale |
| Markets | <ul style="list-style-type: none"> - Local prices above world prices - High-end, white tablecloth foodservice - Local and regional retailers - Exports tiny or non-existent | <ul style="list-style-type: none"> - Local prices above world prices - Most sold domestically with only a small per cent exported - Sold nationally through Coles and Woolworths | <ul style="list-style-type: none"> - Local prices are world prices - Most of production is exported - Exports growing - Exports go to a wide range of markets |
| Primary processing | <ul style="list-style-type: none"> - Hobby/gourmet scale processing | <ul style="list-style-type: none"> - Industry consolidating around large primary processors seeking scale - Multiple-rounds of industry consolidation | <ul style="list-style-type: none"> - At world-class scale - Global leaders arriving through acquisition or greenfields |
| Value-added processing | <ul style="list-style-type: none"> - Farmers-market scale | <ul style="list-style-type: none"> - Local entrepreneurial firms seeking scale | <ul style="list-style-type: none"> - Global leaders building export-focused processing plants |

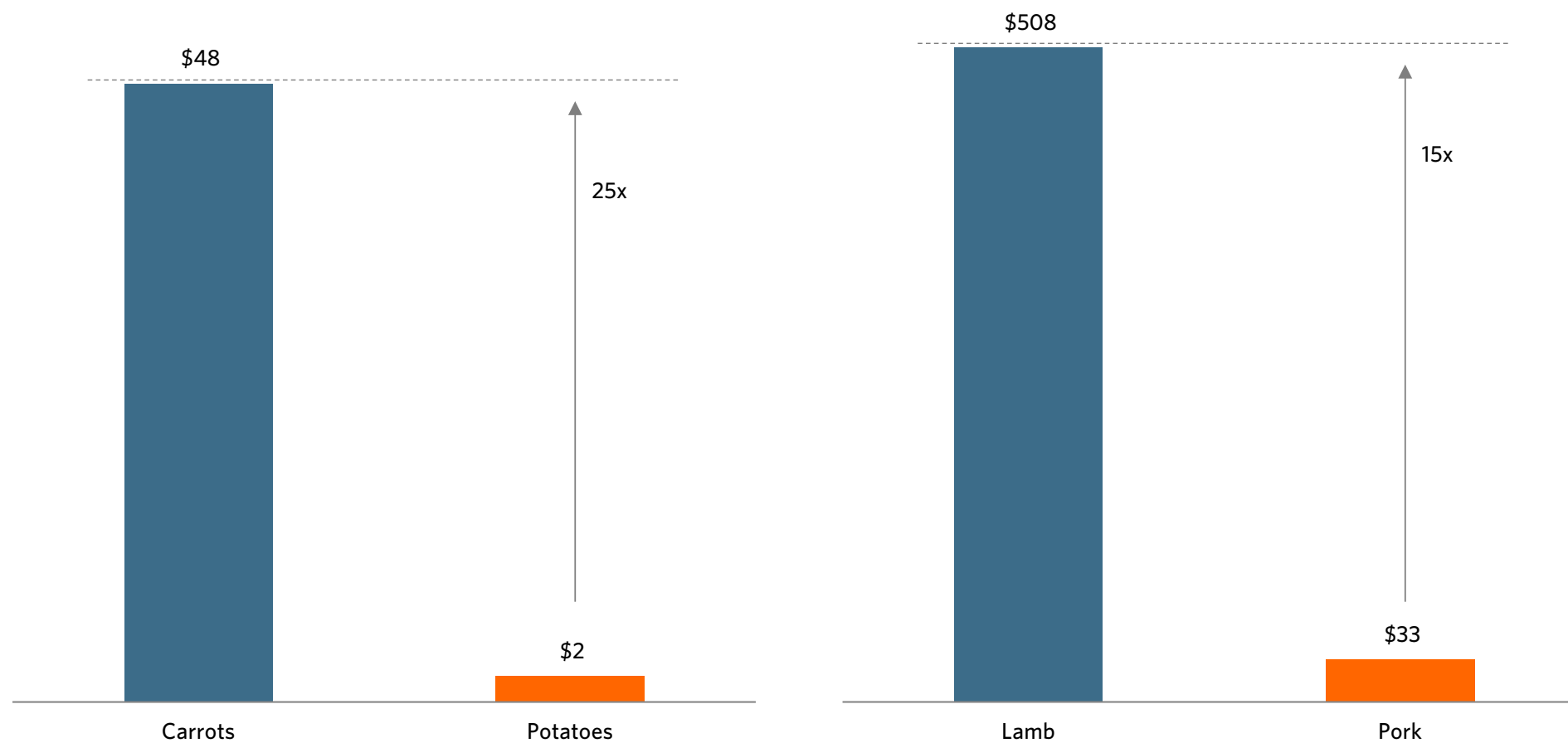
A wide range of explanations and reasons are given for sectors that are unable to move beyond “seeking” competitiveness



These explanations fail to explain why some sectors are competitive, while other very similar sectors are not

EXAMPLES: WESTERN AUSTRALIAN EXPORT VALUE OF SELECT COMPARABLE PRODUCTS

A\$m; 2015 or as available



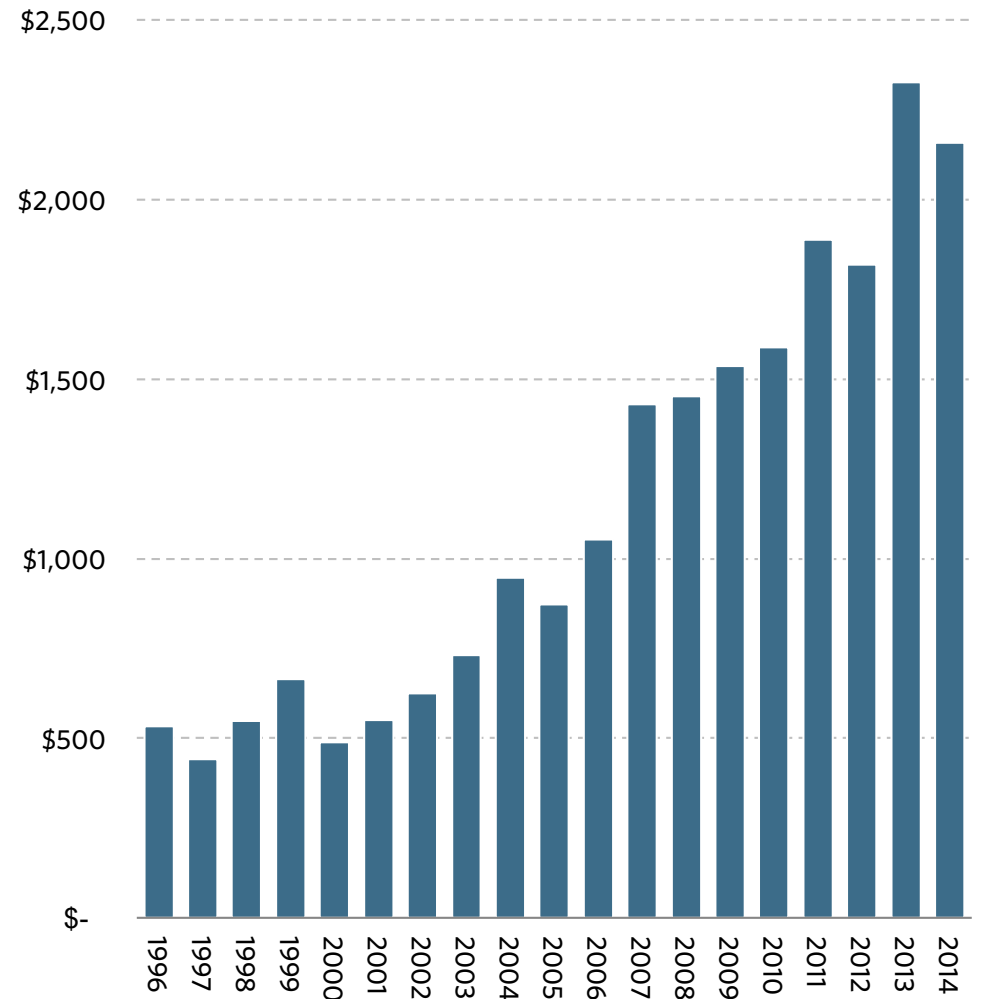
All rich, developed countries are high cost, with cumbersome, inefficient regulations; this does not cause a lack of competitiveness

EXAMPLE: COMPETITIVENESS ISSUES IN BELGIUM

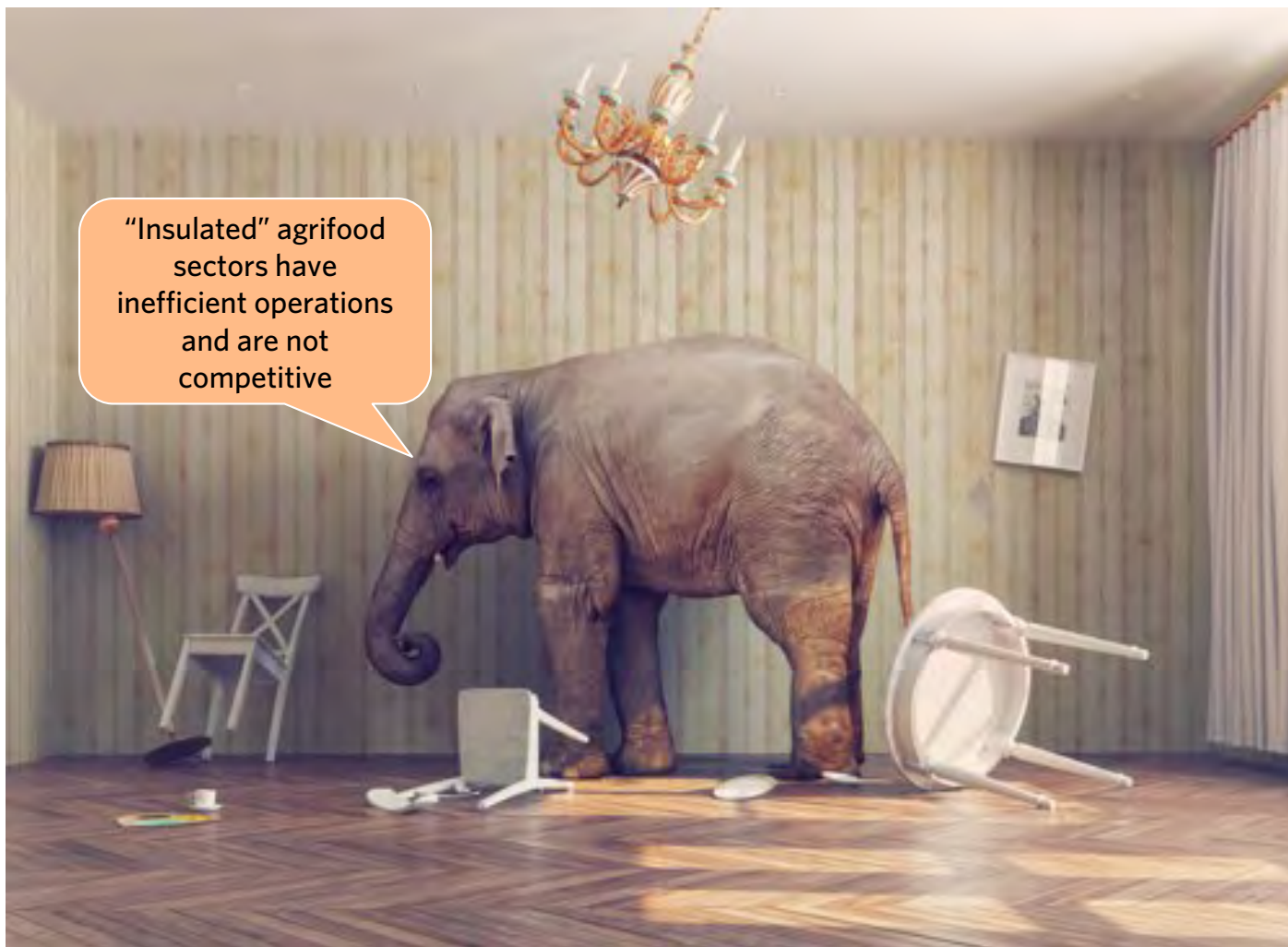
- High wage costs
- Excessive, burdensome EU regulations
- EFSA, EUROPHYT, and huge range of other red tape
- Price of inputs
- Price of packaging
- Price of land
- Not enough land
- Lack of skills & capabilities
- Need for industry-specific training

POTATO PRODUCT EXPORTS FROM BELGIUM

US\$ m; 1996-2014



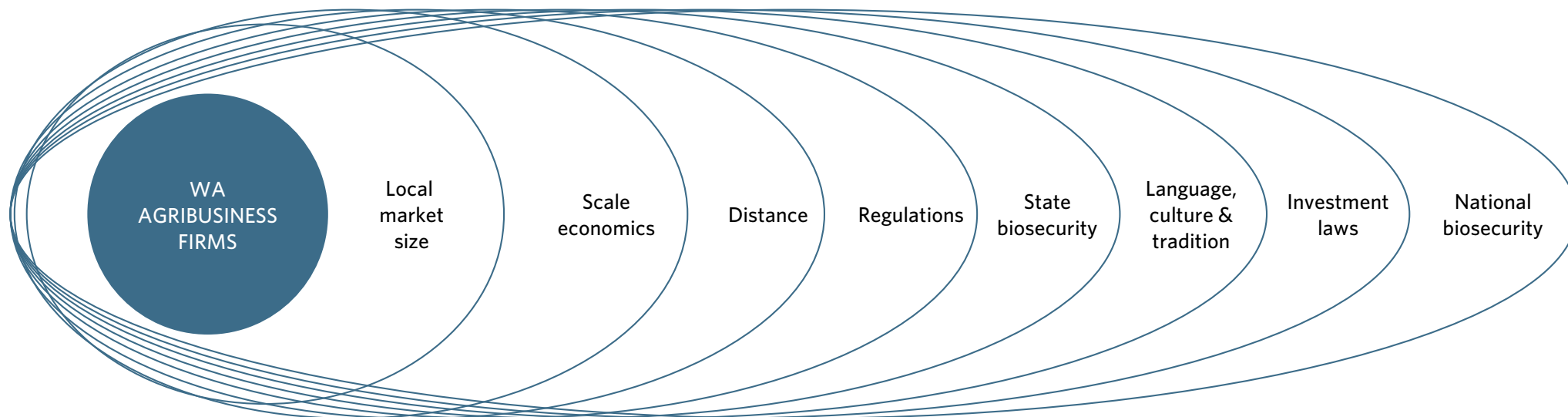
Western Australian agrifood needs to face “The Elephant in the Room”



LET'S LOOK AT EVERYTHING ELSE...


- Clean & Green
- Brand WA
- Collaboration
- Innovation
- Value Chains
- Seminars & Workshops
- Taskforces
- Niche, premium

Western Australia's agrifood market is "insulated" from competition by a wide range of factors




There are clear signs when an agrifood sector is uncompetitive

| | "INSULATED" & UNCOMPETITIVE | "EXPOSED" & COMPETITIVE |
|---|--|---|
| What basic economic theory (Econ 101) suggests... | <ul style="list-style-type: none"> - Inefficient - High prices - Uncompetitive (outside insulated area) - Lack scale | <ul style="list-style-type: none"> - Efficient - World prices - Competitive - At scale |
| What we would expect to see as a result | <ul style="list-style-type: none"> - Low/no exports; exports falling - Losing share in key markets - Imports growing - Trade deficit in product - Imports worth more per kg than exports - Global leaders leaving - Lack of reinvestment in processing - Falling industry capacity - Very little goes to processing | <ul style="list-style-type: none"> - High exports; exports growing - Gaining share in key markets - Imports falling - Exports worth more per kg than imports - Global leaders arriving - Continuous reinvestment in processing - Increasing industry capacity - Growing value-added sectors |

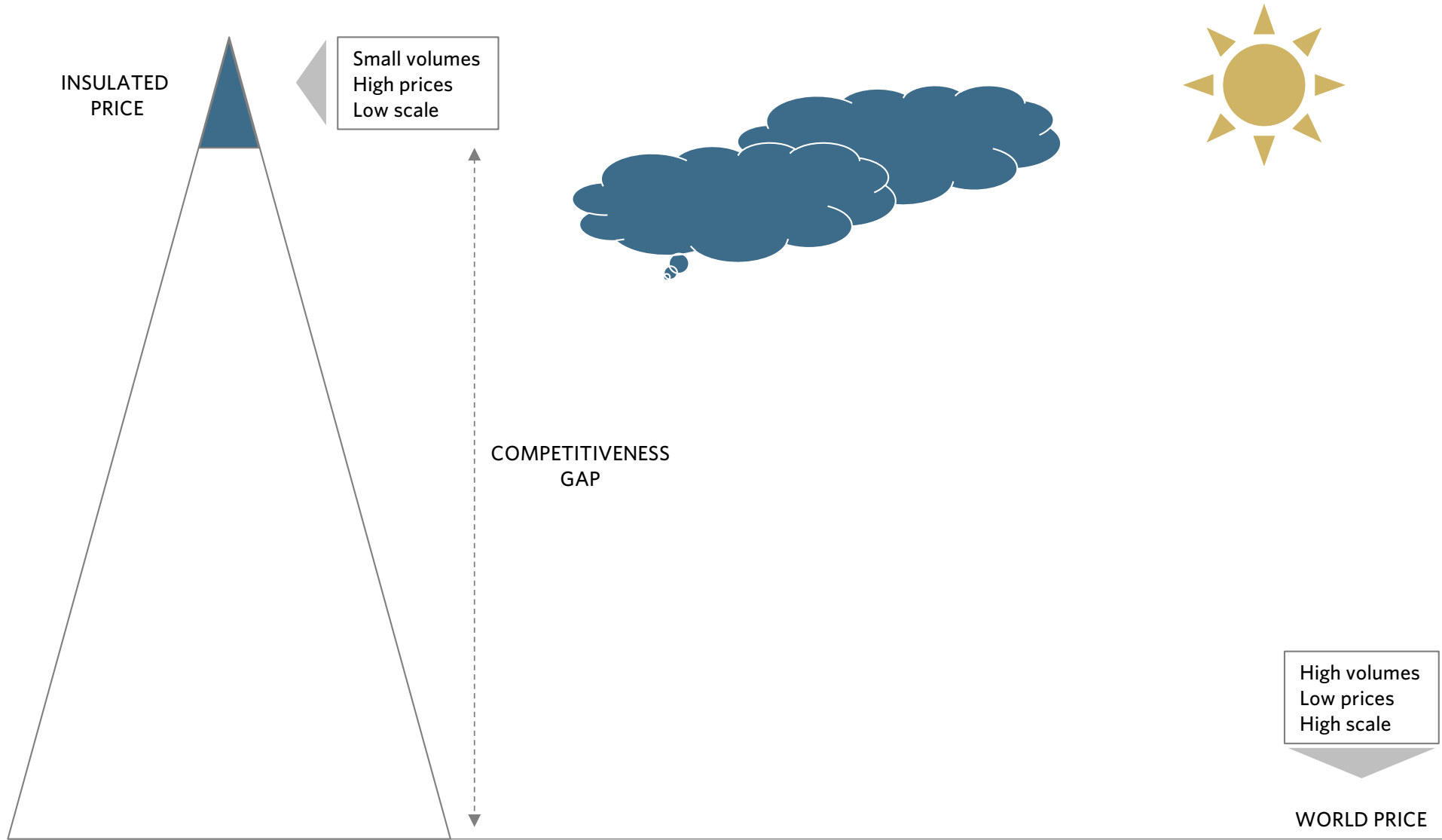


This is what un-competitive
WA agrifood sectors look like



This is what competitive
WA agrifood sectors look like
(e.g. wheat)

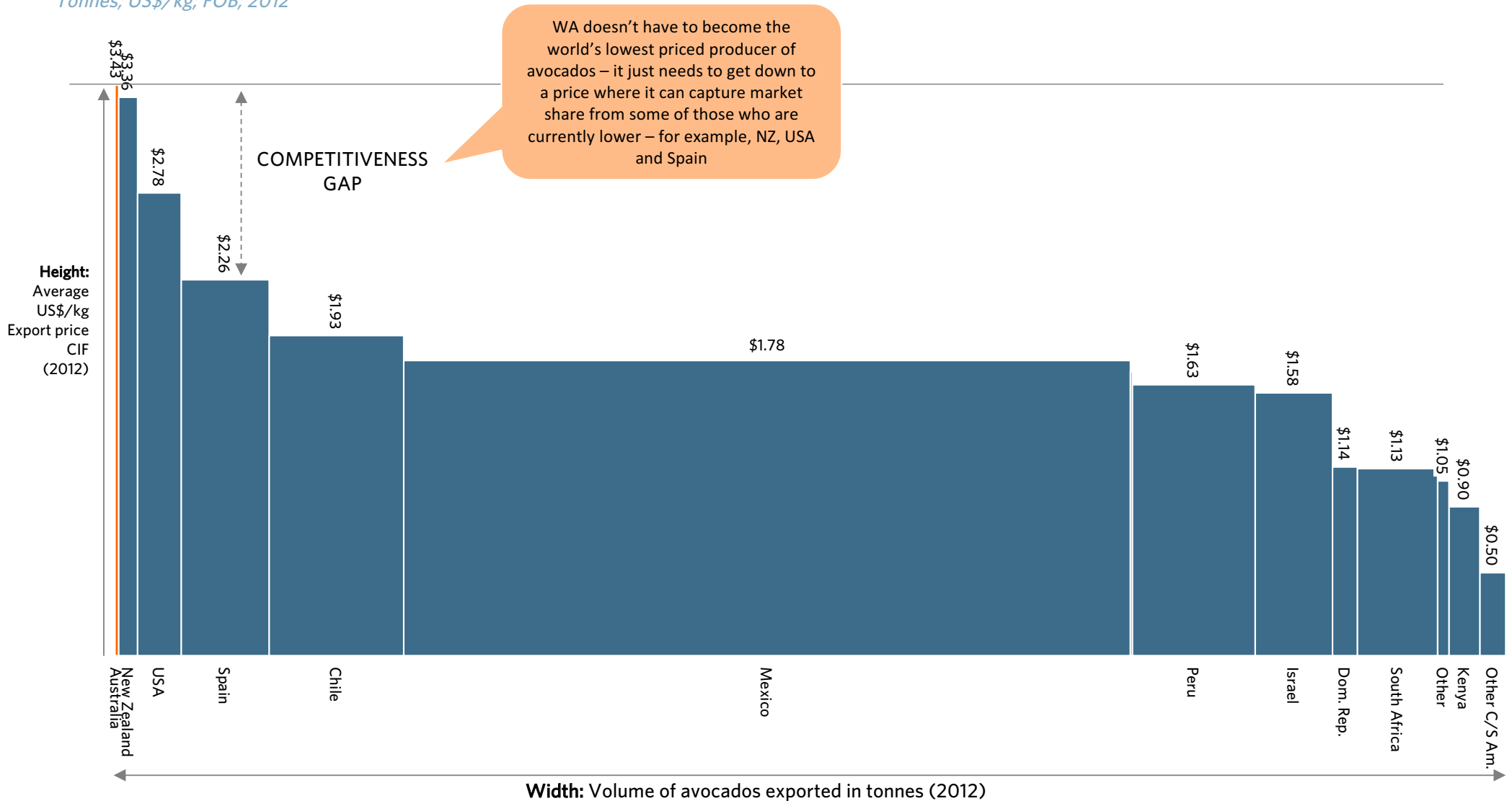
When “insulated” sectors try to export, they must cross a “competitiveness gap”



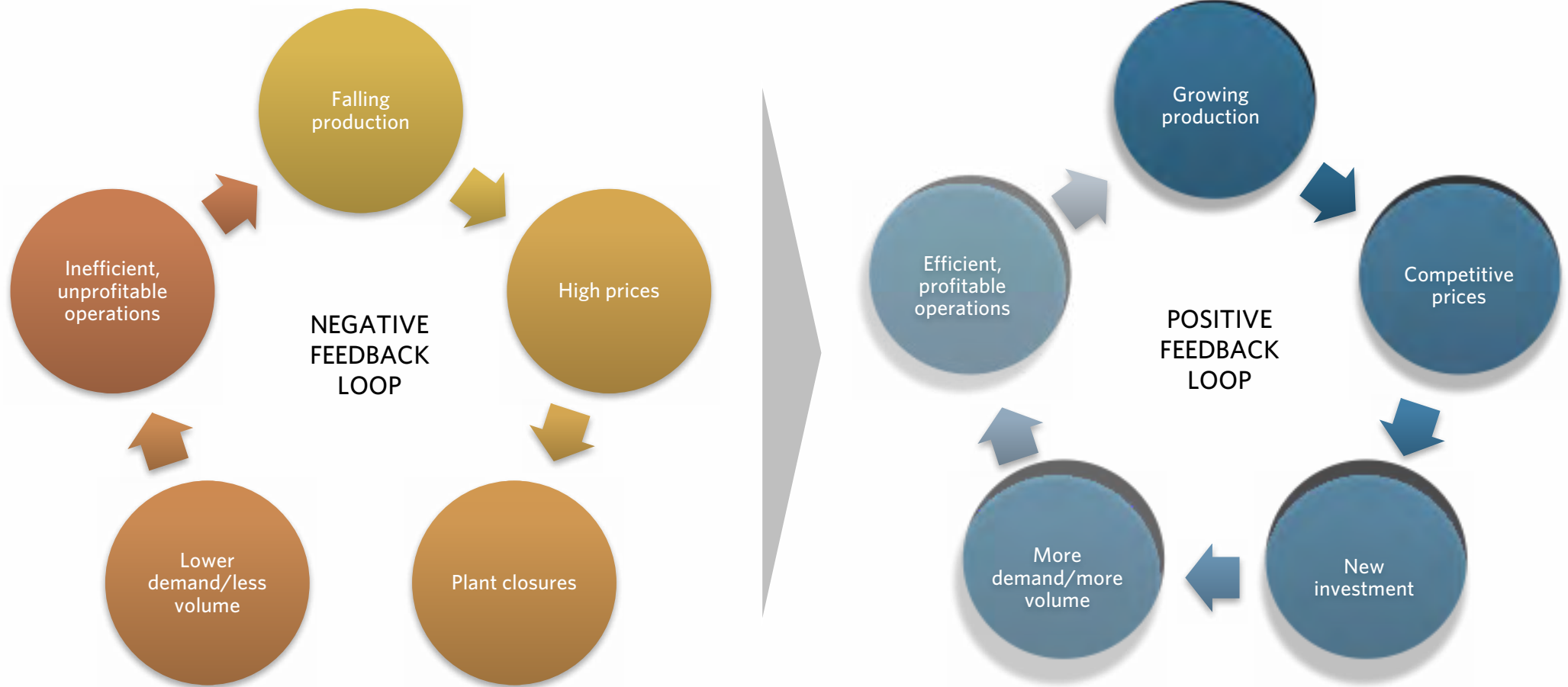
“Competitiveness Gap” is not theory; it can be easily demonstrated

EXAMPLE: GLOBAL AVOCADO EXPORTS: VOLUME VS. AVERAGE EXPORT VALUE PER KG

Tonnes; US\$/kg; FOB; 2012



To escape the “competitiveness gap,” Western Australian agrifood sectors need to transition from a negative feedback loop to a positive one

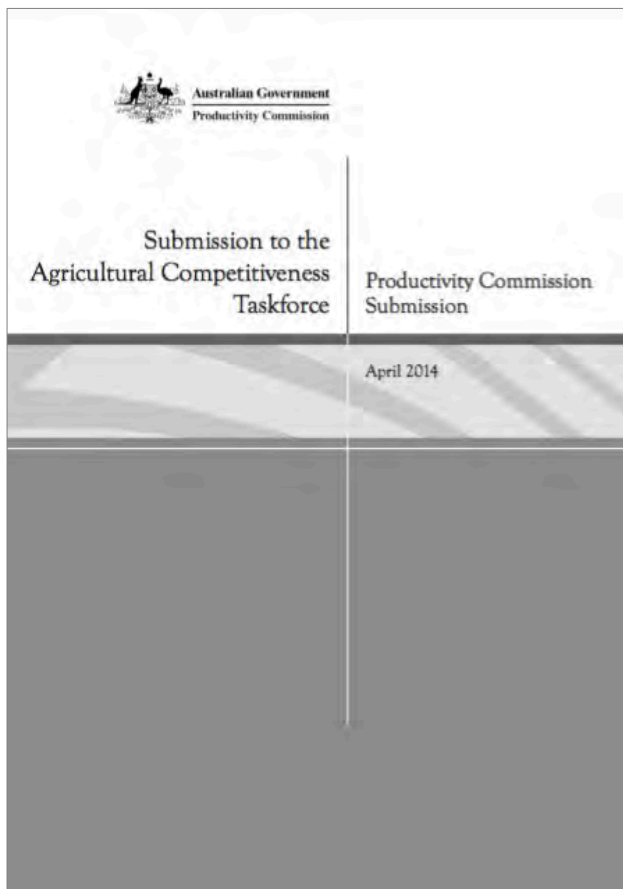


DOCUMENT STRUCTURE

| | |
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We accept the Productivity Commission's definition of agricultural competitiveness



What is a competitive agricultural sector?

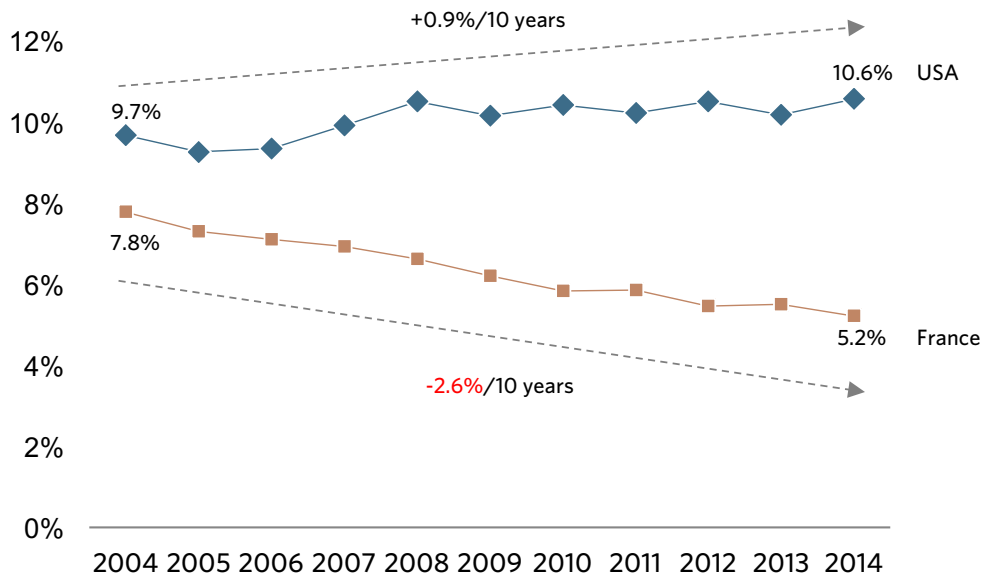
"Competitiveness is essentially about advantage in selling products in markets. This requires Australian farmers to be relatively more efficient producers than their many competitors, and for them to be backed up by efficient supply chains. Producing efficiently, in turn, involves Australian producers being exposed to international competition to spur innovation and productivity gains both to reduce costs and to develop products that consumers are prepared to pay for. It also depends upon the capacity to be flexible and to adapt swiftly to changing market conditions.

An internationally competitive agricultural sector (as for other sectors of the economy) requires policies and institutional frameworks that facilitate innovation, least-cost production, efficient risk management and the allocation (and reallocation) of resources such as land, water and management skills to areas of production and investment with the highest expected net returns. Generally speaking, appropriate incentives will be provided by open, competitive markets and efficient (non-distorted) price signals." *Submission to the Agricultural Competitiveness Taskforce, Australian Government Productivity Commission, April 2014*

International agricultural competitiveness can be demonstrated and measured by changes in export market share, both at the overall agrifood level and at the category or segment level

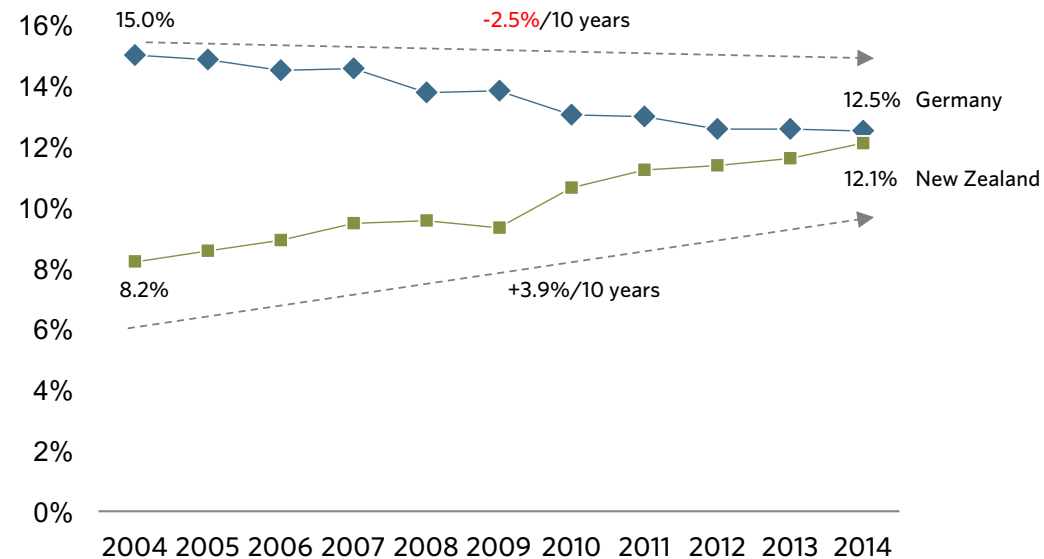
SHARE OF TOTAL GLOBAL AGRIFOOD TRADE: USA VS. FRANCE

% of value; US\$; 2004-2014



SHARE OF GLOBAL DAIRY CATEGORY TRADE: GERMANY VS. NZ

% of value; US\$; 2004-2014



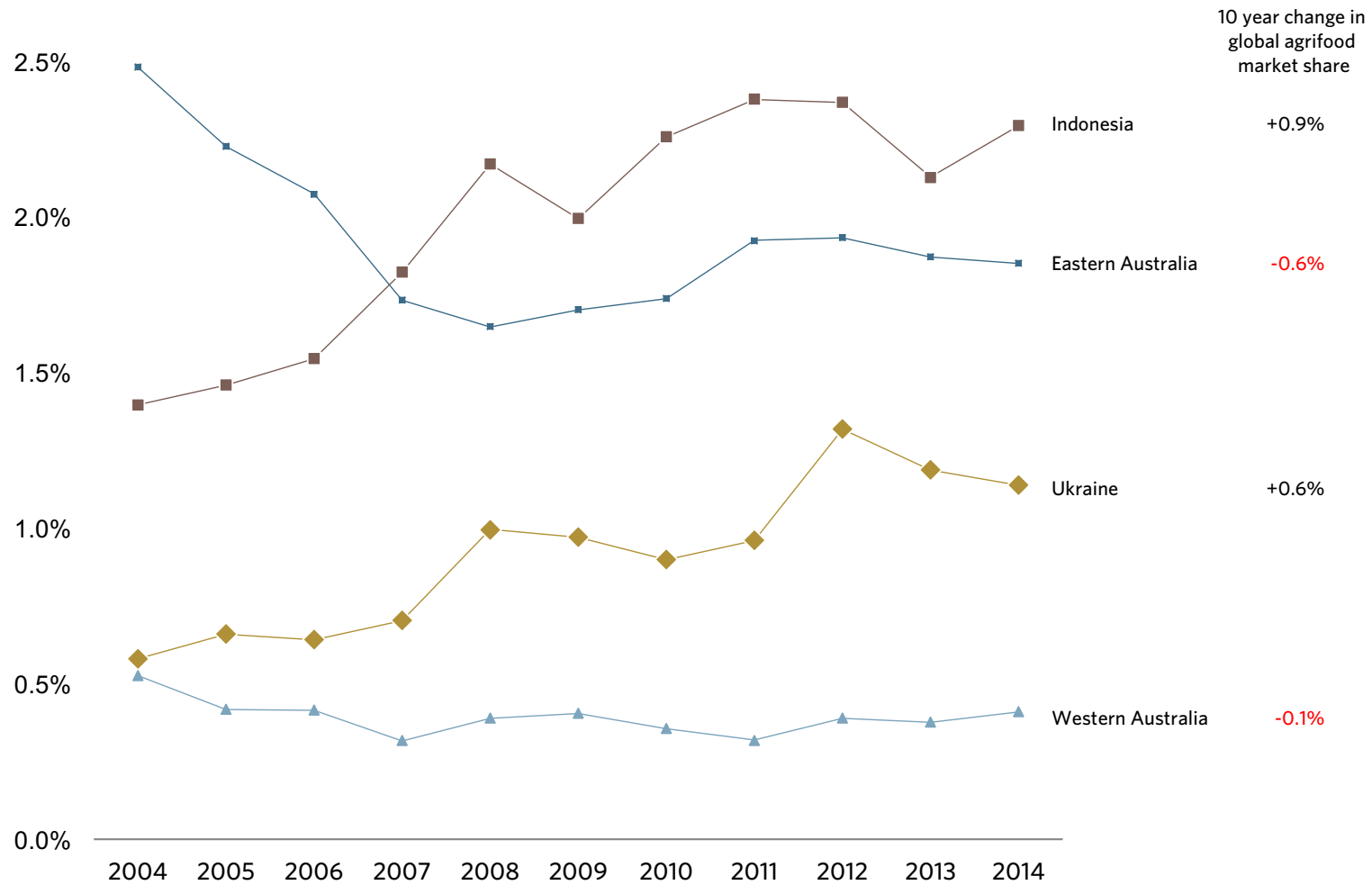
- The United States is the largest agrifood exporter in the world. The US achieves a large (10.6%) global agrifood export market share and is taking global export market share from competitors. Therefore, the United States has growing overall agrifood competitiveness.
- France has fallen from being the second largest agrifood exporter in 2004 to fifth place in 2014. Therefore, France has declining overall agrifood competitiveness.

- Germany is the largest dairy exporter in the world. However it has declining global share. Therefore it is losing competitiveness in dairy to competitors.
- New Zealand is the second largest dairy exporter in the world. New Zealand is taking global export market share from competitors. Therefore, Zealand has growing overall agrifood competitiveness.

On this measure, the overall competitiveness of Western Australia is flat-to-declining over the past decade

SHARE OF TOTAL GLOBAL AGRIFOOD TRADE: SELECT COUNTRIES OR REGIONS

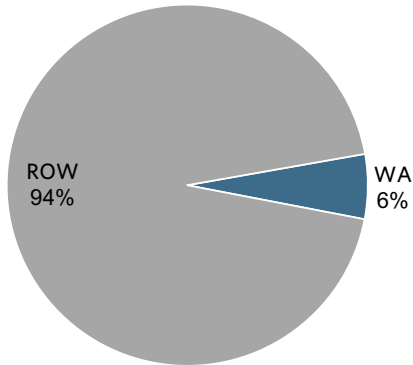
% of value; US\$; 2004-2014



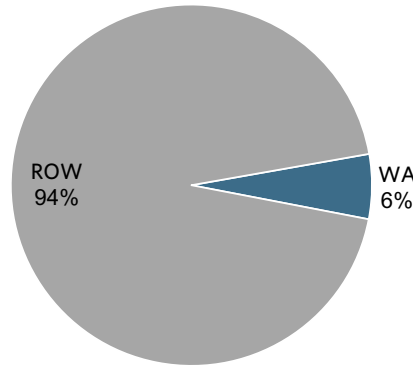
However Western Australia has strong market share in a number of products where it is highly competitive and has a clear comparative advantage

WESTERN AUSTRALIAN SHARE OF GLOBAL EXPORT TRADE: SELECT AGRIFOOD PRODUCTS
% of value; 2014

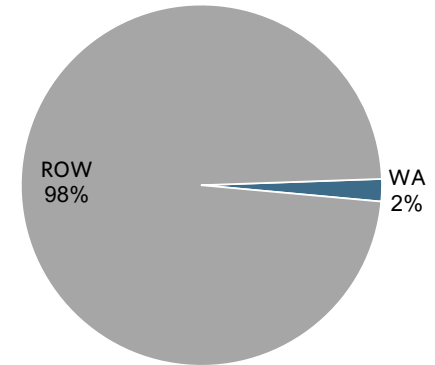
WHEAT (HS1001)



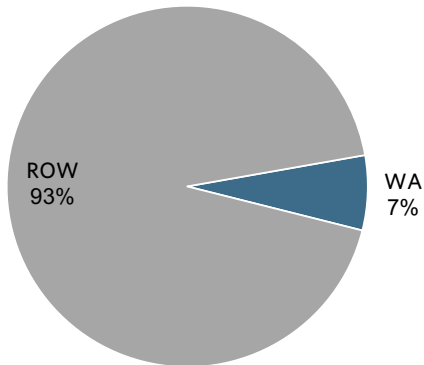
ROLLED OATS (HS110412)



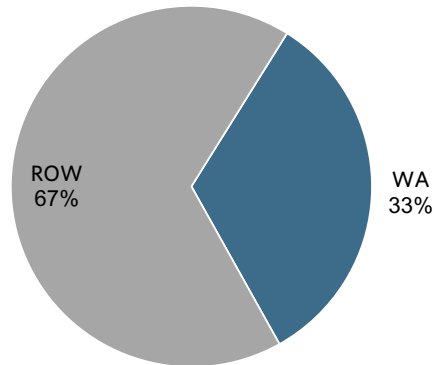
CARROTS (HS070610)



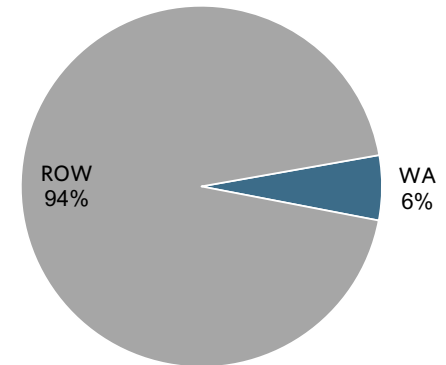
LAMB/SHEEP MEAT (HS020410-43)



LIVE ROCK LOBSTER (HS030621)



CANOLA SEEDS (HS120510)



DOCUMENT STRUCTURE

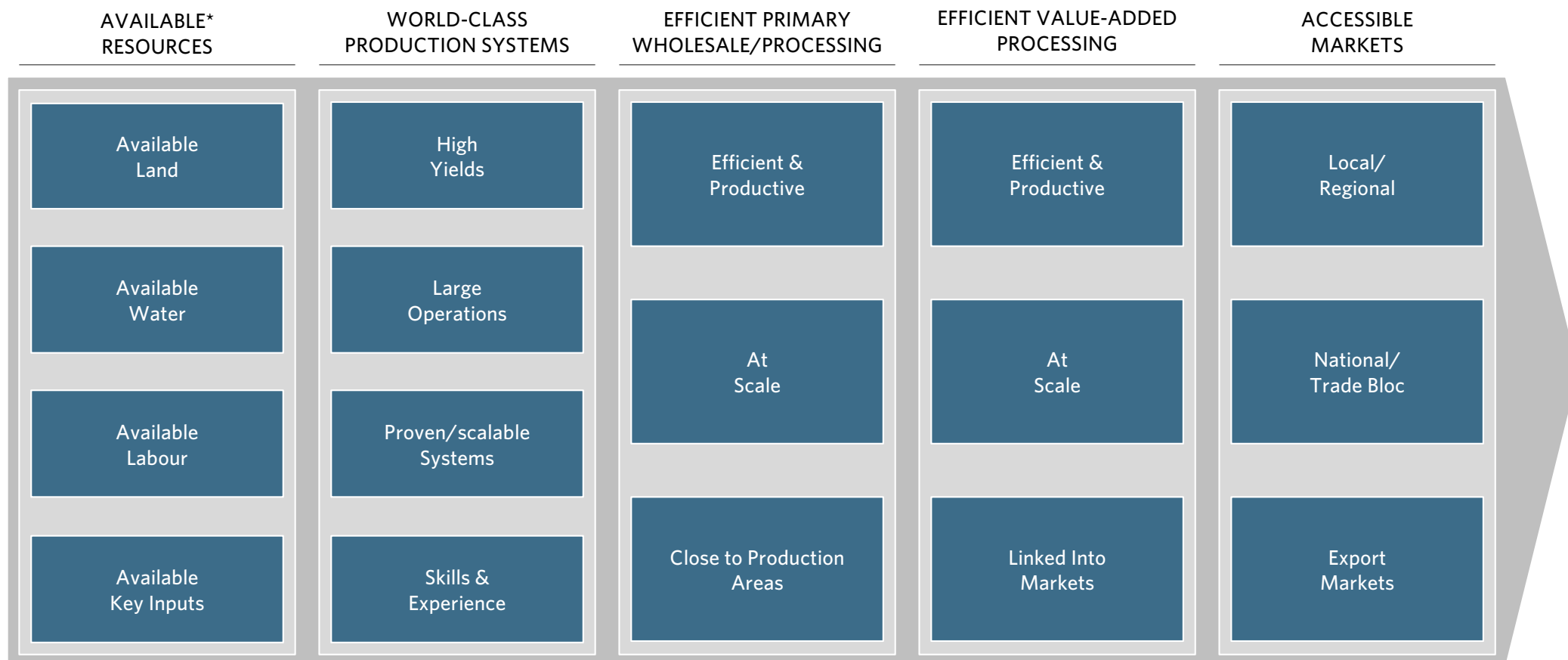
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International competitiveness is created by a range of key drivers

DRIVERS OF INTERNATIONAL COMPETITIVENESS

Model; 2016

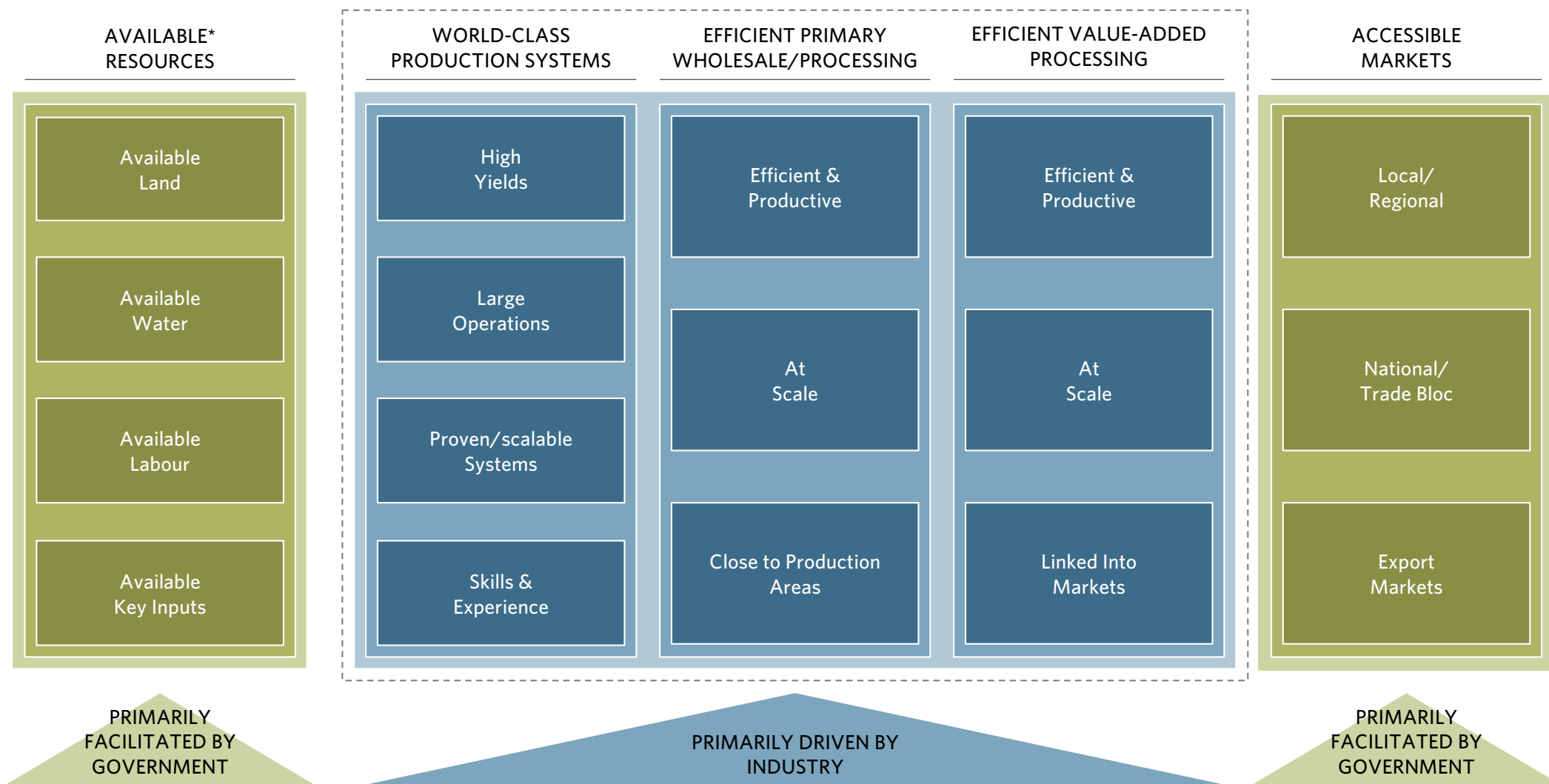


* Efficiently allocated

Industry and government can influence drivers of international competitiveness

DRIVERS OF INTERNATIONAL COMPETITIVENESS

Model; 2016

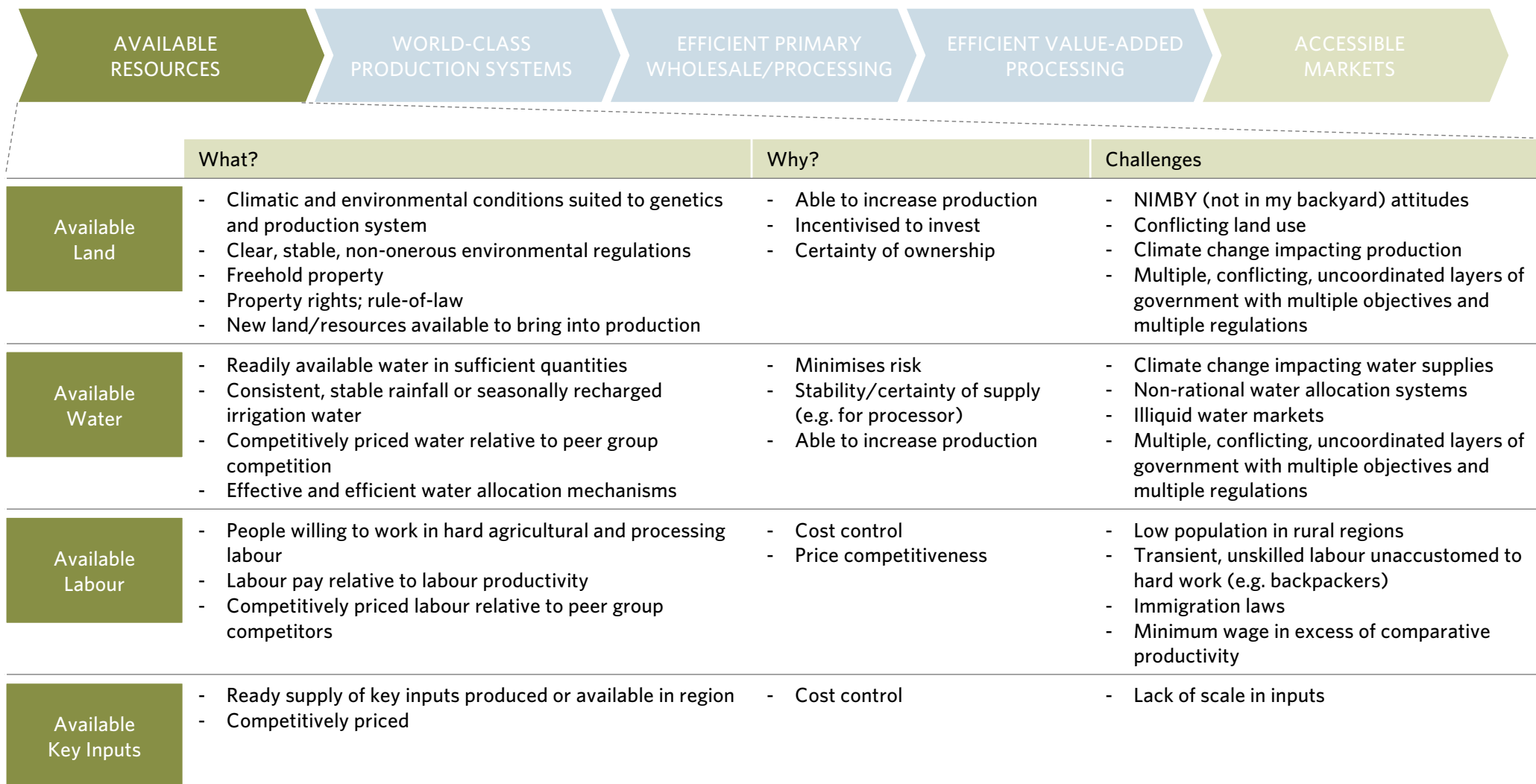


* Efficiently allocated

Internationally competitive regions have readily available resources to produce foods

DETAILS OF KEY DRIVERS OF INTERNATIONAL COMPETITIVENESS: AVAILABLE RESOURCES

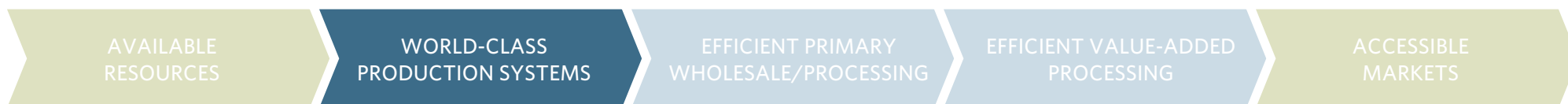
Model; 2016



Internationally competitive regions have world-class production systems

DETAILS OF KEY DRIVERS OF INTERNATIONAL COMPETITIVENESS: WORLD-CLASS PRODUCTION SYSTEMS

Model; 2016

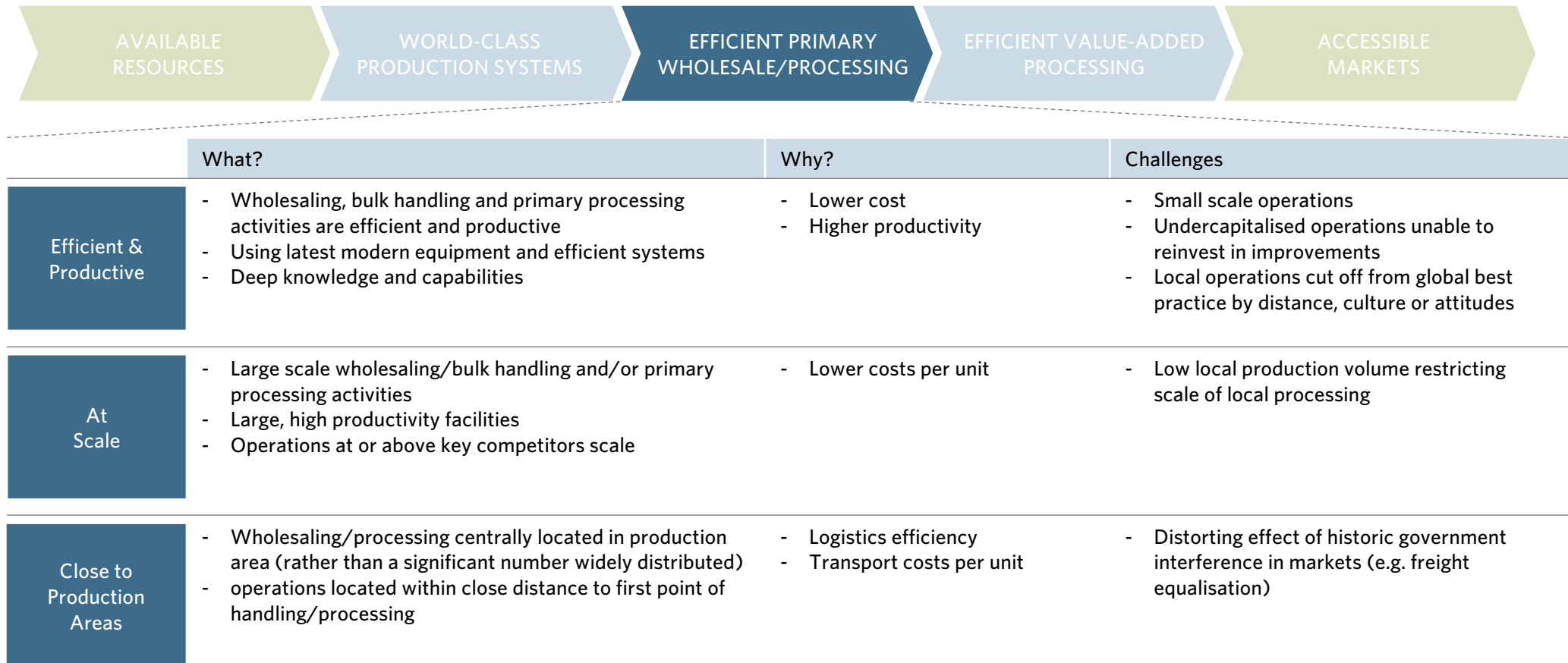


| | What? | Why? | Challenges |
|-------------------------|---|---|---|
| High Yields | <ul style="list-style-type: none"> - Best practice operation management around yield - Genetics most suited to production system and climate - Access to highest performance genetics available from largest/deepest breeding pool | <ul style="list-style-type: none"> - Efficient conversion of inputs to outputs - Not disadvantaged against competition - Time is money | <ul style="list-style-type: none"> - Biosecurity (e.g. no access to non-Australian pig genetics) - Poor/weak global pool not improving at rate of competing products (e.g. lamb vs. chicken) - No access to IP-controlled genetics |
| Large Operations | <ul style="list-style-type: none"> - Large, modern operations - Large operations at or above key competitors scale - Small number of large operations (not vice versa) - Specifically designed and focused on single product | <ul style="list-style-type: none"> - Lower production costs per unit - Higher yields - Better processes, systems and management (on average) | <ul style="list-style-type: none"> - Barriers to operation consolidation - Anti-corporate agribusiness legislation - Rate of operation sales and operational exits - Attitudes and opinions |
| Proven/scalable Systems | <ul style="list-style-type: none"> - Proven, reproducible models in place delivering strong real-world results - World-class systems available - Easy access to latest specialised equipment & technology - Systems operating at minimum required scale | <ul style="list-style-type: none"> - De-risk operations - Higher productivity - Global best practice - Not disadvantaged | <ul style="list-style-type: none"> - Lack of minimum local scale to implement - Lack of required skills - Lack of required equipment or technology - No proven model exists (e.g. bush foods) - Multiple, conflicting, uncoordinated layers of government with multiple objectives |
| Skills & Experience | <ul style="list-style-type: none"> - Deep pool of local skilled operators - Strong industry training programs and systems - Regular uptake of new global best practice | <ul style="list-style-type: none"> - Readily available labour - Enable rapid growth and expansion | <ul style="list-style-type: none"> - Local pool cut off from global best practice by distance, culture or attitudes - Local pool under some critical threshold and therefore not self-sustaining - Immigration laws preventing arrival of new skills suited to new products/systems |

Internationally competitive regions have efficient primary wholesaling and primary processing

DETAILS OF KEY DRIVERS OF INTERNATIONAL COMPETITIVENESS: EFFICIENT PRIMARY WHOLESALE/PROCESSING

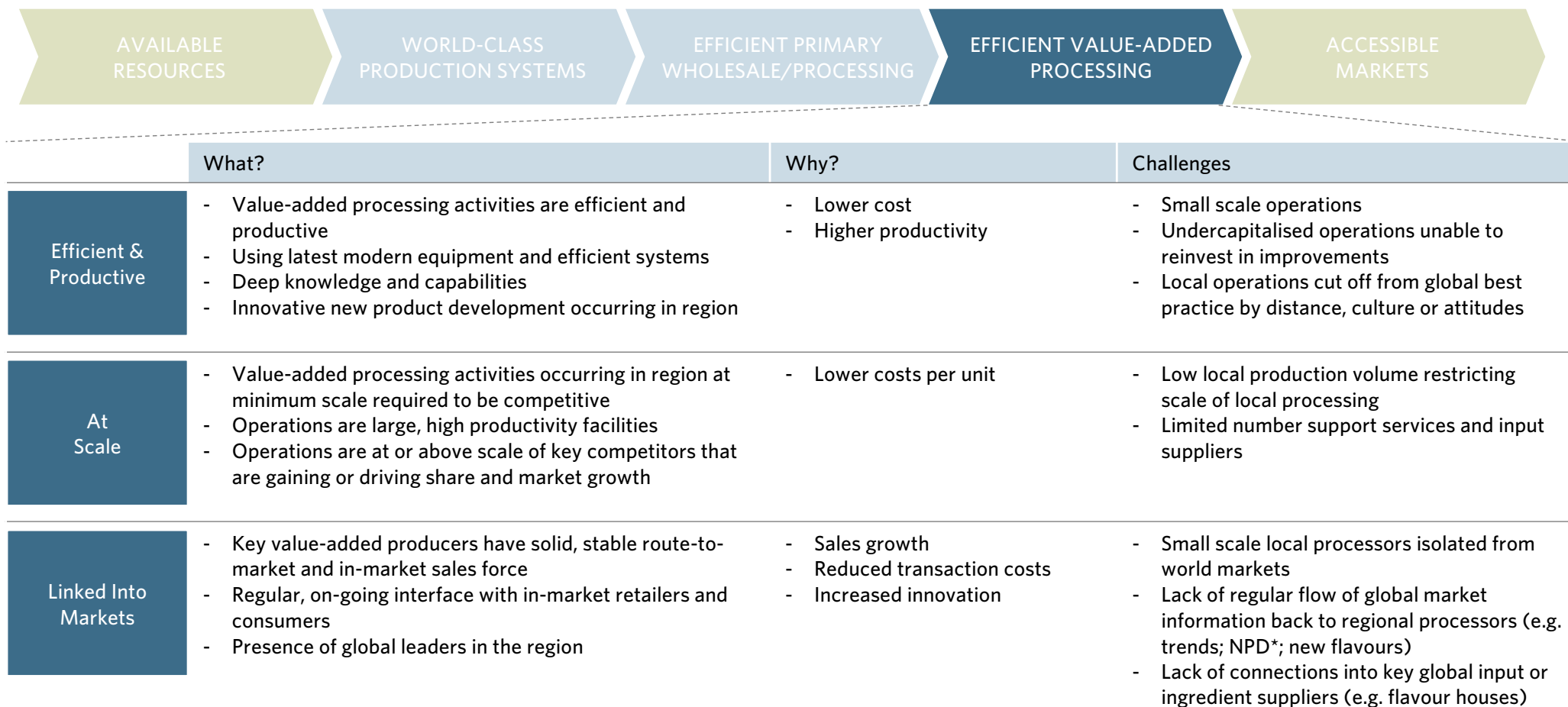
Model; 2016



Internationally competitive regions have efficient value-added processing occurring

DETAILS OF KEY DRIVERS OF INTERNATIONAL COMPETITIVENESS: EFFICIENT VALUE-ADDED PROCESSING

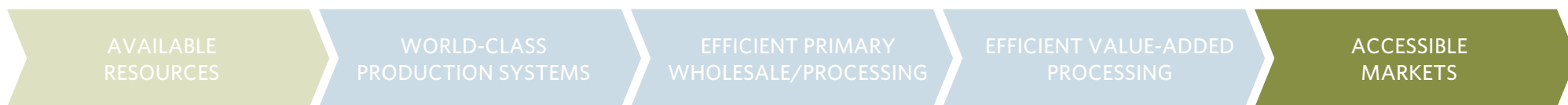
Model; 2016



Internationally competitive regions have a range of accessible markets

DETAILS OF KEY DRIVERS OF INTERNATIONAL COMPETITIVENESS: ACCESSIBLE MARKETS

Model; 2016

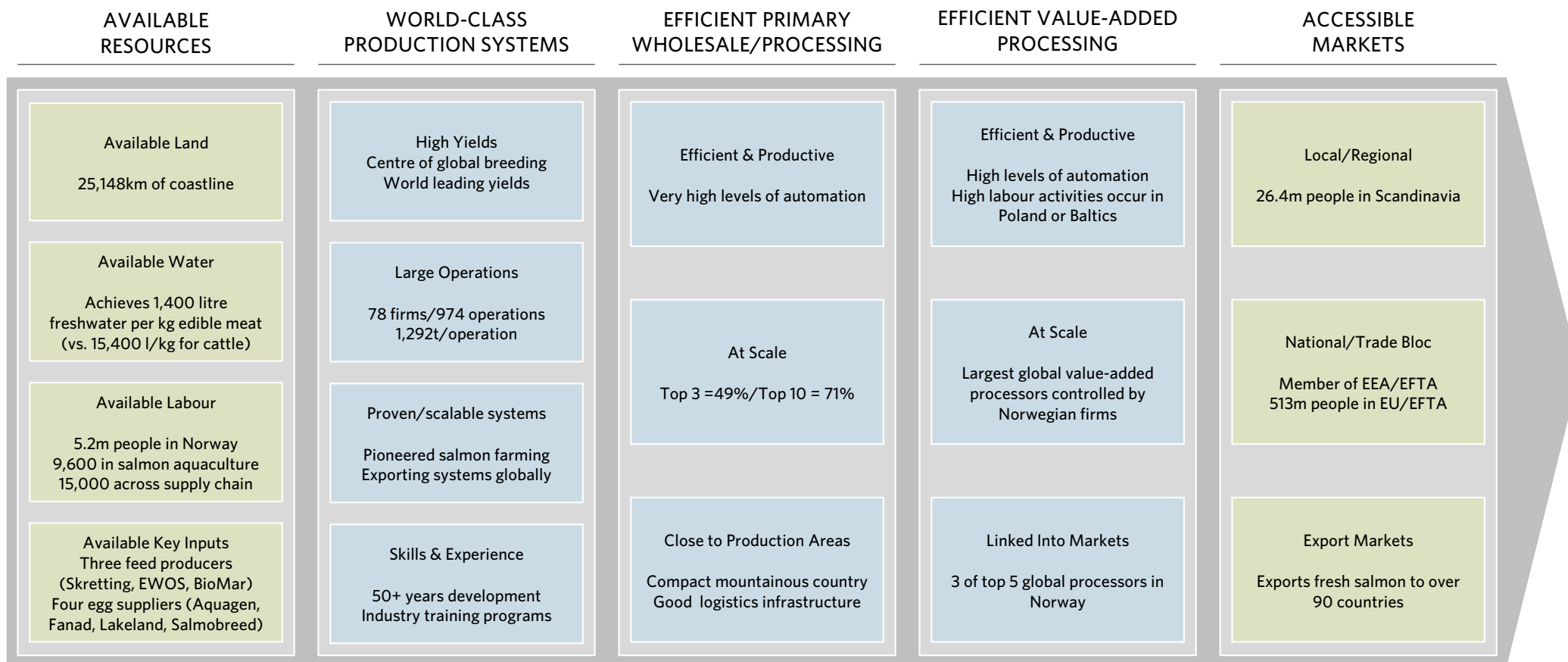


| | What? | Why? | Challenges |
|-------------------------|---|--|---|
| Local/ Regional | <ul style="list-style-type: none"> - Competitive and robust local/regional market - Sophisticated and discerning customers - Multiple channels and retailers | <ul style="list-style-type: none"> - Test bed/nursery for new product development (NPD) - Guaranteed minimum volumes and sales | <ul style="list-style-type: none"> - Small local markets - Very limited local demand for product (e.g. not used in local cuisine) |
| National/ Trade Bloc | <ul style="list-style-type: none"> - Large pool of regional consumers - Ready access via regional trade agreement | <ul style="list-style-type: none"> - Drive volume - Available pool of customers - Easy, gradual expansion | <ul style="list-style-type: none"> - Internal barriers to trade such as transport distances or cost - Language or cultural barriers |
| Export Markets | <ul style="list-style-type: none"> - Low/reduced tariffs into key markets - Large number of high quality trade agreements - Regular and available transport and shipping solutions - Minimum scale required to export product in efficient quantities | <ul style="list-style-type: none"> - Enables export growth | <ul style="list-style-type: none"> - Poor quality trade agreements with limited agrifood access - Presence of significant non-tariff trade barriers - Currency risks |

As an example, the Norwegian salmon industry delivers on all key international competitiveness drivers

EXAMPLE: DRIVERS OF INTERNATIONAL COMPETITIVENESS OF NORWEGIAN SALMON INDUSTRY

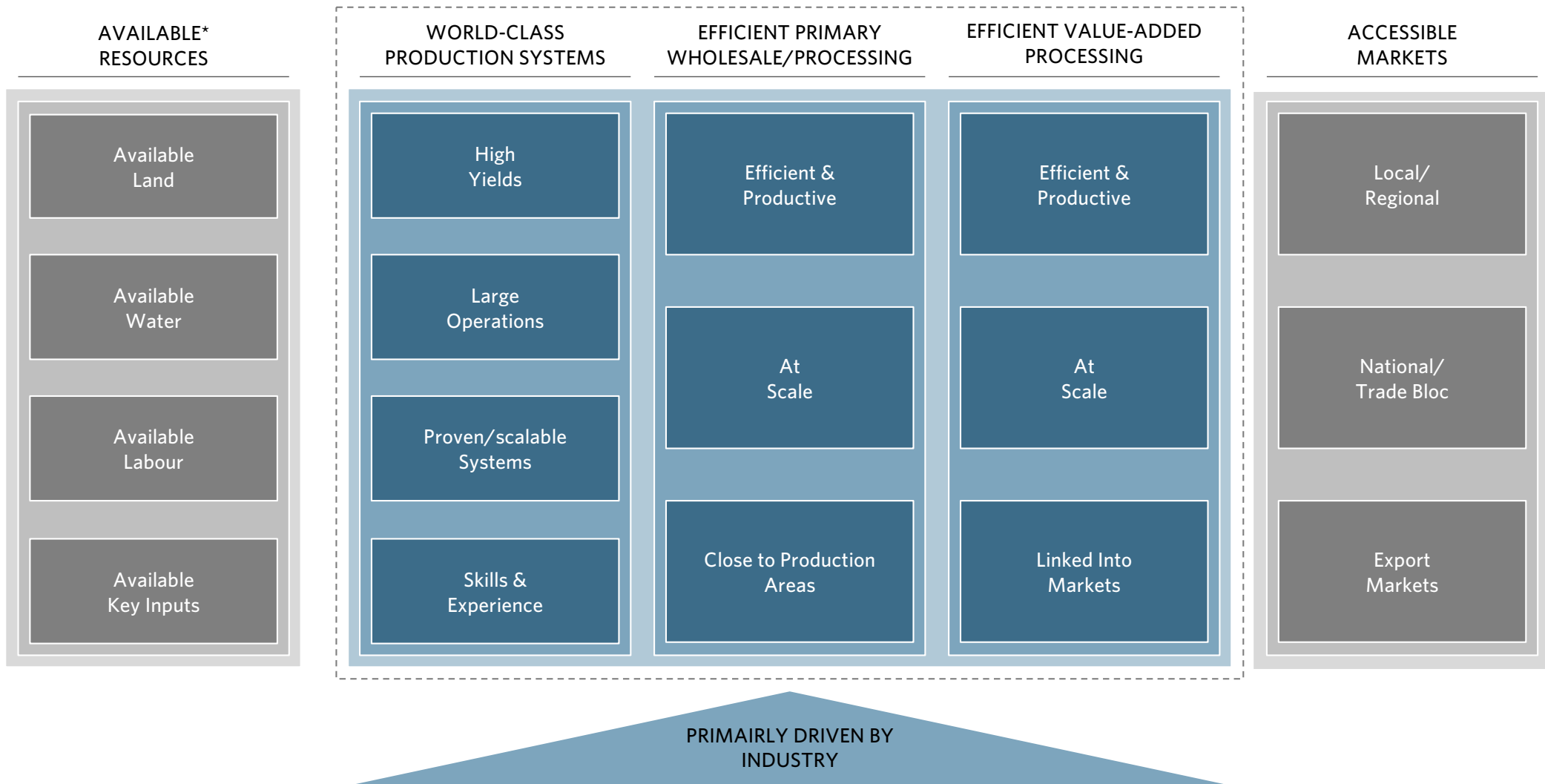
Model; 2016



This report now documents the firm/industry level practices that characterise international competitiveness that competitiveness seeking agrifood sectors in WA will need to adopt

DRIVERS OF INTERNATIONAL COMPETITIVENESS

Model; 2016

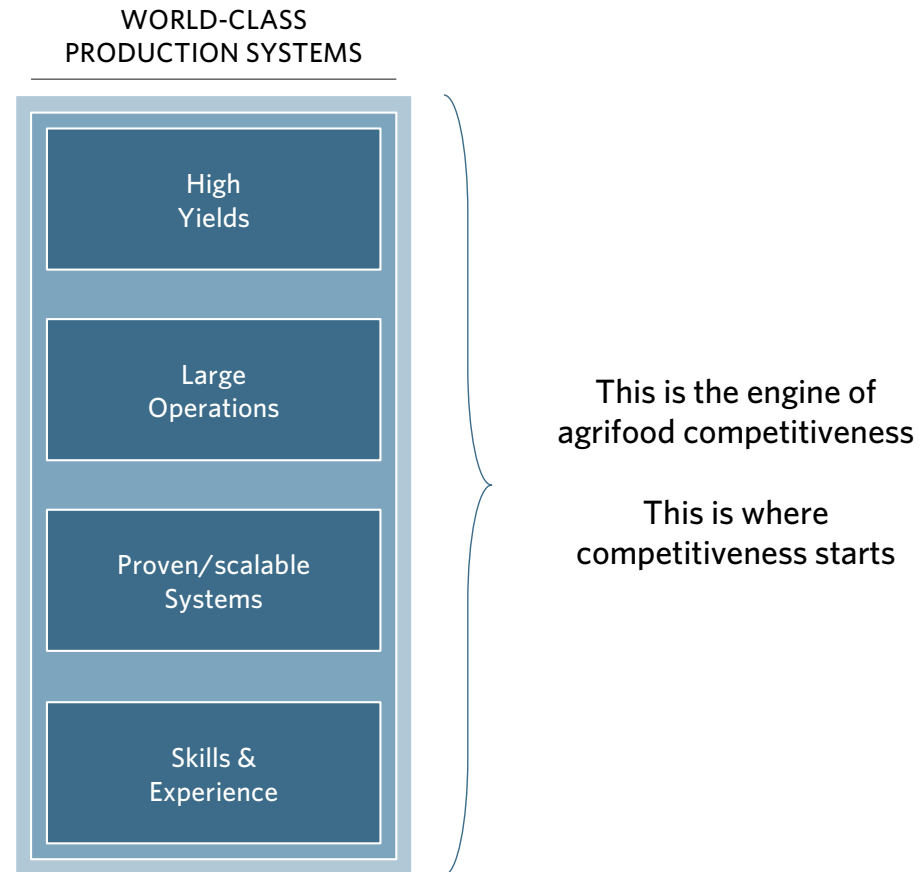


* Efficiently allocated

For Western Australia to be globally competitive, it needs to have world-class production systems

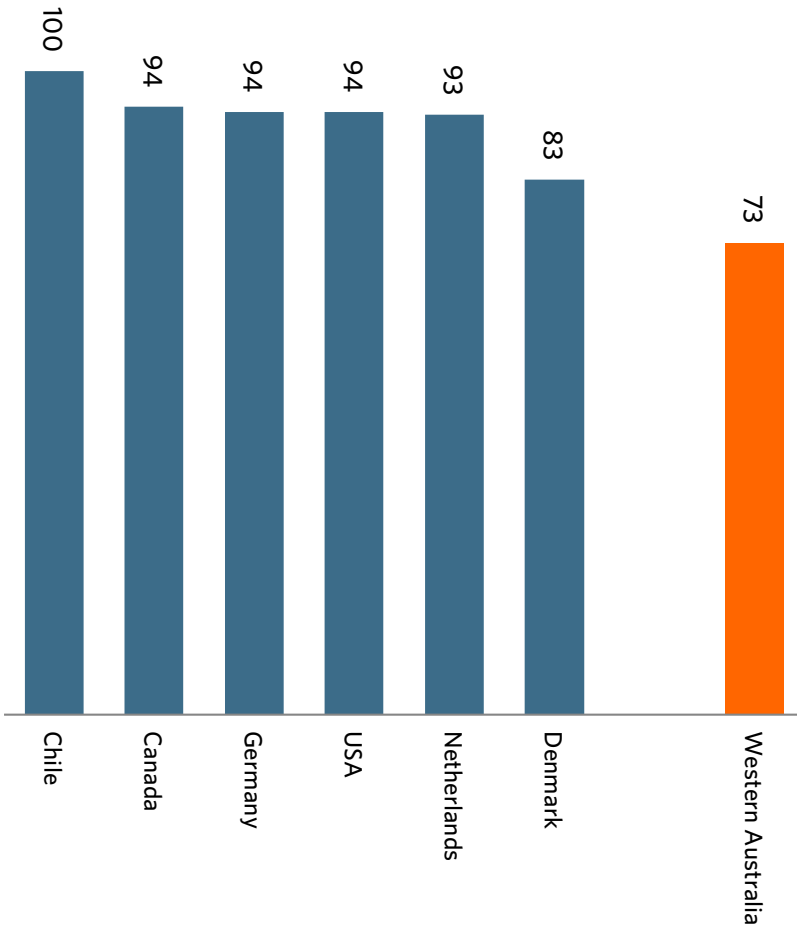
DRIVERS OF INTERNATIONAL COMPETITIVENESS: WORLD-CLASS PRODUCTION SYSTEMS

Model; 2016

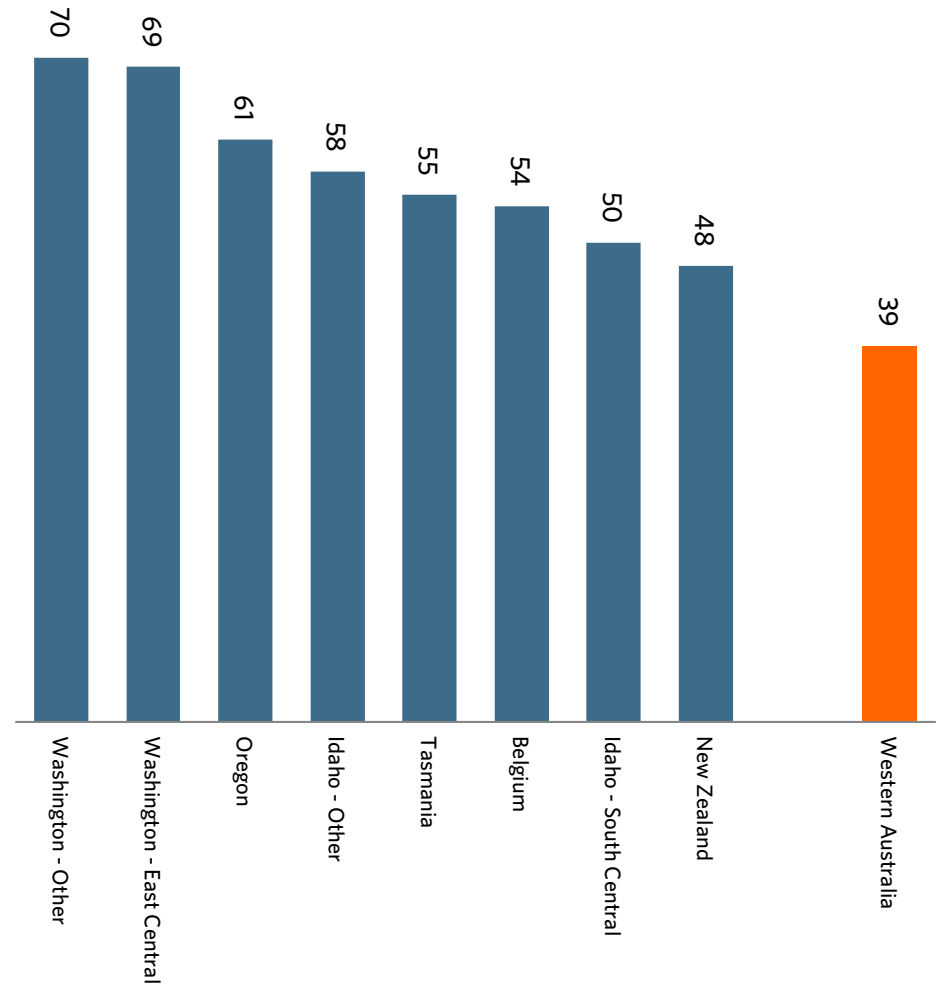


Western Australia needs to dramatically increase yields to achieve competitiveness

MEAT/PIG: WA VS. SELECT PEERS
Kg/pig; 2015 or as available



POTATOES/HA: WA VS. SELECT PEERS
Tonnes/hectare; 2015 or as available

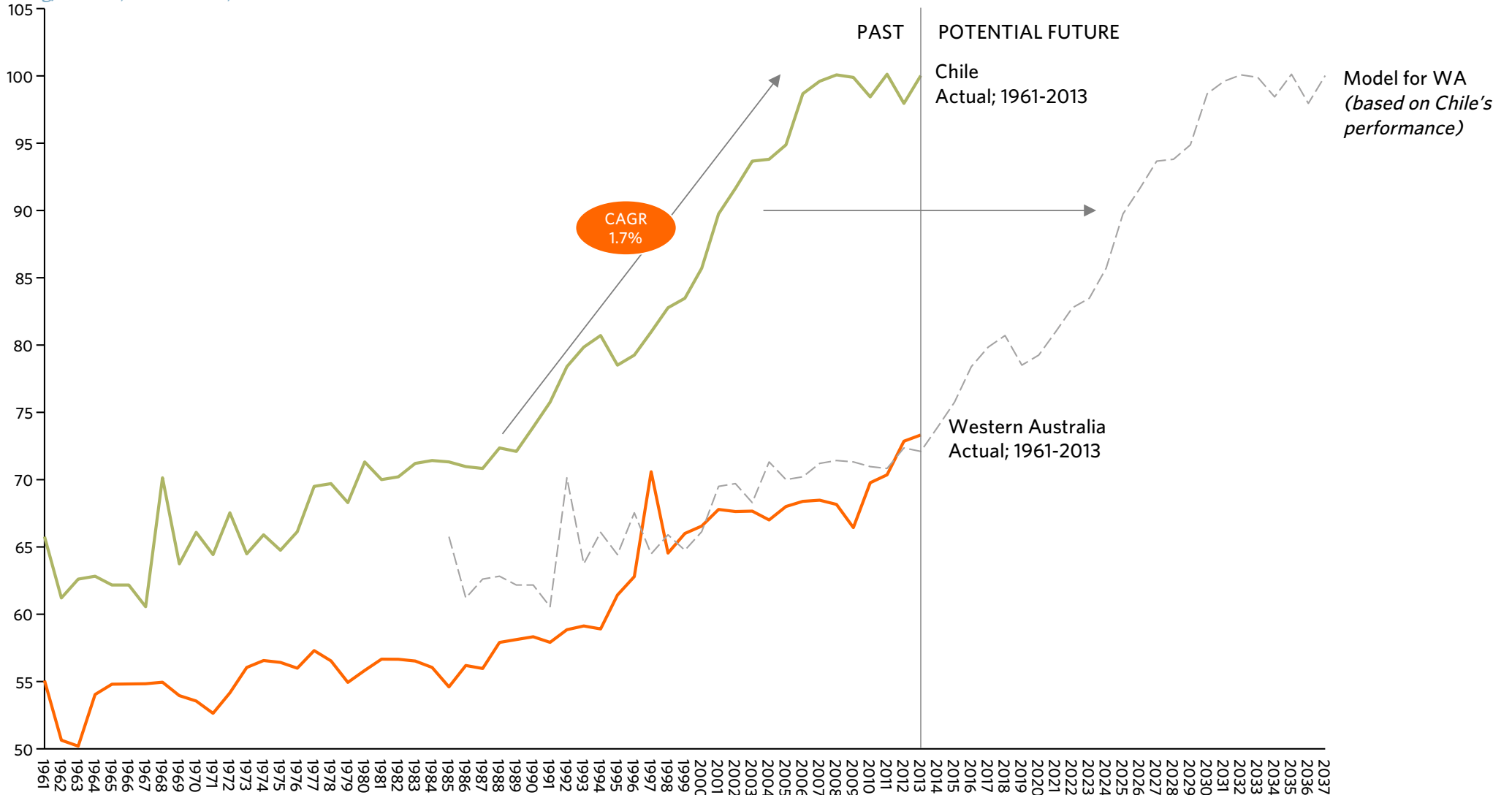


Source: USDA ERS/NASS (various reports); UN FAO AgStat; ABS 7120.0; Coriolis analysis

Western Australian agrifood sectors are typically about 25 years behinds peers in yield

AVERAGE PIG CARCASS WEIGHT AT SLAUGHTER: WESTERN AUSTRALIA VS. CHILE

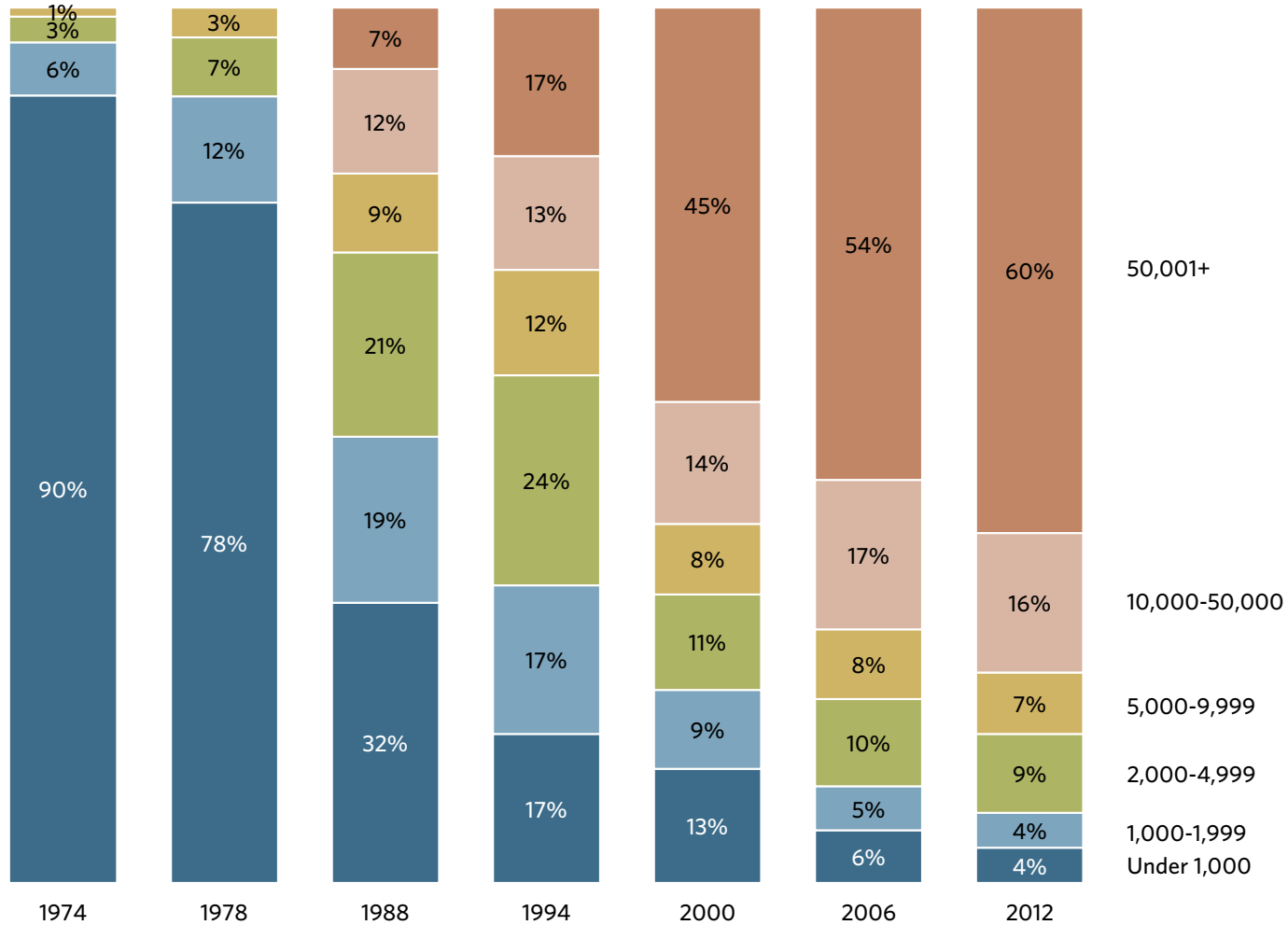
Kg/animal; 1961-2013a; 2014-2037f



Source: various WA Statistical Register (by year); various ABS publications; UN FAO AgStat database; Australian Pig Annual 2012-13; Coriolis analysis and estimates

Agriculture is rapidly shifting to larger operational units

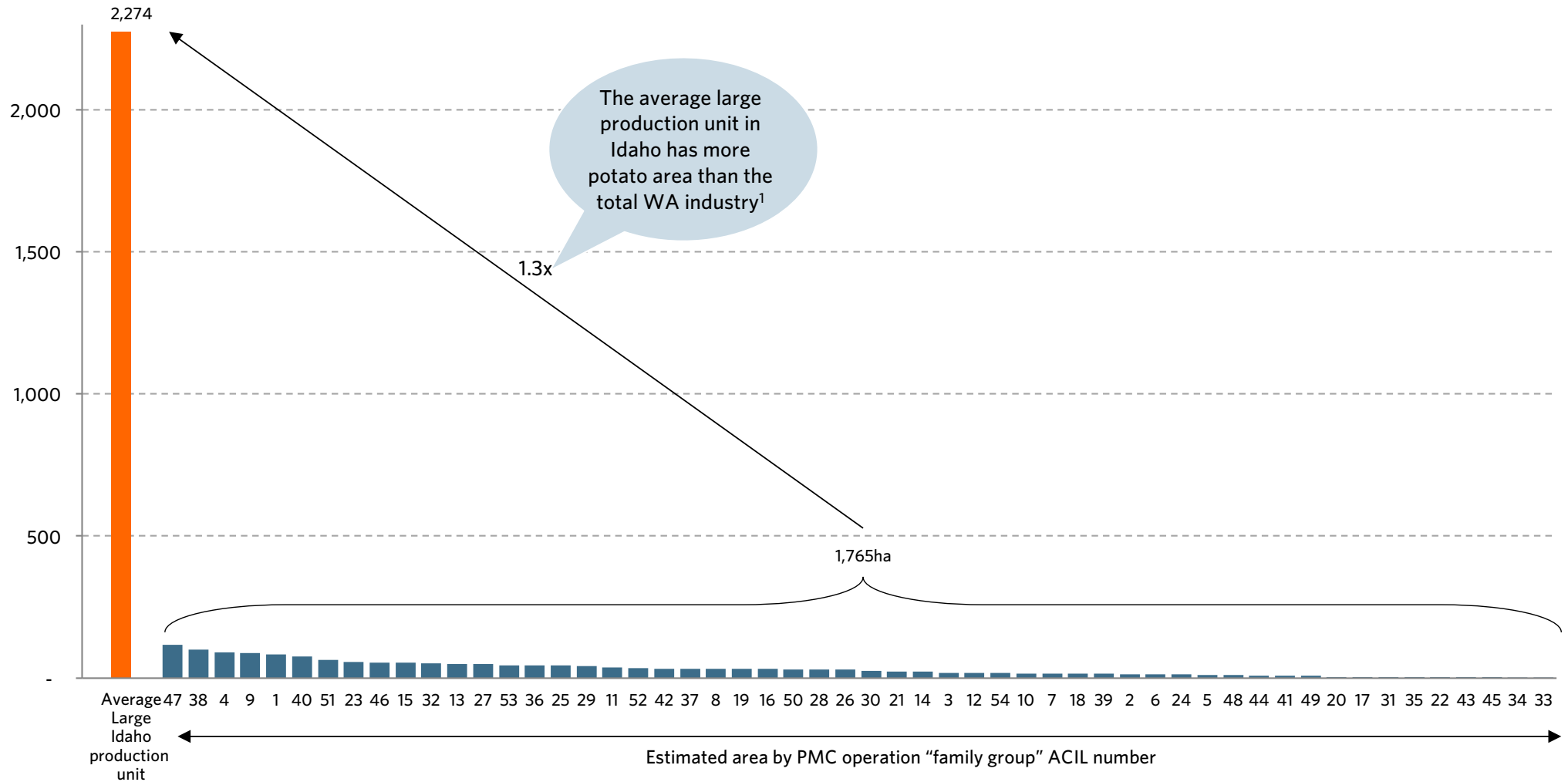
EXAMPLE: SHARE OF HOGS PRODUCED BY OPERATIONAL UNIT SIZE
% of head in inventory; 1974-2012



Source: USDA; Coriolis analysis

Outside of a handful of sectors, Western Australian agribusiness sectors are sub-scale relative to global peers

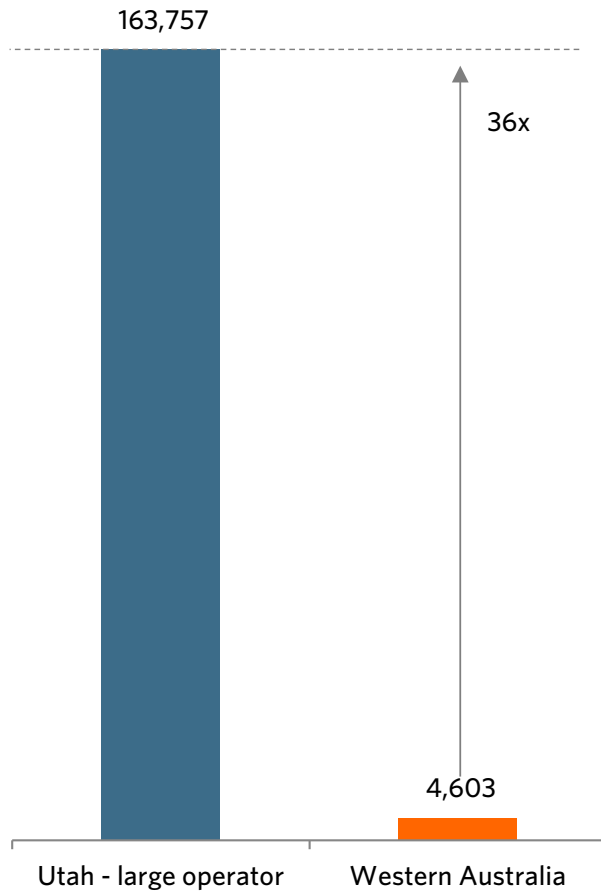
EXAMPLE: POTATO OPERATION SIZE - ESTIMATED WA BY OPERATOR VS. AVERAGE LARGE IDAHO
 Hectare; 2013



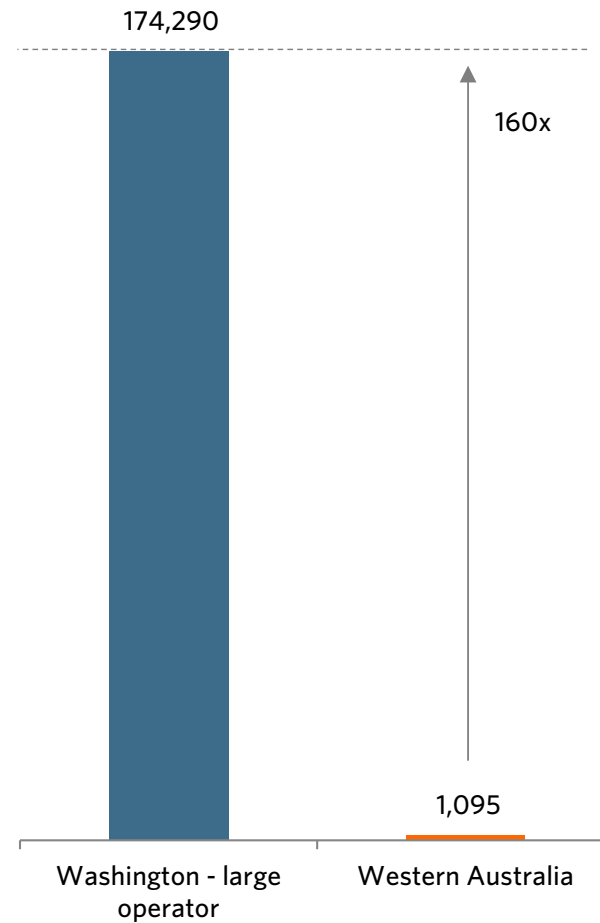
1. They also achieve higher yields per hectare; Source: Estimated from ACIL Allen Consulting "Regulation and the potato industry in WA" March 2014; p6-7 ware production by grower used to allocate total area pro-rata (including processing); known flaws in methodology - treat as directional; Coriolis estimates and analysis

Western Australia needs more large scale operations to reach global competitiveness

PIGS PRODUCED/OPERATION: WA VS. UT
Pigs sold/operation; 2014 or 15



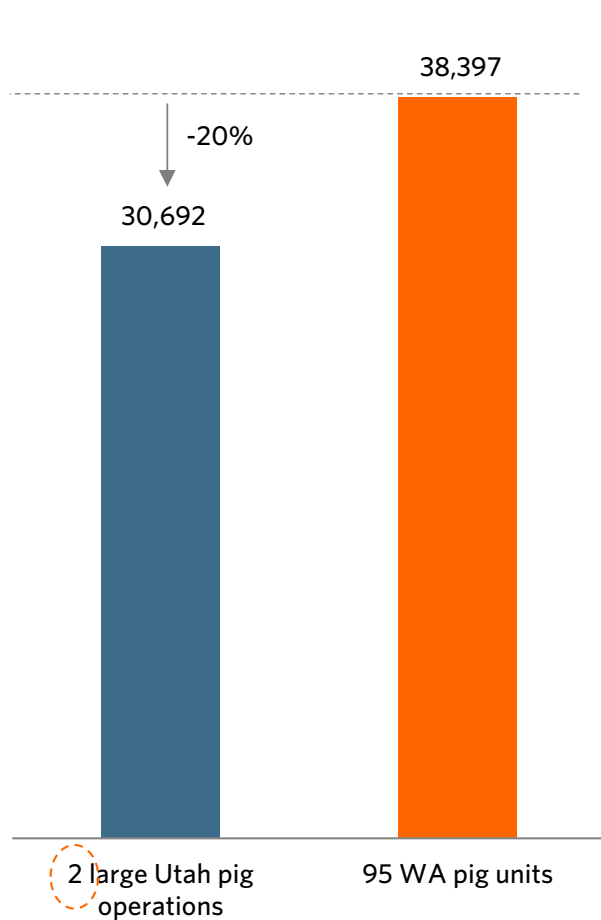
POTATOES/OPERATION: WA/AU VS. WA/USA
Tonnes/operation; 2014 or 15



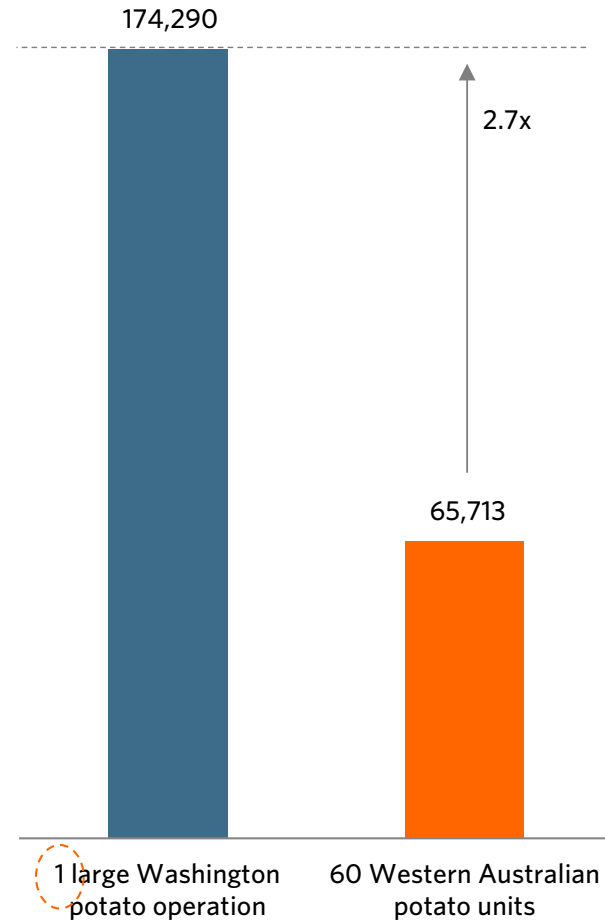
Source: USDA ERS/NASS (various reports); ABS 7120.0; Coriolis analysis

In many peer regions, a few large operational units produce more than Western Australia

PIGS PRODUCTION: 95 WA VS. 2 UT
Tonnes; 2014 or 15



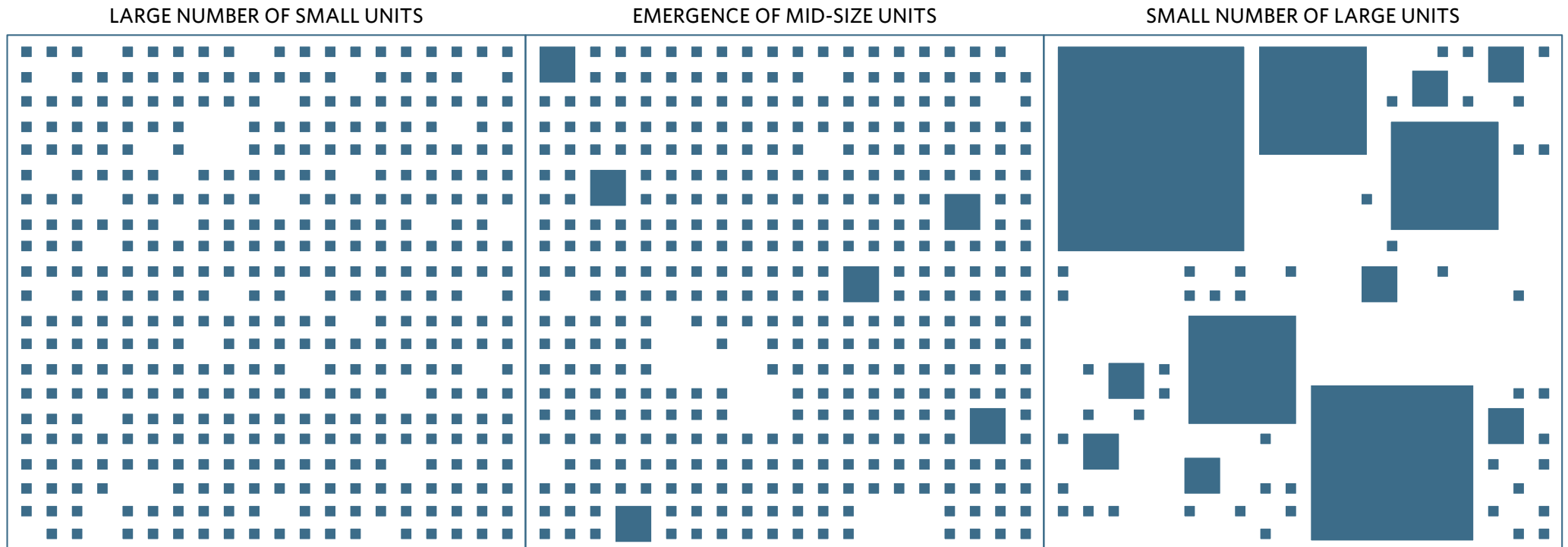
POTATOES: 60 WA/AU VS. 1 WA/US
Tonnes; 2014 or 15



Agribusiness is a dynamic industry undergoing a fundamental long-term shift to larger production units

SIMPLIFIED MODEL OF EVOLUTION OF OPERATIONAL UNIT SIZE

Model; 2016



Large scale integrated grower/packer/shippers are emerging; as an example, Wonderful Citrus alone packs thirty-three times more citrus than Western Australia

EXAMPLE: WONDERFUL CITRUS GROWER/PACKER/SHIPPER
2015 or as available

theWonderfulcompany.
US\$4b
(2014)

Wonderful citrus™



Growing

Own Orchards
19,000+ hectare

Similar in size to total Australian citrus area

Contract growers

Seasonal or multi-year contracts

Agribusiness Operations Management

Irrigation, pest management, orchard management, etc.

Packing

4 regional packhouses & coolstores

*California (2); Mexico (1); Texas (1)
500,000t/year throughput
25m cartons shipped
15m cartons in CA*

Citrus packing operation in Delano world's largest

Recently spent \$200m for new plant/equip



Marketing

Branding & IP

Marketing

Sales

Logistics

- Own mandarin brand 
- Own mandarin genetics
- Own red grapefruit brand 

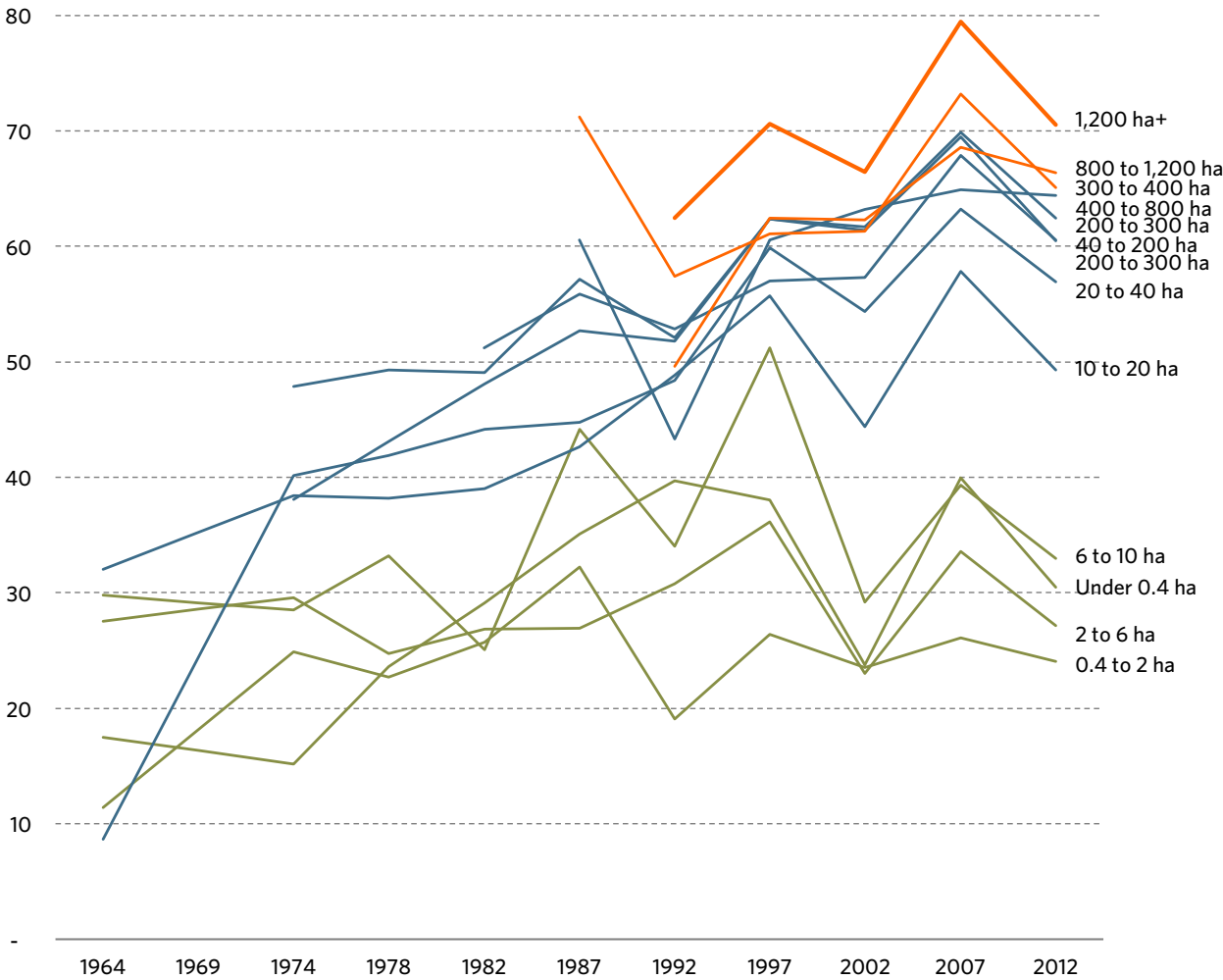
- Spending US\$100m on mandarin marketing campaign in 2013-2018
- Sold at 200,000 point-of-sale locations

Wonderful brands
Sales and Merchandising

- Sell directly to retailers
- 200+ sales & merchandising employees
- Shared with POM
- In-house transportation staff
- Dedicated national carriers

WHY? Large scale operations achieve higher yields

EXAMPLE: POTATO YIELD PER HECTARE BY TOTAL OPERATION SIZE: WASHINGTON STATE
Tonnes/ha; 1964-2012



WHY?

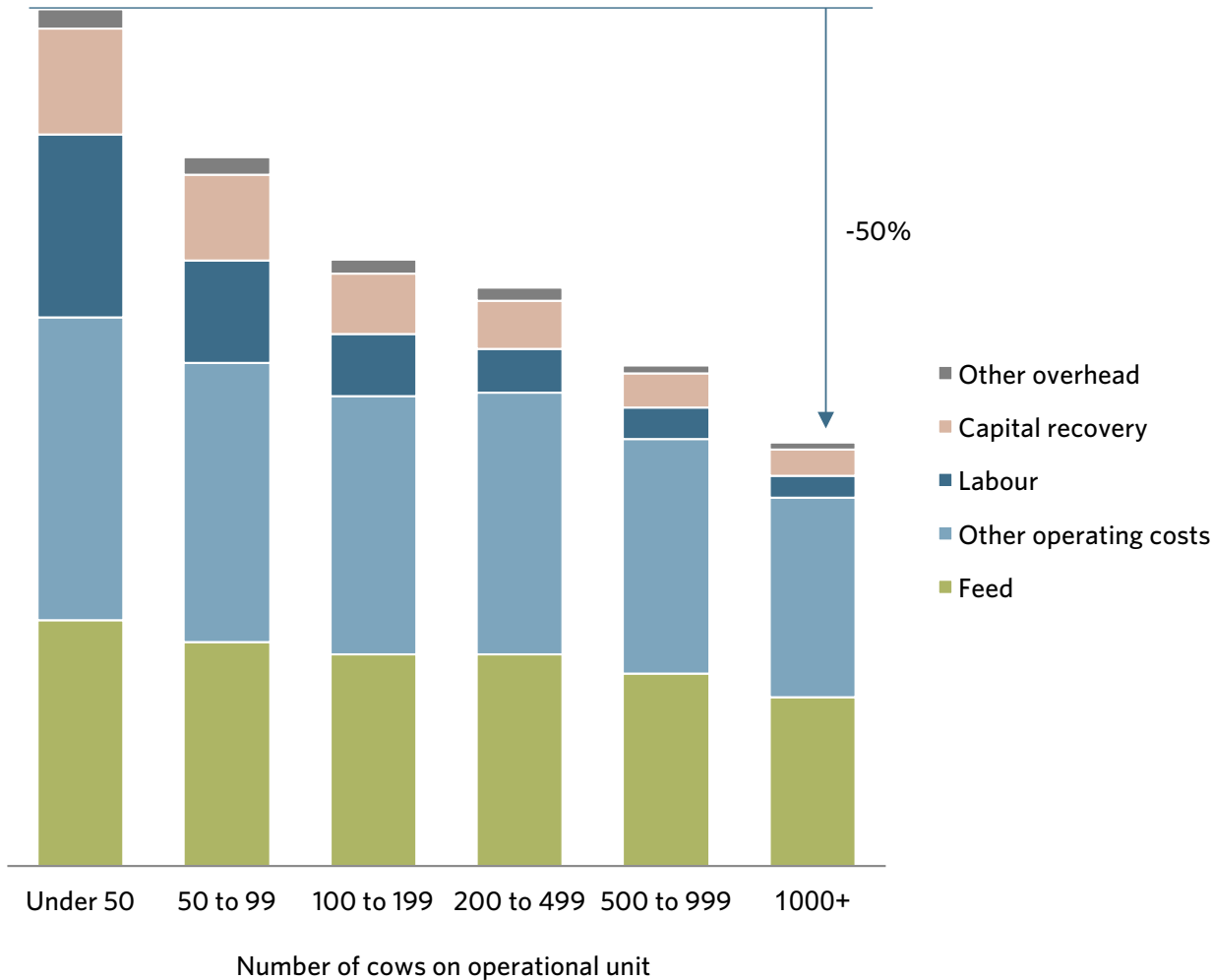
- Better management on average on larger operations; good (profitable) operations buy out bad (unprofitable) operations
- Better systems
- Better equipment

Source: USDA ERS/NASS (various reports); Coriolis analysis

WHY? Large scale operations have lower costs

UNITED STATES MILK PRODUCTION COST PER LITRE BY OPERATION SIZE

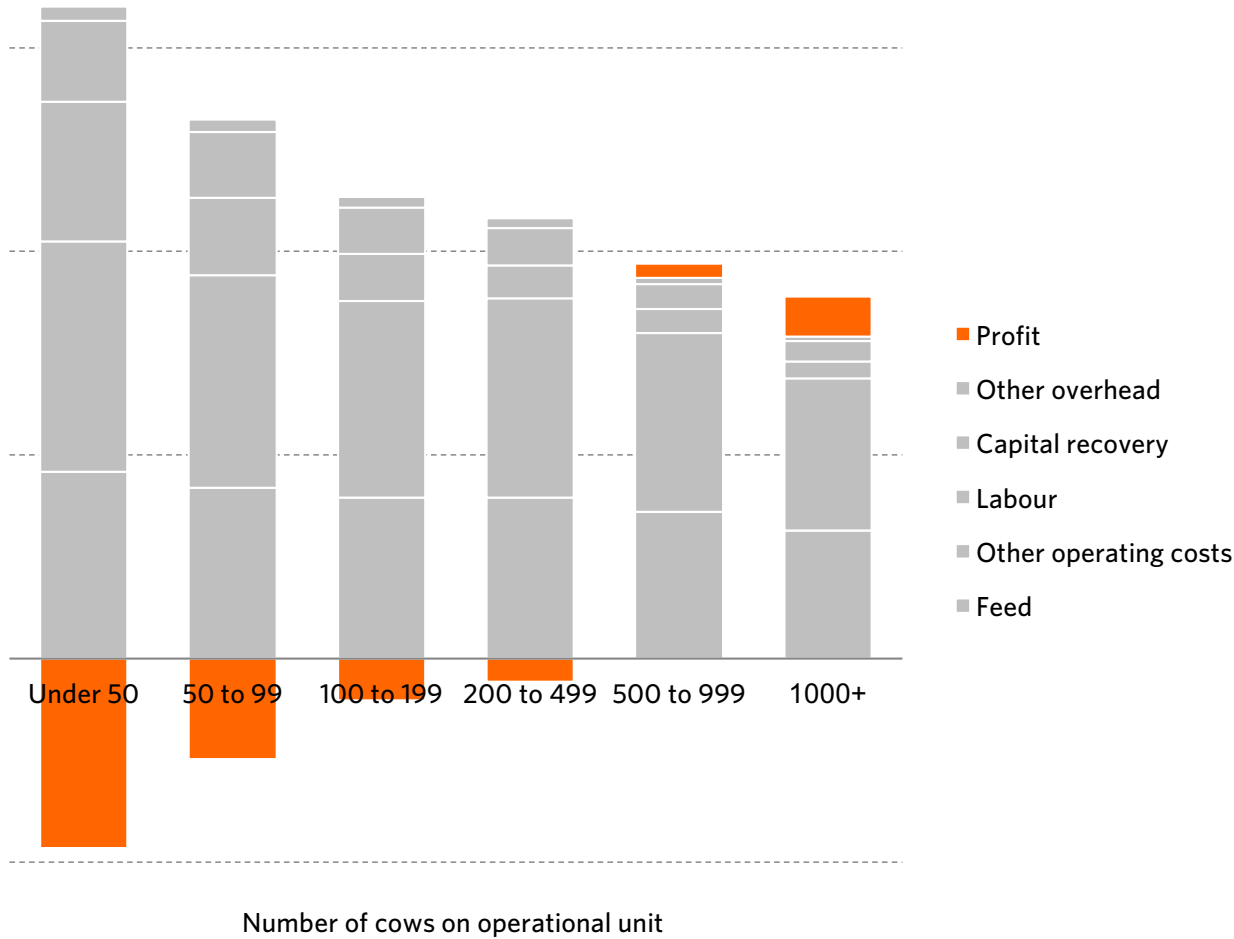
US\$/litre; 2014



| COMMENTS/NOTES |
|--|
| - Labour includes market value of operators time (“opportunity cost of unpaid labour”) |
| - Feed cost includes market value of on-site harvested feed and grazed feed |
| - Capital recovery is on machinery, equipment, housing, feed storage structures, and dairy breeding herd |
| - While there are savings across the board for larger operations, labour and capital recovery stand out |
| - Business favours overhead spread across more volume |
| - Larger operators will also be, all other things being equal, better operators (producing higher returns therefore driving consolidation) |

WHY? Large scale operations are more profitable

UNITED STATES MILK PRODUCTION COST & PROFIT PER CWT BY OPERATION SIZE
US\$/litre; 2014



COMMENTS/NOTES

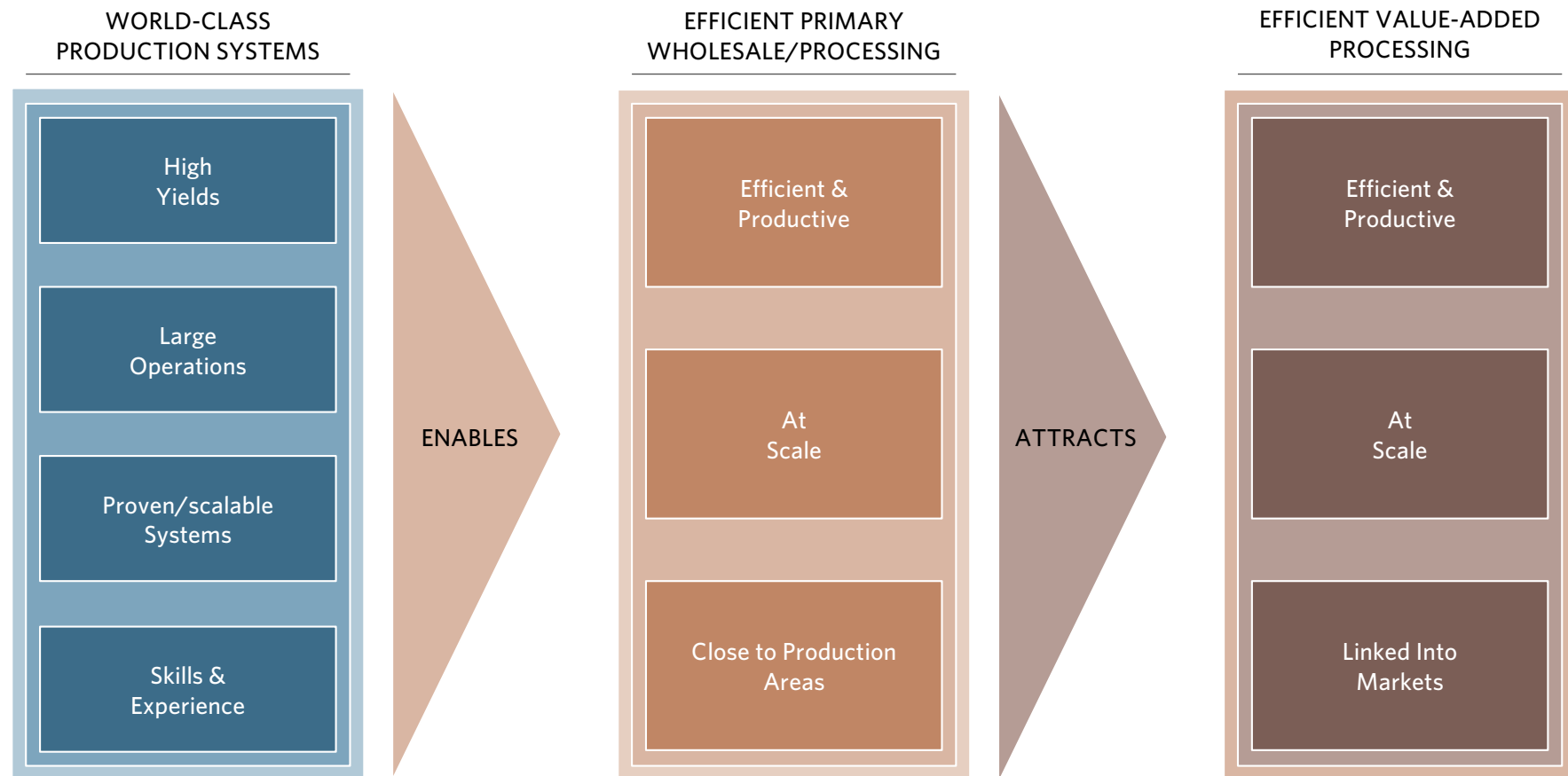
- In fact they are probably the only type of operation that is profitable under any real/proper accounting; when all costs are properly assigned (e.g. unpaid labour), only large operations make a profit
- This pattern is common across agribusiness and is driving the on-going long-term industry consolidation being observed
- This consolidation is often occurring as older owners/operators retire

Note: Income varies slightly by operation size (due to mix; e.g. breeding cows); Source: USDA ERS; Coriolis analysis

As Western Australia increases its agribusiness operational competitiveness, primary processing will become more efficient, which will in turn attract value-added processing to the region and build a stronger industry

DRIVERS OF INTERNATIONAL COMPETITIVENESS:

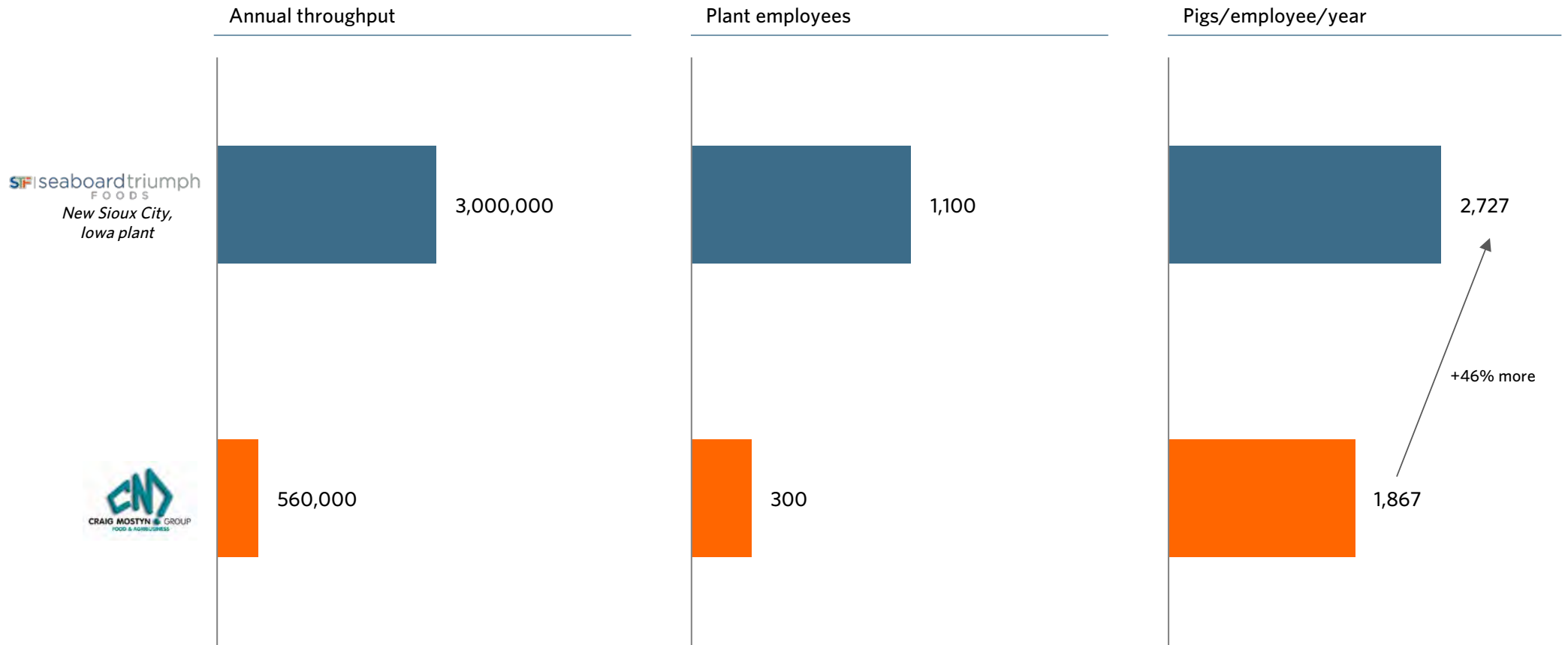
Model; 2016



Western Australia needs larger, modern plants that are more efficient with higher labour productivity

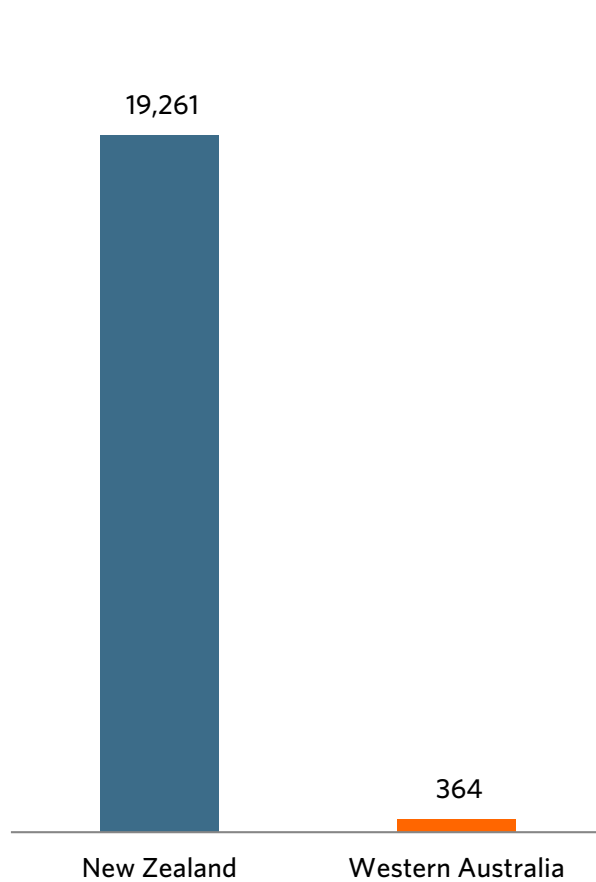
EXAMPLE: BASIC PLANT METRICS: NEW LARGE US PLANT VS. CRAIG MOSTYN

Head; people; 2015

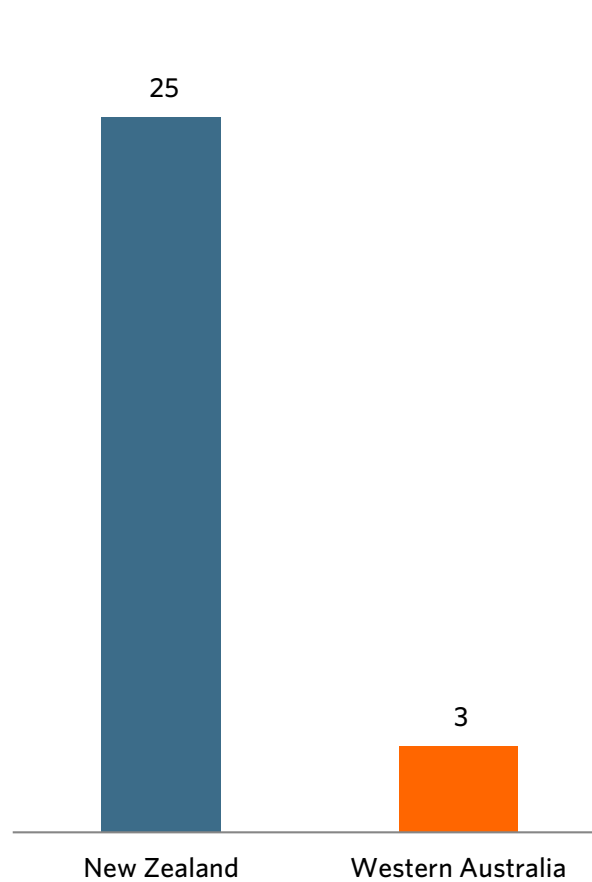


However, Western Australian plant size and throughput is a function of regional production

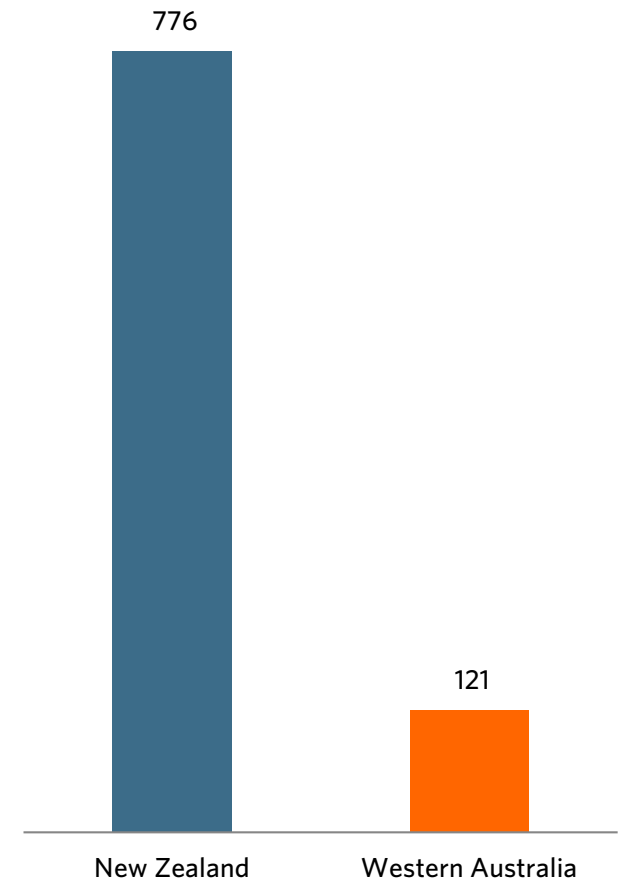
MILK PRODUCTION: NZ VS. WA
Litres; m; 2014 or 15



OF PROCESSING PLANTS*: NZ VS. WA
Plants; 2015



MILK PER PLANT: NZ VS. WA
Litres/plant; m; 2014 or 15



Competitive regions attract successful new market entrants, not just global leaders



IDAHO

New milk protein concentrate (MPC) factory

New start-up market entrant 2009

Founded by three dairy operators with 18 dairies, 100,000 cows and 1,200m L of milk between them

220,000 sqft.; cost \$120m

Produces 42m kg powder/year

Increased Idaho capacity 7.5% (state production is growing at 7% pa)

Streamlined supply chain; 100% operation to customer lot tracked



IDAHO

New milk powder factory

Initially formed as co-op of six operators in 2001

Six dairy owners have 20 dairies, 40,000 cows, 18,200ha (for feed production) and 600m L within 50 km of plant

20 supplying dairies range in size from 800 to 10,000 cows/unit; milked three times per day

Opened milk powder plant in 2008; 130 employees

Expanded in Oct 2012 with addition of butter processing (+50,000 sqft)

Turnover now US\$260m ('14)



NEW ZEALAND

New milk powder factory

Founded by Maori tribal trusts

Supplied by 50,000 cows, including 6 Maori shareholder entities with 20,000 cows between them; 80% of suppliers within 50 km

Uses local geothermal energy

Powder plant opened in 2011 and processes 210m L of milk annually

Recently added a UHT milk factory

Vinamilk (#1 Vietnam dairy company) became a 19.3% shareholder

Contract packing for Shanghai Pengxin (Chinese-owned local dairy operations)

Turnover now NZ\$247m ('14)

WA currently predominantly exports ingredients, and large amounts of WA exports go to the back door of a factory (or wet market or feedlot)

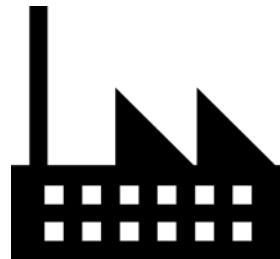
MAJOR WESTERN AUSTRALIAN AGRIFOOD EXPORTS BY LEVEL OF PROCESSING

Model; 2015

| ABSOLUTELY "RAW" | PROCESSED INTO BUTCHER-READY PIECES | "WASHED & BAGGED" | BASIC PROCESSING | SHELF READY FOR THE CONSUMER OR CHEF |
|---|---|---------------------|--|--|
| Live sheep Live cattle Live crayfish Dry grains Dry canola Dry oats Dry barley Whole seafood Cereal hay Scallops | Carcass meat Primal cut meat Boned/skinned fish | Carrots Potatoes | Processed oats Flour mill products Canola oil Frozen prawns | UHT Milk Wine Beer Bacon, Ham & Smallgoods Processed Foods |

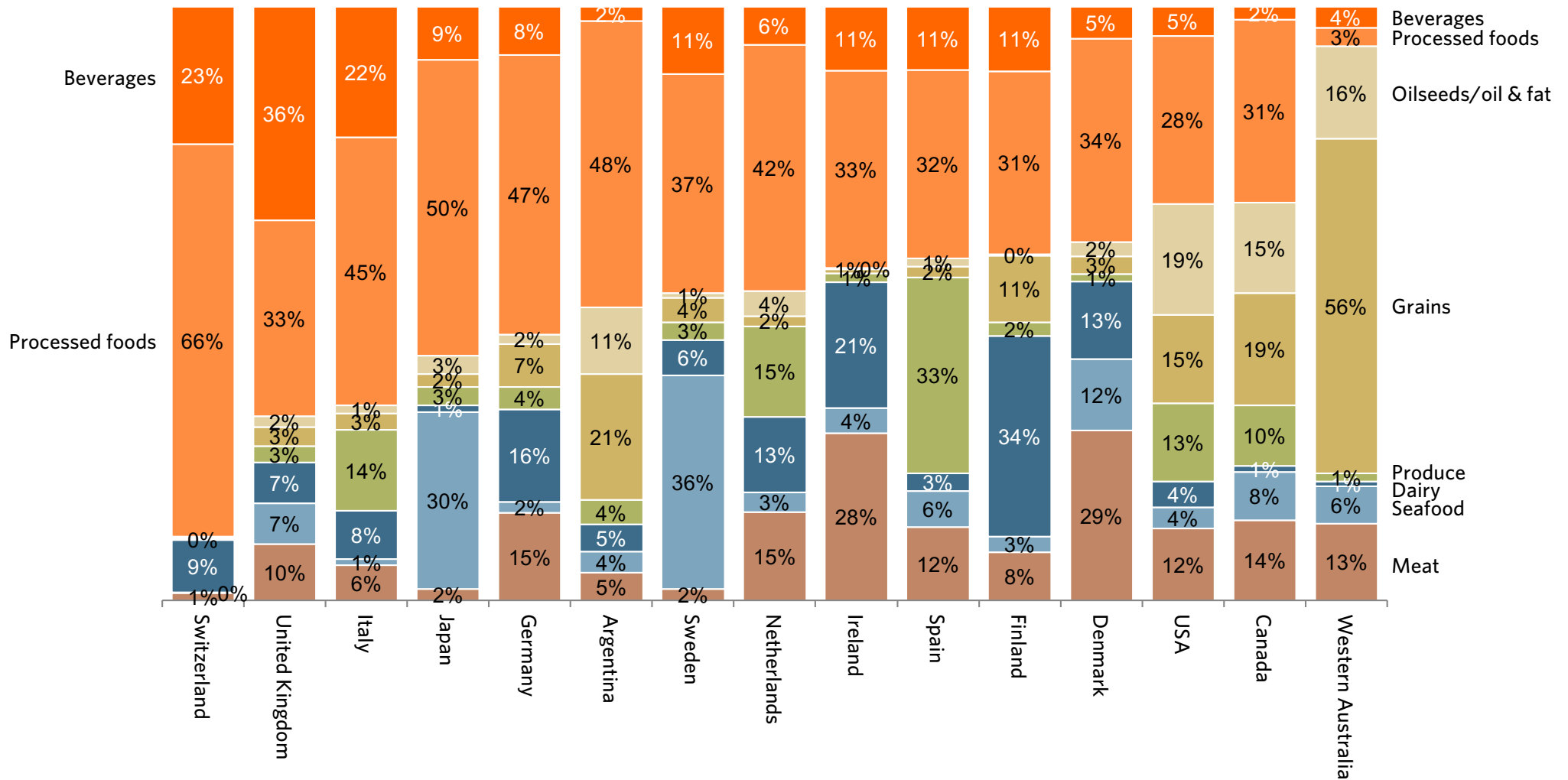
93% of exports

7% of exports



Unlike Western Australia, most rich countries primarily export finished goods – shelf-ready packaged products with a bar code

AGRIFOOD EXPORTS VALUE SHARE BY SEGMENT: WESTERN AUSTRALIA VS. OTHER RICH COUNTRIES
 % of value; 2012/2013

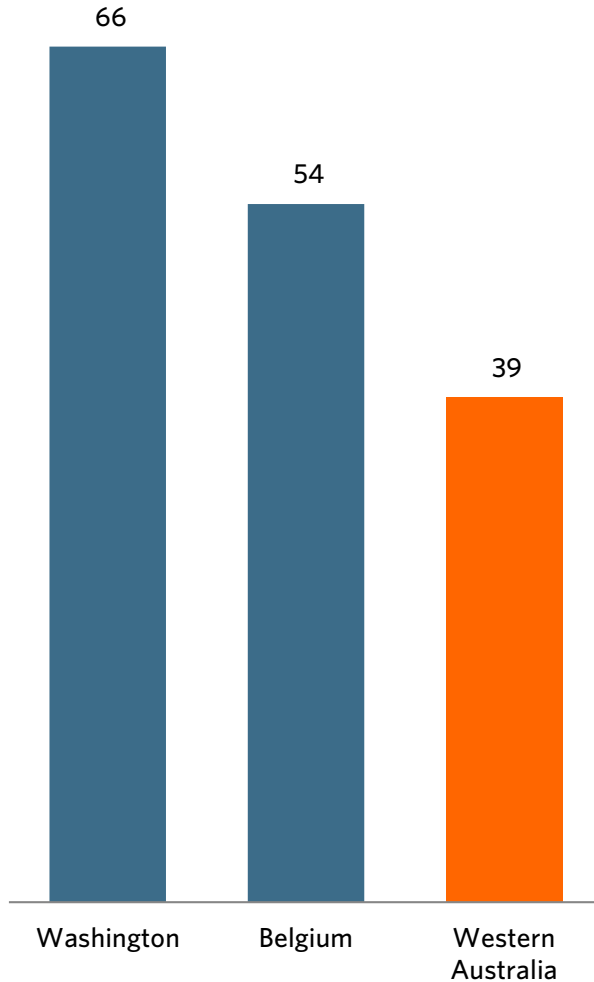


Source: UN Comtrade database; DAFF Australian Food Statistics (various years) Table 5.8; Coriolis analysis

Western Australia will attract value-added processing plants when it has low cost inputs

POTATO YIELD

Tonnes/hectare; 2014 or 15



MAJOR POTATO VALUE-ADDED PROCESSING PLANTS

Presence; 2016

WASHINGTON



BELGIUM



WESTERN AUSTRALIA

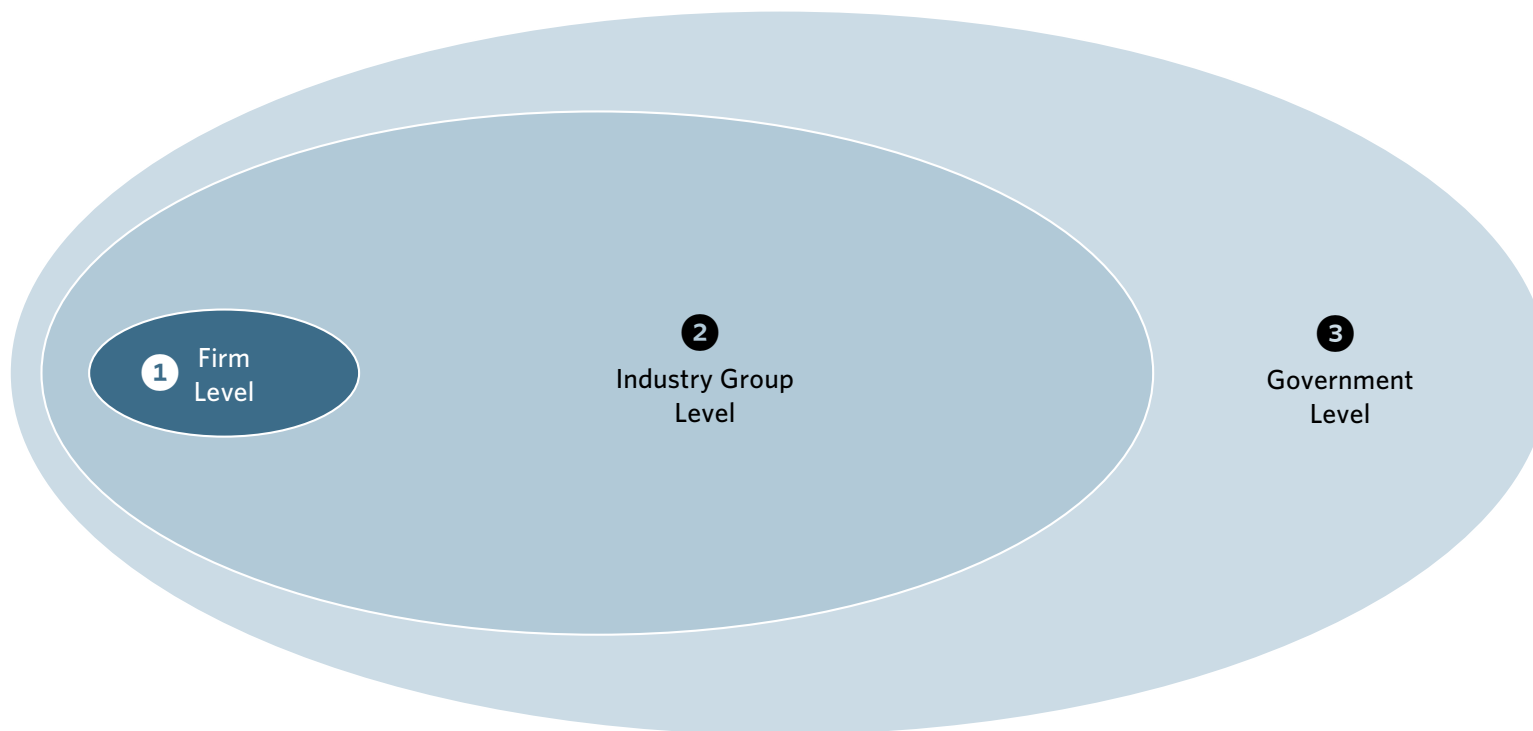


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This section focuses on mechanisms available for (1) firms, (2) industry and (3) government to promote agrifood competitiveness



First, mechanisms available to agribusiness operators to promote agrifood competitiveness



Western Australian agribusiness operators have three potential pathways on the road ahead



ROCKETS

The race for space/size
Grow & change rapidly

- Embrace the large-scale operational model
- Rapid implementation of best practice global model
- Develop clear vision and strategy
- Will suit well capitalised corporate agribusiness operators and younger operators willing to embrace change



SHARKS

The on-going struggle
Business-as-usual

- Continue with existing model
- Constant improvements over time
- Continuous, ongoing price pressure
- 5% of operators exiting the sector every year

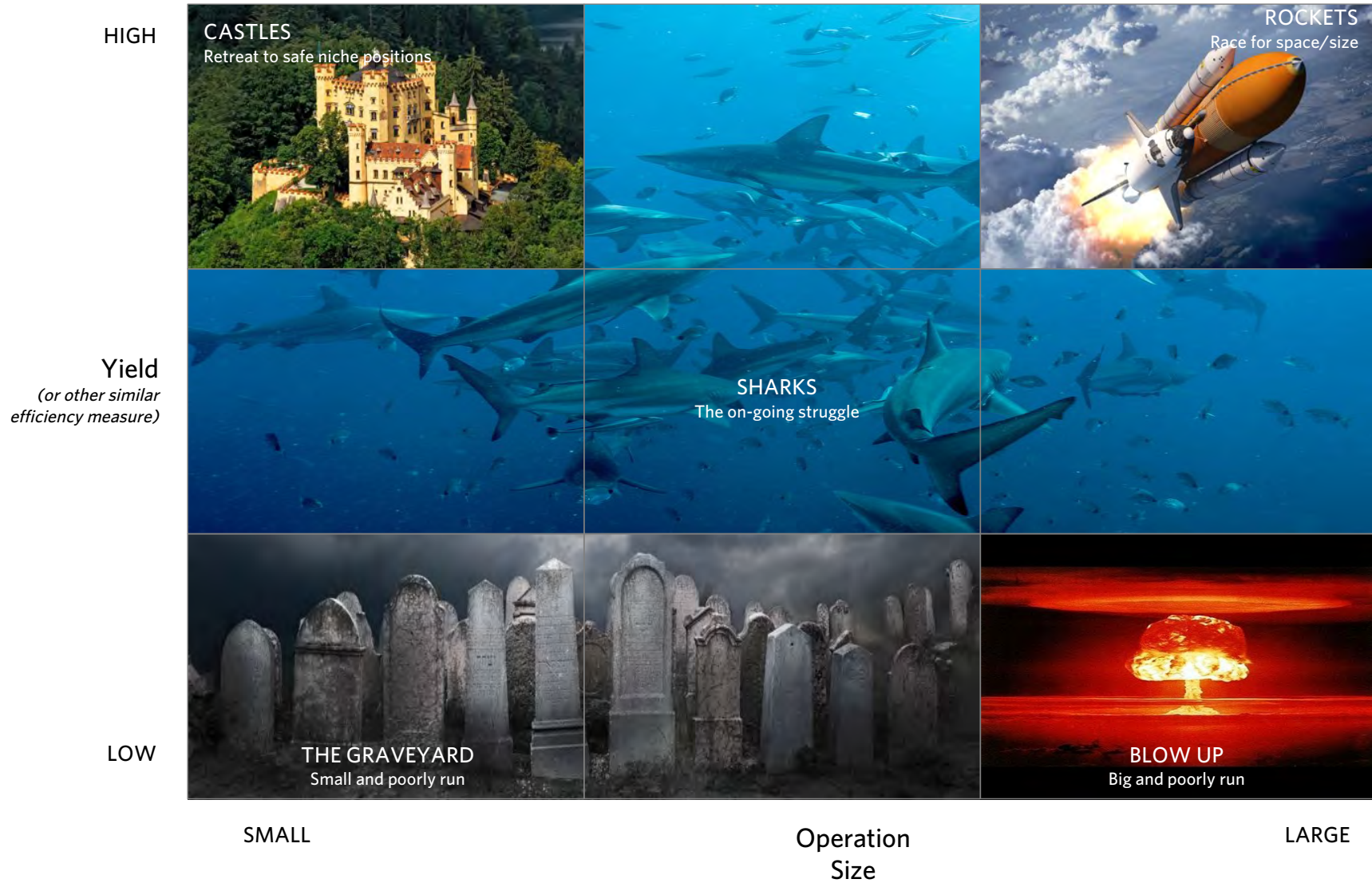


CASTLES

Retreat to safe niche position
Small & innovative

- Migration to a defensible, profitable niche position
- Potential options include organic, free range, heritage breeds and gourmet/specialty lines

Agribusiness operators must choose a strategic positioning or the market will choose one for them



In the “Race for Space,” for businesses to become competitive they must grow and change rapidly



PLAN AND FUND GLOBAL BEST MODELS

- Screen climatic peers for global best practice models
- Conduct study tour of identified short list
- Identify key equipment
- Explore potential JV partners
- Develop business case/plan
- Identify best WA location
- Raise additional funding as required
- Contract leading global systems firms to design project

CONSTRUCT AND OPERATE WORLD SCALE OPERATIONS

- Negotiate regulatory landscape
- Contract outsourced construction
- Bring in skilled and experienced operators (particularly during the first 6 months)
- Iron out bugs

DEVELOP MARKETS IN STAGES

- Bring volume online in stages
- Initially target protected/insulated WA market which will be highly profitable (for a large operators with high yields)
- Expand into Eastern Australia markets through national contracts/retailers
- Expand into export in stages
 - Initially target high income Singapore markets
 - Expand into Malaysia and Thailand
 - Expand into Hong Kong and China

Firms operating in the shark tank must strive for constant improvement and efficiency gains; by default most Western Australian operations in “competitiveness seeking” sectors will be in this position



MEASURE AND SET TARGETS

- Understand relative performance vs WA and AU competitors
- Set performance targets and goals, particularly around:
 - Yield
 - Cost of doing business (CODB)
 - Return on assets (ROA)

IMPROVE CONTINUOUSLY

- Increase yields
- Reduce costs
- Results in higher income
- Reinvest in cost reduction initiatives
- Continuously maintain position in top quartile in terms of measured metrics

EXPAND AND CONSOLIDATE

- Drive industry consolidation
- Acquire new production capacity (land, equipment)
- Continuously maintain position in top quartile in terms of operation size
- Acquire new operations near processing plants; exit locations distant from processing/handling

Firms in the “castle” must develop a unique product while continuously improving and being creative



IDENTIFY DEFENSIBLE MARKET OPPORTUNITY

- Screen leading global markets for next big thing (in category and overall)
 - Leading retailer (Wholefoods, Sainsbury)
 - Global food magazines (e.g. Gourmet)
 - Visit one or more global food shows
- Long term defensible niches, reliant on difficult production systems

IMPROVE CONTINUOUSLY

- Increase yields
- Reduce costs
- Resulting higher income
- Reinvest in cost reduction initiatives
- Continuously develop and refine consumer-facing story

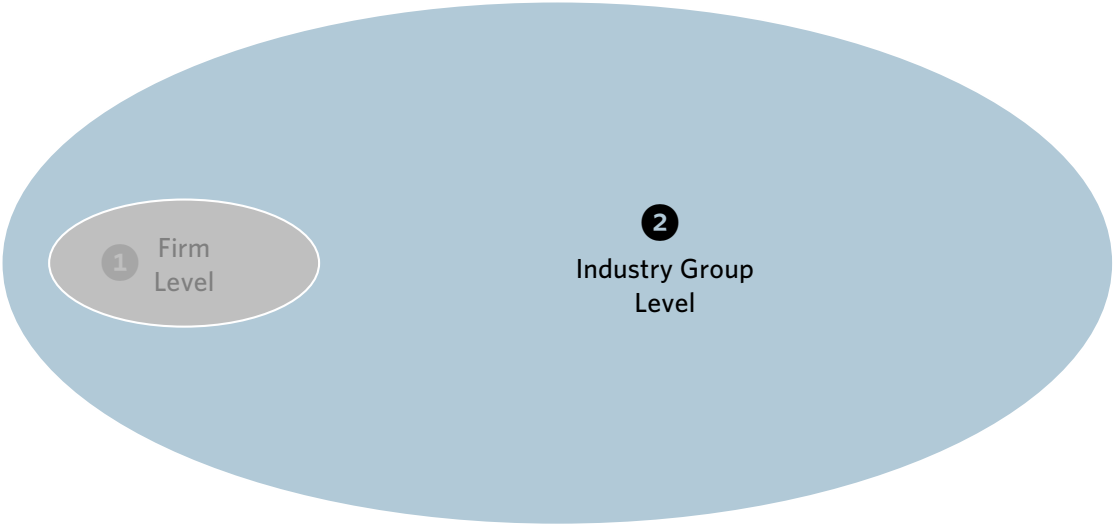
DEVELOP CREATIVE MONETISATION

- Focus on high end retail and foodservice
- Add value through small scale processing:
 - Small scale specialty (e.g. cheese)
 - Liquor/alcohol
 - Jams/jellies/dried
- Develop alternative channels
 - Local rural market
 - Gate/cellar door/ factory door
 - Mail order/website sales/direct sales
- Develop multiple complementary income streams:
 - Rural stay/rural B&B
 - Wine and Food trail stop
 - Café/small shop
 - Factory tour

The three potential strategies have different challenges/risks and are each suited to operators with different characteristics

| | Challenges/Risks | Best suited to... |
|--|---|--|
|  | <ul style="list-style-type: none"> - Not managing growth - Potentially high risk - Understanding regulatory barriers - Identifying best model for WA conditions - Successfully adapting model to WA - Adequate capital | <ul style="list-style-type: none"> - Existing large producers - Global leaders from climatic peers with transferable skills - Well capitalised ventures |
|  | <ul style="list-style-type: none"> - Achieving superior management over long time period - Adequate funding through commodity cycle - Low return on capital over time - Marginal location distant from processing - Being unlucky - Going out of business | <ul style="list-style-type: none"> - Superior management skills - Bold, calculated risk takers - Adaptable, flexible, rapid uptake of new technologies and systems - Lucky - Detail oriented - Strong cost control |
|  | <ul style="list-style-type: none"> - Identifying truly defensible niches - Niche becomes mainstream - "Fools rush in" - rapid expansion of new entrants leads to price collapse - Low barriers to entry | <ul style="list-style-type: none"> - True believers - Life-stylers/hobby operations - People with wide ranging skill set - Gourmet/chefs/food lovers |

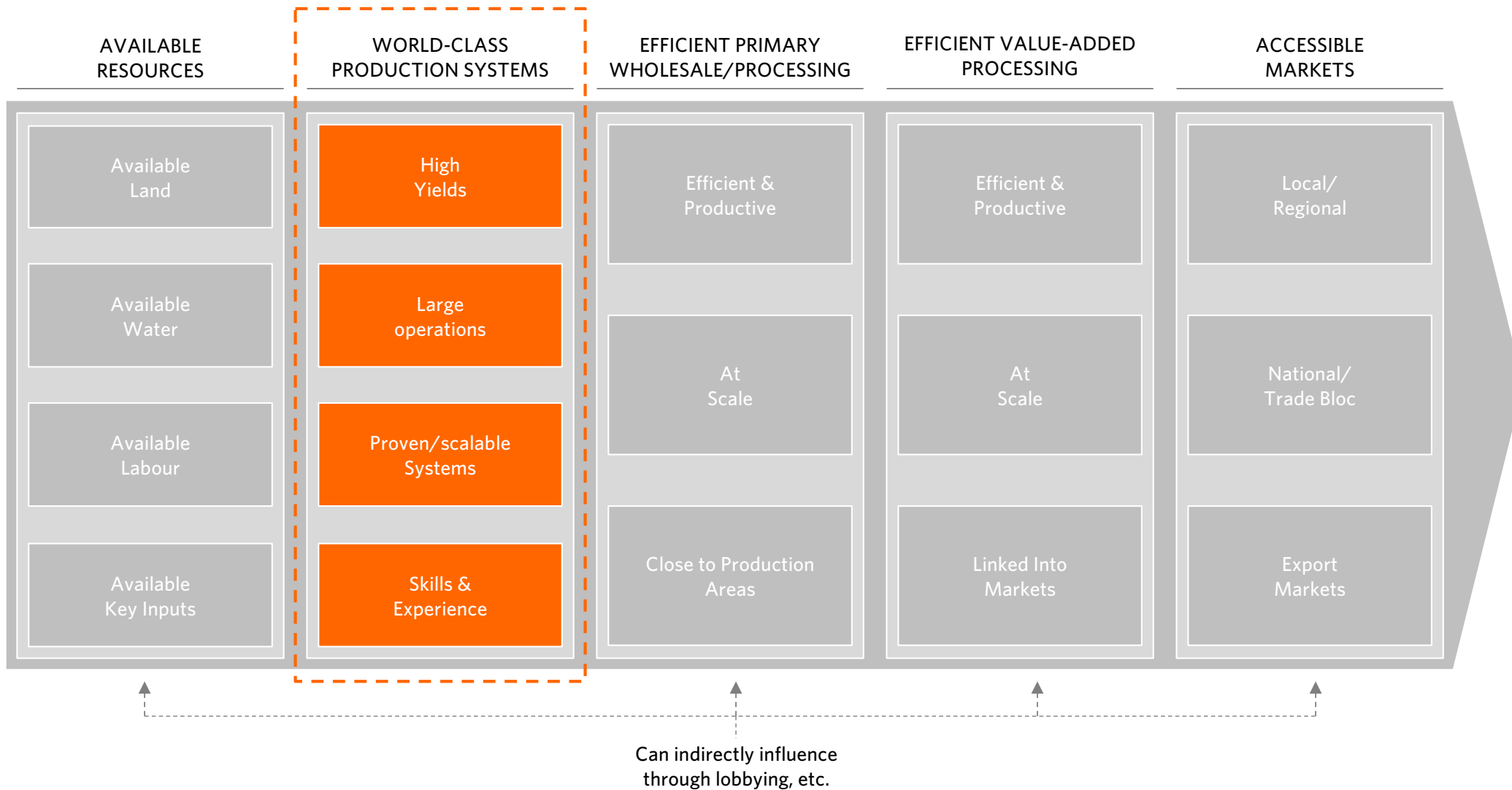
Second, this document looks at mechanisms available to industry to promote agrifood competitiveness



Industry bodies or groups can only directly impact and change “world-class production systems” drivers

DRIVERS OF INTERNATIONAL COMPETITIVENESS THAT CAN BE DIRECTLY INFLUENCED BY INDUSTRY GROUPS

Model; 2016



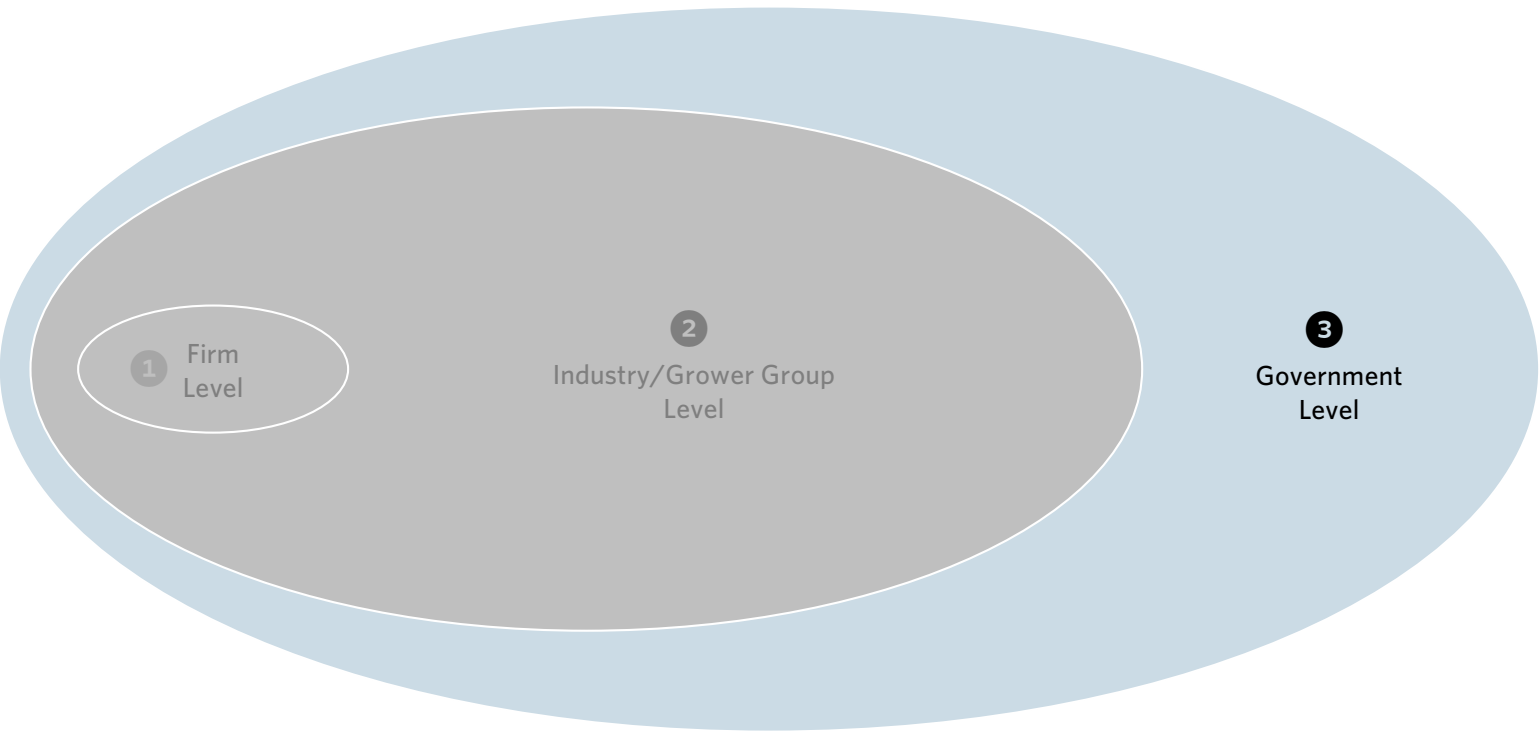
Industry groups drive the vision for the sector, they have a range of potential options available to impact the drivers of world-class production systems

POTENTIAL OPTIONS FOR INDUSTRY/GROWER GROUPS TO IMPACT KEY DRIVERS OF INTERNATIONAL COMPETITIVENESS

Model; 2016

| | Potential options or solutions | Examples |
|-------------------------|--|---|
| High Yields | <ul style="list-style-type: none"> - Industry-funded targeted research projects - Industry funded/managed breeding programmes - Seminar/masterclass in best practice - Sharing benchmarking data - Demonstration projects - Open days at leading producers operations - Organising global study tours | <ul style="list-style-type: none"> - Denmark – Danish Agriculture & Food Council owns SEGES research and innovation centre; Pig Research Centre - Ireland – Irish Cattle Breeding Federation funding two animal DNA-testing companies to undertake world’s biggest cattle genotyping project to improve Ireland’s herd |
| Large operations | <ul style="list-style-type: none"> - Demonstration projects - Organise global study tours - Facilitation of industry consolidation - Ensure industry levies/funding proportional to production not per operation | <ul style="list-style-type: none"> - USA – Ohio operation Bureau co-sponsor agricultural tours of Israel; tour state-of-art facilities, experienced innovative technology and participated in international tradeshow - Netherlands – Courage, founded by NZO and LTO Netherlands to strengthen position of dairy through fundamental modernization |
| Proven/scalable Systems | <ul style="list-style-type: none"> - Build/support/develop demonstration projects - Organise global study tours - Commission and sponsor Research project | <ul style="list-style-type: none"> - New Zealand – Dairy NZ operate own research operations and work with partners to trial new ideas - USA – Sunbelt Ag Expo has 600 acre year round research operation; mission is to emphasise latest agricultural technology |
| Skills & Experience | <ul style="list-style-type: none"> - Develop and support industry training, both for new entrants and refresher courses - Deliver seminars and workshops - Work with local education providers to develop specialist courses - Sponsor specialist education - Provide scholarships | <ul style="list-style-type: none"> - Ireland – FDII Skillnet; network of companies in sector collaborating in purchasing and designing training programs to help resolve outstanding training needs and improve competitiveness; led and managed by businesses themselves - UK – Food and Drink Federation in partnership have developed MEng Food Engineering degree |

Third, this research now looks at potential mechanisms available to government to promote the achievement of agrifood competitiveness



Opinions about potential government “mechanisms to promote achievement of international competitiveness” varies based on economic worldview; the authors make no recommendations

“If you put the federal government in charge of the Sahara Desert, in 5 years there'd be a shortage of sand.” *Milton Friedman, Nobel Prize winning economist*



Free Market Libertarian



“I ignore polling as a method of government. I think that shows a certain weakness of mind... If you are unwilling to force your people to follow you, with or without threats, you are not a leader.” *Lee Kuan Lee, former Prime Minister of Singapore*



Singaporean-style Interventionist

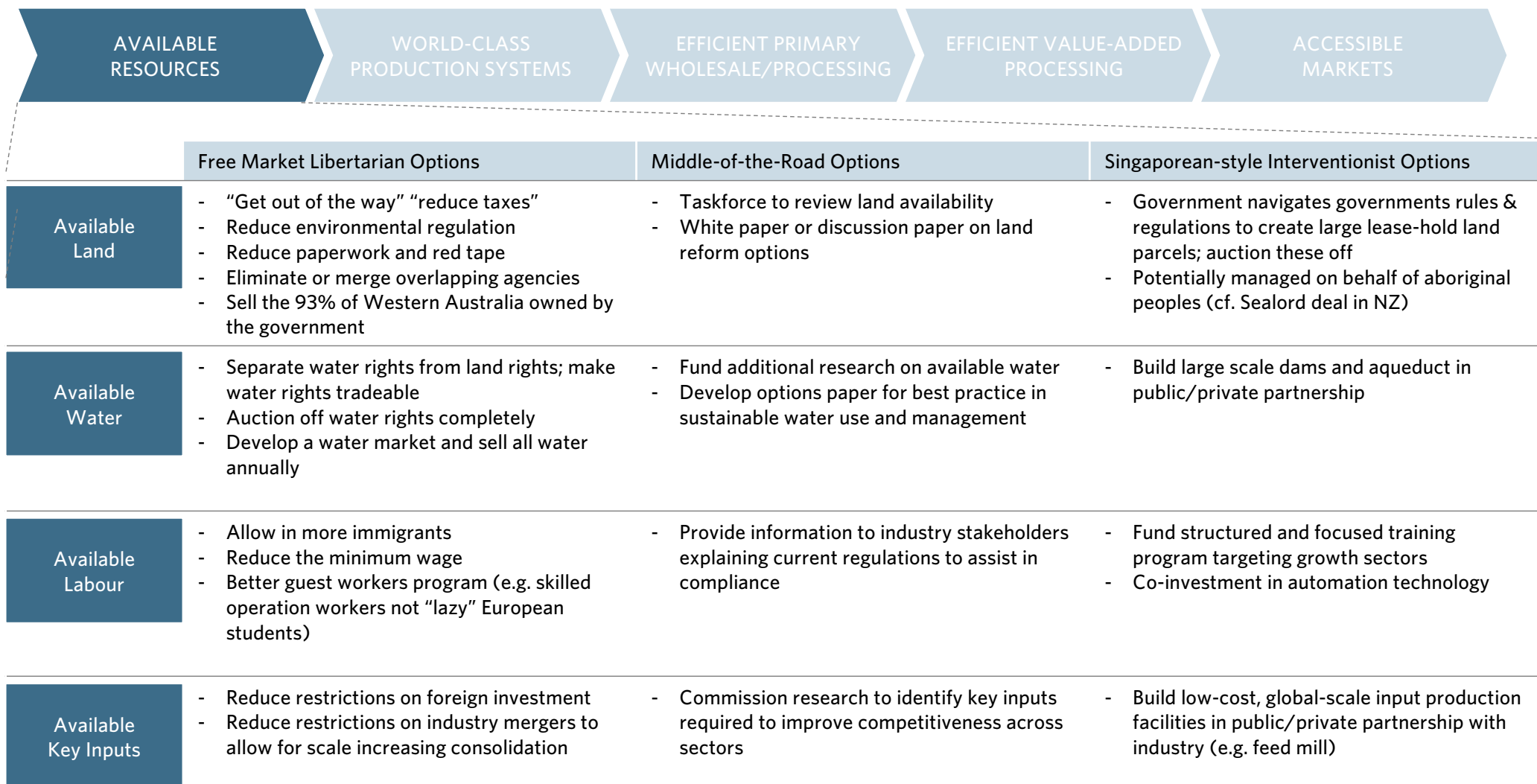


Industry stakeholders interviewed for this project gave a wide range of opinions - across this total spectrum - for how the government could help

Government has a range of potential mechanisms available to ensure adequate resources are available

POTENTIAL OPTIONS FOR GOVERNMENT TO IMPACT KEY DRIVERS OF INTERNATIONAL COMPETITIVENESS

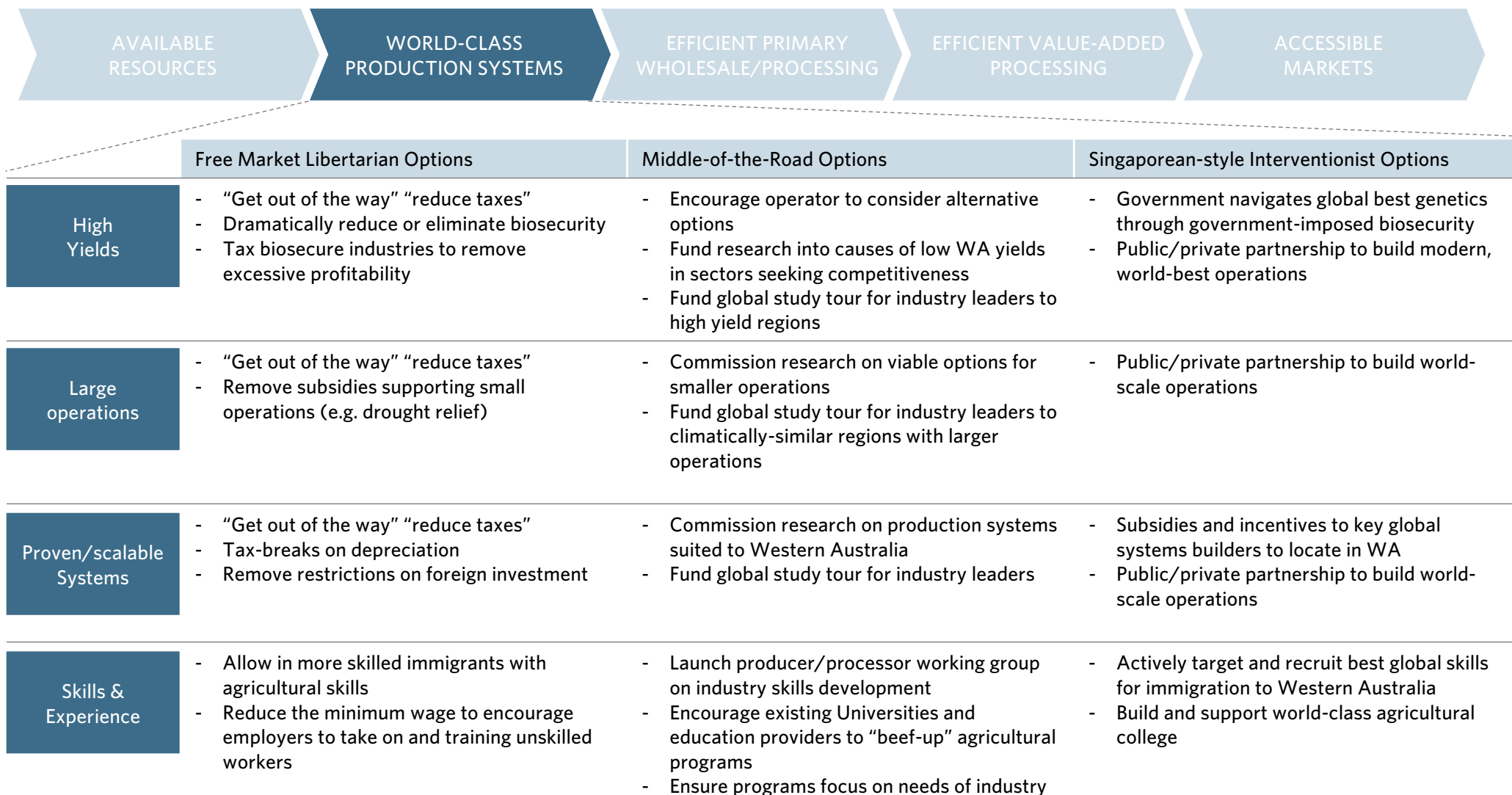
Model; 2016



Government has a range of potential mechanisms available to support the use of world-class production systems

POTENTIAL OPTIONS FOR GOVERNMENT TO IMPACT KEY DRIVERS OF INTERNATIONAL COMPETITIVENESS

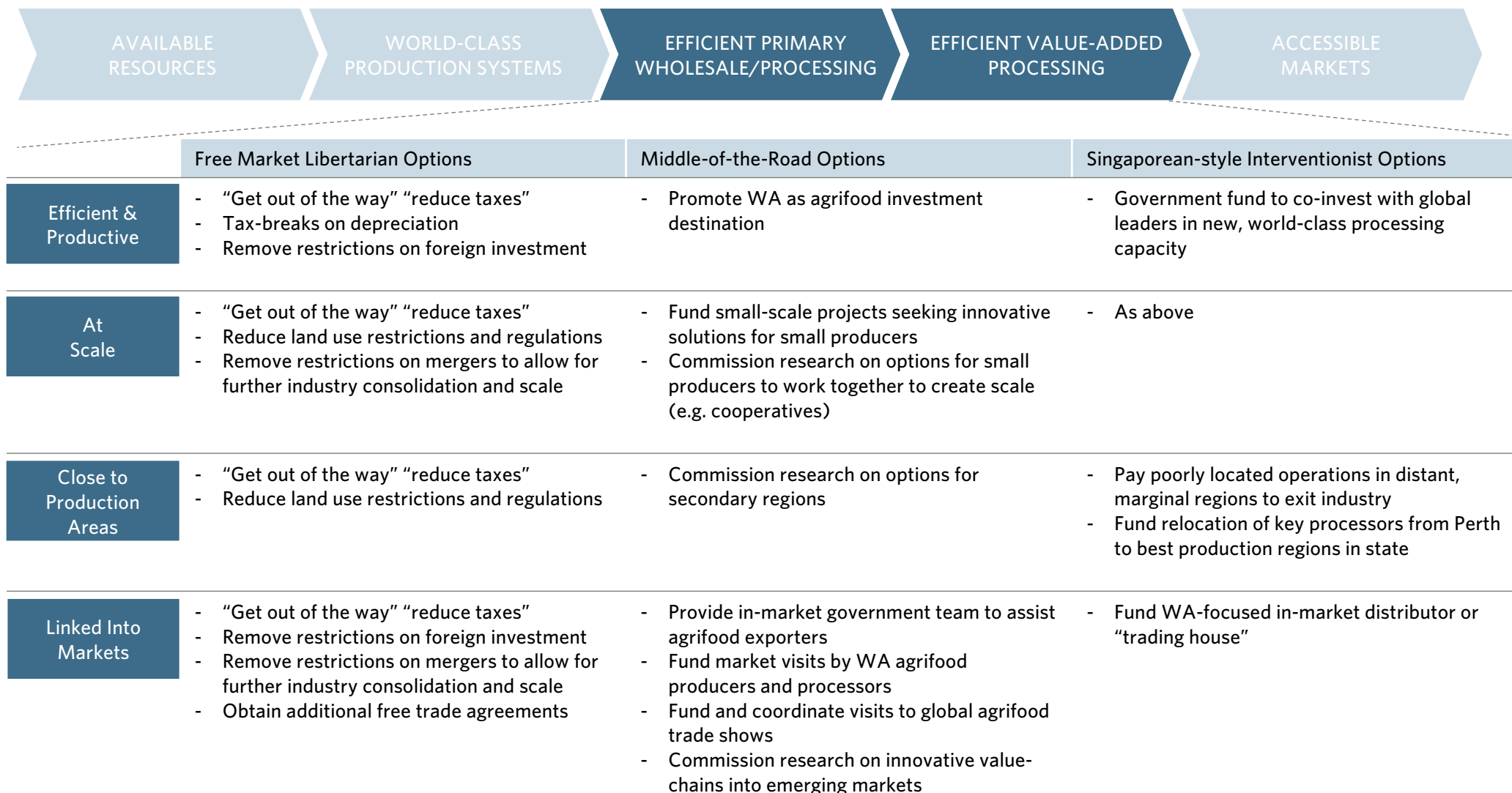
Model; 2016



Government has a range of potential mechanisms available to encourage efficient wholesaling and processing exist

POTENTIAL OPTIONS FOR GOVERNMENT TO IMPACT KEY DRIVERS OF INTERNATIONAL COMPETITIVENESS

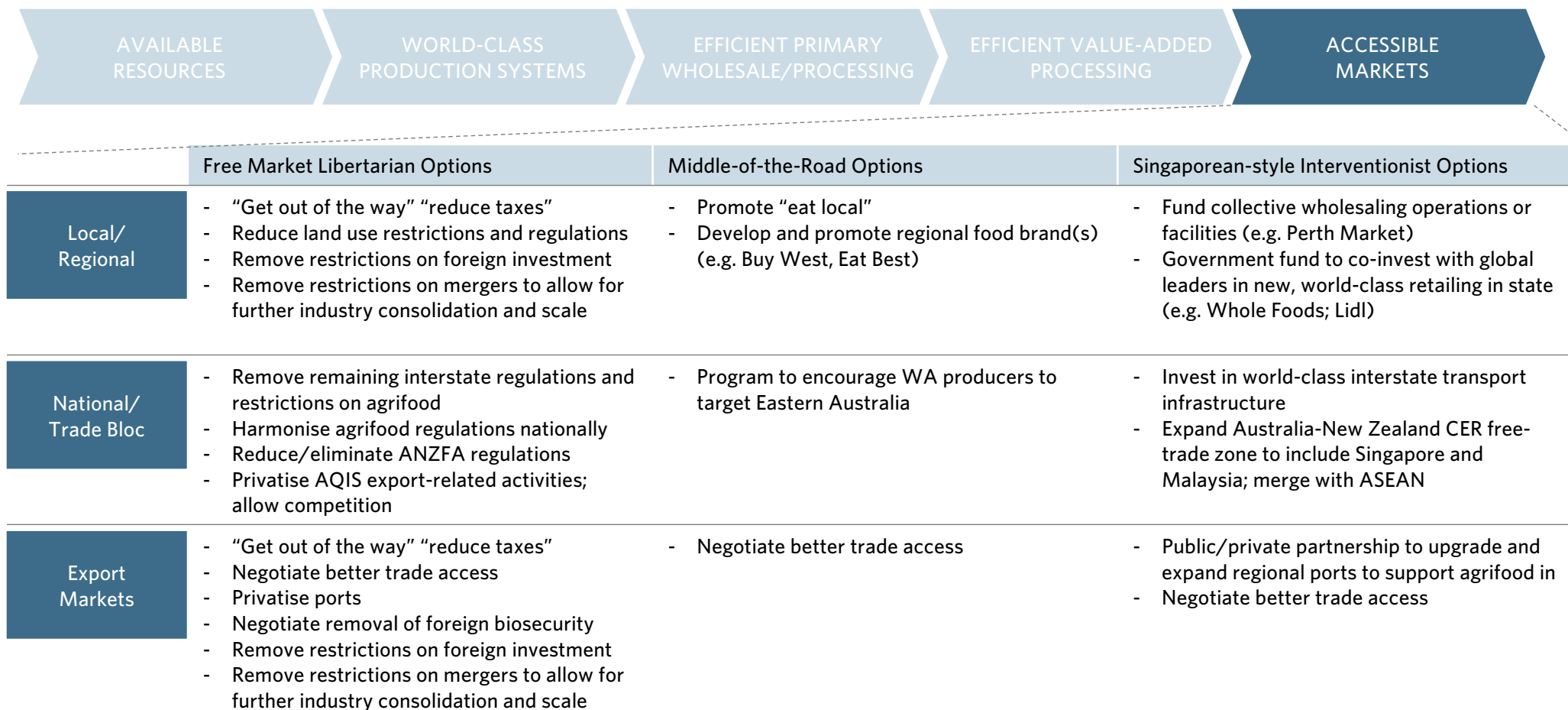
Model; 2016



Government has a range of potential mechanisms available to enable access to markets

POTENTIAL OPTIONS FOR GOVERNMENT TO IMPACT KEY DRIVERS OF INTERNATIONAL COMPETITIVENESS

Model; 2016

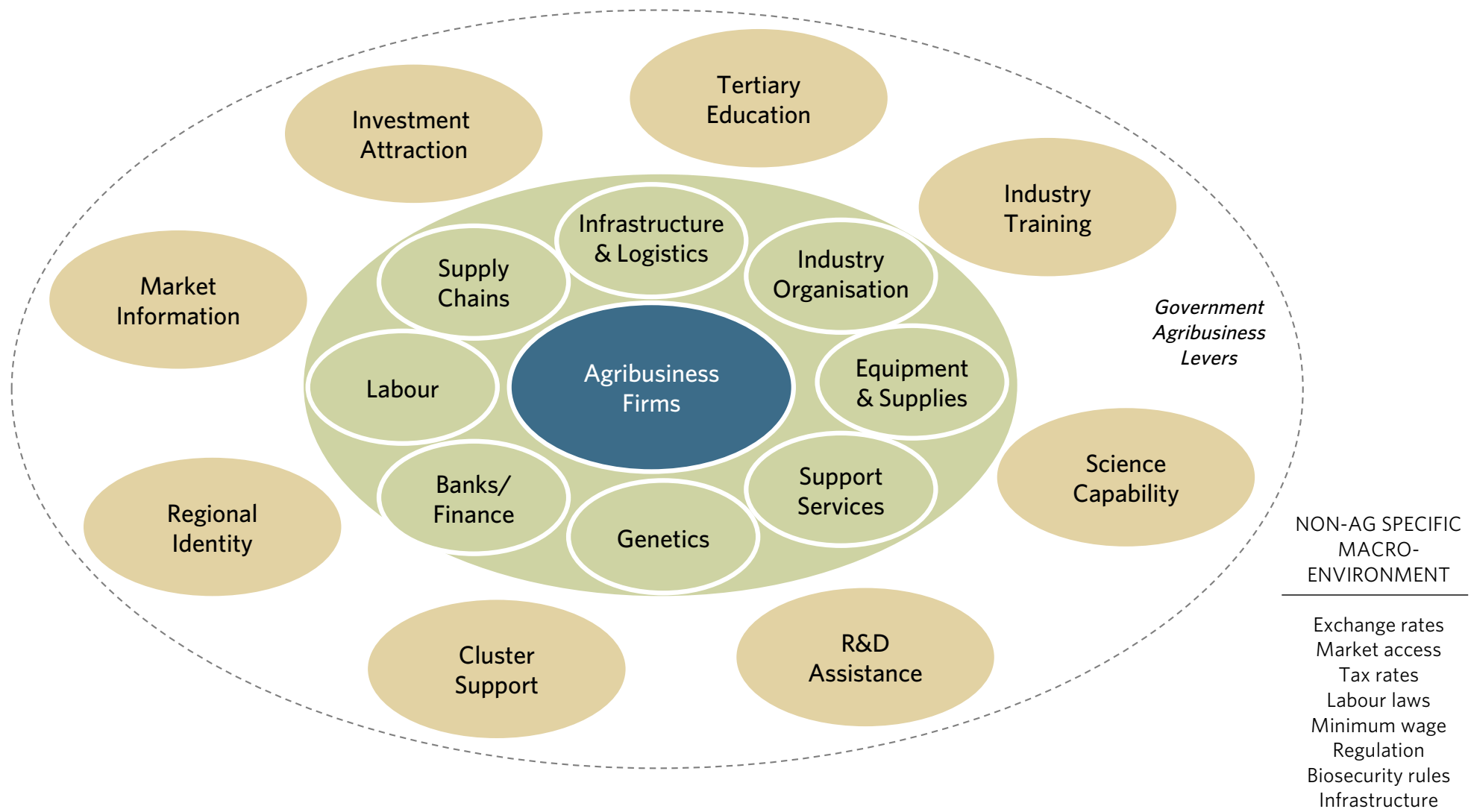


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All parts of WA agrifood sectors seeking competitiveness – businesses, industry and government – must work together to improve and achieve international competitiveness



DAFWA can support WA agrifood businesses to implement the key findings in four ways



PROMOTE

Create awareness of project and findings



SOCIALISE

Spread findings through contacts and networks



SUPPORT

Support groups seeking to improve competitiveness



ALIGN & COORDINATE

Facilitate industry alignment and coordination

DAFWA has processes and procedures to promote and publicise its work

Create promotional brochure highlighting findings

Public presentation of findings to stakeholders

Promote through existing communication channels

Coriolis is tasked with working with a selection of leading industry grower groups to implement findings

Coriolis is available to review findings with all relevant industry stakeholders

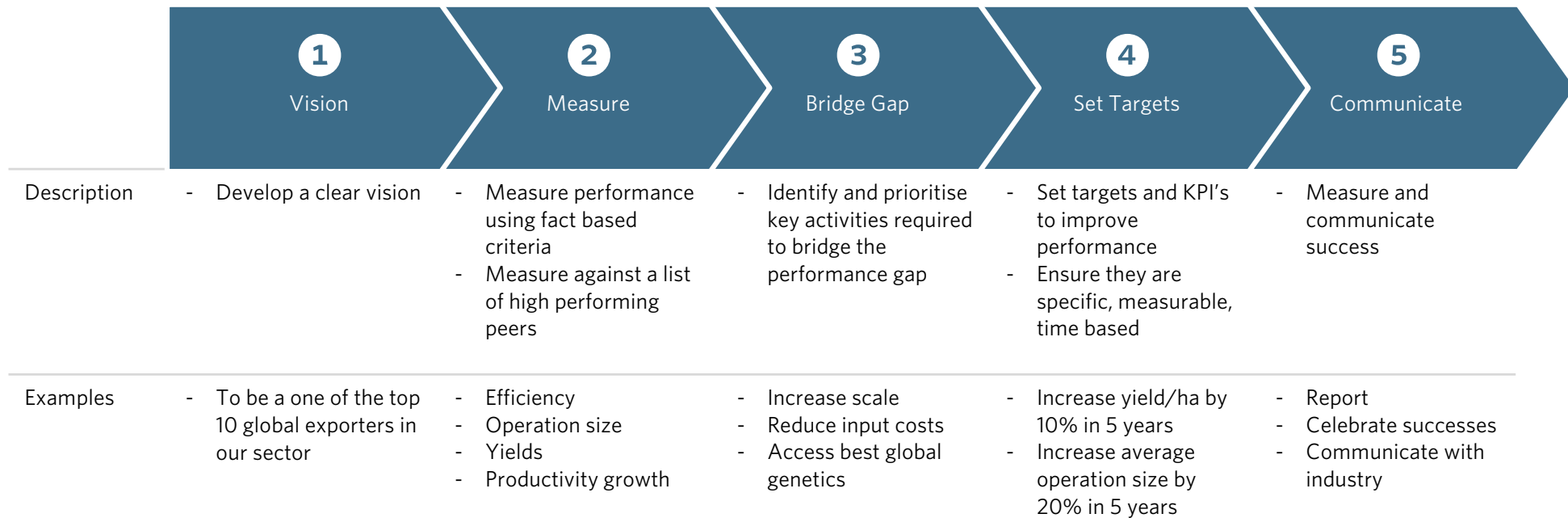
Leverage extensive DAFWA industry networks to create awareness

DAFWA is in the process of delivering \$22.1m less costs in industry grants

Leverage associated Royalties For Regions Agricultural Sciences R&D grants to fund competitiveness improvement projects

Provide a neutral forum for producers and processors to work together to increase total system competitiveness

Looking forward, as a next step, DAFWA can support WA agrifood businesses on their journey down the pathway to competitiveness through a five stage process



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The five sectors evaluated in detailed case studies varied in their level of global competitiveness

SCORING OF SELECTED WESTERN AUSTRALIAN “COMPETITIVENESS SEEKING” SECTORS AGAINST GLOBAL COMPETITIVENESS

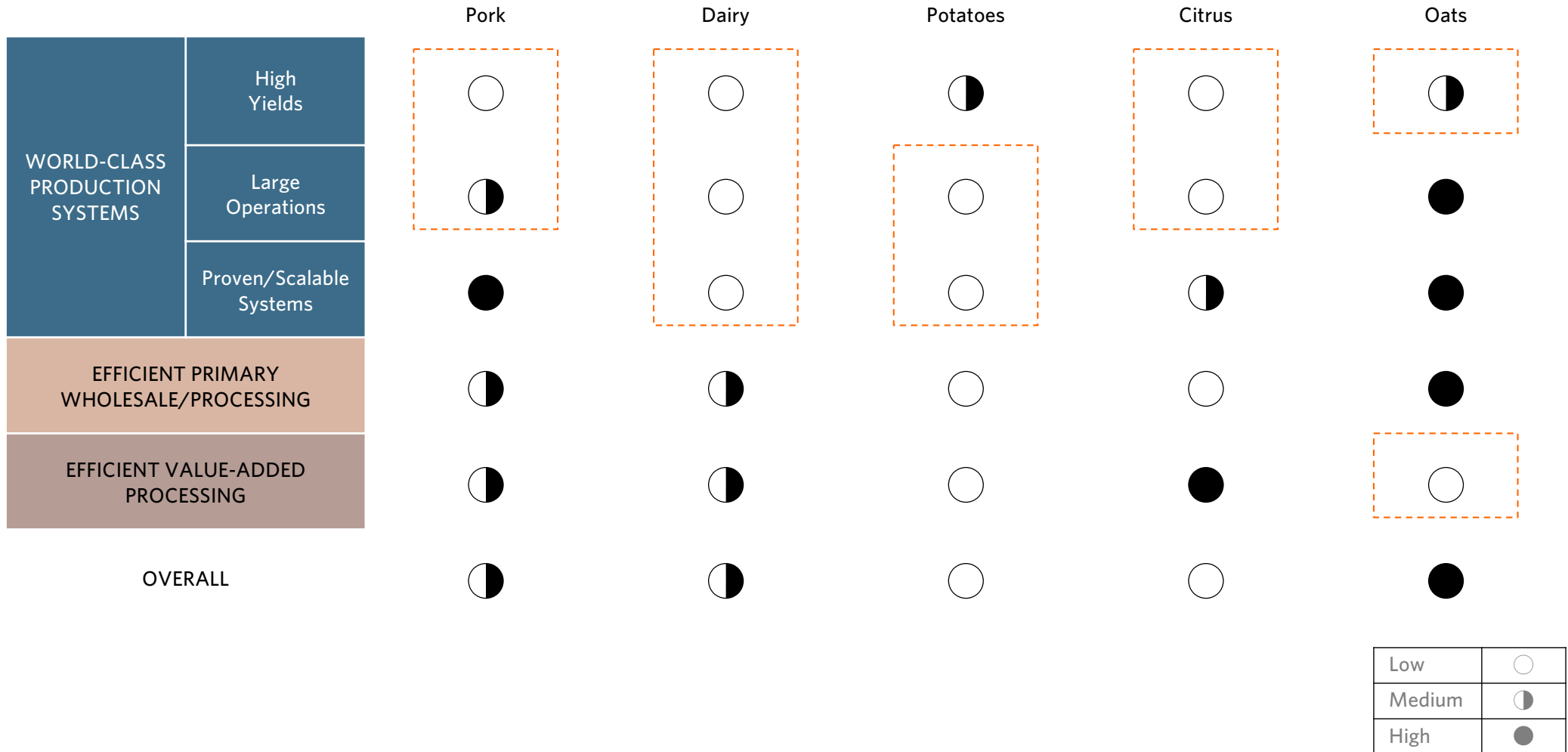
Relative/qualitative scoring; 2016

| | | Pork | Dairy | Potatoes | Citrus | Oats |
|--|-------------------------|------|-------|----------|--------|------|
| WORLD-CLASS PRODUCTION SYSTEMS | High Yields | ○ | ○ | ◐ | ○ | ◐ |
| | Large Operations | ◐ | ○ | ○ | ○ | ● |
| | Proven/Scalable Systems | ● | ○ | ○ | ◐ | ● |
| EFFICIENT PRIMARY WHOLESALE/PROCESSING | | ◐ | ◐ | ○ | ○ | ● |
| EFFICIENT VALUE-ADDED PROCESSING | | ◐ | ◐ | ○ | ● | ○ |
| OVERALL | | ◐ | ◐ | ○ | ○ | ● |

| | |
|--------|---|
| Low | ○ |
| Medium | ◐ |
| High | ● |

Evaluated sectors have different focus areas that should be targeted for improvement

SCORING OF SELECTED WESTERN AUSTRALIAN “COMPETITIVENESS SEEKING” SECTORS AGAINST GLOBAL COMPETITIVENESS
Relative/qualitative scoring; 2016



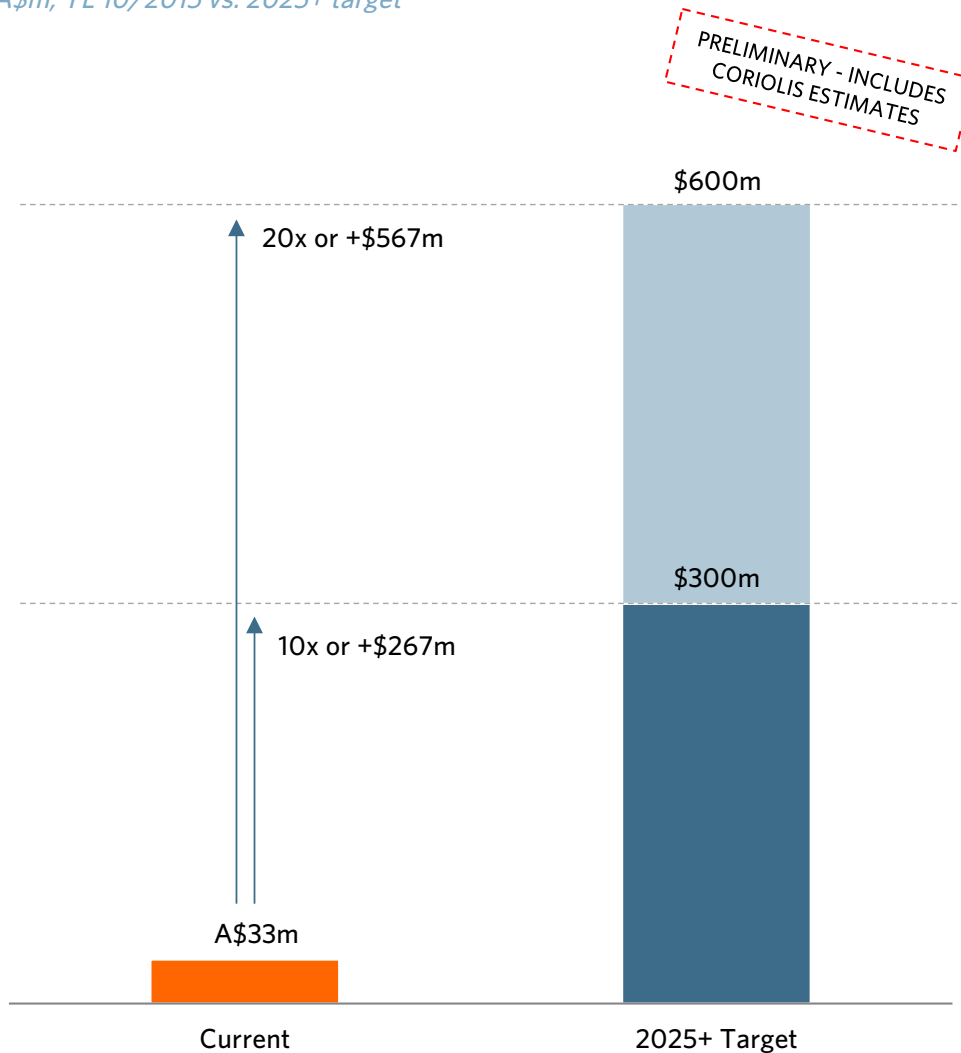
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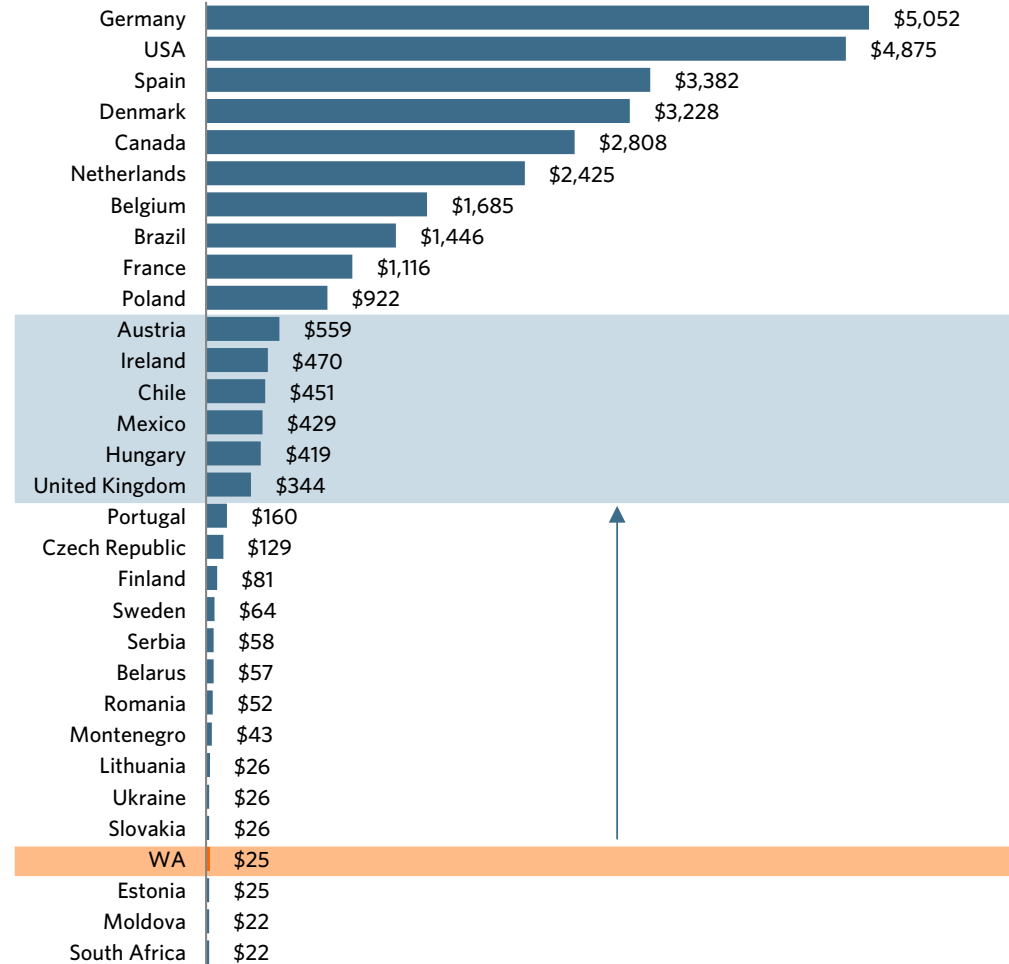


The Government has set a goal of doubling agrifood industry value (predominantly through exports); as some sectors will struggle to grow, others need to grow more; WA pork exports need to grow 10-20x; this is equivalent to matching the current performance of Chile, Austria or Ireland

WA PORK EXPORT VALUE: CURRENT VS. POTENTIAL TARGET
A\$m; YE 10/2015 vs. 2025+ target



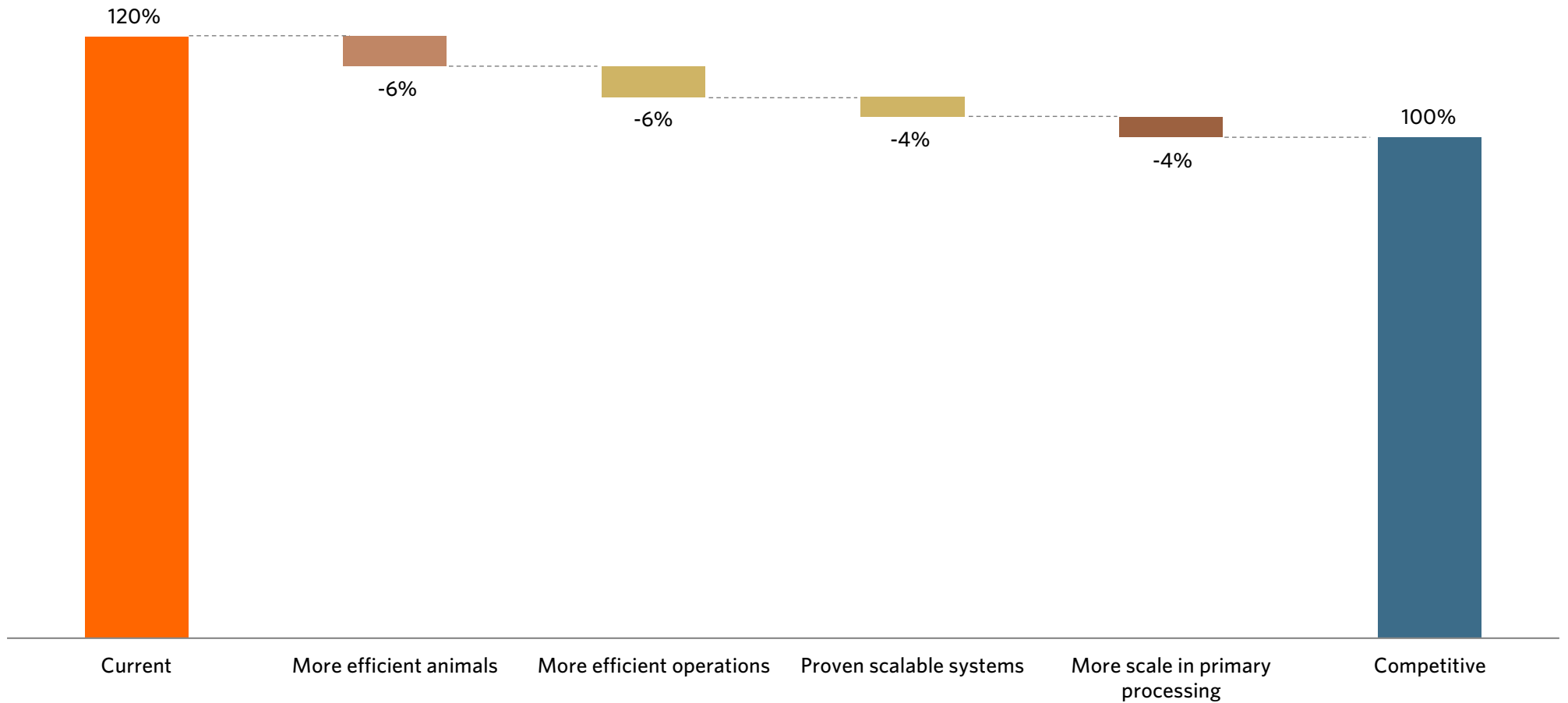
PORK MEAT EXPORT VALUE: WA VS. SELECT
US\$m; 2014/15



While Western Australia is within sight of a globally competitive pork industry, getting there will involve significant industry restructuring

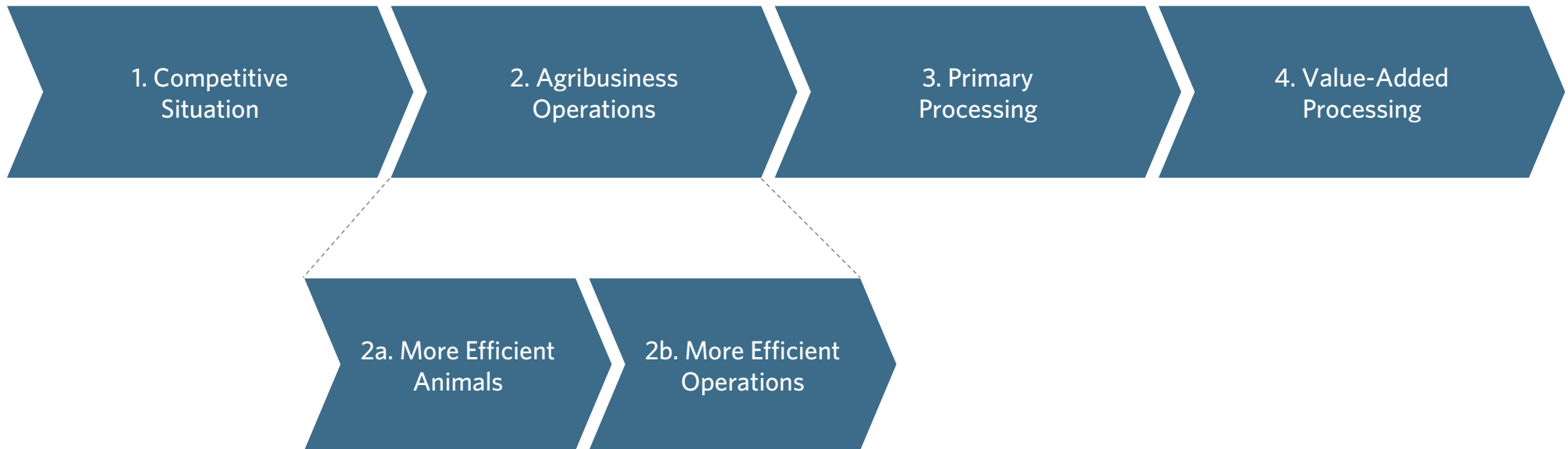
POTENTIAL PATHWAY TO COMPETITIVENESS FOR WESTERN AUSTRALIAN PORK INDUSTRY
% of current cost; 2015

PRELIMINARY
 INCLUDES
 CORIOLIS ESTIMATES



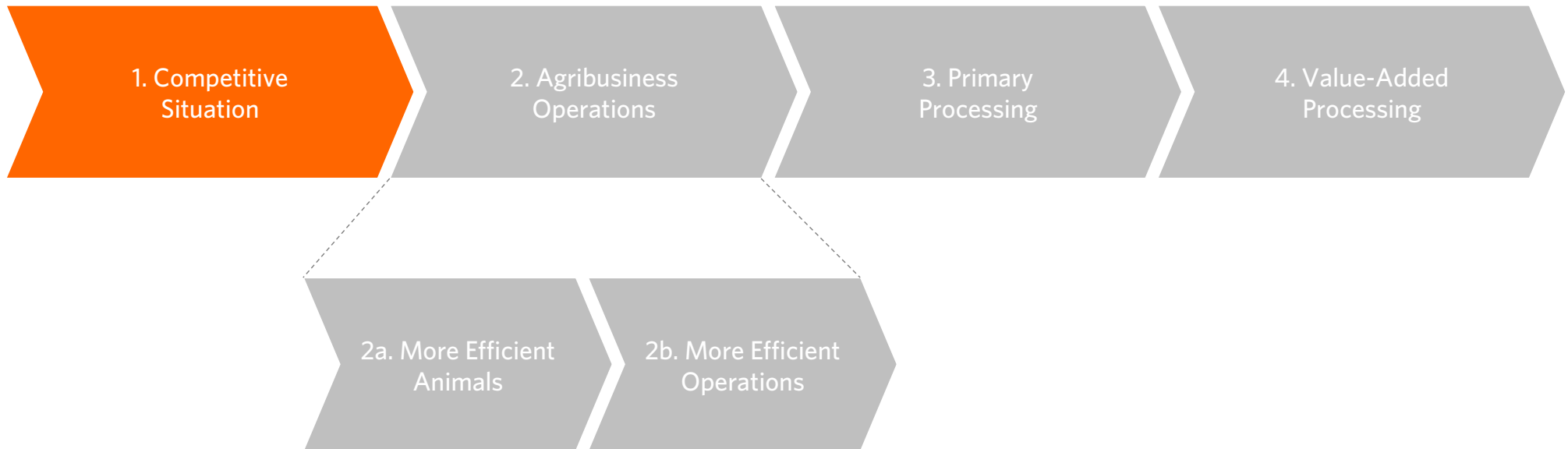
This case study on the relative competitiveness of the Western Australian pork industry is structured as follows

SECTION STRUCTURE: PORK CASE STUDY



The first section of this case study reviews the current competitive situation and finds Western Australian competitiveness declining rapidly

SECTION STRUCTURE: PORK CASE STUDY



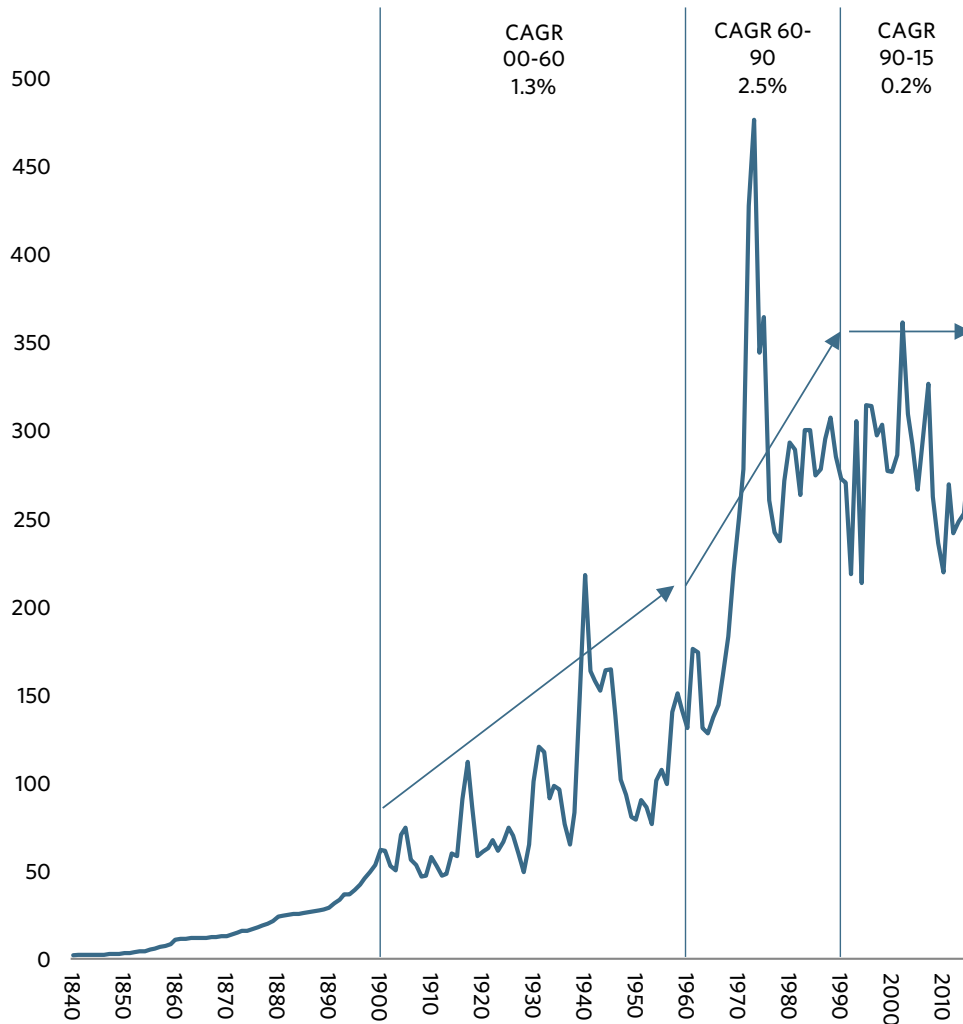
The apparent competitiveness of Western Australia's pig industry is declining; peers suggest there may be alternatives

- After 100+ years of growth, the Western Australian pig industry stalled in the mid-80's; since then – looking across the cycles – pig numbers and pig kill are achieving low/no medium-term growth
- European and North American competitors are taking share in key export markets, leading to falling Australian exports
 - Australian pork exports are falling, while imports are growing, indicating declining international competitiveness
 - Australian pork meat exports are highly dependent on three countries – New Zealand, Papua New Guinea & Singapore; however Australia is losing volume share to competitors in both Singapore and New Zealand
 - In both Singapore and New Zealand, Australia is shrinking in a growing market; export volume losses are going to other rich, developed Western countries
- At the same time, frozen pork imports have shown strong growth since first being allowed into the country in 1990
 - Australia has growing pork imports; imports are from the same countries that are out-competing Australia in export markets
 - Imports are almost all frozen; Australian biosecurity effectively prevents almost all “fresh/chilled” pork imports
- Utah – a dry Western USA state – provides a case study of a small number of operations (16) going to a new larger unit model and transforming industry competitiveness
- Numerous highly relevant peer group countries and regions are showing strong pork production growth; these peers are converting production growth into export growth as they have found a pathway to competitiveness

After 100+ years of growth, the Western Australian pig industry stalled in the mid-80's; since then - looking across the cycles - pig numbers and pig kill are achieving low/no medium-term growth

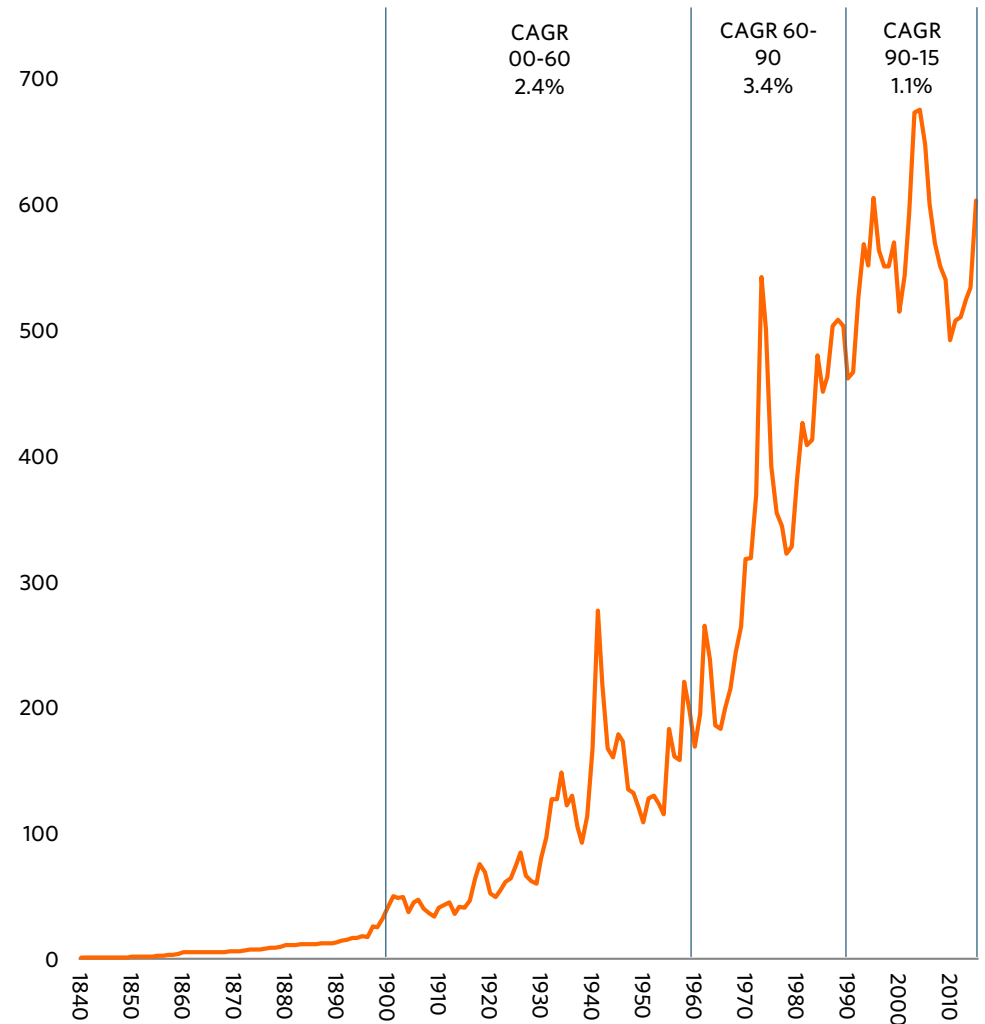
NUMBER OF PIGS: POINT-IN-TIME INVENTORY IN WA

Animals; 000; 1840-2015



PIGS SLAUGHTERED IN WESTERN AUSTRALIA

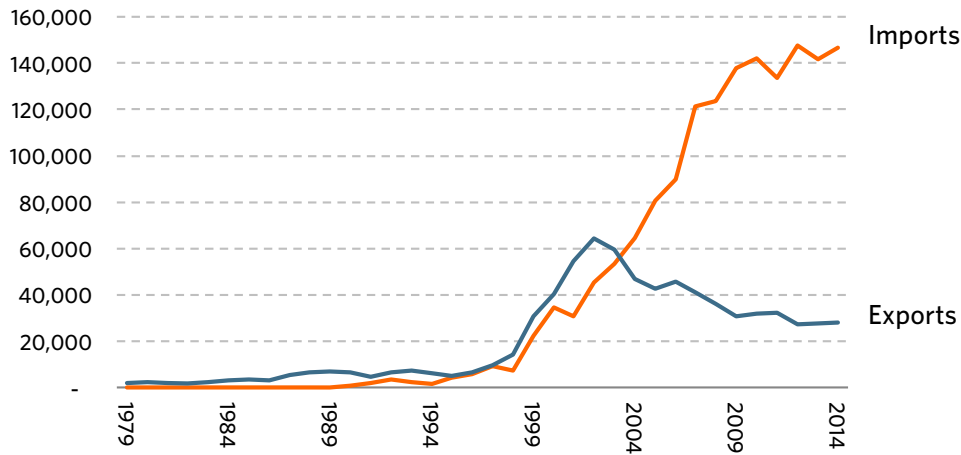
Animals; 1840-2015



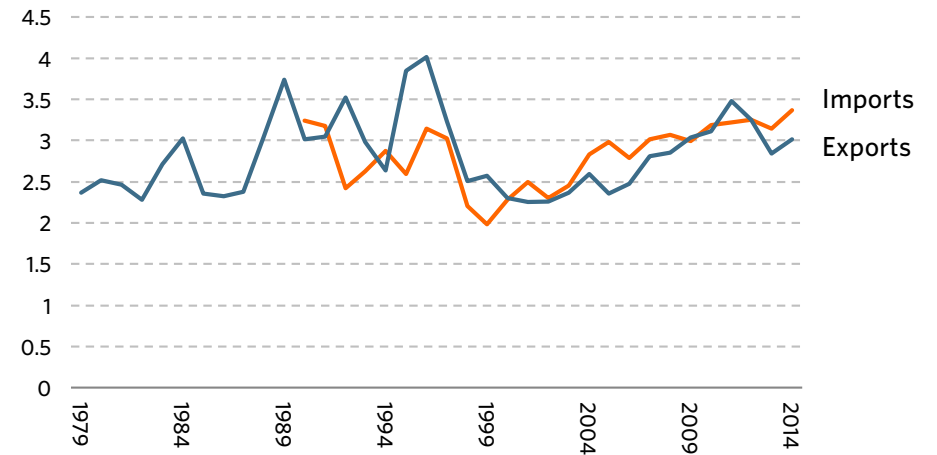
Source: various WA Statistical Register (by year); various ABS publications; Coriolis analysis and estimates

Australian pork exports are falling, while imports are growing, indicating declining international competitiveness

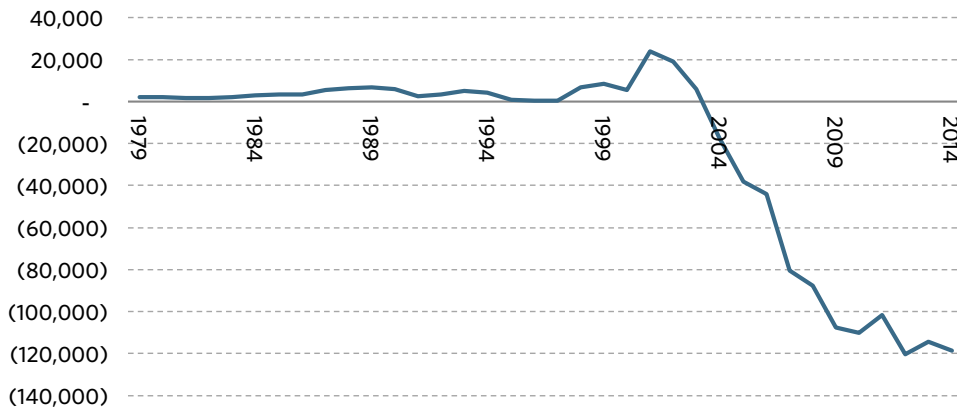
AUSTRALIAN PORK MEAT TRADE VOLUME WITH WORLD
Tonnes; 1979-2014



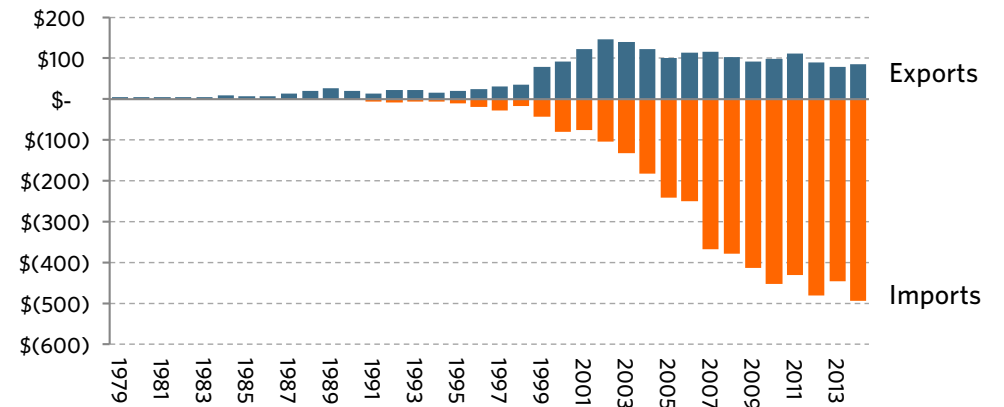
AVERAGE AUSTRALIAN TRADE VALUE PER KILOGRAM
US\$/Kg; 1979-2014



NET AUSTRALIAN TRADE BALANCE IN PORK
Tonnes; 1979-2014



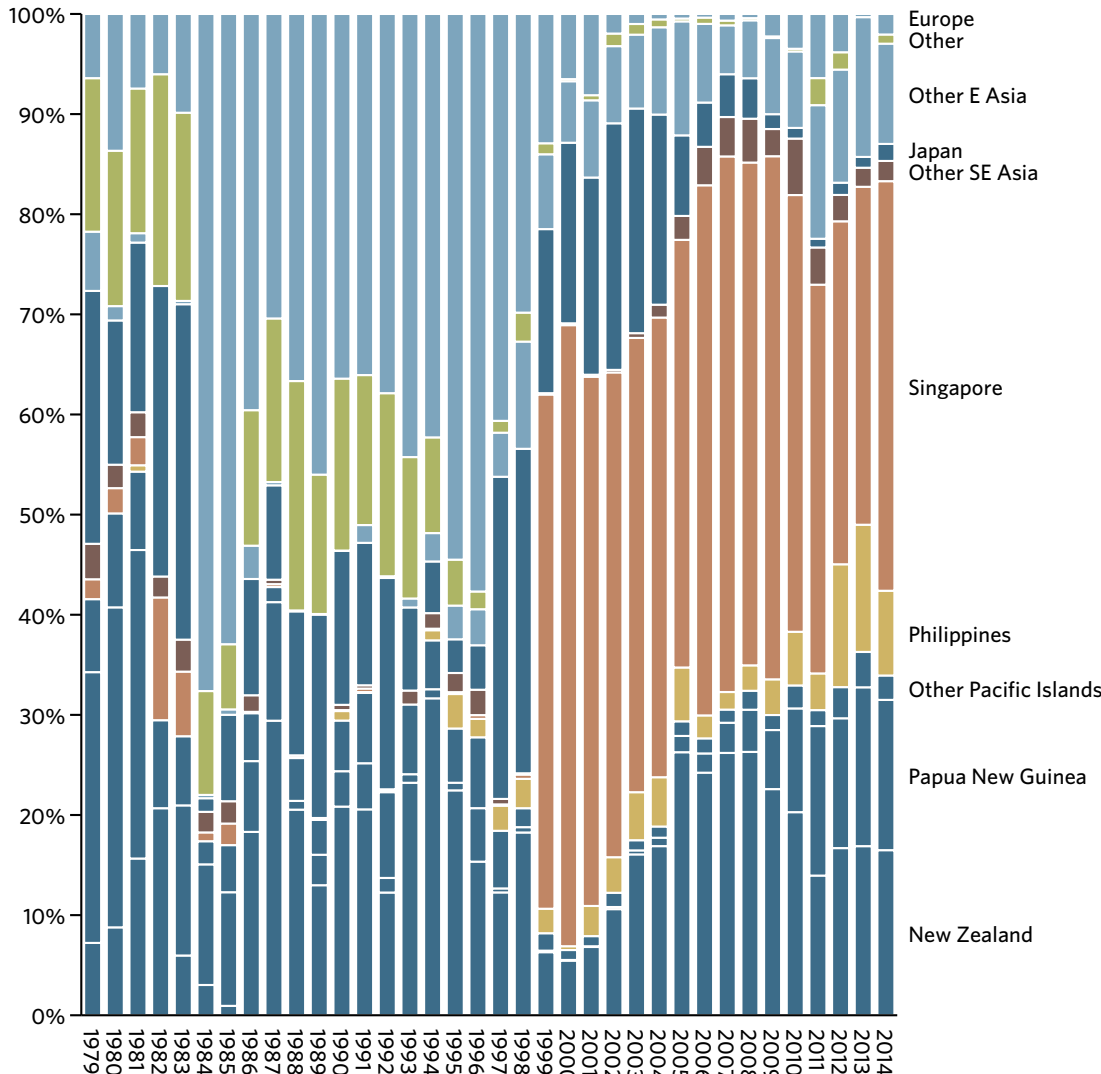
AUSTRALIAN TOTAL VALUE OF ANNUAL PORK MEAT TRADE
US\$; m; 1979-2014



Source: UN Comtrade database (uses SITC rev2 code 0113); Coriolis classifications and analysis

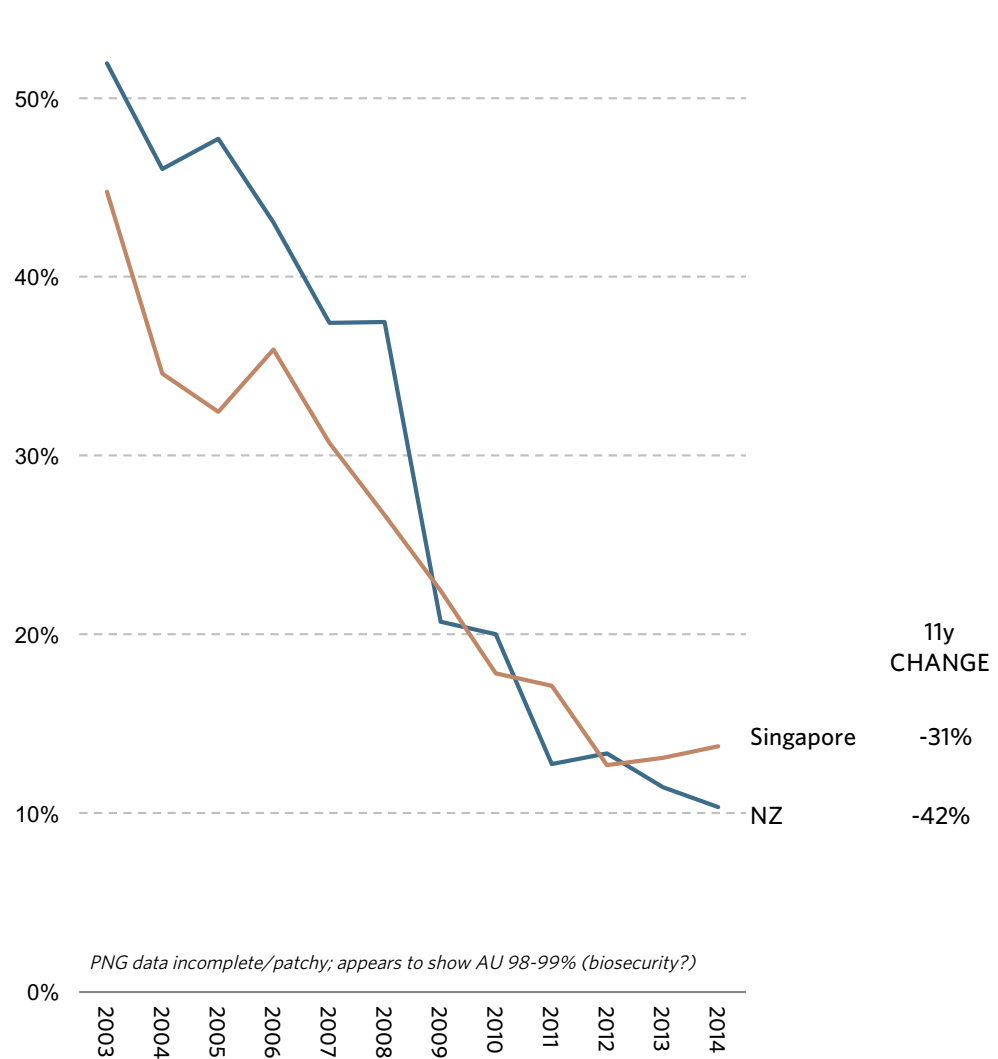
Australian pork meat exports are highly dependent on three countries - New Zealand, Papua New Guinea & Singapore; however Australia is losing volume share to competitors in both Singapore and New Zealand

AU PORK EXPORT VOLUME BY DESTINATION COUNTRY
 % of total volume; 1979-2014



Source: UN Comtrade database (uses SITC rev2 code 0113); Coriolis classifications and analysis

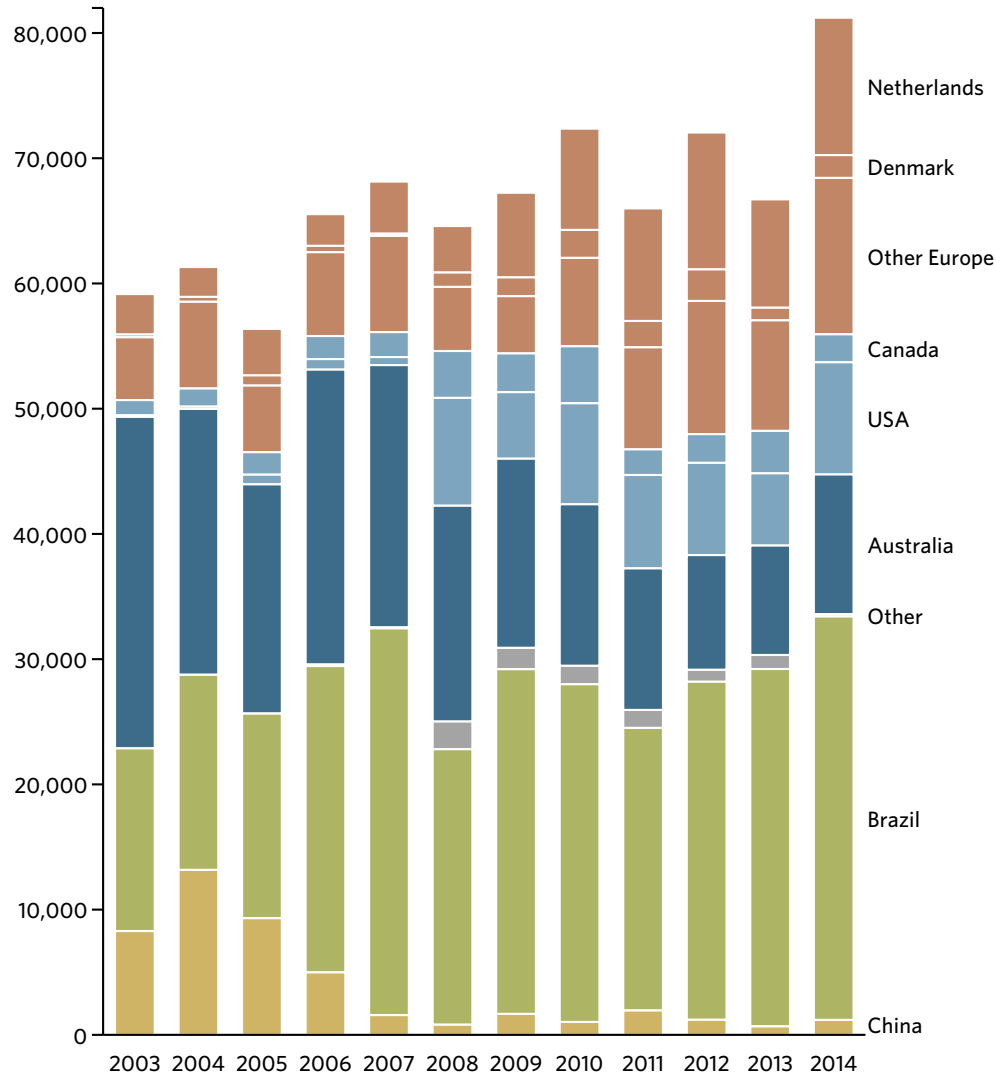
AU SHARE OF TOTAL IMPORT VOLUME: NZ & SINGAPORE
 % of total volume imported; 2003-2014



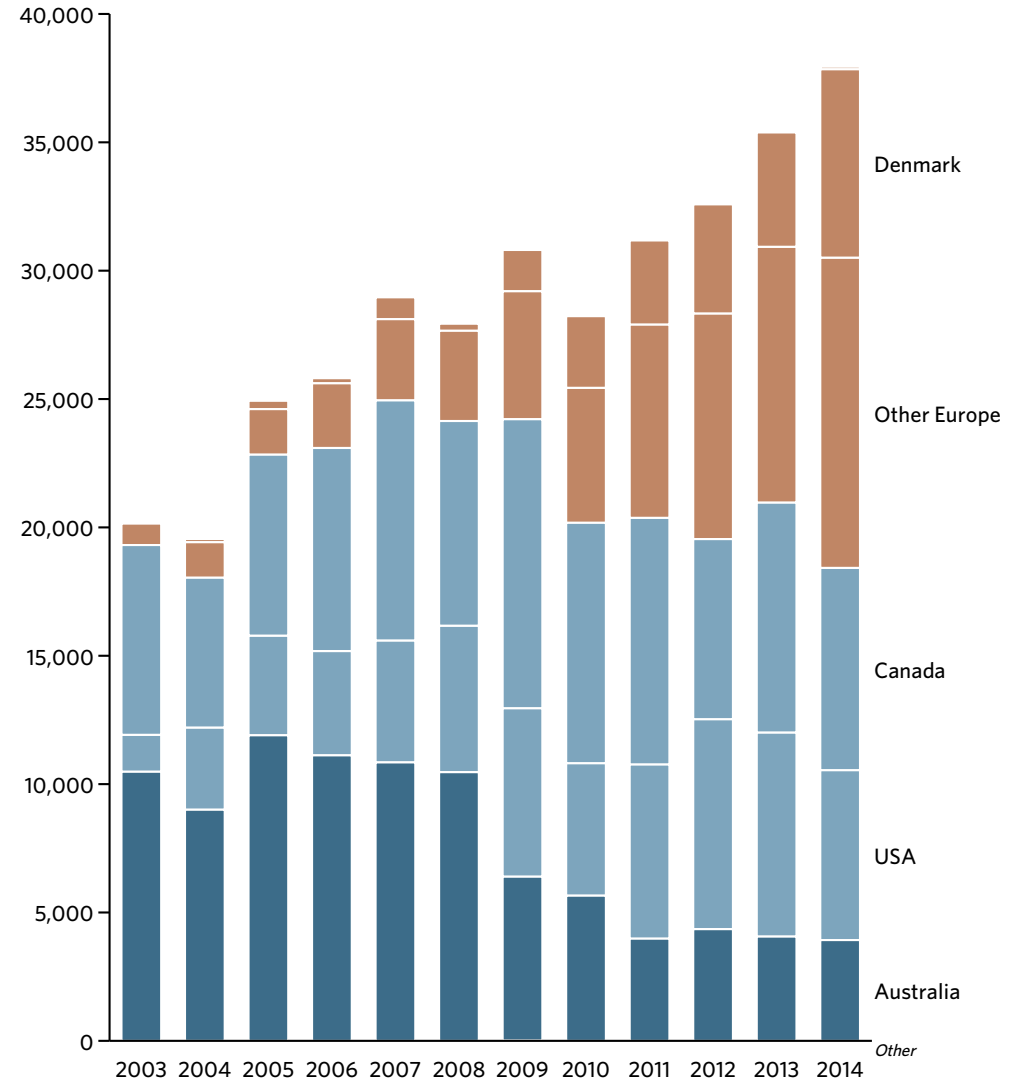
11y
CHANGE

In both Singapore and New Zealand, Australia is shrinking in a growing market; export volume losses are going to other rich, developed Western countries

SINGAPORE PORK IMPORT VOLUME BY SOURCE COUNTRY
Tonnes; 2003-2014



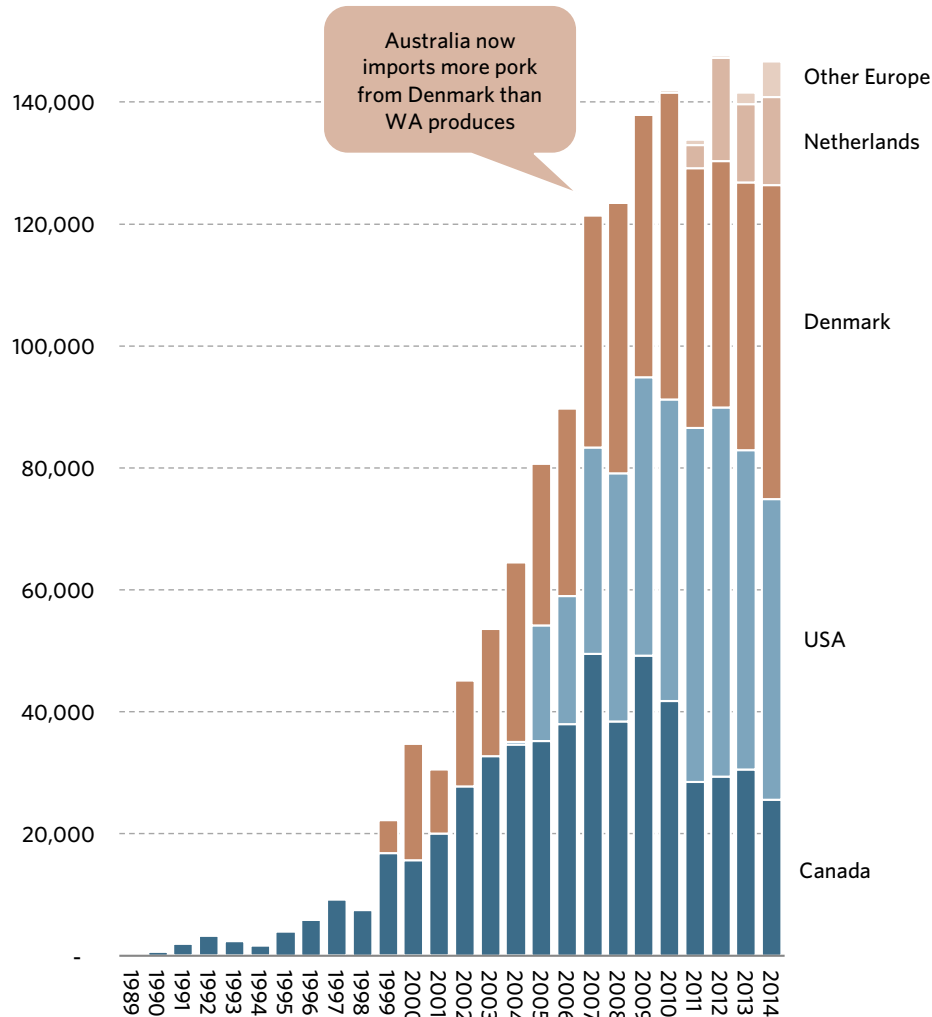
NEW ZEALAND PORK IMPORT VOLUME BY SOURCE COUNTRY
Tonnes; 2003-2014



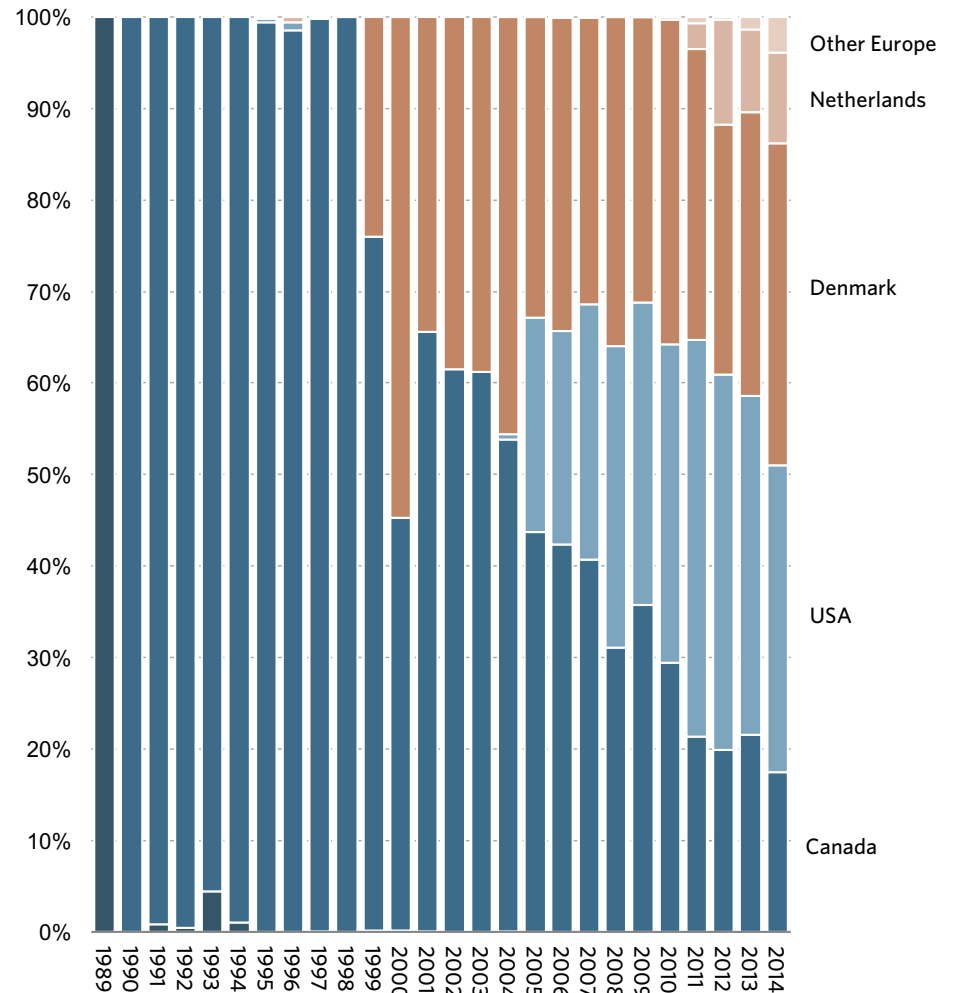
Source: UN Comtrade database (uses SITC rev2 code 0113); Coriolis classifications and analysis

At the same time, Australia has growing pork imports; imports are from the same countries that are out-competing Australia in export markets

AU PORK IMPORT VOLUME BY SOURCE COUNTRY
Tonnes; 1979-2014



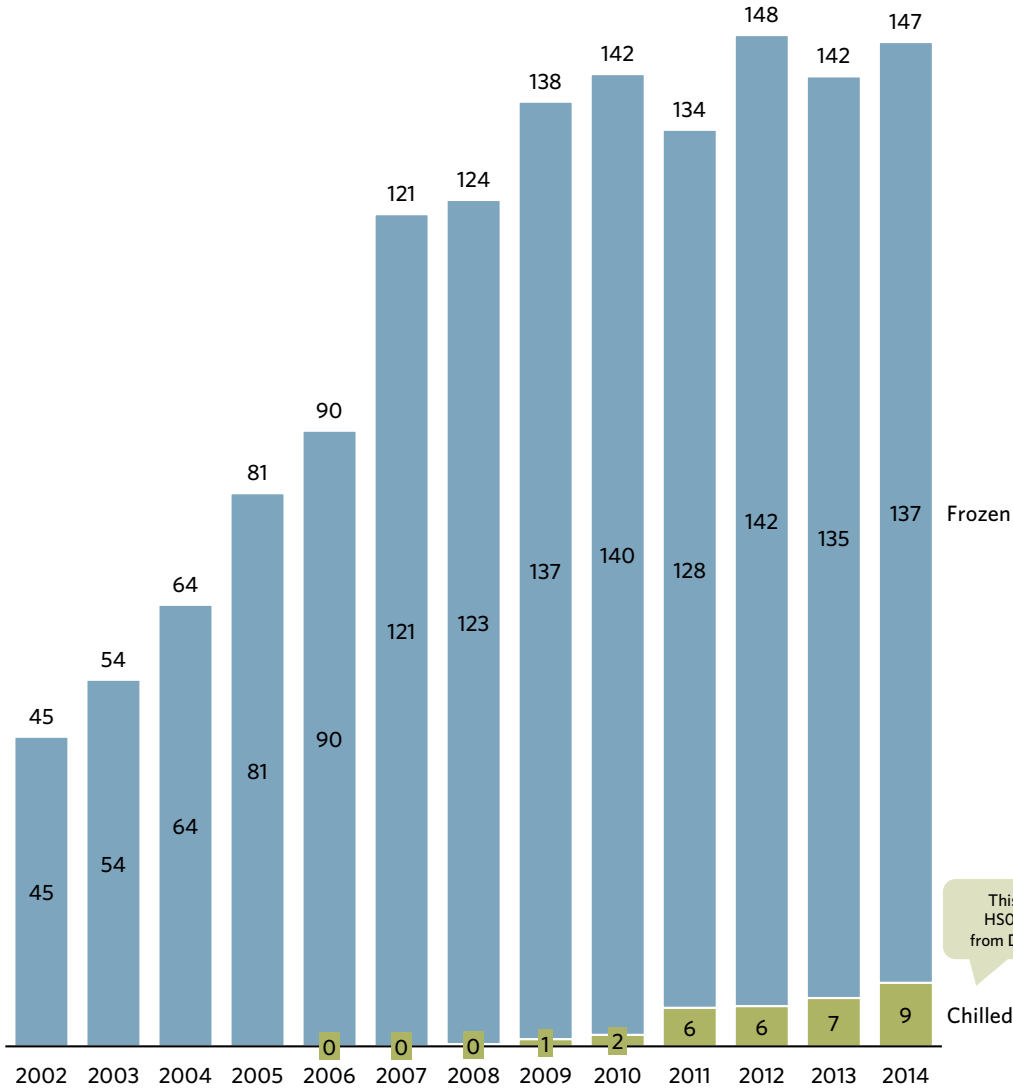
AU PORK IMPORT VOLUME BY SOURCE COUNTRY
% of total volume; 1979-2014



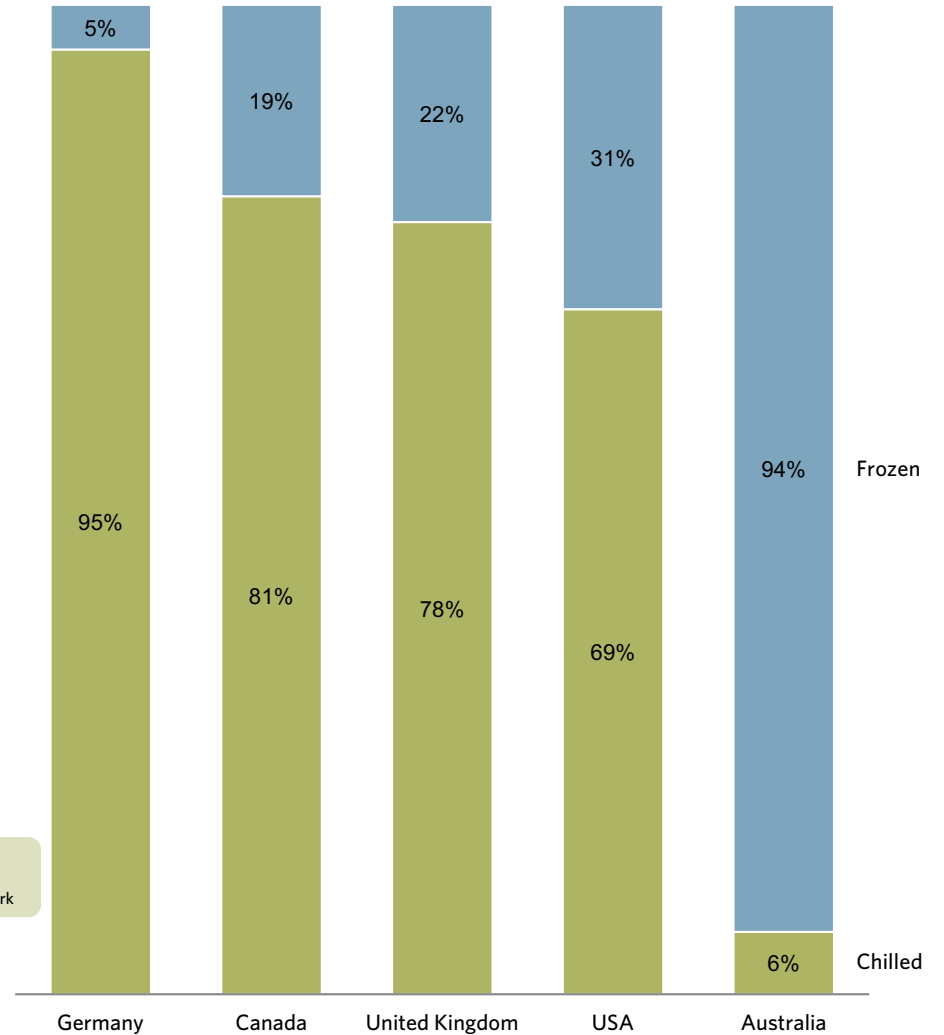
Source: UN Comtrade database (uses SITC rev2 code 0113); Coriolis classifications and analysis

Imports are almost all frozen; Australian biosecurity effectively prevents almost all “fresh/chilled” pork imports

AUSTRALIAN PORK IMPORTS VOLUME BY TEMPERATURE
Tonnes; 000; 2002-2014



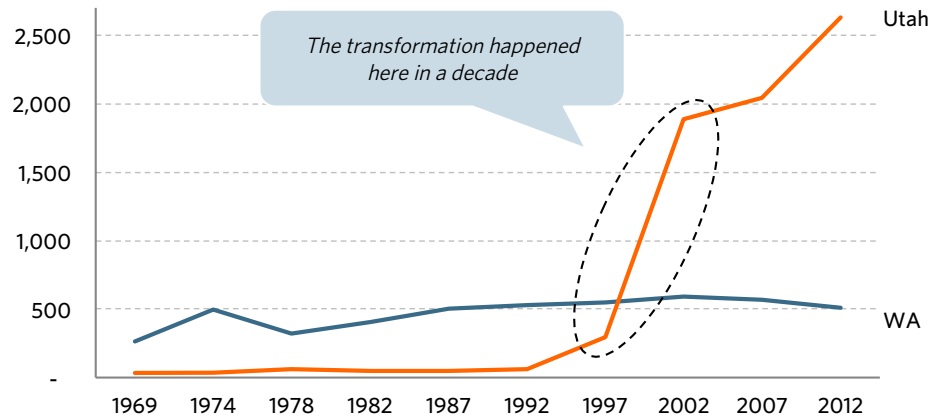
IMPORT VOLUME MIX: SELECT COUNTRIES VS. AUSTRALIA
% of volume; 2014



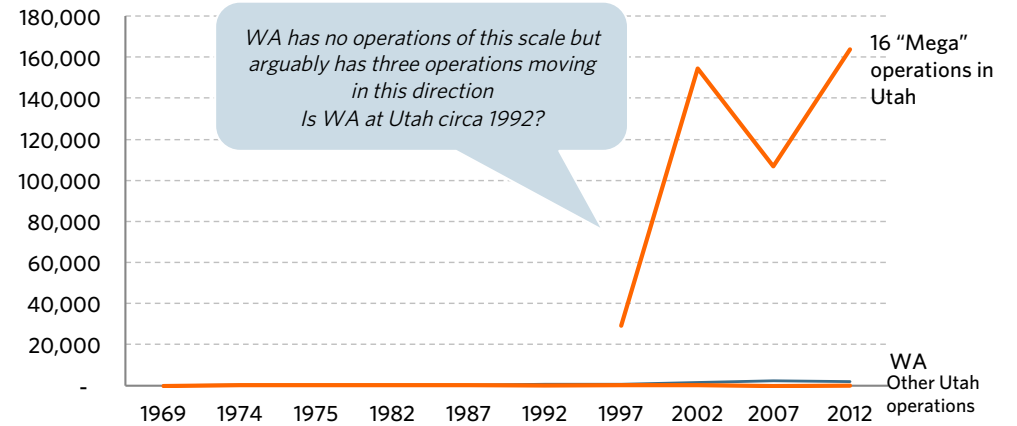
Source: UN Comtrade database (uses SITC rev2 code 0113); Coriolis classifications and analysis

As an example, Utah - a dry Western USA state - provides a case study of a small number of operations (16) going to a new larger unit model and transforming industry competitiveness

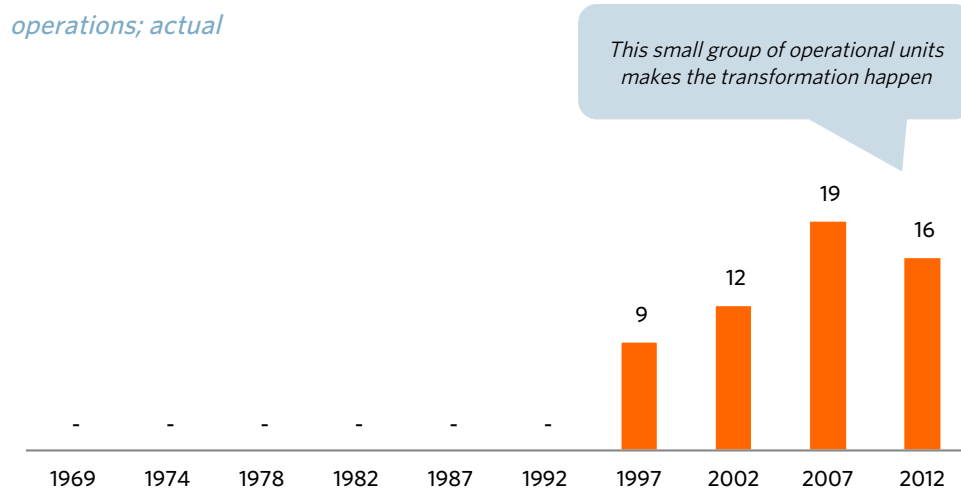
NUMBER OF PIGS MARKETED: WA VS. UTAH
Head; 000; 1969-2012



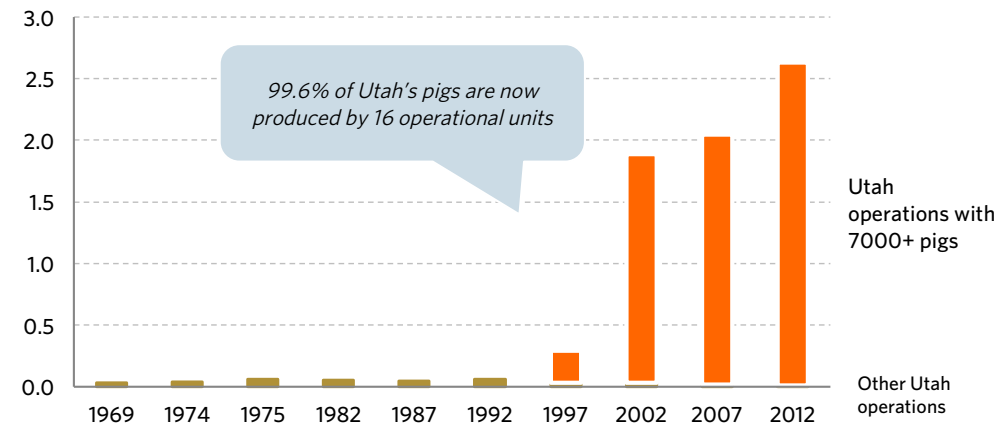
AVERAGE PIGS/YEAR/UNIT: WA VS. UTAH BY UNIT SIZE
Head; 1969-2012



NUMBER OF LARGE SCALE OPERATIONS IN UTAH
operations; actual



TOTAL PIGS MARKETED/YEAR/UNIT BY UNIT SIZE: UTAH
Head; 000; 1969-2012

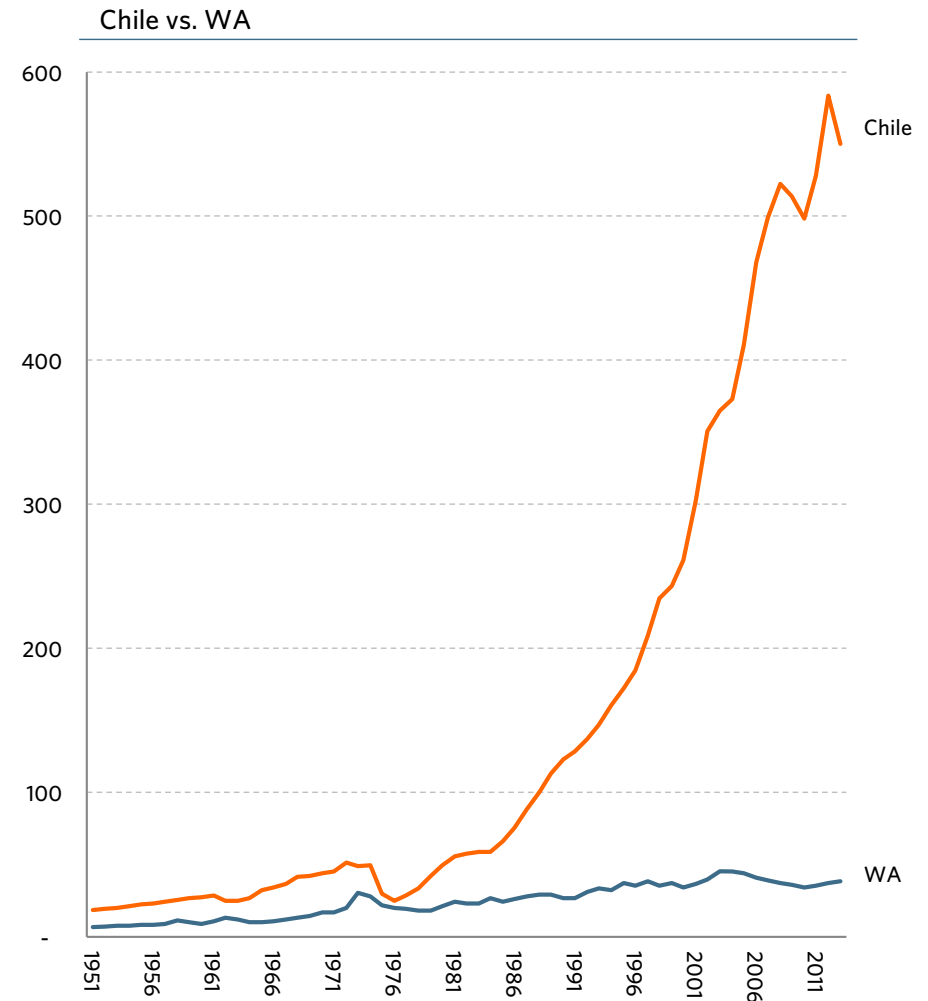
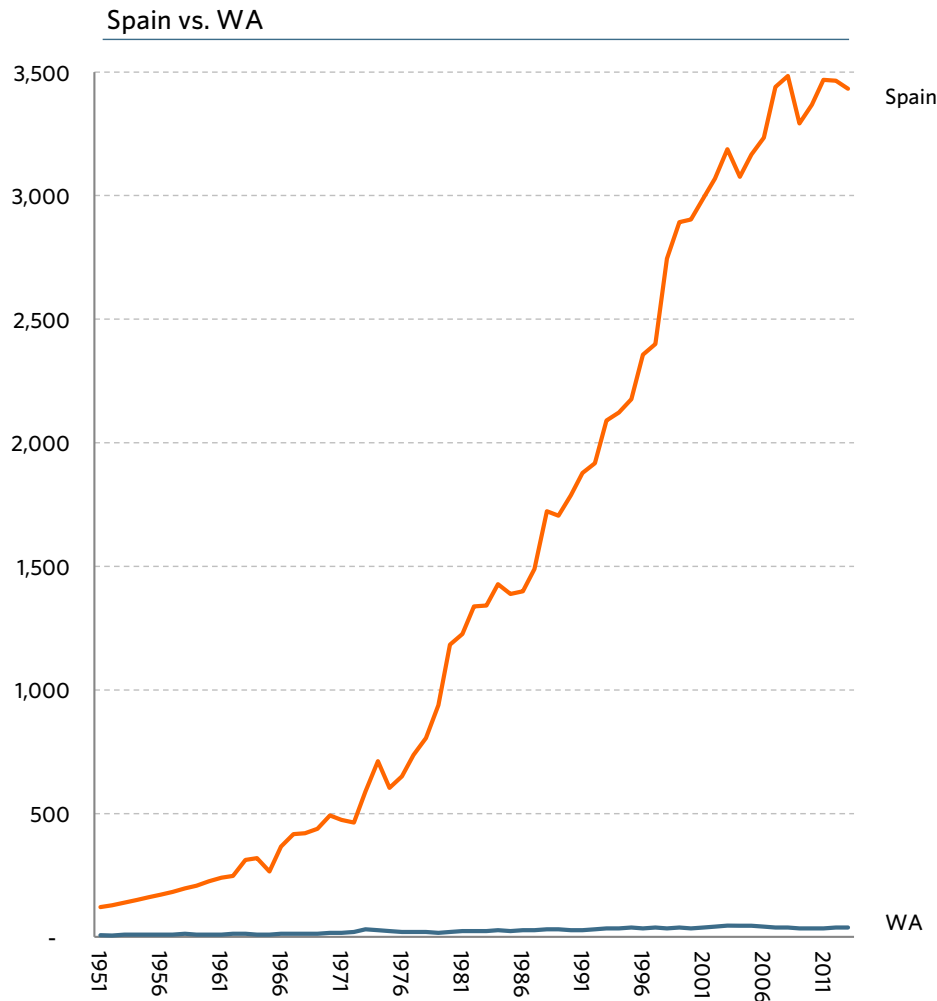


Numerous highly relevant peer group countries and regions are showing strong pork production growth

See Chilean Peer Group Pathways Case Study

PORK PRODUCTION: WA VS. SELECT DRY PEERS

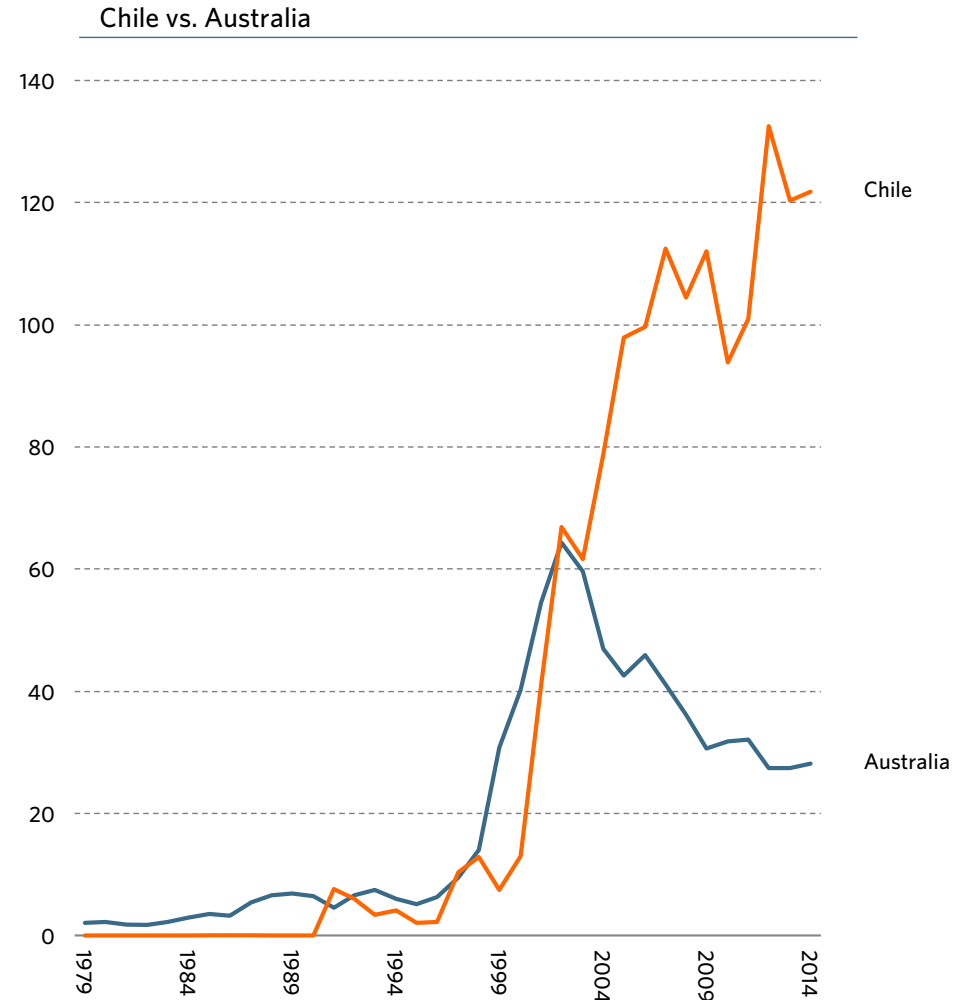
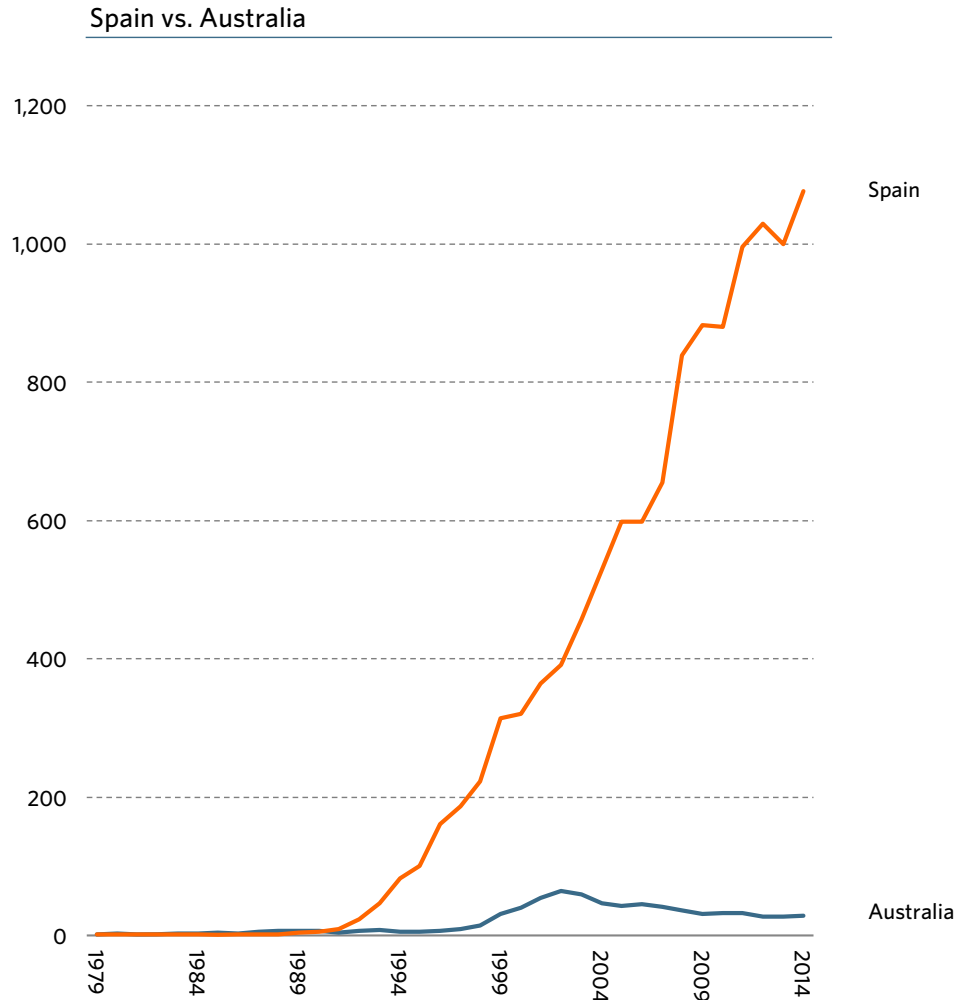
Tonnes; 000; 1951-2013



These peers are converting production growth into export growth as they have found a pathway to competitiveness

PORK EXPORT VOLUME: WA VS. SELECT DRY PEERS

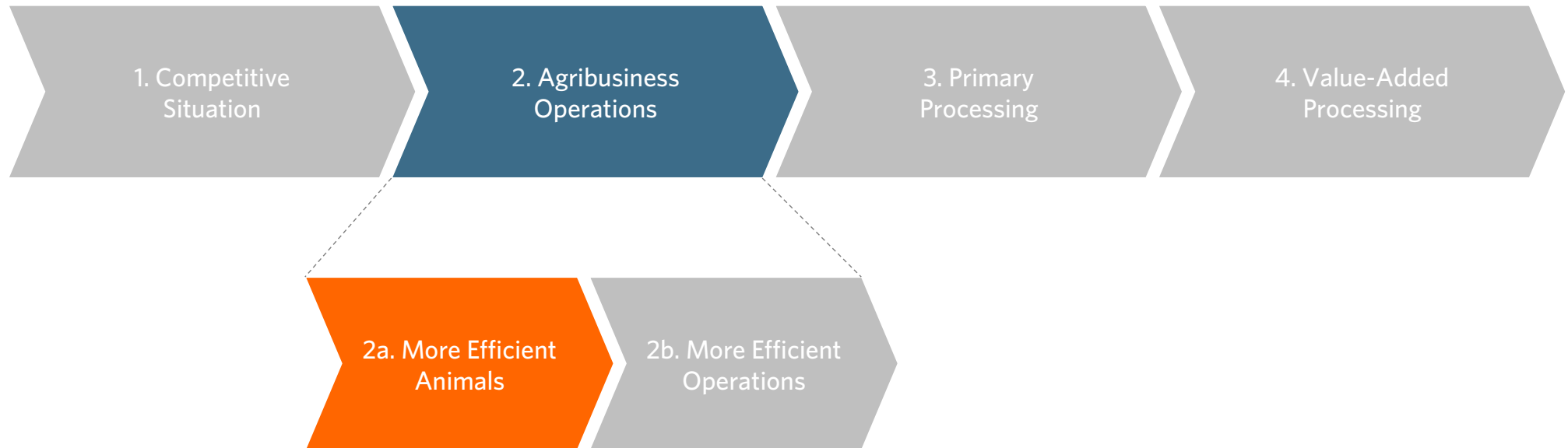
Tonnes; 000; 1979-2014



Source: various WA Statistical Register (by year); various ABS publications; UN FAO AgStat database; Coriolis analysis and estimates

This case study now looks at pig agribusiness operations in Western Australia

SECTION STRUCTURE: PORK CASE STUDY

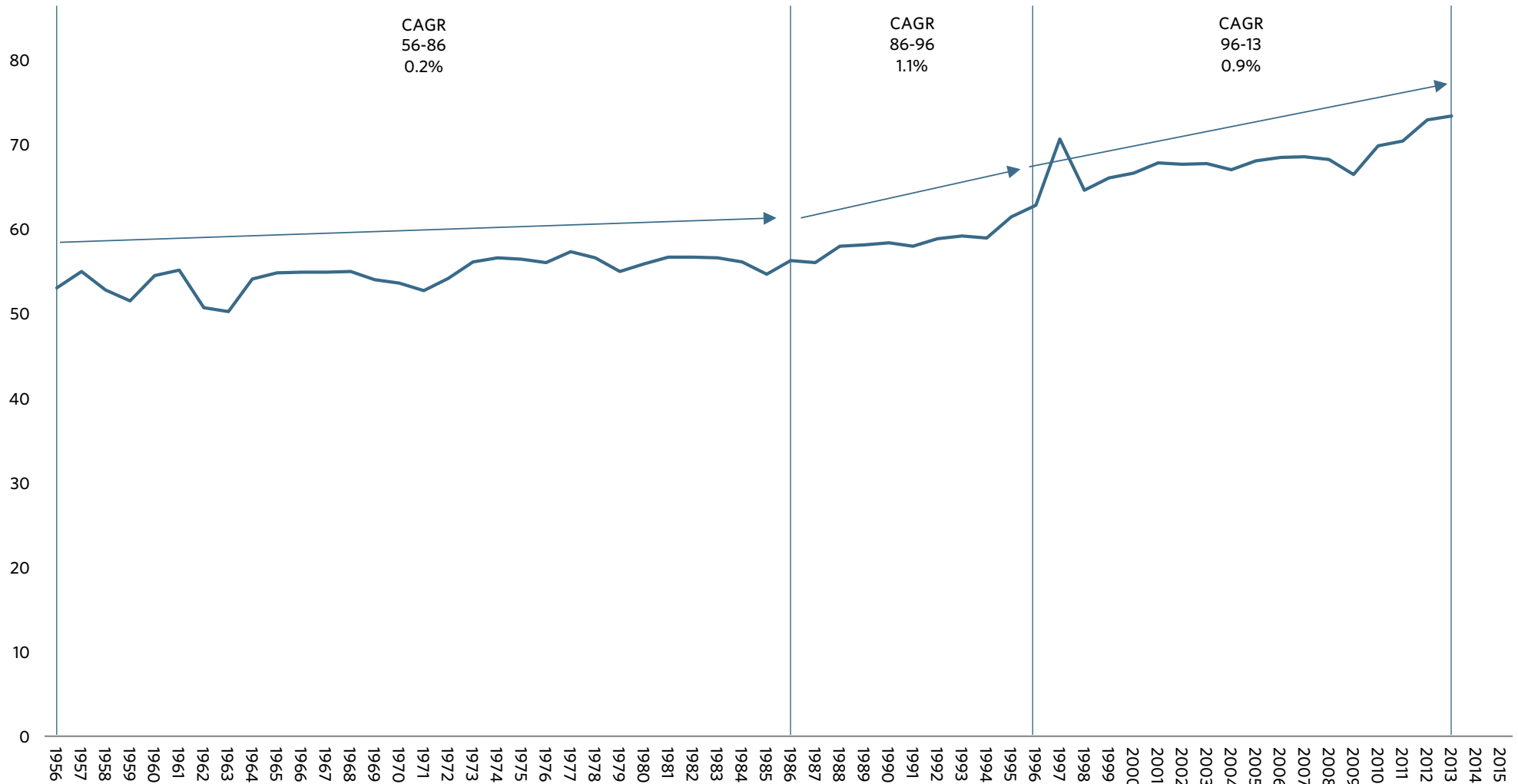


Western Australian needs to improve animal efficiency

- Pig production is a well researched industry on which an extensive range of productivity and efficiency measurement is carried out; the object of this project is not to analyse that in detail. Rather, this work seeks to compare Western Australian performance with that of key peers across a handful of key high level productivity variables; is the state clearly ahead or clearly behind?
- At a high level the data suggests Western Australia performs well in systemic efficiency (likely in part due to lower levels of disease), but poorly in terms of meat yield per animal; poor meat yield will cascade through later stages of the value chain and depress efficiency (e.g. meat per slaughterhouse labour hour)
- YIELD: Western Australia is significantly behind peers on realised meat per pig; WA today is where countries like Denmark, Canada and the UK were in the 1960's
 - While the Western Australian pig industry continues to increase meat yield, this appears to have slowed
 - Peer group suggest Western Australia could achieve +28-36% more meat per pig
 - Western Australian meat yield per pig has consistently trailed peers
 - The Western Australian pork industry is about 25 years behinds peers in yield; the industry appears to have reached take-off and now needs to focus on achieving 1.7%/year yield increases for two decades
- KILL-TO-INVENTORY: Western Australia leads many peers on this simple measure of production efficiency
 - The Western Australian pork industry is increasing its kill-to-inventory ratio
 - The Western Australian pork industry is performing well on kill-to-inventory ratio relative to peers
- MEAT-TO-INVENTORY: The Western Australian pork industry is performing in "the middle of the pack" on meat-to-inventory ratio relative to peers

While the Western Australian pig industry continues to increase meat yield, this appears to have slowed

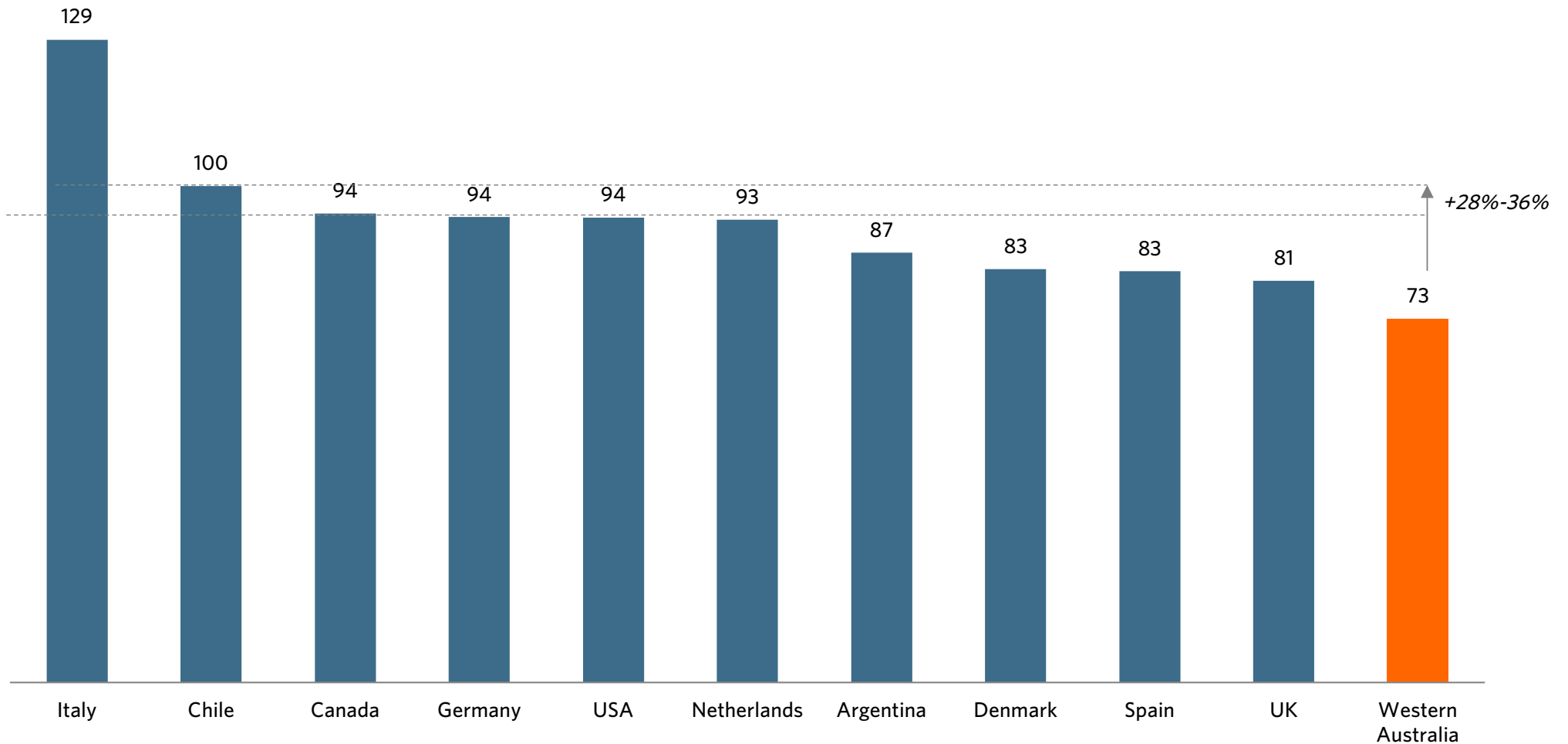
AVERAGE CARCASS WEIGHT AT SLAUGHTER: WESTERN AUSTRALIA
Kg/animal; 1956-2013



Source: various WA Statistical Register (by year); various ABS publications; Coriolis analysis and estimates

Peer group suggest Western Australia could achieve +28-36% more meat per pig

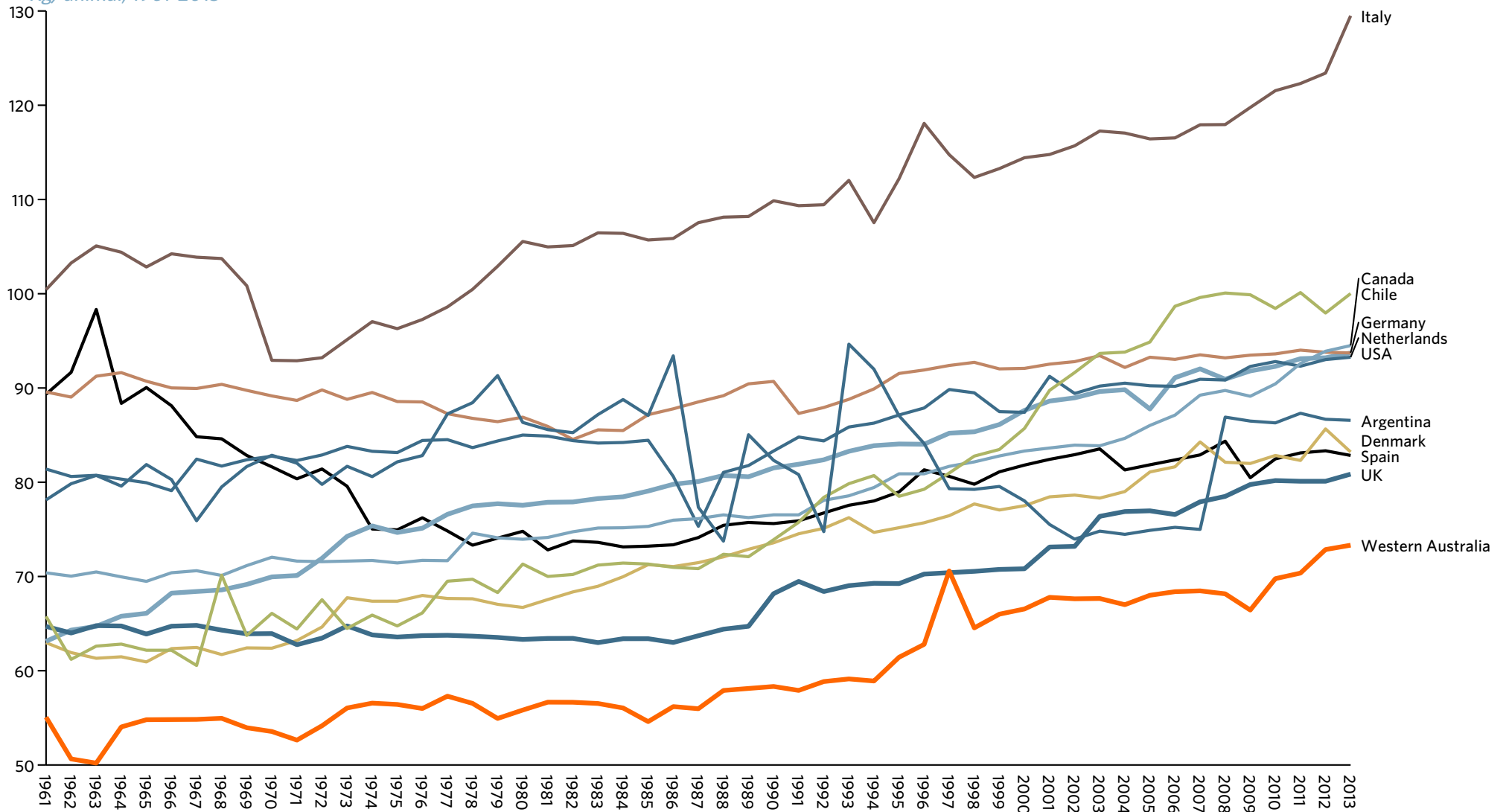
AVERAGE CARCASS WEIGHT AT SLAUGHTER: WESTERN AUSTRALIA VS. SELECTED COUNTRIES
Kg/animal; 2013



Western Australian meat yield per pig has consistently trailed peers

AVERAGE CARCASS WEIGHT AT SLAUGHTER: WESTERN AUSTRALIA VS. SELECTED COUNTRIES

Kg/animal; 1961-2013

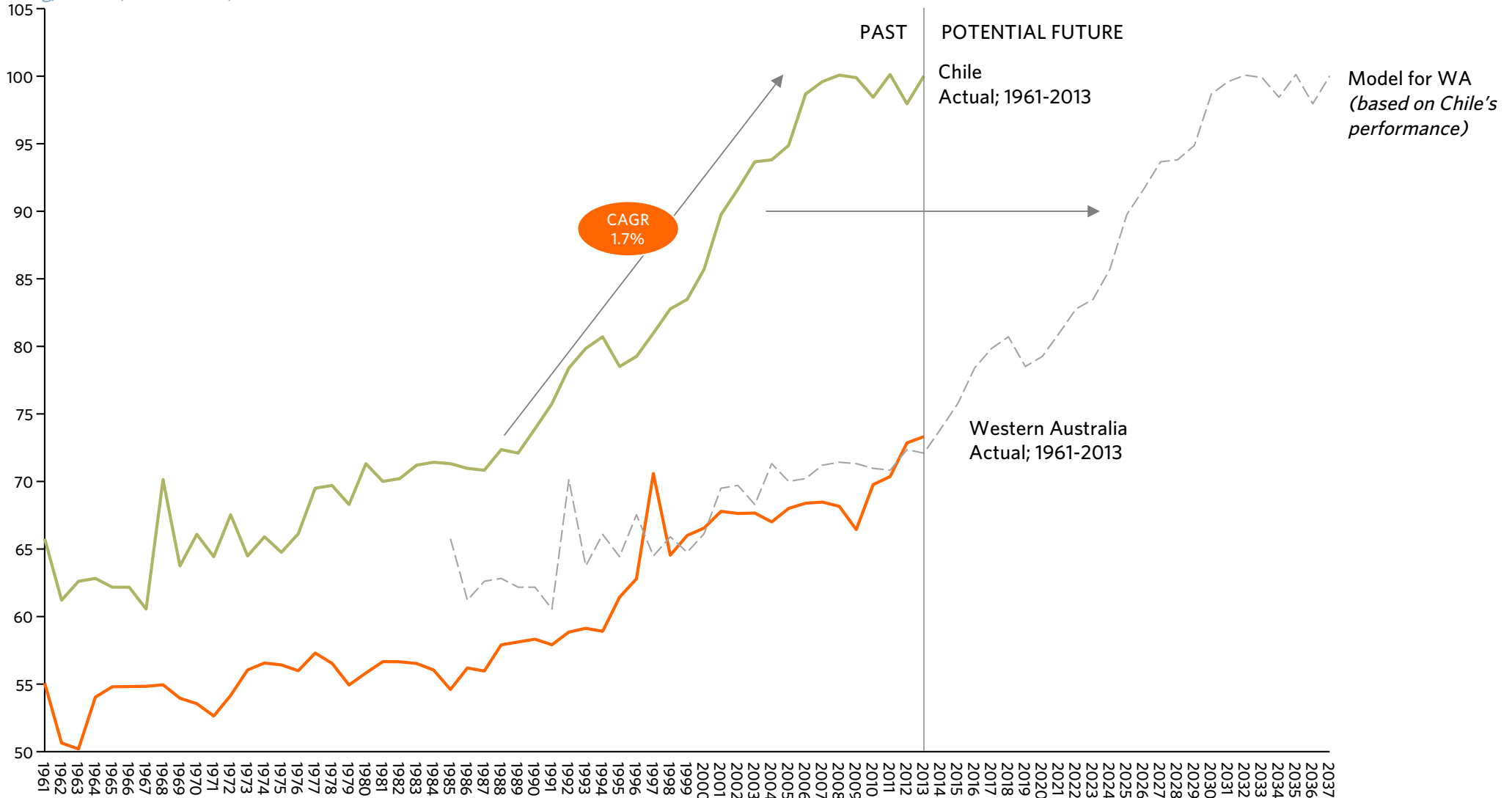


Source: various WA Statistical Register (by year); various ABS publications; UN FAO AgStat database; Australian Pig Annual 2012-13; Coriolis analysis and estimates

The Western Australian pork industry is about 25 years behinds peers in yield; the industry appears to have reached take-off and now needs to focus on achieving 1.7%/year yield increases for two decades

AVERAGE CARCASS WEIGHT AT SLAUGHTER: WESTERN AUSTRALIA VS. CHILE

Kg/animal; 1961-2013a; 2014-2037f

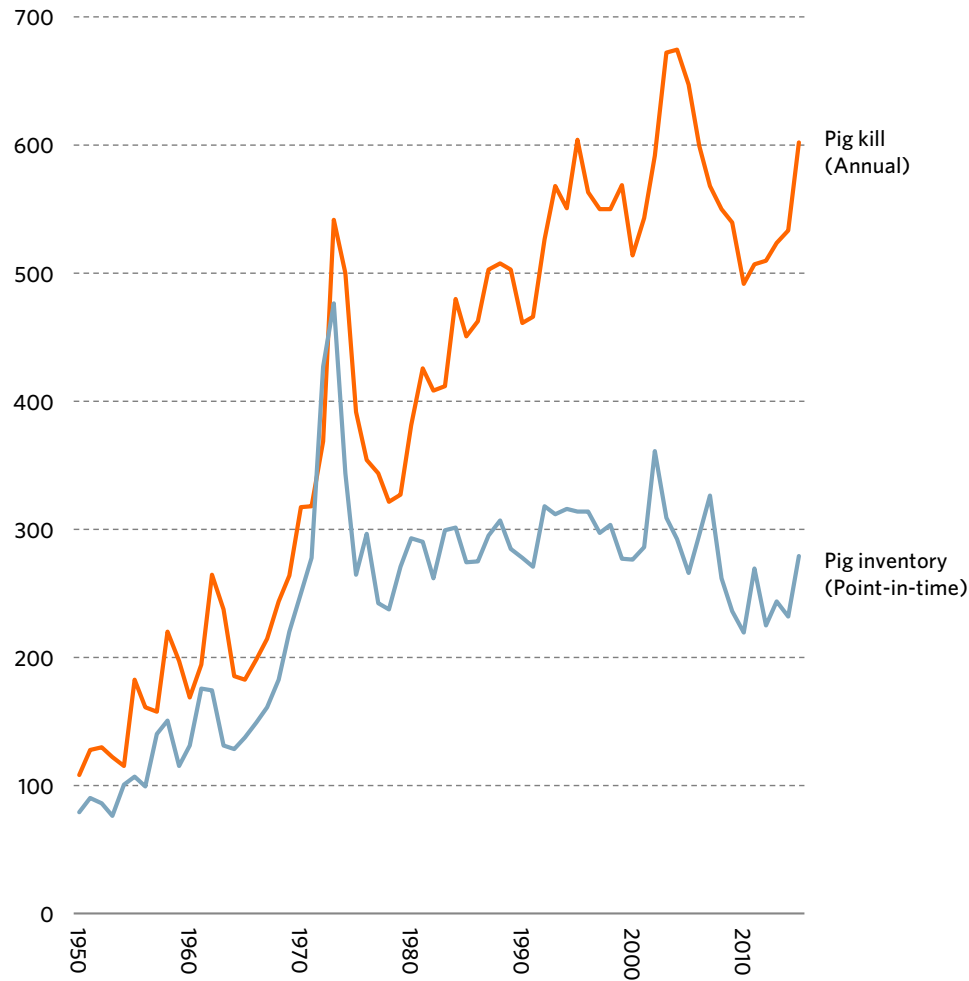


Source: various WA Statistical Register (by year); various ABS publications; UN FAO AgStat database; Australian Pig Annual 2012-13; Coriolis analysis and estimates

The Western Australian pork industry is increasing its kill-to-inventory ratio

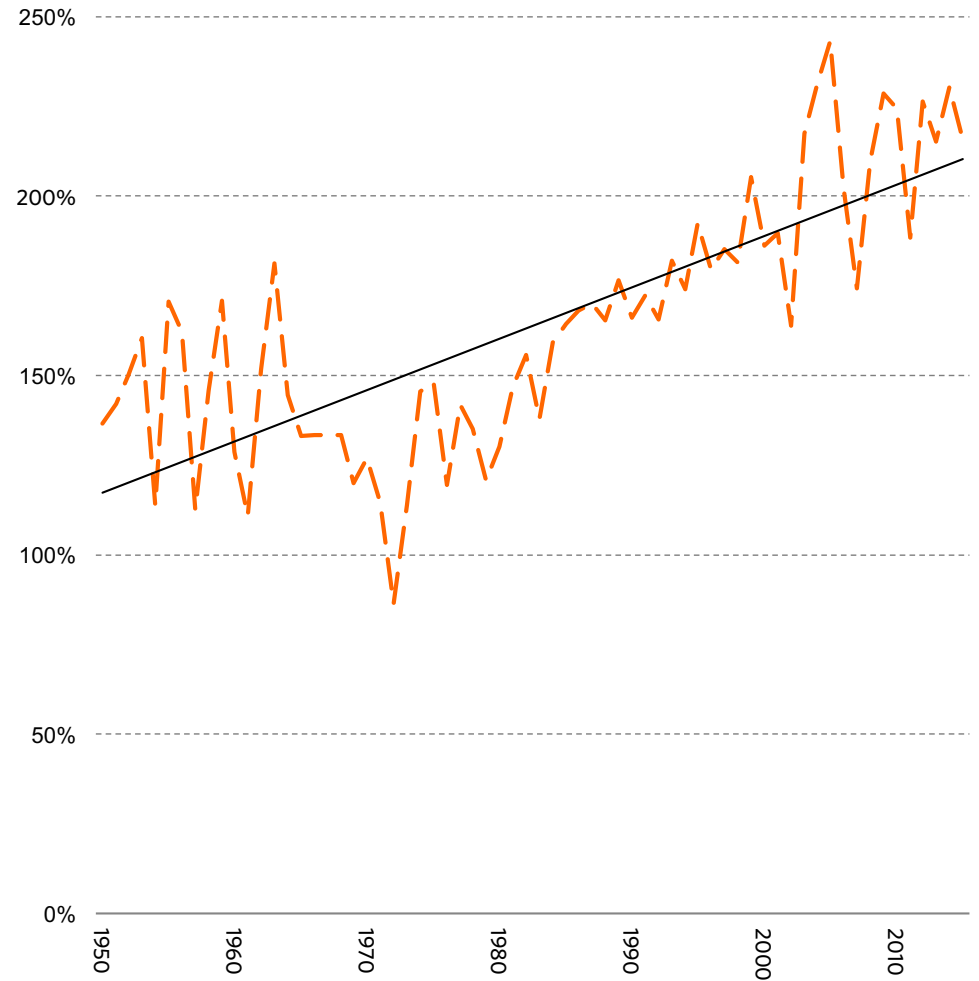
PIG KILL VS. INVENTORY: WESTERN AUSTRALIA

Head; 000; 1950-2015



KILL TO INVENTORY RATIO: WESTERN AUSTRALIA

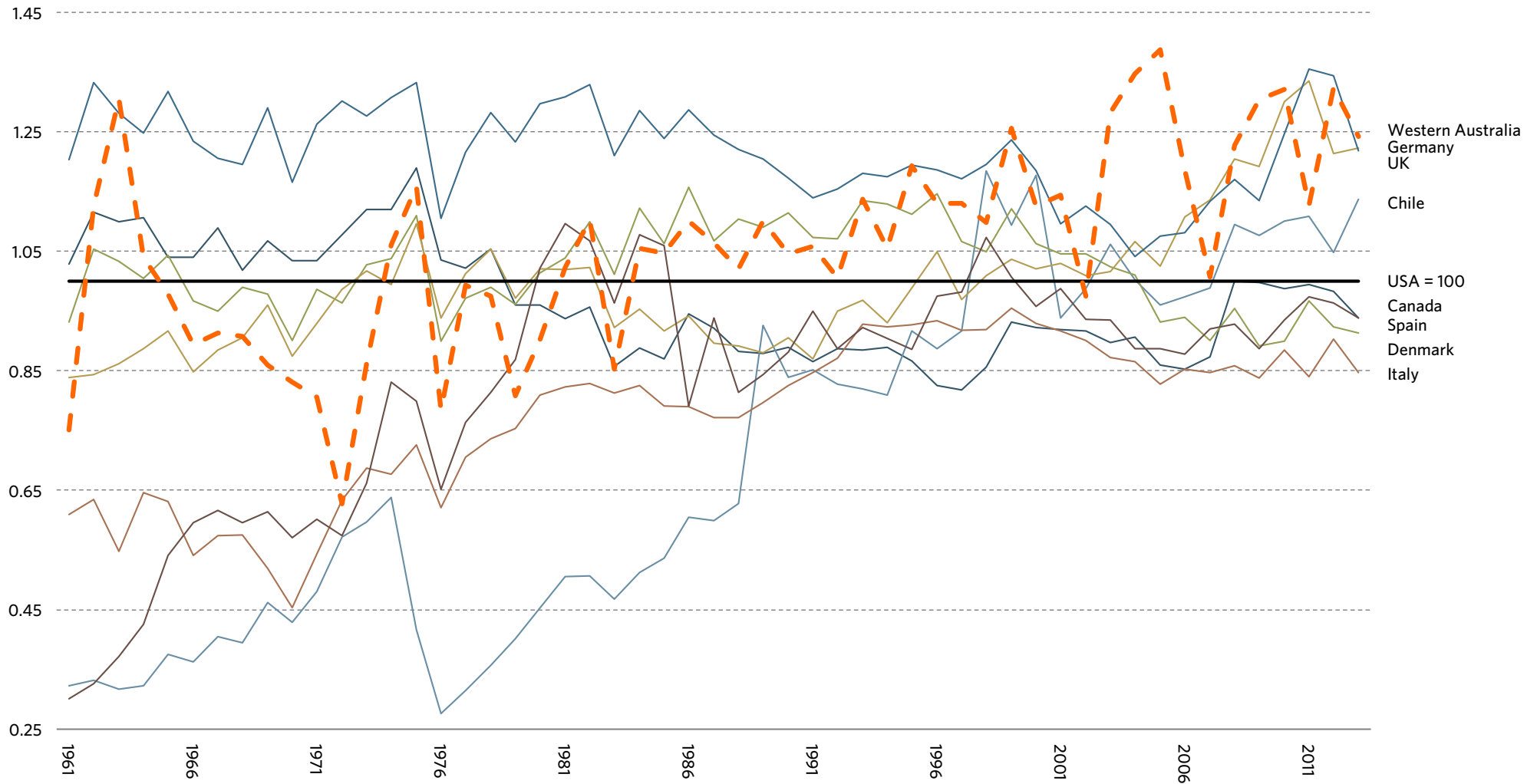
% of pig numbers; 1950-2015



The Western Australian pork industry is performing well on kill-to-inventory ratio relative to peers

KILL-TO-INVENTORY RATIO INDEXED TO UNITED STATES: WESTERN AUSTRALIA VS. SELECT PEERS

Indexed ratio of annual pig kill to point-in-time inventory; USA = 100; 1961-2015

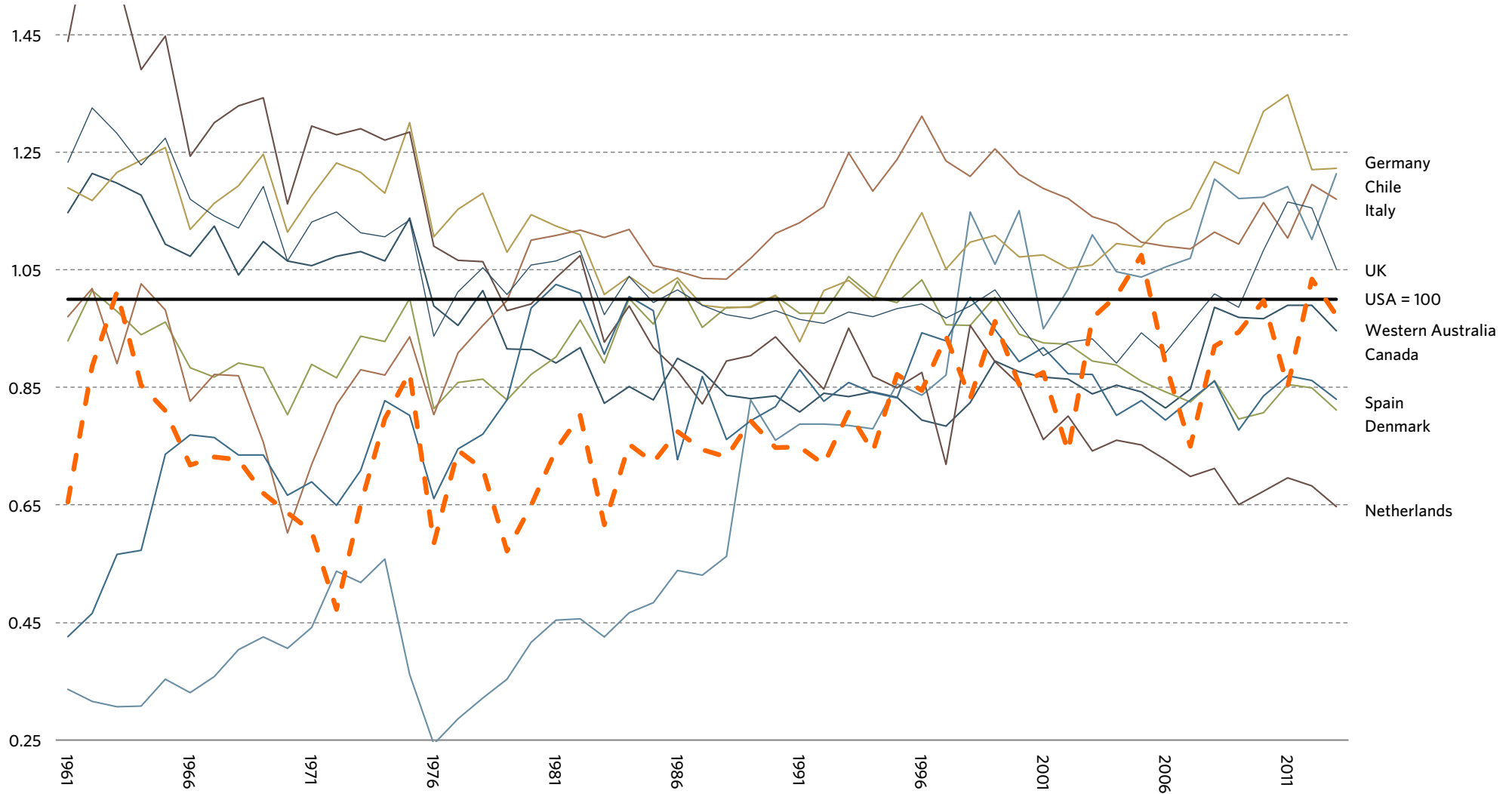


Source: various WA Statistical Register (by year); various ABS publications; UN FAO AgStat database; Australian Pig Annual 2012-13; Coriolis analysis and estimates

The Western Australian pork industry is performing in “the middle of the pack” on meat-to-inventory ratio relative to peers

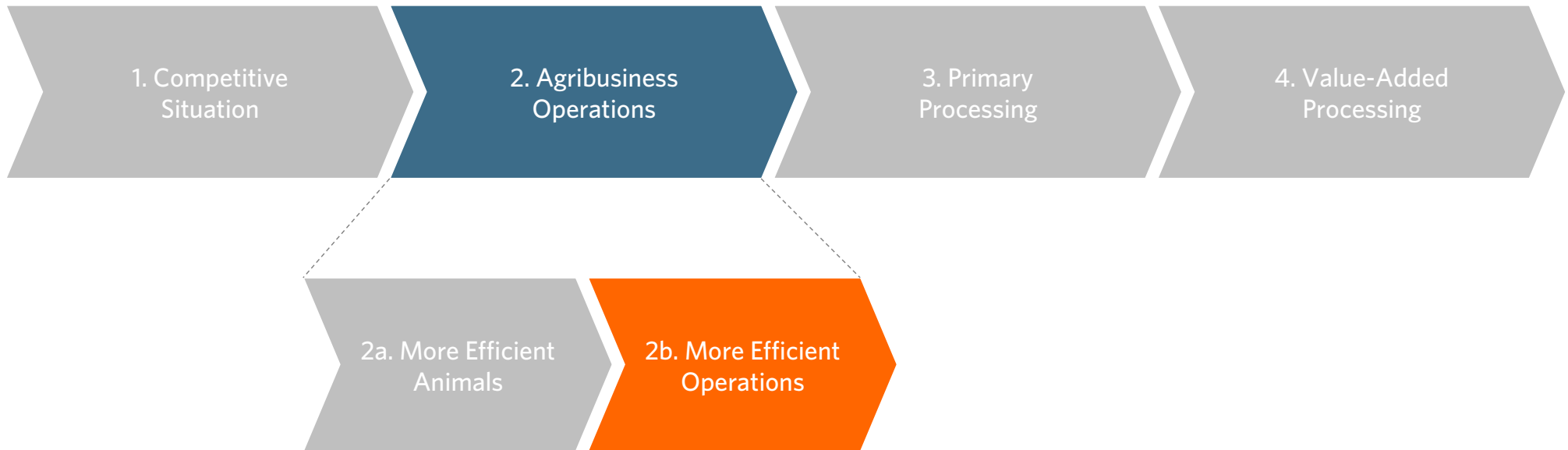
MEAT-TO-INVENTORY RATIO INDEXED TO UNITED STATES: WESTERN AUSTRALIA VS. SELECT PEERS

Indexed ratio of annual meat to point-in-time inventory; USA = 100; 1961-2015

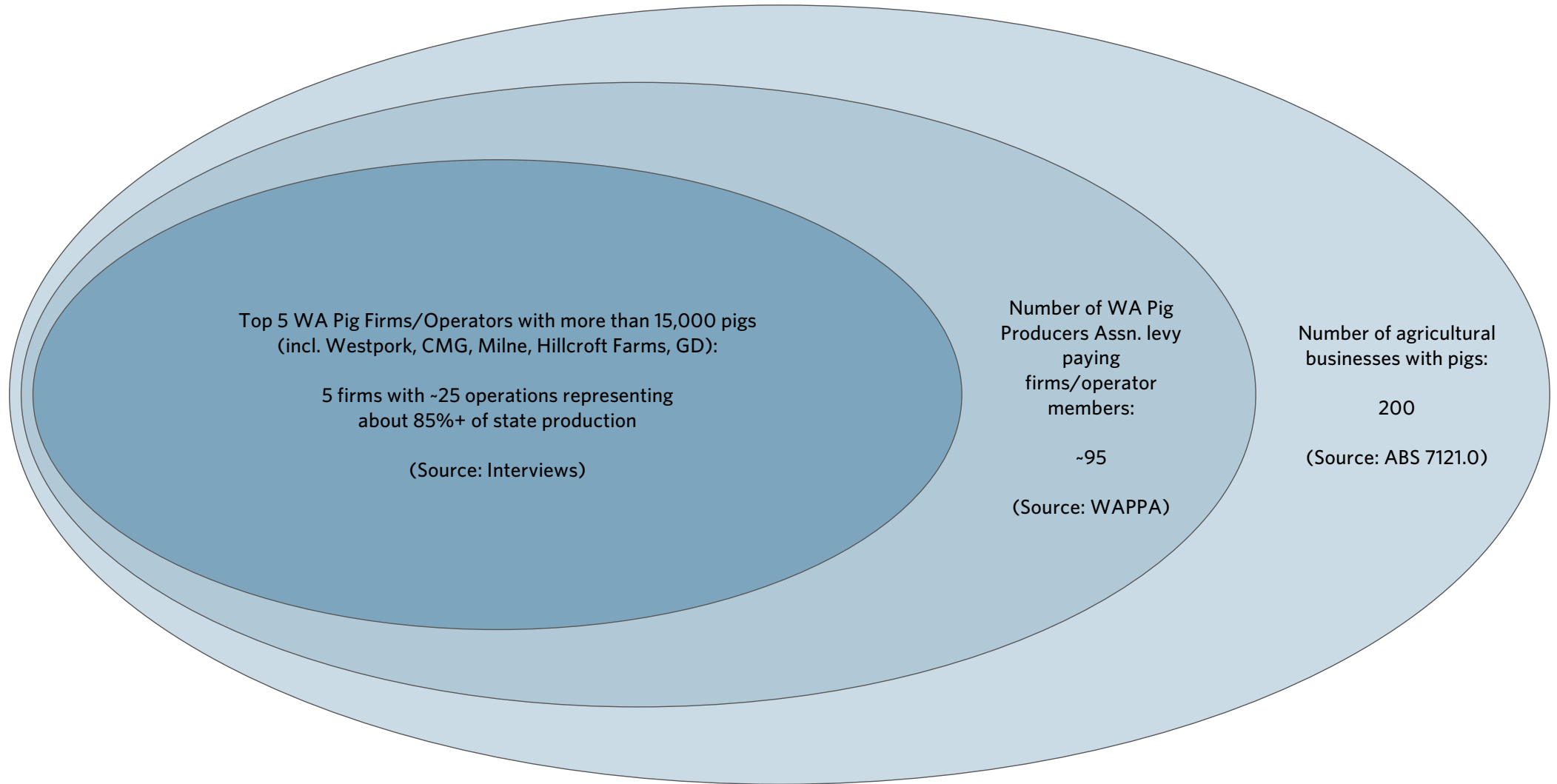


Source: various WA Statistical Register (by year); various ABS publications; UN FAO AgStat database; Australian Pig Annual 2012-13; Coriolis analysis and estimates

SECTION STRUCTURE: PORK CASE STUDY



When looking at information in this section around the number of pig operations, readers need to be aware of and recognise that there are different data sources and different definitions

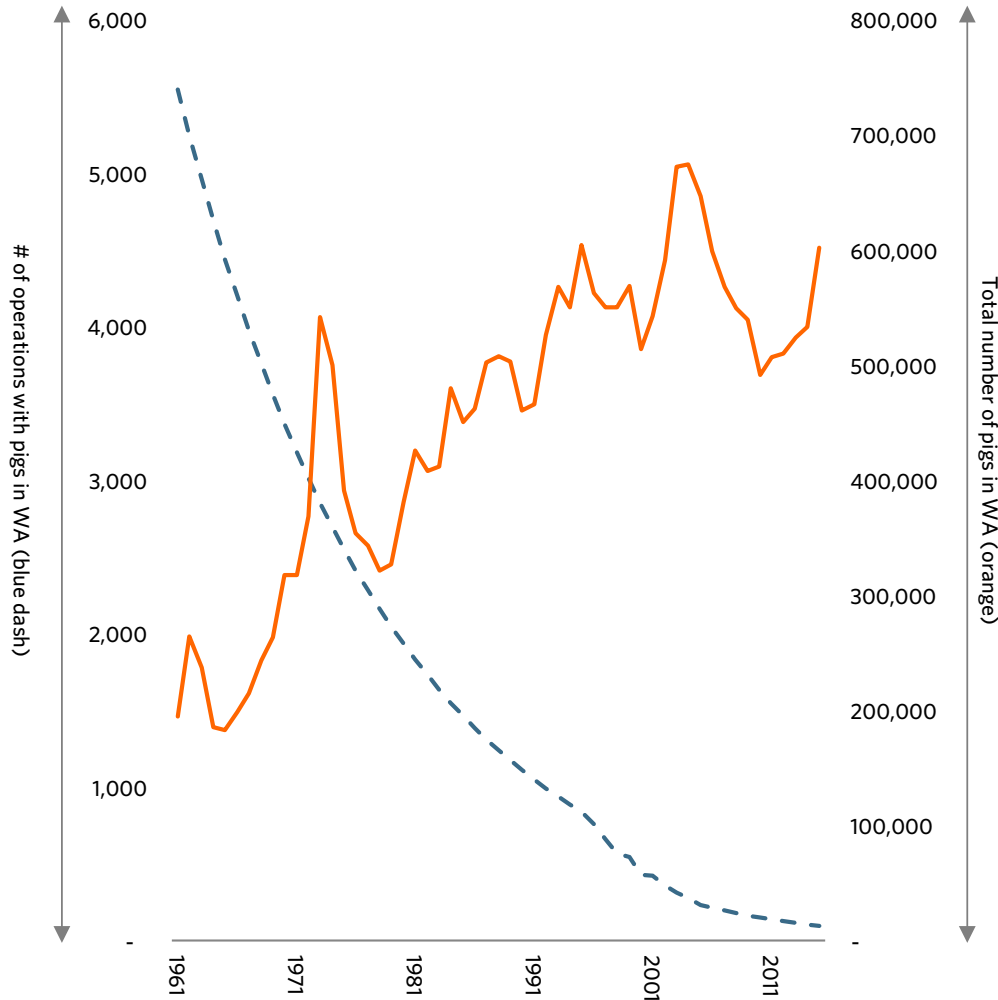


Western Australian should increase output per operation to drive competitiveness

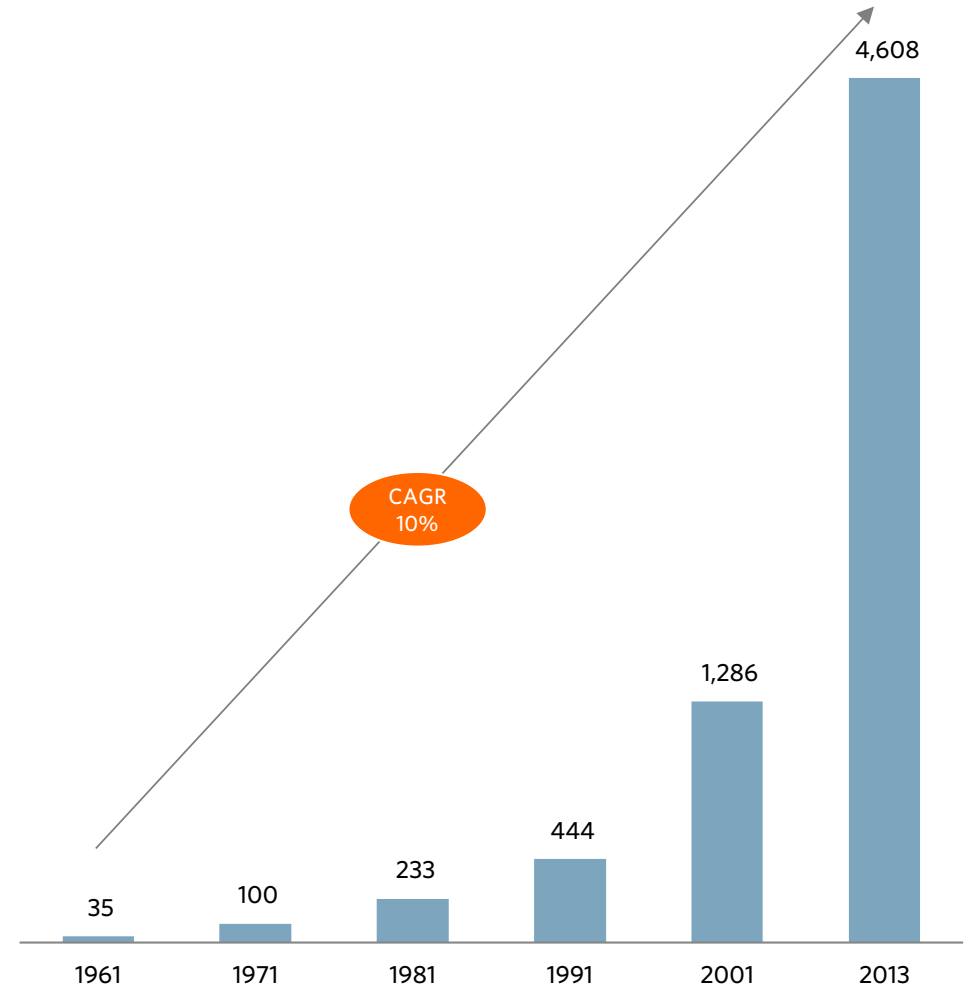
- Western Australia has been increasing average annual pig production per operational unit at 10% per annum
- Western Australian average annual pig production per operational unit is low relative to peer group leaders
 - Peers suggest Western Australia can continue increasing pigs produced per operational unit at 8-11% per year and that the state should aim to triple average pigs per unit within the near future
- In Western Australia, both the total number of agricultural operations with pigs and the number of specialised pig operations is declining
 - Other countries and regions are also experiencing reductions in pig unit numbers
- Western Australia will likely have fewer specialised pig operations in the future
- Comparing Western Australia with the major North American operators suggests it will likely have a number of significantly larger pig operations; the same message emerges from a global benchmarking

Western Australia has been increasing average annual pig production per operational unit at 10% per annum

NUMBER OF OPERATIONS VS. NUMBER OF PIGS: WA
Actual; 1961-2015



AVERAGE PIGS PER OPERATION: WESTERN AUSTRALIA
Pigs produced/operation; actual; 1961-2013

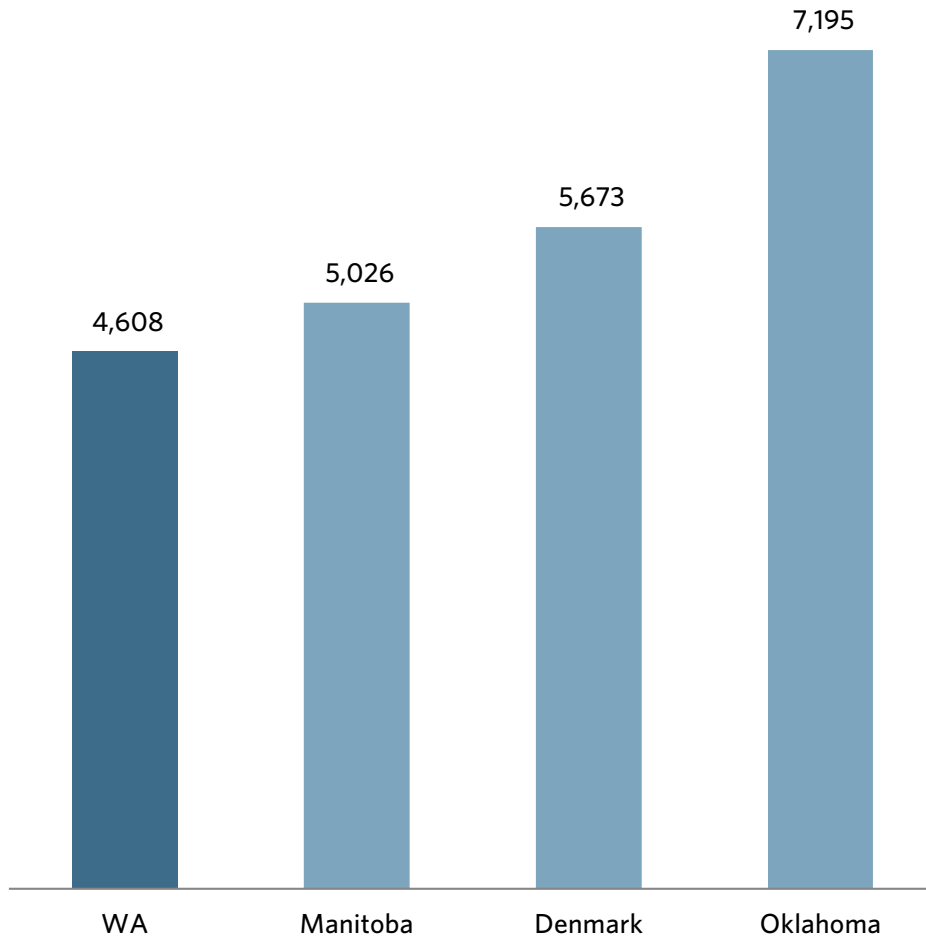


Source: various WA Statistical Register (by year); various ABS publications; Coriolis analysis and estimates

Western Australian average annual pig production per operational unit is low relative to peer group leaders

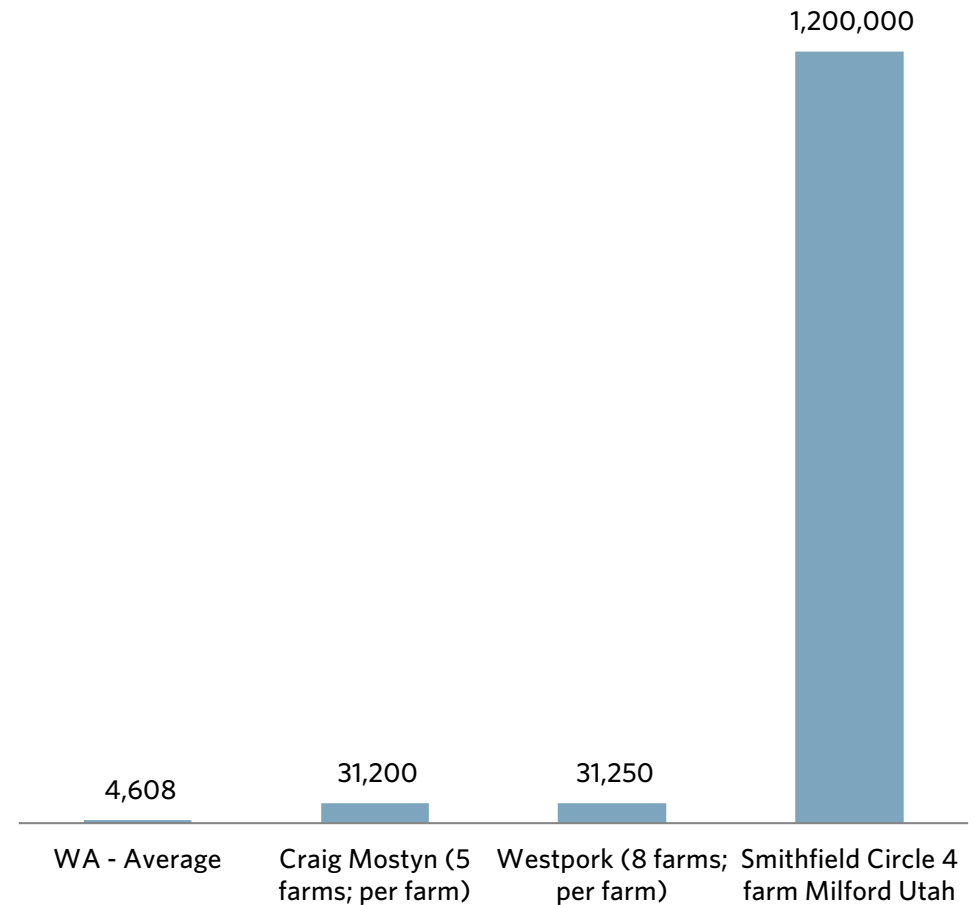
AVERAGE PIGS PRODUCED PER UNIT: WA VS. SELECT PEERS

Pigs produced/operation; actual; 2012/2013



AVERAGE PIGS PRODUCED PER OPERATION: LARGE UNITS

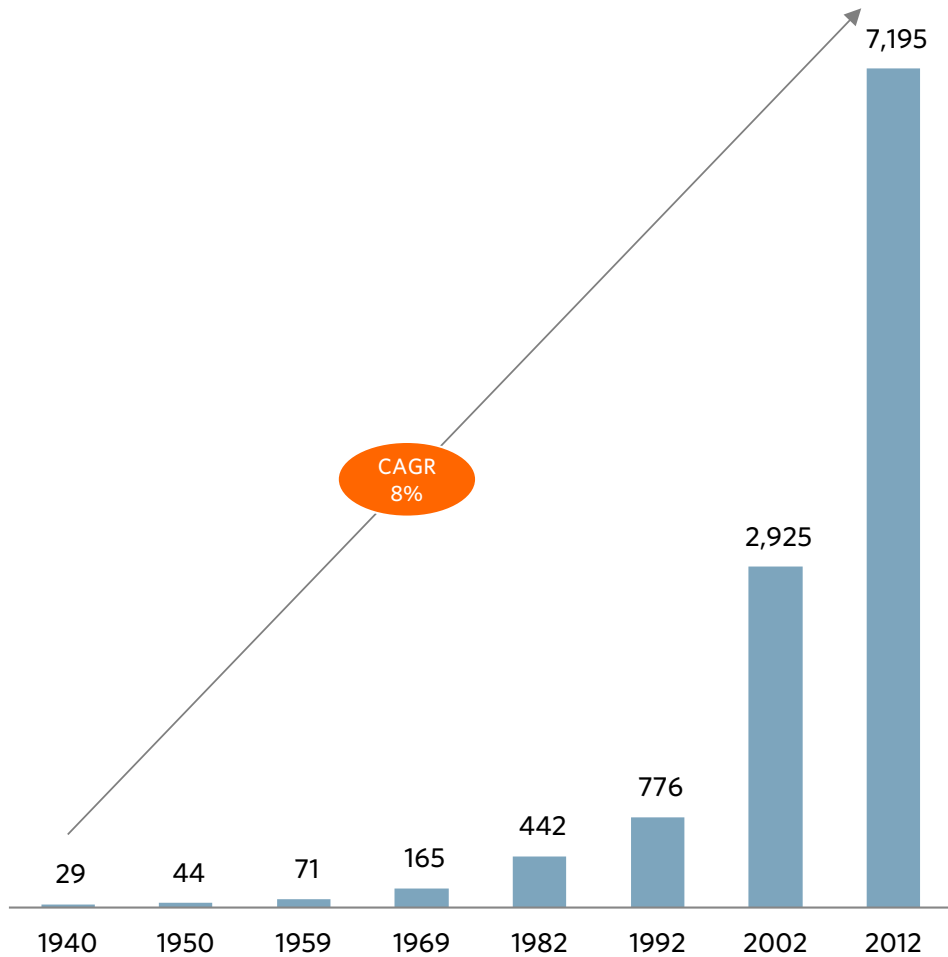
Pigs produced/operation; actual; 2012/2013



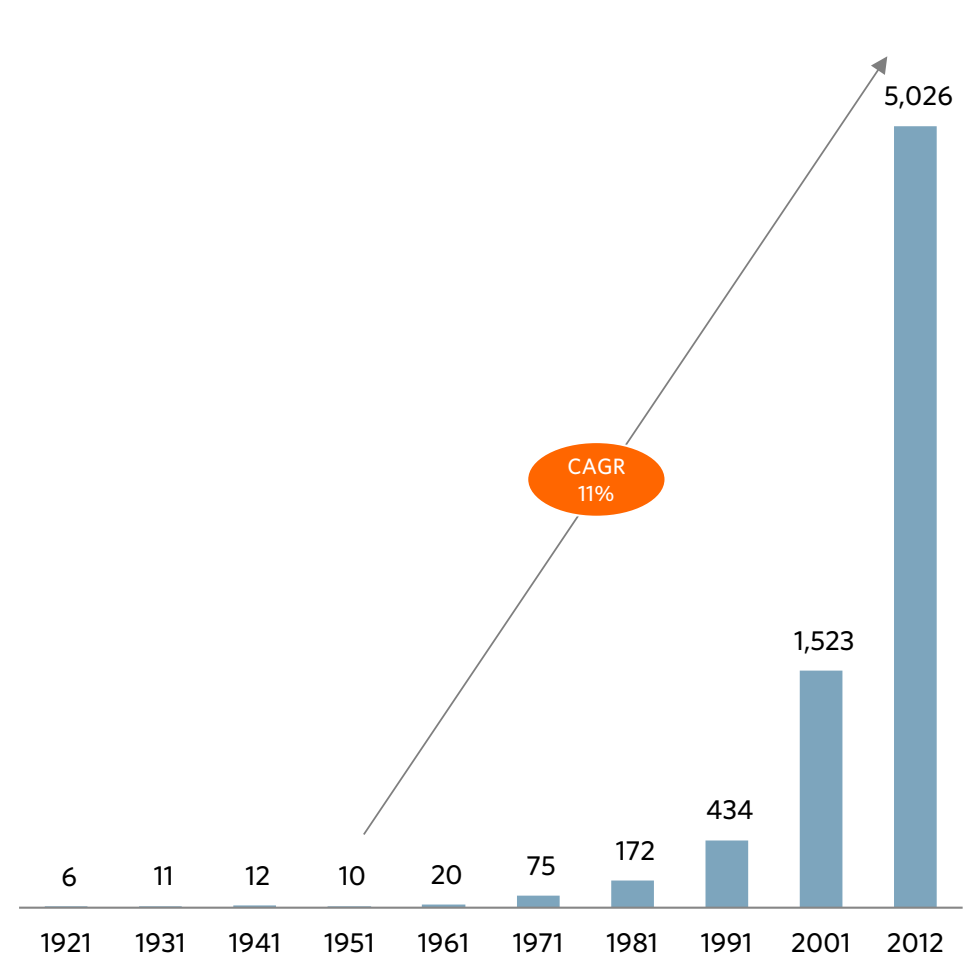
Note: the Smithfield pig operation can easily be seen southwest of Milford, Utah on Google Earth satellite view; Denmark used the GE1000 operations (77% of production); Source: WA (interviews & firm websites); Statistics Denmark; Statistics Canada; USDA NASS Census of Agriculture; Smithfield; Coriolis analysis

Peers suggest Western Australia can continue increasing pigs produced per operational unit at 8-11% per year and that the state should aim to triple average pigs per unit within the near future

AVERAGE PIGS PER OPERATIONAL UNIT: OKLAHOMA
Pigs produced/operation; actual; 1940-2012

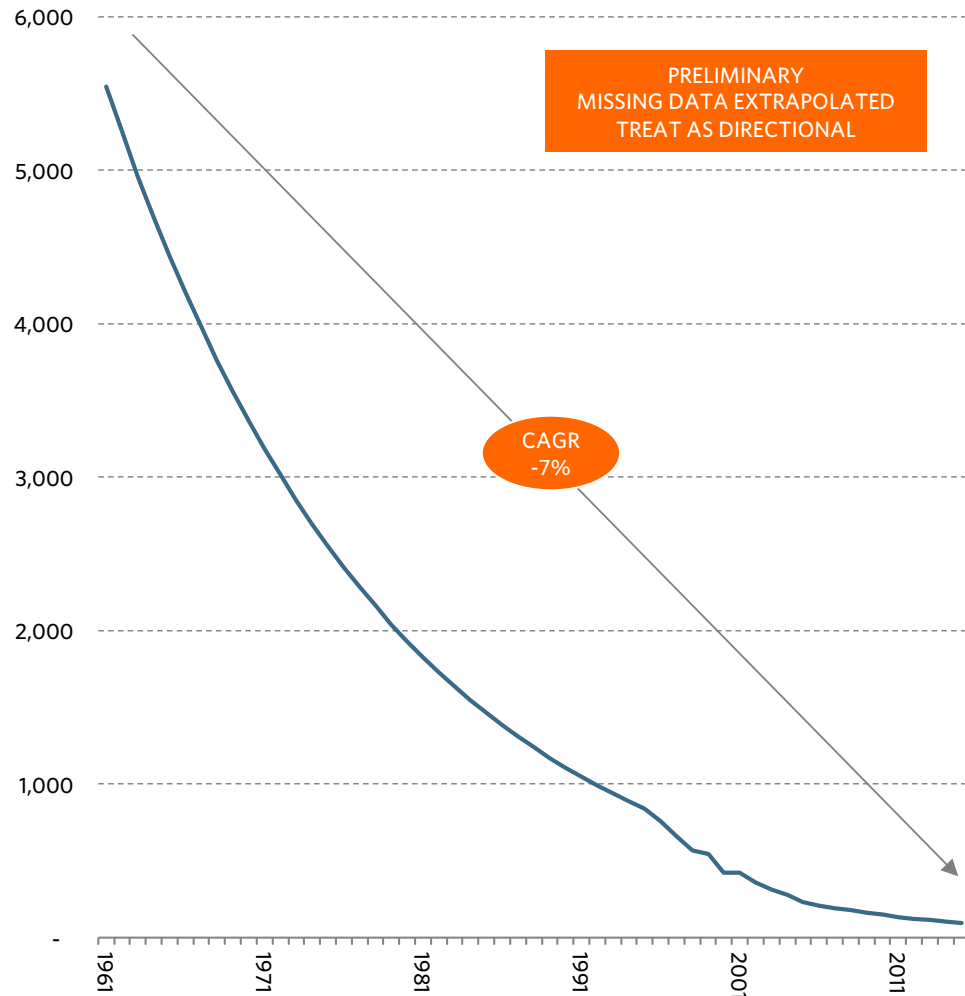


AVERAGE PIGS PER OPERATIONAL UNIT: MANITOBA
Pigs produced/operation; actual; 1921-2012

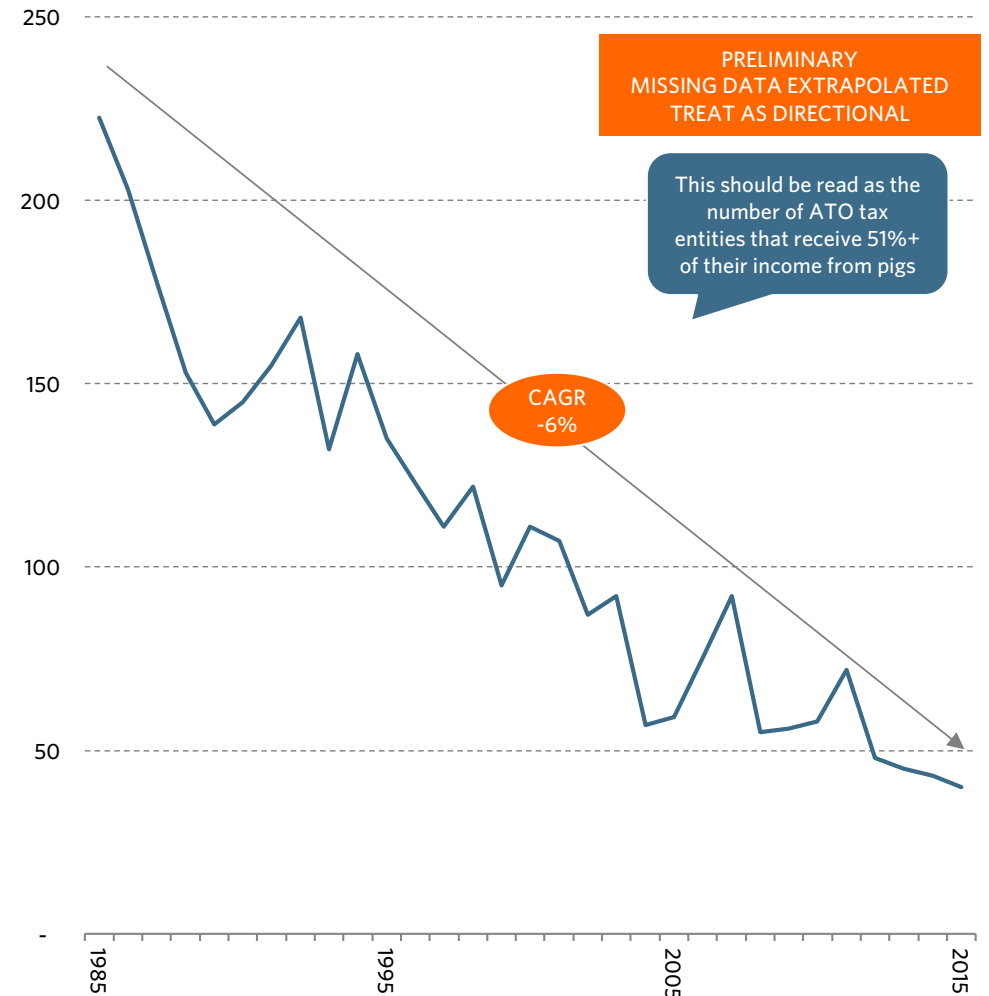


In Western Australia, both the total number of agricultural operations with pigs and the number of specialised pig operations is declining

NUMBER OF PIG OPERATIONS: WESTERN AUSTRALIA
Operational units; 1961-2015



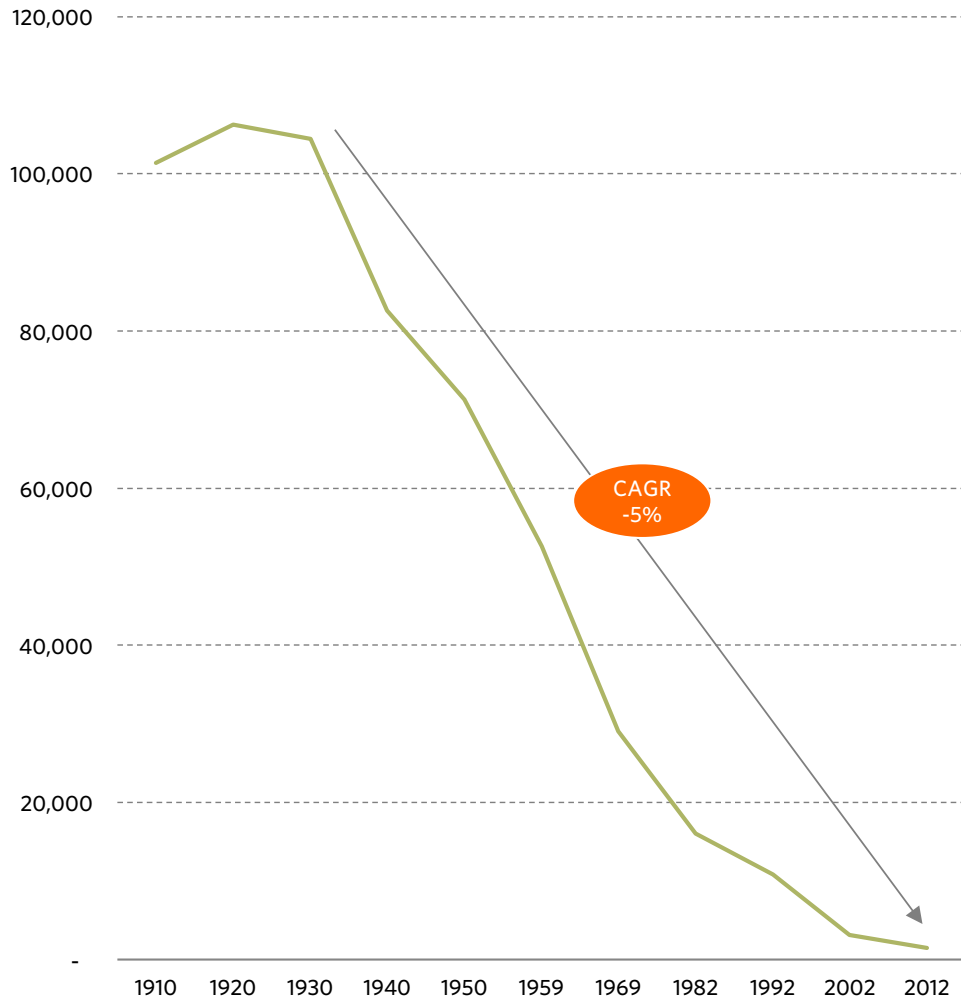
NUMBER OF SPECIALISED PIG OPERATIONS: WA
Business units; 1985-2015



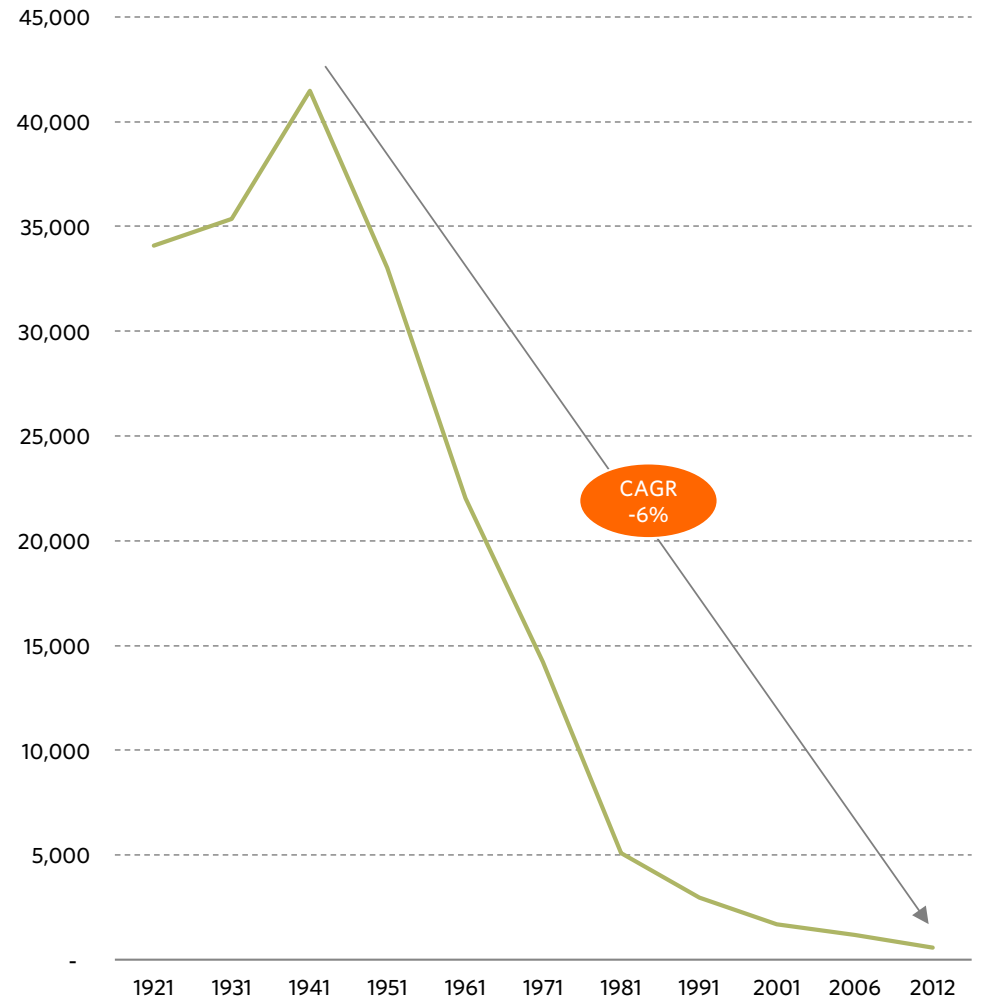
Source: various WA Statistical Register (by year); various ABS publications; Coriolis analysis and estimates

Other countries and regions are also experiencing reductions in pig unit numbers

NUMBER OF OPERATIONS REPORTING HAVING PIGS: NEBRASKA
Geographic units; 1910-2012



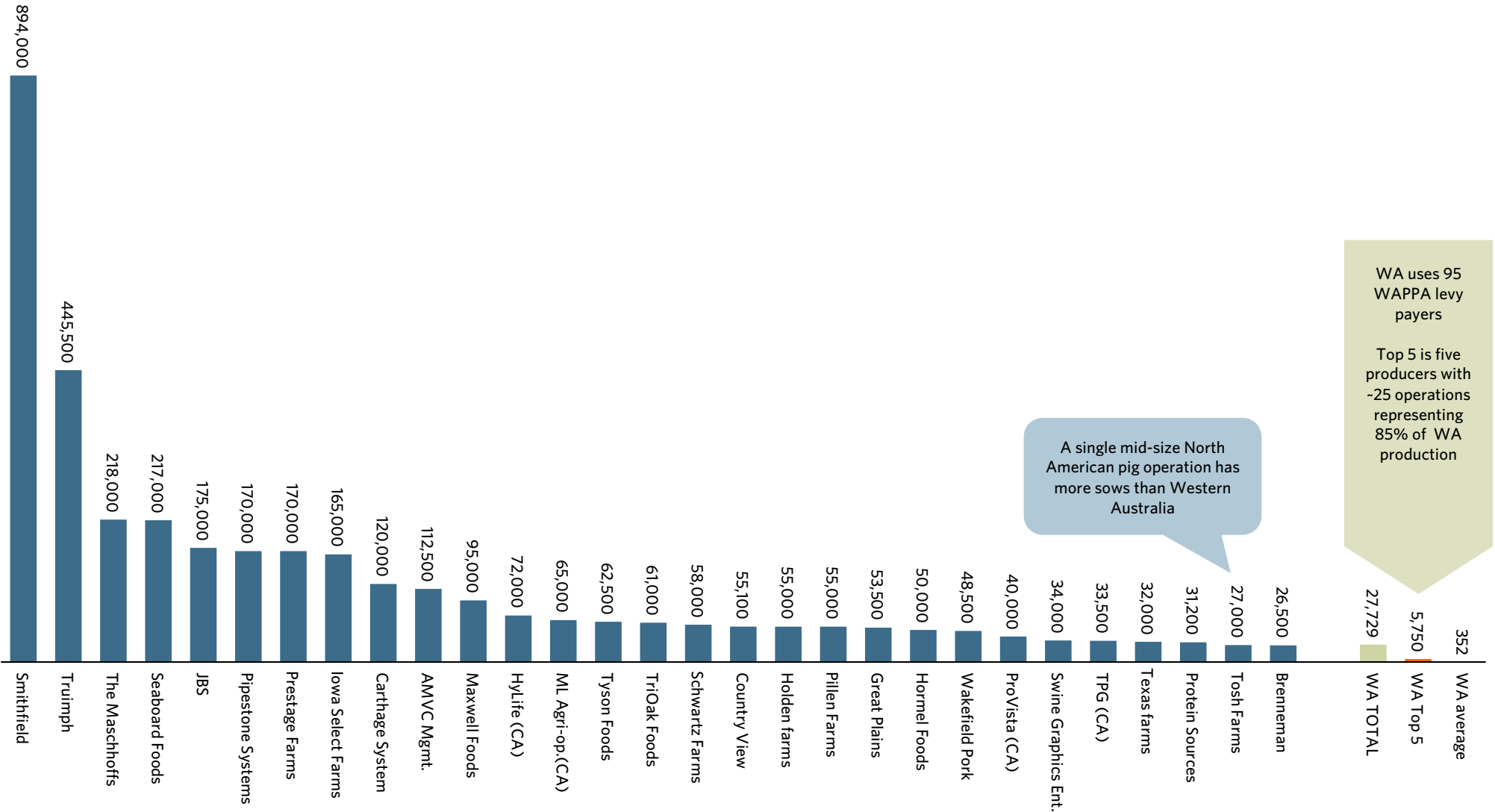
NUMBER OF OPERATIONS REPORTING HAVING PIGS: MANITOBA
Business units; 1921-2012



Comparing Western Australia with the major North American operators suggests it will likely have a number of significantly larger pig operations

NUMBER OF SOWS: TOP 29 US & CANADIAN PIG OPERATIONS VS. WESTERN AUSTRALIA

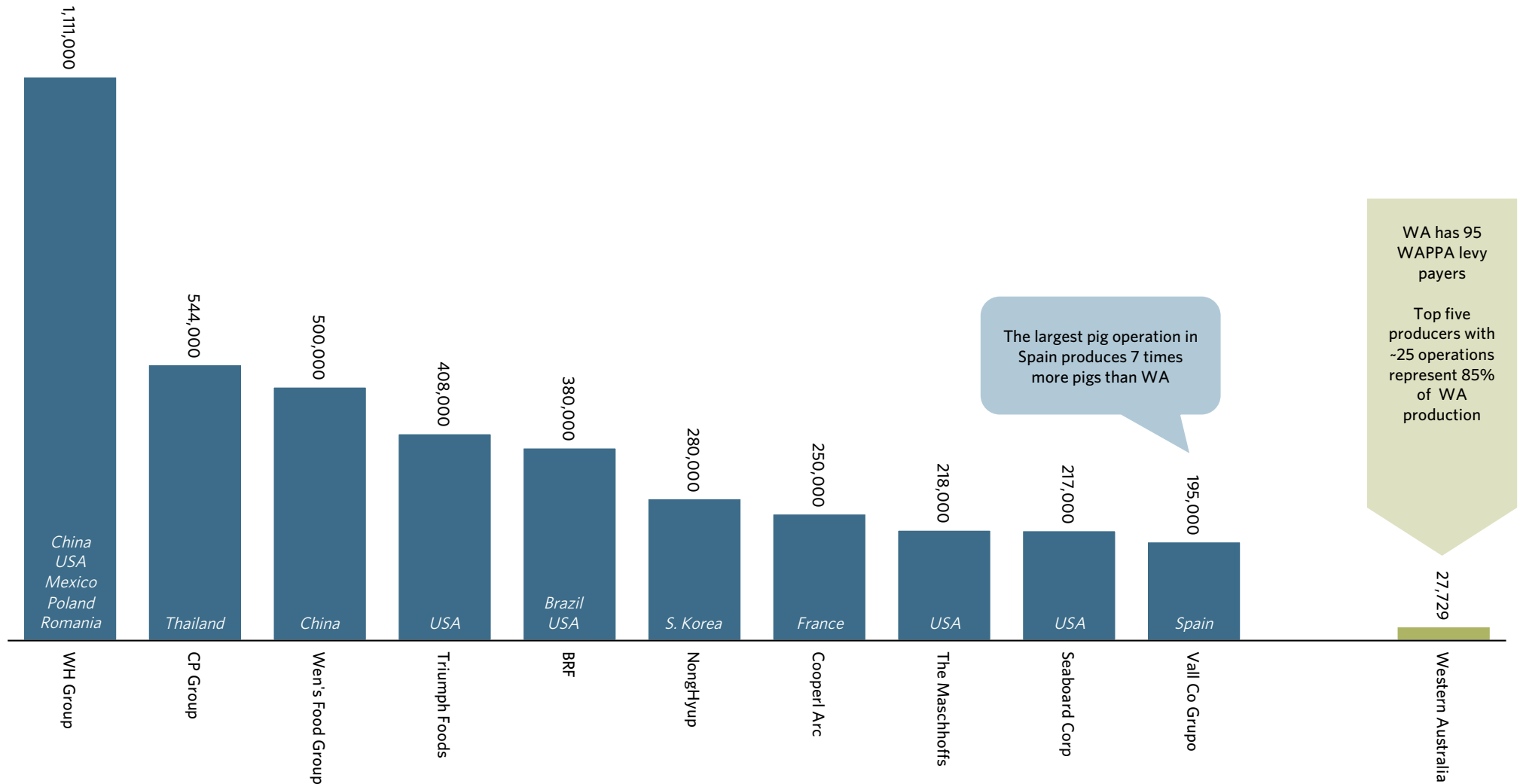
Sows; 2015



Source: Successful farms "Top Pork Powerhouses 2015"; ABS data; Coriolis analysis and estimates

A similar message emerges from global benchmarking

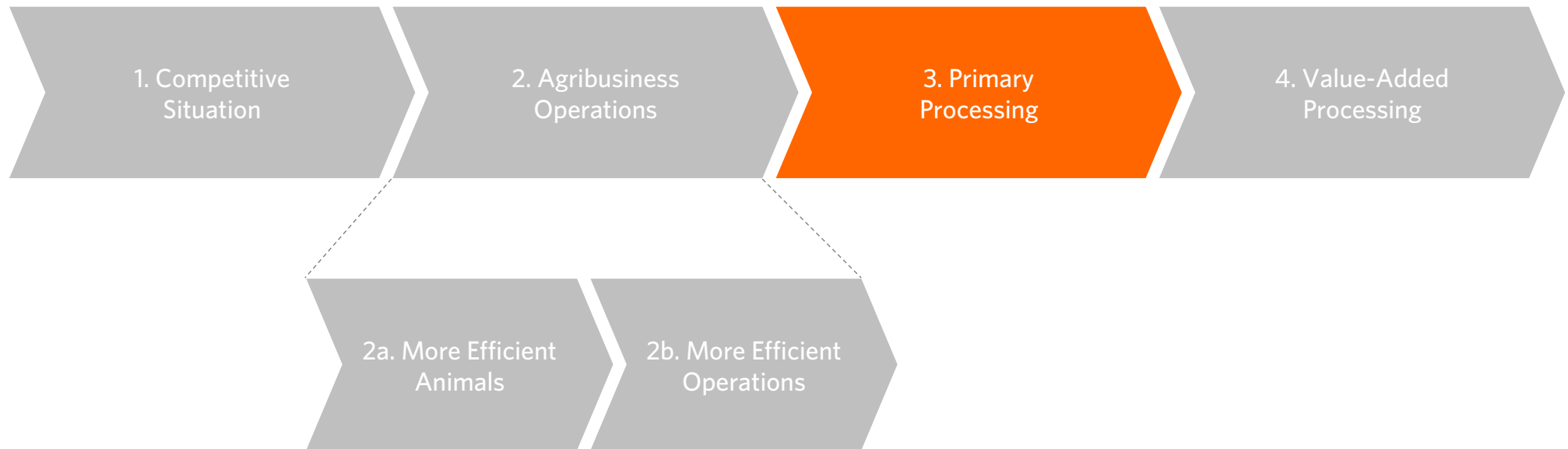
NUMBER OF SOWS: TOP 10 GLOBAL PIG OPERATIONS VS. WESTERN AUSTRALIA
Sows; 000; 2015



Source: Watt AgNet directory; "Top Pork Powerhouses 2015"; ABS data; Coriolis analysis and estimates

The third section of this report looks at the competitive situation in primary processing of pigs

SECTION STRUCTURE: PORK CASE STUDY



Western Australian has a highly consolidated pig primary processing sector; improved sector competitiveness will need to come from greater throughput, not more consolidation

- Western Australia has a highly consolidated pork primary processing sector, with Craig Mostyn Group (CMG) handling approximately 94% of the primary kill
- There is nothing strange in this; other regions show a similar level of consolidation
- The challenge for Western Australia is plant scale and throughput; comparing CMG with the top five USA pork processors highlights that many global competitors have plants 5-10 times larger
- The same message emerges from global benchmarking: Western Australian firms lack scale globally
- Larger modern plants have - among other advantages - higher labour productivity

Western Australia has a highly consolidated pork primary processing sector, with Craig Mostyn Group handling approximately 94% of the primary kill



INCLUDES CORIOLIS ESTIMATES

DAILY PIG PRIMARY KILL CAPACITY: WESTERN AUSTRALIA
Head/day; 2016

TOTAL = 1,900/day



PROFILE OF PRIMARY PROCESSORS OF PORK IN WA
2015 or as available

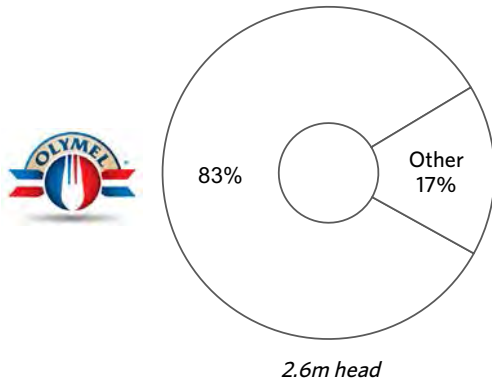
| |  |  | TOTAL |
|-----------------------------------|---|---|---------------|
| % of WA primary pig kill capacity | 94% | 6% | 100% |
| Capacity - Weekly | 12,500 | ~800 | 13,300 |
| Capacity - Daily | 2,500 (5 day) | ~160 (5 days) | 2,660 (5 day) |
| Annual pig throughput | 566,000 | ~35,900 | 601,900 (15e) |
| Own pig operations? | Yes | No | - |
| Contract pig operations? | Yes | ? | - |
| Toll processing? | Yes | No | - |
| Toll customers | Milne/Plantagenet Westpork D'Orsogna Others | | |
| Other species? | No | Yes (beef, pork & lamb) | - |

There is nothing strange in this; other regions show a similar level of consolidation

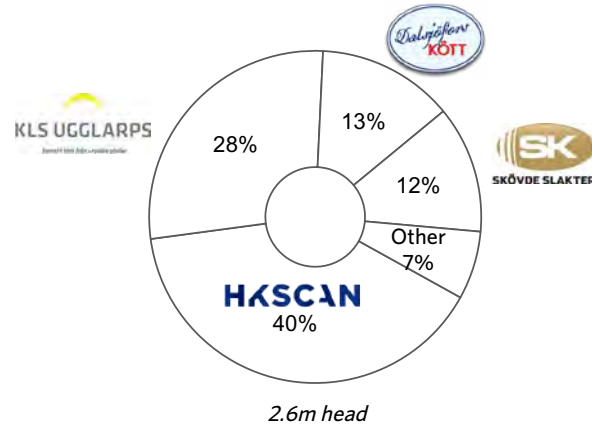
PIG PROCESSING CAPACITY SHARE: SELECT REGIONS OR COUNTRIES

% of kill capacity; 2015 or as available

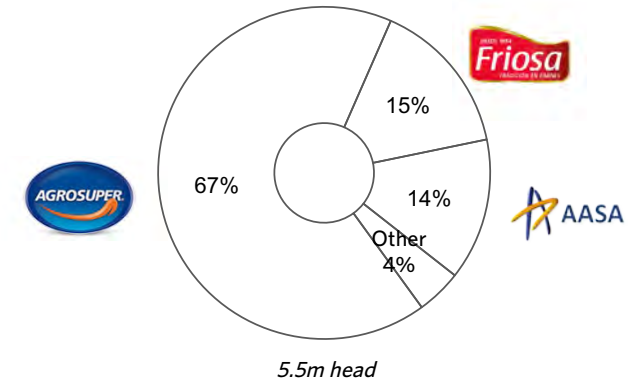
Alberta



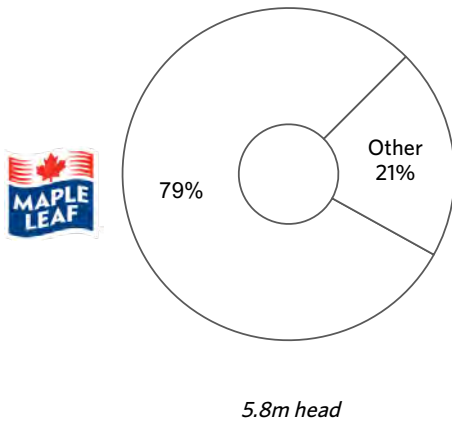
Sweden



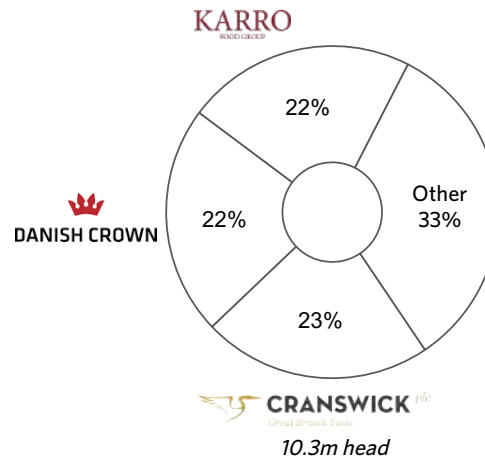
Chile



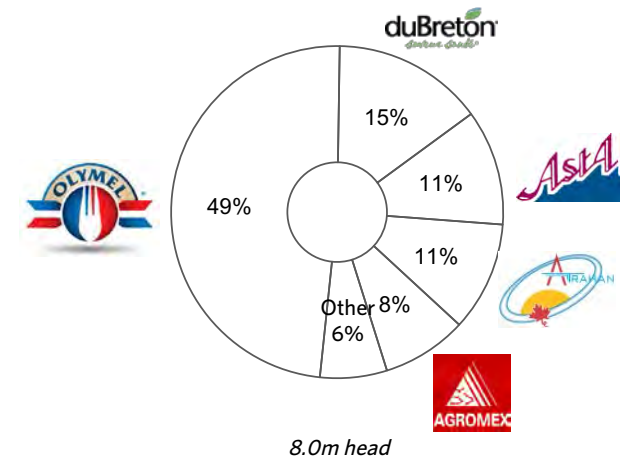
Manitoba



United Kingdom



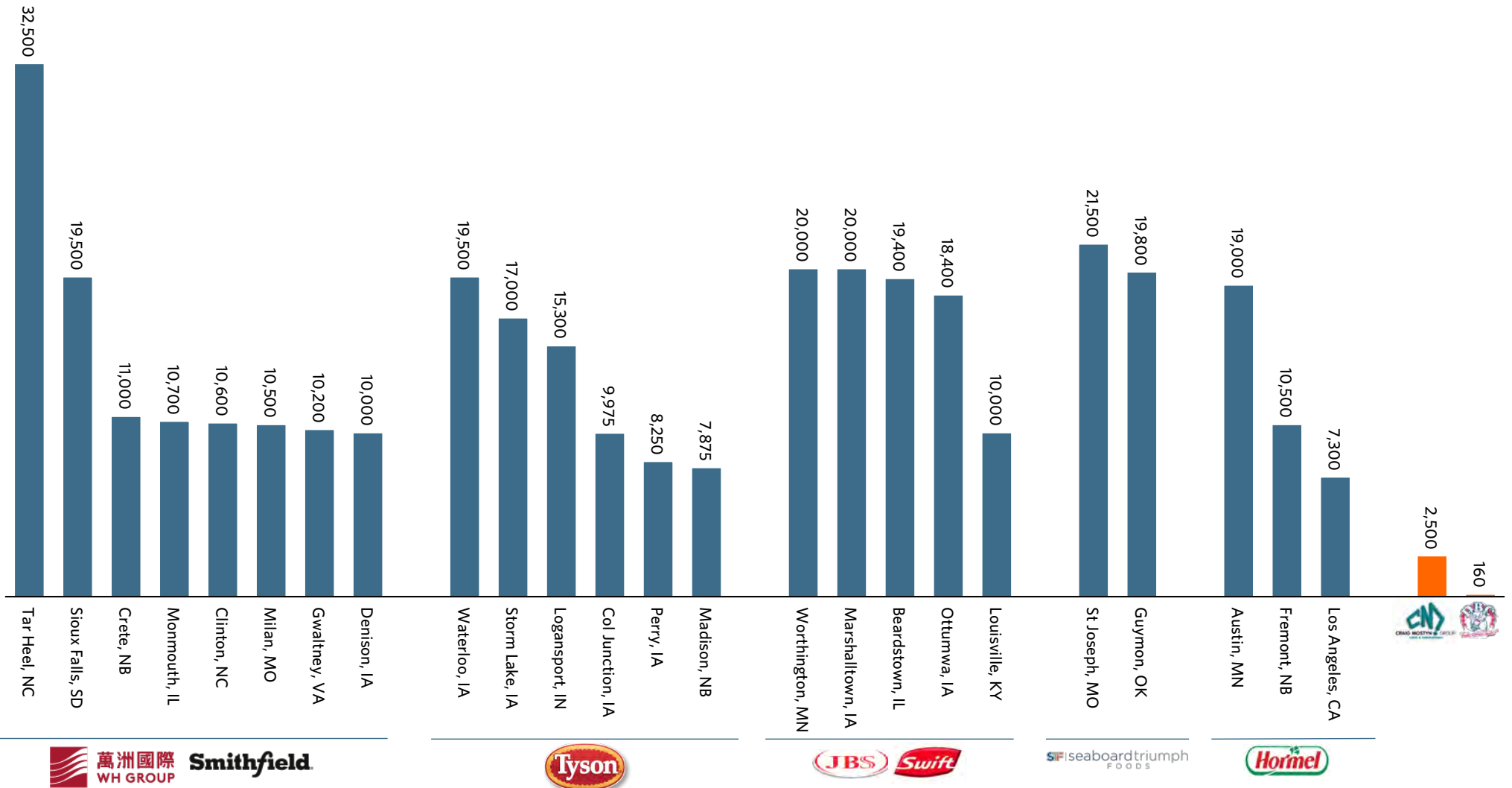
Quebec



Source: WattAg; various others; Coriolis analysis and estimates

The challenge for Western Australia is plant scale and throughput; comparing CMG with the top five USA pork processors highlights that many global competitors have plants 5-10 times larger

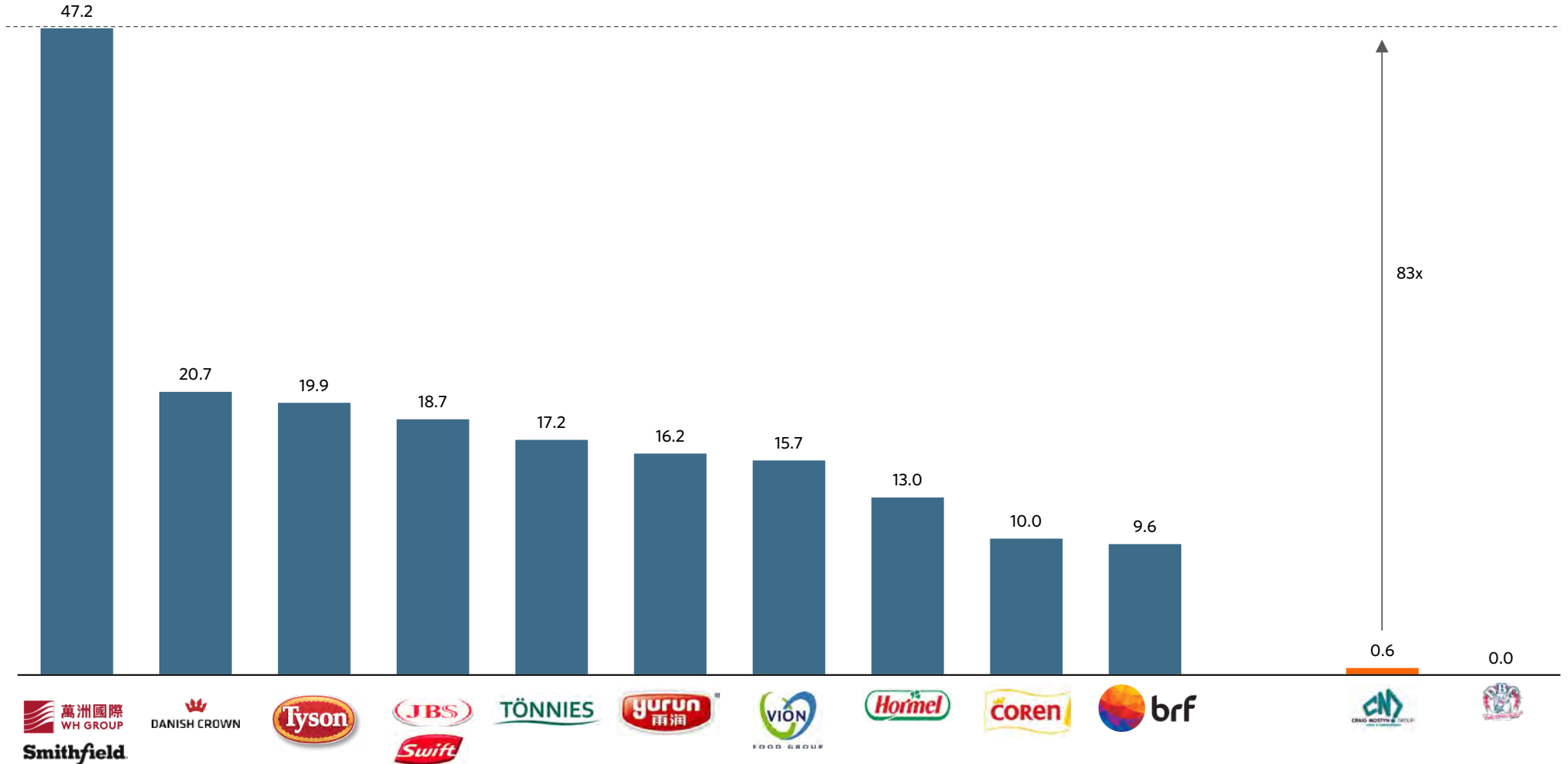
DAILY PIG SLAUGHTER PLANT CAPACITY: TOP 5 US PORK PROCESSORS VS. WESTERN AUSTRALIA
Kill/day; 2015



Source: National Hog Farmer magazine Aug 2015; industry interviews; industry sources; Coriolis estimates and analysis

The same message emerges from global benchmarking: Western Australian firms lack scale globally

ANNUAL PIG HEAD SLAUGHTERED: TOP 10 GLOBAL FIRMS VS. WESTERN AUSTRALIA
Kill/year; m; 2015

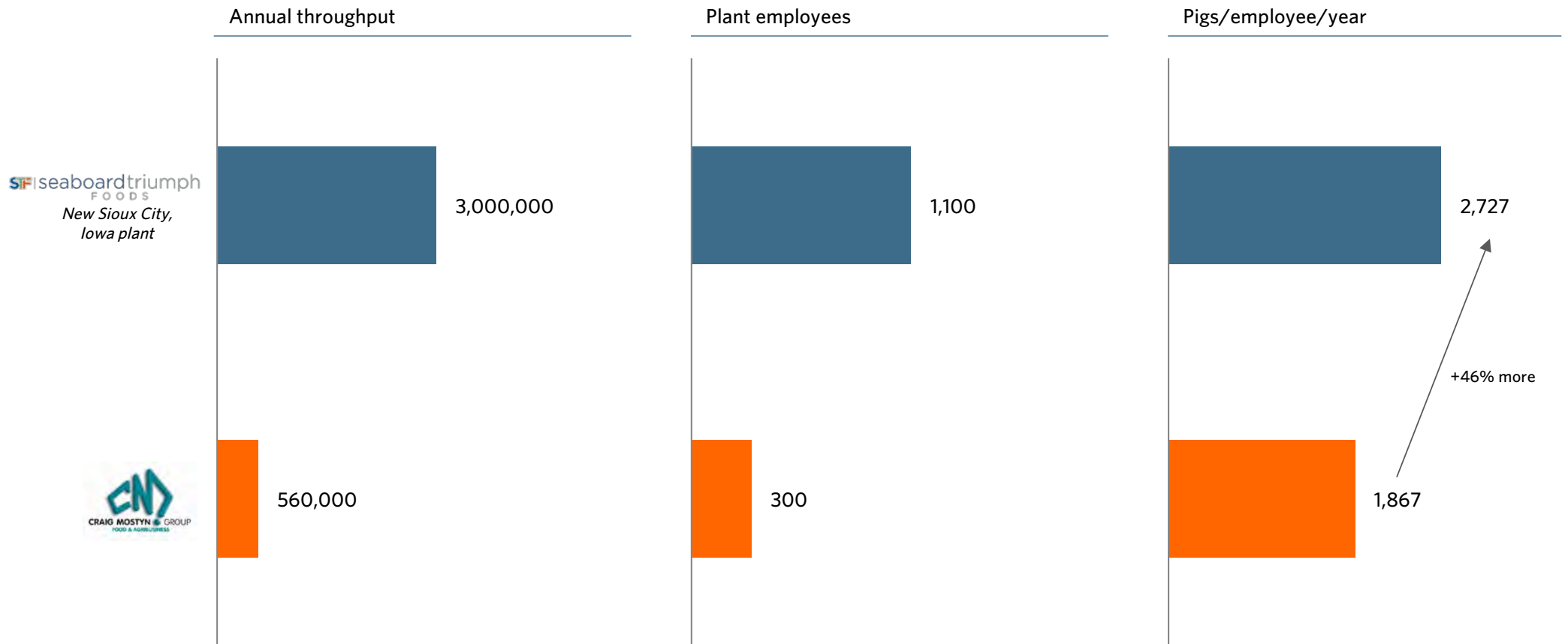


Source: WattAgNet; industry interviews; industry sources; Coriolis estimates and analysis

Larger modern plants have – among other advantages – higher labour productivity

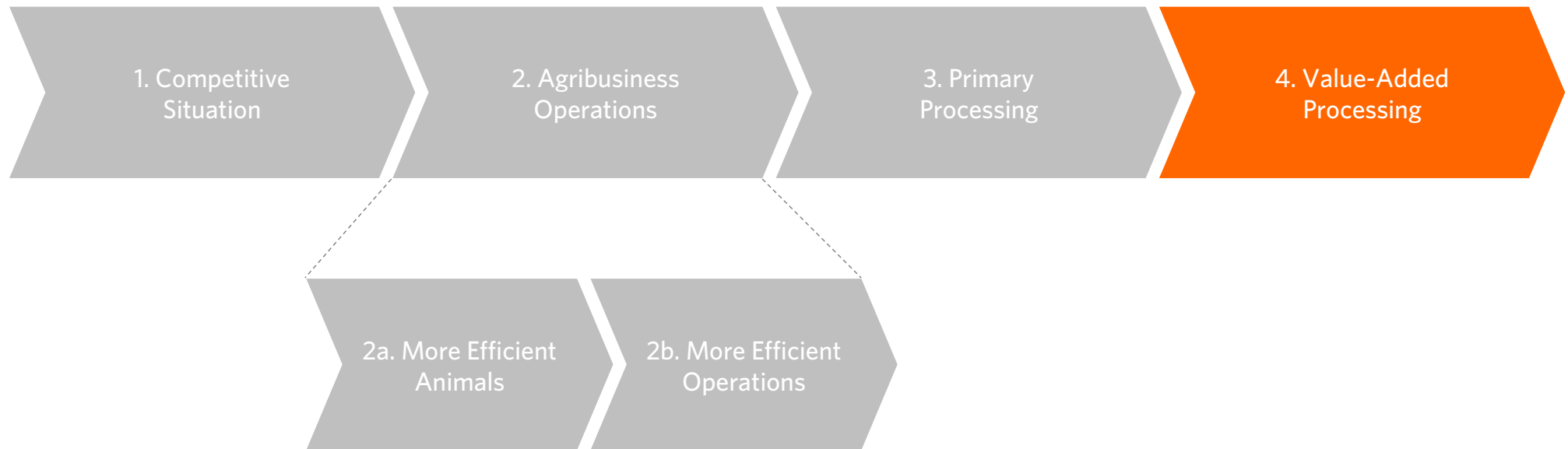
EXAMPLE: BASIC PLANT METRICS: NEW LARGE U.S. PLANT VS. CRAIG MOSTYN

Head; people; 2015



The final section of this case study looks briefly at the competitive situation in the value-added pork processing sector

SECTION STRUCTURE: PORK CASE STUDY



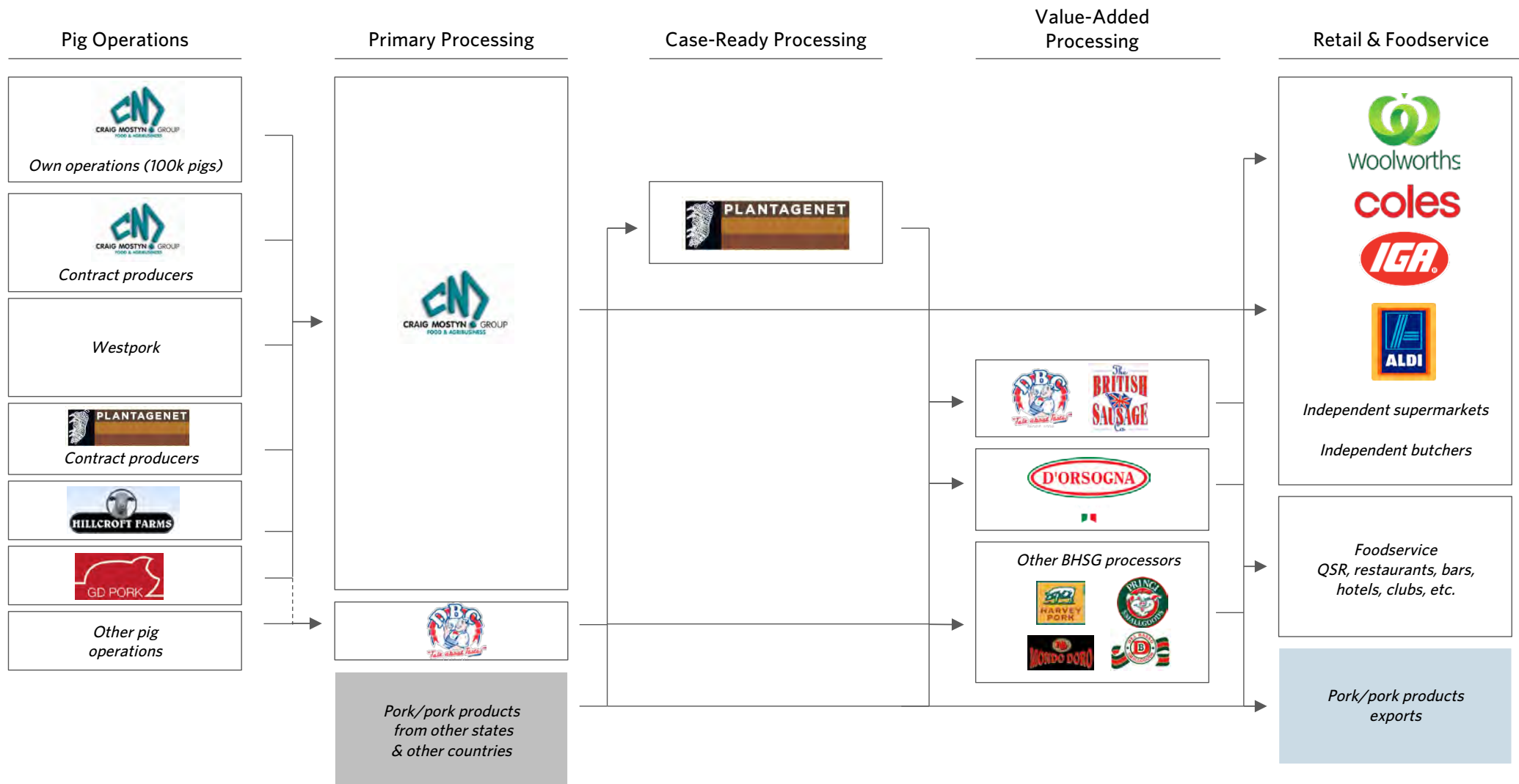
Western Australia has a robust and innovative value-added pork products sector; unfortunately it is hampered by an uncompetitive primary sector and so is growing production through imports

- Western Australia has a handful of value-added pork processors at any scale
- In practice, the majority of the raw material being used by these firms is coming from frozen imports
 - These frozen imports are coming from the same countries that are outcompeting Western Australia in Singapore and New Zealand
- As a result of being reliant on frozen imports, the industry will likely struggle long-run to compete in export markets with products from competitive regions
- Western Australian bacon, ham & smallgoods processors lack scale relative to Australian or global peers; D'Orsogna's key competitor Primo is 10 times larger; Primo is, in turn, part of a meat processor 260 times larger

Western Australia has a handful of value-added pork processors at any scale

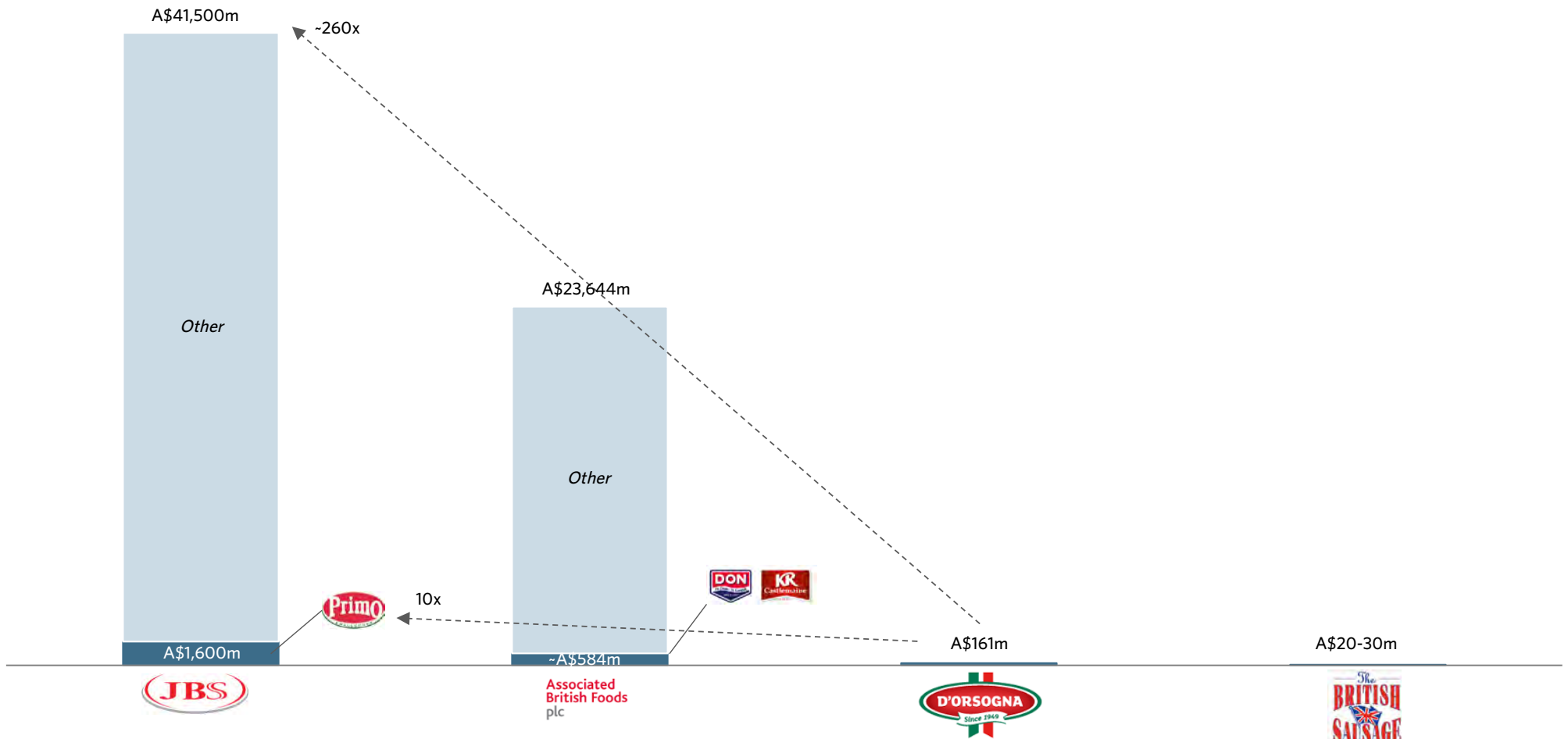
STRUCTURE OF WESTERN AUSTRALIAN PORK & PORK PRODUCTS SUPPLY CHAIN

Simplified model; 2016



Western Australian bacon, ham & smallgoods processors lack scale relative to Australian or global peers; D’Orsogna’s key competitor Primo is 10 times larger; Primo is, in turn, part of a meat processor 260 times larger

COMPARISON OF REVENUE: TOP TWO AUSTRALIAN AND WESTERN AUSTRALIAN BH&SG MANUFACTURERS
A\$m; 2015 or as available



Source: various published articles & sources; Coriolis estimates & analysis

DOCUMENT STRUCTURE

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| Document the practices that characterise international competitiveness | 37 |
| Define mechanisms to promote achievement of international competitiveness | 66 |
| Recommend how DAFWA will support WA agrifood businesses to implement the key findings of the investigation to improve and achieve international competitiveness | 84 |
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| Appendix 1.4 – Citrus Case Study | 214 |
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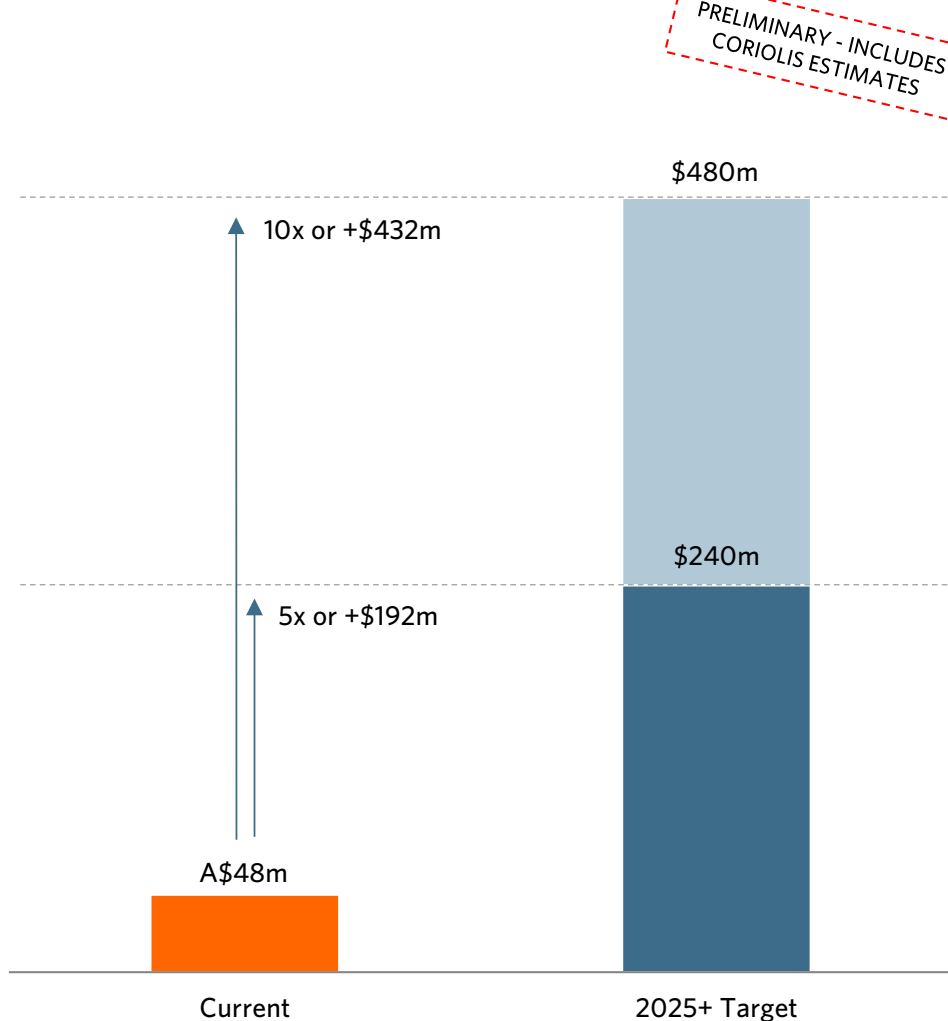


The Government has set a goal of doubling agrifood industry value (predominantly through exports); as some sectors will struggle to grow, others need to grow more; WA dairy exports need to grow 5-10x; this is equivalent to matching the current performance of Chile, Egypt or South Africa

WA DAIRY EXPORT VALUE GROWTH TARGET

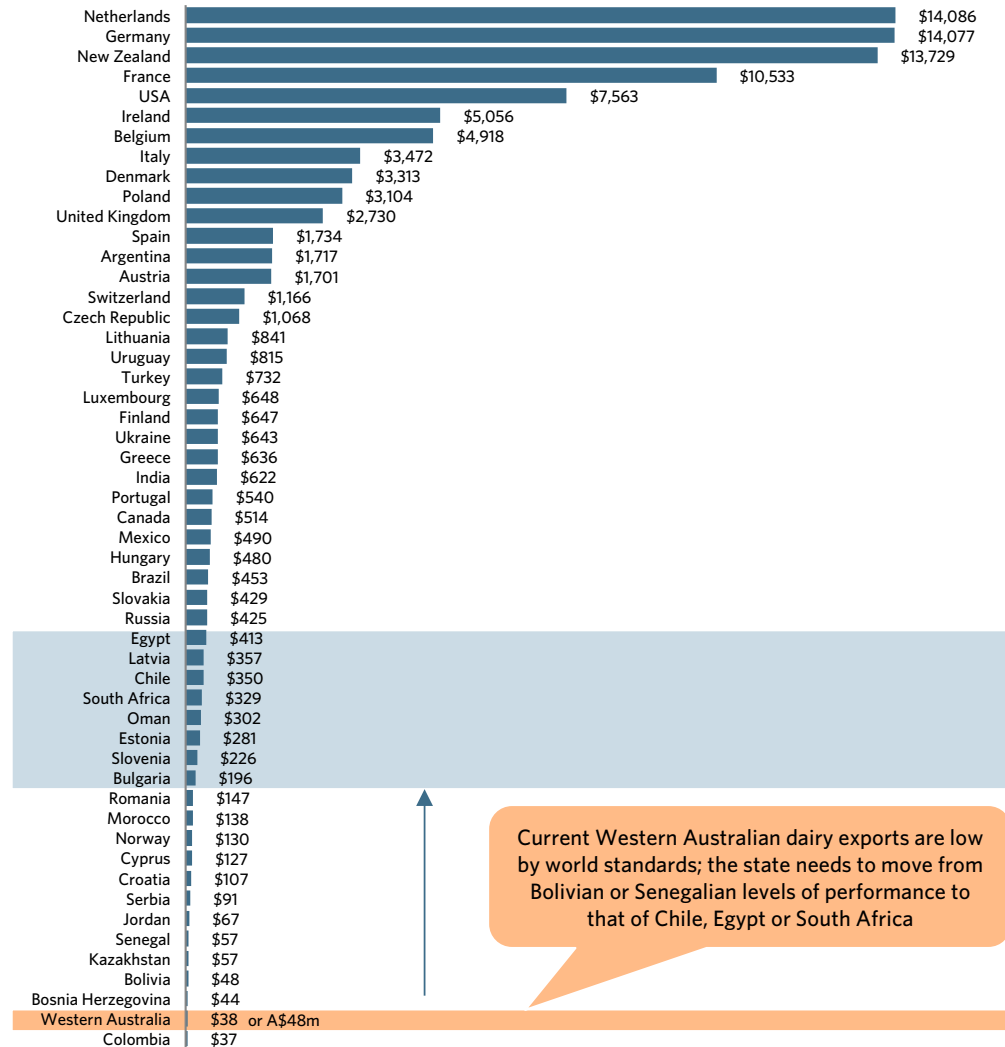
A\$; m; 2015 vs. 2025+ target

PRELIMINARY - INCLUDES CORIOLIS ESTIMATES



DAIRY EXPORT VALUE: WA VS. SELECT

US\$; m; 2014/15



Current Western Australian dairy exports are low by world standards; the state needs to move from Bolivian or Senegalian levels of performance to that of Chile, Egypt or South Africa

Note: WA pork meat export value not available (access/confidentiality issues with ABS); WA based on interviews

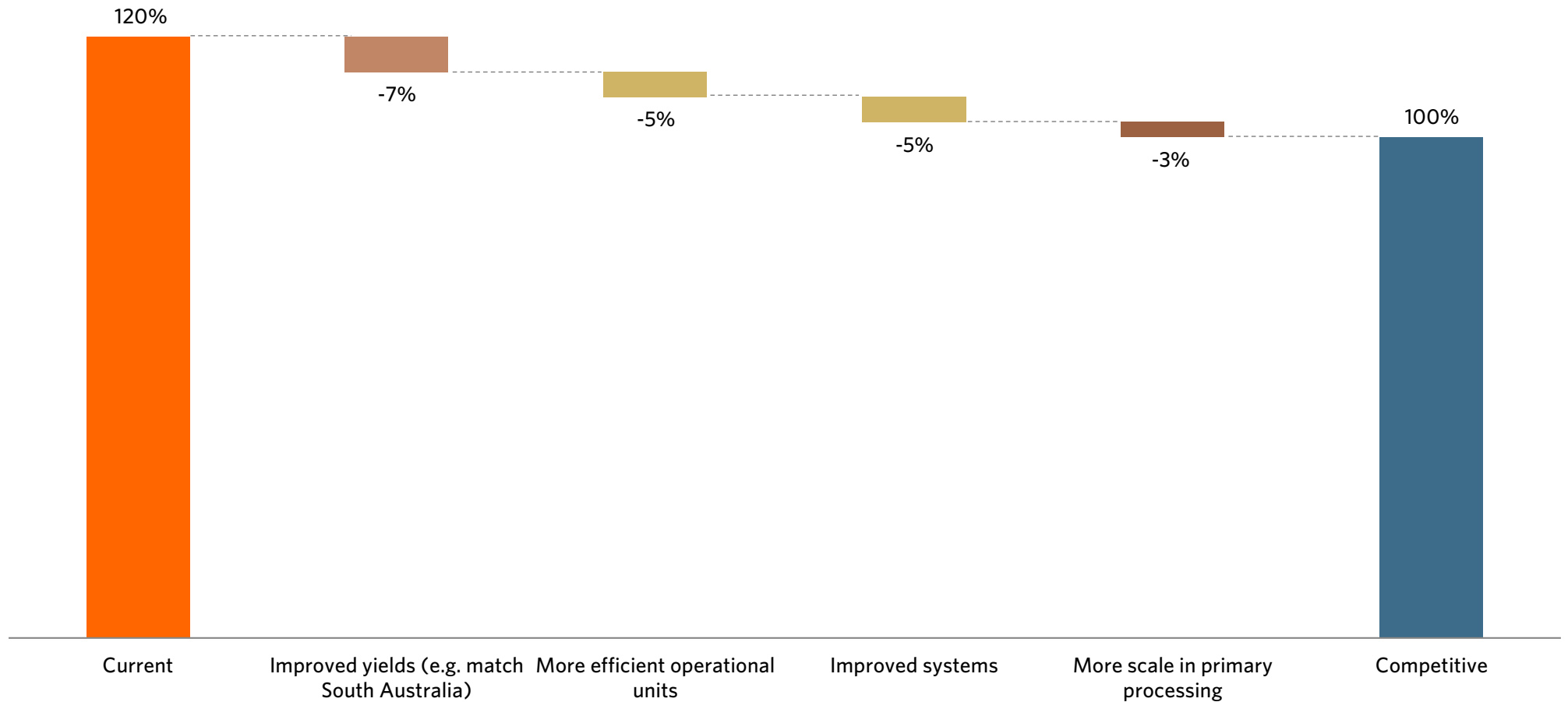
Source: industry interviews (WA export estimate); UN Comtrade database (uses SITC rev2 code 0113); x-rate used = A\$1=US\$0.80; Coriolis classifications and analysis

While Western Australia is within sight of a globally competitive dairy industry, getting there will involve continued improvement by all parties

POTENTIAL PATHWAY TO COMPETITIVENESS FOR WESTERN AUSTRALIAN DAIRY INDUSTRY

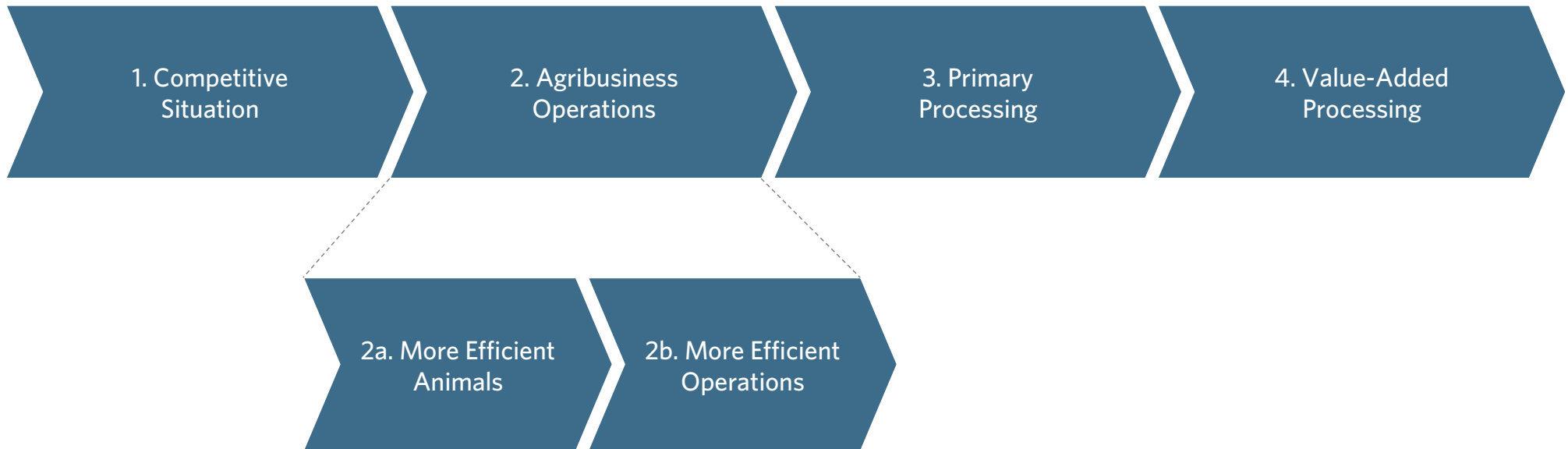
% of current cost; 2015

PRELIMINARY
INCLUDES
CORIOLIS ESTIMATES



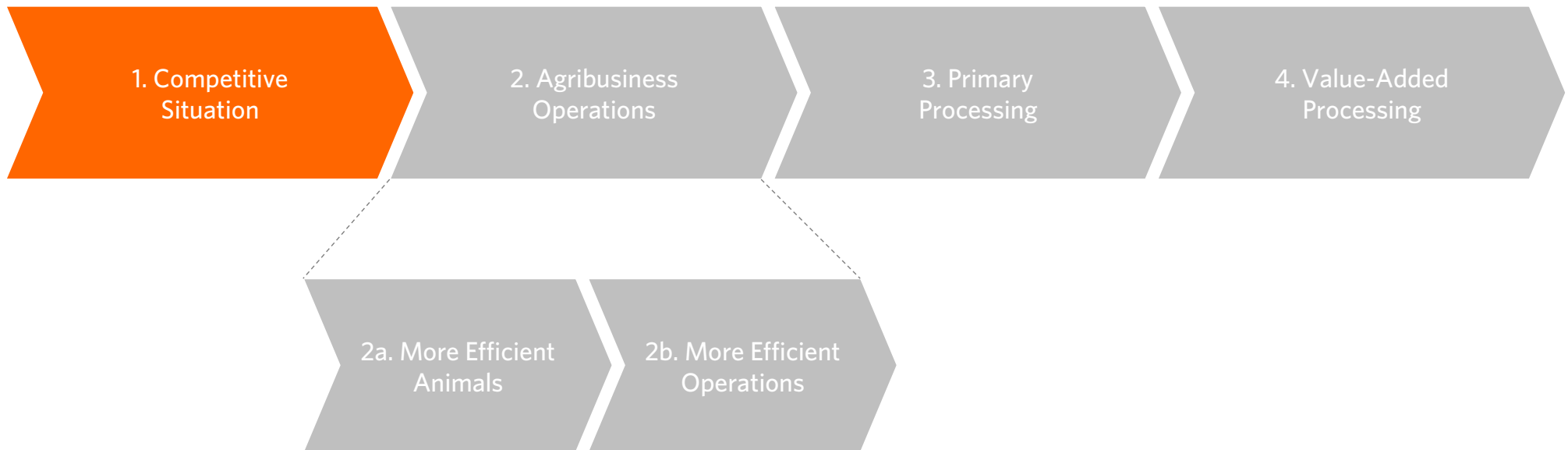
This case study on the relative competitiveness of the Western Australian dairy industry is structured as follows

SECTION STRUCTURE: DAIRY CASE STUDY



The first section of this case study reviews the current competitive situation and finds Western Australian competitiveness declining rapidly

SECTION STRUCTURE: DAIRY CASE STUDY

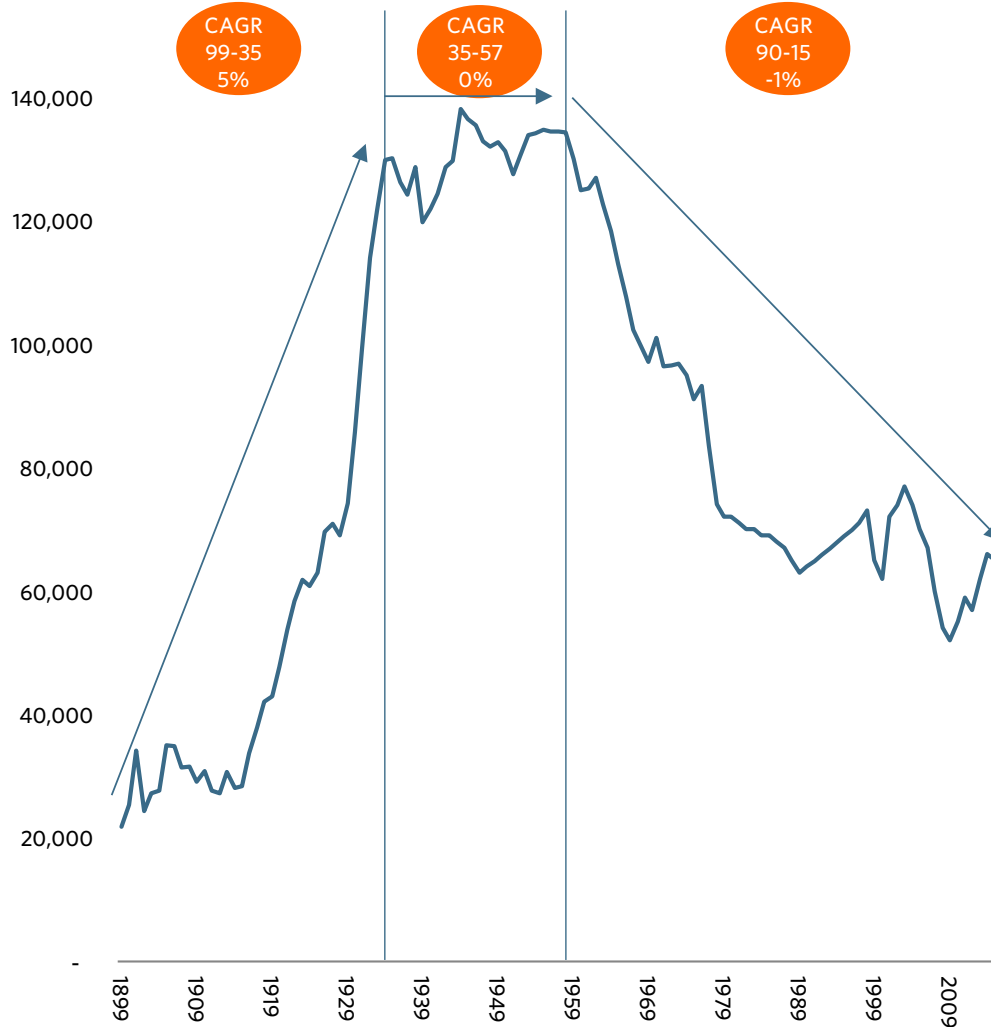


Western Australian dairy competitiveness is trending non-positively

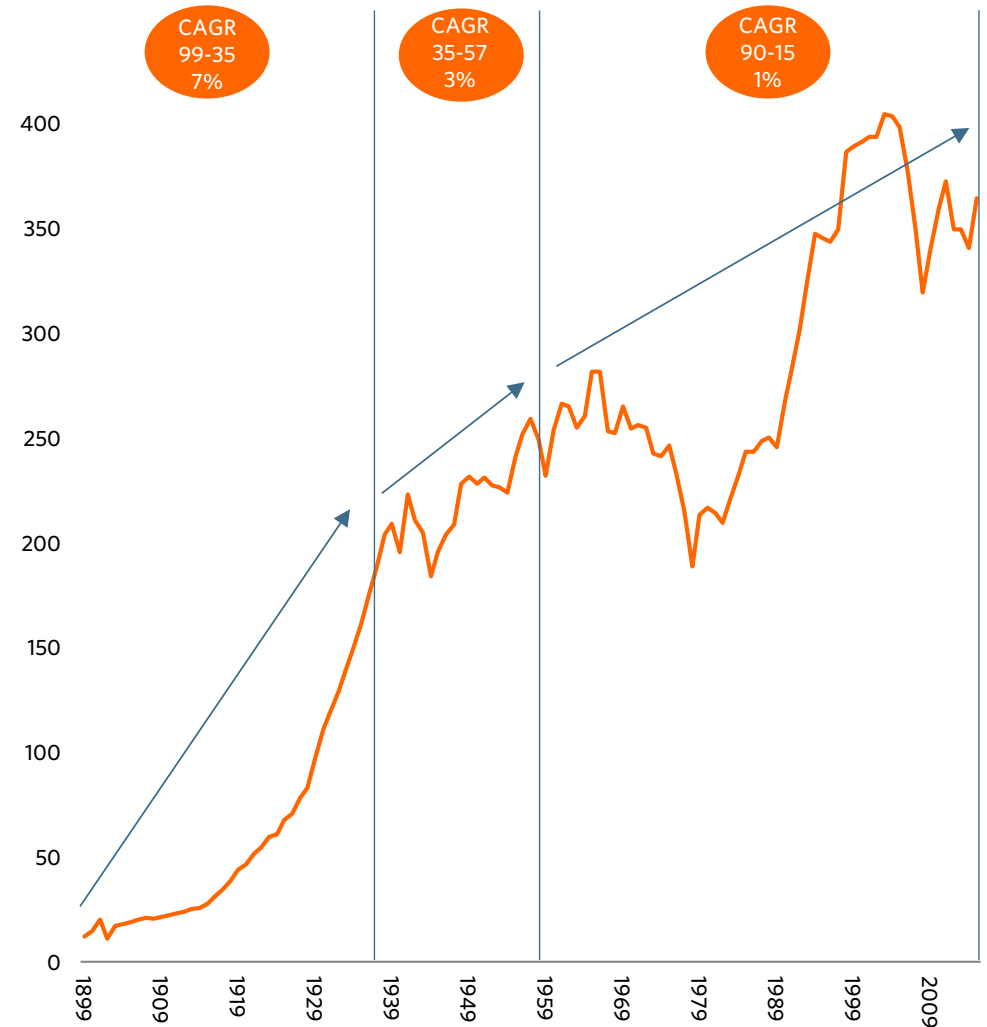
- The Western Australian dairy industry is not creating meaningful long-term growth, with cow numbers trending down and milk production growing only slowly
- Western Australia is not growing dairy exports and export products outside milk have failed; milk exports are dependent on six key markets in Asia (Singapore, Malaysia, Philippines, South Korea, Hong Kong & China)
- Australia is losing import market share in fluid milk across all six of its key export markets
- Climatic peer group countries demonstrate robust dairy export growth is possible

The Western Australian dairy industry is not creating meaningful long-term growth, with cow numbers trending down and milk production growing only slowly

NUMBER OF DAIRY COWS IN MILK & DRY IN WA
Animals; 1899-2015



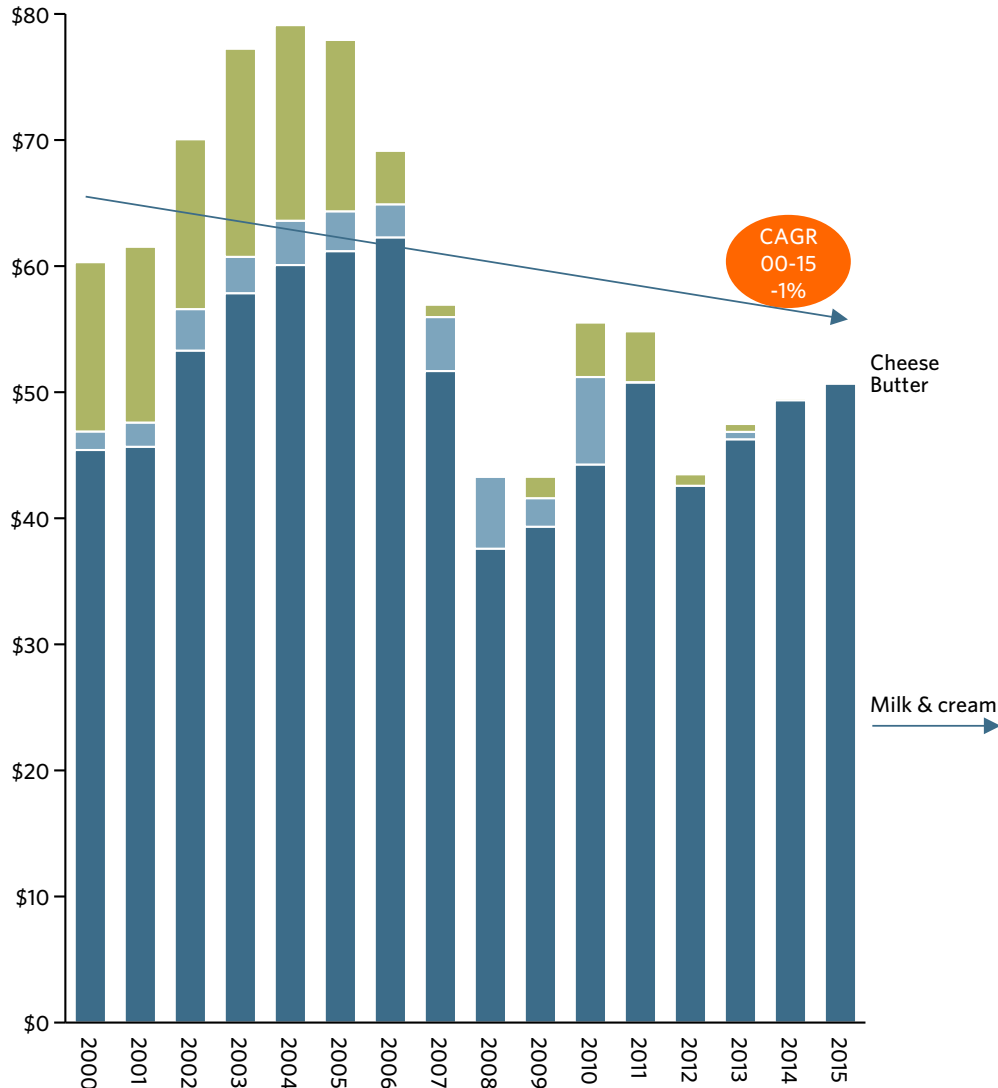
MILK PRODUCTION IN WESTERN AUSTRALIA
Litres; m; 1899-2015



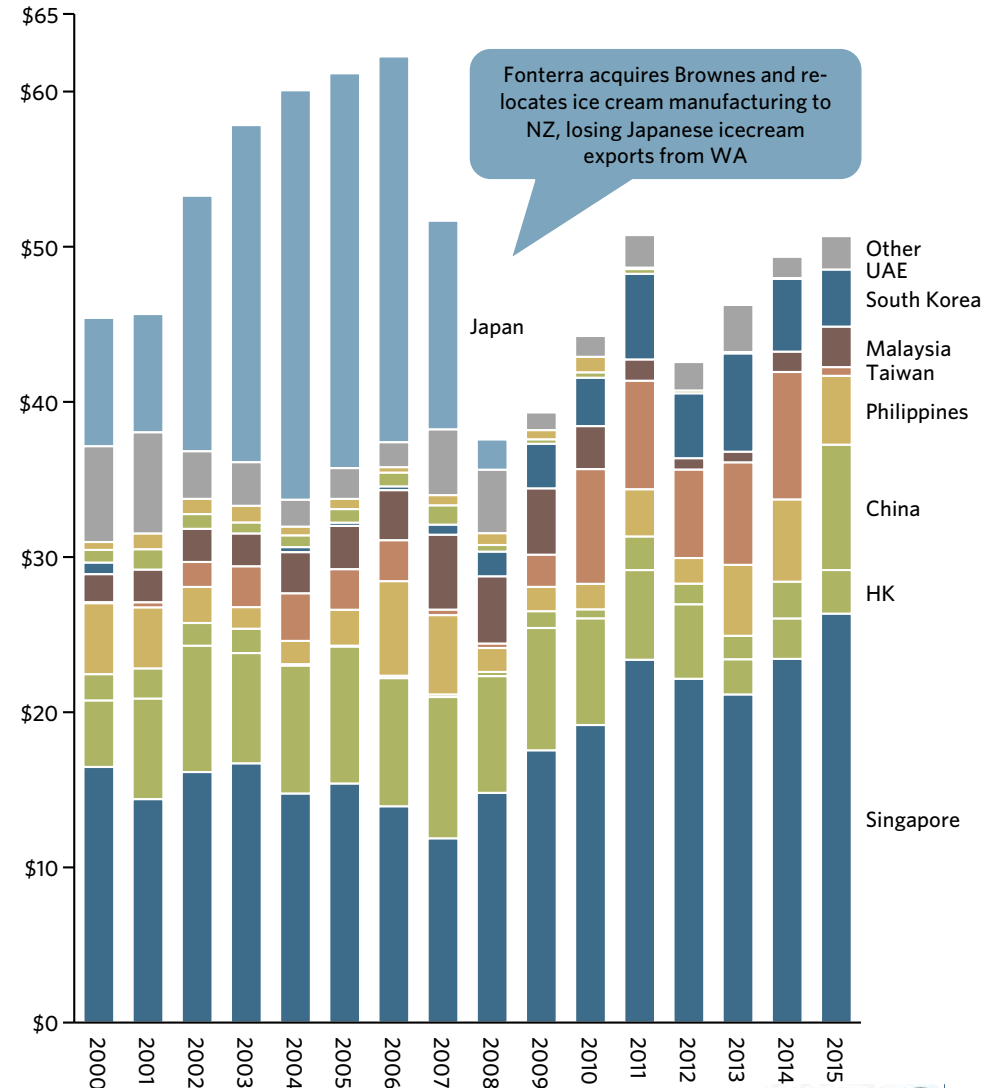
Source: various WA Statistical Register (by year); various ABS publications; Coriolis analysis and estimates

Western Australia is not growing dairy exports; milk exports are dependent on six key markets in Asia (Singapore, Malaysia, Philippines, South Korea, Hong Kong & China)

WESTERN AUSTRALIA DAIRY EXPORT VALUE BY TYPE
A\$, m; 1996-2015



WESTERN AUSTRALIA MILK/CREAM EXPORT VALUE BY COUNTRY
A\$, m; 1996-2015

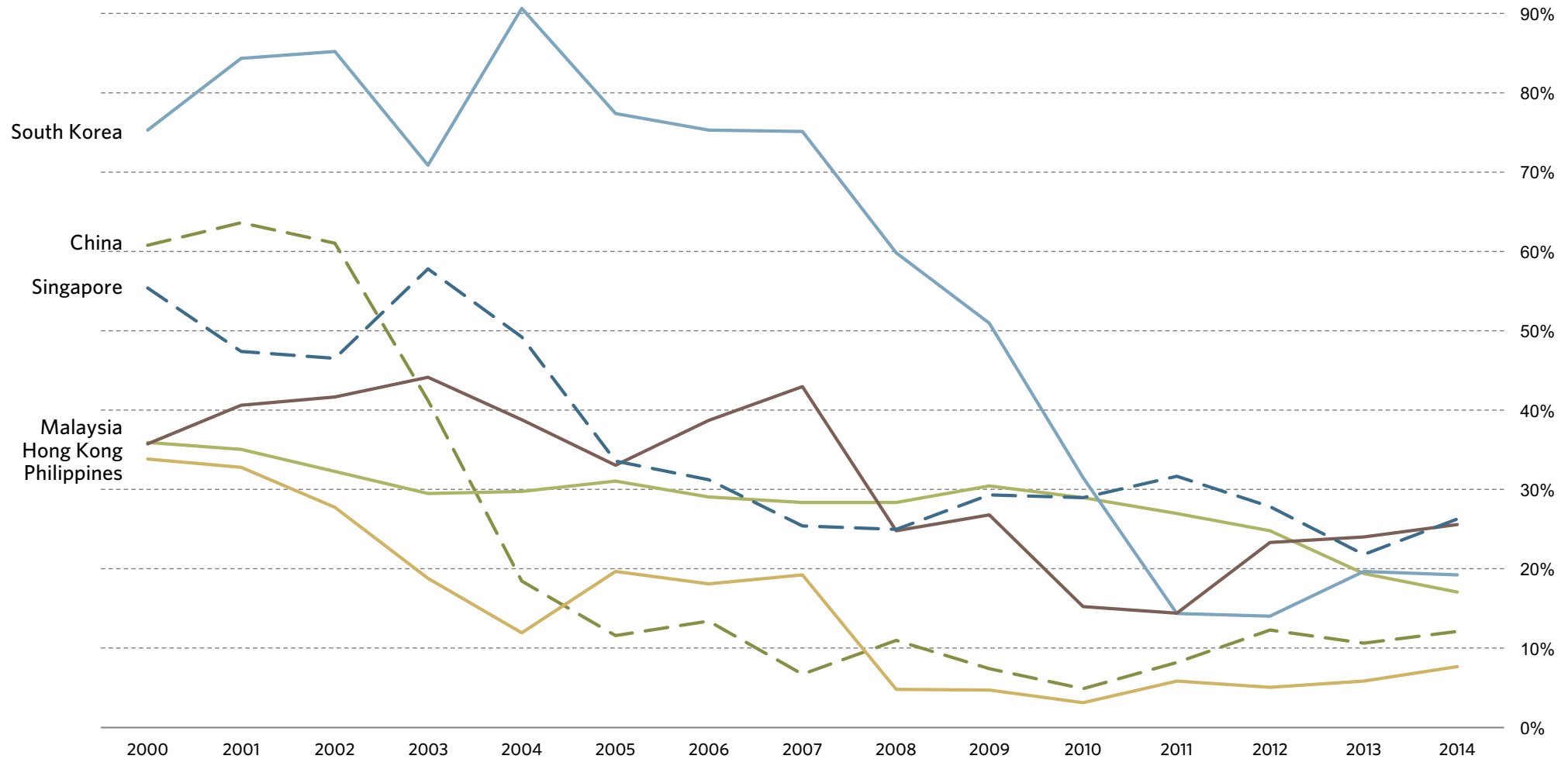


Source: ABS (abs.stat database); Coriolis classifications and analysis

Australia is losing import market share in fluid milk across all six of its key export markets

IMPORT MARKET SHARE OF AUSTRALIAN FLUID MILK (HS0401) INTO SELECT ASIAN MARKETS

% of value; 2000-2014 or 2015 as available

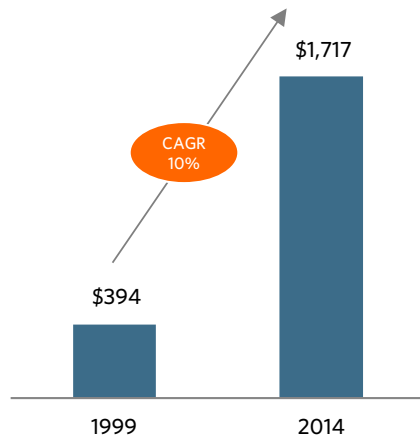


Climatic peer group countries demonstrate robust dairy export growth is possible

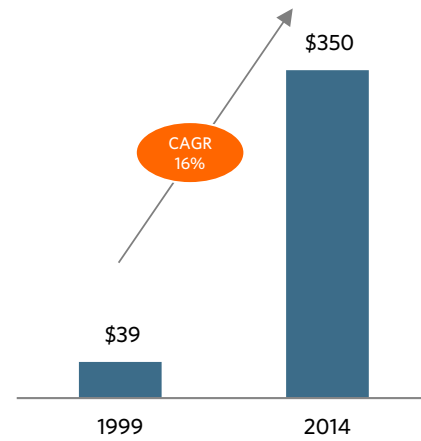
TOTAL DAIRY PRODUCT EXPORT VALUE: WA VS. SELECT PEERS

US\$, m; 1999-2014

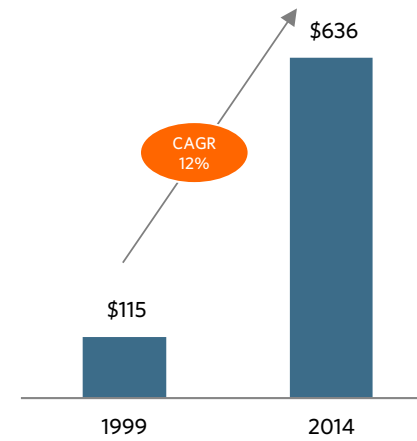
ARGENTINA



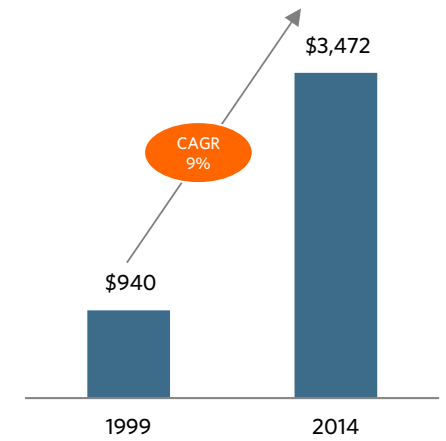
CHILE



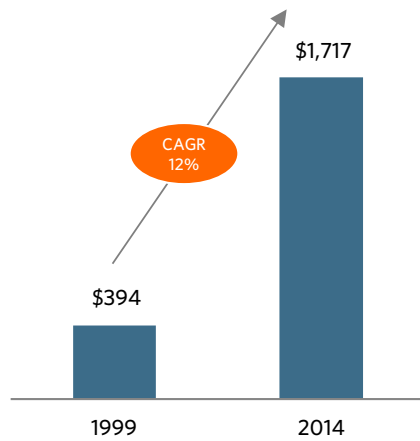
GREECE



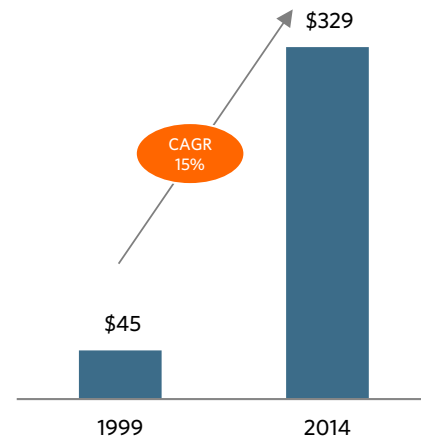
ITALY



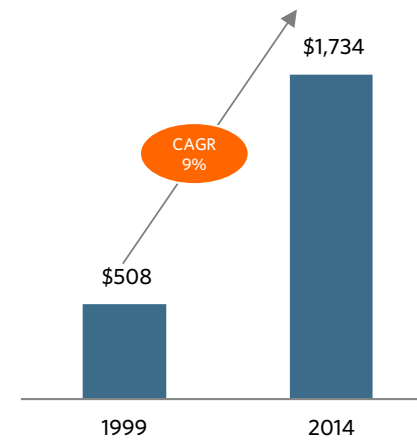
MEXICO



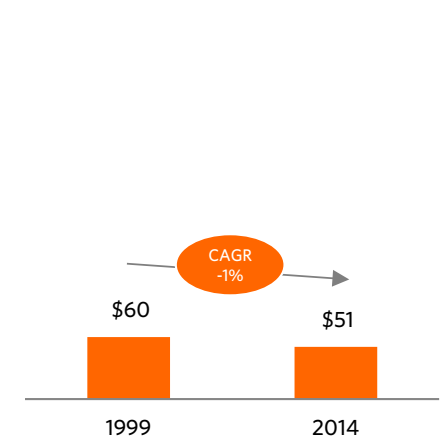
SOUTH AFRICA



SPAIN



WESTERN AUSTRALIA



This case study now looks at dairy agribusiness operational units in Western Australia, where the state needs to improve efficiency

SECTION STRUCTURE: DAIRY CASE STUDY



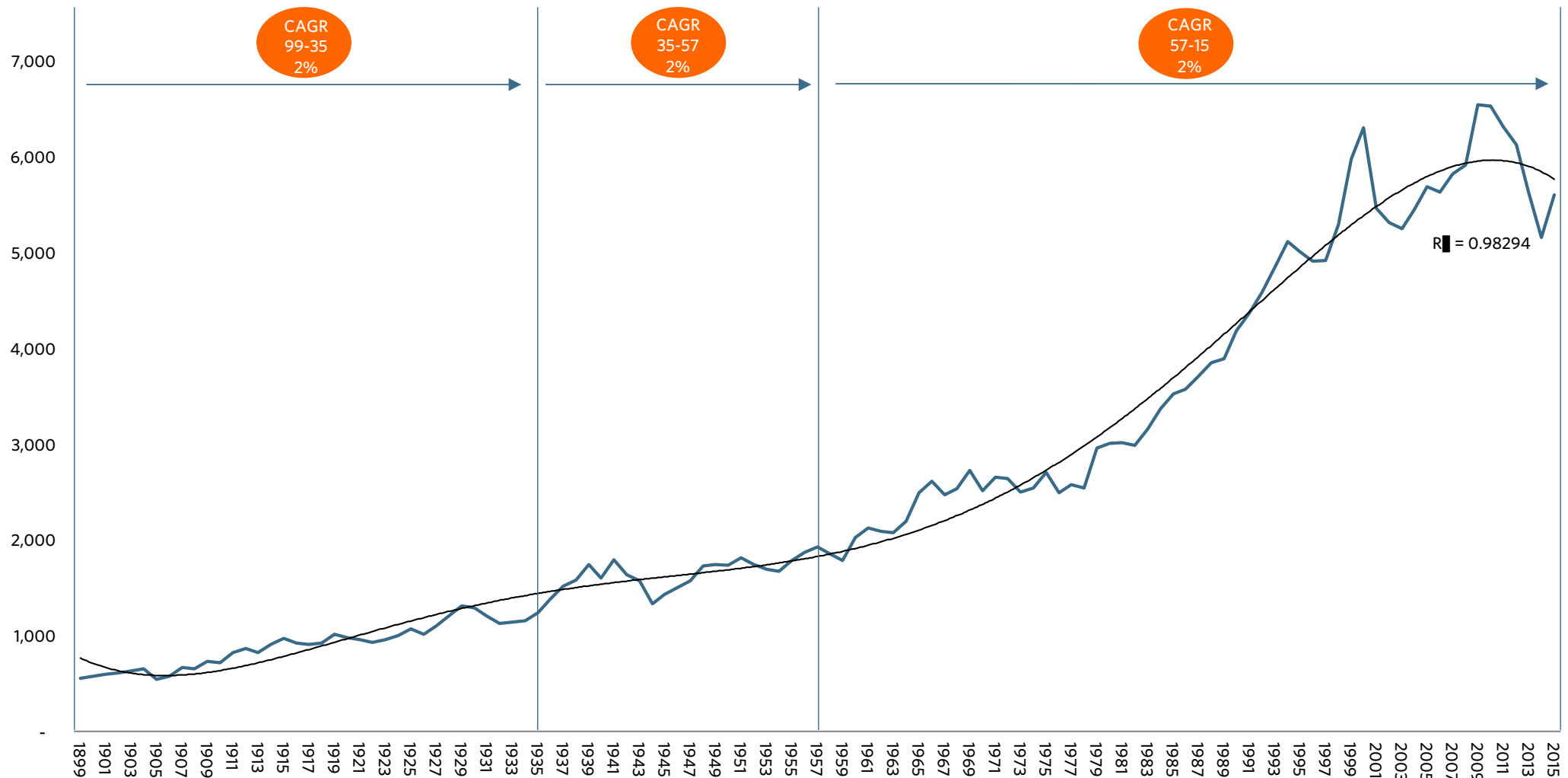
Western Australian needs to improve animal efficiency

- Dairy production is a well researched industry on which an extensive range of productivity and efficiency measurement is carried out; the object of this project is not to analyse that in detail. Rather, this work seeks to compare Western Australian performance with that of key peers across a handful of key high level productivity variables; is the state clearly ahead or clearly behind?
- The Western Australian dairy industry continues to increase milk yield per cow, it appears to be unable to escape a long-run rate-of-growth of 2%
- Other dairy producing regions are achieving faster growth

The Western Australian dairy industry continues to increase milk yield per cow, it appears to be unable to escape a long-run rate-of-growth of 2%

AVERAGE MILK PRODUCED PER COW IN WESTERN AUSTRALIA

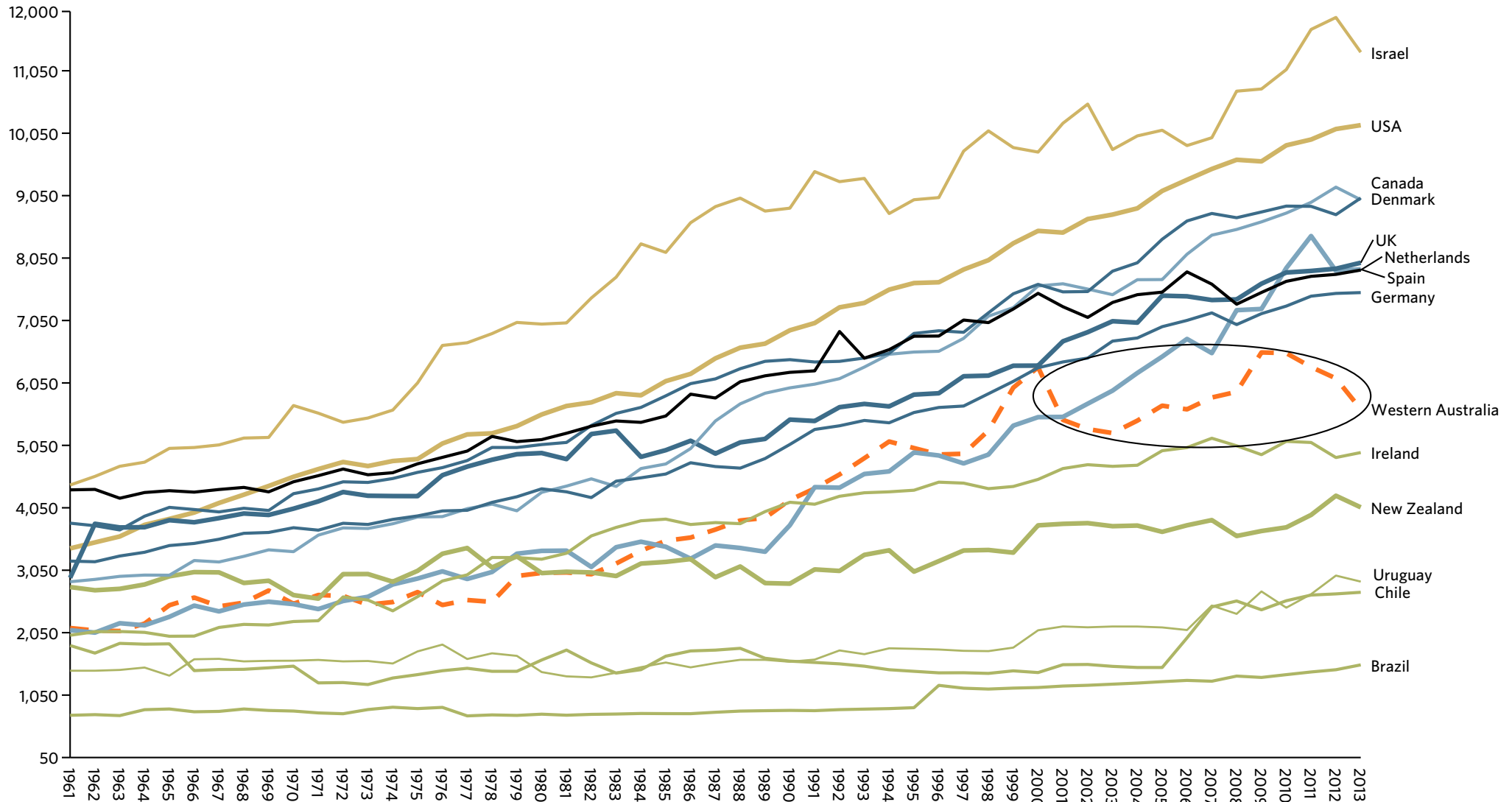
Litre/animal; 1899-2015



Other dairy producing regions are achieving faster growth

AVERAGE MILK YIELD PER COW: WA VS. SELECT PEERS

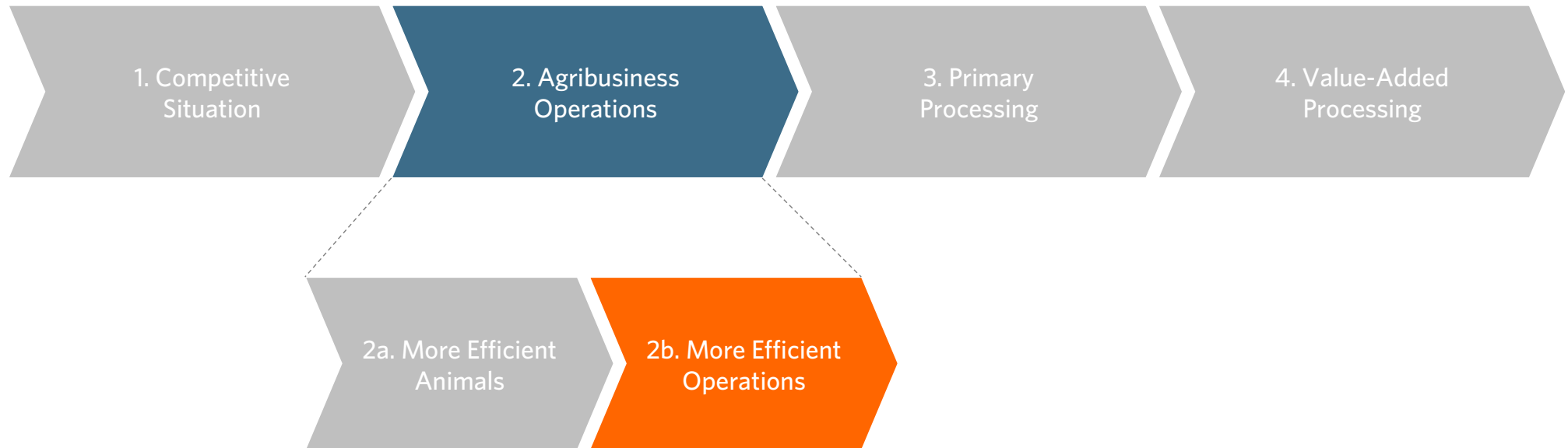
Litres/cow; 1961-2013 (latest available for group)



Source: various WA Statistical Register (by year); various ABS publications; UN FAO AgStat database; Australian Pig Annual 2012-13; Coriolis analysis and estimates

This case study now looks at dairy agribusiness operational efficiency in Western Australia

SECTION STRUCTURE: DAIRY CASE STUDY

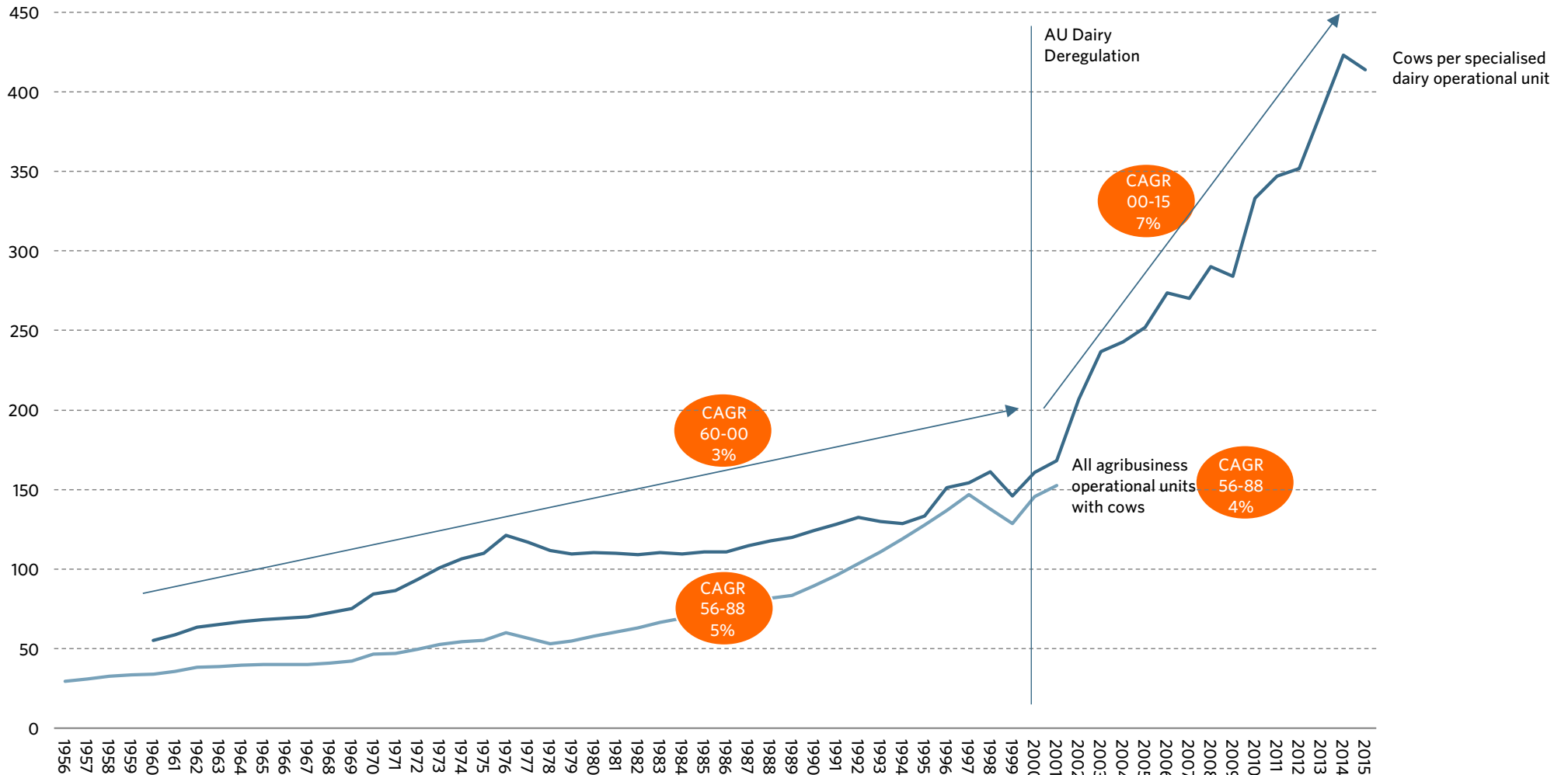


Western Australian needs to consider increasing operational efficiencies

- Western Australia has been increasing average dairy operational unit size (measured in cows/operational unit) for over sixty years; this process accelerated fifteen years ago with deregulation
- Relative to other Australian states, Western Australia leads Australia on cows-per-operational unit, but is not achieving high yields per cow compared with other States
- The number of dairy operations in Western Australia has been declining
- Other countries and regions are also experiencing falling operational unit numbers

Western Australia has been increasing average dairy operational unit size (measured in cows/operational unit) for over sixty years; this process accelerated fifteen years ago with deregulation

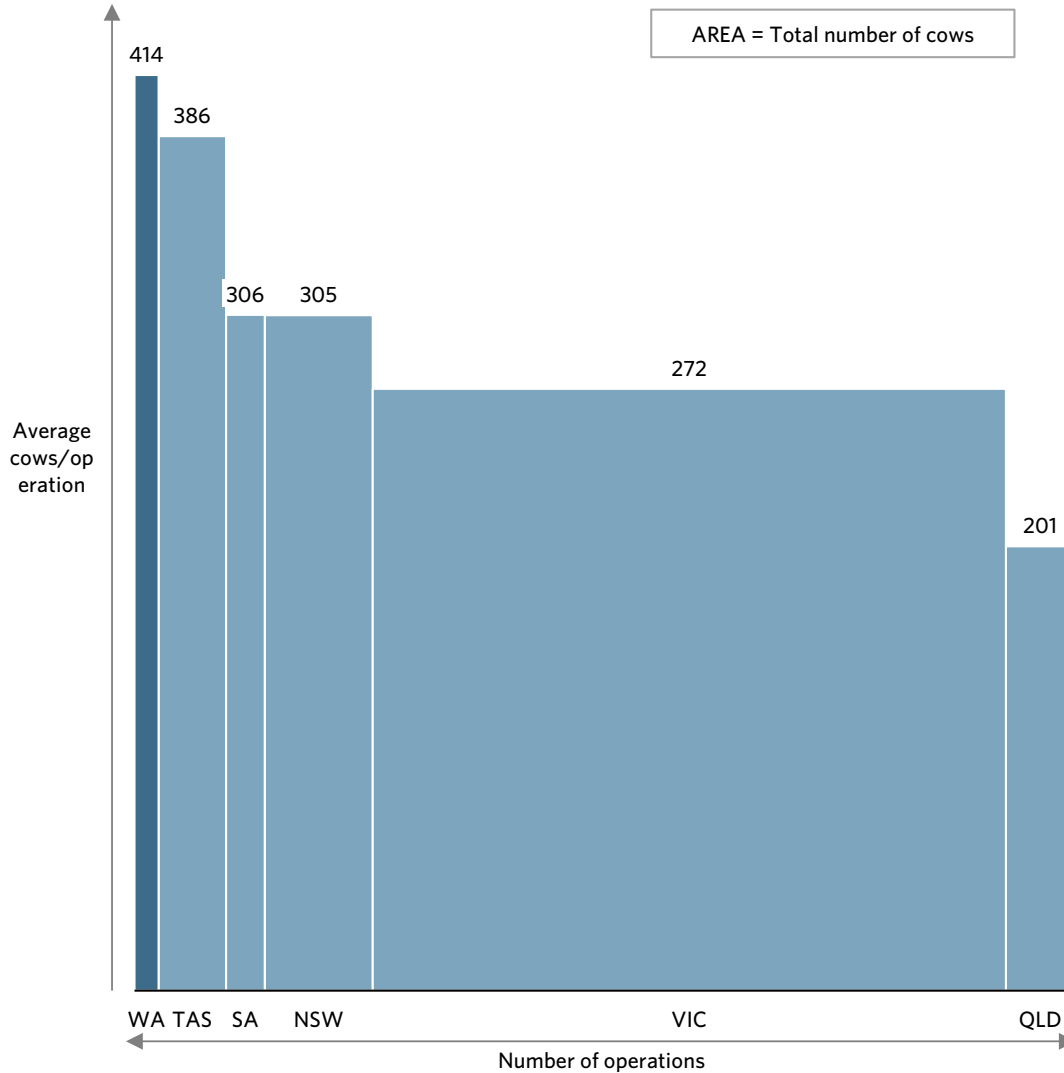
AVERAGE NUMBER OF DAIRY COWS PER OPERATIONAL UNIT IN WESTERN AUSTRALIA
Cows in milk and dry; 1956-2015



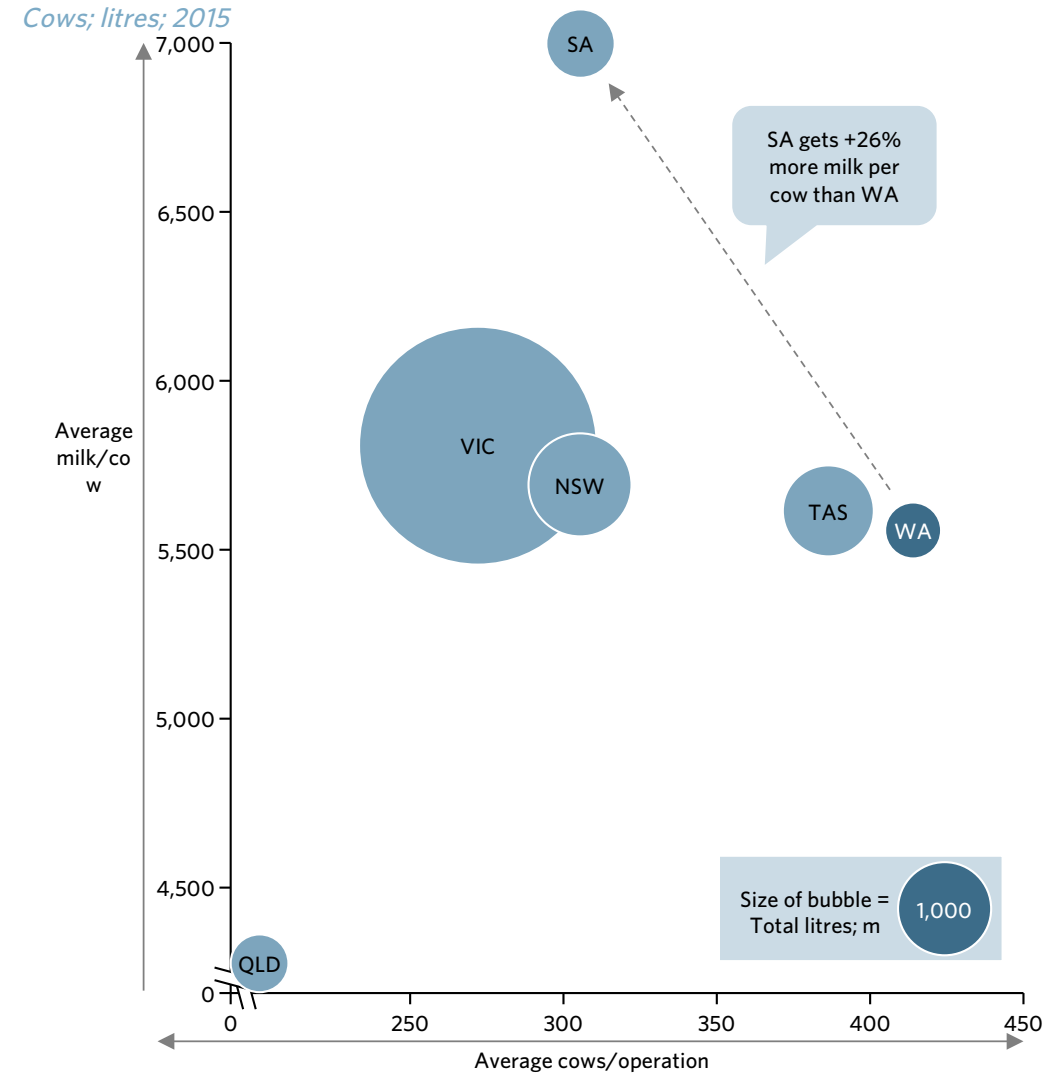
Source: various WA Statistical Register (by year); various ABS publications; various Dairy Australia publications; Coriolis analysis and estimates

Relative to other Australian states, Western Australia leads Australia on cows-per-operational unit, but is not achieving high yields per cow compared with other States

COWS BY AUSTRALIAN STATE: # OF UNITS VS. COWS/UNIT
Head; units; 2015



PRODUCTION MATRIX: COWS/OPERATION VS. MILK/COW VS. MILK
Cows; litres; 2015

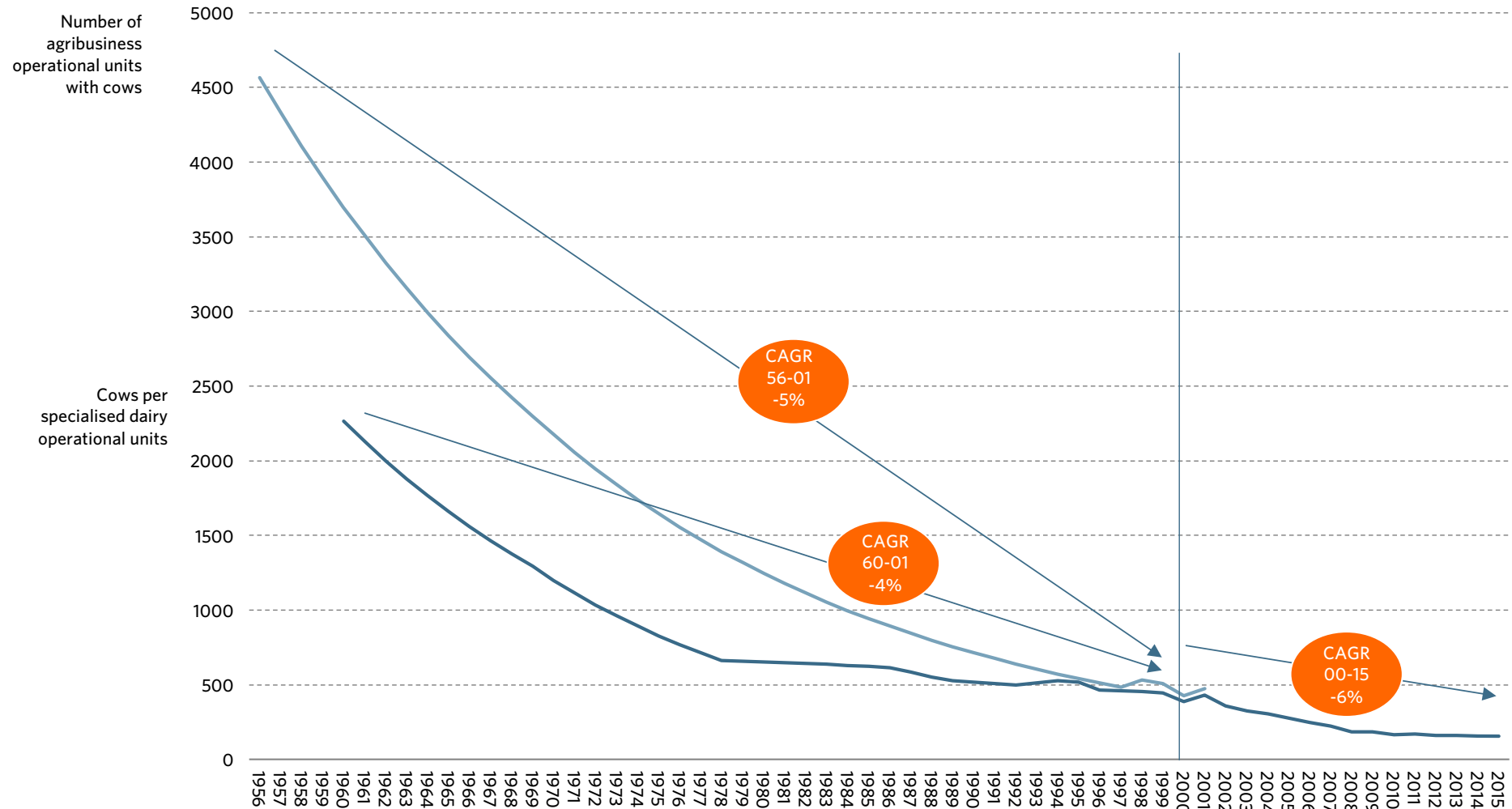


Source: Dairy Australia; Coriolis analysis

The number of dairy operations in Western Australia has been declining

NUMBER OF AGRIBUSINESS OPERATIONAL UNITS WITH DAIRY COWS IN WESTERN AUSTRALIA BY TYPE

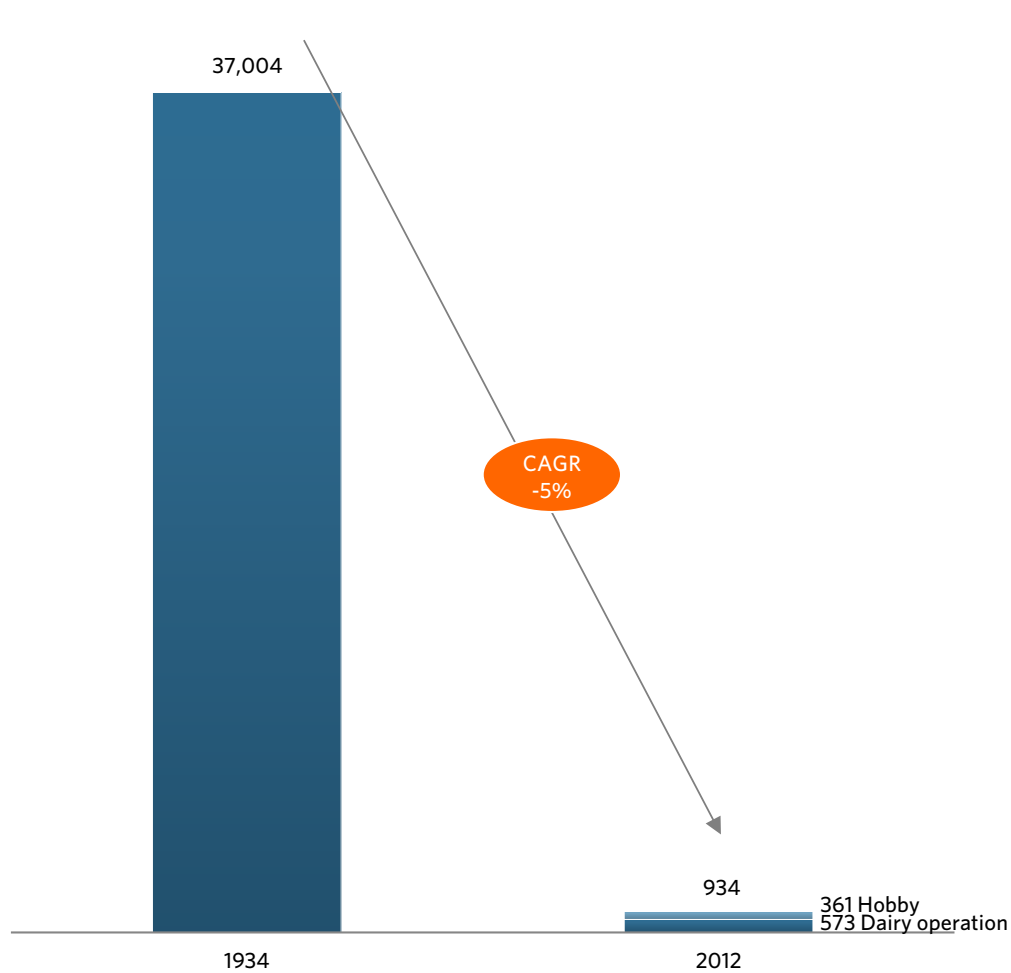
Number of operational units with cows in milk and dry; 1956-2015



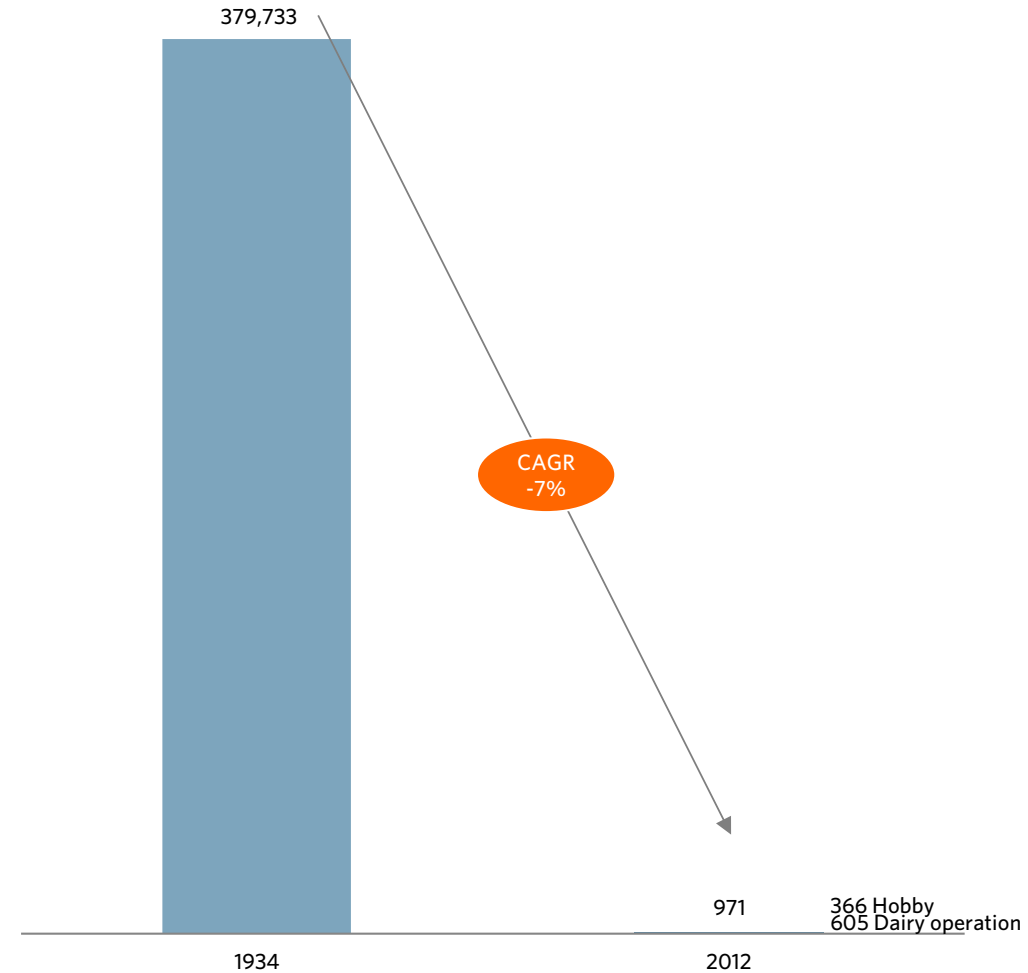
Source: various WA Statistical Register (by year); various ABS publications; various Dairy Australia publications; Coriolis analysis and estimates

Other countries and regions are also experiencing falling operational unit numbers

NUMBER OF UNITS REPORTING HAVING DAIRY COWS: IDAHO
operations; 1934 vs. 2012

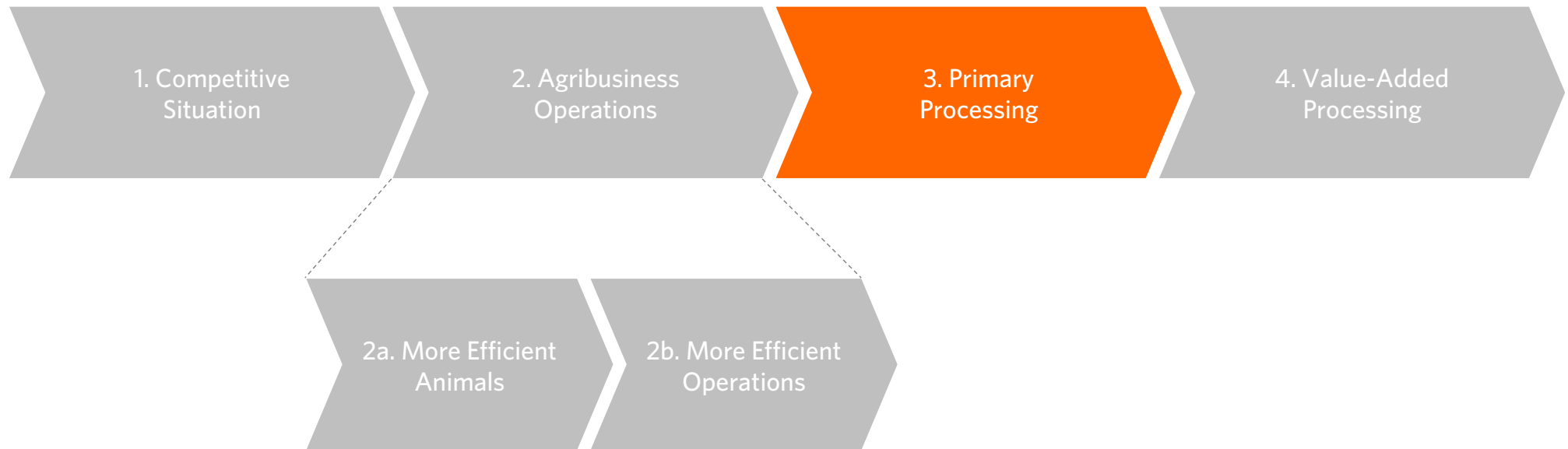


NUMBER OF UNITS REPORTING HAVING DAIRY COWS: TEXAS
operations; 1934 vs. 2012



The third section of this report looks at the competitive situation in primary processing of milk

SECTION STRUCTURE: DAIRY CASE STUDY



Western Australian has a consolidated dairy primary processing sector; improved sector competitiveness will need to come from (1) greater throughput, (2) enabling larger plants and (3) potentially consolidation

- Western Australia has a three larger primary dairy processors and two smaller operations
- Western Australia does not produce a lot of milk, therefore it's three major plants are sub-scale globally (~120m L/plant)
- New Zealand produces a lot of milk, therefore it has efficient plants (750m L/plant)
- Larger modern plants have - among other advantages - higher labour productivity
- Competitive regions attract successful new market entrants, not just global leaders

Western Australia has a three larger primary dairy processors and two smaller operations

NOTE: The WA dairy processing sector has significant surplus capacity (estimated at 40%+)

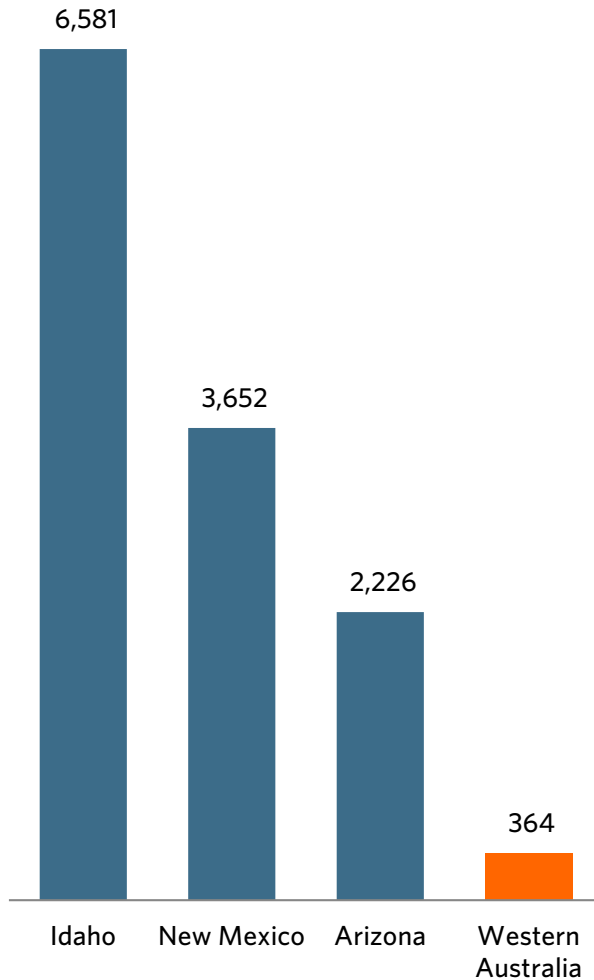
FRESH DAIRY PRIMARY PROCESSING IN WESTERN AUSTRALIA

2016 or as available

| | Founded | Volume | # of suppliers | Ownership | Operations | Revenue # of employees | Key products | Website |
|--|--------------|-----------------|---------------------|--|---|---|--|--|
|  | 1986 | 150m L 42% | 61+ |  | 1 plant Harvey, WA | \$200m [Co.] 250 [Co.] | Dairy, (UHT, fresh, cream, custard, yoghurt, cheese) juice, wine | www.harveyfresh.com.au |
|  | 1886 | 144m L 40% | 50-60 (estimate) |  | Balcatta | \$300m [Co.] 270 [Co.] | Fluid milk, yoghurt, iced coffee, flavoured milk, cream, sour cream, yogo, juice | www.brownesdairy.com.au |
|  | 1994 | 55-75m L 18% | 20-30 (estimate) |  | Bentley | \$100-120m [B2B] 80 [BN] | Fluid milk, flavoured milk, ice coffee, juice | www.lionco.com |
|  | 1974 1991 | TBD | TBD |  | | \$5-10m (estimate) 50 [news article] | Yoghurt, cheese (feta, cottage, ricotta), drinking yoghurt, private label sour cream | www.mundellafoods.com.au www.margaretriverdairy.com.au |
|  | 1924 | 10m L 3% | 1 (?) | Private: AU (Daubney; Rinehart)  | \$20m milking, creamery and tourist facility 2,500 cows on 1,000ha | \$10m [BN] 55 [BN] | Fluid milk, cream, flavoured milk, iced coffee, mango smoothie, gelati | www.bannisterdowns.com.au |
| TOTAL | | 364m L | 157 | | | | | |

Western Australia does not produce a lot of milk, therefore it's three major plants are sub-scale globally (~120m L/plant)

MILK PRODUCTION
Litres; m; 2015



MAJOR DAIRY PROCESSING PLANTS
Presence; 2016

IDAHO (Average ~470m L per plant)

| | | | | | | |
|---|---|--|---|--|---|---|
|  Fluid/cultured |  Cheese/Whey |  Cheese/Whey |  Fluid/cultured |  Powder |  Powder |  Powder |
|  Cheese/Whey |  Cheese/Whey |  Cheese/Whey |  Cheese/Whey |  Cheese/Whey |  Fluid/cultured |  Powder |

NEW MEXICO (Average ~730m L per plant)

| | | | | | |
|--|--|--|--|--|--|
|  Powder |  Fluid/cultured |  Cheese/Whey |  Cheese/Whey |  Cheese/Whey |  Cheese/Whey |
|--|--|--|--|--|--|

WESTERN AUSTRALIA (Average ~120m L per plant)

| | | |
|---|---|---|
|  Fluid/cultured |  Fluid/cultured |  Fluid/cultured |
|---|---|---|

New Zealand produces a lot of milk, therefore it has efficient plants (750m L/plant)

MILK PRODUCTION

Litres; m; 2015



MAJOR MILK VALUE-ADDED PROCESSING PLANTS

Presence; 2016

NEW ZEALAND (Average ~775m L per plant)

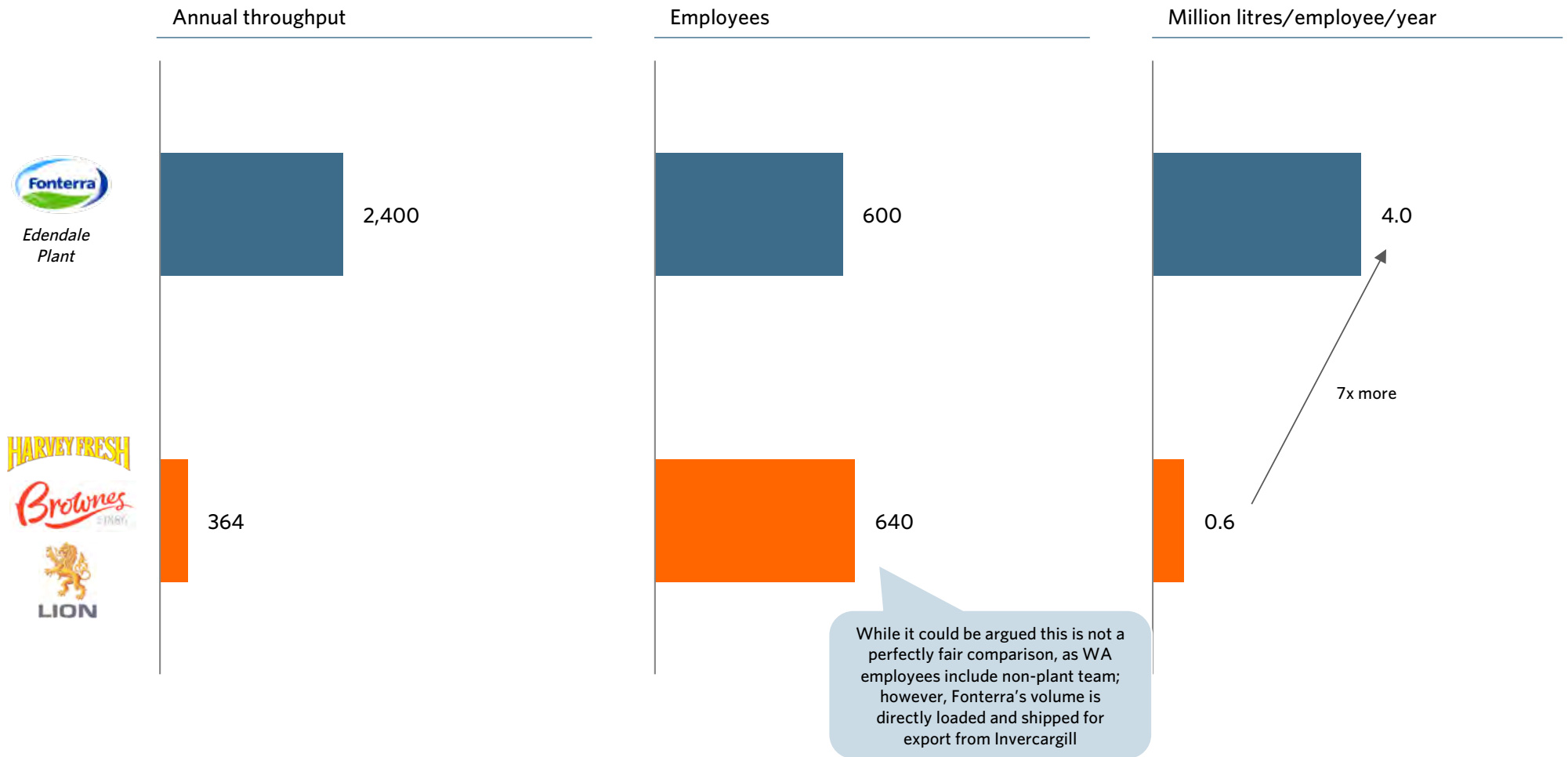


WESTERN AUSTRALIA (Average ~120m L per plant)



Larger modern plants have, among other advantages, higher labour productivity

EXAMPLE: BASIC PLANT METRICS: FONTERRA EDENDALE VS. ALL OF WA DAIRY INDUSTRY
Litres; m; people; 2015



Competitive regions attract successful new market entrants, not just global leaders



IDAHO

New milk protein concentrate (MPC) factory

New start-up market entrant 2009

Founded by three dairy operators with 18 dairies, 100,000 cows and 1,200m L of milk between them

220,000 sqft.; cost \$120m

Produces 42m kg powder/year

Opened Oct 2009

Increased Idaho capacity 7.5% (state production is growing at 7% pa)

Streamlined supply chain; 100% operation to customer lot tracked



IDAHO

New milk powder factory

Initially formed as coop of six operators in 2001

Six dairy operators owners have 20 dairies, 40,000 cows, 18,200ha (for feed production) and 600m L within 50 km of plant

Supplying dairies range in size from 800 to 10,000 cows/unit; milked three times per day

Opened milk powder plant in 2008; 130 employees

Expanded in Oct 2012 with addition of butter processing (+50,000 sqft)

Turnover now US\$260m (14)



NEW ZEALAND

New milk powder factory

Founded by Maori tribal trusts

Supplied by 50,000 cows, including 6 Maori shareholder entities with 20,000 cows between them; 80% of suppliers within 50 km

Uses local geothermal energy

Powder plant opened in 2011 and processes 210m L of milk annually

Recently added a UHT milk factory

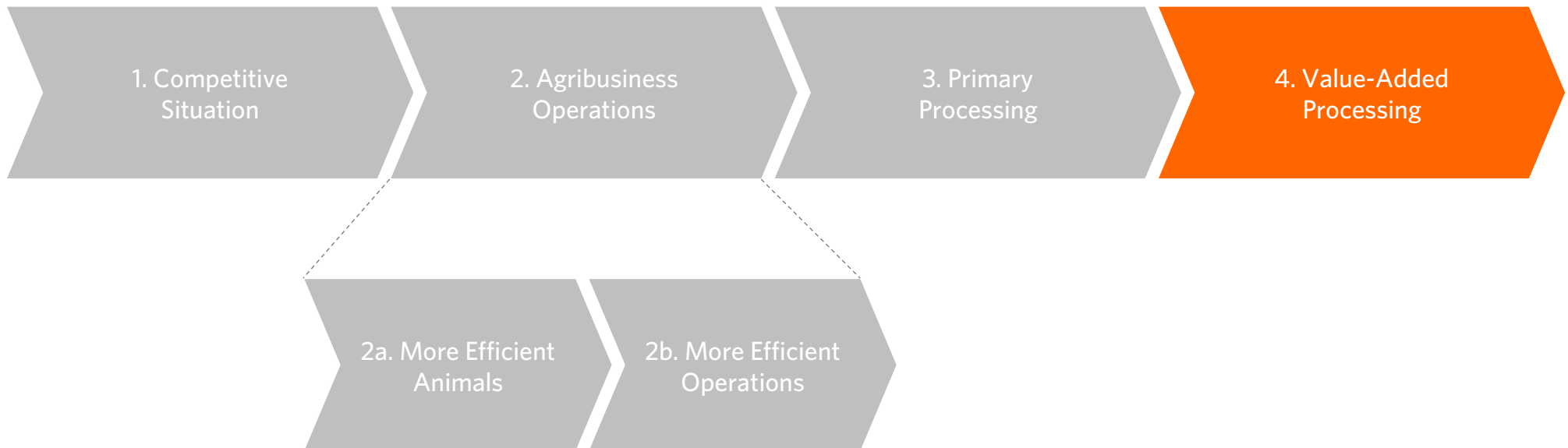
Vinamilk (#1 Vietnam dairy co.) became a 19.3% shareholder

Contract packing for Shanghai Pengxin (Chinese-owned local dairy operations)

Turnover now NZ\$247m (14)

The final section of this case study looks briefly at the competitive situation in the value-added dairy processing sector

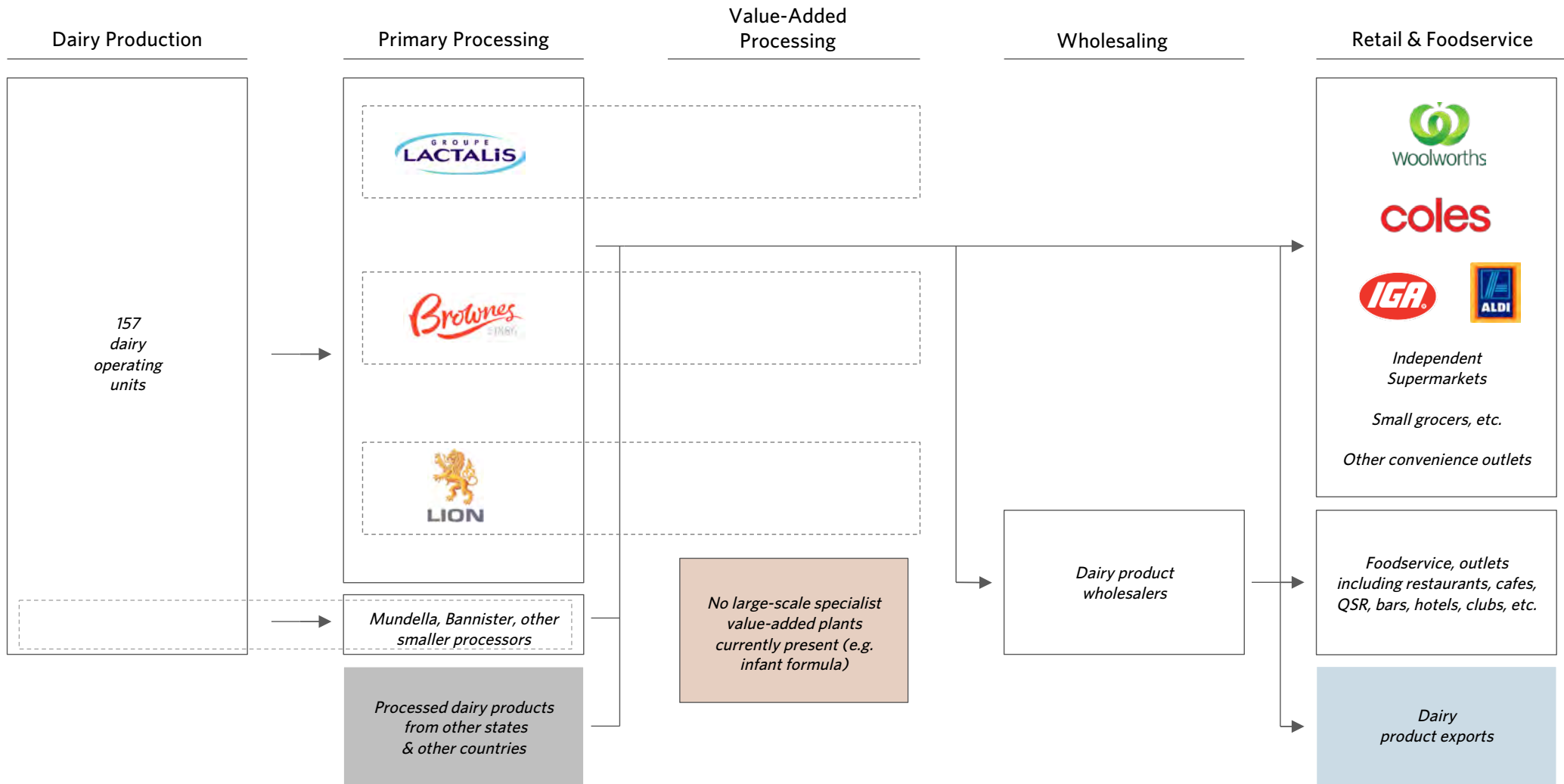
SECTION STRUCTURE: DAIRY CASE STUDY



Western Australia has no stand alone value-added dairy processors at any scale

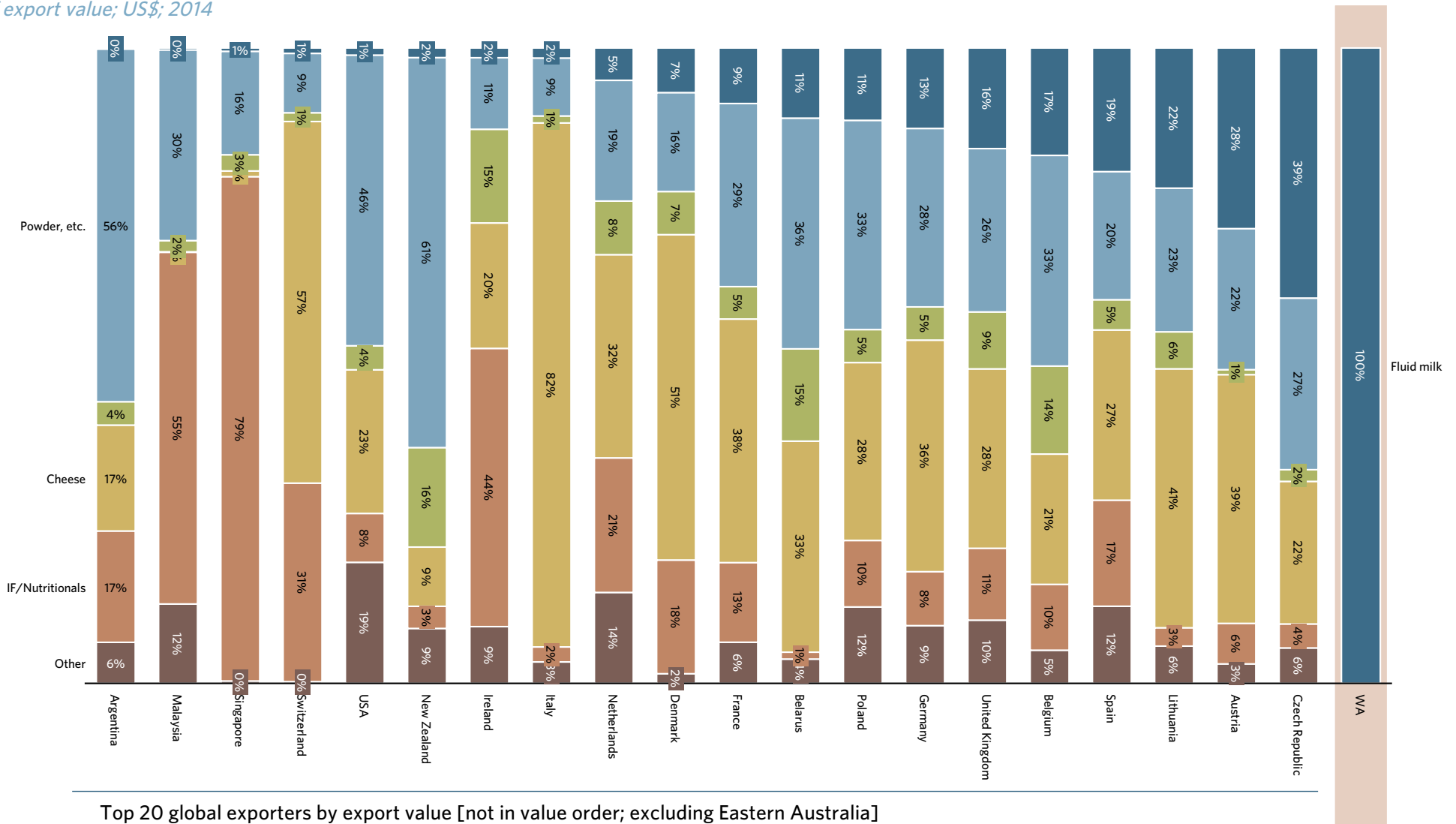
STRUCTURE OF WESTERN AUSTRALIAN DAIRY PRODUCTS SUPPLY CHAIN

Simplified model; 2016



Competitive countries export a wide range of value-added dairy products; Western Australia's dairy export mix is fluid milk (including yoghurt and other similar)

DAIRY EXPORT VALUE MIX BY PRODUCT TYPE: WESTERN AUSTRALIA VS. TOP 20 EXPORTING COUNTRIES
 % of export value; US\$, 2014



Source: UN Comtrade database; Coriolis analysis and classifications

DOCUMENT STRUCTURE

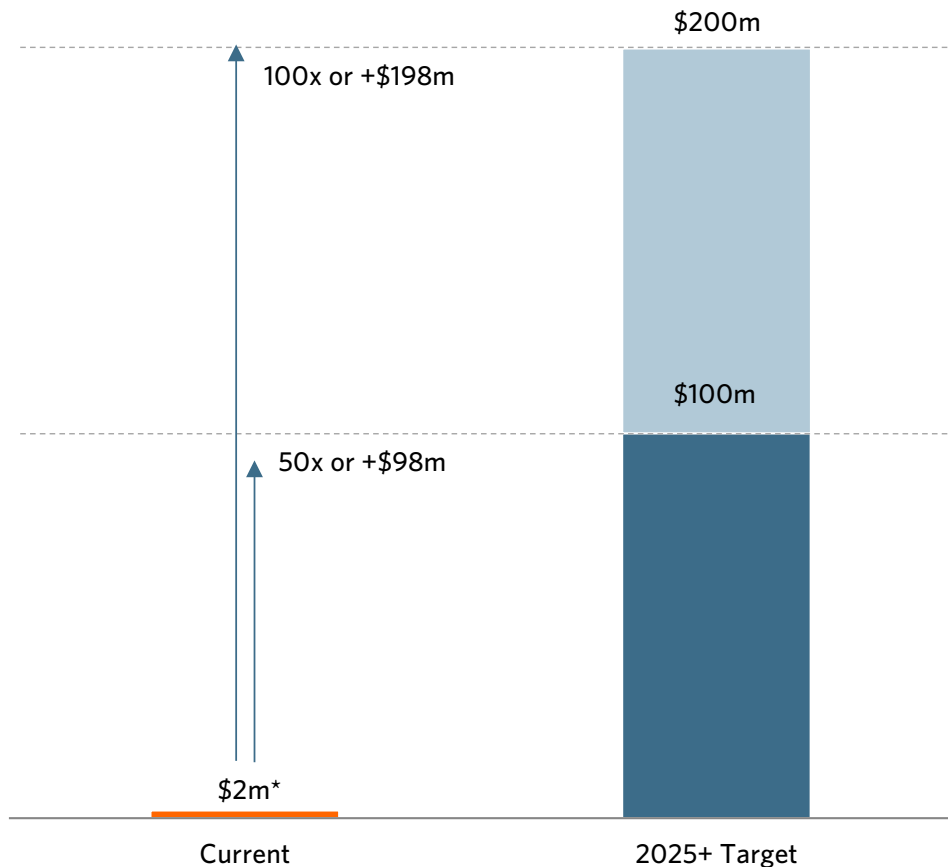
| | |
|---|-----|
| Executive Summary | 4 |
| Context/Question | 7 |
| Identify and describe international competitiveness | 32 |
| Document the practices that characterise international competitiveness | 37 |
| Define mechanisms to promote achievement of international competitiveness | 66 |
| Recommend how DAFWA will support WA agrifood businesses to implement the key findings of the investigation to improve and achieve international competitiveness | 84 |
| Appendix 1 – Product/Segment Case Studies | 88 |
| Appendix 1.1 – Pork Case Study | 91 |
| Appendix 1.2 – Dairy Case Study | 136 |
| Appendix 1.3 – Potatoes Case Study | 166 |
| Appendix 1.4 – Citrus Case Study | 214 |
| Appendix 1.5 – Oats Case Study | 250 |
| Appendix 2 – Peer Group Pathways Case Studies | 292 |



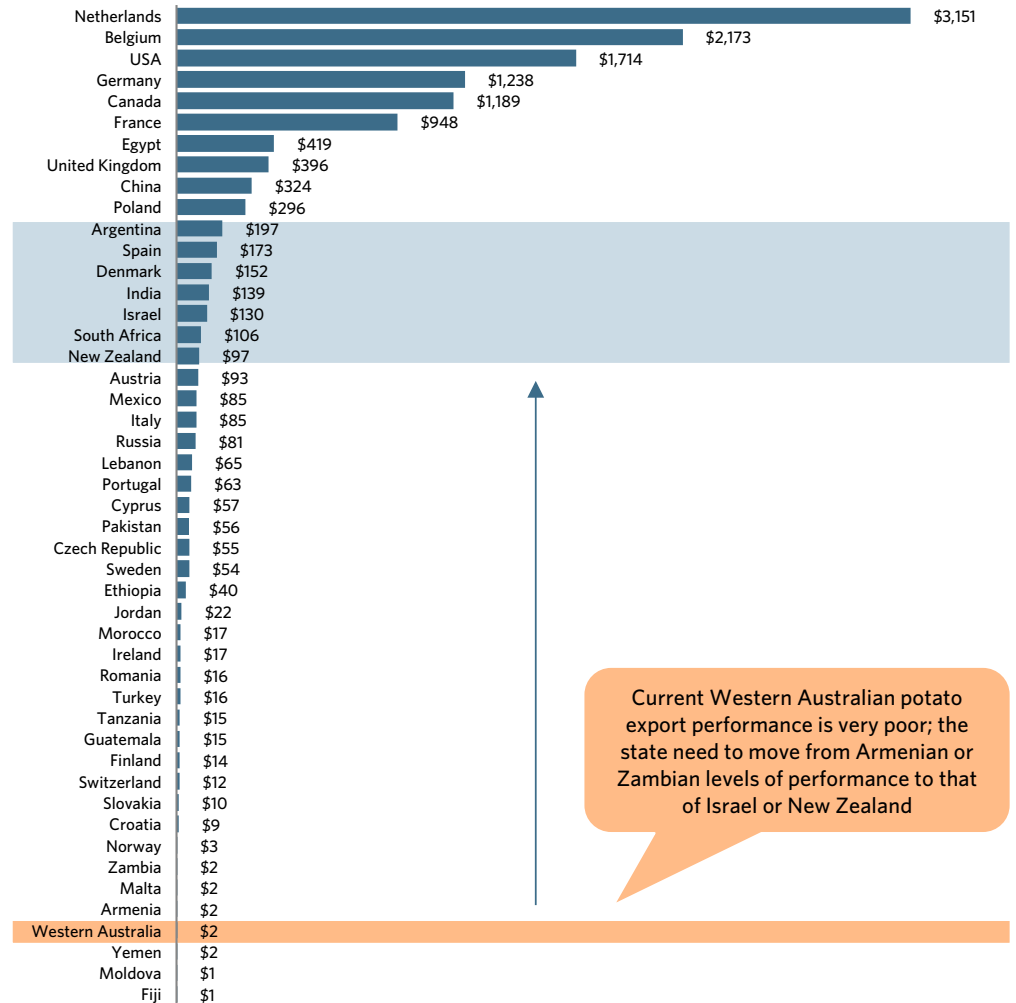
The Government has set a goal of doubling agrifood industry value (predominantly through exports); as some sectors will struggle to grow, others need to grow more; WA potato exports need to grow 50-100x; this is equivalent to matching the current performance of Israel or New Zealand

WA POTATO EXPORT VALUE GROWTH TARGET
US\$; m; 2015e vs. 2025+ target

PRELIMINARY - INCLUDES CORIOLIS ESTIMATES



POTATO/PRODUCTS EXPORT VALUE: WA VS. SELECT
US\$m; 2014/15



Current Western Australian potato export performance is very poor; the state need to move from Armenian or Zambian levels of performance to that of Israel or New Zealand

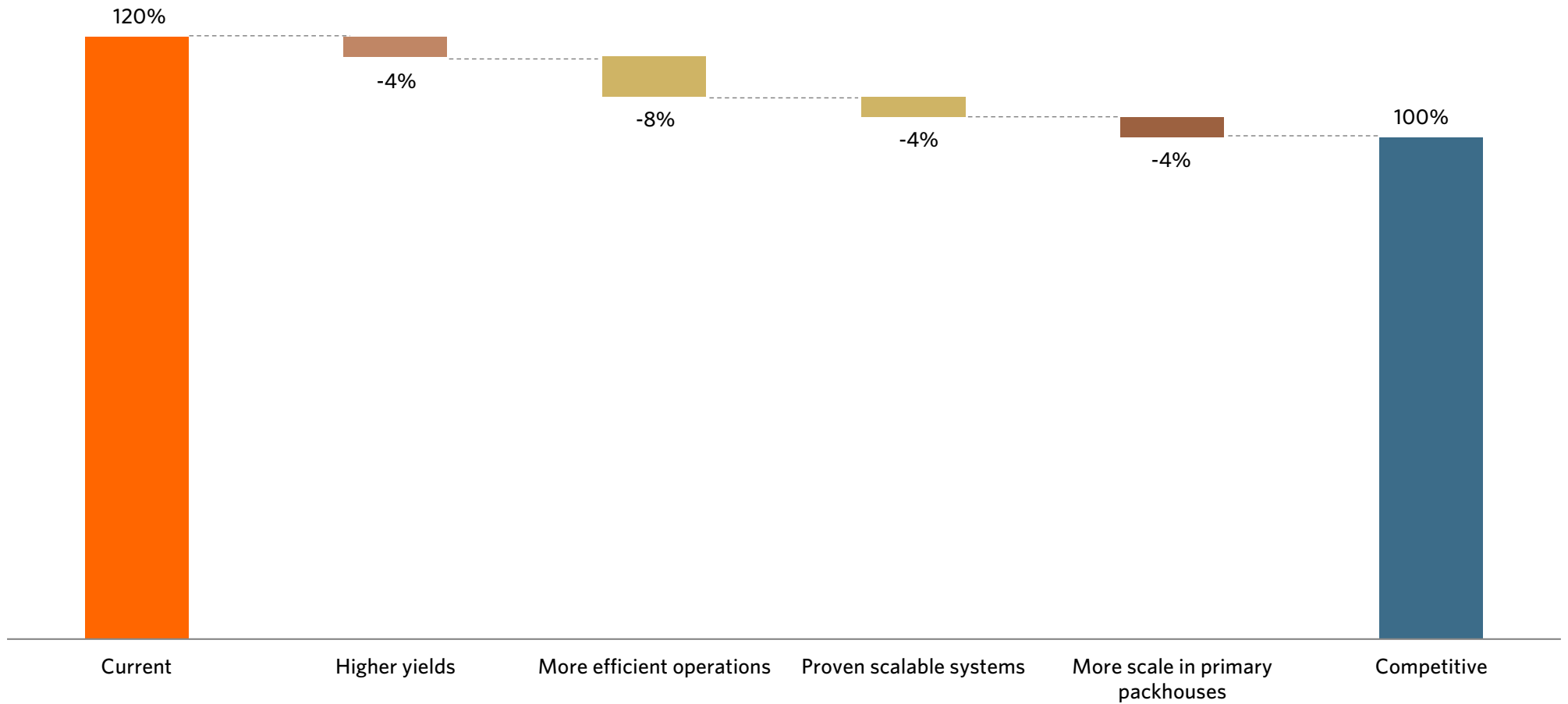
* current WA export value based on 1,850t exported (PMC/ACIL Allen 2014 p5) at US\$0.67 (fresh) to US\$0.87 (seed); total AU fresh/seed potato exports from all states are US\$18.9b
 Source: UN Comtrade database; PMC ACIL Allen March 2014; Coriolis classifications and analysis

While Western Australia is within sight of a globally competitive potato industry, getting there will involve significant industry change

POTENTIAL PATHWAY TO COMPETITIVENESS FOR WESTERN AUSTRALIAN POTATO INDUSTRY
 % of current cost; 2015

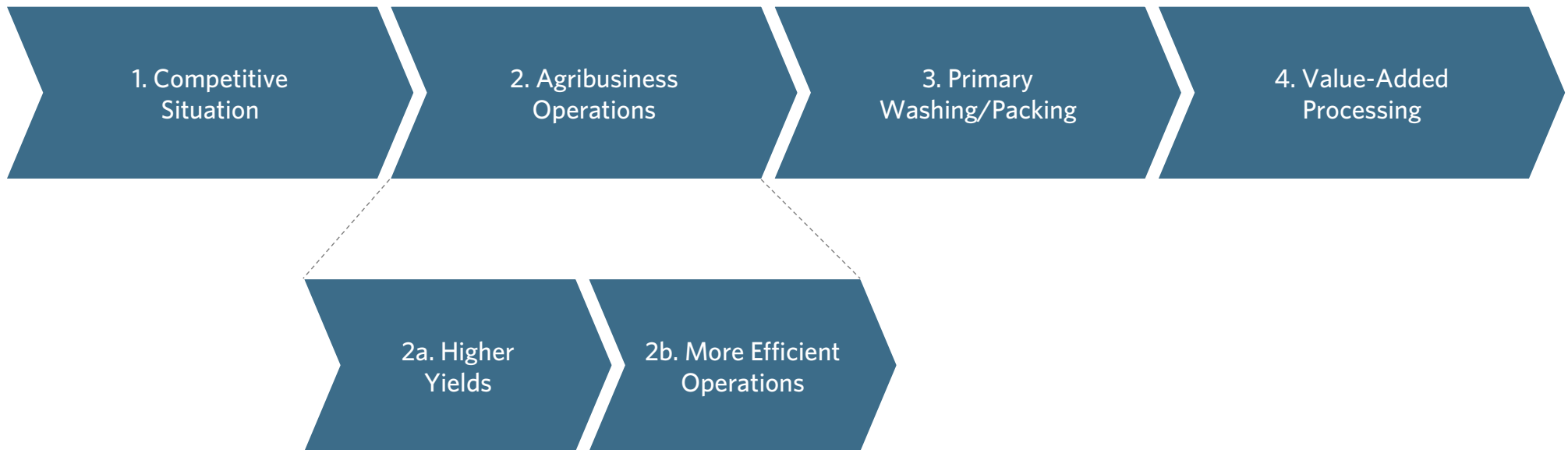
INCLUDES CORIOLIS ESTIMATES

PRELIMINARY



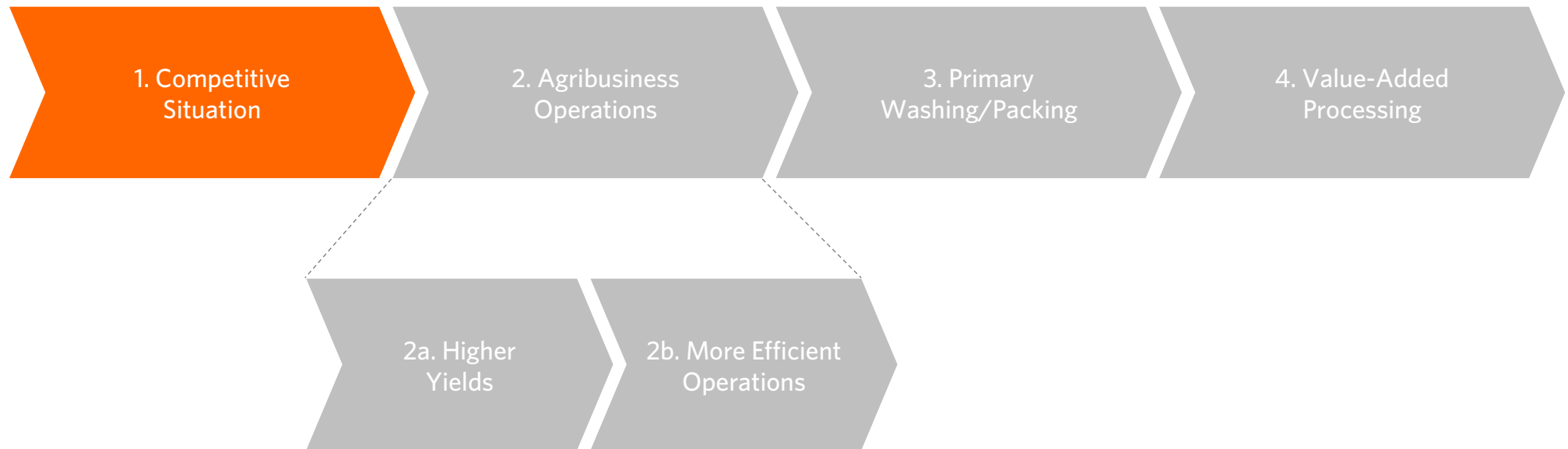
This case study on the relative competitiveness of the Western Australian potato industry is structured as follows

SECTION STRUCTURE: POTATO INDUSTRY CASE STUDY



The first section of this case study reviews the current competitive situation in potatoes

SECTION STRUCTURE: POTATO INDUSTRY CASE STUDY

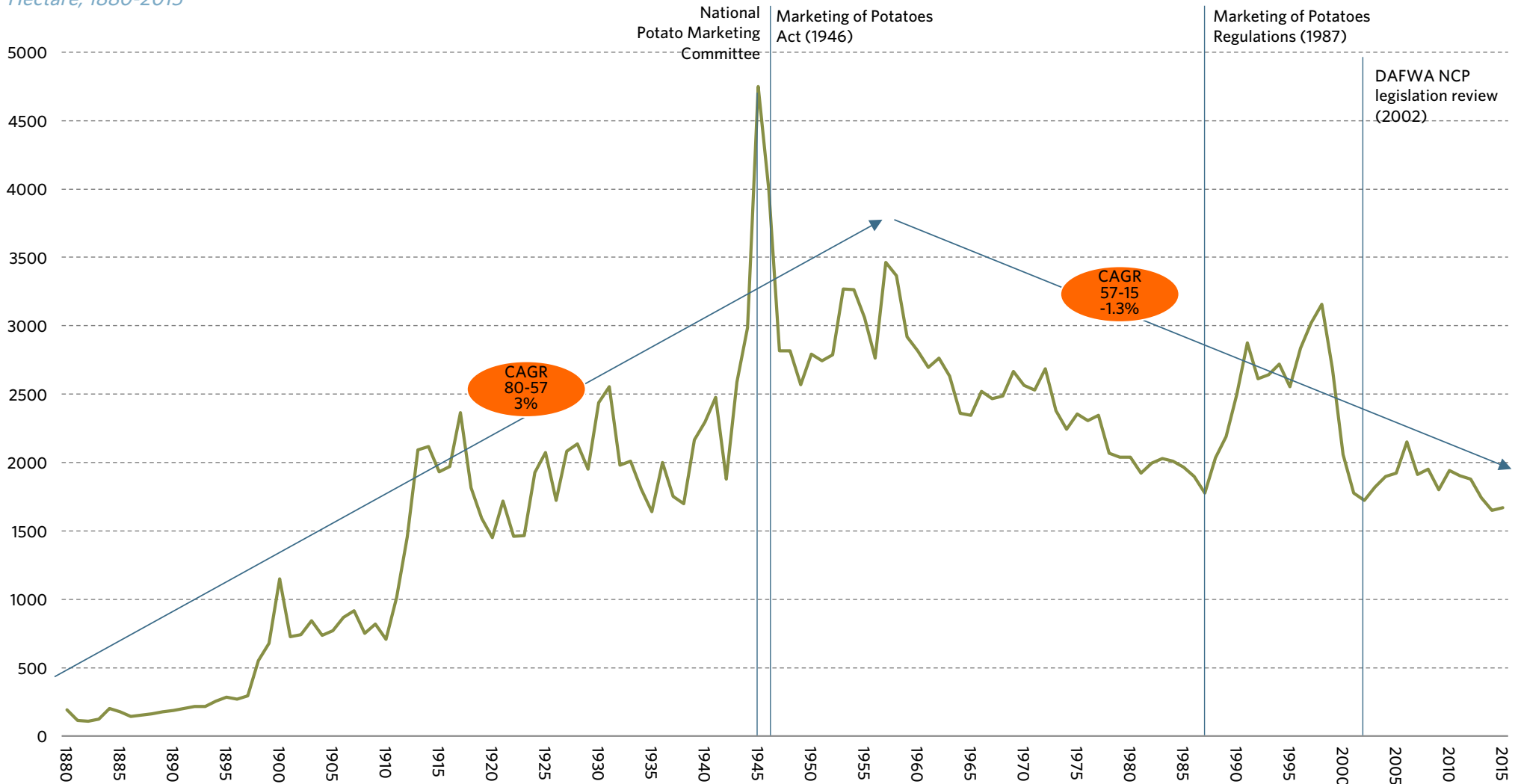


The export competitiveness of the Western Australian potato industry is low and declining rapidly

- The Western Australian potato industry had a long period of area growth through the late 50's; since then, the area has been erratically trending downward
- Potato production has grown over the past 135 years; however, it has turned down recently and returned to 1968 levels
- Australian potato exports are flat-to-falling, while imports are growing, indicating declining international competitiveness
- Exports are struggling
 - Potato exports are primarily un-processed (fresh and seed potatoes) and a declining amount of frozen french fries (FFF) to a small number of close markets, disproportionately islands (NZ, Pacific, Indonesia) and South Korea
 - Australia shows declining performance in export markets; it has falling value and falling share across all of its three largest markets; in all cases, it is declining in growing markets, indicating declining competitiveness
- Imports are growing
 - Australia's rapidly growing potato imports are processed, value-added products (FFF, starch, chips) from a handful of developed countries (NZ, USA, Netherlands)

The Western Australian potato industry had a long period of area growth through the late 50's; since then, the area has been erratically trending downward

AREA PLANTED IN POTATOES IN WESTERN AUSTRALIA
Hectare; 1880-2015

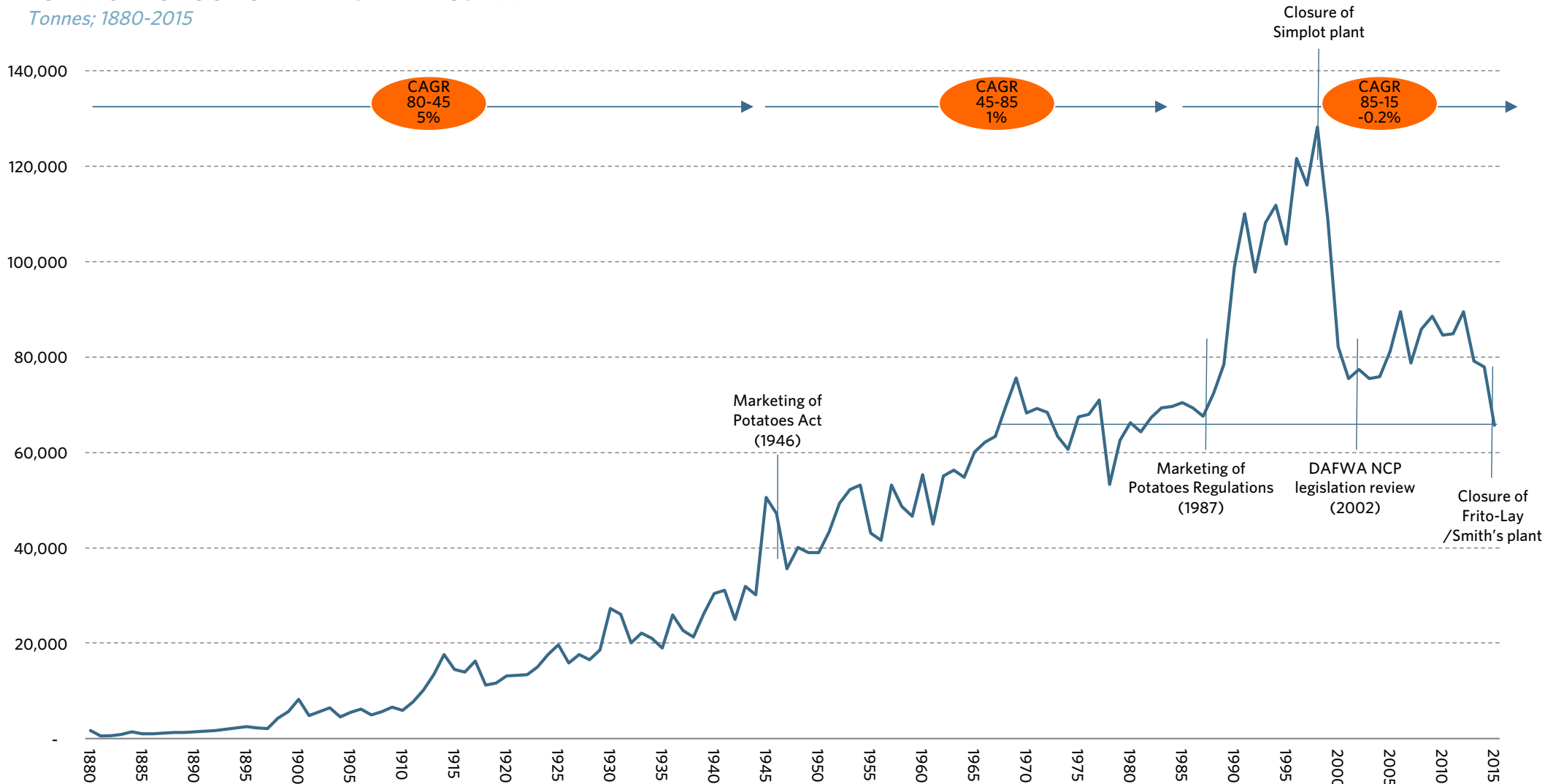


Source: various WA Statistical Register (by year); various ABS publications; Coriolis analysis and estimates

Potato production has grown over the past 135 years; however, it has turned down recently and returned to 1968 levels

POTATO PRODUCTION IN WESTERN AUSTRALIA

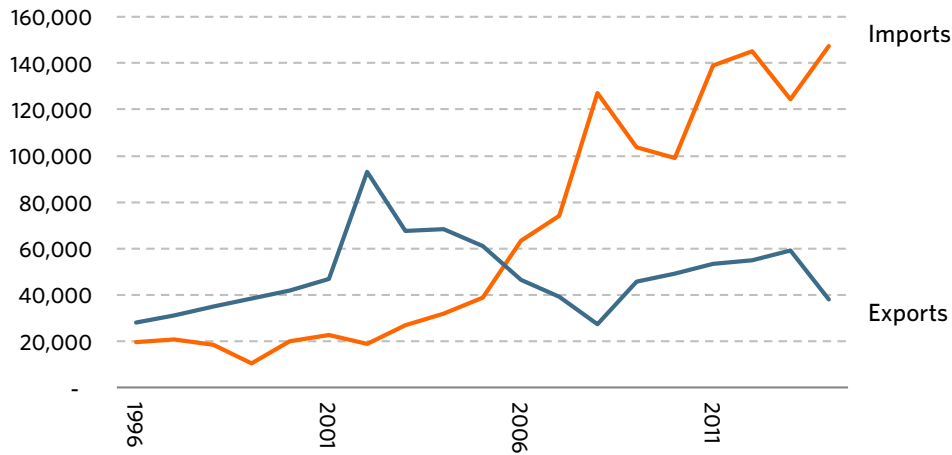
Tonnes; 1880-2015



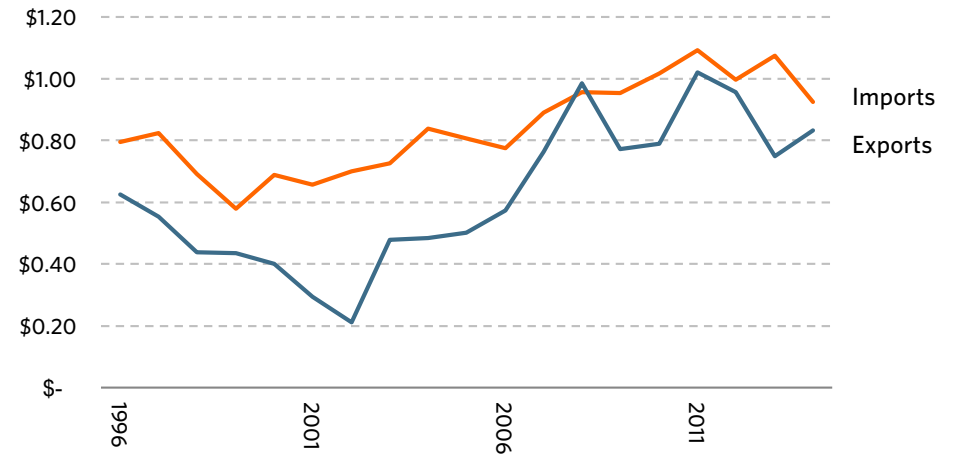
Source: various WA Statistical Register (by year); various ABS publications; Coriolis analysis and estimates

Australian potato exports (all forms) are flat-to-falling, while imports are growing, indicating declining international competitiveness

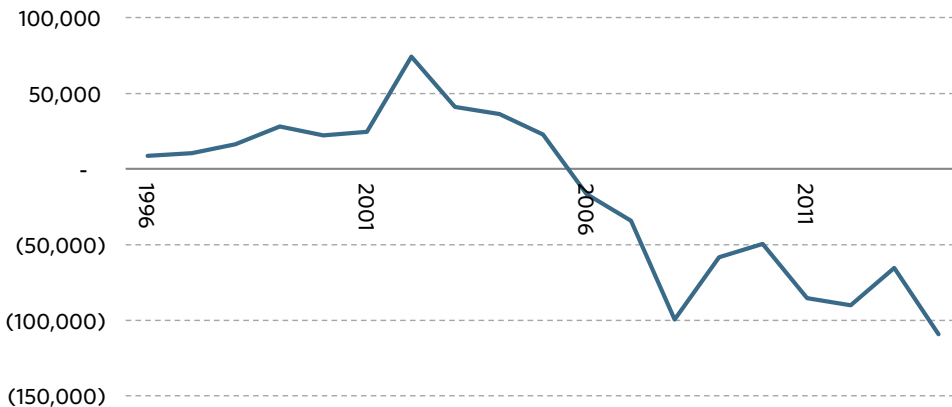
AUSTRALIAN POTATO TRADE VOLUME WITH WORLD
Tonnes; 1996-2014



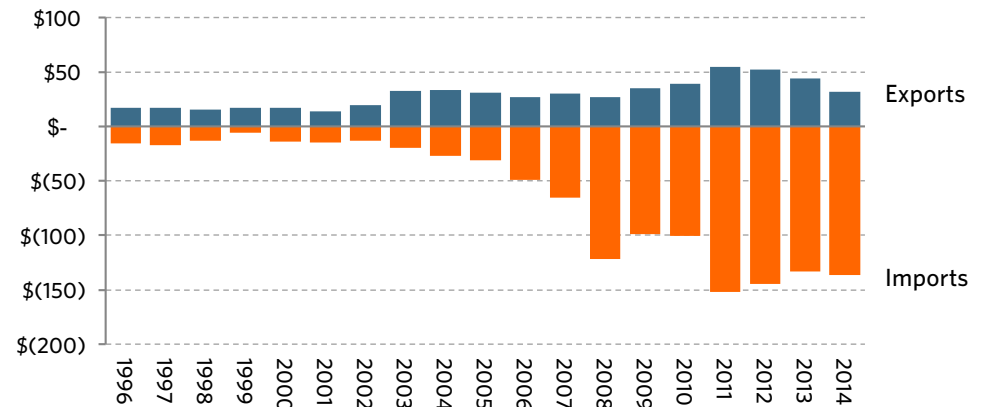
AVERAGE AUSTRALIAN TRADE VALUE PER KILOGRAM
US\$/Kg; 1996-2014



NET AUSTRALIAN TRADE BALANCE IN POTATOES
Tonnes; 1996-2014



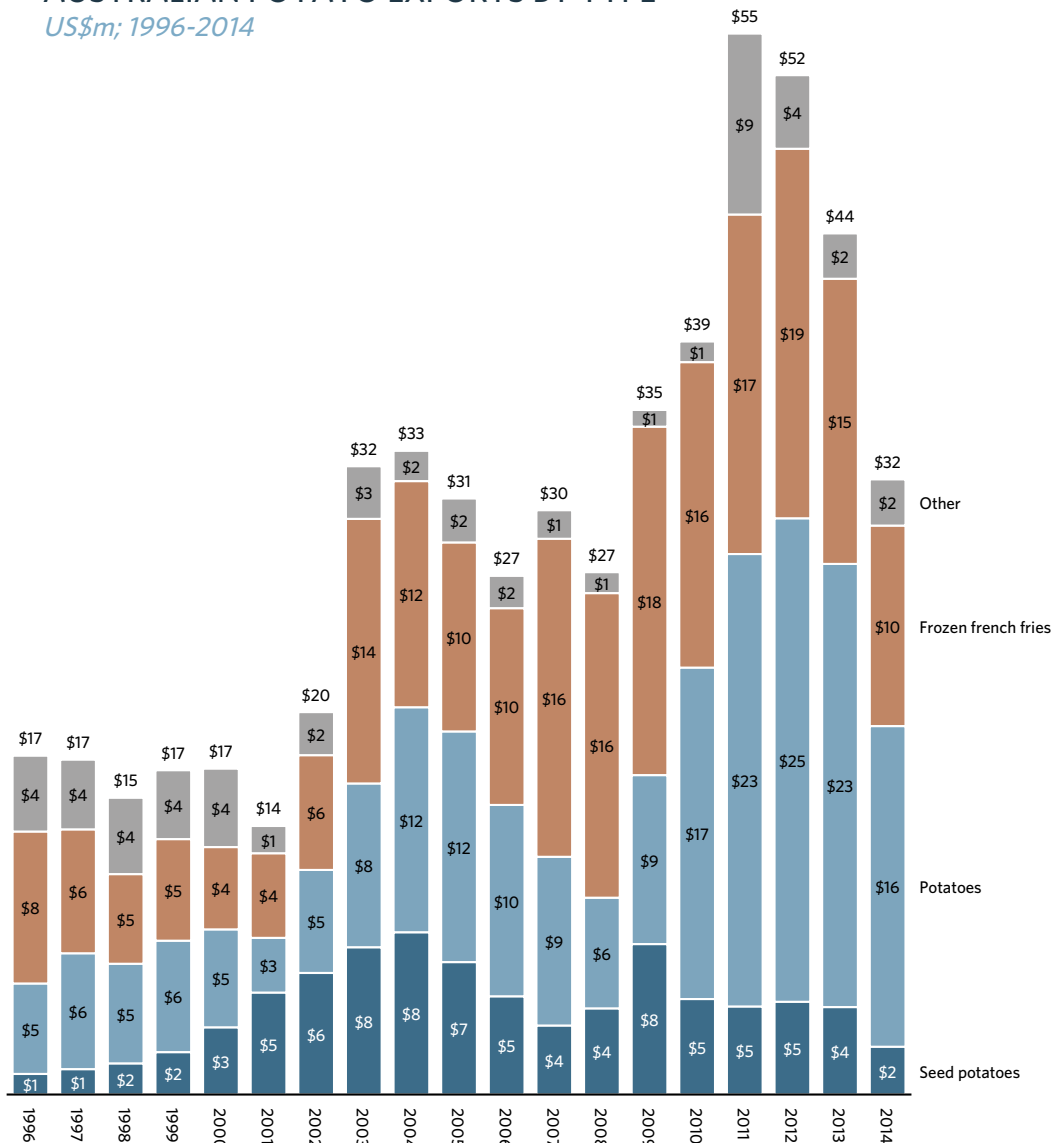
TOTAL VALUE OF ANNUAL POTATO TRADE
US\$, M; FOB or CIF; 1979-2014



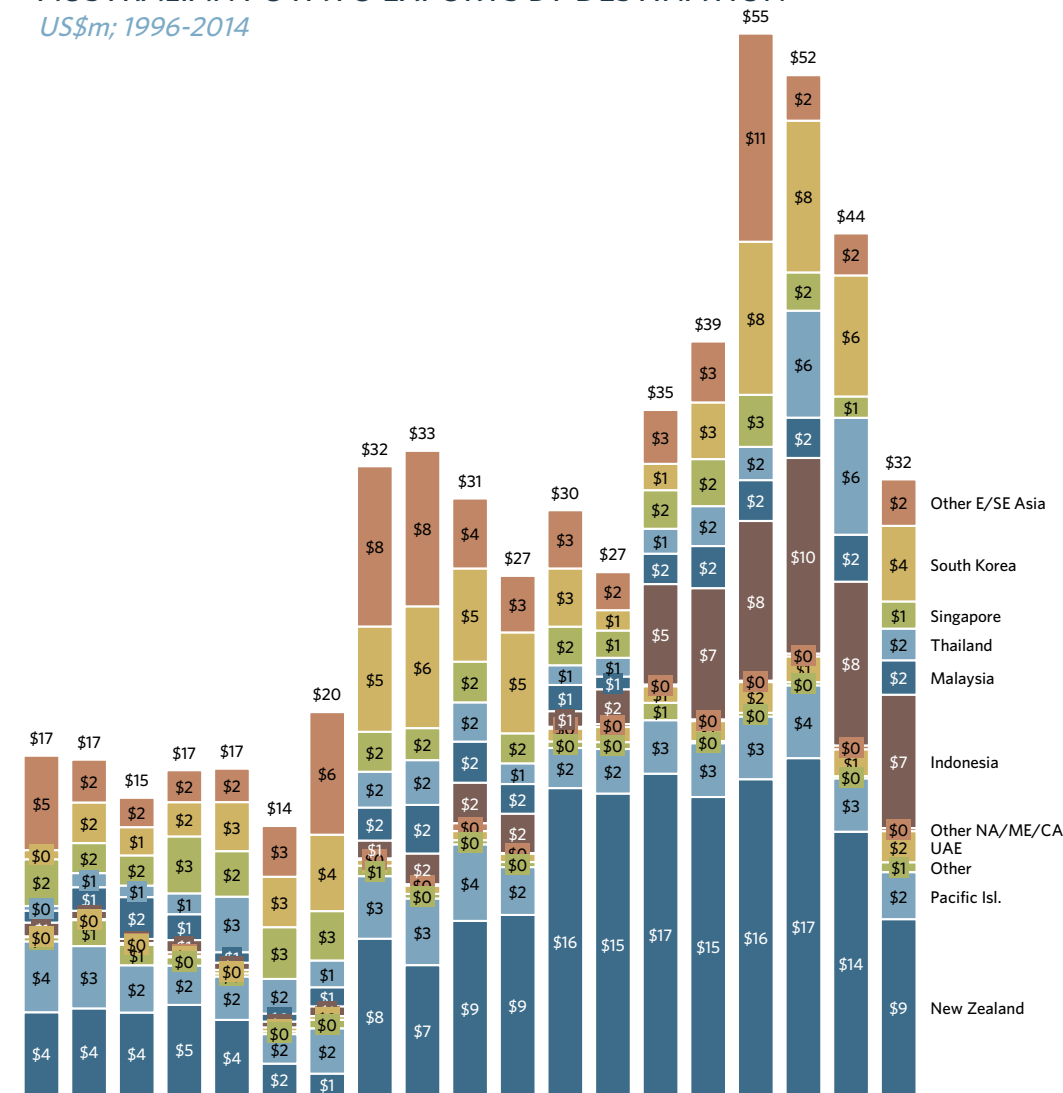
Note: data is all forms (frozen french fries, starch, flakes, etc.) as reported Australia
Source: UN Comtrade database (uses all potato codes; see next page for products); Coriolis classifications and analysis

Potato exports are primarily un-processed (fresh and seed potatoes) and a declining amount of frozen french fries (FFF) to a small number of close markets, disproportionately islands (NZ, Pacific, Indonesia) and South Korea

AUSTRALIAN POTATO EXPORTS BY TYPE
US\$m; 1996-2014



AUSTRALIAN POTATO EXPORTS BY DESTINATION
US\$m; 1996-2014

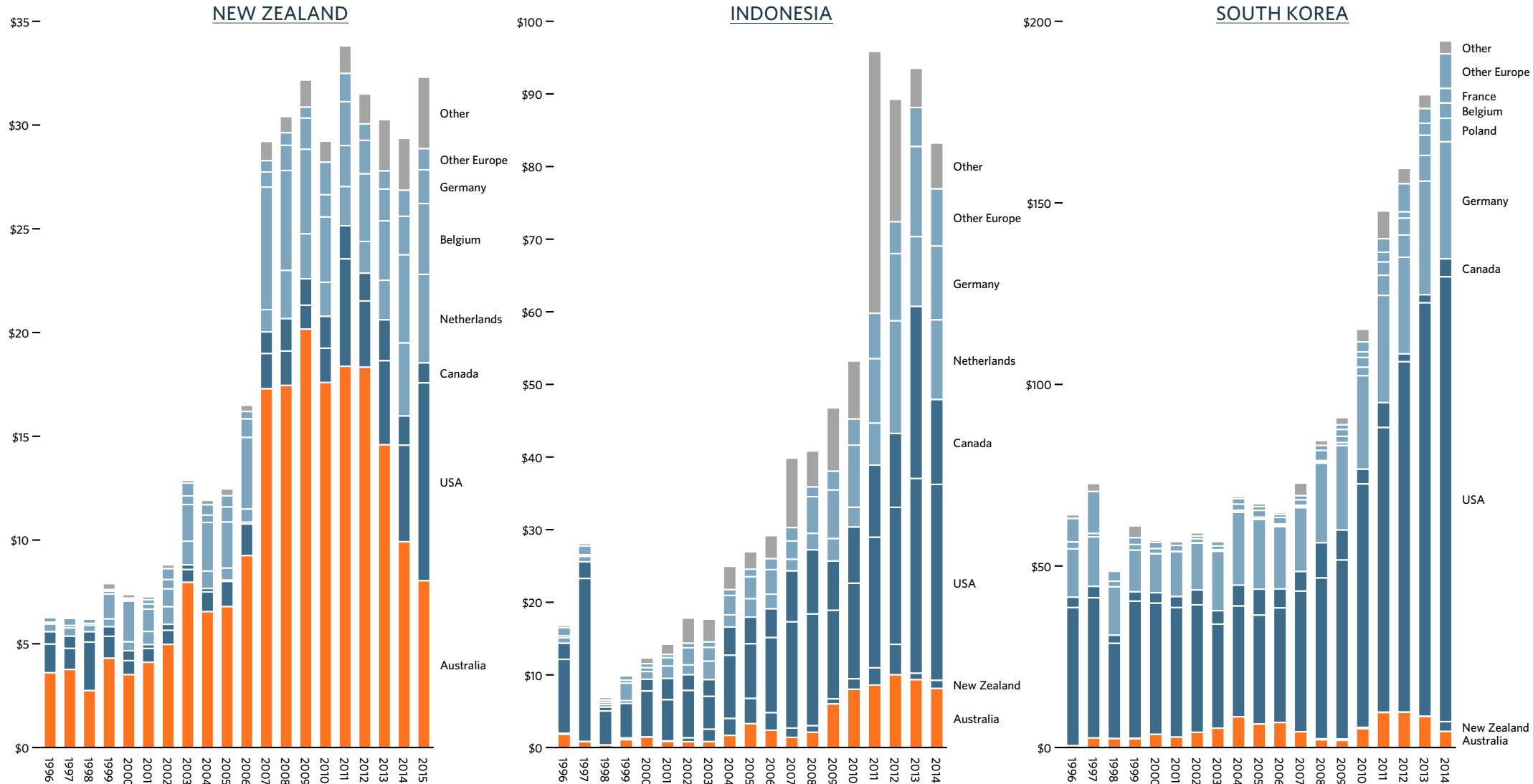


Source: UN Comtrade database (uses all potato codes); Coriolis classifications and analysis

Australia shows declining performance in export markets; it has falling value and falling share across all of its three largest markets; in all cases, it is declining in growing markets, indicating declining competitiveness

POTATO IMPORT VALUE BY SOURCE COUNTRY: AUSTRALIA'S THREE LARGEST MARKETS

US\$m; 1996-2014/15

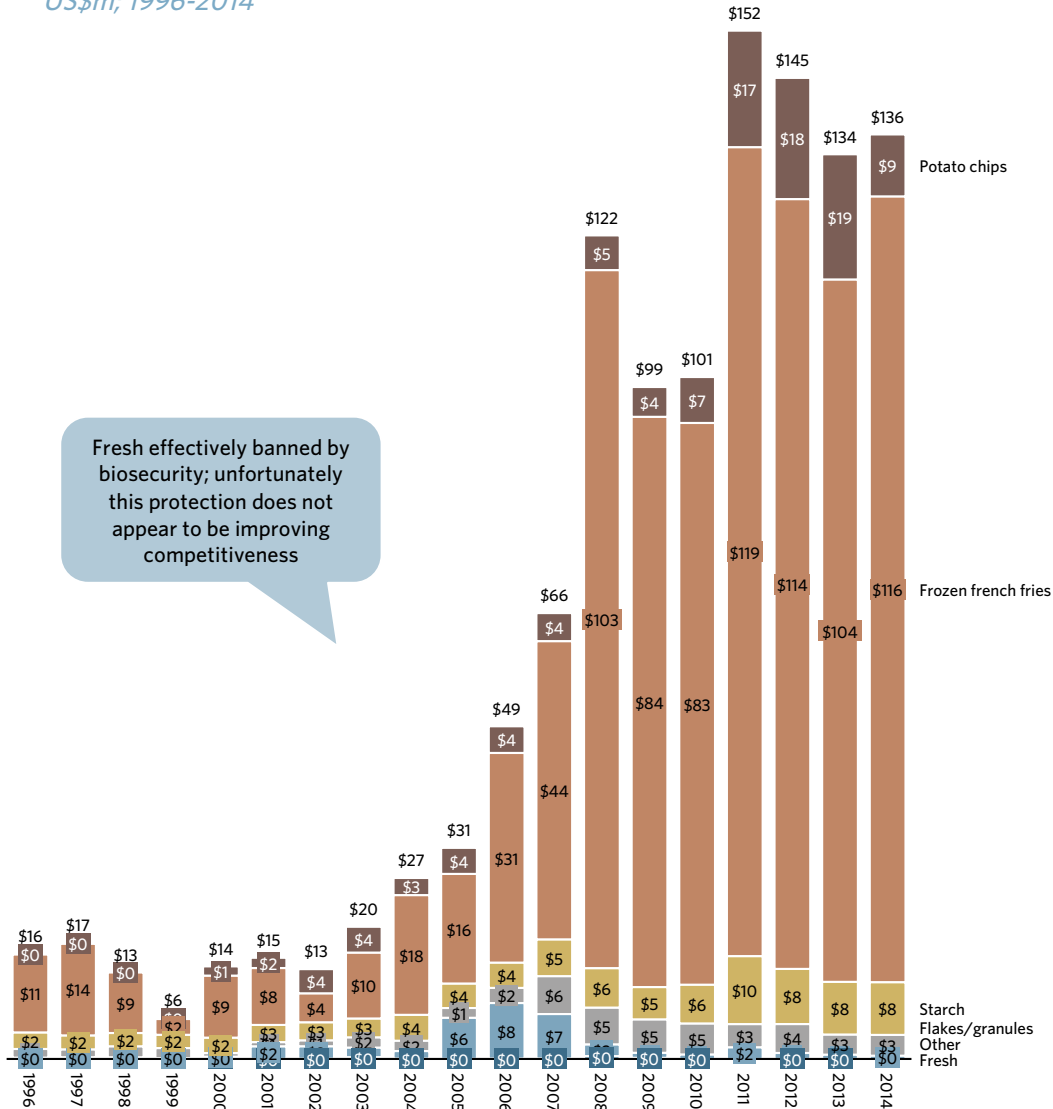


Source: UN Comtrade database (uses all potato codes); Coriolis classifications and analysis

Australia's rapidly growing potato imports are processed, value-added products (FFF, starch, chips) from a handful of developed countries (NZ, USA, Netherlands)

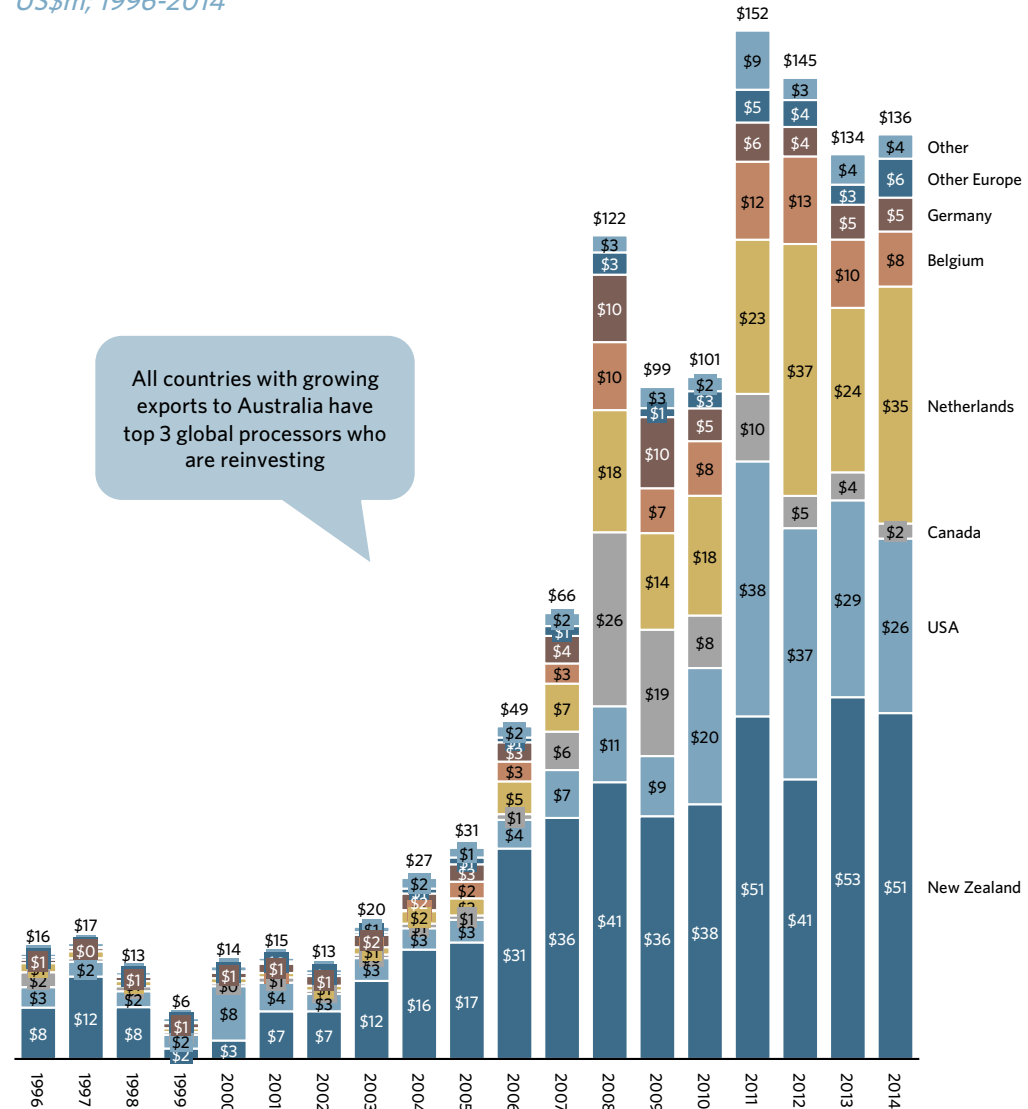
AUSTRALIAN POTATO IMPORT VALUE BY TYPE

US\$m; 1996-2014



AUSTRALIAN POTATO IMPORT VALUE BY SOURCE COUNTRY

US\$m; 1996-2014



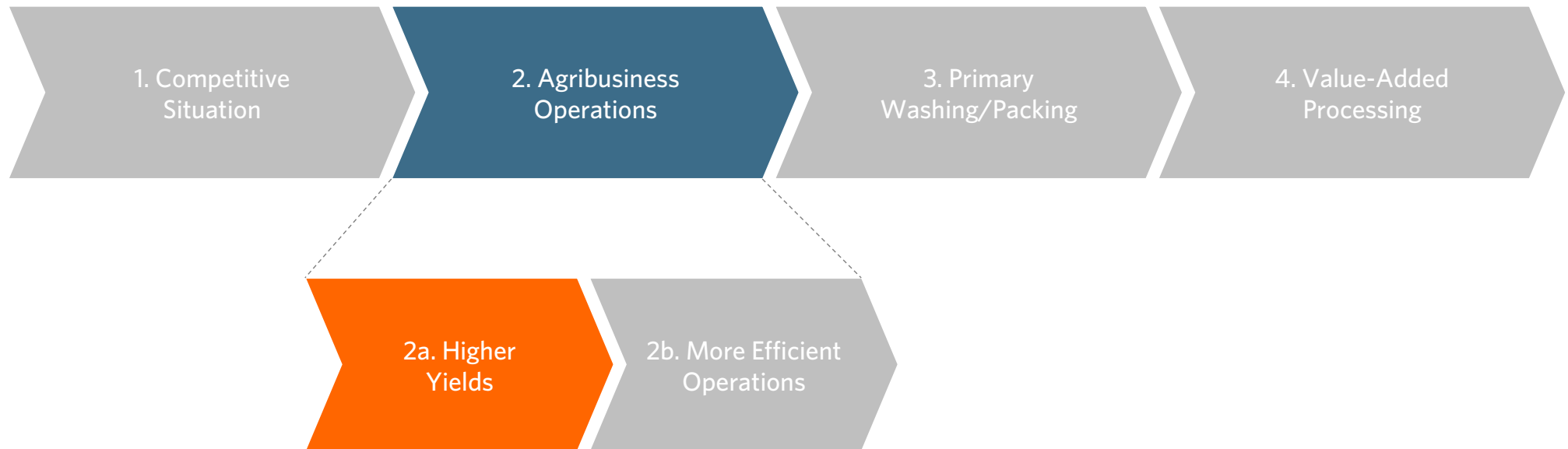
All countries with growing exports to Australia have top 3 global processors who are reinvesting

Fresh effectively banned by biosecurity; unfortunately this protection does not appear to be improving competitiveness

Source: UN Comtrade database (uses all potato codes); Coriolis classifications and analysis

This case-study now looks at potato agribusiness operations in Western Australia

SECTION STRUCTURE: POTATO INDUSTRY CASE STUDY



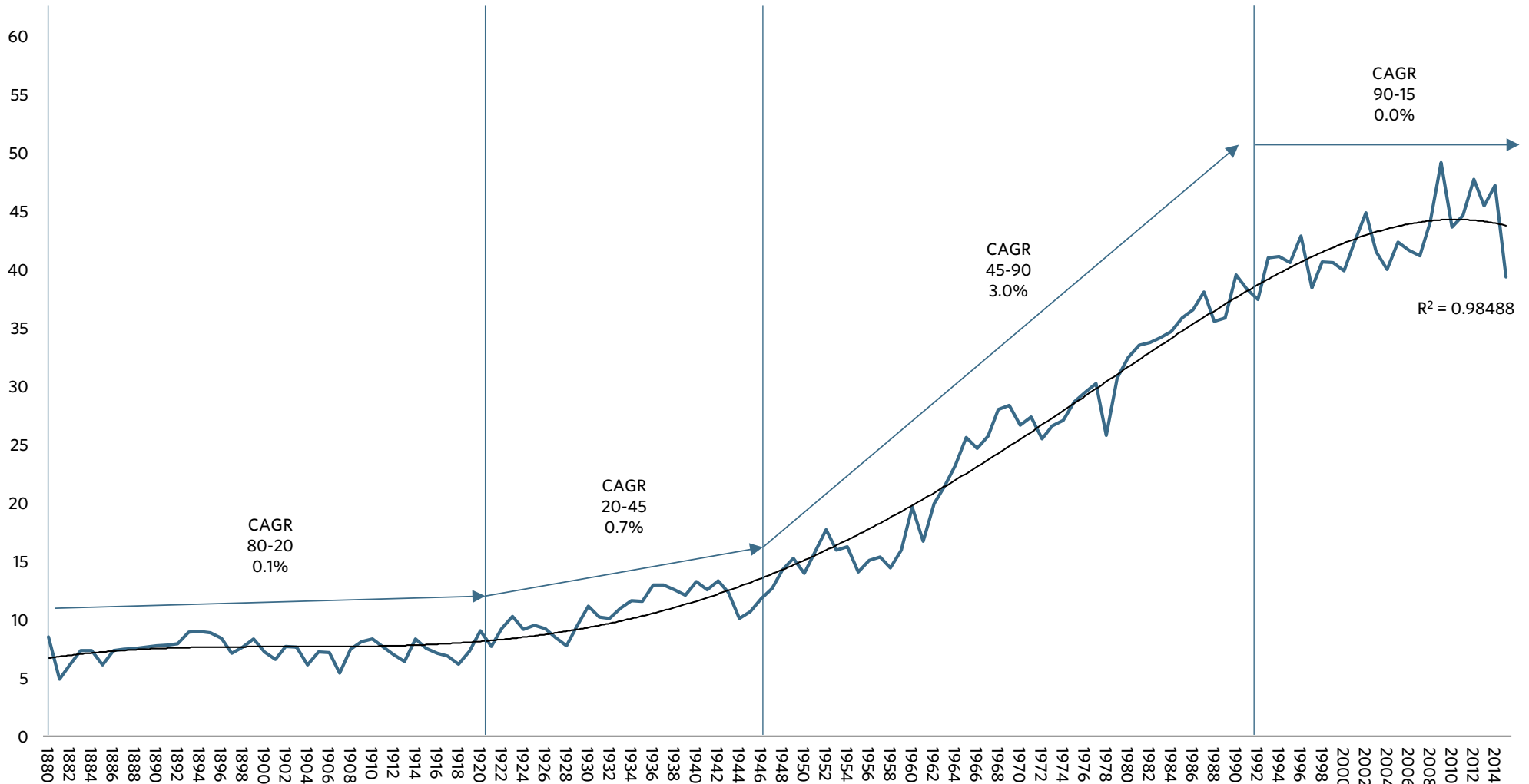
Western Australian needs to continue to improve yield per hectare

- Western Australian potato yields started to grow in the 1920's and took off after the Second World War; while yields continue to grow, these gains appear to have slowed or stalled
- Within Australia, only Tasmania achieves world class yields
- At a high level, the global yield curve shows Australia underperforms key global exporters
- Australia's failure to match leaders global yields has hampered export growth
- Best practice peer group suggest Western Australia could achieve +20-55% more potatoes per hectare
- Continuous improvement in yield is a constant battle where Western Australia must continue to improve
- The Western Australian potato industry is about 45 years behind Washington State in yield; the industry needs to focus on achieving 2.2%/year yield increases for the foreseeable future

Western Australian potato yields started to grow in the 1920's and took off after the Second World War; while yields continue to grow, these gains appear to have slowed or stalled

AVERAGE POTATO YIELD IN WESTERN AUSTRALIA

Tonnes/hectare; 1880-2015



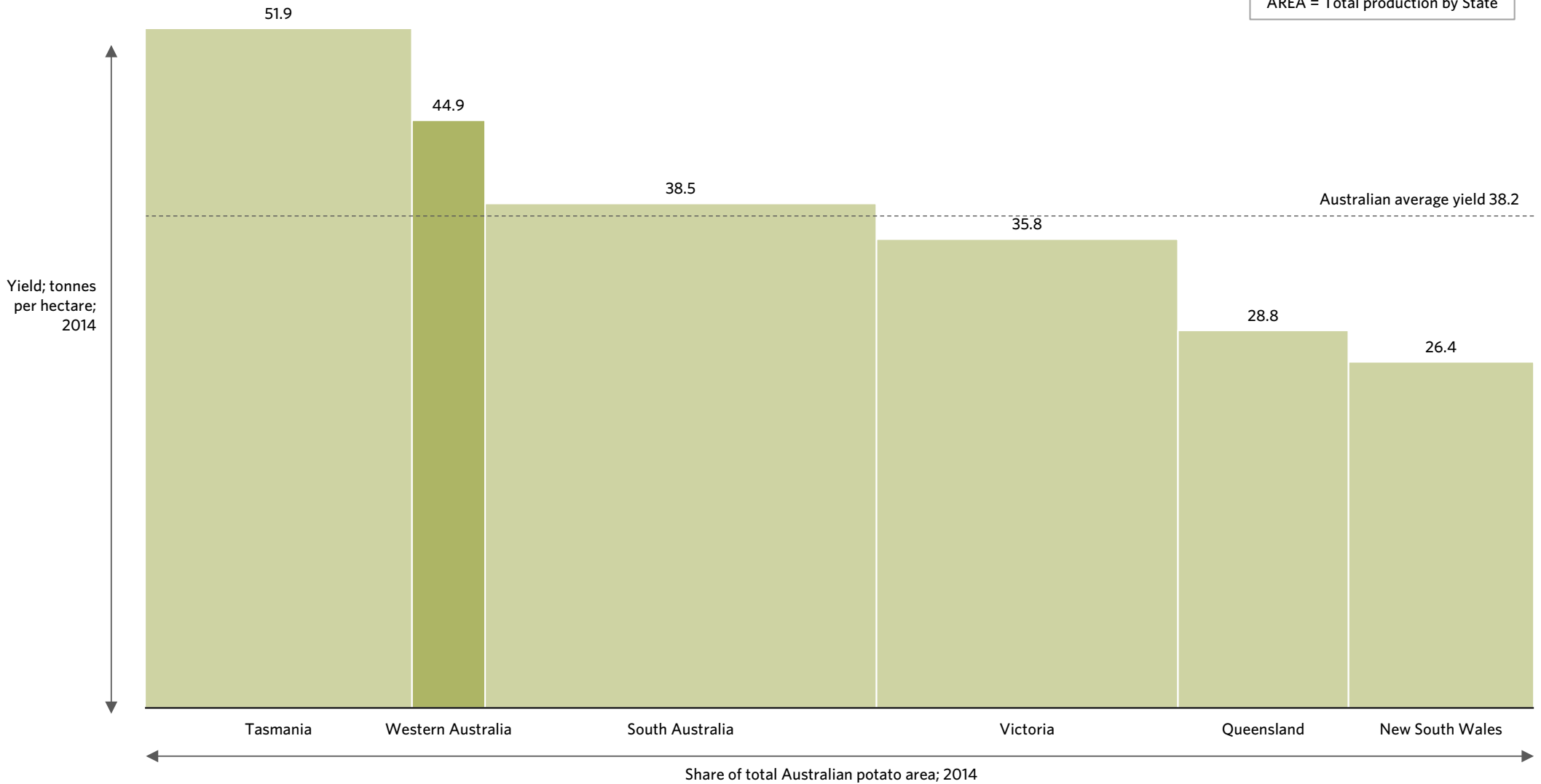
Source: various WA Statistical Register (by year); various ABS publications; Coriolis analysis and estimates

Within Australia, only Tasmania achieves world class yields

AUSTRALIAN YIELD CURVE BY STATE: AREA VS. 5YR AVERAGE YIELD

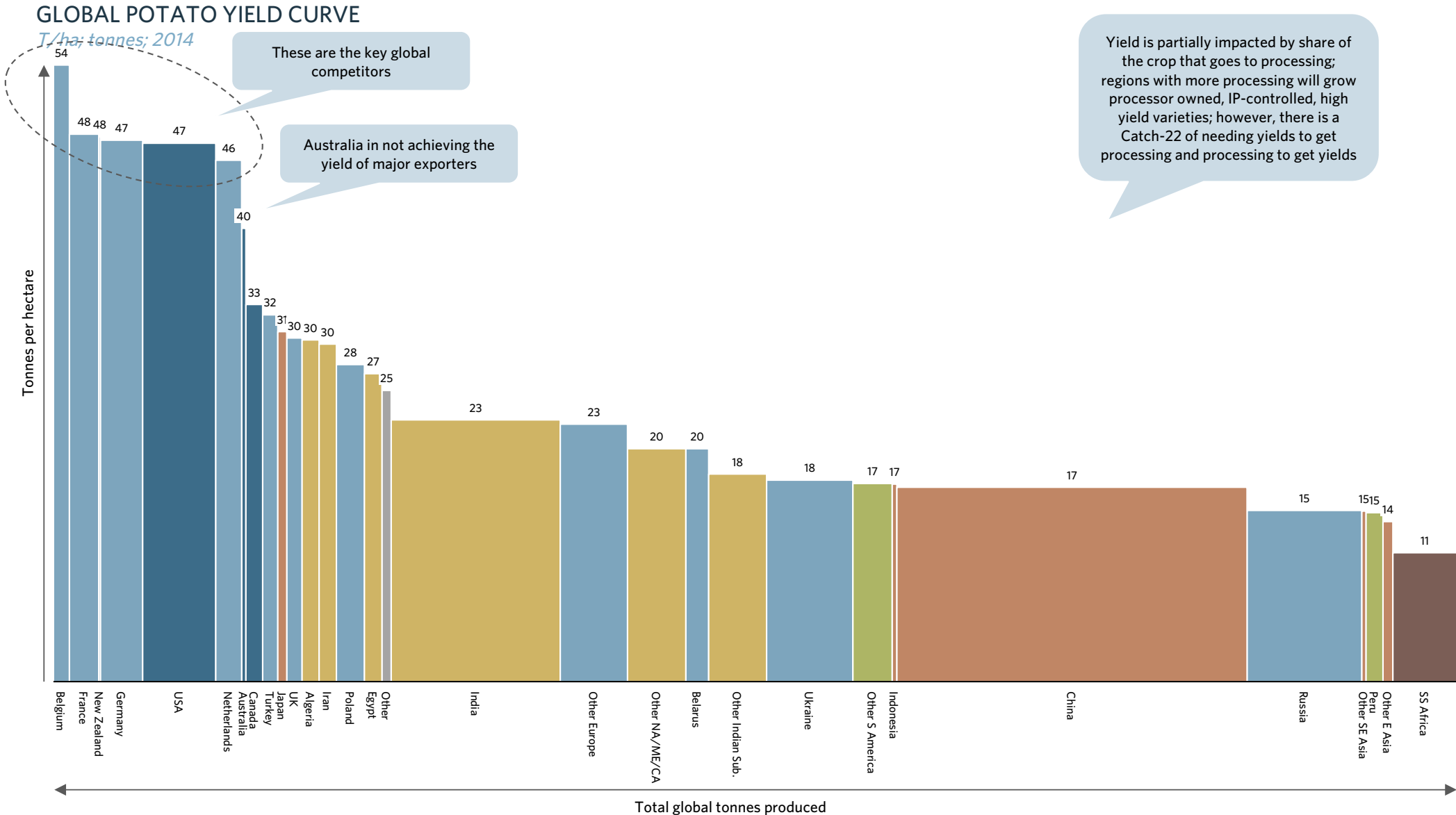
Tonnes per hectare; 5yr average 2011-15; hectares

AREA = Total production by State



Source: ABS Agricultural Commodities Australia (7121.0); Coriolis analysis

At a high level, the global yield curve shows Australia underperforms key global exporters

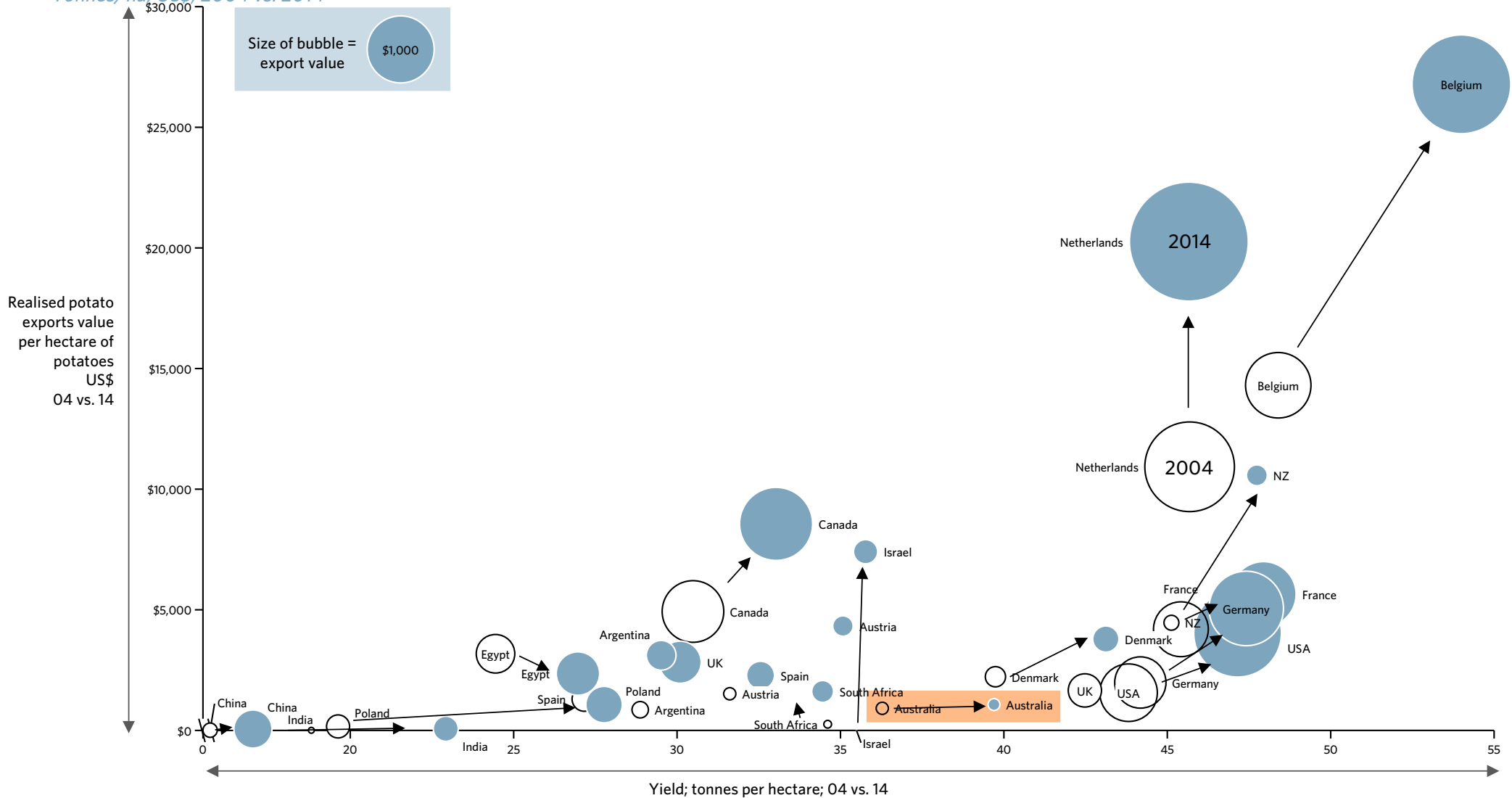


Source: UN FAO AgStat database; Coriolis analysis and classifications

Australia's failure to match leaders global yields has hampered export growth

COMPETITIVENESS MATRIX: YIELD VS. POTATO EXPORTS PER HECTARE VS. TOTAL EXPORT VALUE

Tonnes/ha: US\$; 2004 vs. 2014

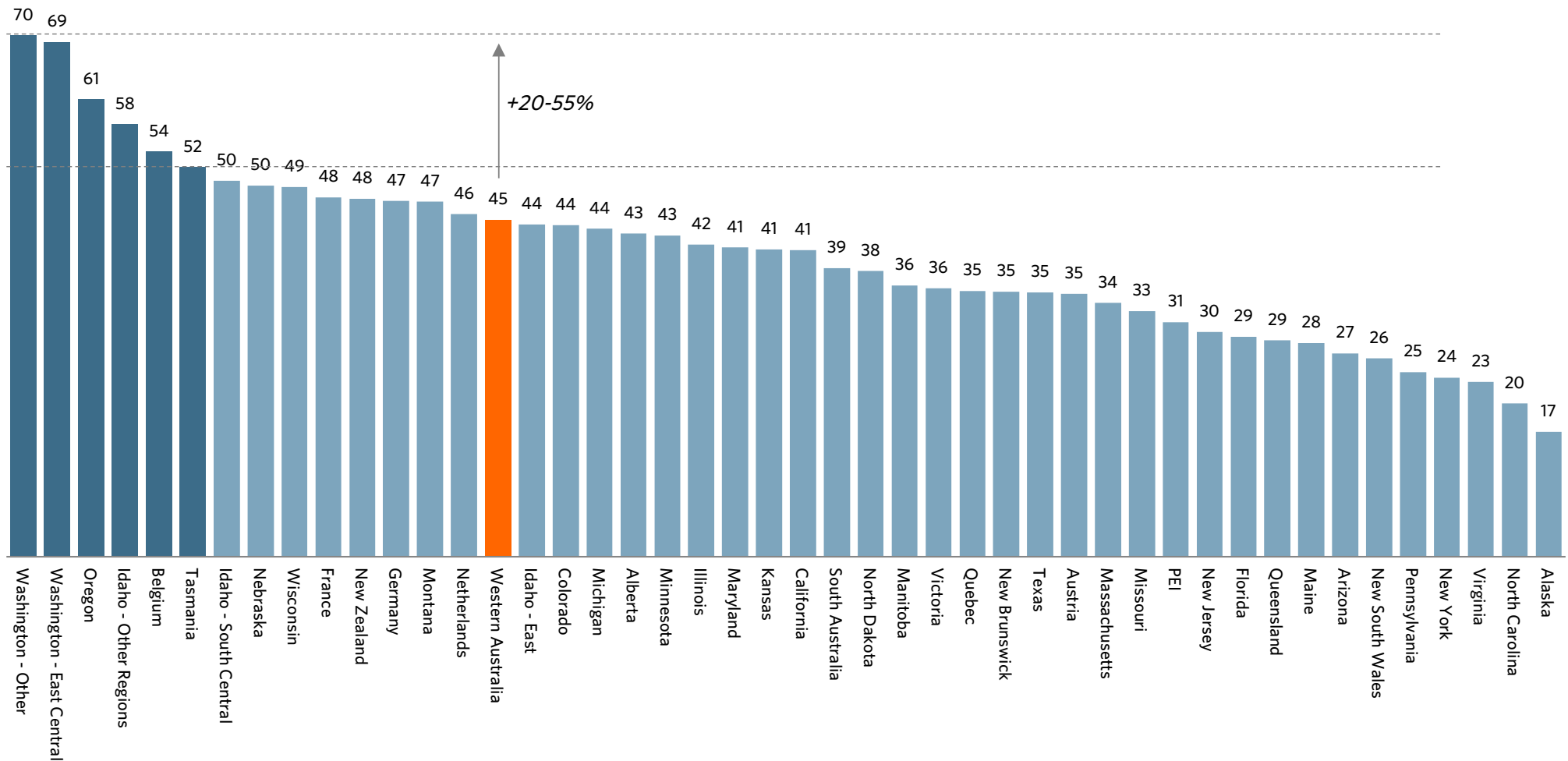


Source: UN FAO AgStat database; UN Comtrade database; Coriolis analysis and classifications

Best practice peer group suggest Western Australia could achieve +20-55% more potatoes per hectare

AVERAGE YIELD IN TONNES PER HECTARE: WESTERN AUSTRALIA VS. SELECT US/CANADA/EU/AU
Tonnes/hectare; 5y average (AU; 11-15); 2013/14 (others as available)

AU states (only)
use 5y average

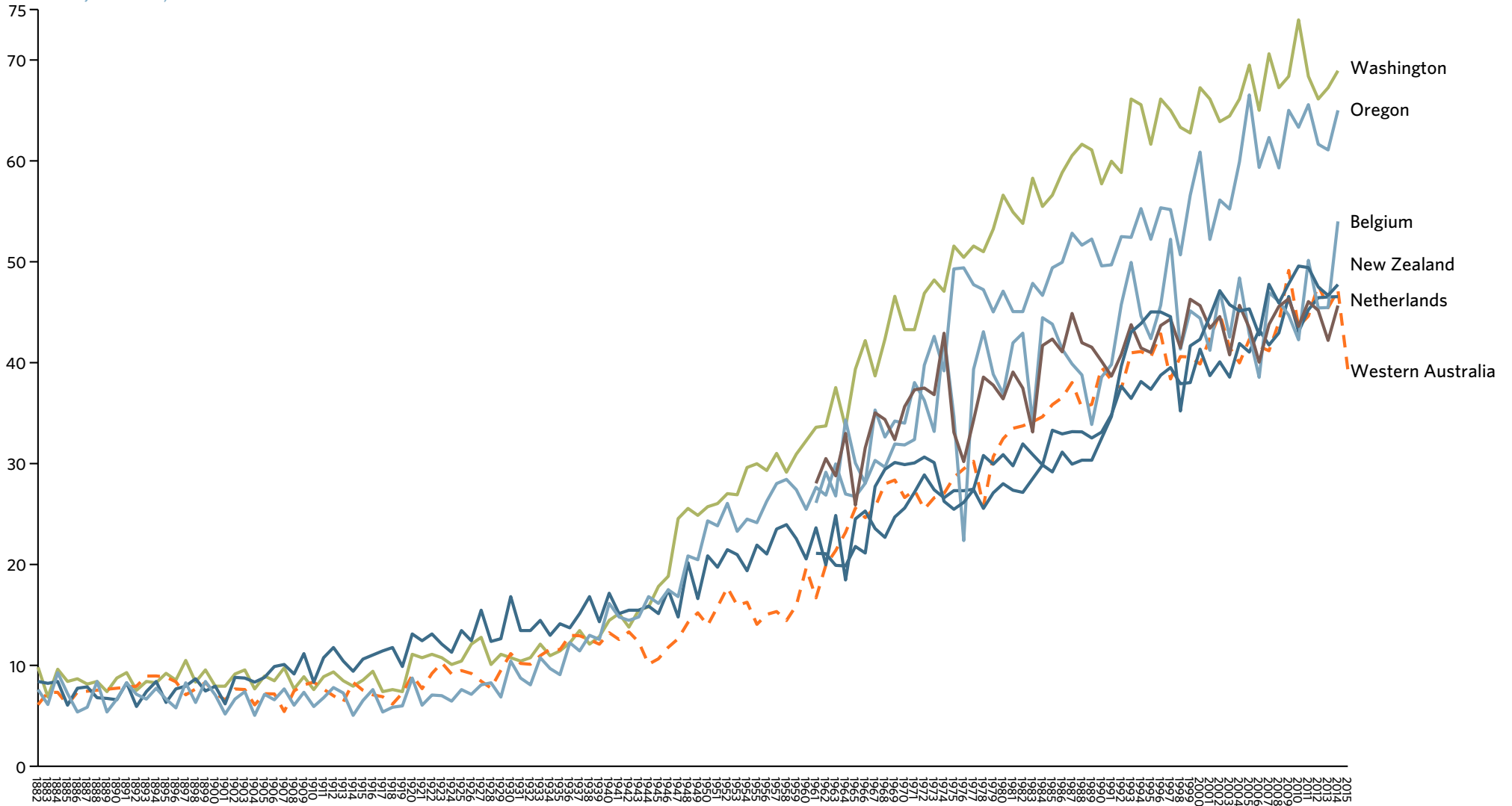


Source: UN FAO AgStat database; USDA NASS database; USDA NASS Census of Agriculture; Statistics Canada; ABS Agricultural Commodities Australia (7121.0); Coriolis analysis

Continuous improvement in yield is a constant battle where Western Australia must continue to improve

AVERAGE YIELD IN TONNES PER HECTARE: WESTERN AUSTRALIA VS. SELECT PEERS

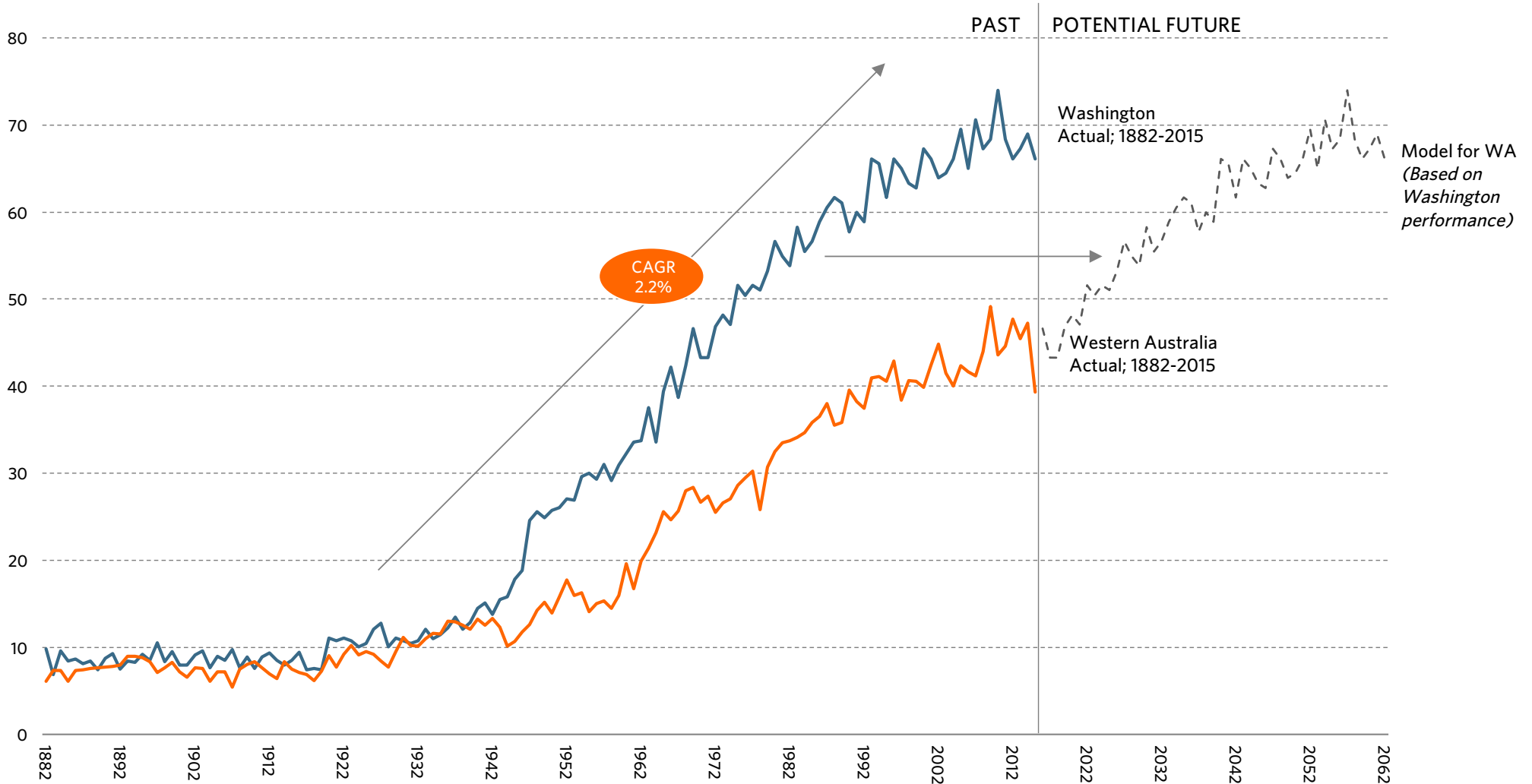
Tonnes/hectare; 1882-2015 or as available



The Western Australian potato industry is about 45 years behind Washington State in yield; the industry needs to restructure and focus on achieving 2.2%/year yield increases for the foreseeable future

AVERAGE YIELD IN TONNES PER HECTARE: WESTERN AUSTRALIA VS. WASHINGTON STATE

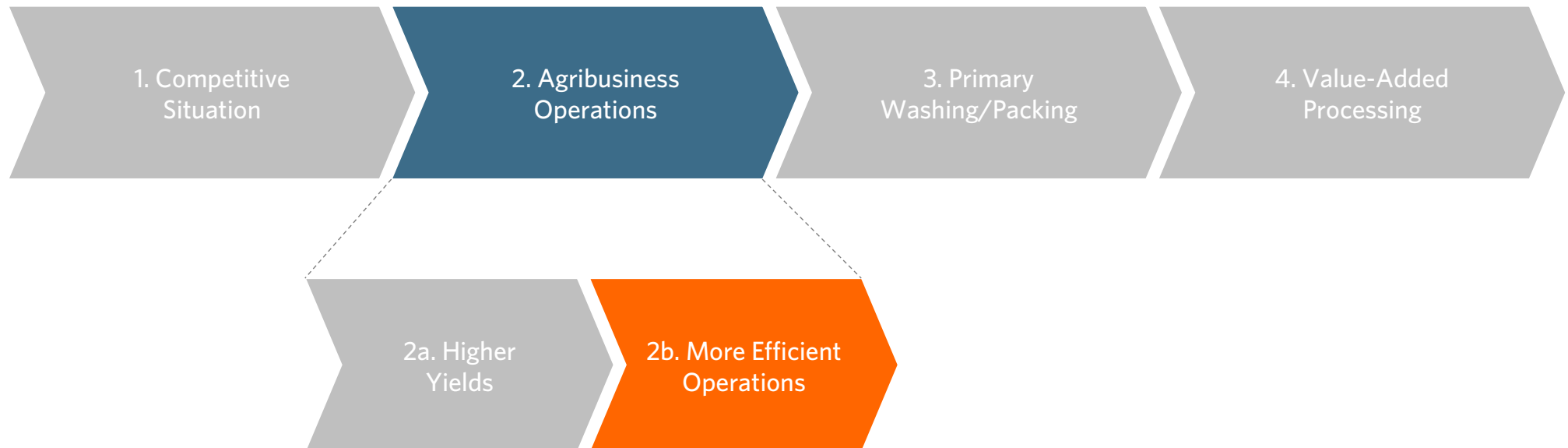
Tonnes/hectare; 1882-2014a; 2015-2060f



Source: various WA Statistical Register (by year); various ABS publications; UN FAO AgStat database; Coriolis analysis and estimates

This case study now looks at potato production unit operation efficiency

SECTION STRUCTURE: POTATO INDUSTRY CASE STUDY



Western Australian needs to accelerate its move to producing more potatoes per operational unit

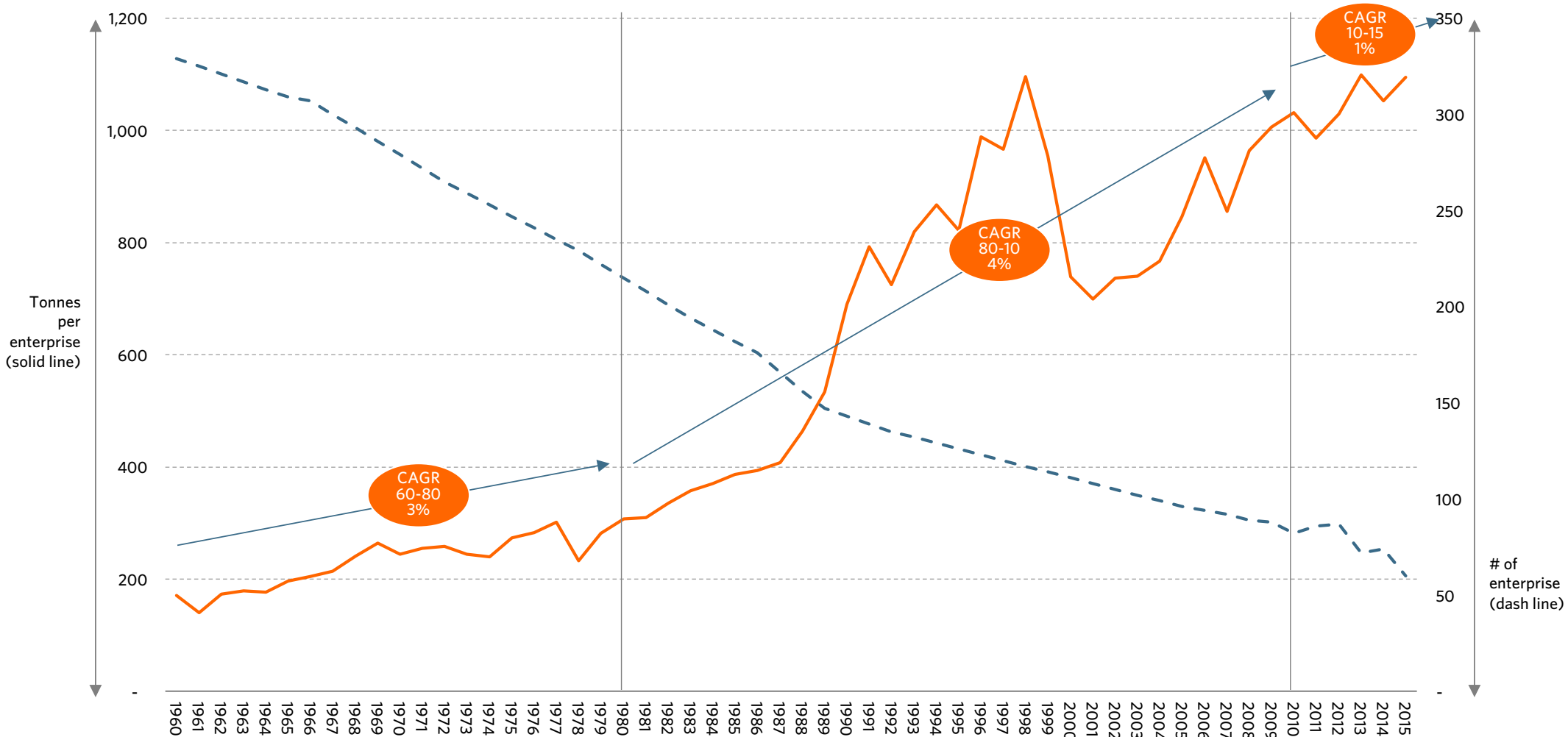
- Western Australia is increasing potato production per operational unit
 - Western Australia is underperforming other states in this measure
 - Western Australia has low potato production per operational unit relative to South Australia and rate of increase over the past five years has been poor
- Western Australia is dramatically underperforming key competitors on this measure
 - Western Australian potato operational units vary by size, however most are small, with only a handful of enterprises over 100 hectares
 - Comparing with Washington State highlights the complete lack of large operations in Western Australia leading to low relative production
 - This in turn leads to the situation that the average large Washington State operational unit can easily produce more potatoes than the state of Western Australia
- Growth in other regions is coming from large operations; without larger operations WA will struggle to grow
- The number of agribusiness operational units producing potatoes in Western Australia is declining
 - A similar level of operational unit number decline can be observed in peer group regions
 - The number of operational units producing potatoes in Western Australia will likely continue to decline

Western Australia is increasing potato production per operational unit

PRELIMINARY INCLUDES
EXTRAPOLATION OF MISSING DATA
TREAT AS DIRECTIONAL

WESTERN AUSTRALIAN NUMBER OF POTATO OPERATIONAL UNITS VS. AVERAGE POTATO VOLUME PER OPERATION

Units; tonnes/unit; 1960-2015

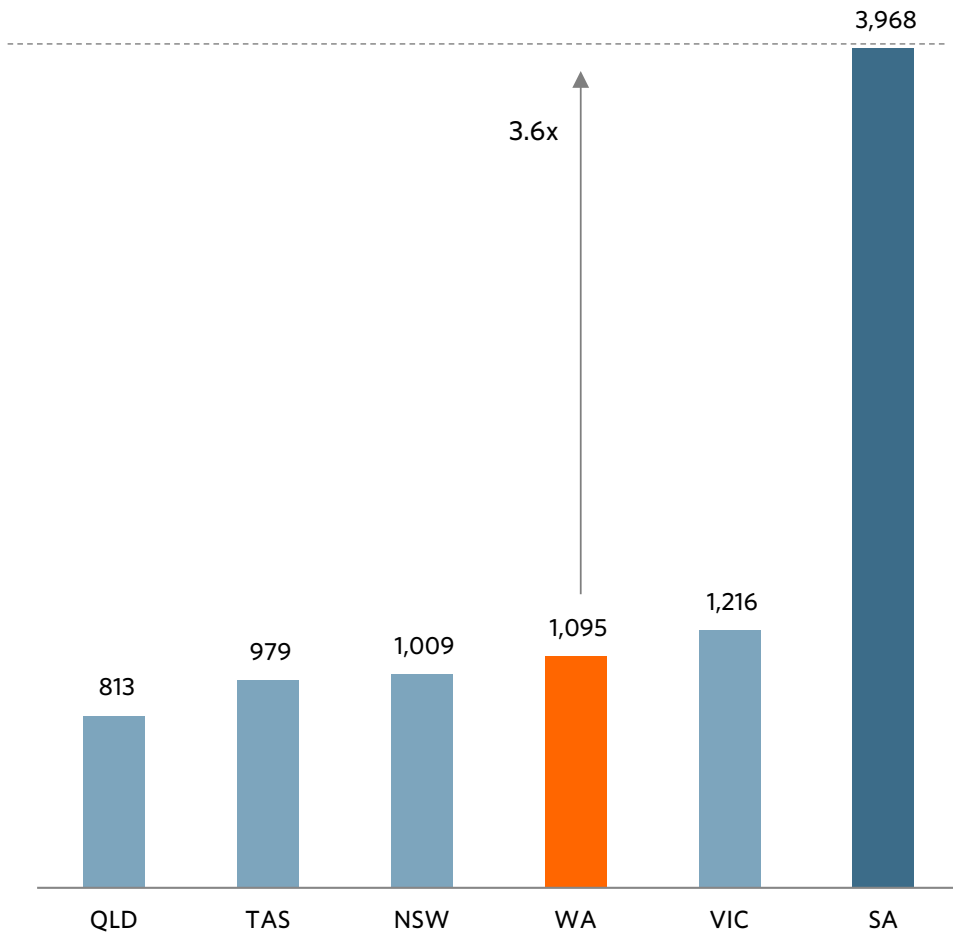


Source: various WA Statistical Register (by year); various ABS publications; Coriolis analysis and estimates

However Western Australia has low potato production per operational unit relative to South Australia and rate of increase over the past five years has been poor

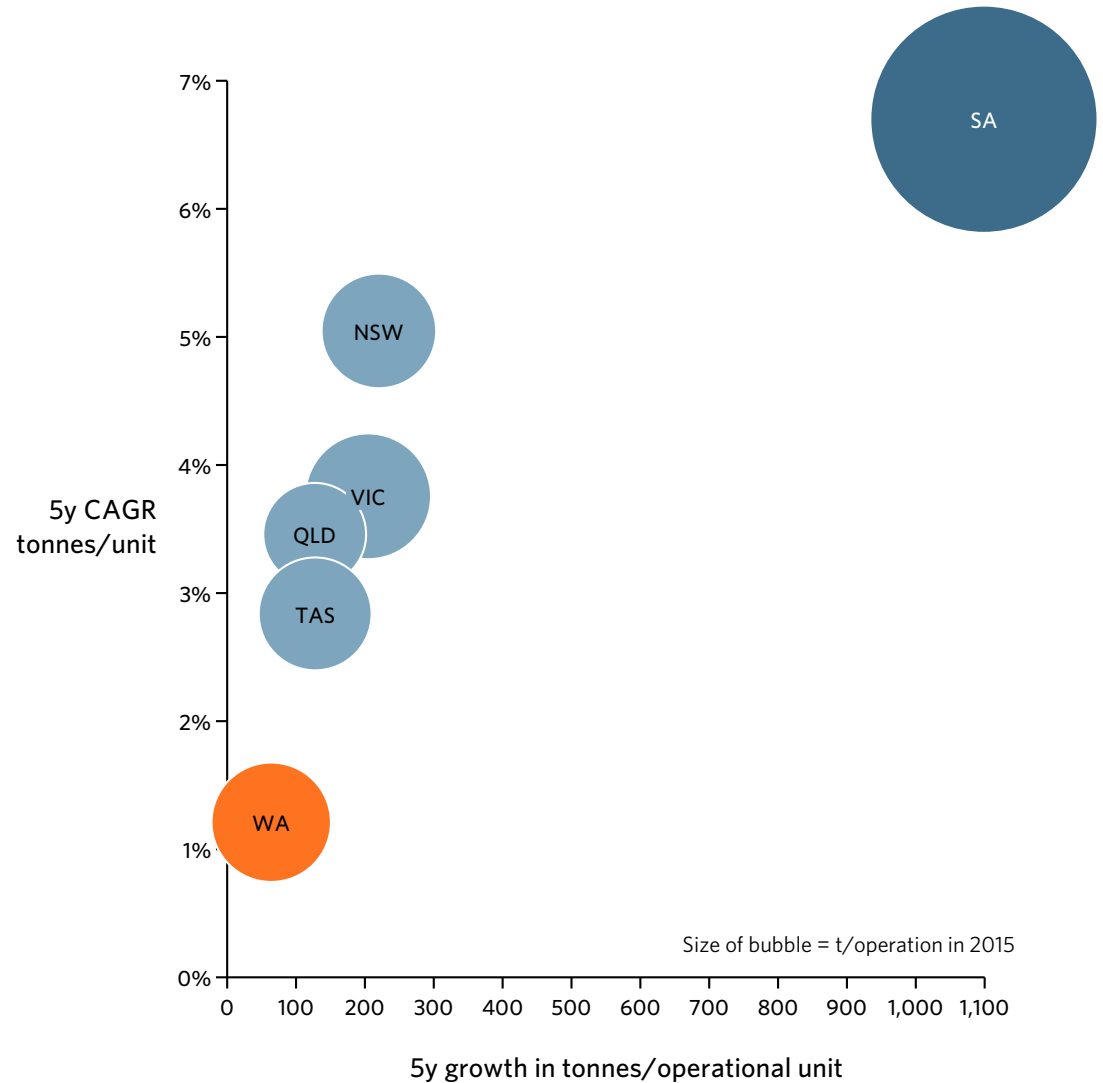
AVERAGE TONNES OF POTATOES PRODUCED PER AGRICULTURAL ENTERPRISE BY AUSTRALIAN STATE

Tonnes/operational unit; 2015



GROWTH MATRIX ON TONNES/UNIT BY AUSTRALIAN STATE

Tonnes/operational unit; 2010 vs. 2015

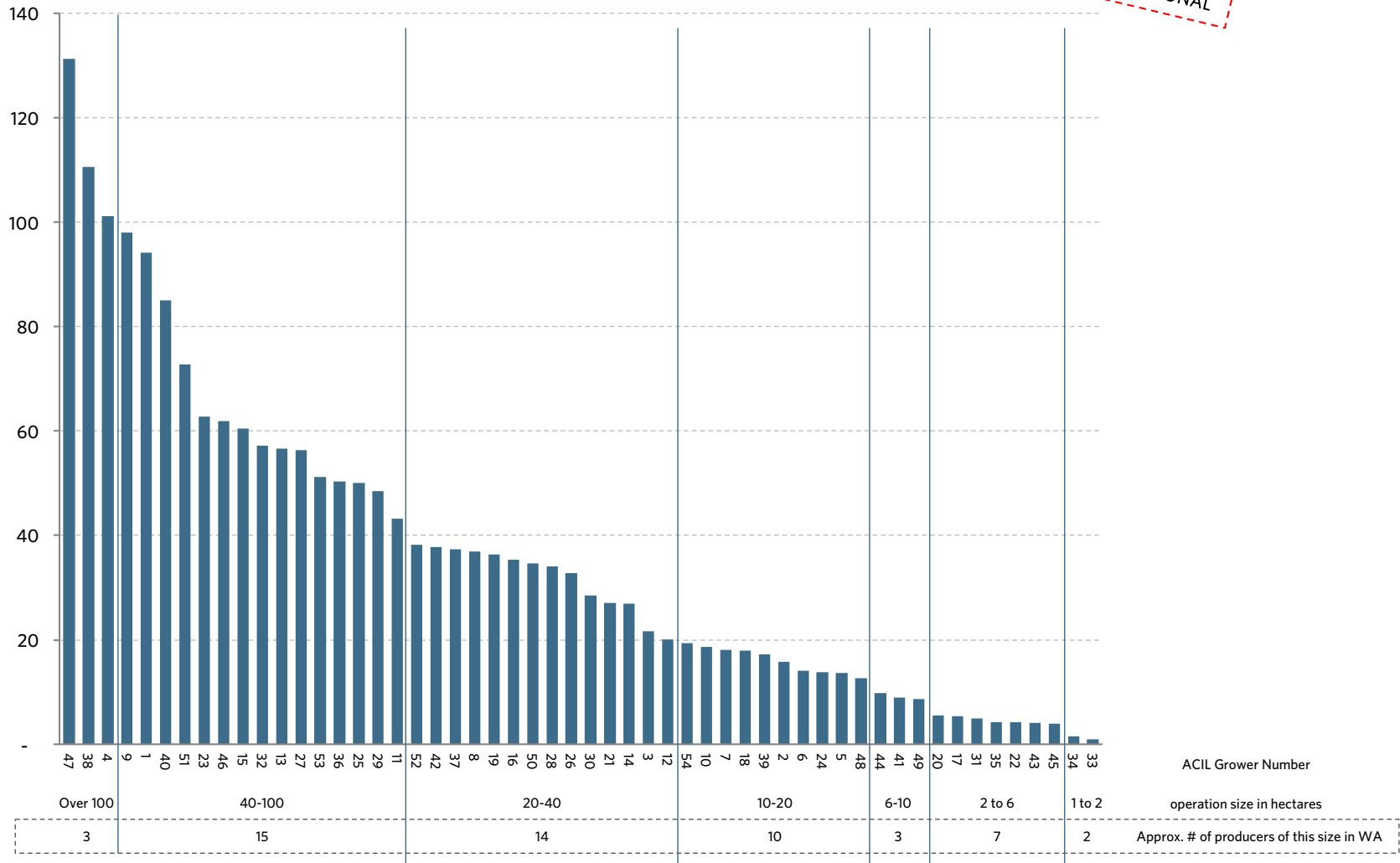


Source: ABS (7121.0); Coriolis analysis and estimates

Western Australian potato operations vary by size, however most are small, with only a handful of enterprises over 100 hectares

ESTIMATED WA POTATO OPERATIONAL UNITS BY OPERATION SIZE
Hectare/enterprise; 2014

PRELIMINARY
TREAT AS DIRECTIONAL

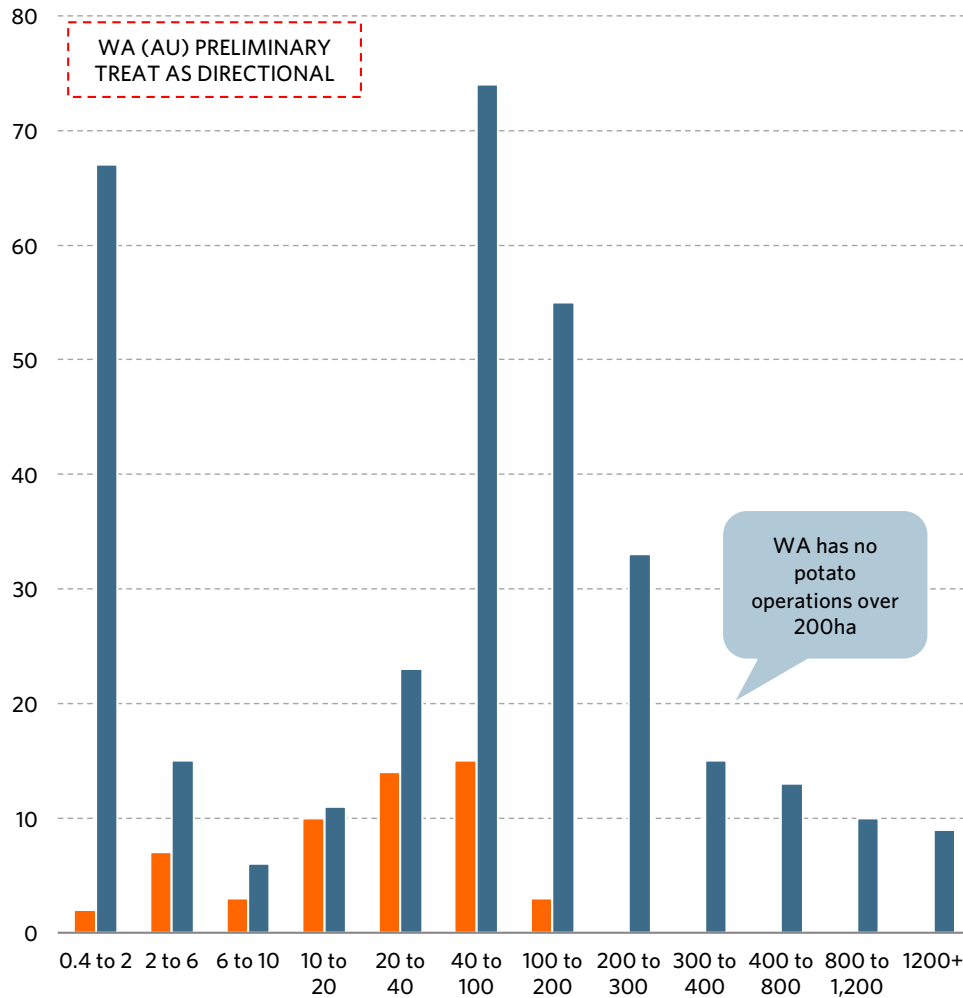


Note: Data is Coriolis estimates based on production (not area) data provided to ACIL Allen by PMC

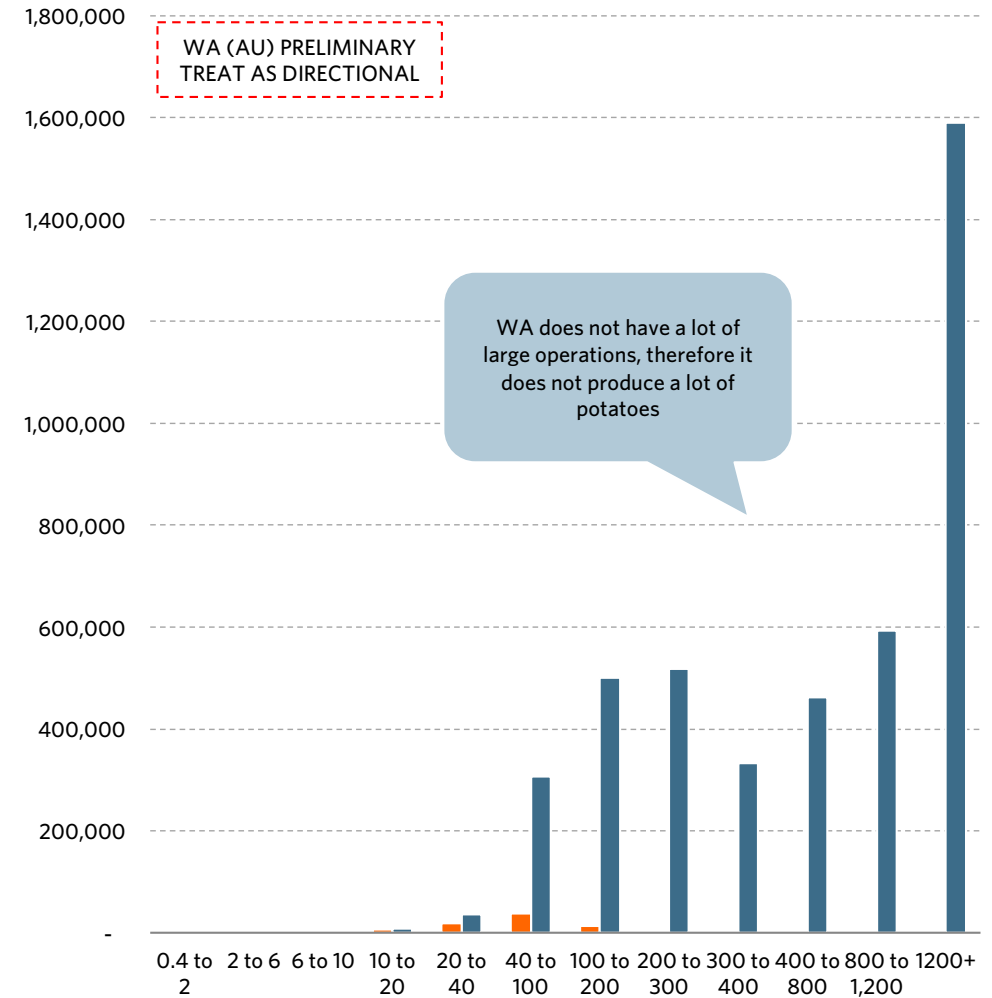
Source: ACIL Allen Consulting "Regulation and the Potato Industry in WA" (p5); ABS "Agricultural Commodities, Australia 2013-14 (7121.0); Coriolis analysis

Comparing with Washington State highlights the complete lack of large operations in Western Australia leading to low relative production

NUMBER OF OPERATIONS BY SIZE: WA VS. WASHINGTON
Units; actual; 2014



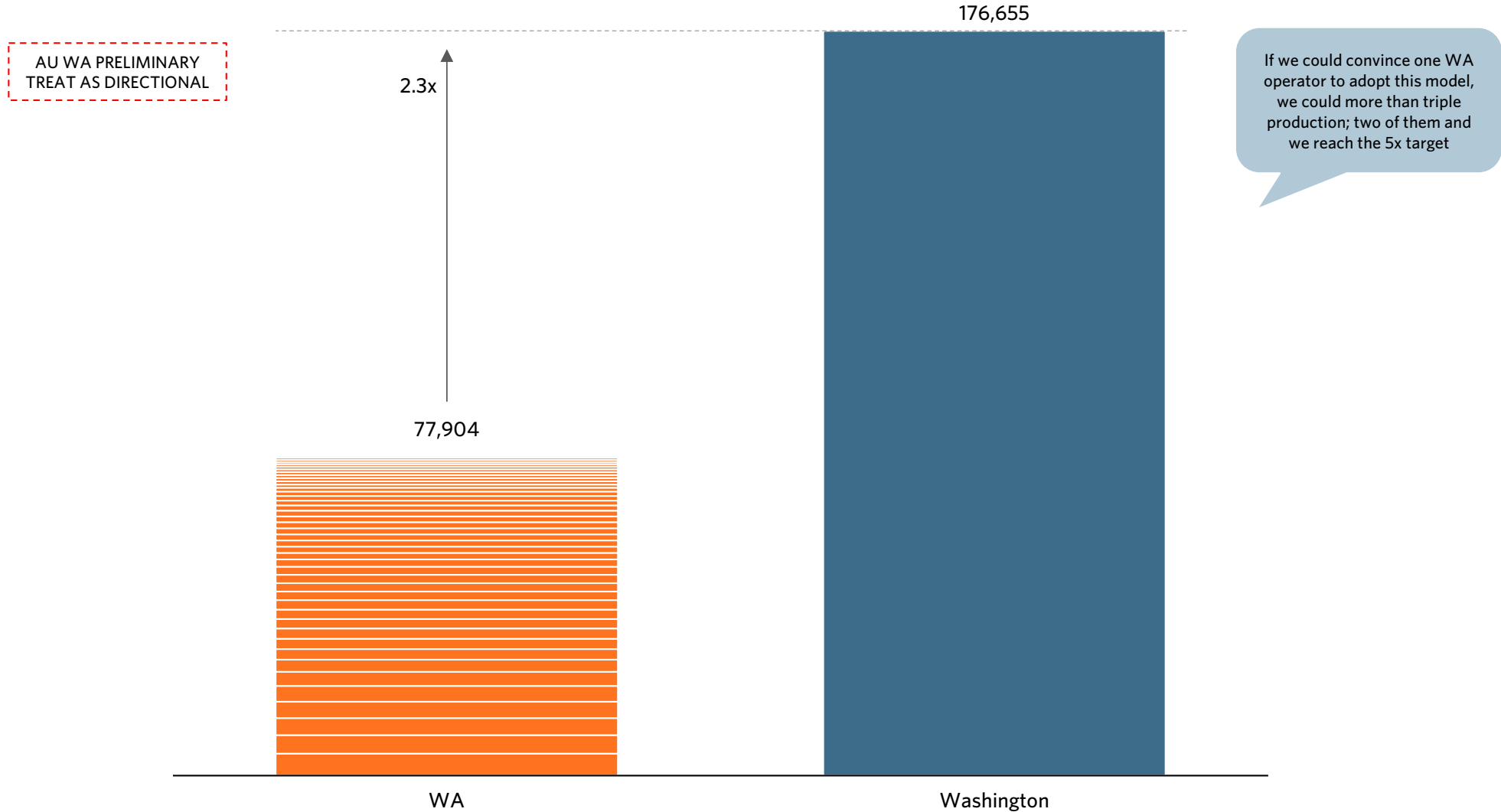
PRODUCTION BY OPERATION SIZE: WA VS. WASHINGTON
Tonnes; 2014



Source: ACIL Allen Consulting "Regulation and the Potato Industry in WA" (p5); ABS "Agricultural Commodities, Australia 2013-14 (7121.0)"; USDA NASS Census of Agriculture; Coriolis analysis, modelling and estimates

This in turn leads to the situation that the average large Washington State operational unit can easily produce more potatoes than the state of Western Australia

POTATO PRODUCTION: ALL WESTERN AUSTRALIA OPERATIONAL UNITS VS. 1 AVERAGE LARGE WASHINGTON STATE OPERATION
Tonnes; 2014



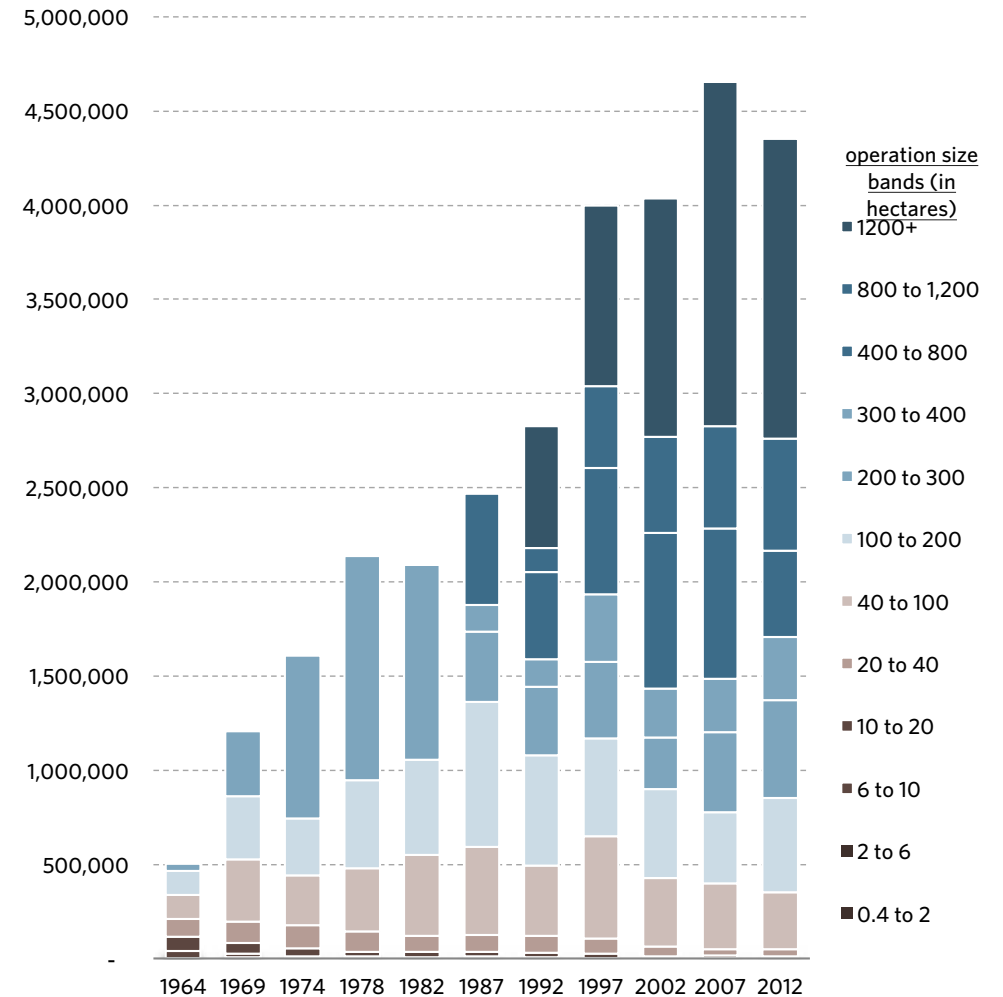
Source: ACIL Allen Consulting "Regulation and the Potato Industry in WA" (p5); ABS "Agricultural Commodities, Australia 2013-14 (7121.0)"; USDA NASS Census of Agriculture; Coriolis analysis, modelling and estimates

Growth in other regions is coming from large operations; without larger operations WA will struggle to grow

TOTAL POTATO PRODUCTION: WESTERN AUSTRALIA
Tonnes; actual; select years 1964-2012



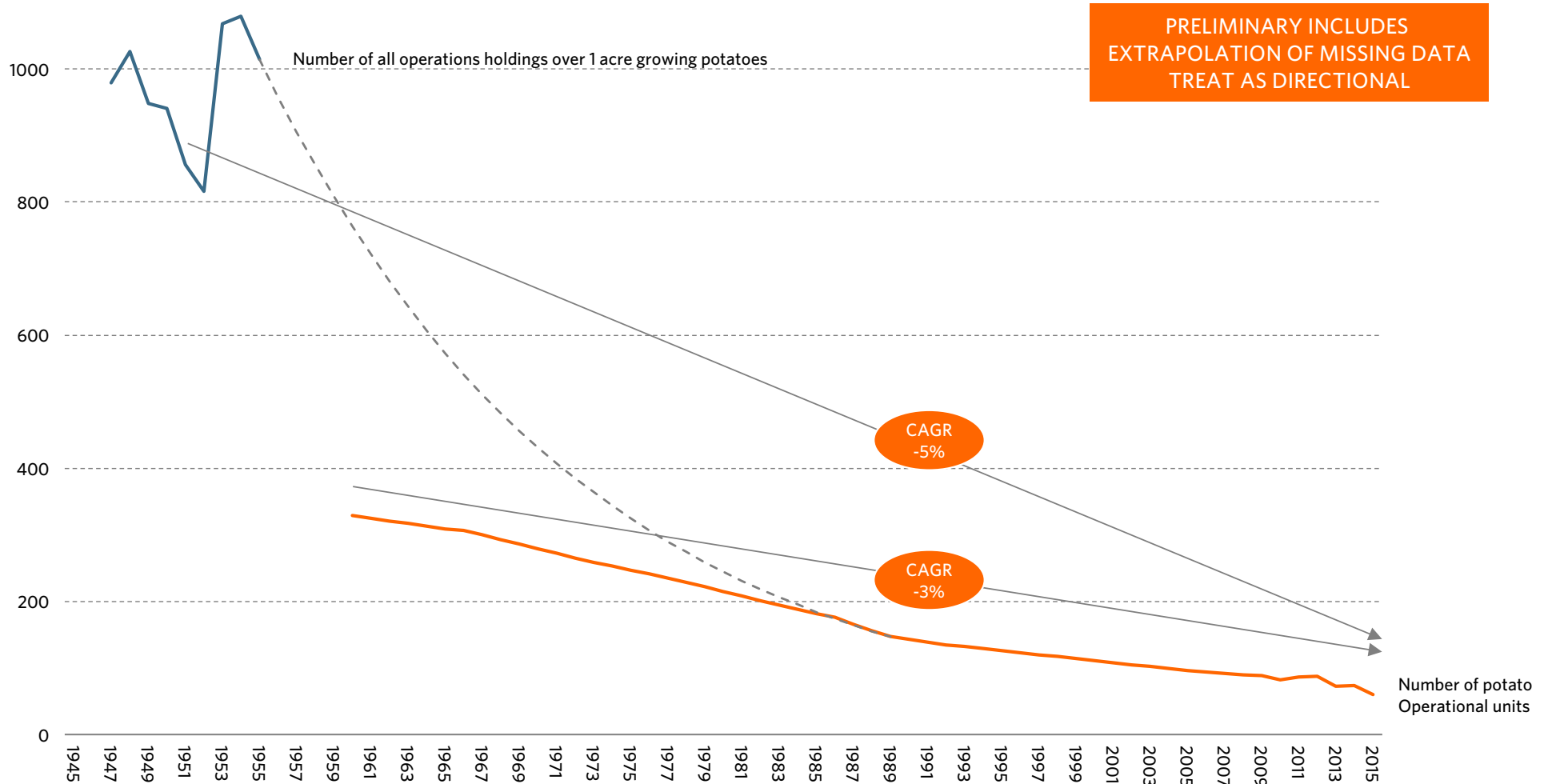
POTATO PRODUCTION BY OPERATION SIZE (HA): WASHINGTON STATE
Tonnes; actual; select US Ag Census years 1964-2012



Source: various publications; USDA NASS Census of Agriculture; Coriolis analysis, modelling and estimates

The number of agribusiness operational units producing potatoes in Western Australia is declining

NUMBER OF POTATO PRODUCERS IN WESTERN AUSTRALIA: AVAILABLE MEASURES
Holdings or enterprises; 1945-2015



Source: various WA Statistical Register (by year); various ABS publications; Coriolis analysis and estimates

A similar level of operational unit number decline can be observed in peer group regions

NUMBER OF POTATO OPERATORS: WESTERN AUSTRALIA VS. SELECT PEERS

operation units; various definitions; 1951/54 vs 2011/14/15



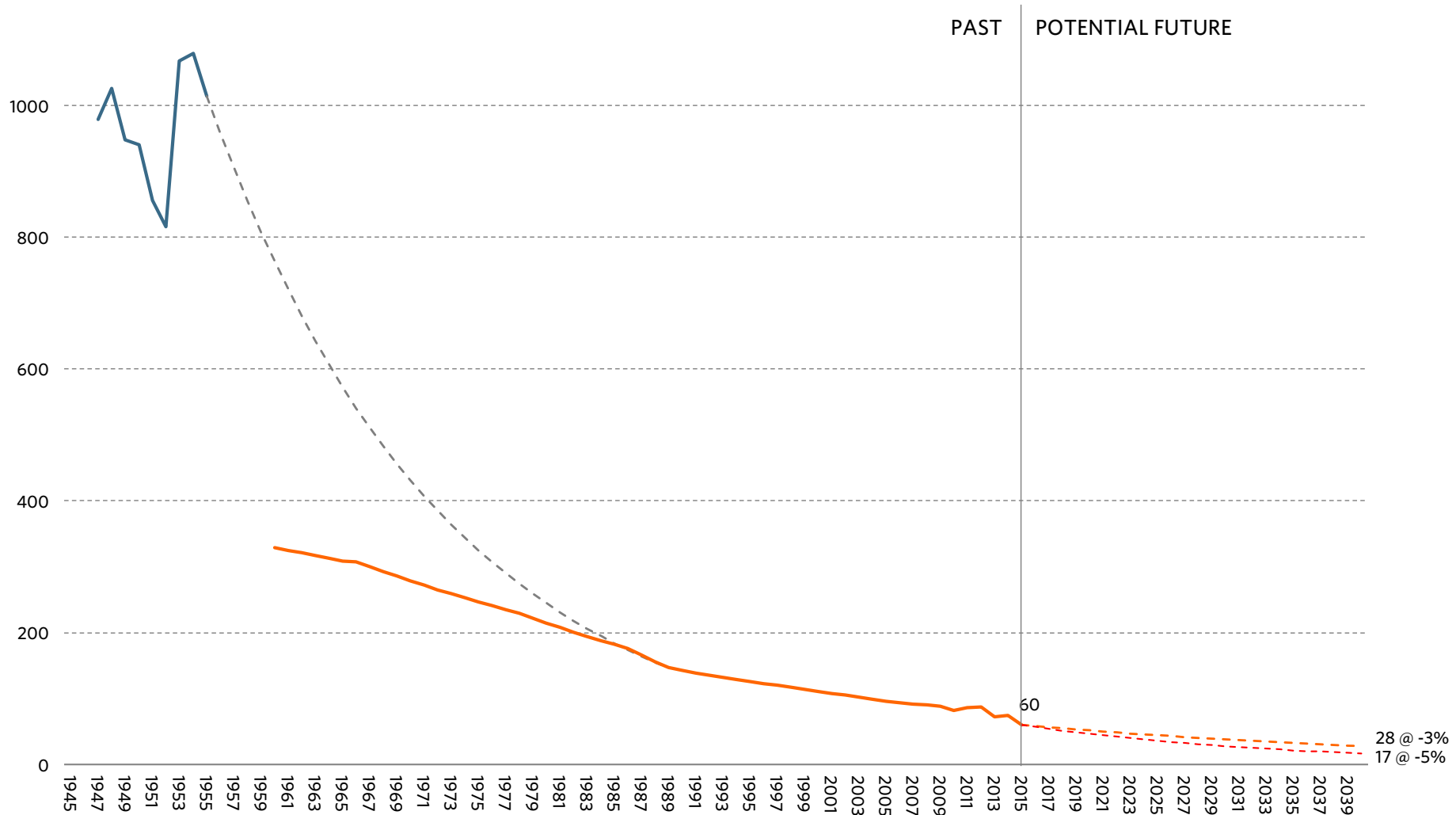
Note: to normalise with WA data, 1951 Canada uses operations with more than 1 acre of potatoes; 1954 US uses operations with more than 1.9 acre (e.g. Quebec 51 = 95,796 operations with potatoes)

Source: USDA NASS Census of Ag 2013; Cornell University Mann Library Historical US Agricultural Census collection; Statistics Canada; various AU (see elsewhere) Coriolis analysis

The number of operational units producing potatoes in Western Australia will likely continue to decline

NUMBER OF POTATO PRODUCTION UNITS IN WESTERN AUSTRALIA: PAST AND POTENTIAL FUTURE
Holdings or enterprises; 1945-2015

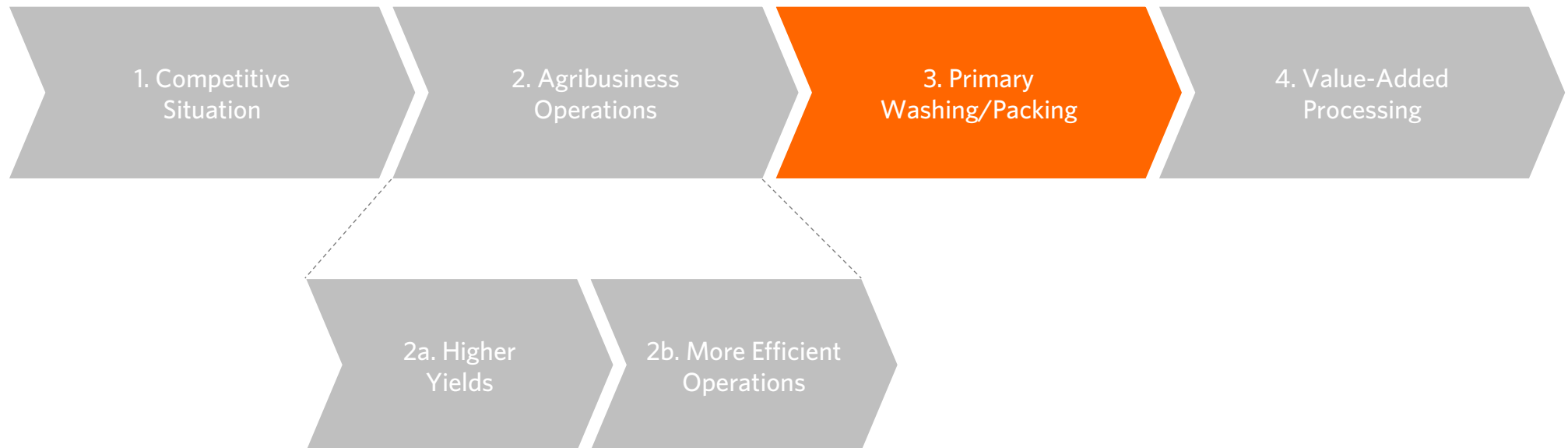
**PRELIMINARY
TREAT AS DIRECTIONAL**



Source: various WA Statistical Register (by year); various ABS publications; Coriolis analysis and estimates

The third section of this report looks at the competitive situation in primary washing/packing of potatoes

SECTION STRUCTURE: POTATO INDUSTRY CASE STUDY








The Western Australian potato packhouse sector lacks scale relative to competitors

- Western Australia has a handful of large potato packhouses
- Western Australian potato packhouses lack scale relative to their global competitors
- Among other advantages, larger packhouses can spend more on packaging design, branding and advertising

Western Australia has a handful of large potato packhouses

MAJOR FRESH POTATO PACKHOUSES IN WESTERN AUSTRALIA

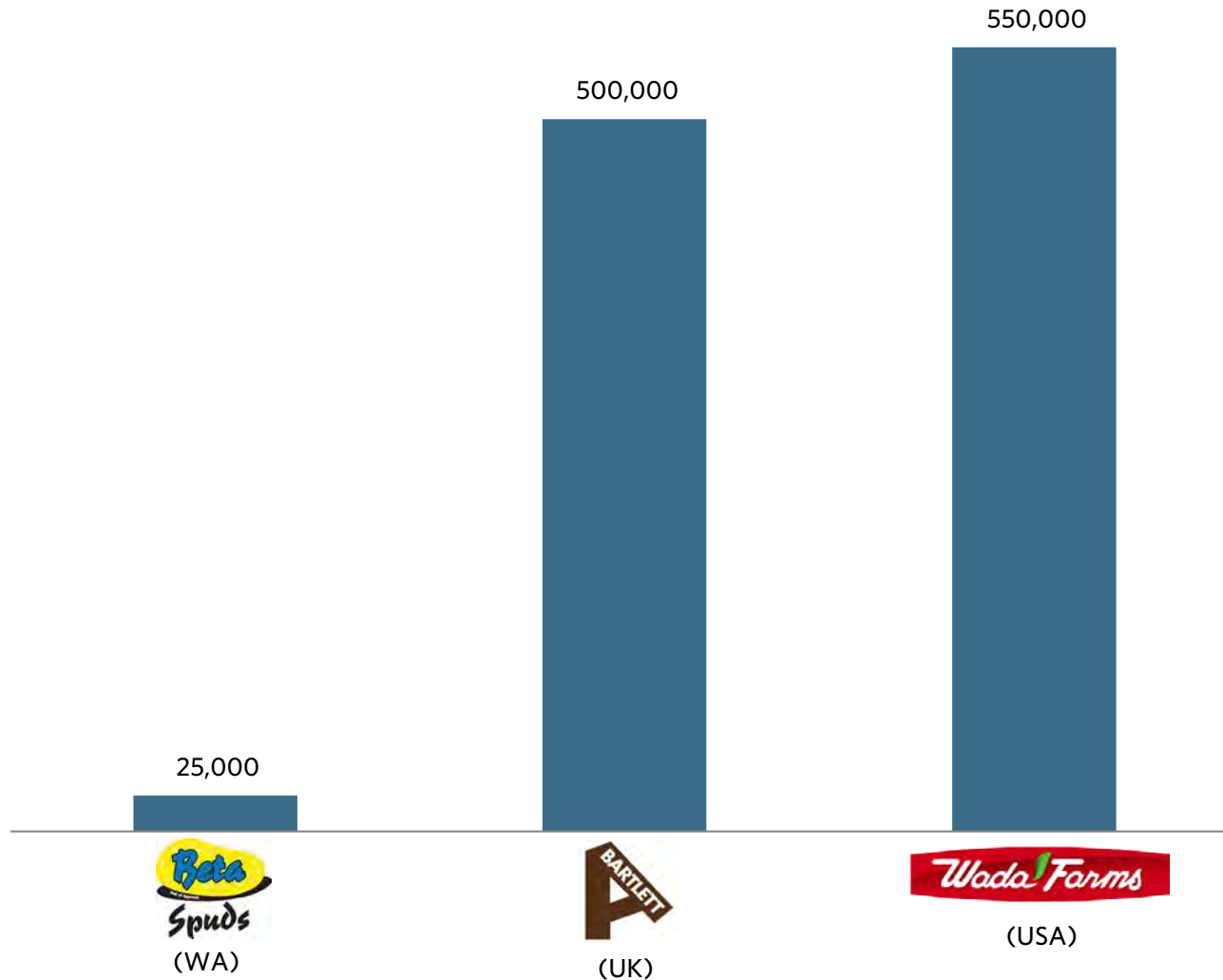
2016 or as available

| | Founded | Volume | Ownership | Location | Description | # of employees | Key products | Website |
|--|---------------------------|--------------------------------|-----------------------------|---|--|----------------|--|--|
|  | TBD | 25,000t (West Au 2012) | Private Cociolone family | 386 Mandogalup Road, Mandogalup, WA 6167 +61 8 9410 0900 | Packhouse in Mandogalup operation in Binningup (180ha producing 4,500t potatoes; 4,000t carrots) Independent growers supply 60% | TBD | Potatoes Carrots | www.betaspuds.com.au |
|  | TBD | TBD | Private Patane family | 27 Pead Road Myalup, WA 6220 + 61 8 9720 2235 | Potato grower and packer 440ha, including a state-of-the-art grading, cleaning, cooling, packing and storage facility | 30 (AuExp) | Carrots, Onions, Potatoes and Broccoli | www.pataneproduce.com |
|  | 1958 | TBD | Private Ryan family | Gray Rd, Pemberton, WA 6260 +61 8 9773 1033 | Potato grower and packer Packhouse in Pemberton; three properties (Pemberton, Perth, Dandaragan) | TBD | Potatoes | www.ryanpotatoes.com.au |
|  | 1965 | TBD | Private Galati family | 630 Karel Ave Jandakot WA 6164 +61 8 9412 6000 | Grow 92ha (2011) of potatoes | 700 (group) | Vegetables, fruit, eggs, poultry, cattle, wholesaling, retailing | www.galatibros.com.au www.spudshed.com.au |
|  | 1930 | Fresh TBD Processed 10,000t | Private Bendotti family | Lot 689 Franklin Street PO Box 1510 Manjimup WA 6258 +61 8 9771 8964 | Packhouse & FFF factory operation potatoes (10,000t/year) | TBD | Potatoes, frozen french fries, cattle | www.bendotti.com.au |
| Aldwich Holdings Supa Chips Pty Ltd. | TBD Supa Chips 1988 | TBD | Private Pannacchione family | Lot 14 Howson Way, Spearwood, WA 6163 +61-89418 4400 | Onion and potato packhouse Potato chips manufacturing | 15 (AuExp) | Onions Potatoes | None identified |

Western Australian potato packhouses lack scale relative to their global competitors

ANNUAL POTATO VOLUME HANDLED

Tonnes; 2015 or as available



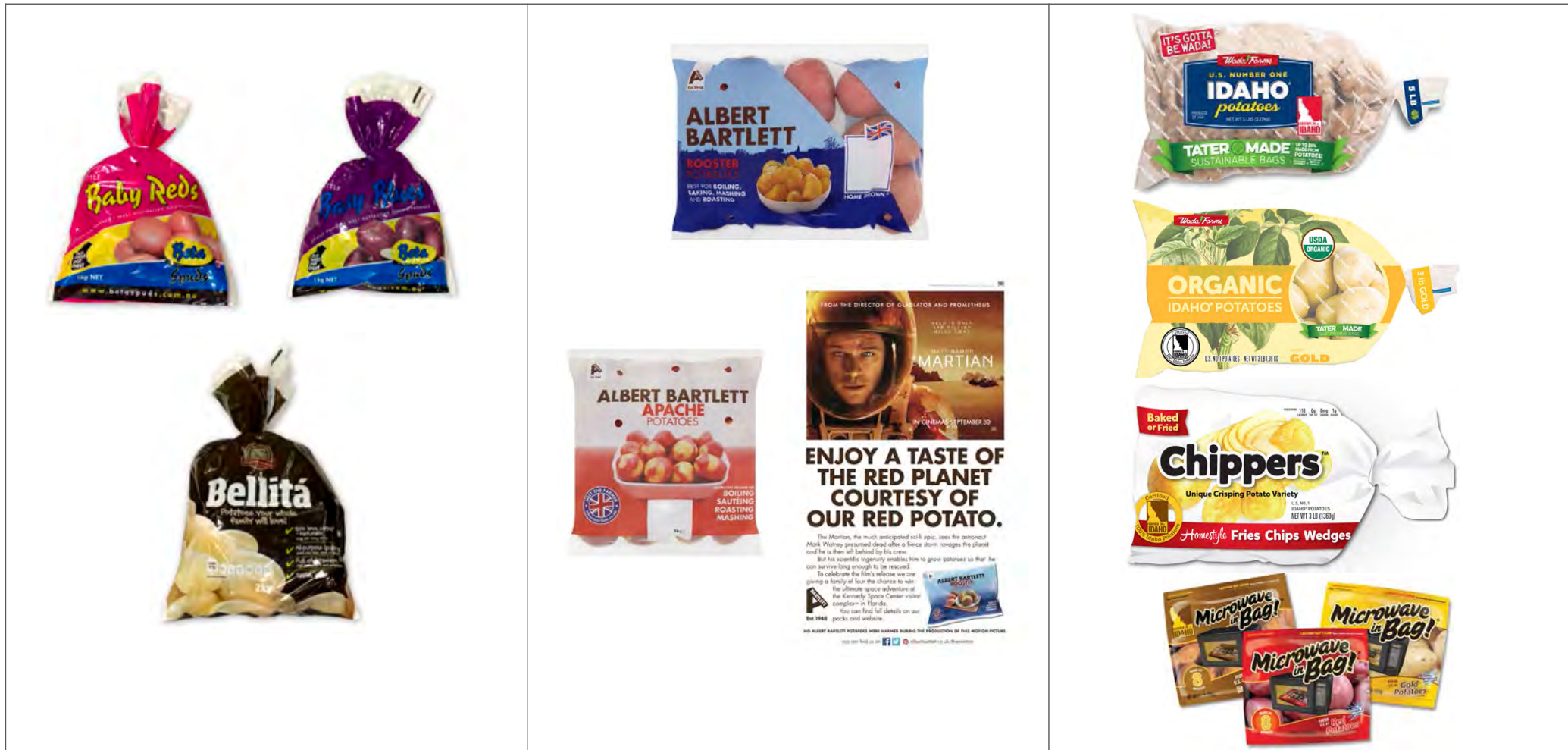
COMMENTS/NOTES

- Larger packhouses can invest more in equipment and automation
- This investment in turn will reduce their labour cost per unit of throughput
- Both Bartlett and Wada operations export
- "Asia is a growing market for us. Malaysia, Singapore and Hong Kong are good markets now... We also have high hopes for boosting sales in South Korea and Vietnam." *Chris Wada, Director of marketing and exports, Wada operations Marketing Group LLC, Oct 2014*

Among other advantages, larger packhouses can spend more on packaging design, branding and advertising

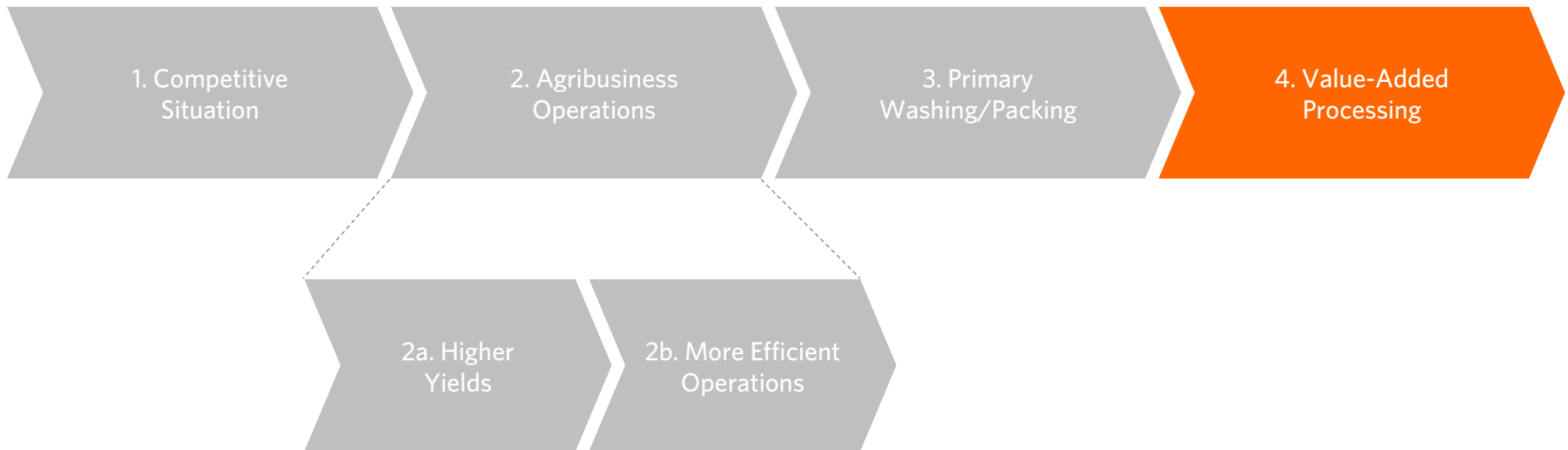
EXAMPLE: FRESH POTATO PRODUCTS

2016 or as available



The final section of this case study looks briefly at the competitive situation in the value-added potato processing in WA

SECTION STRUCTURE: POTATO INDUSTRY CASE STUDY



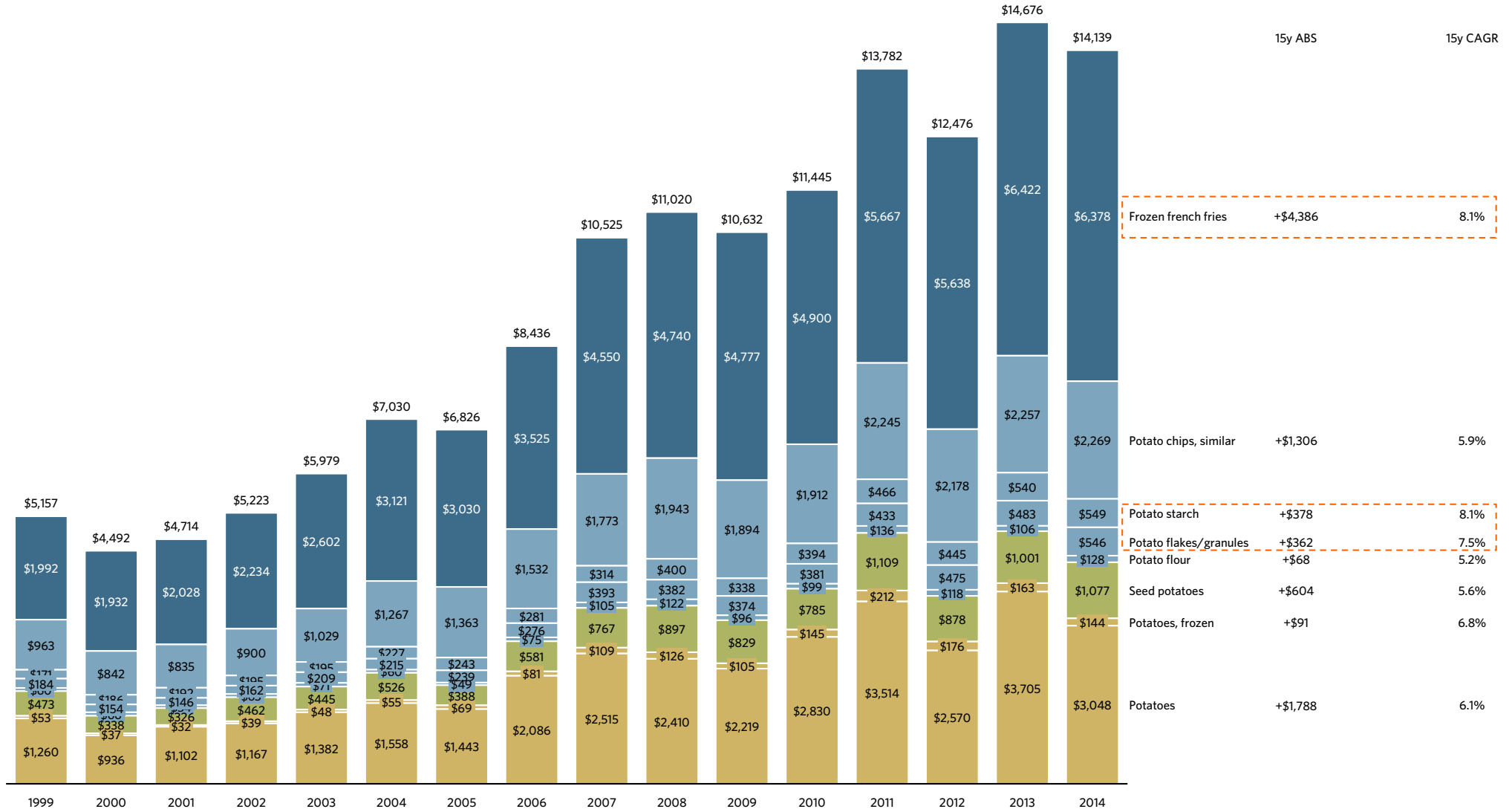
Value-added potato processing is a global game where Western Australia will struggle to play without higher yields

- The global potato trade and trade growth is over-weighted to processed products, particularly frozen french fries
- Australia's potato export mix is skewed to un-processed raw ingredients, more similar to a developing nation (e.g. Belarus, Egypt, India) than an advanced nation (e.g. Canada, USA, NZ)
- Exports of processed potato products are highly consolidated and dominated by a handful of countries with large plants at scale
- The global frozen french fry industry is highly consolidated, suggesting strong economies of scale
 - The global processed potato products market is dominated by a handful of large USA and European firms
- Western Australia has two value-added potato processors at any scale (Bendotti and Supa Chips)
- Processed potato products are made in regions with large quantities of low cost inputs; Western Australia will attract value-added processing plants when it is competitive

The global potato trade and trade growth is over-weighted to processed products, particularly frozen french fries

15 YEAR AGGREGATE GLOBAL EXPORT TRADE VALUE BY PRODUCT TYPE

US\$m; 1999-2014

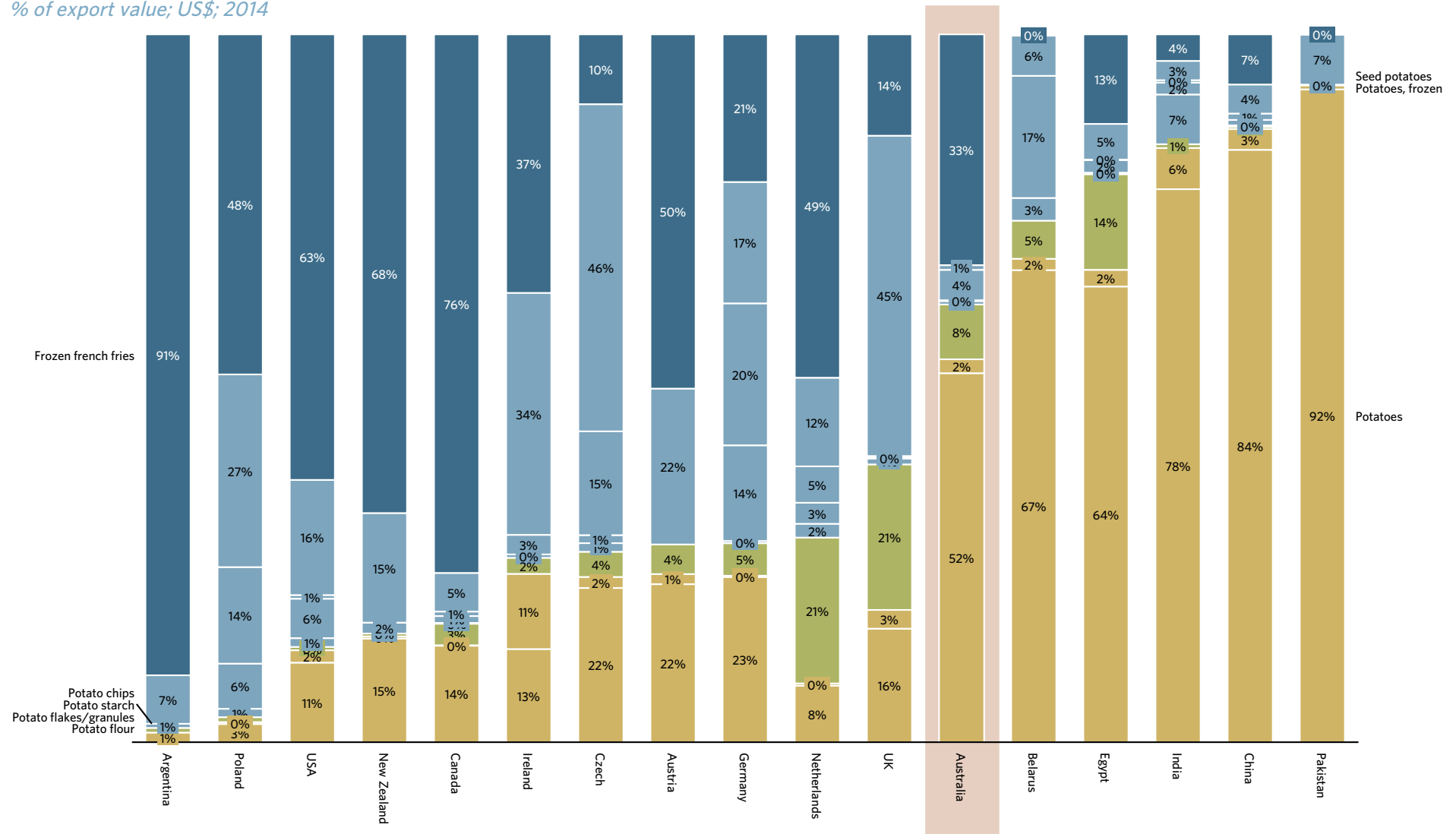


Source: UN Comtrade database; Coriolis analysis and classifications

Australia's potato export mix is skewed to un-processed raw ingredients, more similar to a developing nation (e.g. Belarus, Egypt, India) than an advanced nation (e.g. Canada, USA, NZ)

POTATO EXPORT VALUE MIX BY PRODUCT TYPE: AUSTRALIA VS. SELECT COUNTRIES

% of export value; US\$; 2014



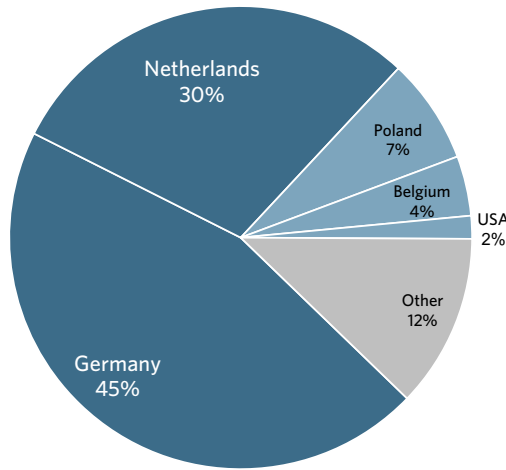
Source: UN Comtrade database; Coriolis analysis and classifications

Exports of processed potato products are highly consolidated and dominated by a handful of countries with large plants at scale

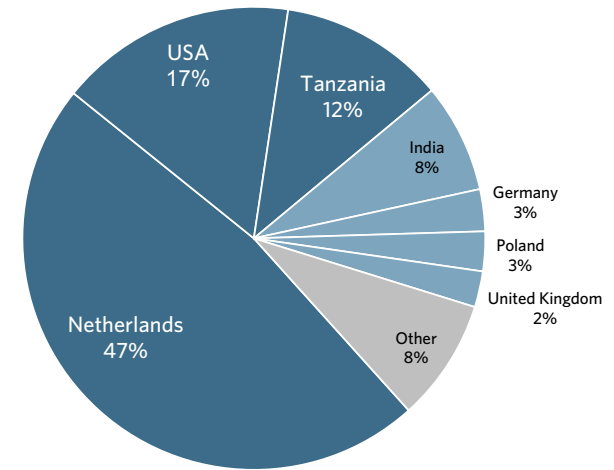
GLOBAL CROSS-BORDER EXPORT TRADE SHARE BY PRODUCT: SELECT COUNTRIES & OTHER

% of export value; 2014

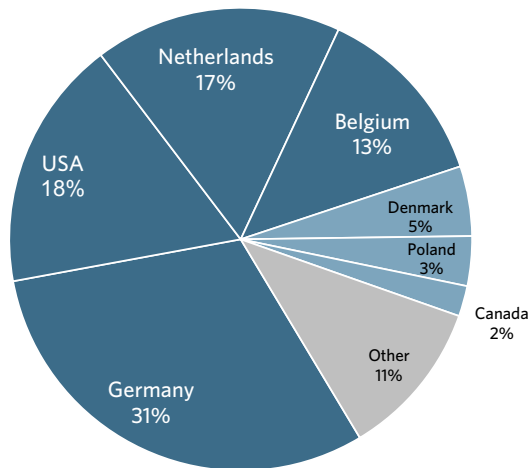
POTATO STARCH (HS110813)



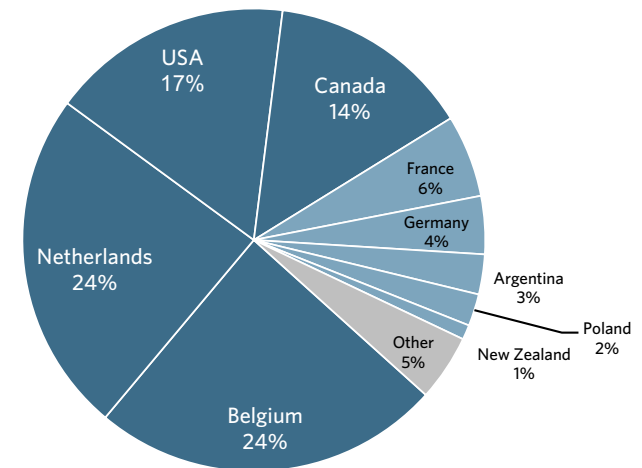
POTATO FLOUR (HS110510)



POTATO FLAKES (HS110520)

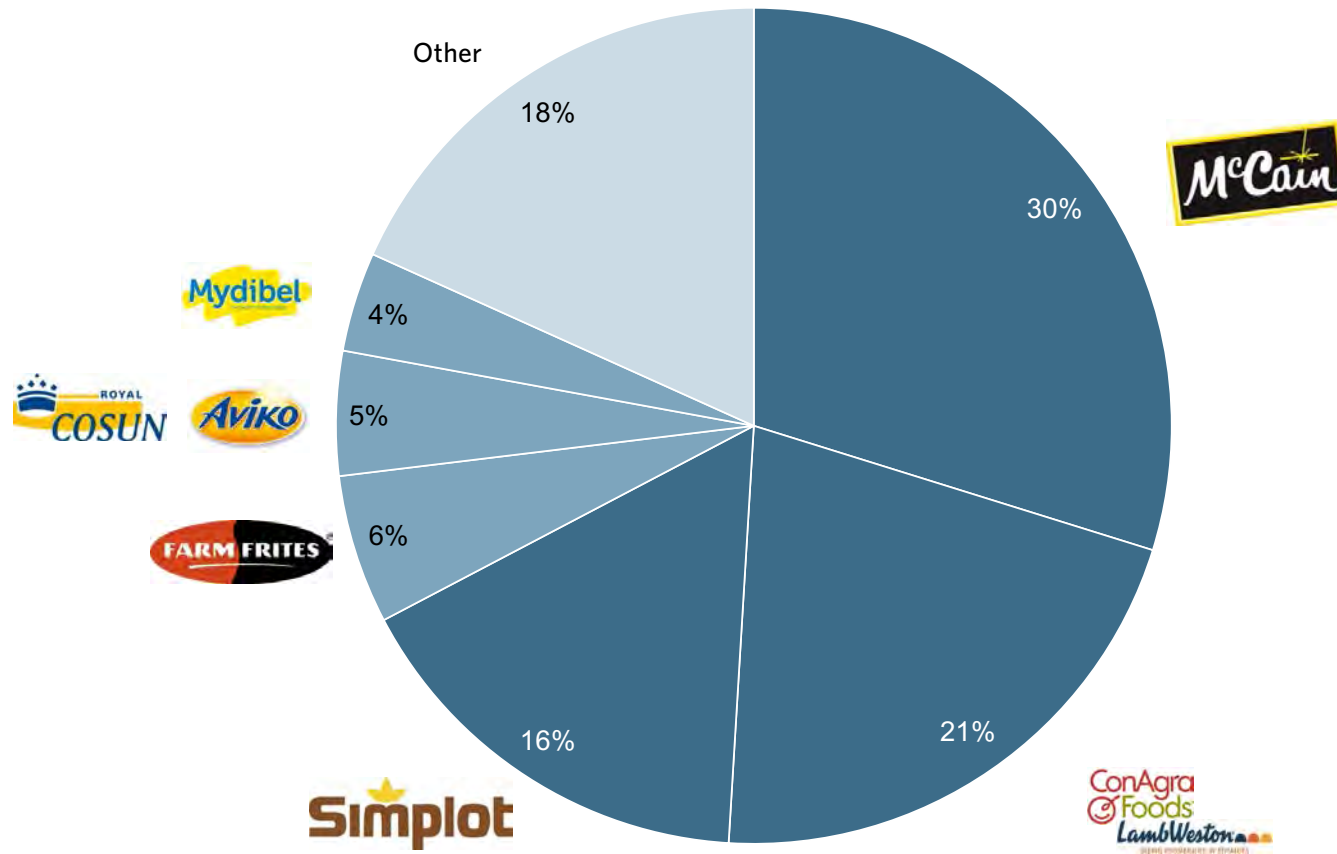


FROZEN FRENCH FRIES (HS200410)



The global frozen french fry industry is highly consolidated, suggesting strong economies of scale









GLOBAL FROZEN FRENCH FRY PRODUCTION BY FIRM
 % of volume; 2014e



The global processed potato products market is dominated by a handful of large North American and European firms

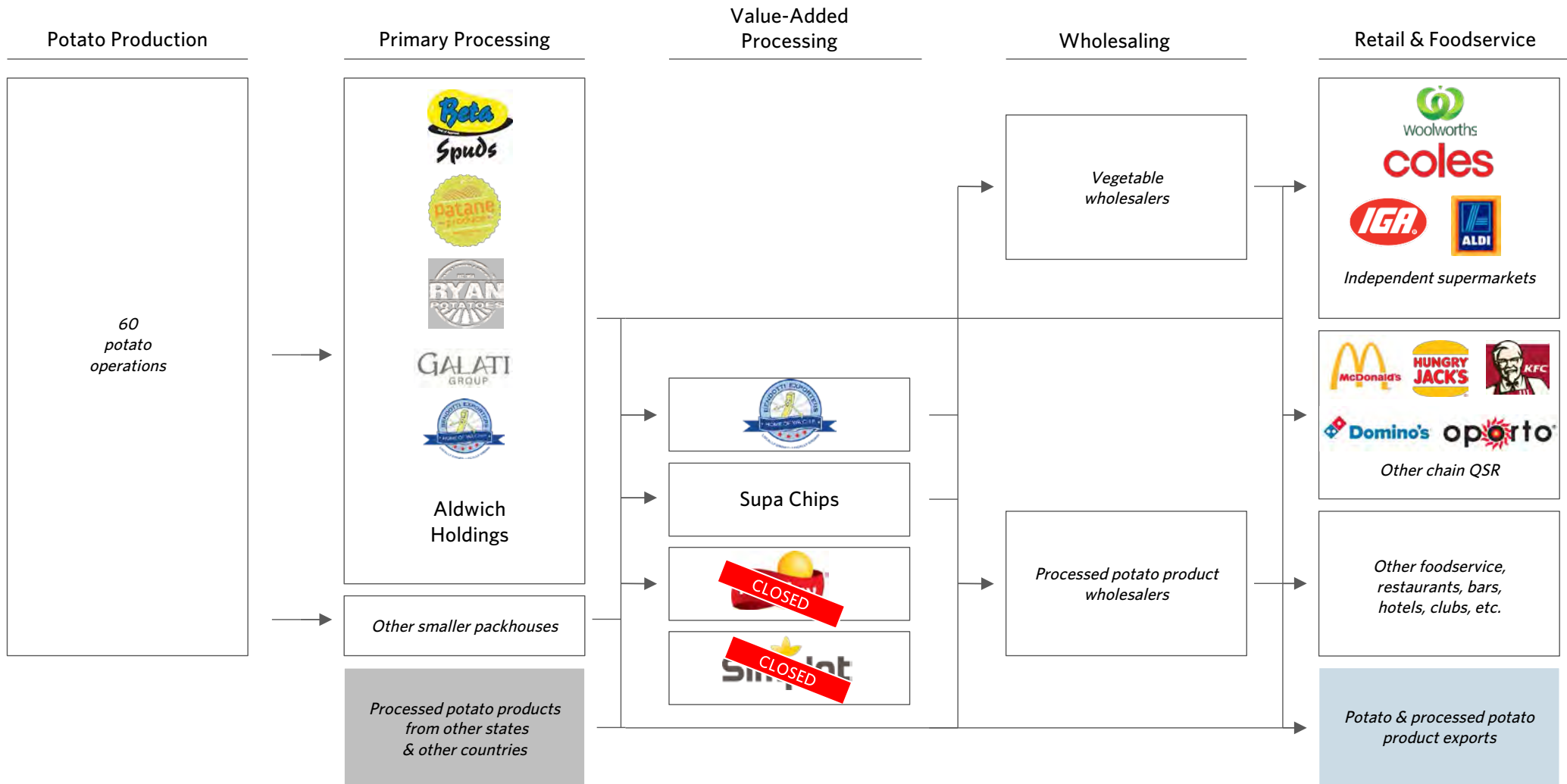
TOP SEVEN GLOBAL FROZEN FRENCH FRY/PROCESSED POTATO PRODUCERS

US\$m; 2015 or as available

| Firm | Location Year founded | Ownership | Global volumes Global turnover # global employees | Production sites | Products | Notes/Website | |
|--|--|--|---|---|---|---|--|
|  | New Brunswick, Canada 1957 | Private McCain family | C\$6b (15) 19,000 employees | Canada United Kingdom United States Netherlands Belgium France Poland | Australia New Zealand Argentina Mexico South Africa | Frozen potato products Green vegetables Desserts Pizzas Juices & beverages Oven meals & entrees | www.mccain.com www.mccain.com.au |
|  | Boise, Idaho 1929 | Private Simplot family | 1.6m t US\$3.3b (15) | United States Canada Mexico | Australia New Zealand China | Frozen potato products Frozen vegetables Other frozen foods Biotech research Fertilizer manufacturing | www.simplot.com www.simplot.com.au www.simplotfoodservice.com.au |
|  | Con-Agra Foods Lamb Weston div. 1950 | Listed parent NYSE: CAG | US\$2b TBD | United States Canada Turkey Europe (below) | China (TaiMei) India Chile (JV) | Frozen potato products Other potato products Savoury snacks Sauces & other foods | www.conagrafoods.com www.lambweston.com |
|  | Lamb Weston/ Meijer JV 1994 | Joint-venture | 650,000t 1,300 employees | Netherlands (3) UK | Austria | Frozen potato products Other potato products | www.lambweston.eu |
|  | Oudenhorn, NL 1971 | Private; family | 1.3m t processed 1,500 employees | Netherlands (1) Belgium (2) Poland (JV) | Egypt (1) Argentina (1) | Frozen potato products Other potato products | www.farmfrites.com Alliance with Simplot |
|  | Breda, NL Founded 1968 Acquired | Parent is cooperative of 10,000 Dutch operators | Aviko €600m 1.7m t processed 1,700 employees | Netherlands (5) Belgium Germany Poland (JV) | Sweden China | Frozen potato products Potato flakes | www.cosun.nl www.aviko.com Supplied by 1,000 growers |
|  | Mouscron, Belgium 1988 | Private; family (Mylle family) | 180,000t prod. 150,000t FFF; other | Belgium | - | Frozen potato products Other potato products | www.mydibel.be |
|  | Netherlands 1919 | Cooperative of 2,500 Dutch & German operators | 3m t of potatoes | Netherlands Germany | Sweden | Potato starch (#1 global) Other starch products | www.avebe.com |

Western Australia has two value-added potato processors at any scale (Bendotti and Supa Chips)

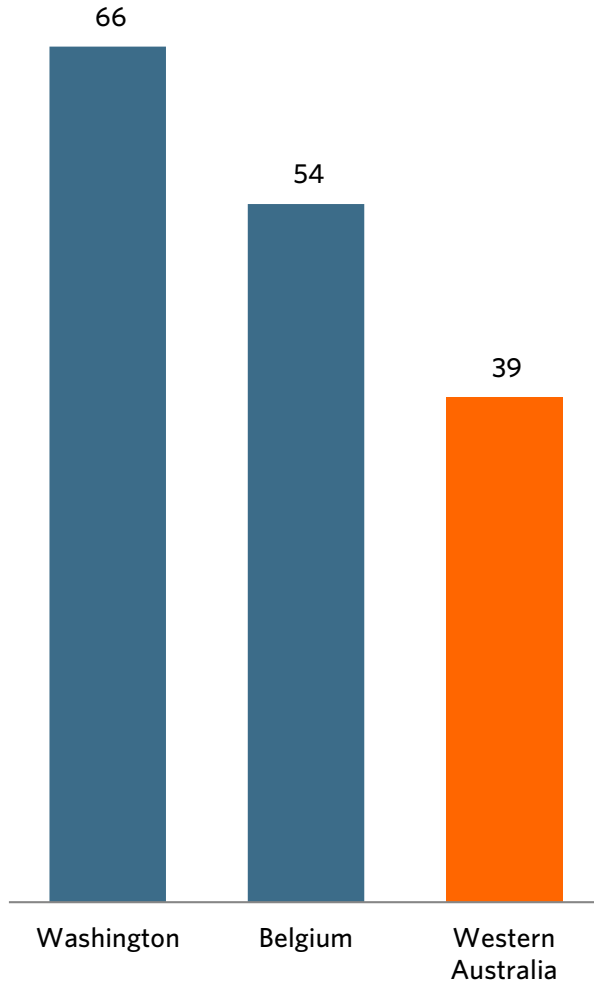
STRUCTURE OF WESTERN AUSTRALIAN FRESH & PROCESSED POTATO PRODUCTS SUPPLY CHAIN
Simplified model; 2016



Processed potato products are made in regions with large quantities of low cost inputs; Western Australia will attract value-added processing plants when it is competitive

POTATO YIELD

Tonnes/hectare; 2014 or 15



MAJOR POTATO VALUE-ADDED PROCESSING PLANTS

Presence; 2016

WASHINGTON



BELGIUM



WESTERN AUSTRALIA



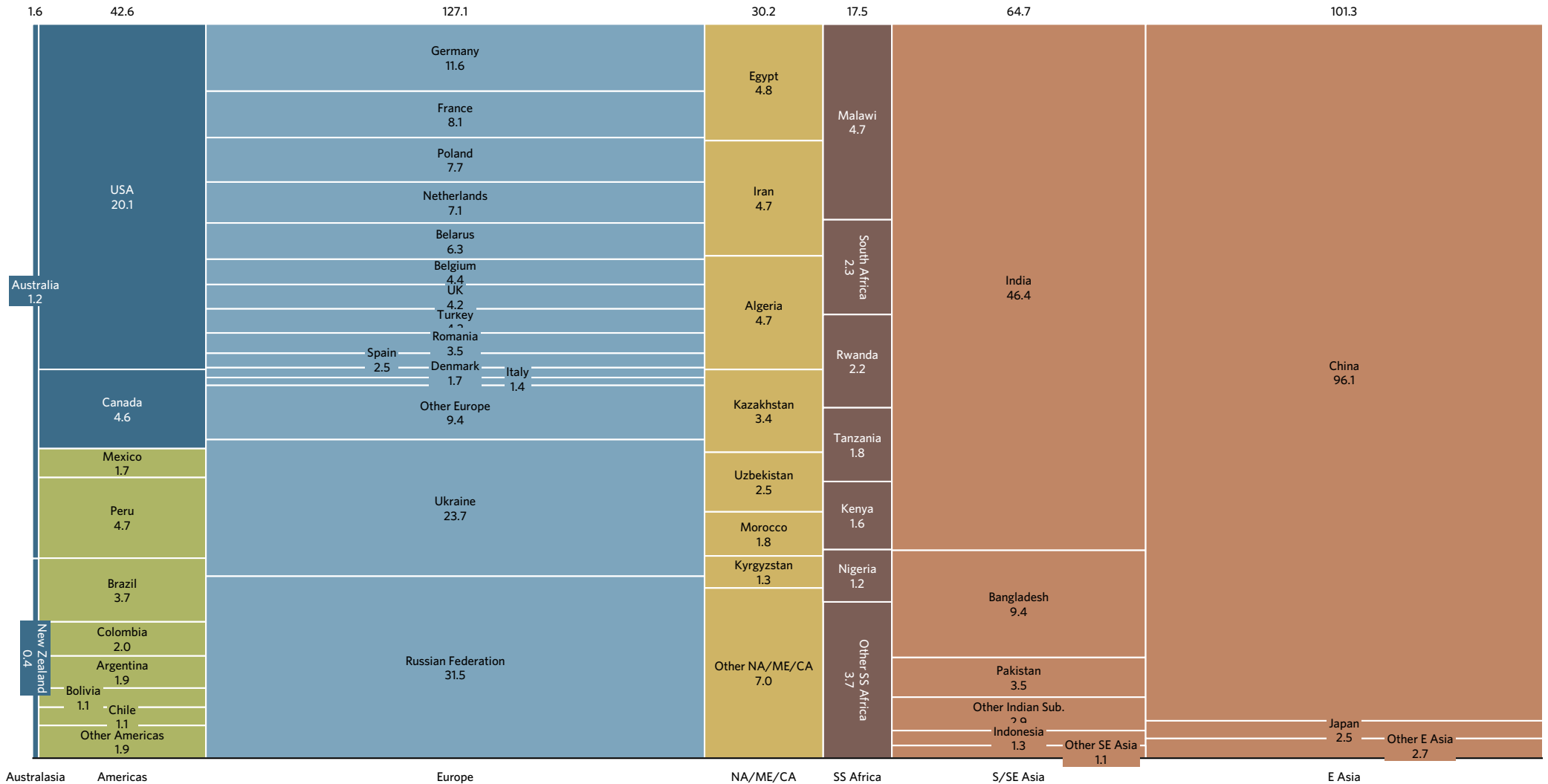
ADDITIONAL POTATO CONTEXT ANALYSIS

Global potato production is spread across the planet; Australia is a relatively small producer

GLOBAL POTATO PRODUCTION VOLUME

Tonnes; m; 2014

TOTAL = 385.1m t



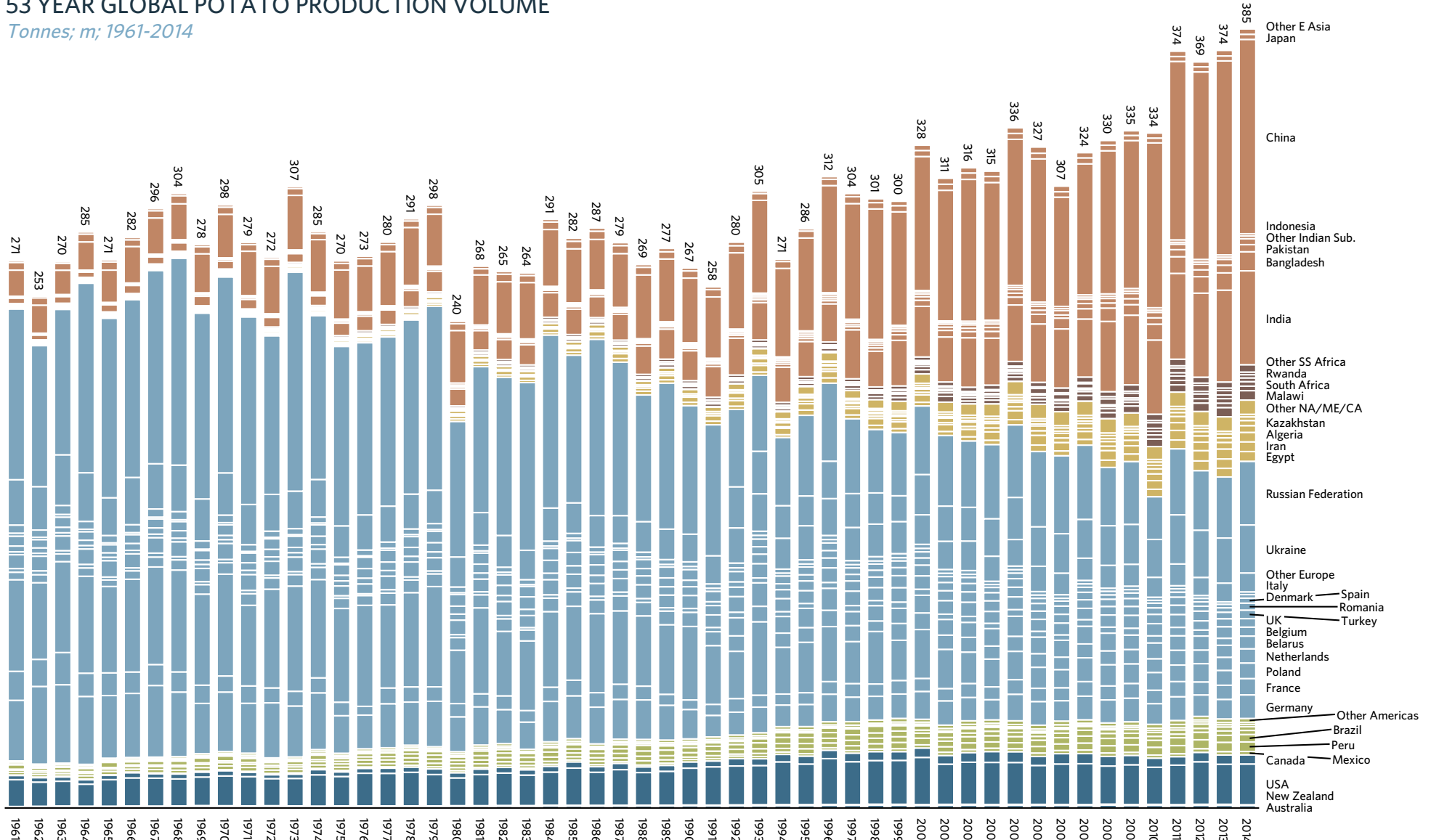
NA/ME/CA=North Africa/Middle East/Central Africa; SS=Sub Saharan; Source: UN FAO AgStat database; Coriolis classification and analysis

ADDITIONAL POTATO CONTEXT ANALYSIS

Potato production is growing in Asia, particularly in China and India, while results are mixed elsewhere

53 YEAR GLOBAL POTATO PRODUCTION VOLUME

Tonnes; m; 1961-2014



Source: UN FAO AgStat database; Coriolis classification and analysis

DOCUMENT STRUCTURE

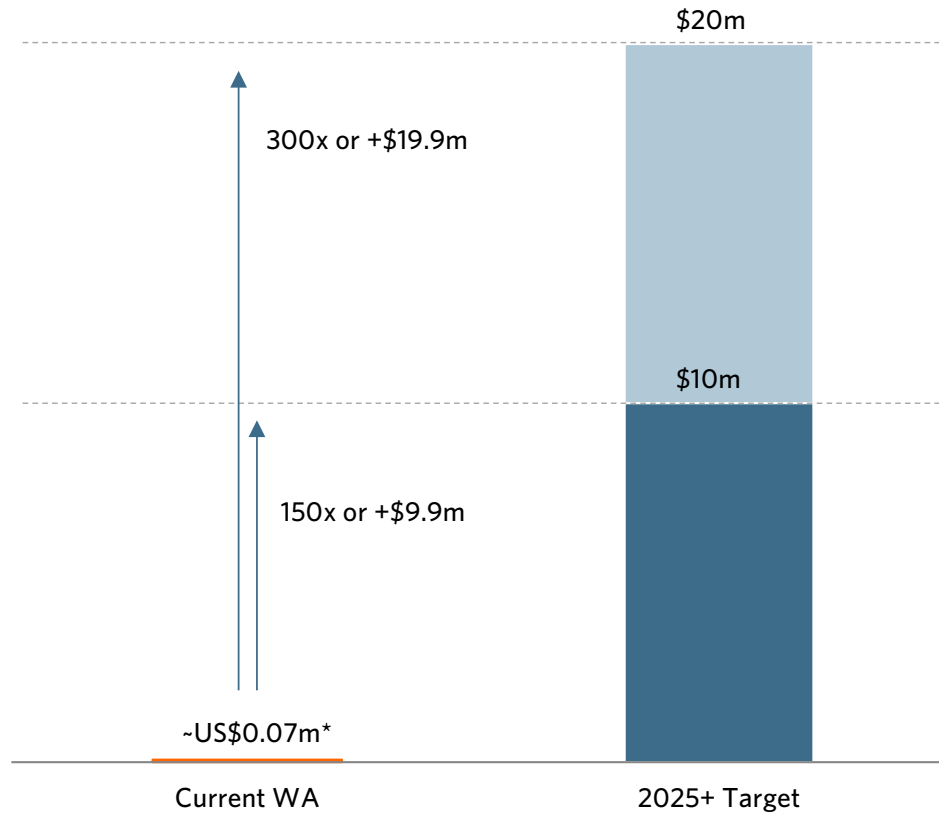
| | |
|---|-----|
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| Context/Question | 7 |
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| Appendix 1.5 – Oats Case Study | 250 |
| Appendix 2 – Peer Group Pathways Case Studies | 292 |



The Government has set a goal of doubling agrifood industry value (predominantly through exports); as some sectors will struggle to grow, others need to grow more; WA citrus exports need to grow 150x to 300x

WA CITRUS EXPORT VALUE GROWTH TARGET
US\$; m; 2013e vs. 2025+ target

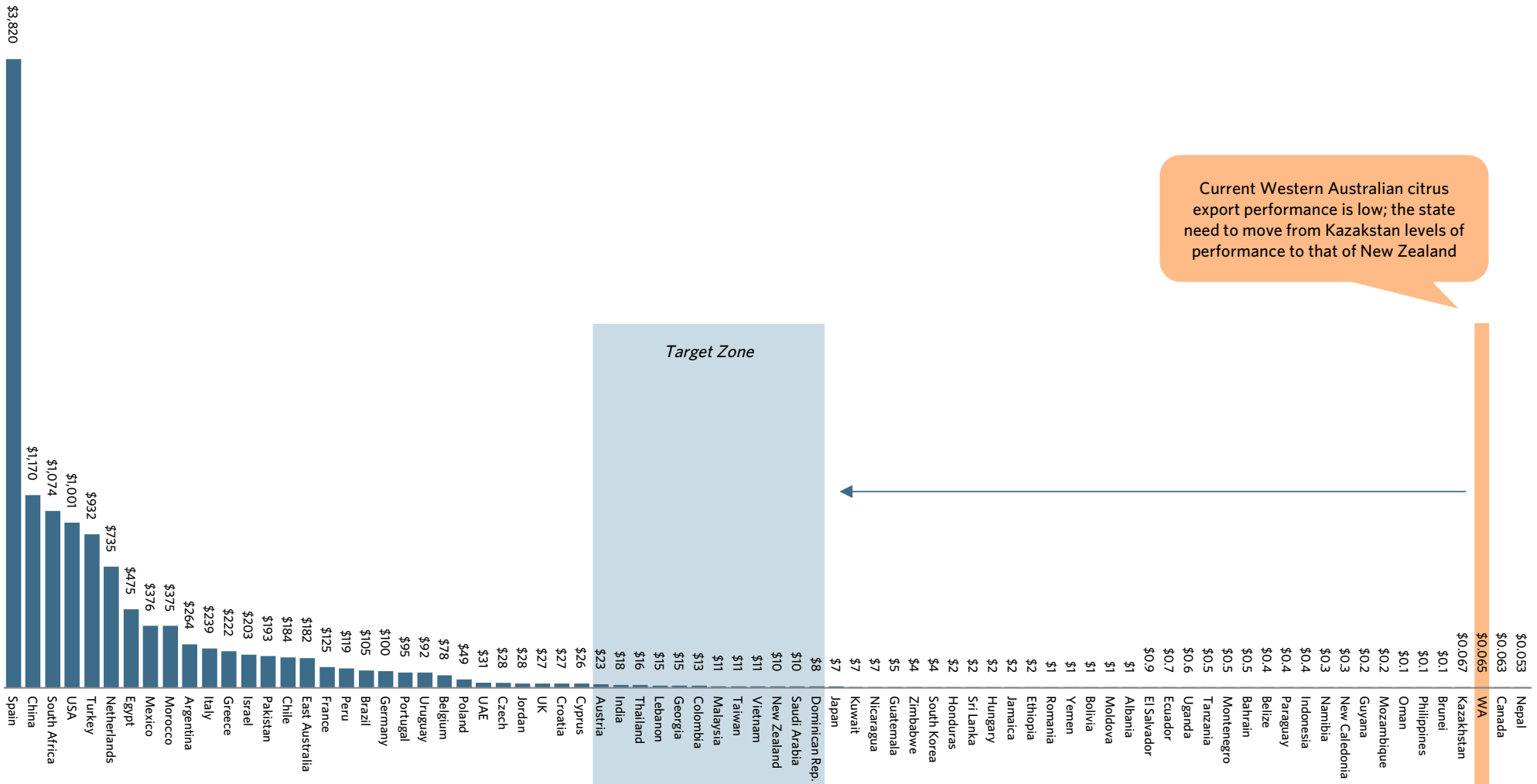
PRELIMINARY - INCLUDES CORIOLIS ESTIMATES



* WA (US\$0.07m) is a Coriolis estimate based on DAFWA 2013 estimate (46t exported) at (US\$1.14/kg.); Source: DAFWA; UN Comtrade database; ABS; Coriolis classifications and analysis

150x to 300x citrus export growth is equivalent to matching the current performance of New Zealand, Lebanon or Austria

CITRUS EXPORT VALUE: WA VS. SELECT
US\$m; 2014



Current Western Australian citrus export performance is low; the state need to move from Kazakstan levels of performance to that of New Zealand

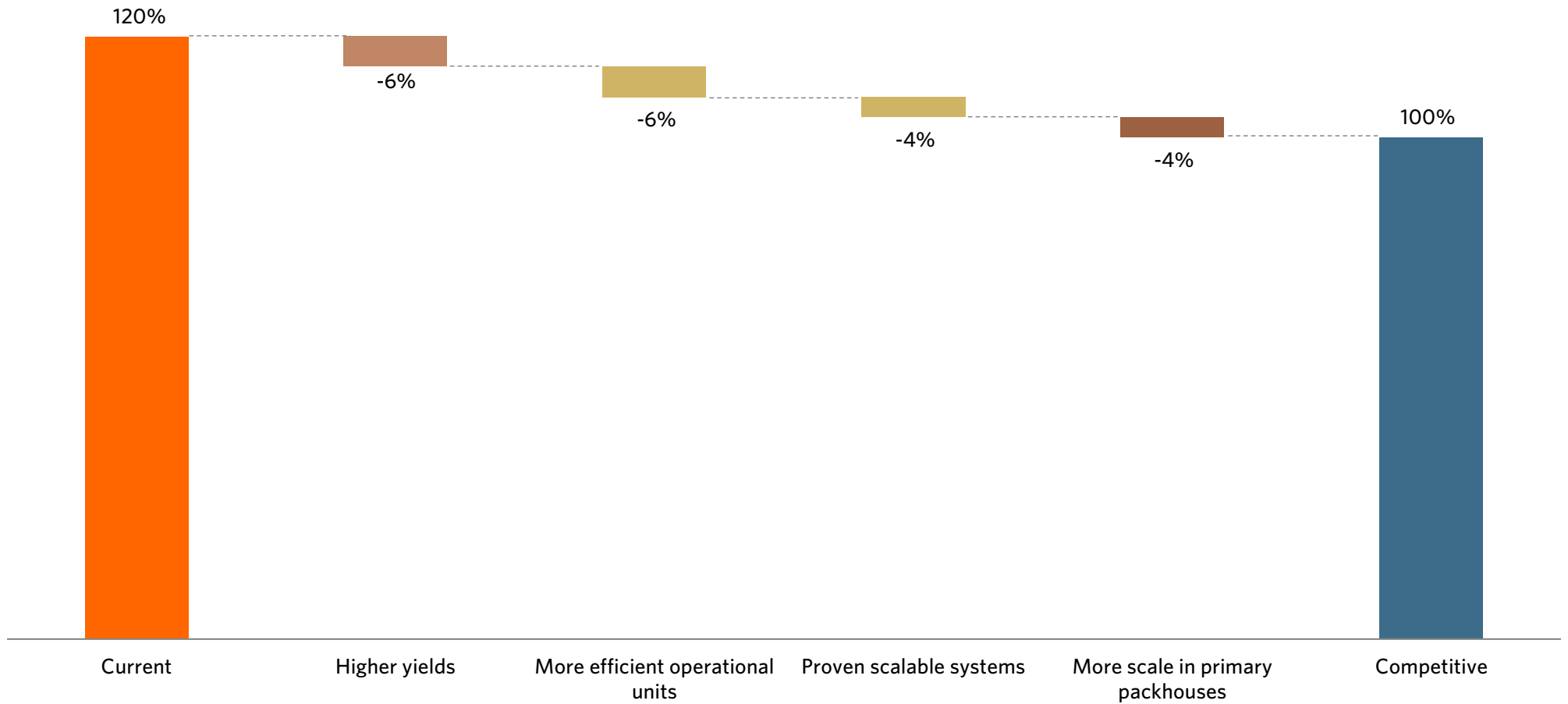
* WA (US\$0.07m) is a Coriolis estimate based on DAFWA 2013 estimate (46t exported) at (US\$1.14/kg.); Source: DAFWA; UN Comtrade database; ABS; Coriolis classifications and analysis

While Western Australia is within sight of a globally competitive citrus industry, getting there will involve significant industry change

POTENTIAL PATHWAY TO COMPETITIVENESS FOR WESTERN AUSTRALIAN CITRUS INDUSTRY
% of current cost; 2015

INCLUDES
CORIOLIS ESTIMATES

PRELIMINARY



This case study on the relative competitiveness of the Western Australian citrus industry is structured as follows

SECTION STRUCTURE: CITRUS INDUSTRY CASE STUDY



The first section of this case study reviews the current competitive situation in citrus

SECTION STRUCTURE: CITRUS INDUSTRY CASE STUDY

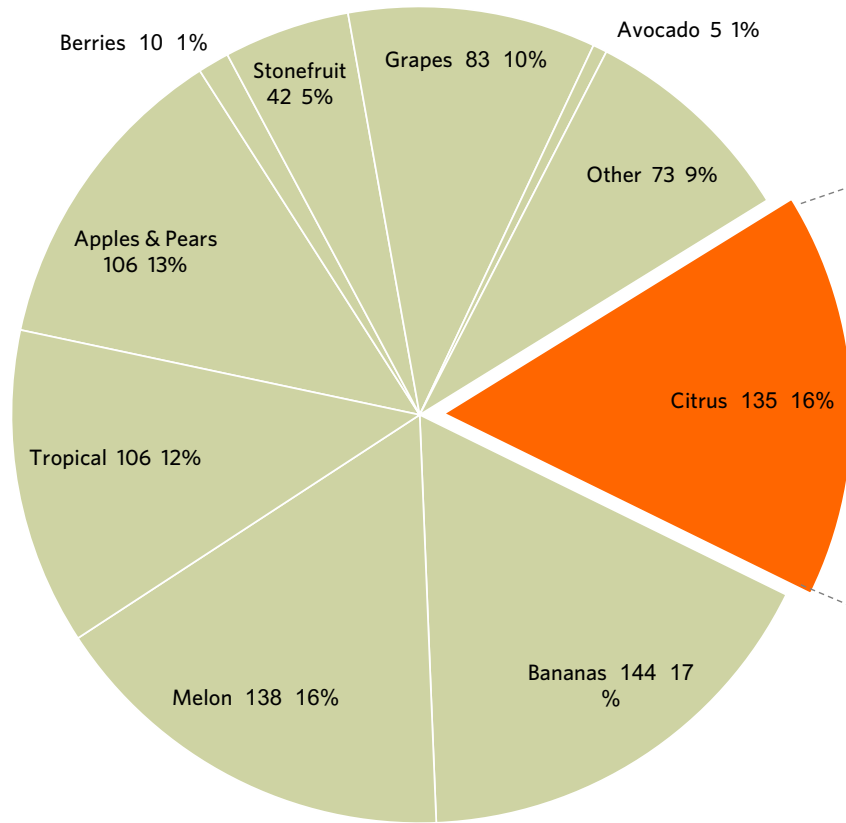


The export competitiveness of the Western Australian citrus industry is improving

- Citrus represents 16% of global fruit production volume and citrus is produced across the world
- Western Australia represents 2% of Australian orange production and 3% of mandarin production
- Western Australian citrus production has been growing since the early 1990's, following a correction in the mid 1980's

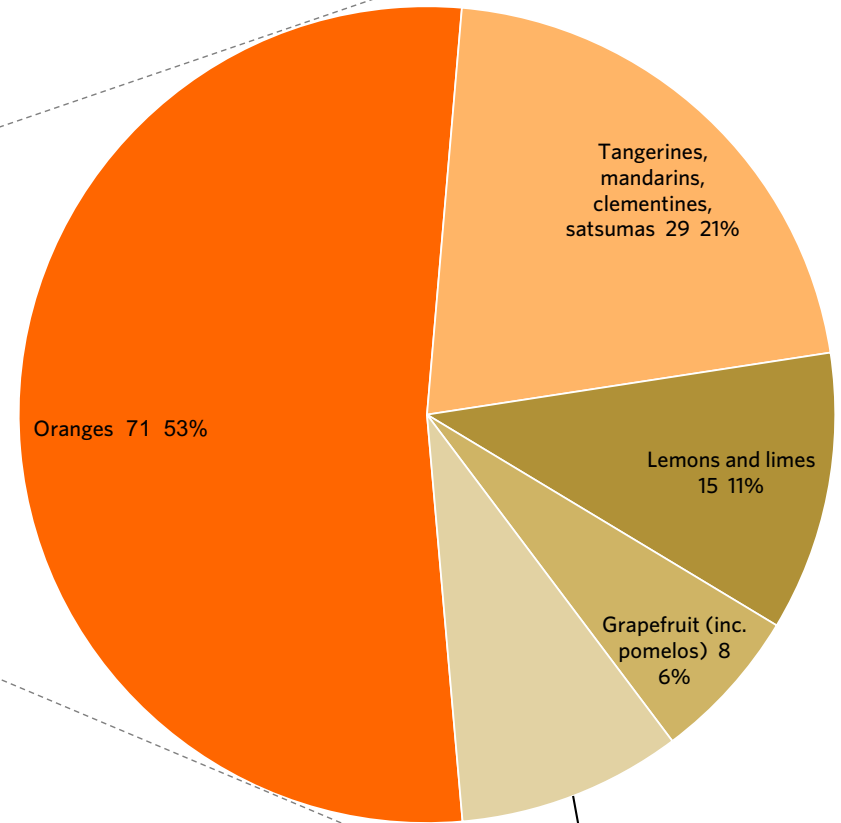
Citrus are popular fruit representing 16% of global fruit production volume

GLOBAL FRUIT PRODUCTION BY TYPE/GROUP
Tonnes; m; 2013



TOTAL = 842m

CITRUS FRUIT PRODUCTION BY TYPE/GROUP
Tonnes; m; 2013

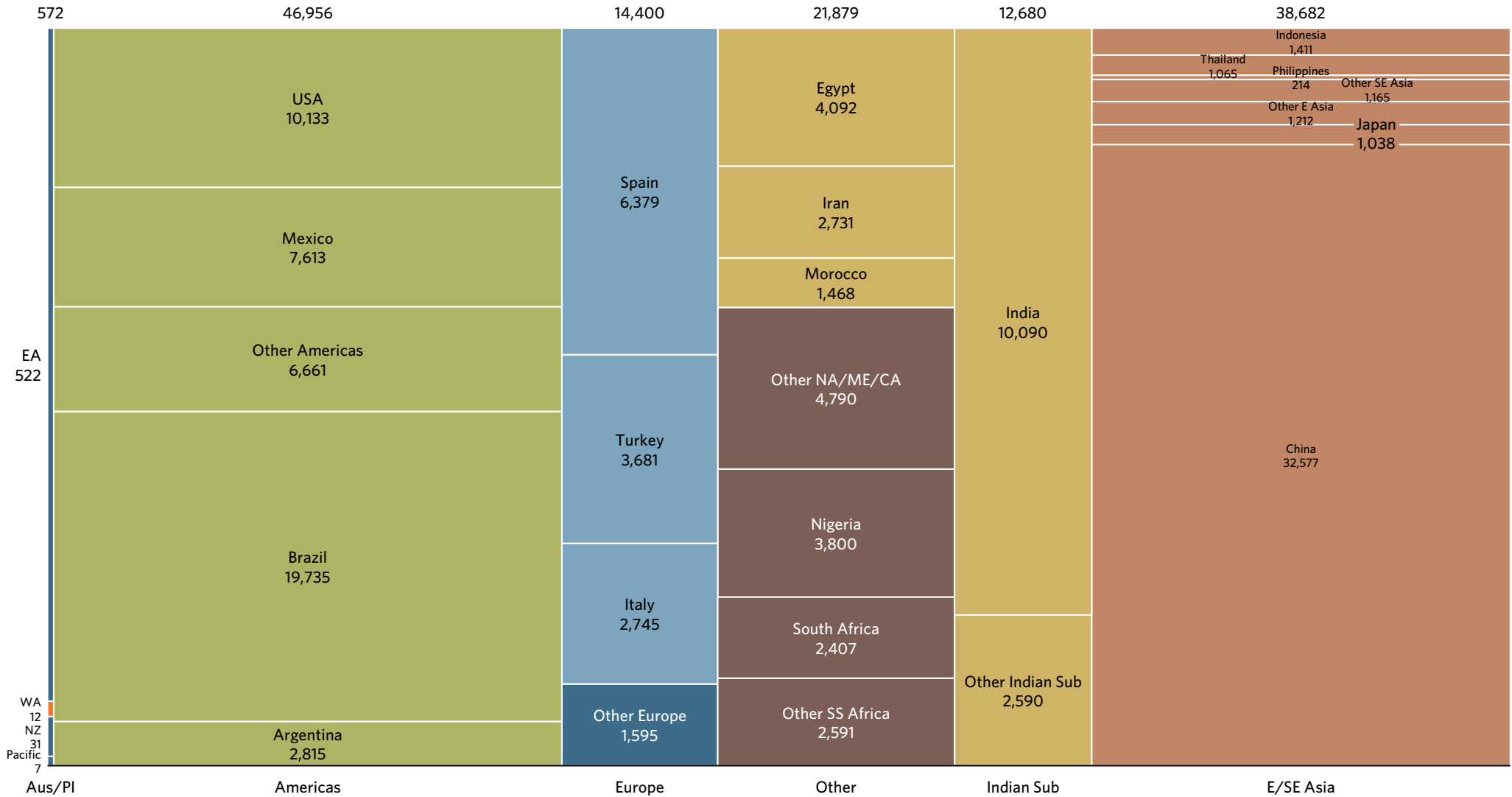


TOTAL = 135m

Citrus is produced across the world, with significant volumes produced in China and Brazil

CITRUS FRUIT PRODUCTION BY COUNTRY/REGION

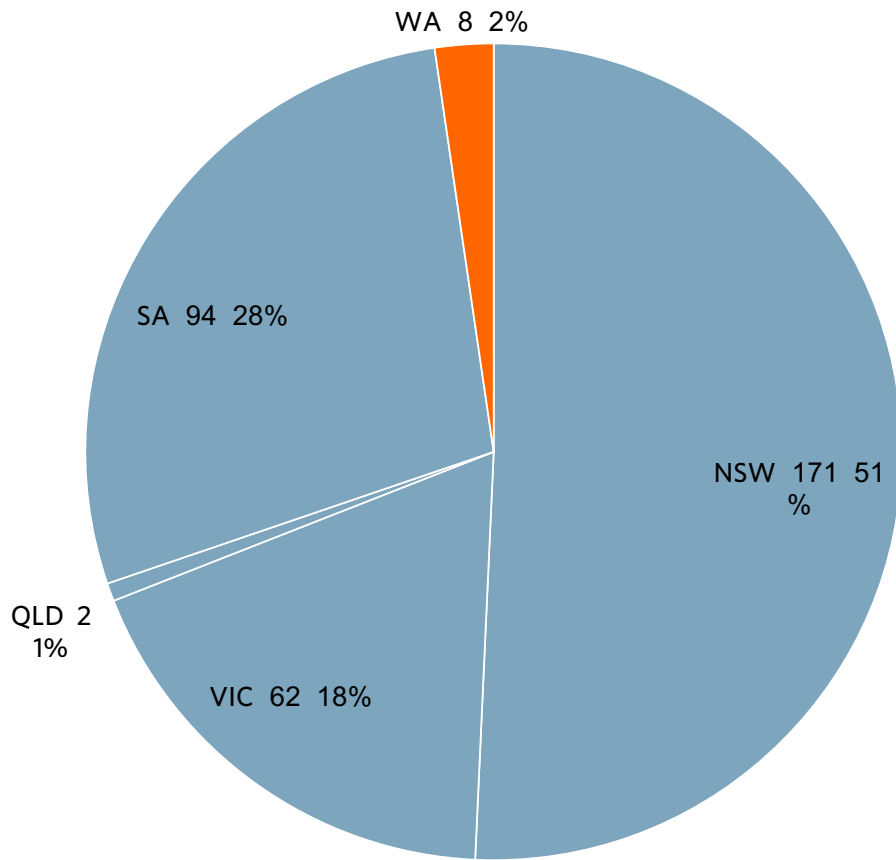
Tonnes; m; 2013



Source: UN FAO AgStat; ABS; Coriolis analysis and classifications

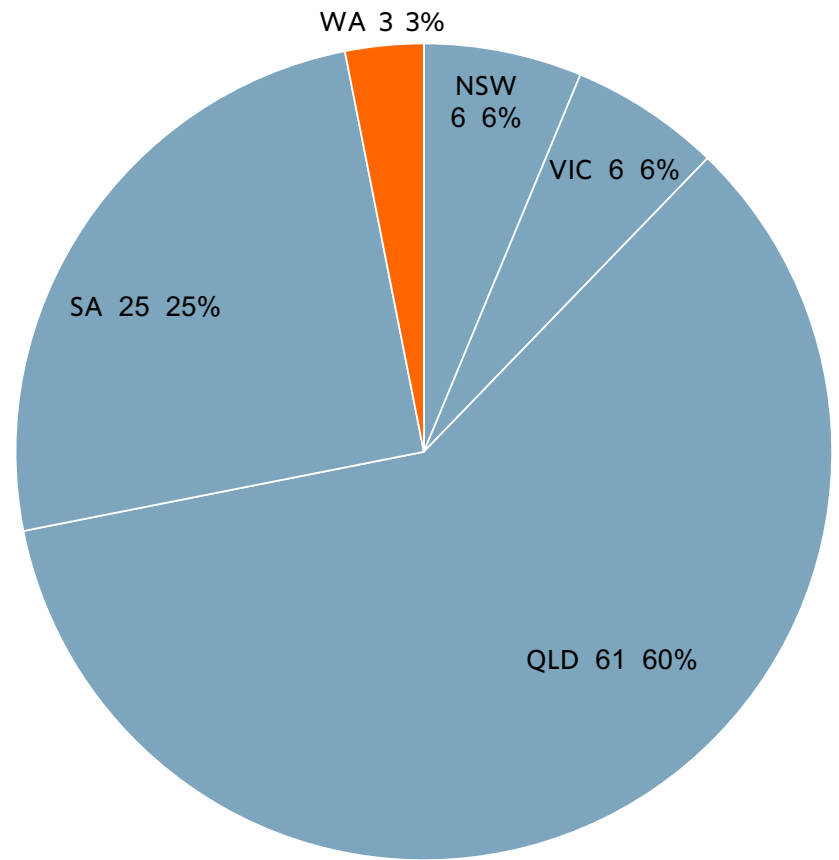
Western Australia represents 2% of Australian orange production and 3% of mandarin production

AUSTRALIAN ORANGE PRODUCTION BY STATE
Tonnes; m; 2014-15



TOTAL = 338m tonnes

AUSTRALIAN MANDARIN PRODUCTION BY STATE
Tonnes; m; 2014-15

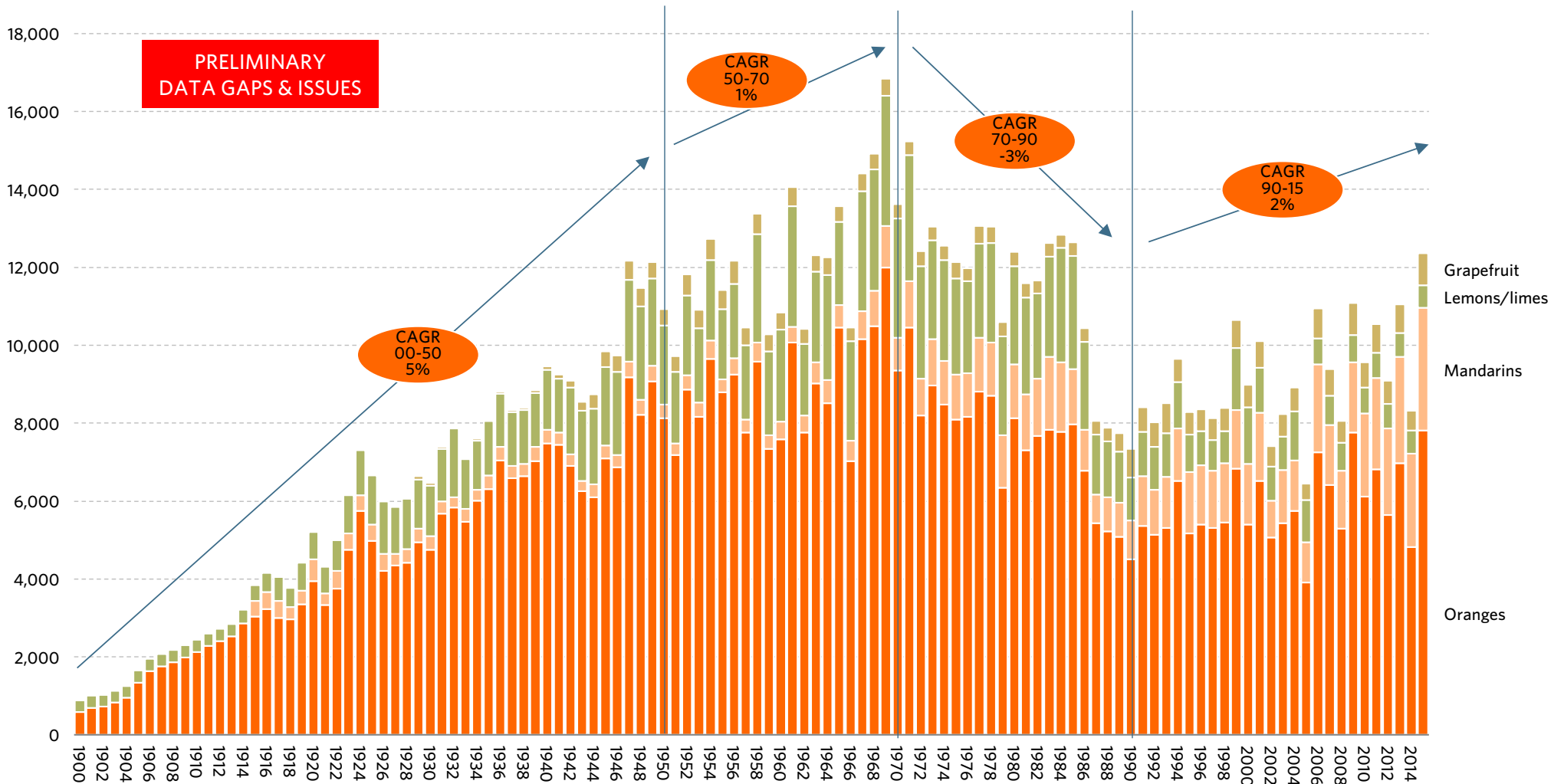


TOTAL = 101m tonnes

Western Australian citrus production has been growing since the early 1990's, following a correction in the mid 1980's

TOTAL CITRUS PRODUCTION IN WESTERN AUSTRALIA
Tonnes; 1900-2015

INCLUDES CORIOLIS ESTIMATES



Note: mandarins included in orange prior to 1915; Source: various WA Statistical Register (by year); various ABS publications; Coriolis analysis and estimates

This case-study now looks at citrus agribusiness operations in Western Australia

SECTION STRUCTURE: CITRUS INDUSTRY CASE STUDY



Western Australian needs to continue to improve citrus yields per tree/per hectare

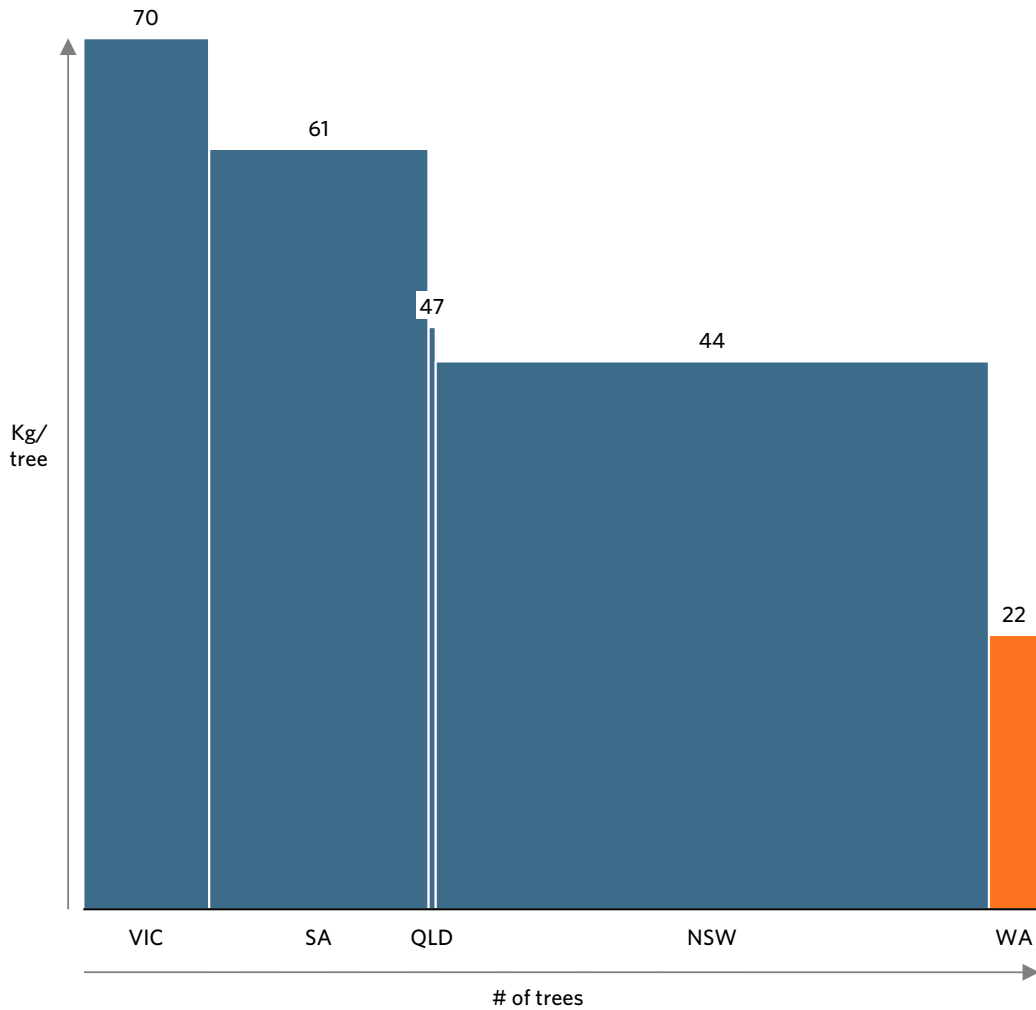
- Western Australia underperforms other Australian states on orange and mandarin yield
- Western Australia consistently underperforms on yield relative to other states; South Australia and Queensland suggest tripling yields should be an industry objective
- Australia - as a whole - sits in the middle of the global orange yield curve, achieving 17 tonnes per hectare; peers Greece, and Spain suggest +35% yield increases are possible

Western Australia underperforms other Australian states on orange and mandarin yield

AUSTRALIAN ORANGE YIELD CURVE BY STATE

Trees; kg/tree; 2014-15

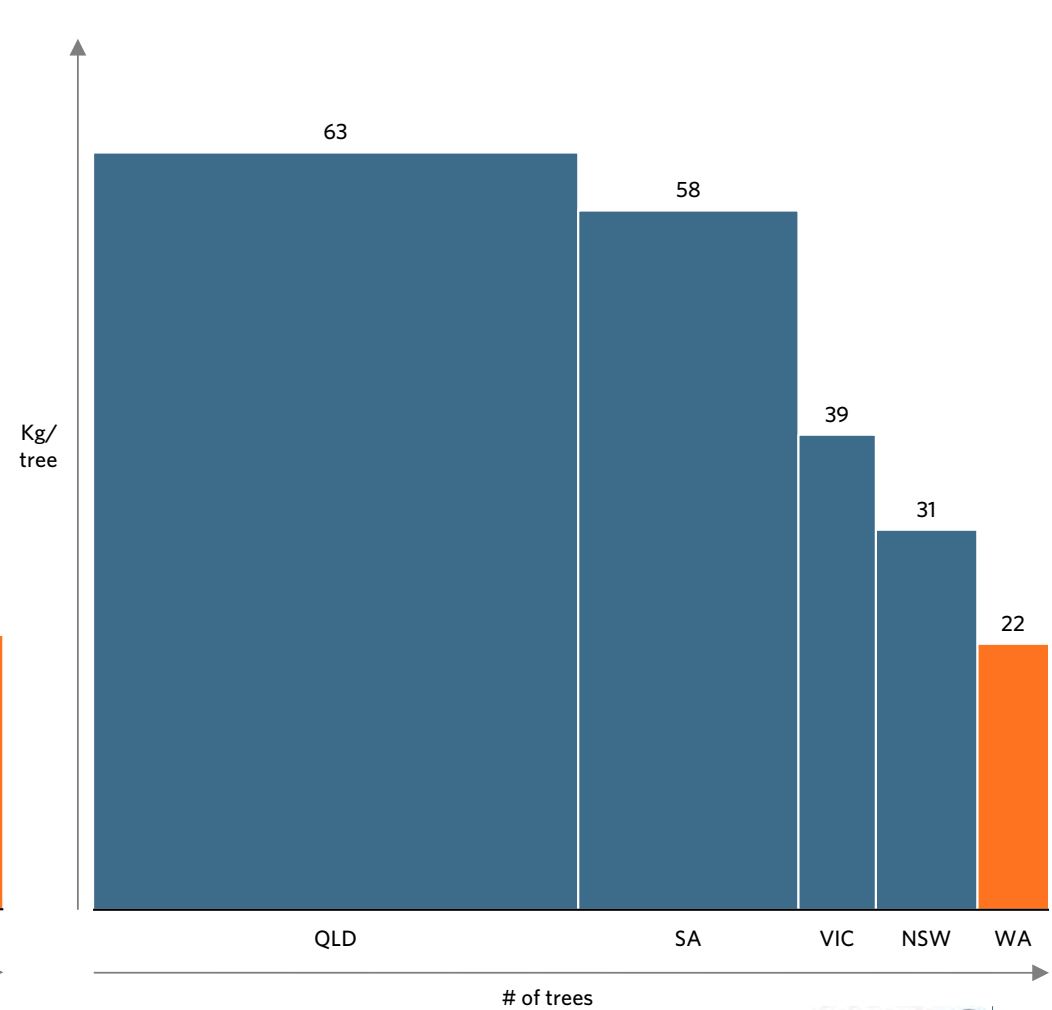
Note: Area is proportional to production



AUSTRALIAN MANDARIN YIELD CURVE BY STATE

Trees; kg/tree; 2014-15

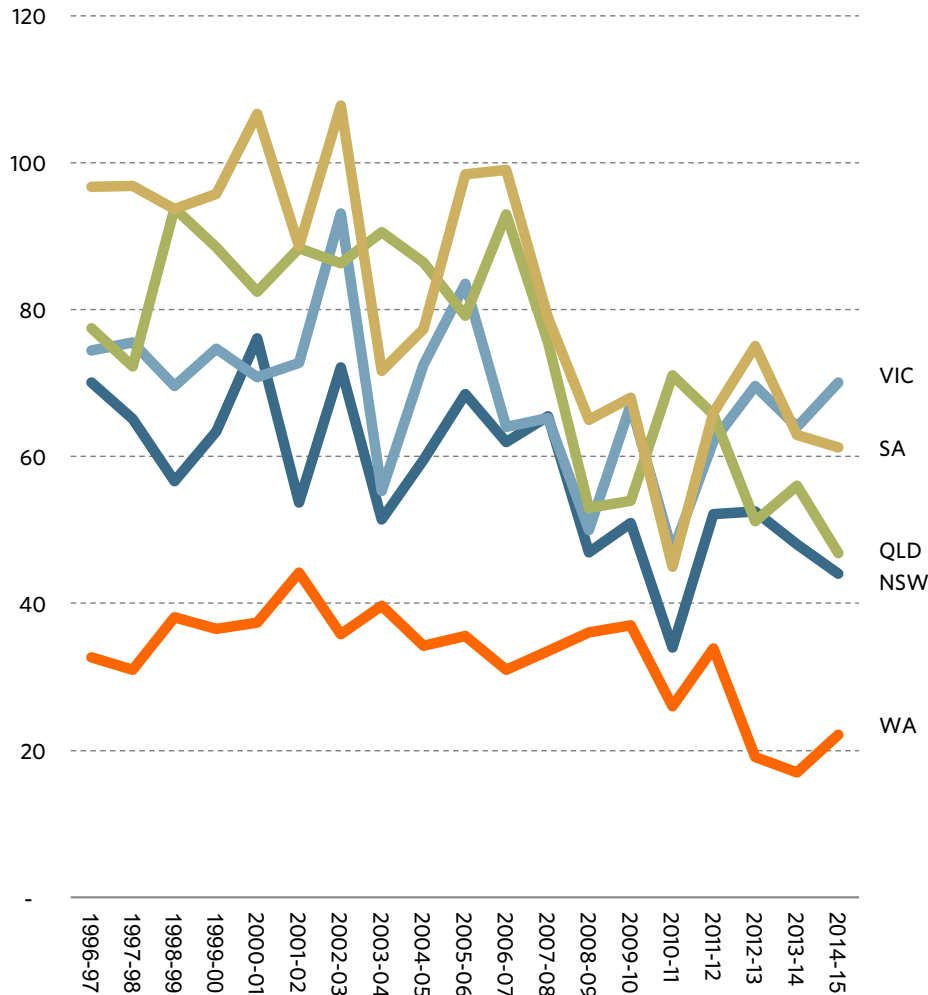
Note: Area is proportional to production



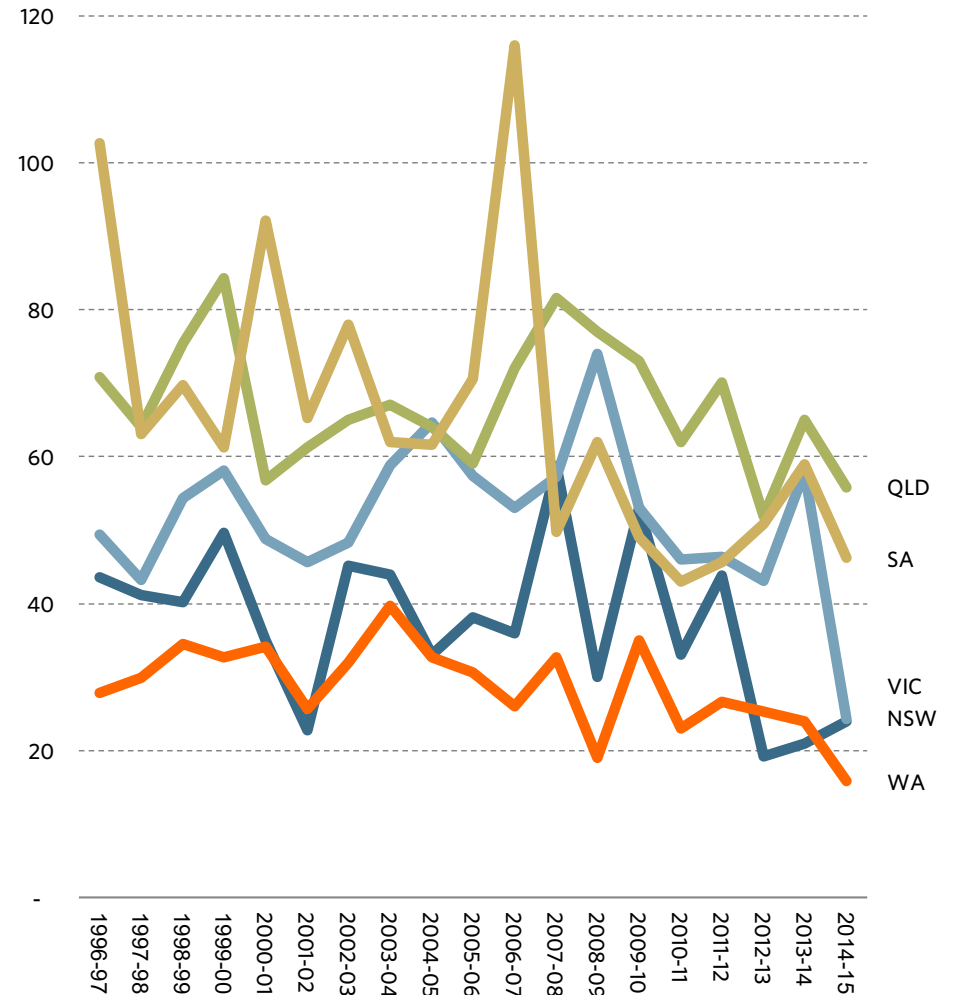
Source: ABS

Western Australia consistently underperforms on yield relative to other states; South Australia and Queensland suggest tripling yields should be an industry objective

AUSTRALIAN ORANGE YIELD BY STATE
Kg/tree; 1996-97 to 2014-15



AUSTRALIAN MANDARIN YIELD BY STATE
Kg/tree; 1996-97 to 2014-15

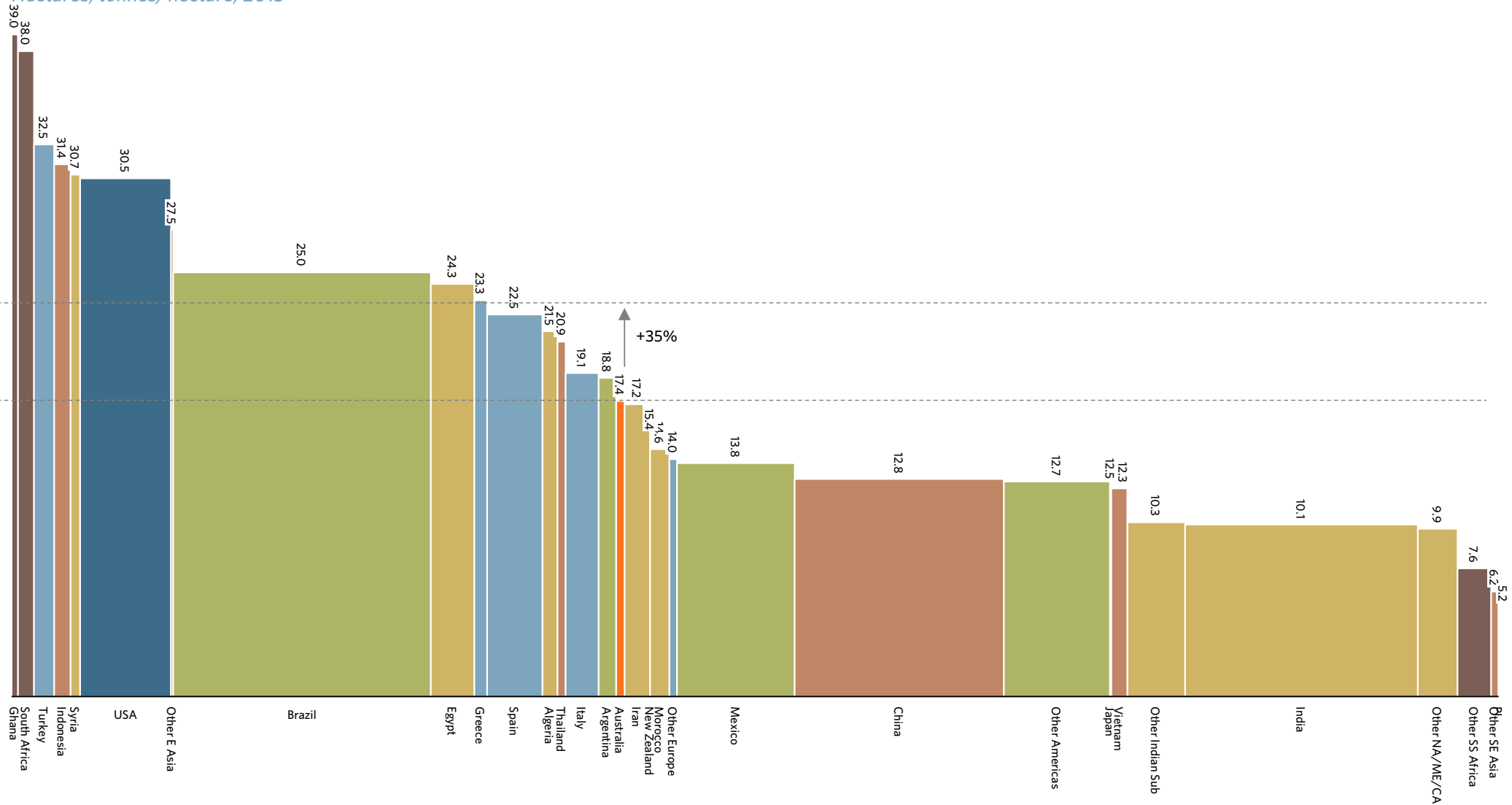


Source: ABS

Australia - as a whole - sits in the middle of the global orange yield curve, achieving 17 tonnes per hectare; peers Greece, and Spain suggest +35% yield increases should be a target

GLOBAL ORANGE YIELD CURVE: AREA VS. TONNES PER HECTARE

Hectares; tonnes/hectare; 2013



Source: UN FAO AgStat database; Coriolis classification and analysis

This case study now looks at citrus production unit operation efficiency

SECTION STRUCTURE: CITRUS INDUSTRY CASE STUDY



Western Australian needs to accelerate its move to producing more citrus per operational unit

ORANGES

- Western Australia is increasing both orange trees per operational unit and orange production per operational unit
- Western Australia has low orange production per operational unit relative to Eastern Australia; however, the rate of increase over the past five years has been good

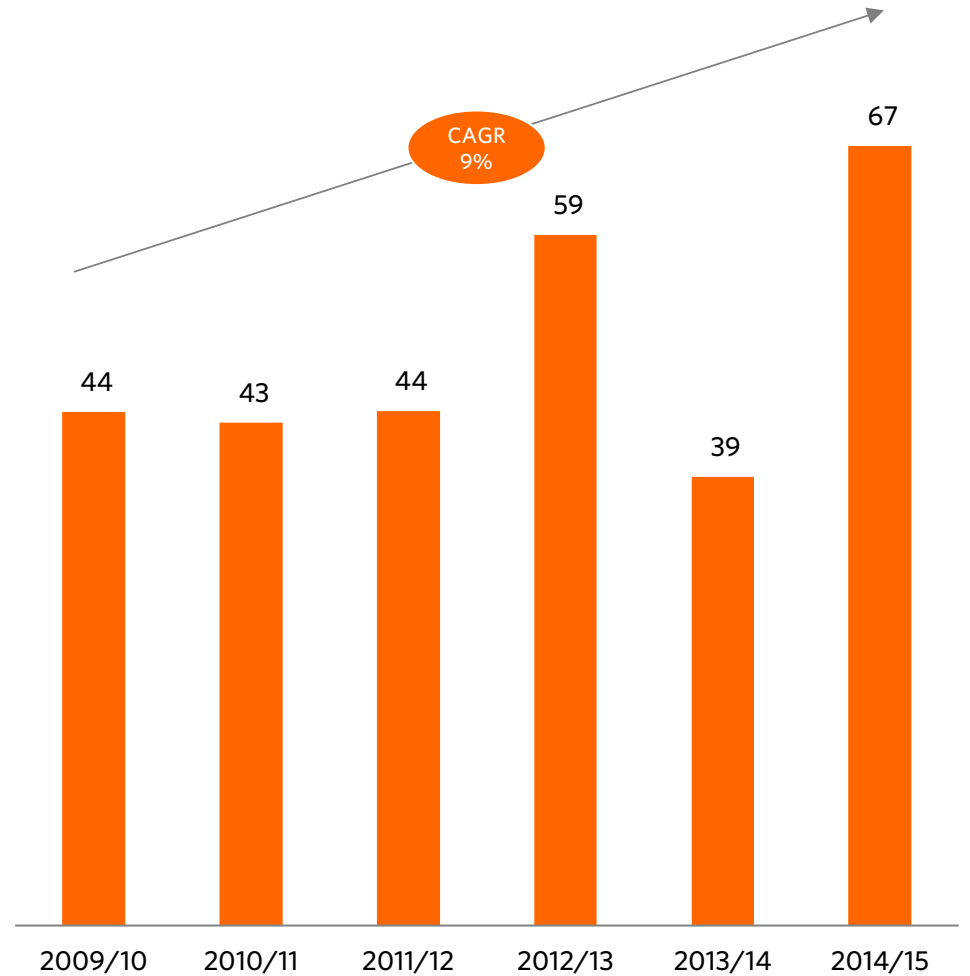
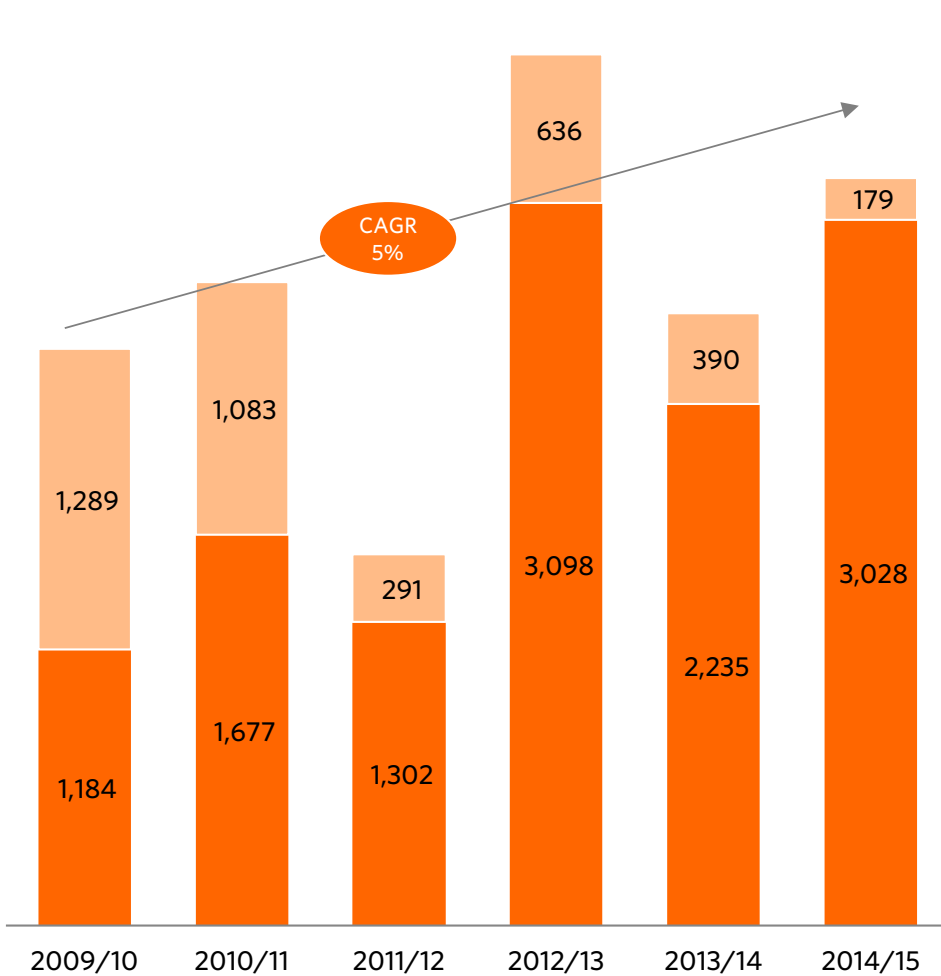
MANDARINS

- Western Australia is also increasing mandarin trees per operational unit and mandarin production per operational unit
- Western Australia has low mandarin production per operational unit relative to Eastern Australia; however, the rate of increase over the past five years has been good
- Benchmarking Western Australia with the three largest U.S. citrus producing states also suggests there may be opportunities for larger scale operational units

Western Australia is increasing both orange trees per operational unit and orange production per operational unit

ORANGE TREES/OPERATIONAL UNIT: WESTERN AUSTRALIA
Trees/unit; 2010-2015

ORANGE TONNES/OPERATIONAL UNIT: WESTERN AUSTRALIA
Tonnes/unit; 2010-2015

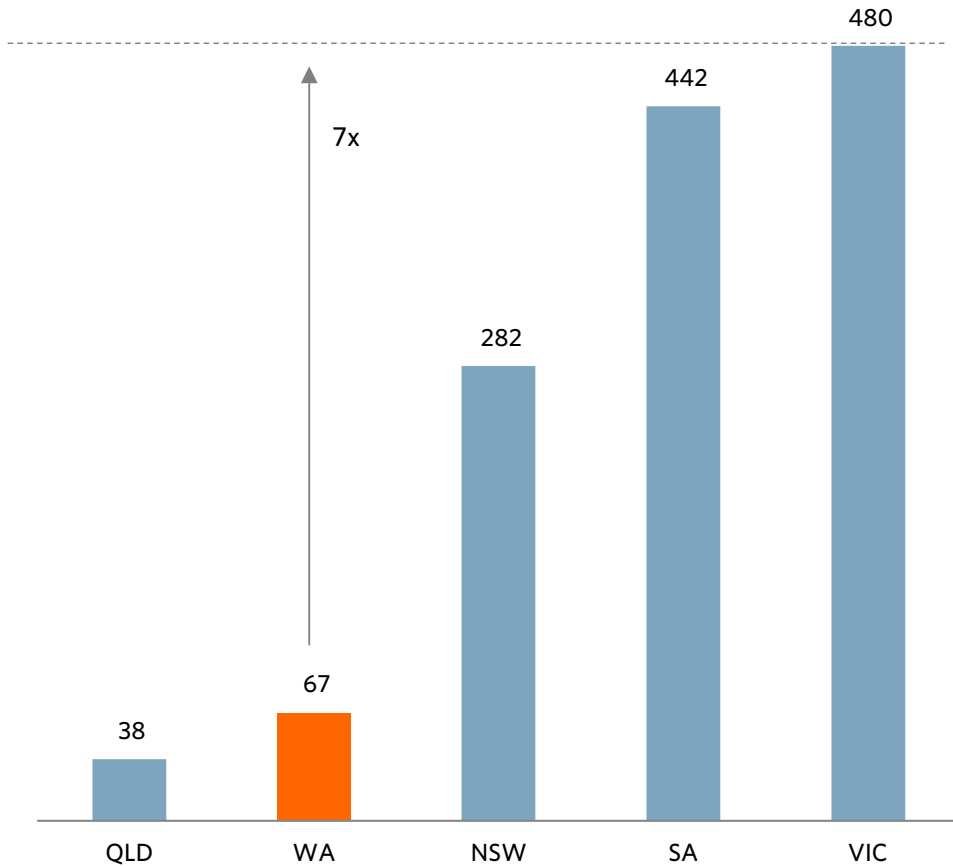


Source: various ABS publications; Coriolis analysis

Western Australia has low orange production per operational unit relative to Eastern Australia; however, the rate of increase over the past five years has been good

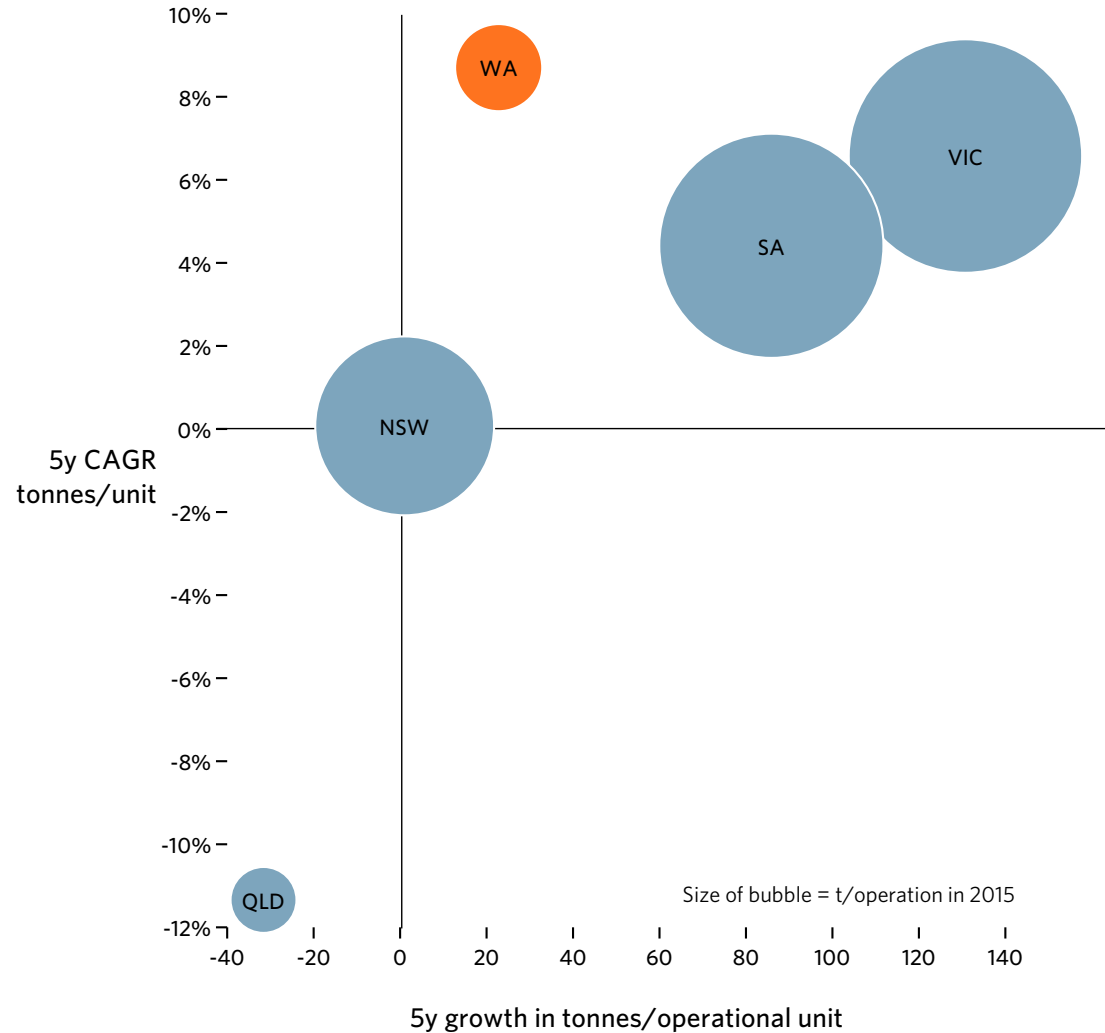
AVERAGE TONNES OF ORANGES PRODUCED PER OPERATIONAL UNIT BY AUSTRALIAN STATE

Tonnes/operational unit; 2015



GROWTH MATRIX ON ORANGE TONNES/UNIT BY AU STATE

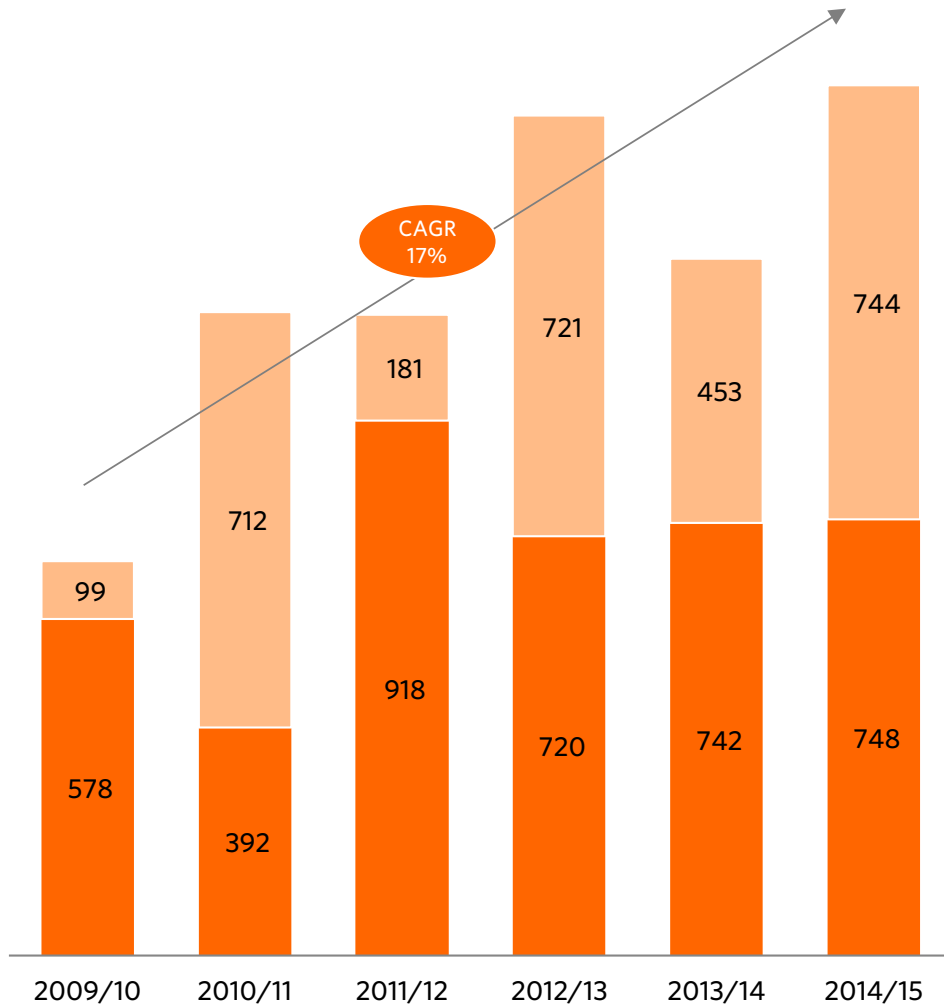
Tonnes/operational unit; 2010 vs. 2015



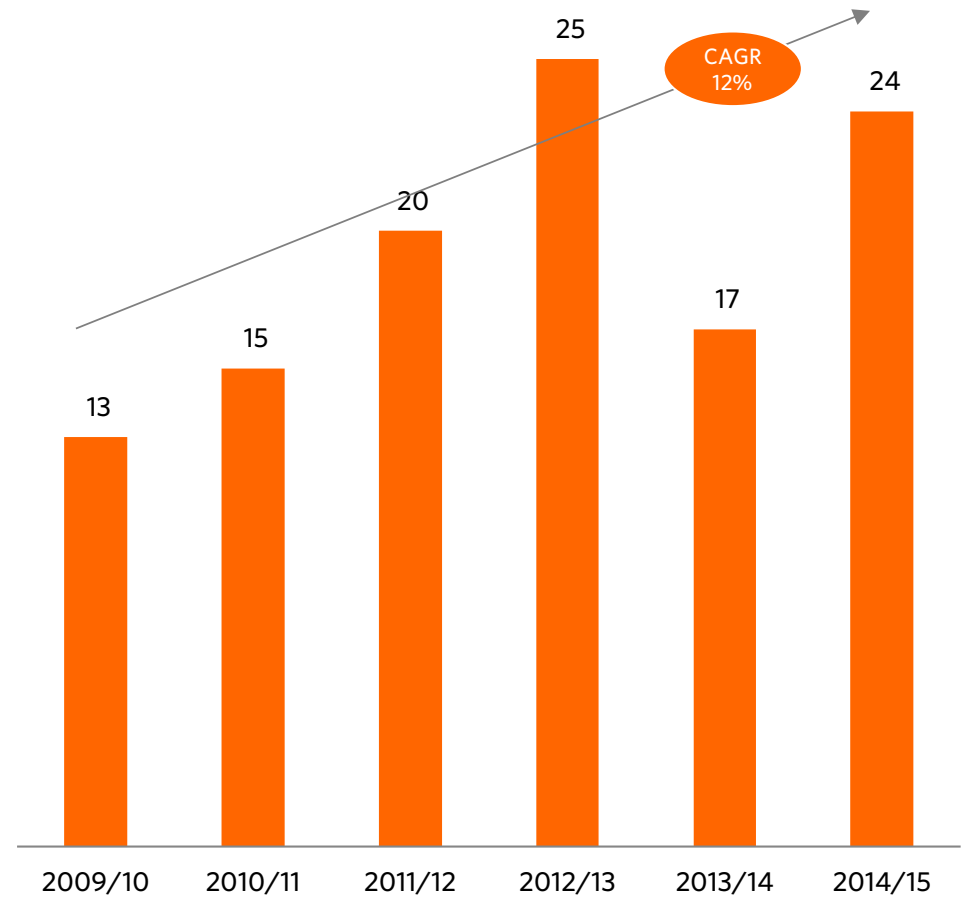
Source: ABS (7121.0); Coriolis analysis and estimates

Western Australia is also increasing mandarin trees per operational unit and mandarin production per operational unit

MANDARIN TREES/OPERATIONAL UNIT: WESTERN AUSTRALIA
Trees/unit; 2010-2015



MANDARIN TONNES/OPERATIONAL UNIT: WESTERN AUSTRALIA
Tonnes/unit; 2010-2015

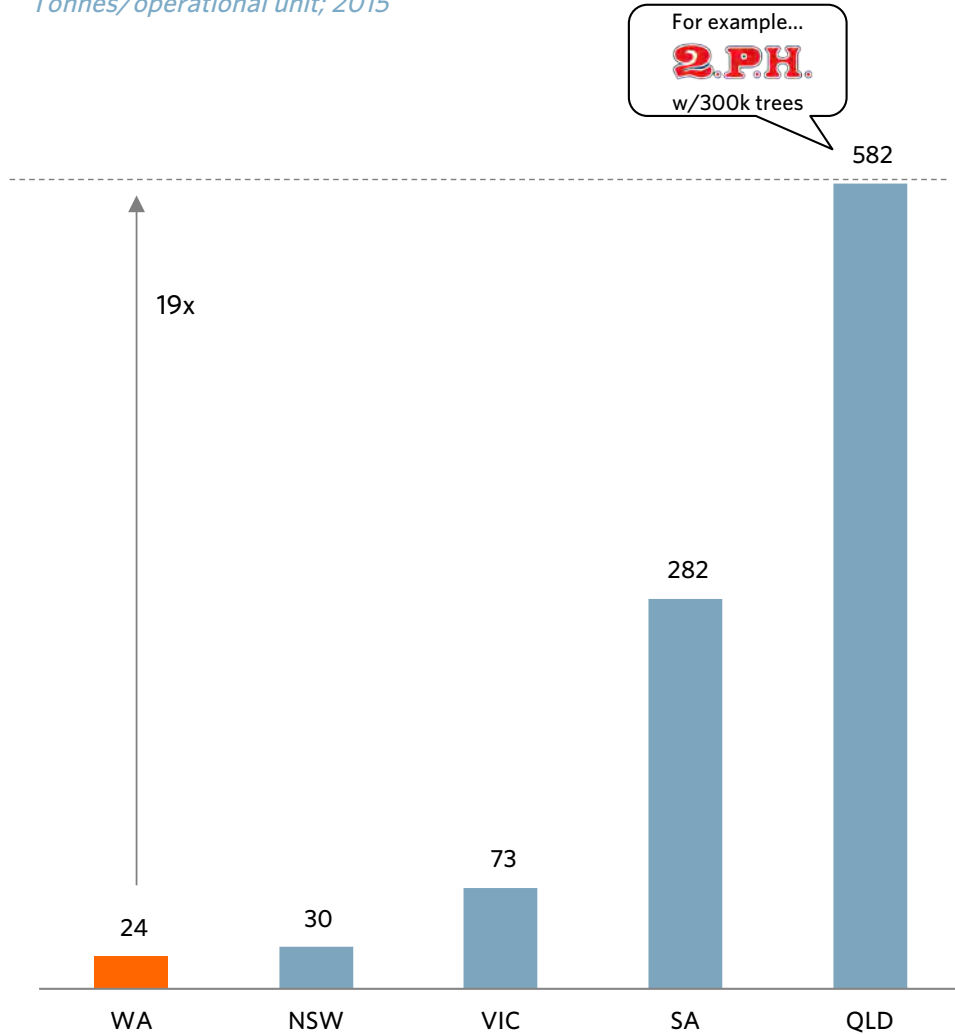


Source: various ABS publications; Coriolis analysis

Western Australia has low mandarin production per operational unit relative to Eastern Australia; however, the rate of increase over the past five years has been good

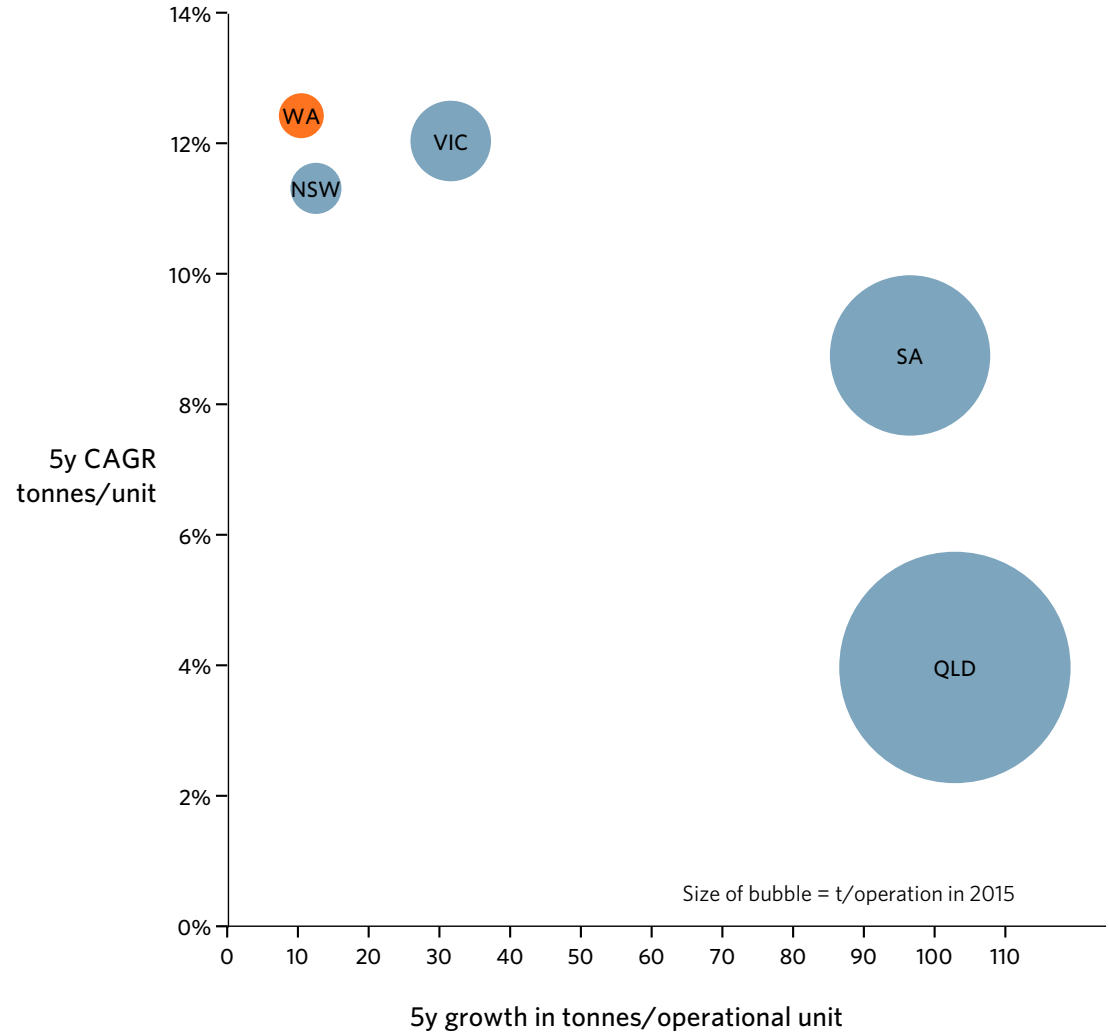
AVERAGE TONNES OF MANDARIN PRODUCED PER OPERATIONAL UNIT BY AUSTRALIAN STATE

Tonnes/operational unit; 2015



GROWTH MATRIX ON MANDARIN TONNES/UNIT BY AU STATE

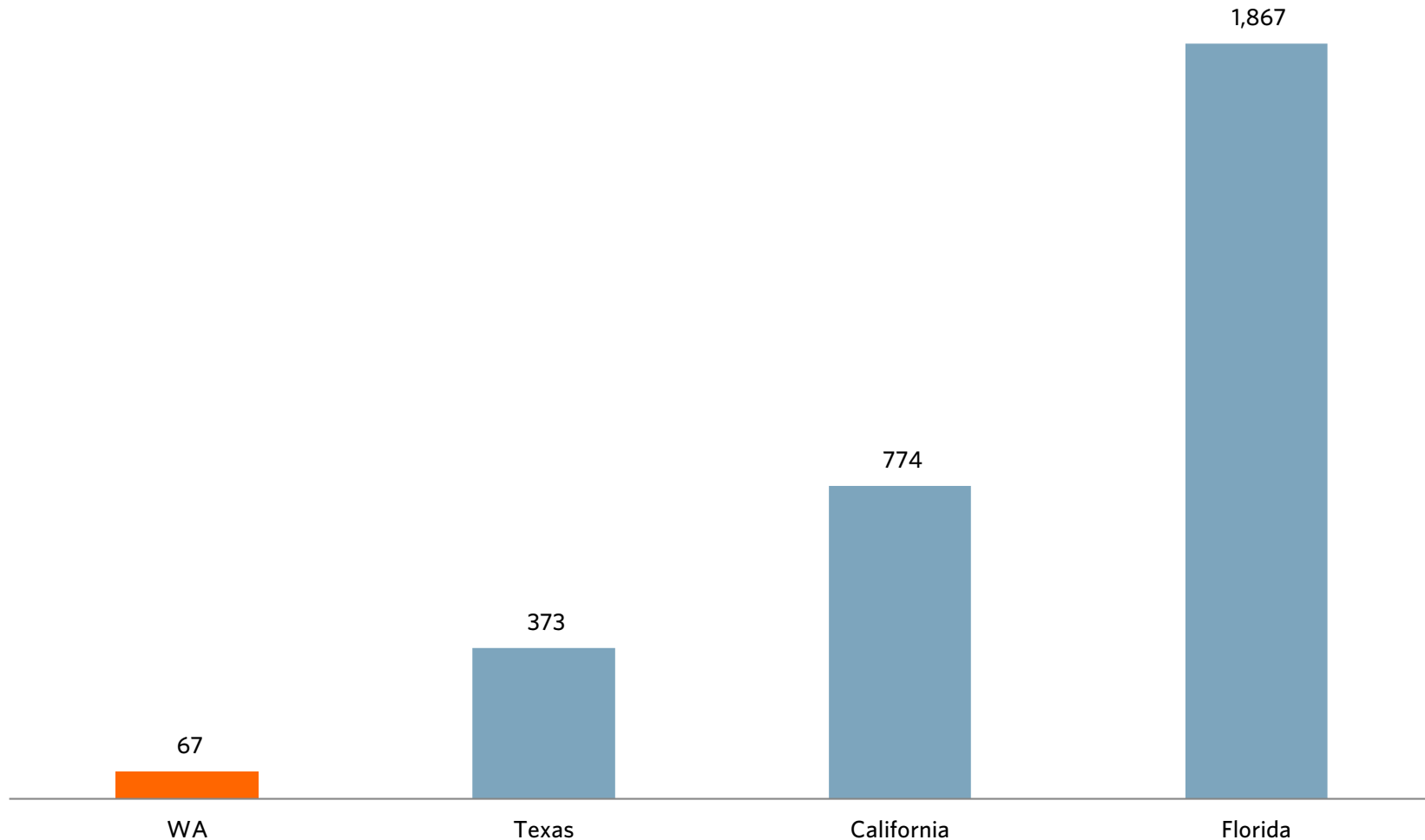
Tonnes/operational unit; 2010 vs. 2015



Benchmarking Western Australia with the three largest U.S. citrus producing states also suggests there may be opportunities for larger scale operational units

AVERAGE TONNES OF ORANGES PRODUCED PER AGRIBUSINESS OPERATIONAL UNIT: WA VS. SELECT PEERS

Tonnes/operational unit; 2015 or as available



The third section of this report looks at the competitive situation in packing/wholesaling of citrus

SECTION STRUCTURE: CITRUS INDUSTRY CASE STUDY








Western Australian has a modern and consolidated citrus grower/packer sector; improved sector competitiveness will need to come from greater throughput, not more consolidation

- Western Australia has a modern packing/wholesaling sector with several large grower/packers/exporters of citrus
- There is a high level of consolidation in the Western Australian citrus at grower/packer level
- Citrus - like many agrifood sectors - is moving rapidly to the large integrated Grower/Packer/Shipper model; for example Wonderful Citrus alone packs thirty-three times more citrus than Western Australia
- Greater throughput is required to achieve scale at packhouse level
- Large scale integrated operations allow for investment in marketing and IP development

Western Australia has a modern packing/wholesaling sector with several large grower/packers/exporters of citrus

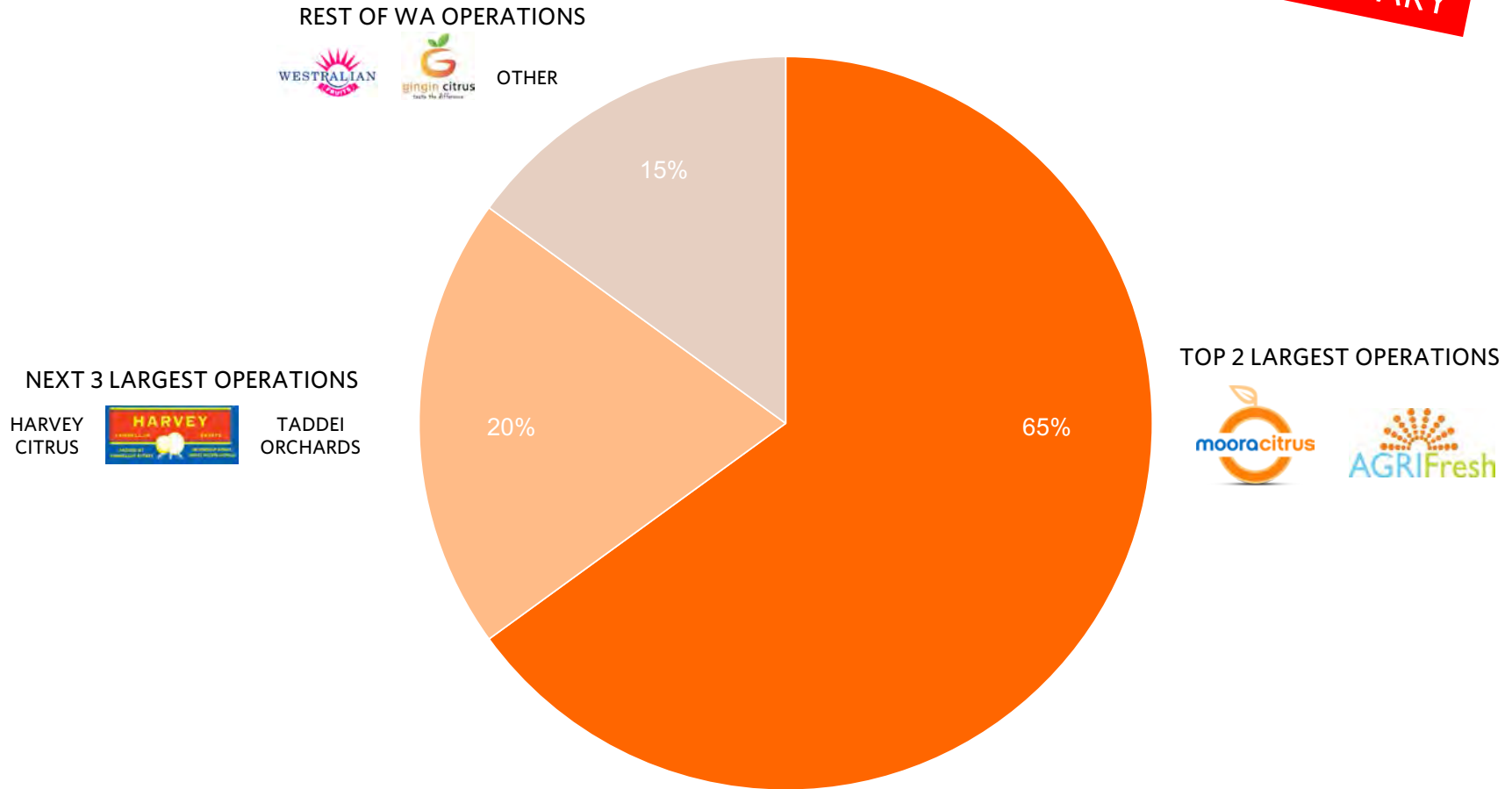
MAJOR CITRUS GROWERS AND PACKERS IN WESTERN AUSTRALIA

2016 or as available

| | Founded | Volume | Ownership | Location | Description | # of employees | Key products | Website |
|--|---------|---|--|--|---|----------------|---|--|
|  | 2005 | 5,000t; future 15,000t; 280ha | Private Ling family | 12/41 Catalano Court, Canning Vale, WA 6155 +61 8 9455 4538 | Vertically integrated citrus and mango grower, packer and shipper; number 1 citrus grower in WA with two orchards; 280ha of citrus, 45ha of mango; two packing facilities | 20-60 seasonal | Oranges Mandarins | www.agrifresh.com.au |
|  | TBD | 30 ha; expanding to 37ha | Private Ansell family | Dooling Road, Neergabby, WA 6503 +61 418 944 151 | Pesticide free citrus grower supplying Market City; recent venture into packing facilities with Mercer Mooney | TBD | Oranges Mandarins Lemons | N/A |
| Harvey Citrus | 1982 | 60ha | Private Pergoliti family | 7 Fifth Street, Harvey, WA 6220 +61 8 9729 3861 | Citrus grower and packer; received \$500,000 Coles grant; 9,000 new lime and mandarin trees; new seedless lemons | TBD | Oranges Mandarins Grapefruit Limes | N/A |
|  | 1998 | 6,000t; future 13,000t; 210ha | Private Brennan Rural Group, Gillon Group | 1429 Prices Road, Moora, WA 6510 +61 8 9653 1318 | Citrus grower and packer; number 2 citrus grower in WA; 170,100 orange and mandarin trees; exports to China of 1,000t in '15; 3 packhouses, 4 th planned | 10-15 | Oranges Mandarins | www.mooracitrus.com |
| Taddei Orchards | 1976 | 40,000 citrus trees; 101 ha (incl. stone fruit) | Private Taddei family | 683 Chitna Road, Neergabby, WA 6503 +61 8 9575 7611 | Citrus grower and packer; packs for other growers as well as avocados and mangos; 35,000 stone fruit trees, 40,000 citrus on 101ha | 7 | Mandarins Citrus | N/A |
|  | 1990 | 120ha (incl. mango) | Private | 108 Lennards Road, Gingin, WA 6503 +61 8 9575 2057 | Citrus grower and packer; 6 orchards currently in production; approximately 77,000 trees; for sale | 40 | Oranges Mandarins Lemons | www.westralianfruits.com.au |
|  | 1993 | 1,400t; 50ha | Private Eckersley family | 399 River Rd, Harvey, WA 6220 +61 417 911 534 | Citrus grower and packer; fourth generation | TBD | Mandarins Oranges Lemons | www.yambellup.com.au |

There is a high level of consolidation in the Western Australian citrus at grower/packer level

CITRUS PRODUCTION BY FIRM
% of production volume; 2016e



PRELIMINARY

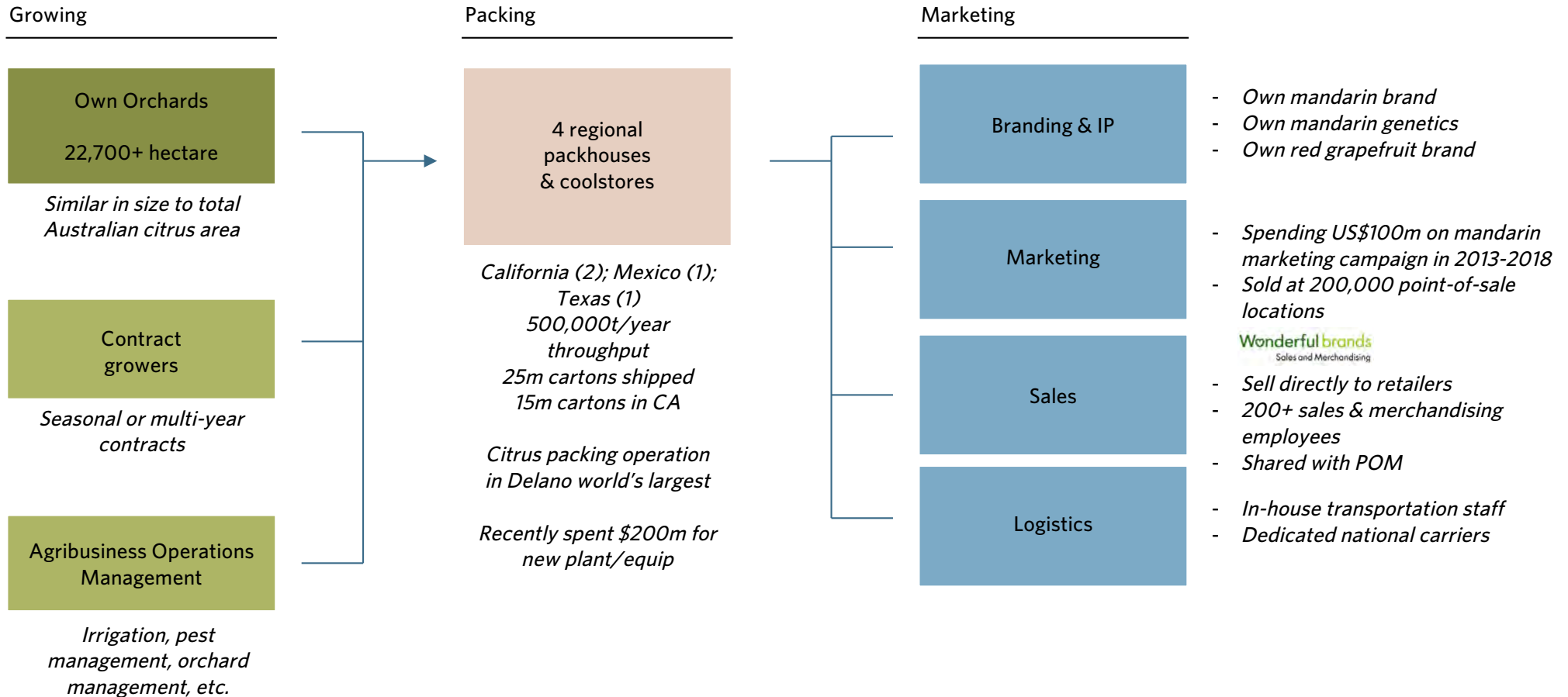
INCLUDES CORIOLIS ESTIMATES

Citrus - like many agrifood sectors - is moving rapidly to the large integrated Grower/Packer/Shipper model; for example Wonderful Citrus alone packs thirty-three times more citrus than Western Australia

EXAMPLE: WONDERFUL CITRUS GROWER/PACKER/SHIPPER
2016 or as available

theWonderfulcompany.
US\$4b
(2014)

Wonderful citrus™

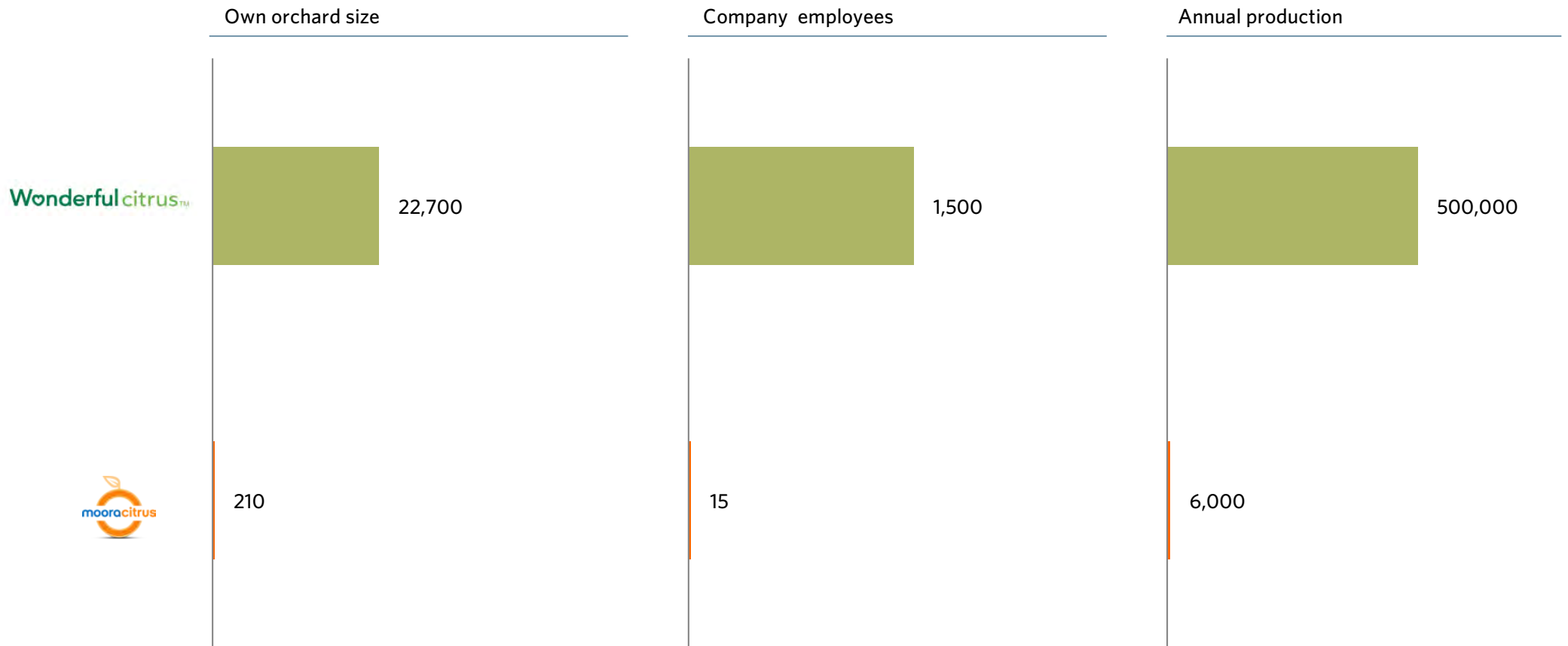


Source: Coriolis from a range of sources

Greater throughput is required to achieve scale at packhouse level

EXAMPLE: MOORA CITRUS, WA VS. WONDERFUL CITRUS, CA

Ha; head; t; 2016 or as available



Large scale integrated operations allow for investment in marketing and IP development

EXAMPLE: WONDERFUL CITRUS, USA
2016

Wonderful citrus™

Launched new brand “Wonderful Halos” to market its mandarins

65 per cent of US’s California mandarin crop

Invested \$100m in five year marketing and advertising campaign

200 salespeople employed by Wonderful Brands



Launched new brand “Wonderful Sweet Scarletts” to market its Texas-sourced grapefruit

10,000 acres in South Texas

Invested \$3m in national advertising campaign



The final section of this case study looks briefly at the competitive situation in the value-added citrus processing in WA

SECTION STRUCTURE: CITRUS INDUSTRY CASE STUDY











Western Australian lacks the scale and low production cost structure to compete in the orange juice sector; value-added sectors beyond juice are small and highly competitive

- Western Australia has range of juice processors, from large scale multinational beverage companies to small boutique fresh juice companies
- Western Australia has only one significant juice processor using locally produced fresh citrus; other beverage manufacturers use nationally or internationally sourced concentrate
- Juice dominates the global trade in value-added citrus; sectors beyond this are small or highly competitive
- Brazil dominates orange juice exports, combining large scale production with a low processing cost structure

Western Australia has range of juice processors, from large scale multinational beverage companies to small boutique fresh juice companies

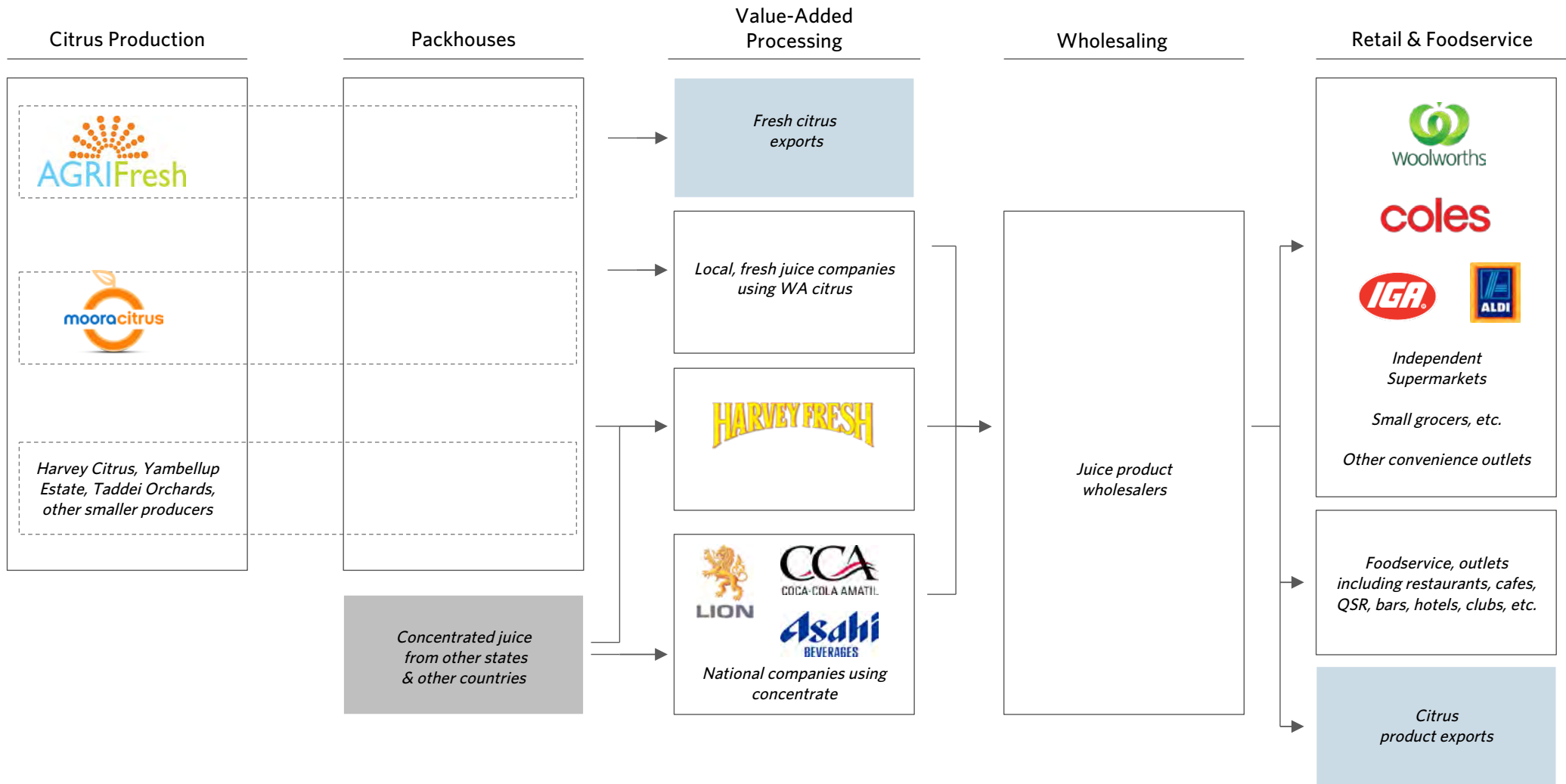
JUICE PROCESSORS IN WESTERN AUSTRALIA

2016 or as available

| | Founded | Volume | Ownership | Location | Description | # of employees | Key products | Website |
|--|---------|----------------------|--|--|---|-----------------------------|---|---|
| Large scale processing from local fresh and concentrate | | | | | | | | |
|  | 1986 | 20mL 20% of WA | Private Lactalis (France) | Lot 4 Third St, Harvey, WA 6220 +61 8 9729 0600 | Dairy and juice processor with plant in Harvey; fresh and concentrate used | 250 | Dairy, juice, wine | www.harveyfresh.com.au |
| Regional operations of large scale national companies processing from concentrate | | | | | | | | |
|  | 1994 | TBD | Private Kirin (Japan) | 86 Radium St, Bentley, WA 6102 +61 8 9333 2888 | Dairy and juice processor; juice sourced as concentrate | 80 | Dairy, juice | www.lionco.com |
|  | 1904 | TBD | Public (ASX: CCL) | 19-21 Miles Rd, Kewdale, WA 6105 +61 8 9449 1331 | Multinational beverage manufacturer; bottling and distribution operations in WA | 450 | Soft drinks, juice, bottled water, alcoholic beverages | www.ccamatil.com |
|  | 1990 | TBD | Private Asahi Group (Japan) | 31 Somersby Road, Welshpool, WA 6106 +61 8 9333 2100 | Multinational beverage manufacturer, bottling and distribution operations in WA | 25-50 | Soft drinks, juice, bottled water, alcoholic beverages | www.asahi.com.au www.schweppesaustralia.com.au |
| Local small scale fresh juice processors | | | | | | | | |
|  | 2013 | TBD | Private Glasfurd | 2/84 Forsyth Street, O'Connor, WA 6163 +61 8 9337 6131 | Fresh, cold-pressed juice and cleanses processor; delivery | TBD | Juice, cleanses, nut mix packs | www.madejuice.com |
|  | 2013 | TBD | Private Beare family | 5/24 St Quentin's Av, Claremont, WA 6010 +61 8 9384 0481 | Fresh, cold-pressed juice and cleanses processor; 1 retail outlet; stocked in independents; delivery | TBD | Juice, cleanses | www.pressedearth.com.au |
|  | 2005 | TBD | Private Trader family | Unit 3/24 Darlot Road, Landsdale, WA 6065 +61 1300 854 095 | Juice and smoothie supplier to IGA, schools, hospitals, cafes; office fruit baskets, coffee machines, flowers | 5-7 | Juice, smoothies, fruit baskets, office kitchen supplies and catering | www.vitalicious.com.au |
| Food Service/retail fresh juice chain outlets | | | | | | | | |
|  | 2000 | TBD | Private Bain Capital, Allis family | 1341 Dandenong Road, Chadstone, VIC 3148 +61 3 9508 4409 | Fresh juice franchise business; 350 stores in 17 countries; 32 stores in WA | 7,000 (Retail Zoo total) | Juice, smoothies, yoghurt, banana bread, wraps, snack food | www.boostjuice.com.au |

Western Australia has only one significant juice processor using locally produced fresh citrus; other beverage manufacturers use nationally or internationally sourced concentrate

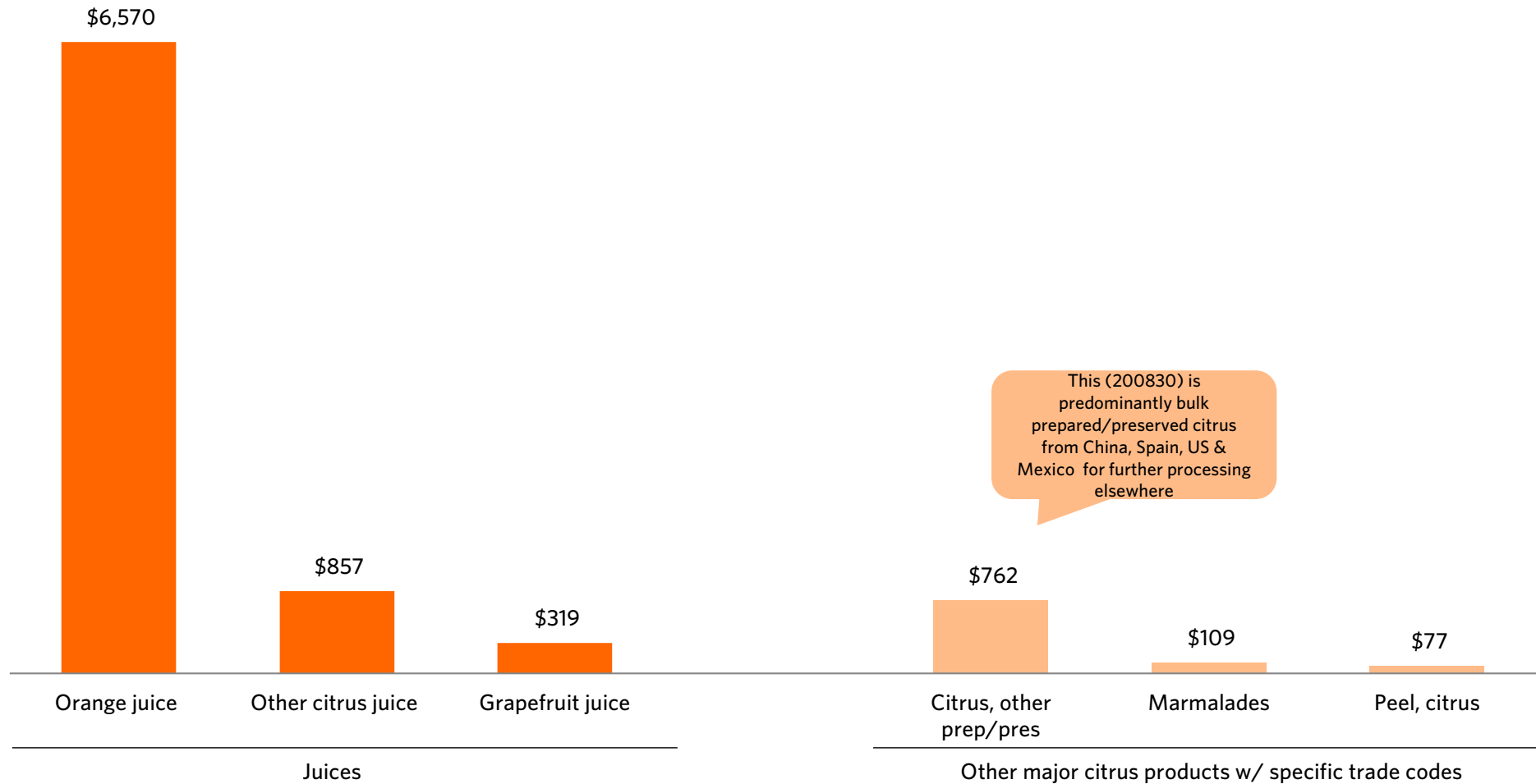
STRUCTURE OF WESTERN AUSTRALIAN CITRUS SUPPLY CHAIN
Simplified model; 2016



Juice dominates the global trade in value-added citrus; sectors beyond this are small or highly competitive

GLOBAL TOTAL IMPORT VALUE FOR VALUE-ADDED PROCESSED CITRUS PRODUCTS

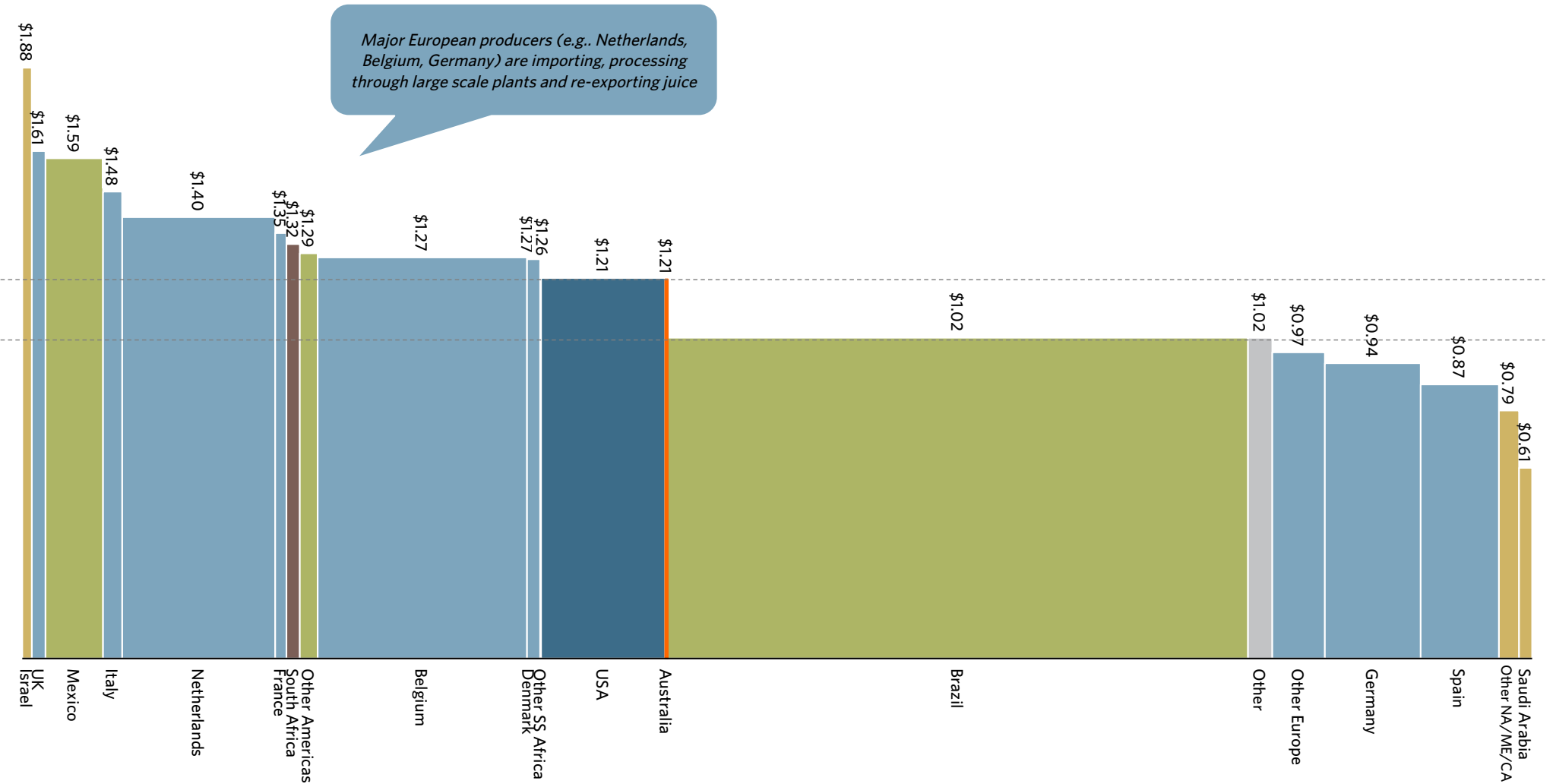
\$USm; 2014



Brazil dominates orange juice exports, combining large scale production with a low processing cost structure

GLOBAL ORANGE JUICE EXPORT VALUE COST CURVE: DOLLAR PER KILOGRAM VS. KILOGRAMS

Kilograms; m; US\$/kg; FOB; 2014



DOCUMENT STRUCTURE

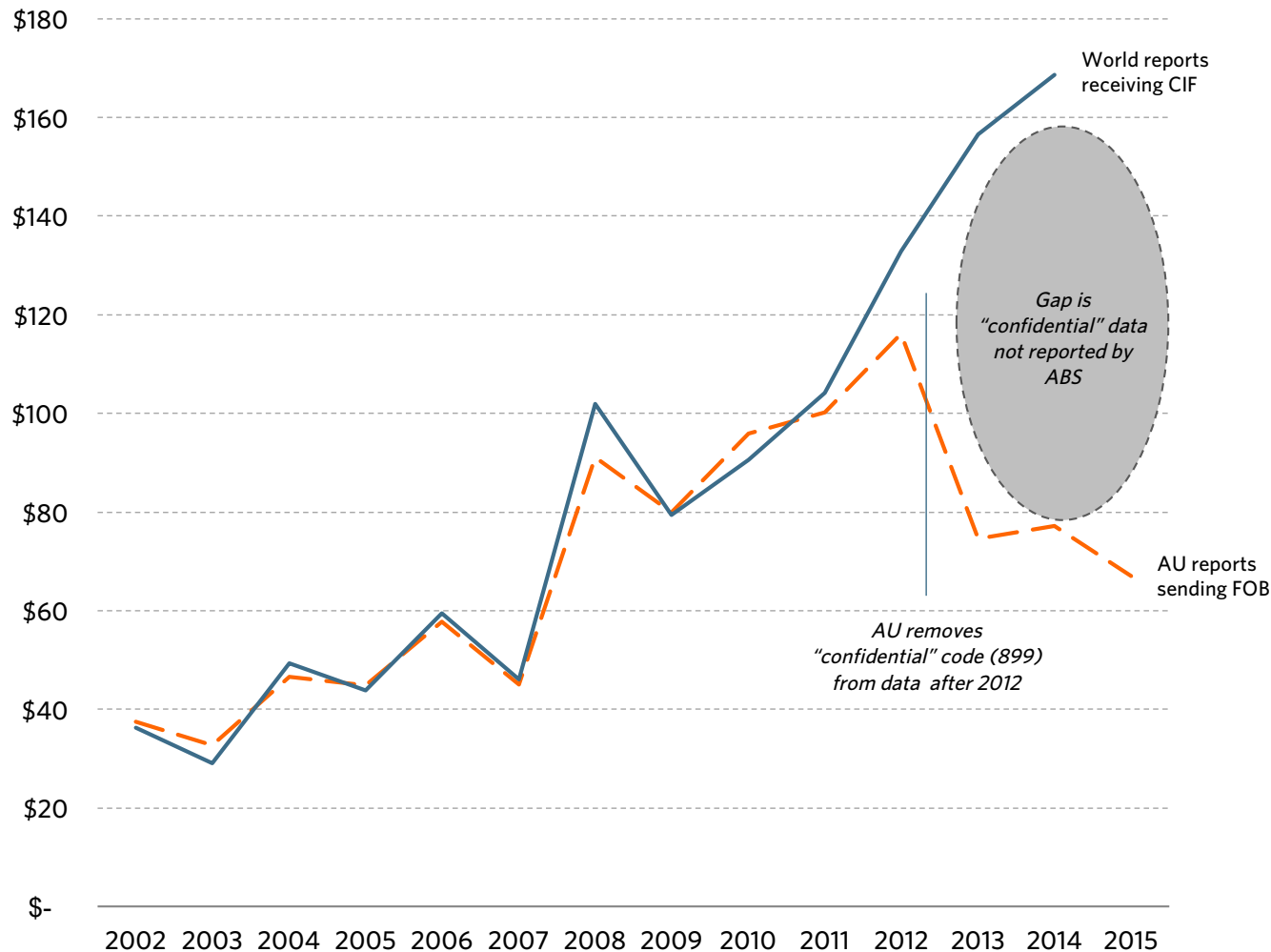
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Australia exported ~US\$170m worth of oats & rolled oats in 2014; however, Australian data under-reports this due to ABS domestic confidentiality rules; therefore this report uses global receipts data instead

REPORTED VALUE OF AUSTRALIAN OAT TRADE

US\$m; 2002-2014/15

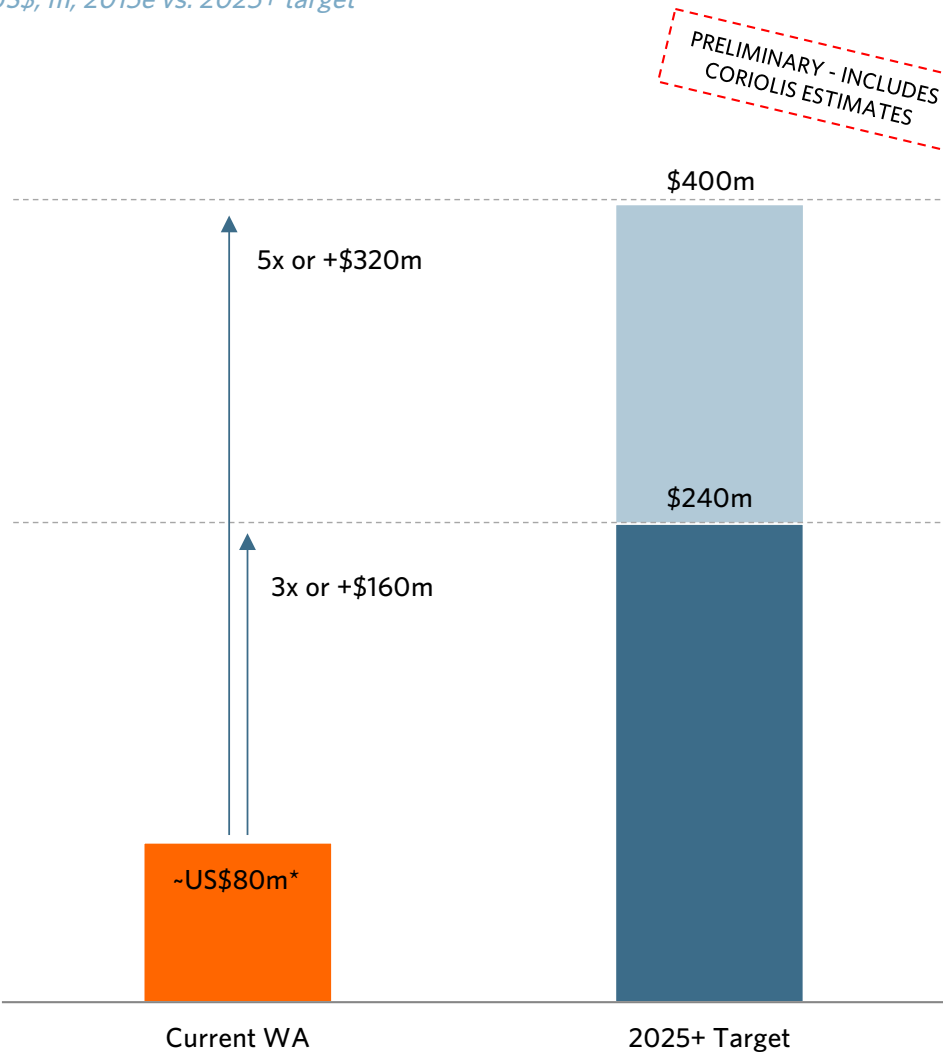


COMMENTS/NOTES

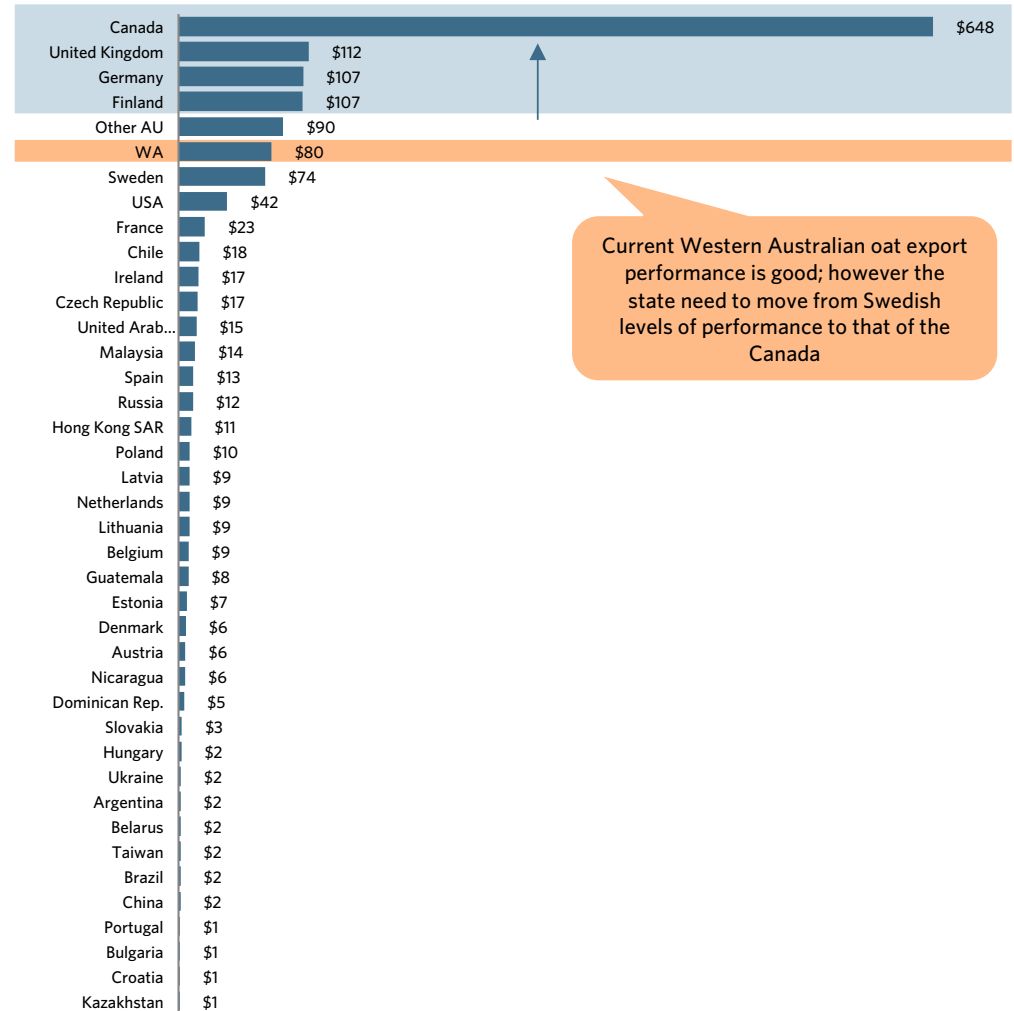
- Australian customs data currently significantly under-reports oat exports
- Customs/ABS operate under strict regulations around confidentiality, particularly around disclosure of small data sets and or single firms
- Therefore Australian export data for some products has data removed/excluded
- Firms can also request that public reporting of certain Australian trade codes be made confidential
- Historically confidential data was reported as "Areas not elsewhere specified [899]"
- This limitation of Australian reporting is easily overcome by turning the question around and asking every other country what they received from Australia
- Therefore export data presented in this section uses global receipt CIF not Australian sending FOB

The Government has set a goal of doubling agrifood industry value (predominantly through exports); as some sectors will struggle to grow, others need to grow more; WA oat exports need to grow 5x; this is equivalent to matching half the current performance of Canada

WA OATS/ROLLED OATS EXPORT VALUE GROWTH TARGET
 US\$; m; 2015e vs. 2025+ target



OATS/ROLLED OATS EXPORT VALUE: WA VS. SELECT
 US\$m; 2014/15



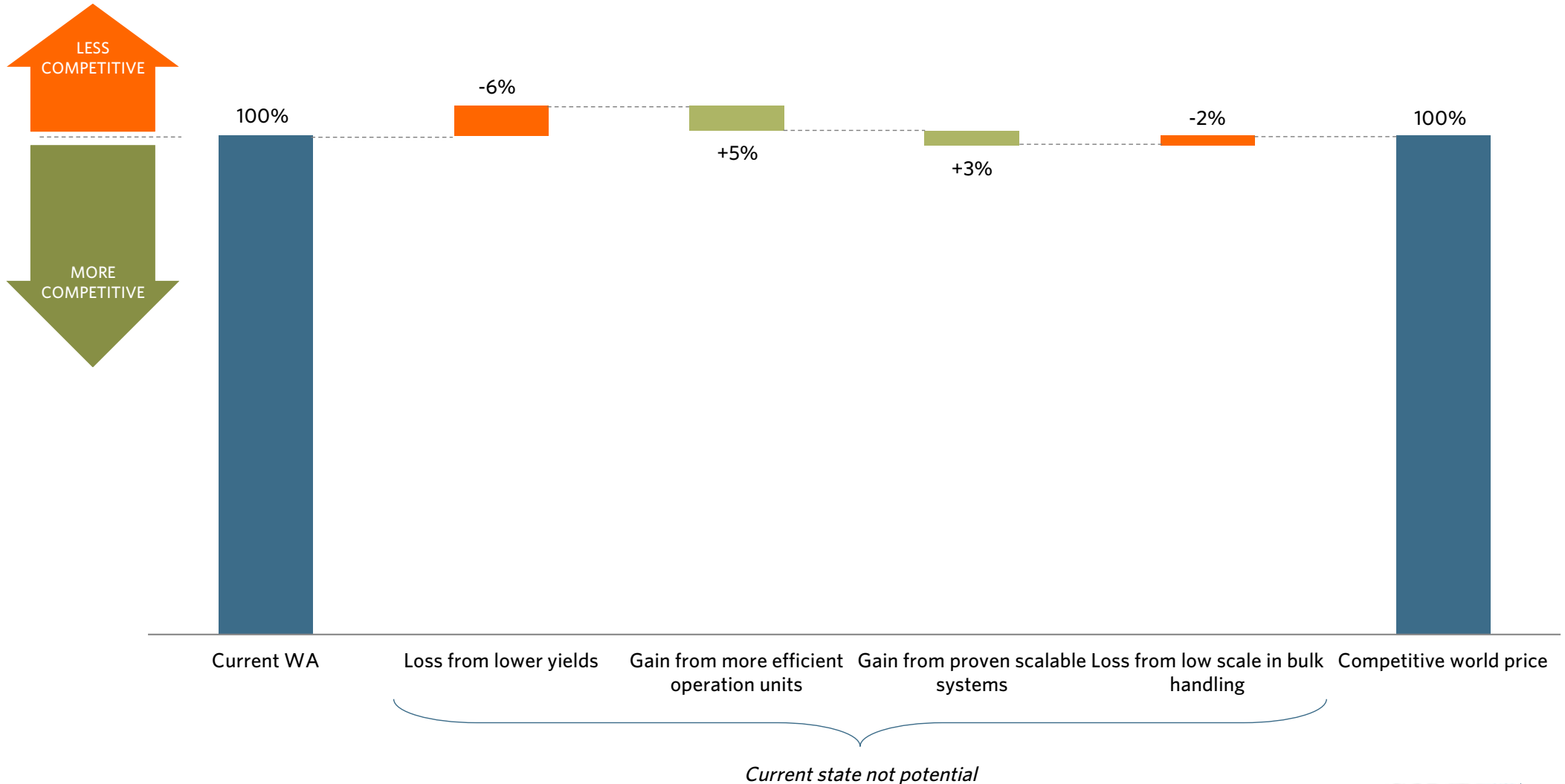
* WA (US\$80m) is a Coriolis estimate based on WA share of production (46.5%) applied to AU exports value; Source: UN Comtrade database; ABS; Coriolis classifications and analysis

Western Australia has a globally competitive oats industry achieving world price; however, gains in some areas are masking challenges elsewhere (particularly in yields)

POTENTIAL PATHWAY TO COMPETITIVENESS FOR WESTERN AUSTRALIAN OATS INDUSTRY
% of current cost; 2015

INCLUDES CORIOLIS ESTIMATES

PRELIMINARY



Source: Coriolis estimates

This case study on the relative competitiveness of the Western Australian oat industry is structured as follows

SECTION STRUCTURE: OAT INDUSTRY CASE STUDY



The first section of this case study reviews the current competitive situation in oats

SECTION STRUCTURE: OAT INDUSTRY CASE STUDY



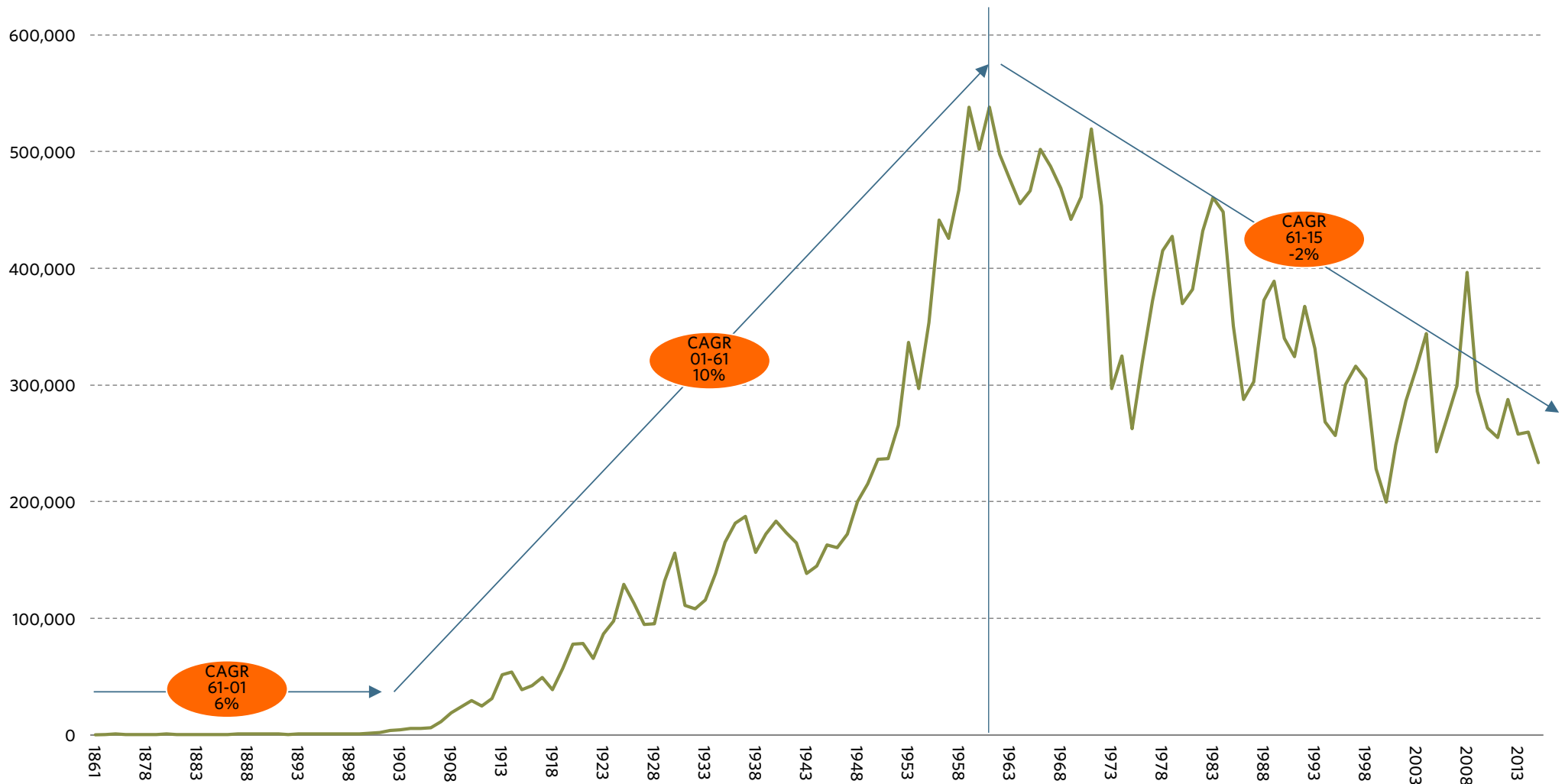
The export competitiveness of the Western Australian oat industry is improving

- The Western Australian oat industry had a long period of area growth through the early 1960's; since then, the area has been erratically trending downward
- Oat production has grown over the past 154 years; however, the rate of growth has slowed
- Western Australia is a major oat producer, producing more than China but less than the UK
- Western Australia is increasing oat production while global oat production is in long term decline
- Western Australia (and a handful of other countries) have been growing oat production; Chile stands out for growth and Russia, Canada and the US for decline
- Australia is growing oat exports, particularly to Asia
- Australia dominates most of its key export markets; it is growing across all three of its largest markets

The Western Australian oat industry had a long period of area growth through the early 1960's; since then, the area has been erratically trending downward

AREA PLANTED IN OATS IN WESTERN AUSTRALIA

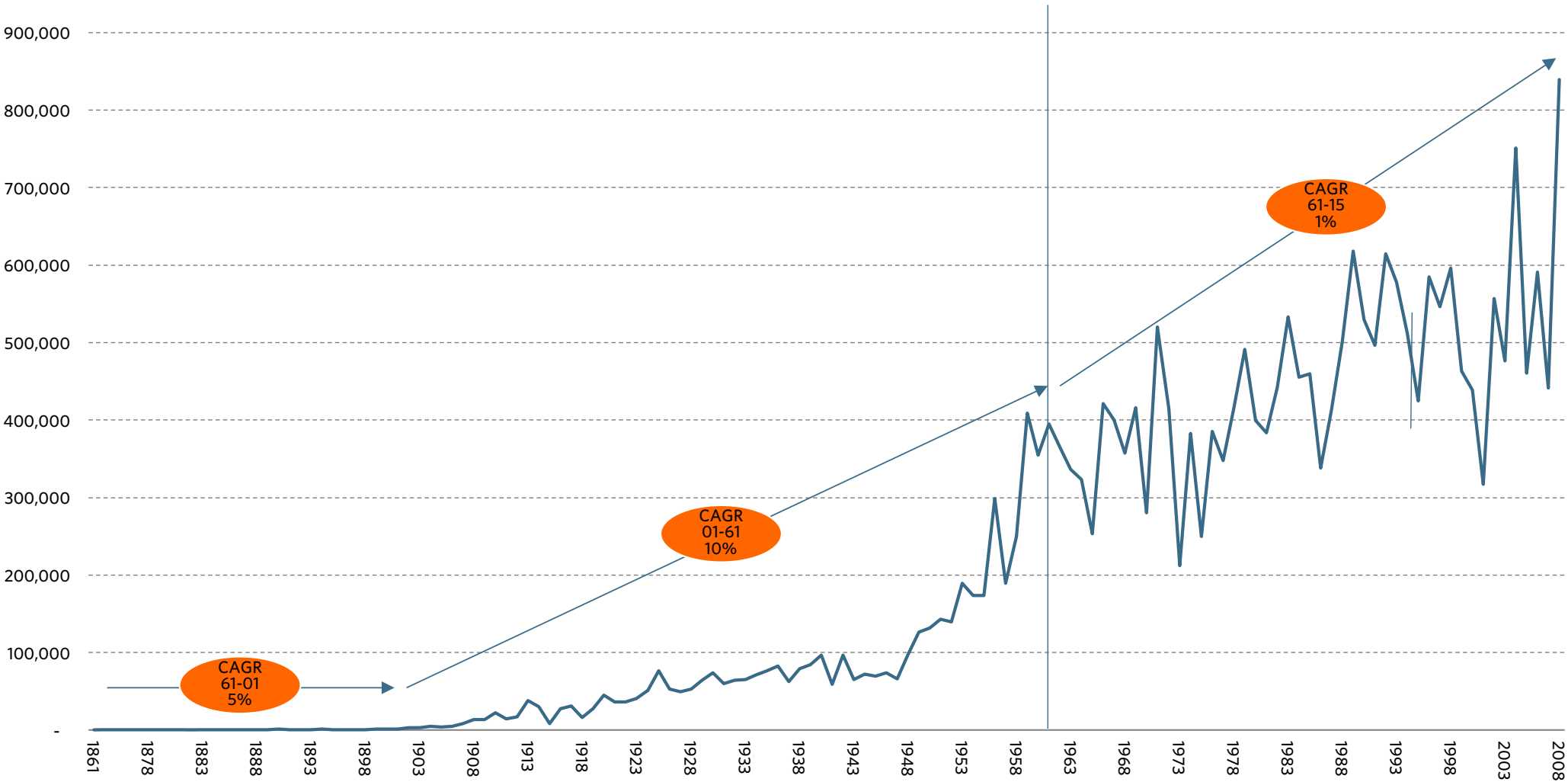
Hectare; 1861-2015



Oat production has grown over the past 154 years; however, the rate of growth has slowed

OAT PRODUCTION IN WESTERN AUSTRALIA

Tonnes; 1861-2015

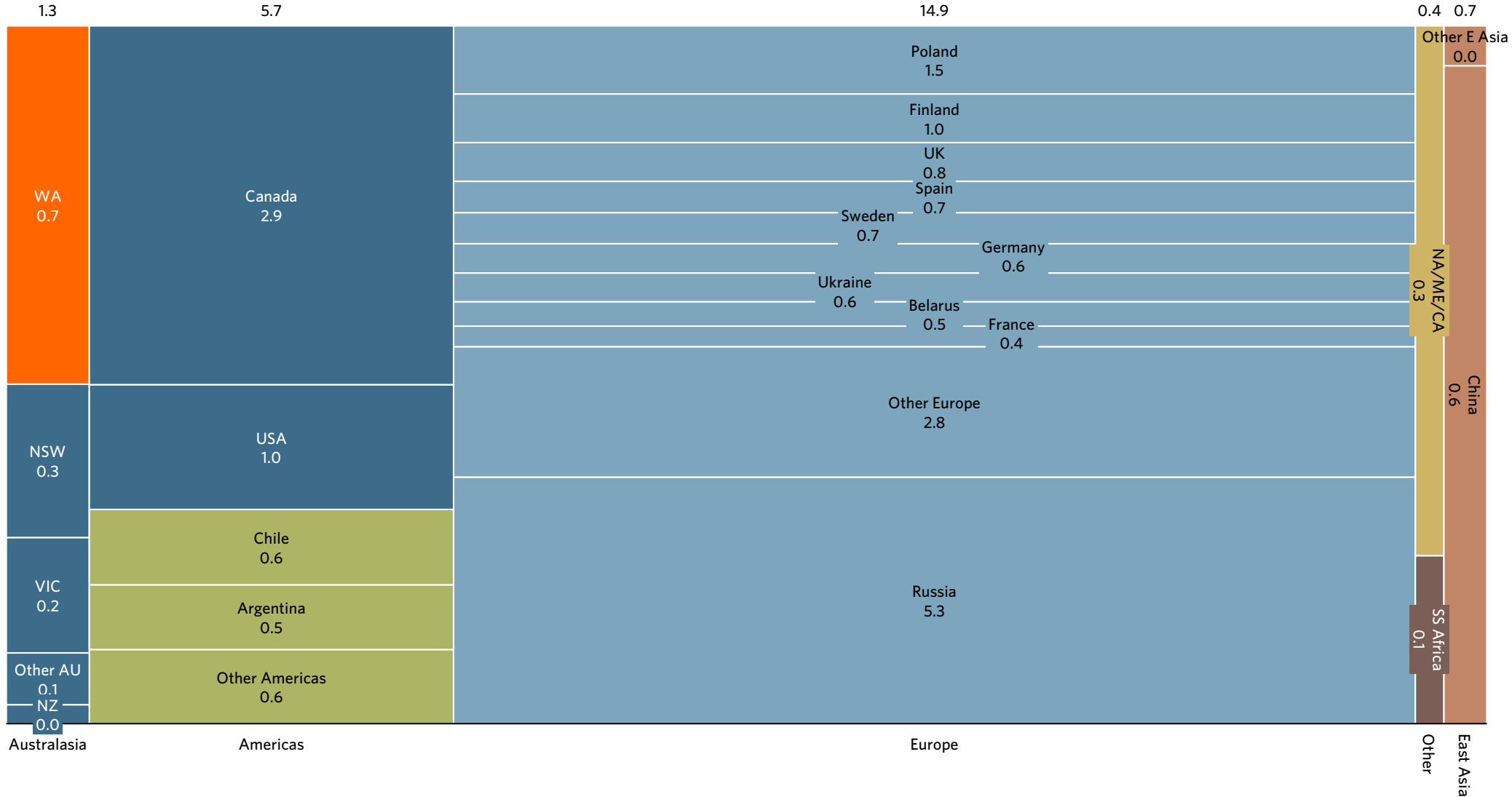


Source: various WA Statistical Register (by year); various ABS publications; Coriolis analysis and estimates

Western Australia is a major oat producer, producing more than China but less than the UK

GLOBAL OAT PRODUCTION

Tonnes; m; 2014

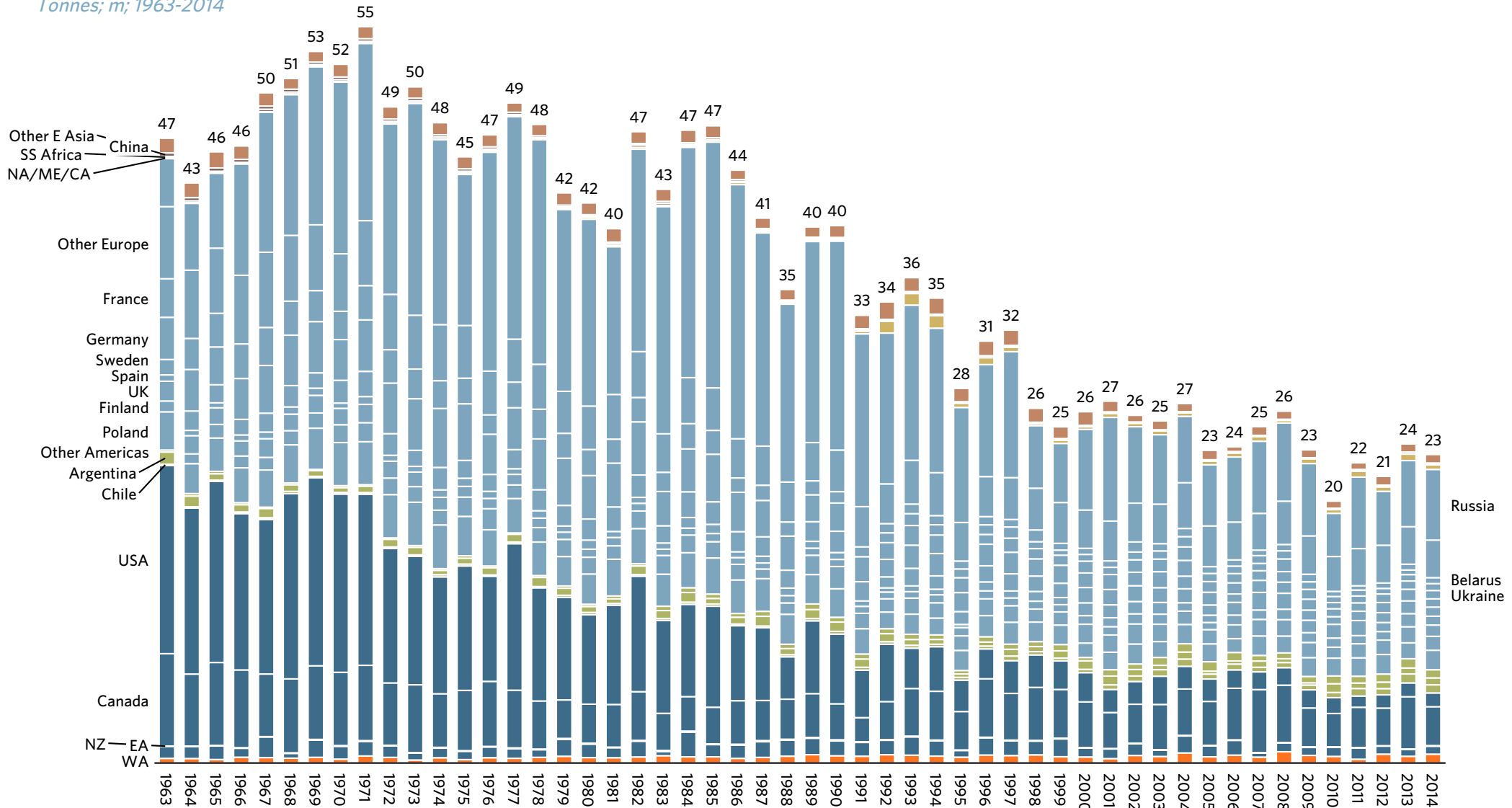


Source: UN FAO AgStat database; ABS data; Coriolis analysis

Western Australia is increasing oat production while global oat production is in long term decline

GLOBAL OAT PRODUCTION

Tonnes; m; 1963-2014

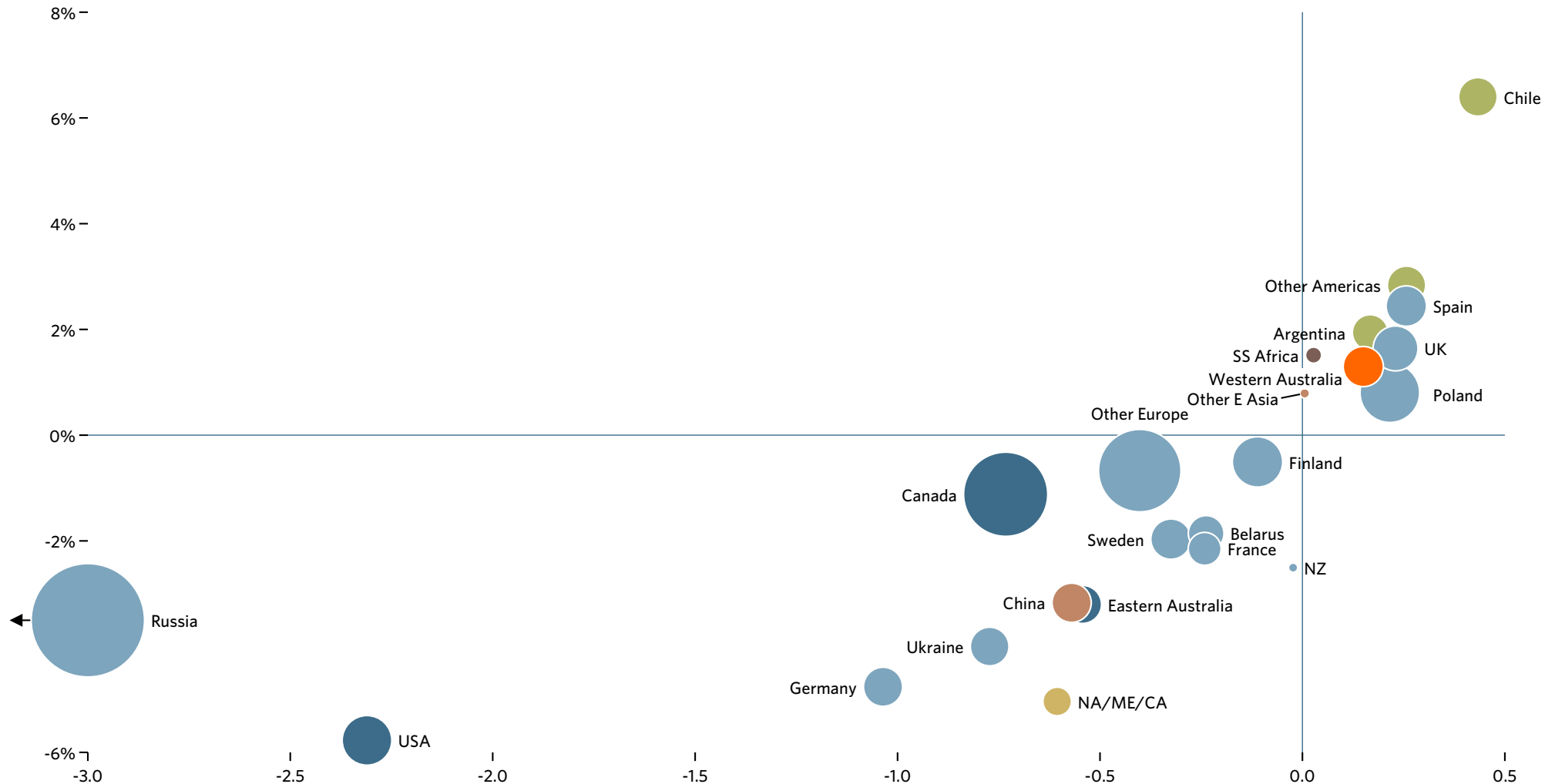


Source: UN FAO AgStat database; ABS data; Coriolis analysis

Western Australia (and a handful of other countries) have been growing oat production; Chile stands out for growth and Russia, Canada and the US for decline

20 YEAR OAT PRODUCTION GROWTH MATRIX: ABSOLUTE GROWTH VS. RATE OF GROWTH VS. TONNES

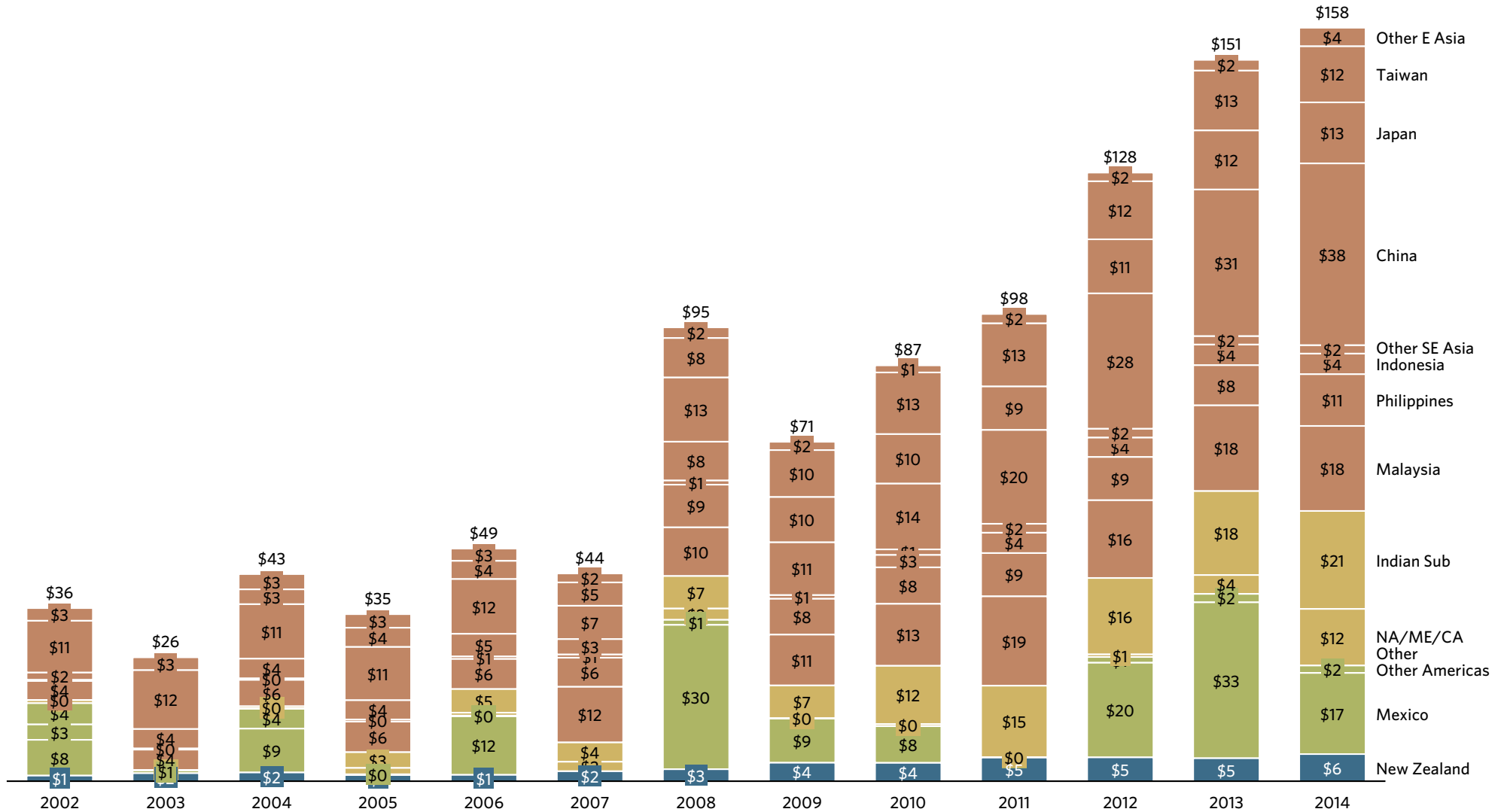
Tonnes; m; 2014 vs. 1994



Australia is growing oat exports, particularly to Asia

AUSTRALIAN OAT EXPORT VALUE

US\$, m; FOB; 2002-2014

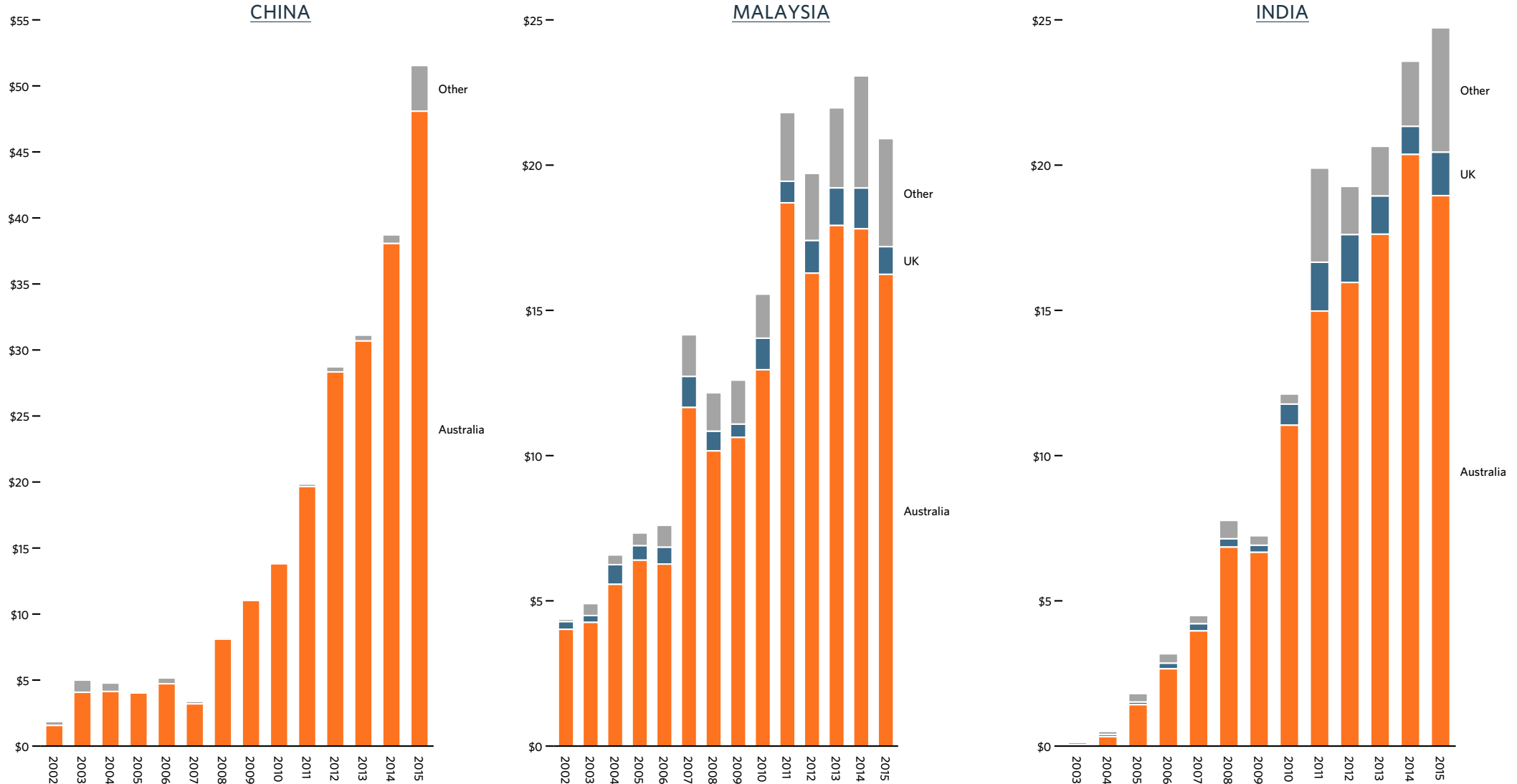


Note: data is oats, rolled oats and other worked oats as reported received from Australia Source: UN Comtrade database; Coriolis classifications and analysis

Australia dominates most of its key export markets; it is growing across all three of its largest markets

OAT IMPORT VALUE BY SOURCE COUNTRY: AUSTRALIA'S THREE LARGEST MARKETS

US\$m; 1996-2014/15



Note: data is oats, rolled oats and other worked oats as reported received from Australia Source: UN Comtrade database; Coriolis classifications and analysis

This case-study now looks at oat agribusiness operations in Western Australia

SECTION STRUCTURE: OAT INDUSTRY CASE STUDY

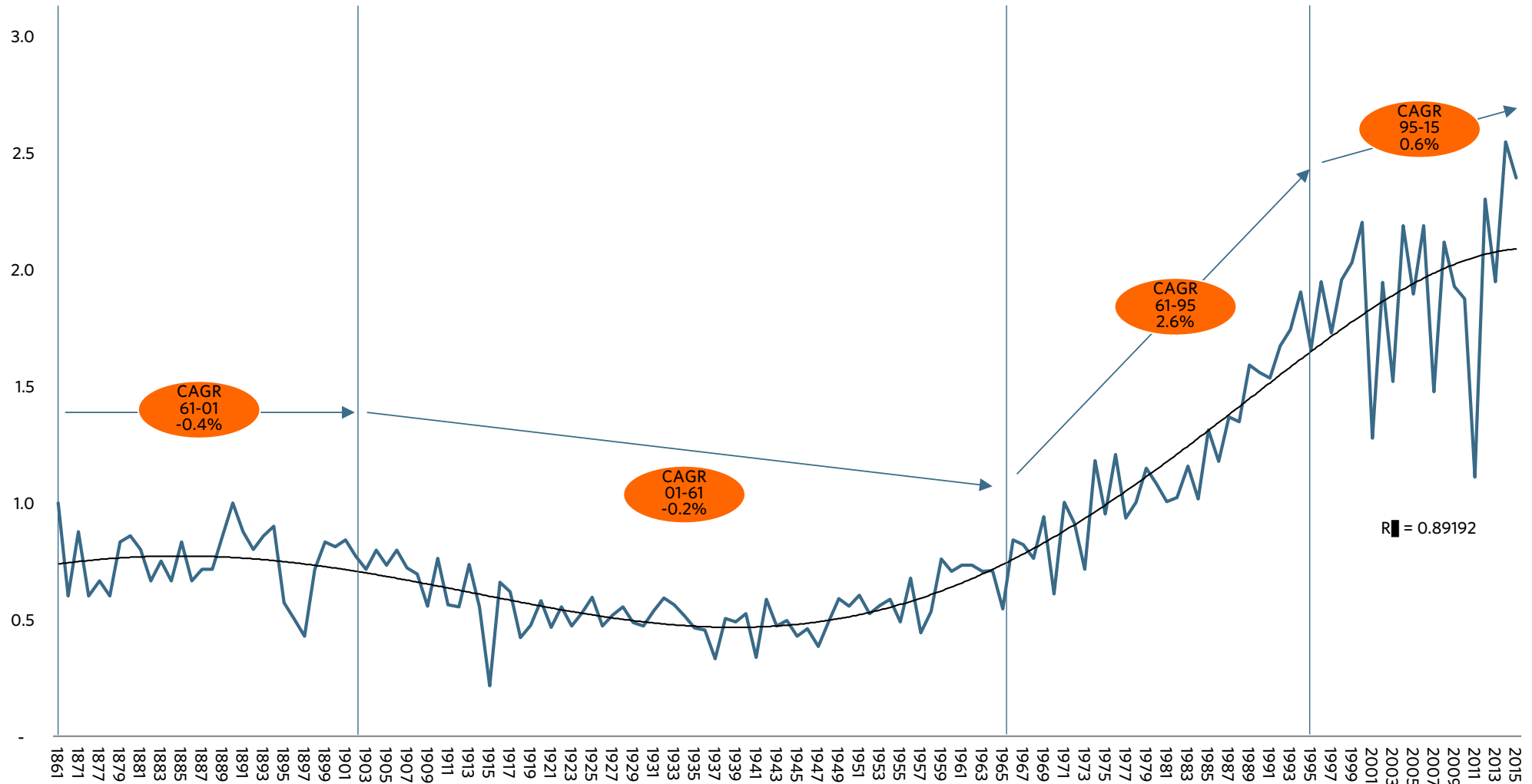


Western Australian needs to continue to improve oat yield per hectare

- Western Australian oat yields started to grow in the 1960's; however, yield gains appear to have slowed
- Western Australia leads Australian yields (among major producing states)
- However Western Australia is only "middle-of-the-pack" in yield at a global level and underperforms key global competitors
- Best practice peer group suggest Western Australia could potentially achieve more oats per hectare
- Continuous improvement in yield is a constant battle where Western Australia must continue to improve

Western Australian oat yields started to grow in the 1960's; however, yield gains appear to have slowed

AVERAGE OAT YIELD IN WESTERN AUSTRALIA
Tonnes/hectare; 1861-2015

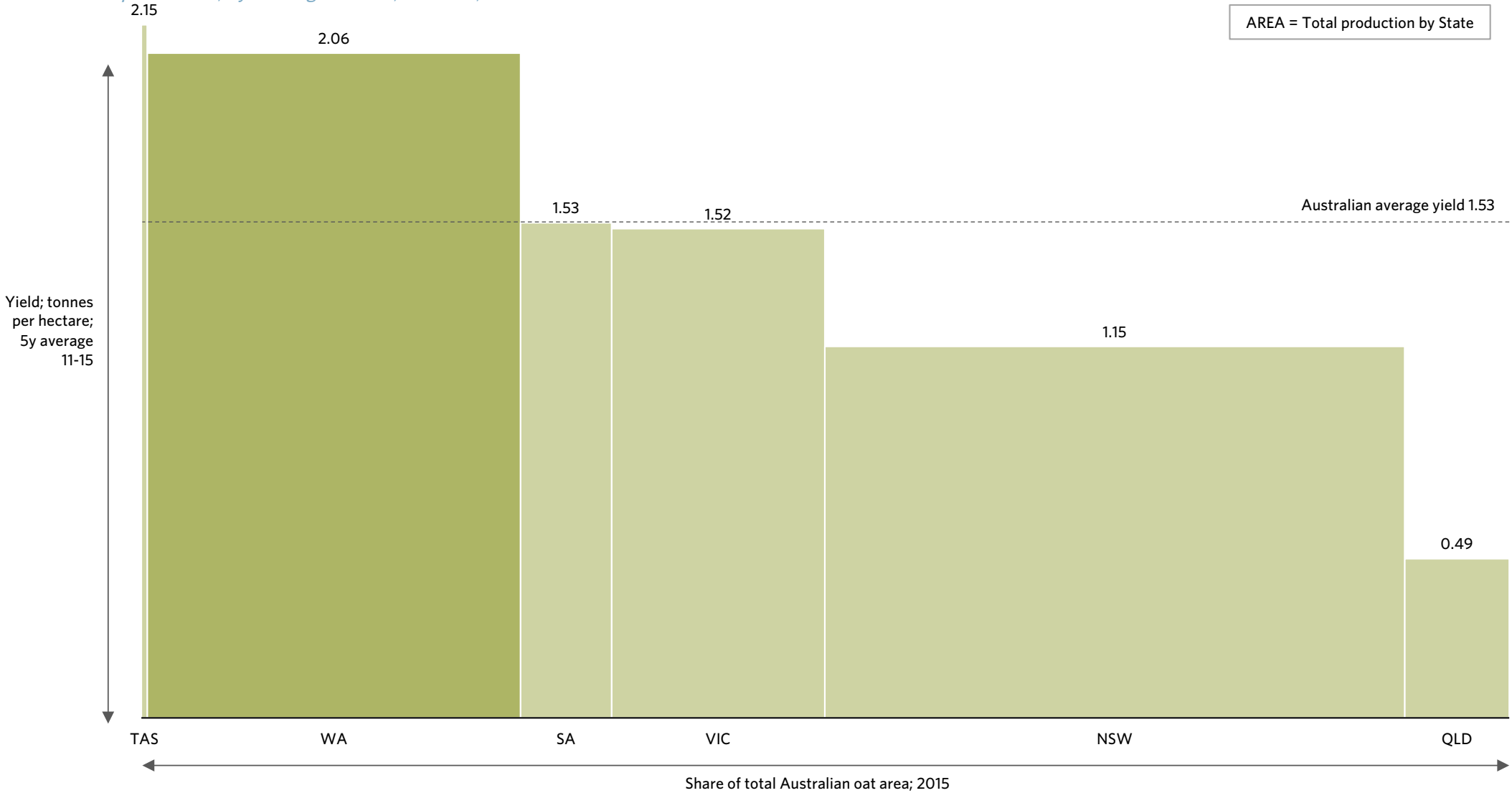


Source: various WA Statistical Register (by year); various ABS publications; Coriolis analysis and estimates

Western Australia leads Australian yields (among major producing states)

AUSTRALIAN OAT YIELD CURVE BY STATE: AREA VS. 5YR AVERAGE YIELD

Tonnes per hectare; 5yr average 2011-15; hectares; 2015

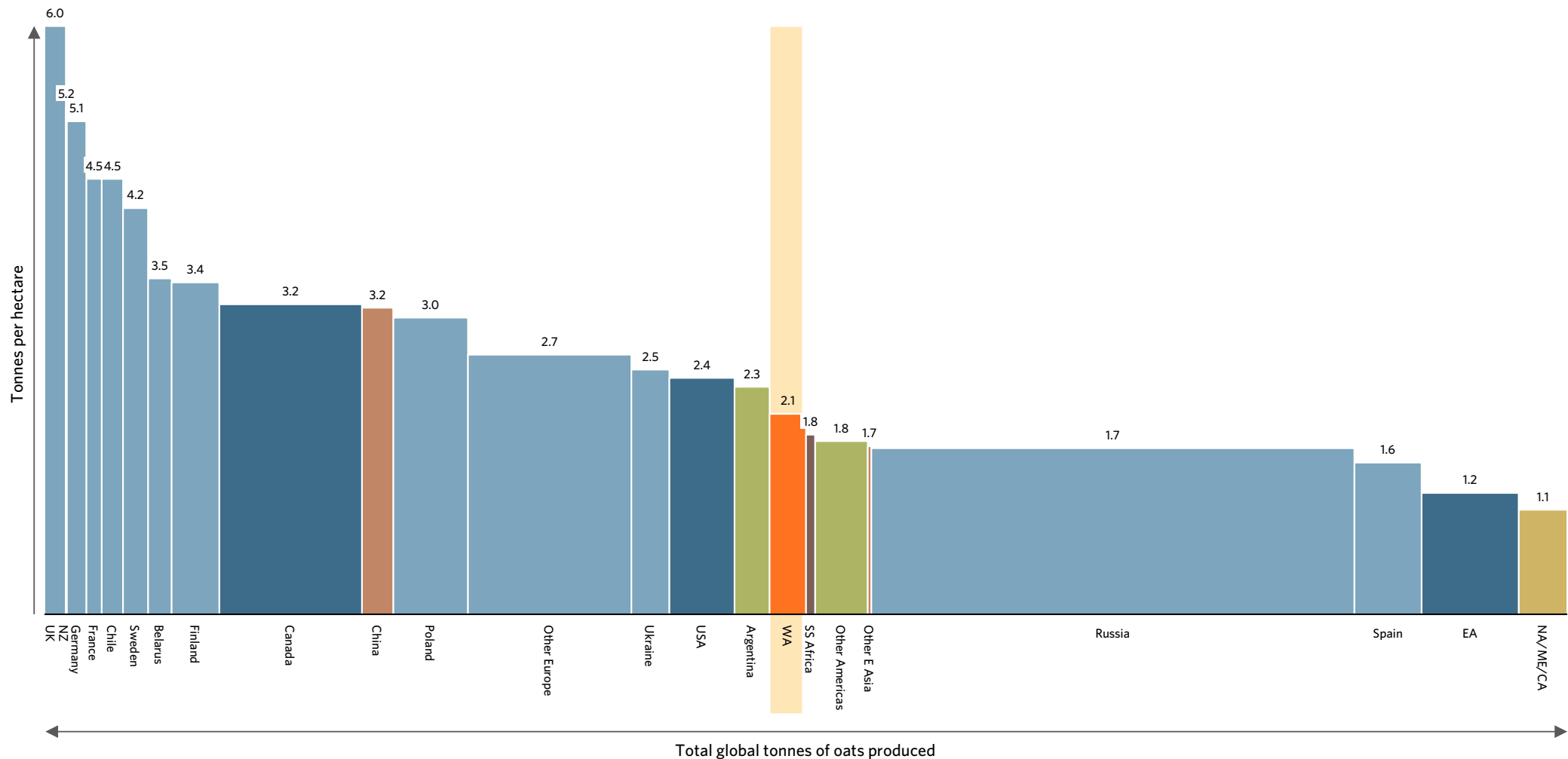


Source: ABS Agricultural Commodities Australia (7121.0); Coriolis analysis

However Western Australia is only “middle-of-the-pack” in yield at a global level and underperforms key global competitors

GLOBAL OAT YIELD CURVE

T/ha; tonnes; 2014*



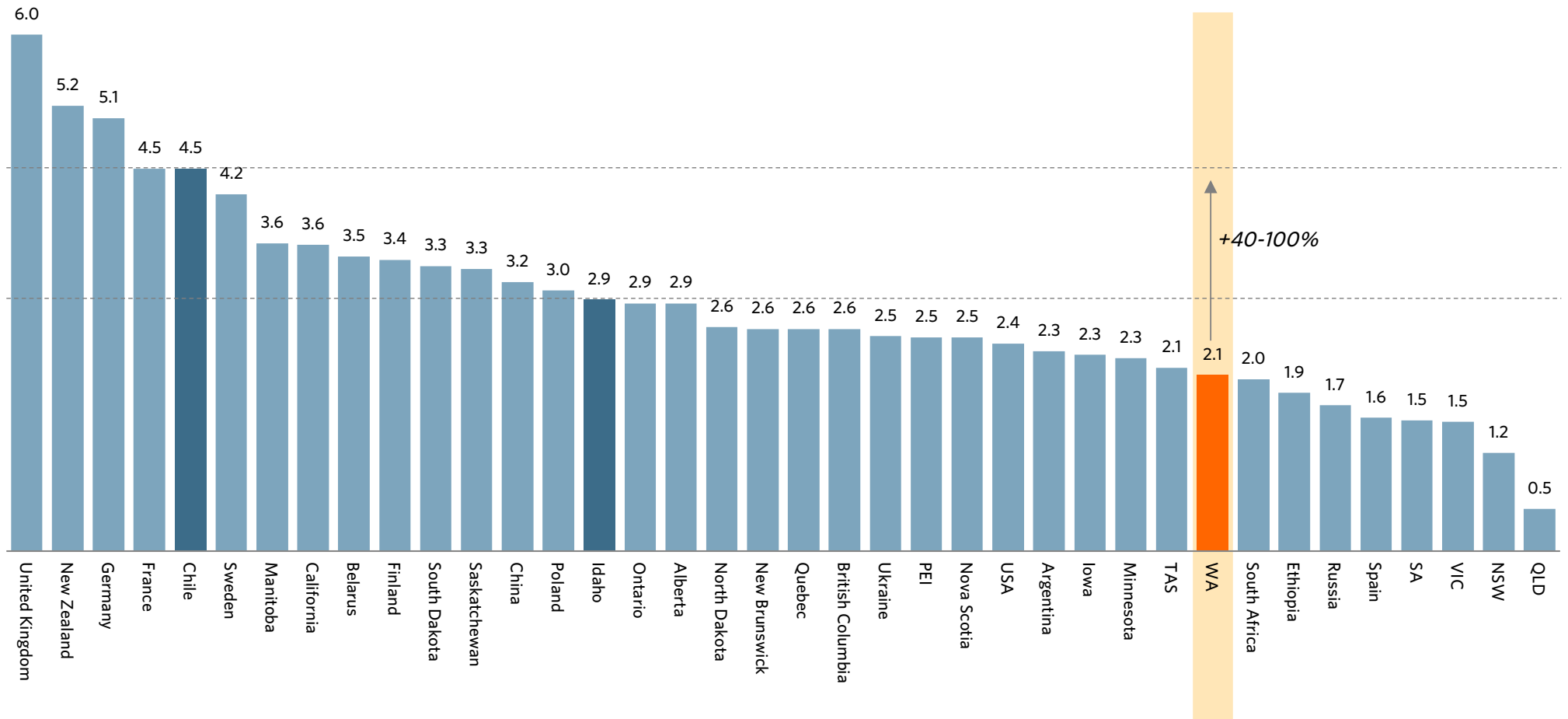
EA = Eastern Australia; * Except for WA/EA which use 5y average and 2015 area; Source: UN FAO AgStat database; Coriolis analysis and classifications

Best practice peer group suggest Western Australia could potentially achieve more oats per hectare

AVERAGE YIELD IN TONNES PER HECTARE: WESTERN AUSTRALIA VS. SELECT PEER GROUP

Tonnes/hectare; 5y average (AU; 11-15); 2013/14 (others as available)

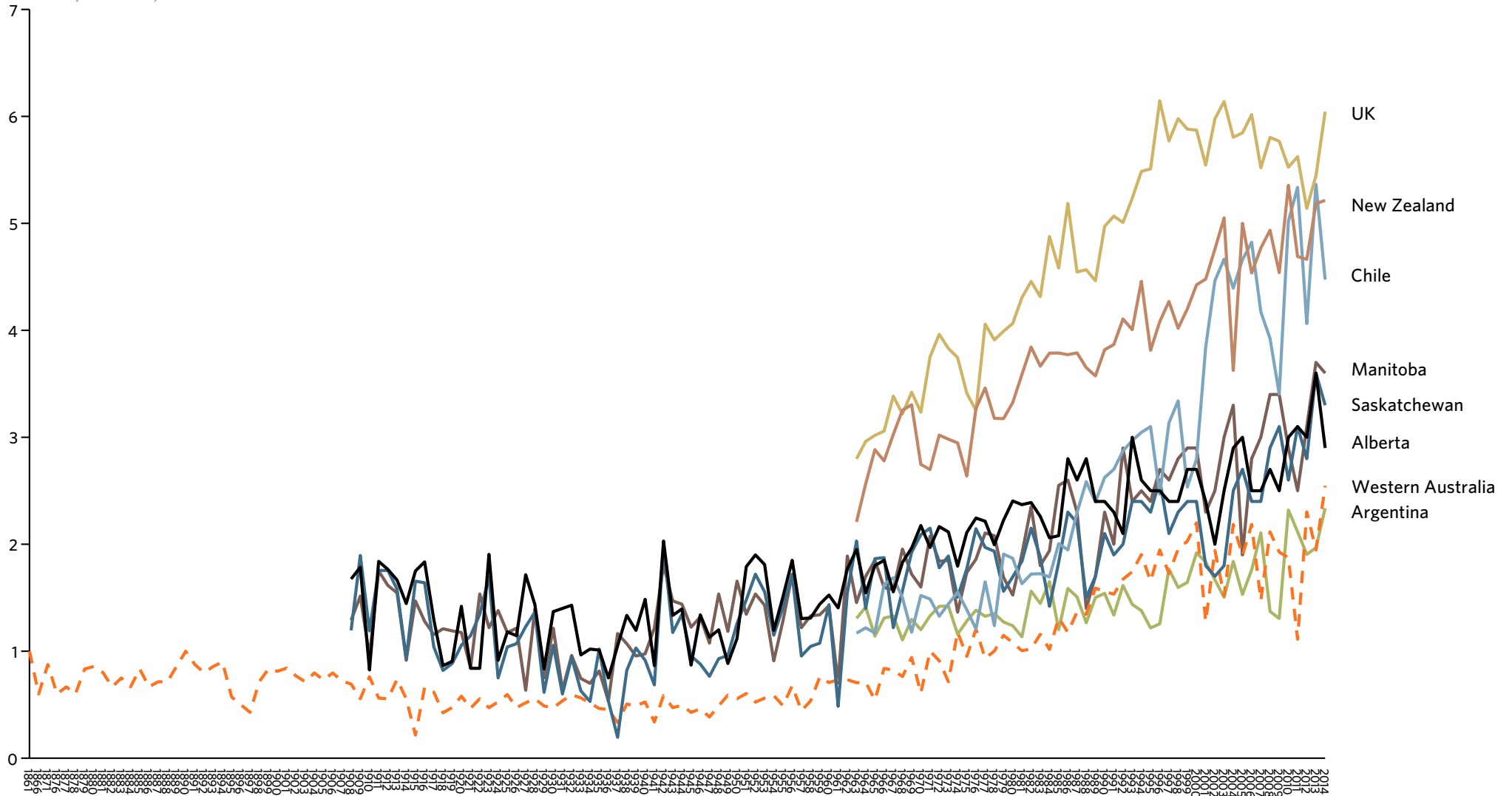
AU states (only)
use 5y average



Continuous improvement in yield is a constant battle, where Western Australia must continue to improve

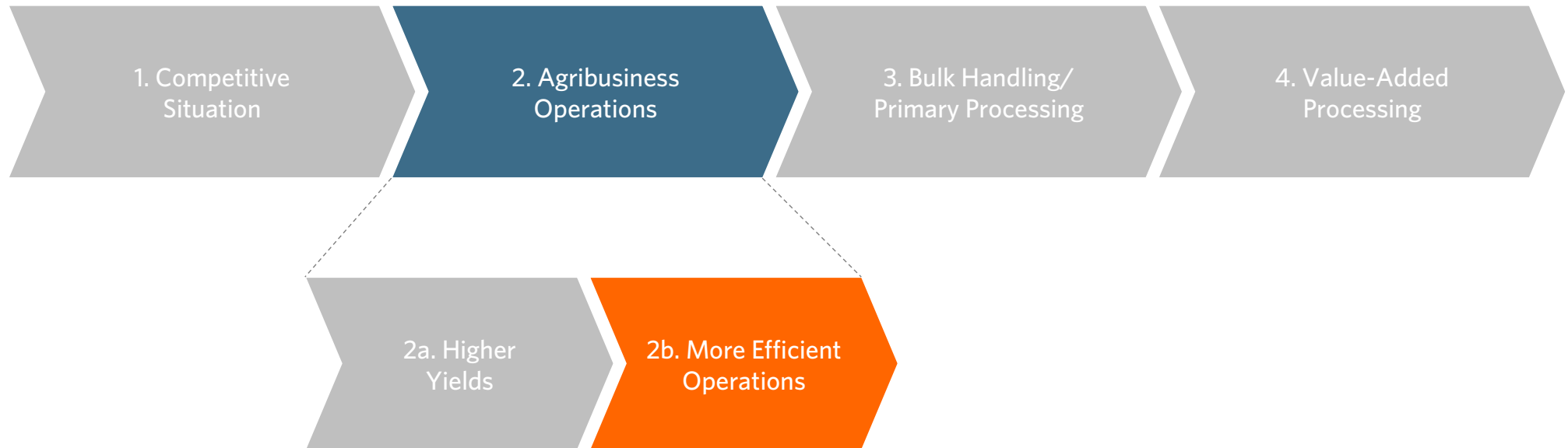
AVERAGE OAT YIELD IN TONNES PER HECTARE: WESTERN AUSTRALIA VS. SELECT PEERS

Tonnes/hectare; 1861-2014 or as available



This case study now looks at oat production unit operation efficiency

SECTION STRUCTURE: OAT INDUSTRY CASE STUDY

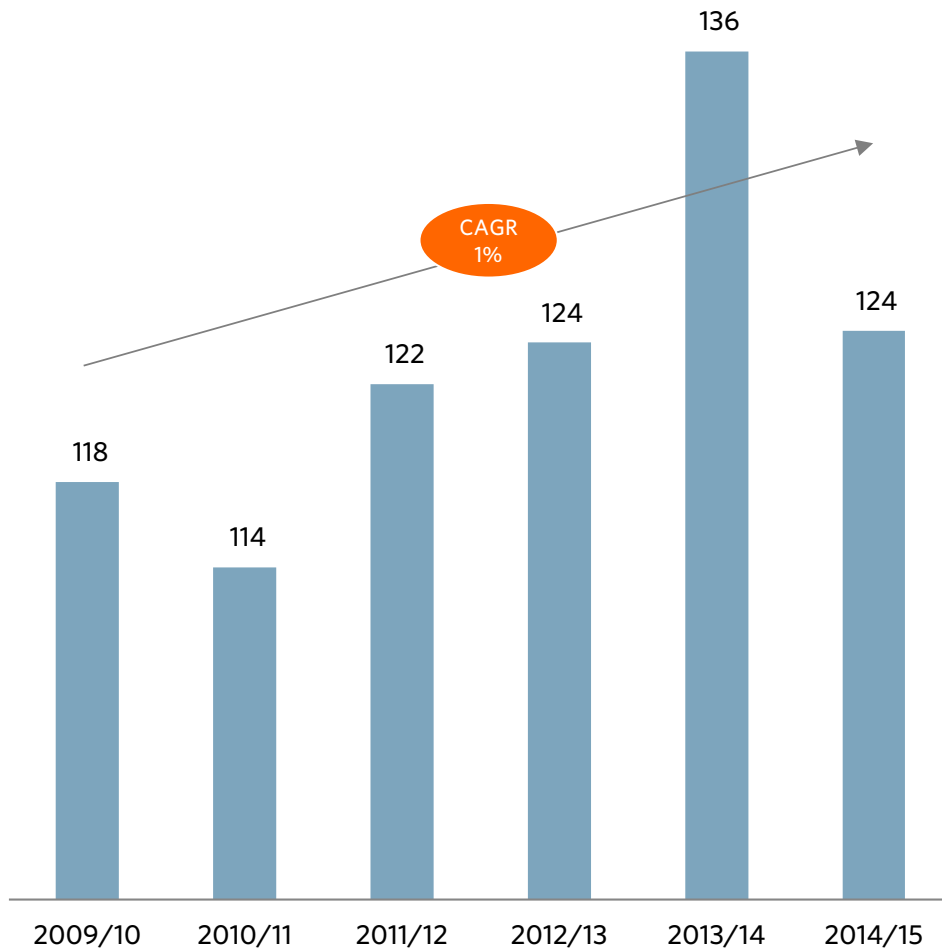


Western Australian needs to accelerate its move to producing more oats per operational unit

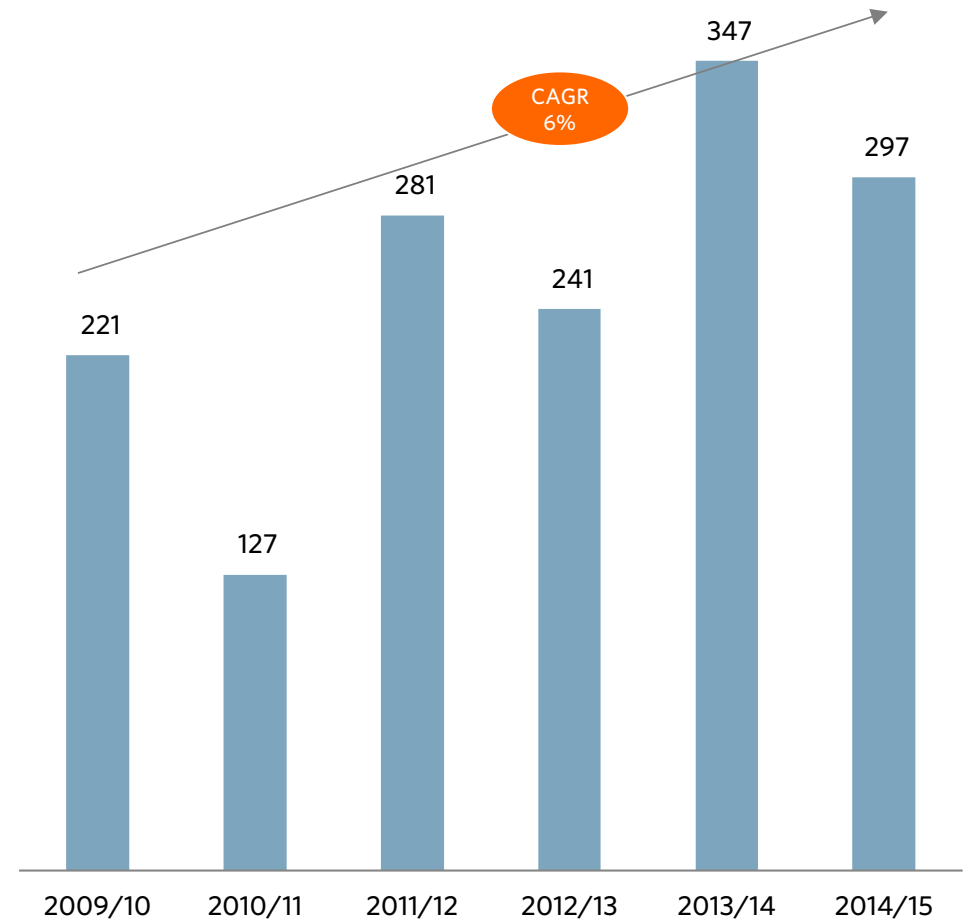
- Western Australia is increasing both oat area and oat production per operational unit
- Western Australia has high oat production per operational unit relative to Eastern Australia and rate of increase over the past five years has been excellent
- Western Australia performs well on oat production per operational unit relative to key peer group production regions

Western Australia is increasing both oat area and oat production per operational unit

OAT HECTARES/OPERATIONAL UNIT: WESTERN AUSTRALIA
Hectare/unit; 2010-2015



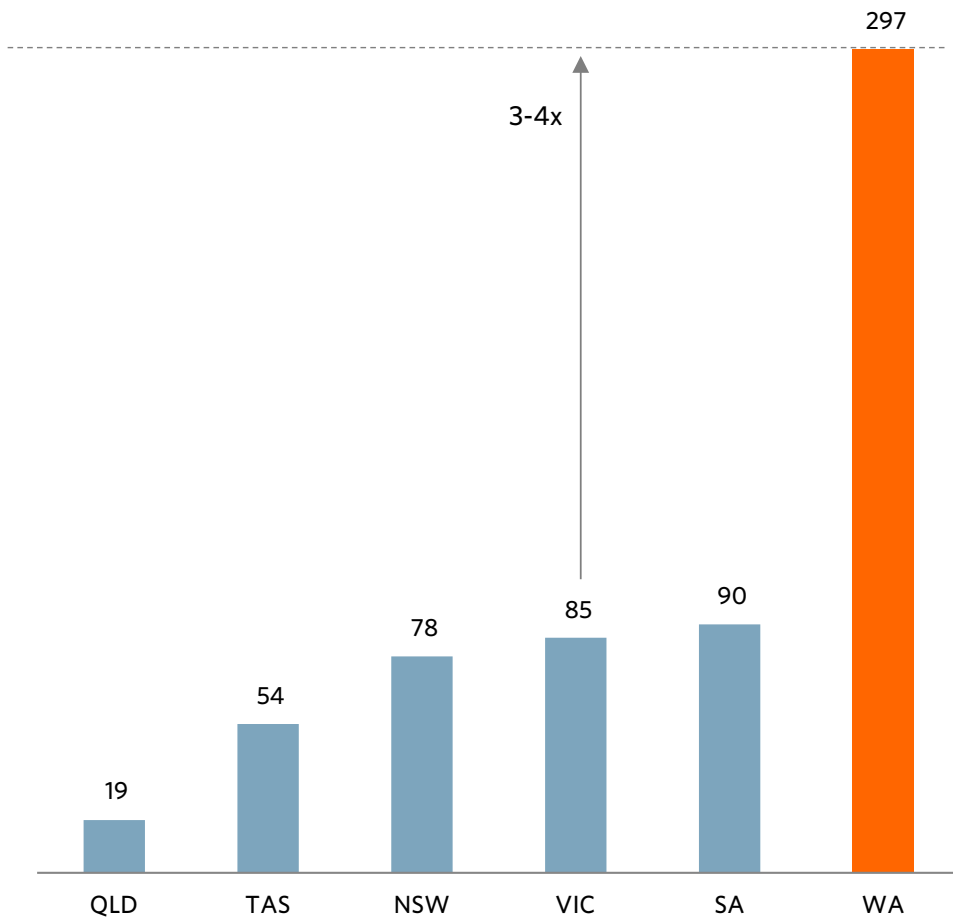
OAT TONNES/OPERATIONAL UNIT: WESTERN AUSTRALIA
Tonnes/unit; 2010-2015



Western Australia has high oat production per operational unit relative to Eastern Australia and rate of increase over the past five years has been excellent

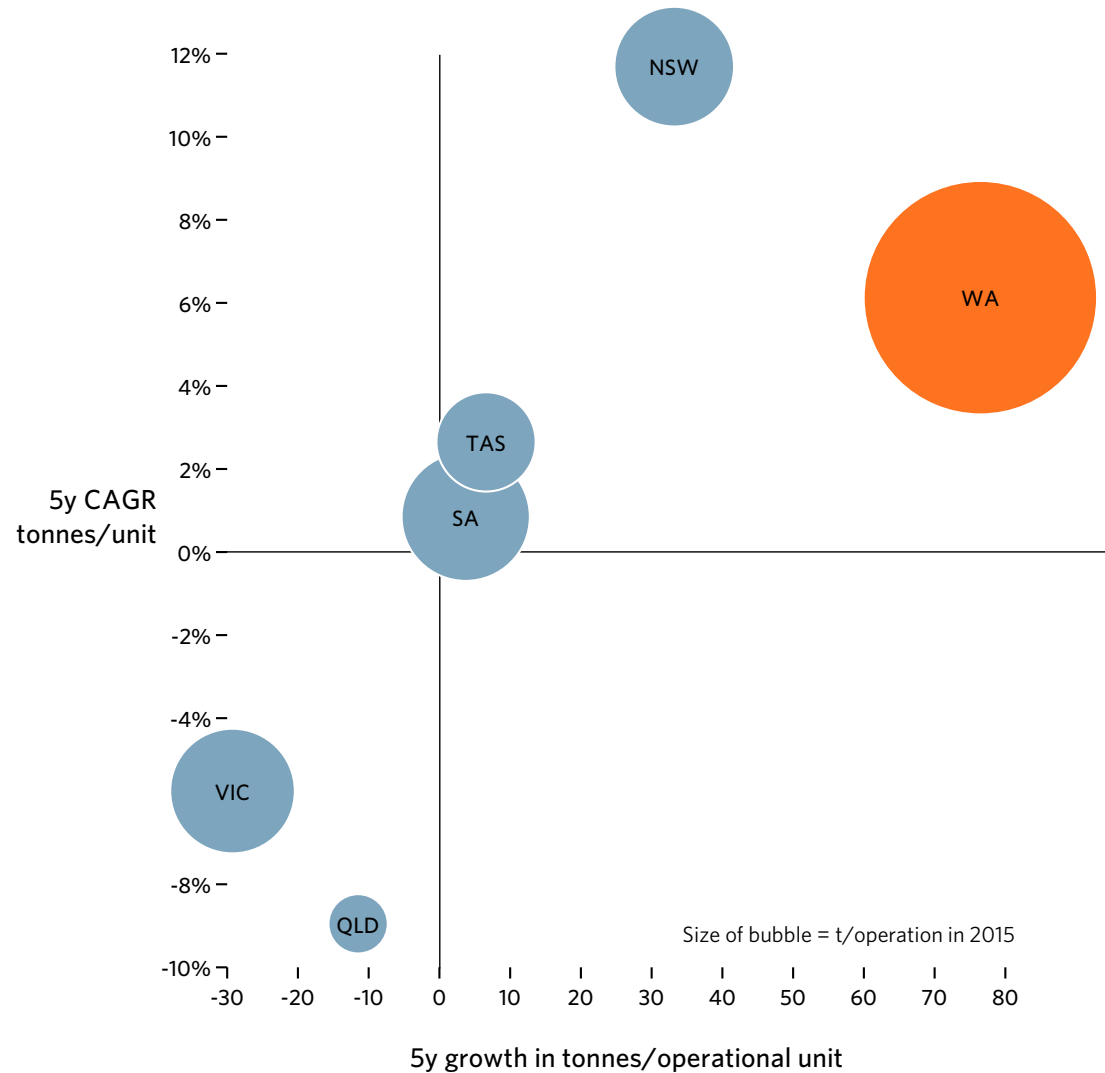
AVERAGE TONNES OF OATS PRODUCED PER OPERATIONAL UNIT BY AUSTRALIAN STATE

Tonnes/operational unit; 2015



GROWTH MATRIX ON TONNES/UNIT BY AUSTRALIAN STATE

Tonnes/operational unit; 2010 vs. 2015

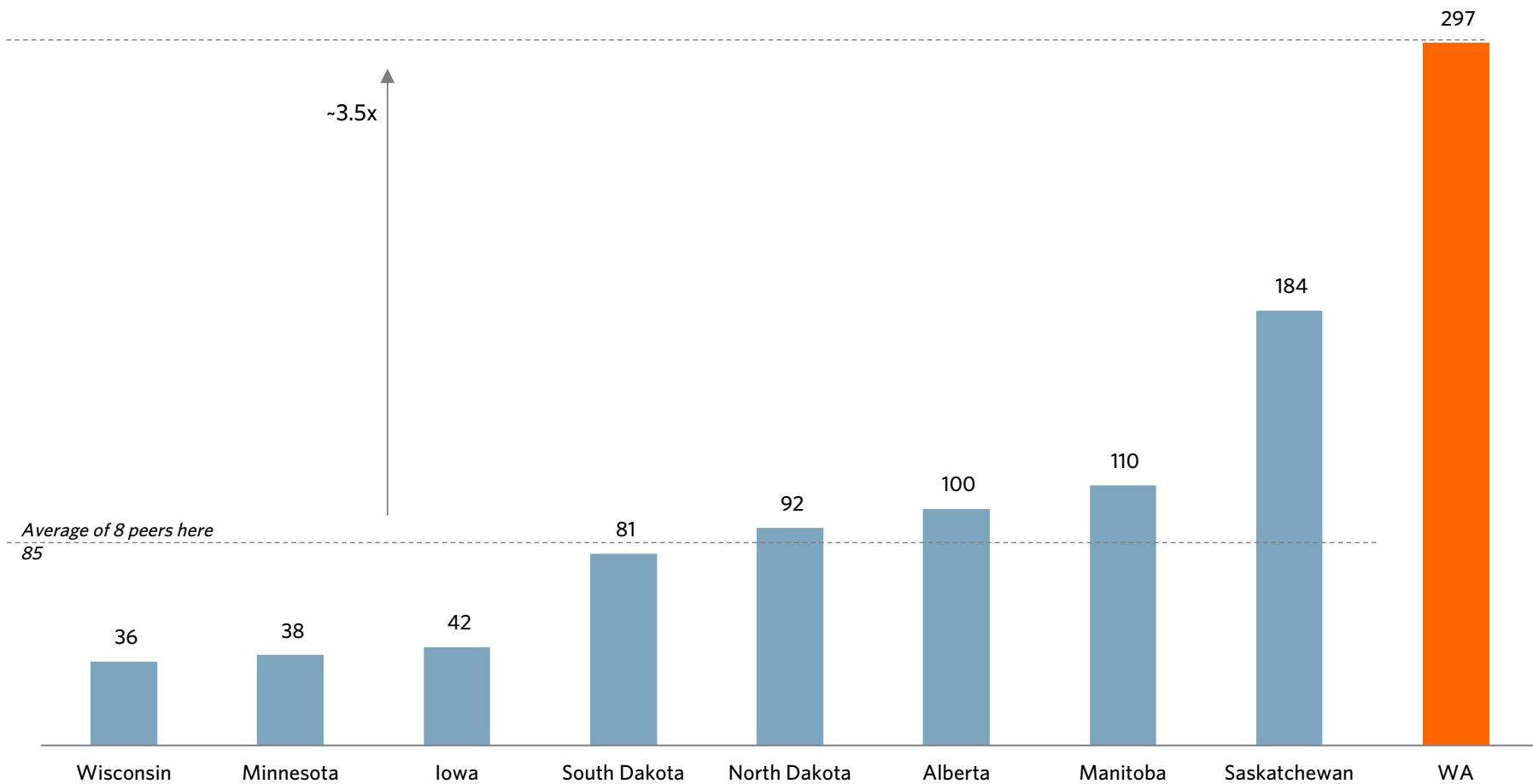


Source: ABS (7121.0); Coriolis analysis and estimates

Western Australia performs well on oat production per operational unit relative to key peer group production regions

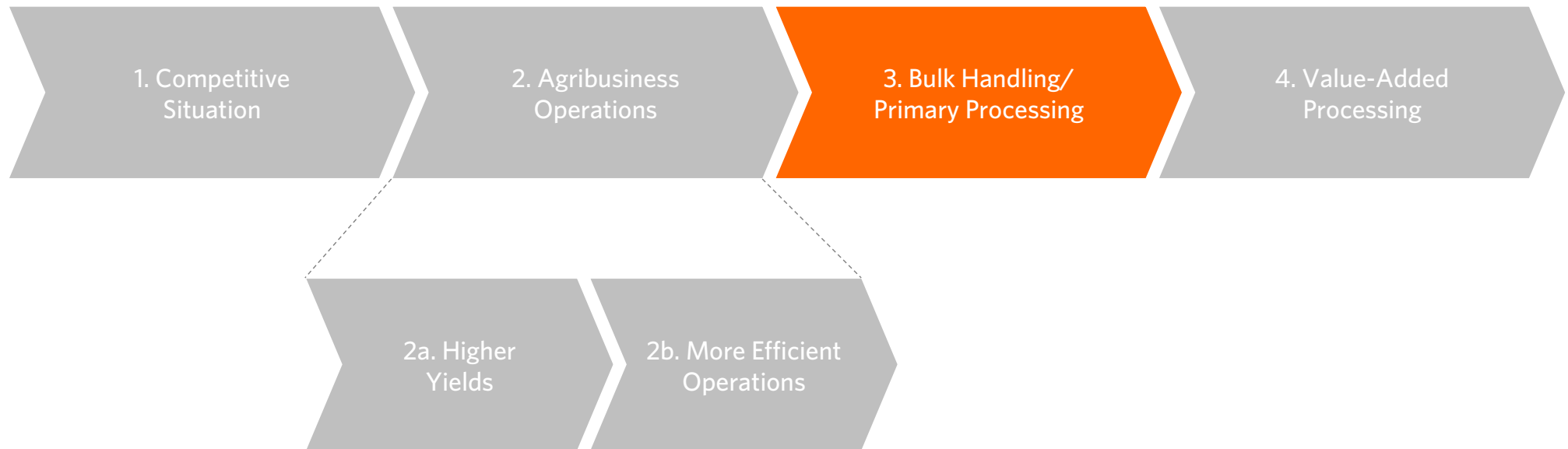
AVERAGE TONNES OF OATS PRODUCED PER OPERATIONAL UNIT BY SELECT REGION

Tonnes/operational unit; 2015



The third section of this report looks at the competitive situation in primary processing of oats

SECTION STRUCTURE: OAT INDUSTRY CASE STUDY









West Australia is exporting the majority of its oats for further value-added processing elsewhere

- Western Australia has a number of major oat handlers and processors
- There has been significant recent investment activity in the oat processing sector
- Western Australian oat processing plants lack scale relative to their global competitors
- Western Australia predominantly exports raw material ingredient oats to Asia where they are processed into further value-added products

Western Australia has a number of major oat handlers and processors

MAJOR OAT HANDLERS AND PROCESSORS IN WESTERN AUSTRALIA

2016 or as available

| | Founded | Volume | Ownership | Location | Description | # of employees | Key products | Website |
|--|---------|--------------------------------|----------------------------------|---|--|------------------|--|--|
|  | 1854 | TBD | Private Clapin, others | 148 Carrington Street, O'Connor, WA 6163 +61 8 9314 4200 | Processed food manufacturing and distribution company; private label contract manufacturing; sources interstate oats | 120 | Breakfast cereal Flour | www.anchorfoods.com.au |
|  | 1933 | 60,000t (Blue Lake Milling) | Co-op 4,200 growers | 30 Delhi Street, West Perth, WA 6005 +61 8 9237 9600 | Grain storage, handling, processing, and marketing; AU's largest co-op, acquired Blue Lake Milling oat processor with milling plants in SA, VIC in '15 | 1,100-1,800 | Oats, grouts Rolled, quick, instant Oat flour, meal, bran Premixes | www.cbh.com.au www.bluelakemilling.com.au |
|  | 1987 | TBD | Private Mackie family | Level 3, 3 Ord Street, West Perth, WA 6005 +61 8 9429 4900 | Animal feed operation; largest exporter of hay and straw in Australia; five plants across WA, SA, VIC | 70 | Oaten hay Feed pellets | www.gilmac.com.au |
|  | 1995 | 42,000t (all grains) | Private Orr | 12 - 14 Sultan Way, North Fremantle, WA 6959 +8 9430 6656 | Grain supply, storage, cleaning, processing, bagging and container packing service for grain, pulse and oilseed products; three WA locations | 10-20 (estimate) | Oats Hulled oats | www.pgh.com.au |
|  | 1994 | TBD | Private Pepsico (Public: USA) | 12 Carolyn Way, Forrestfield, WA 6058 +61 8 9454 8166 | Oat milling plant in Forrestfield; no further processing in WA; \$35m new mill in '15; new cleaning facilities in '10 | 41 (WA) | Rolled, quick, instant Milled and kiln dried | www.quakeroats.com.au www.pepsico.com |
|  | 1978 | 120,000t (oats from WA) | Private Costa, May families | 28 Howson Way, Bibra Lake, WA 6163 +61 8 9418 6126 | Grain product manufacturers; acquired Morton's Seed and Grain in '14 with two milling facilities in Wagin and Bibra Lake | 50 (WA) | Rolled, quick, instant Kiln dried hulled Grouts Bran, flour Animal nutrition | www.unigrain.com.au |

There has been significant recent investment activity in the oat processing sector



ACQUISITION



Blue Lake Milling

- Two mills in South Australia and Victoria
- 100,000t per annum capacity



ACQUISITION



Morton's Seed and Grain

- Two mills in Wagin and Bibra Lake
- 120,000t oats per annum capacity
- Increasing capacity 30%



INVESTMENT

\$35m

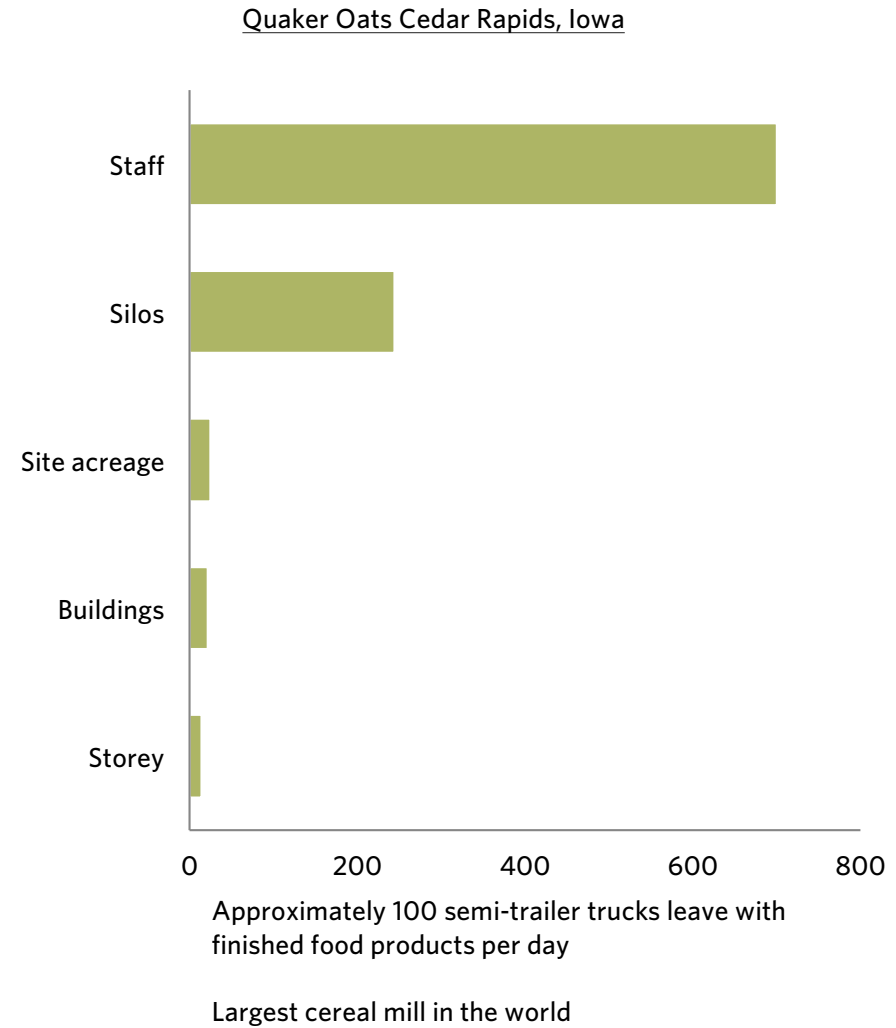
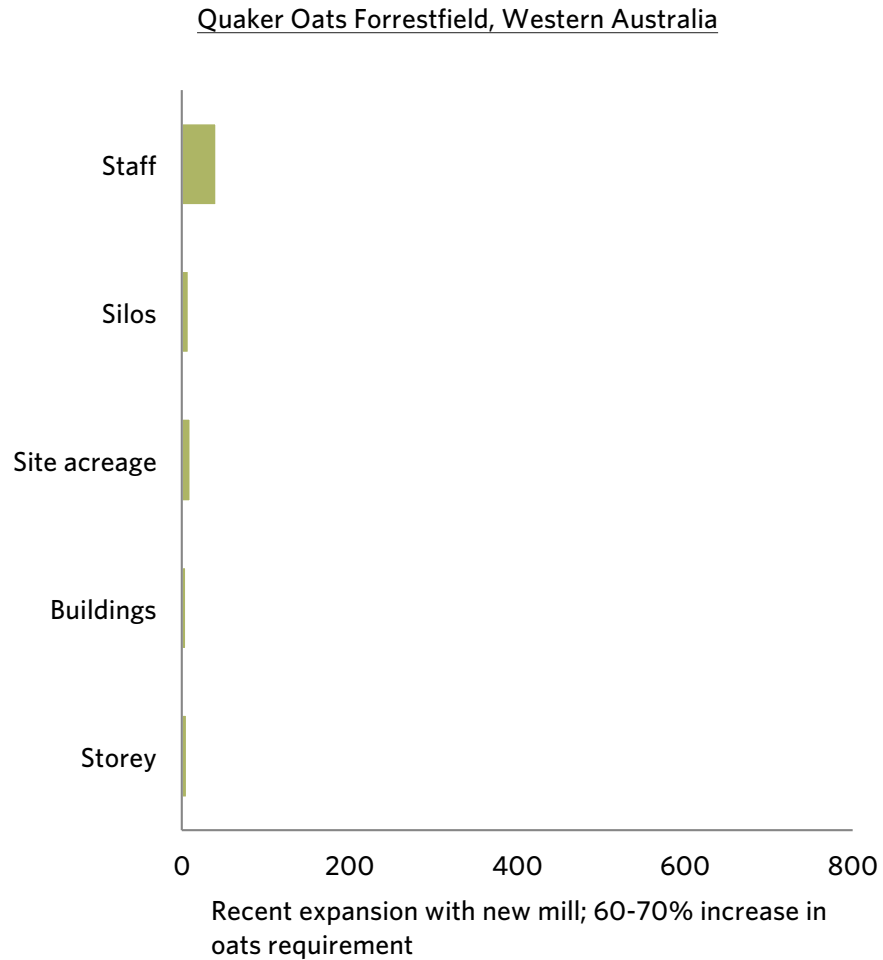
New milling facilities

- 6-storey, 32 metre high mill
- 60-70% increase in oat requirement
- Increasing to 250,000t

Western Australian oat processing plants lack scale relative to their global competitors

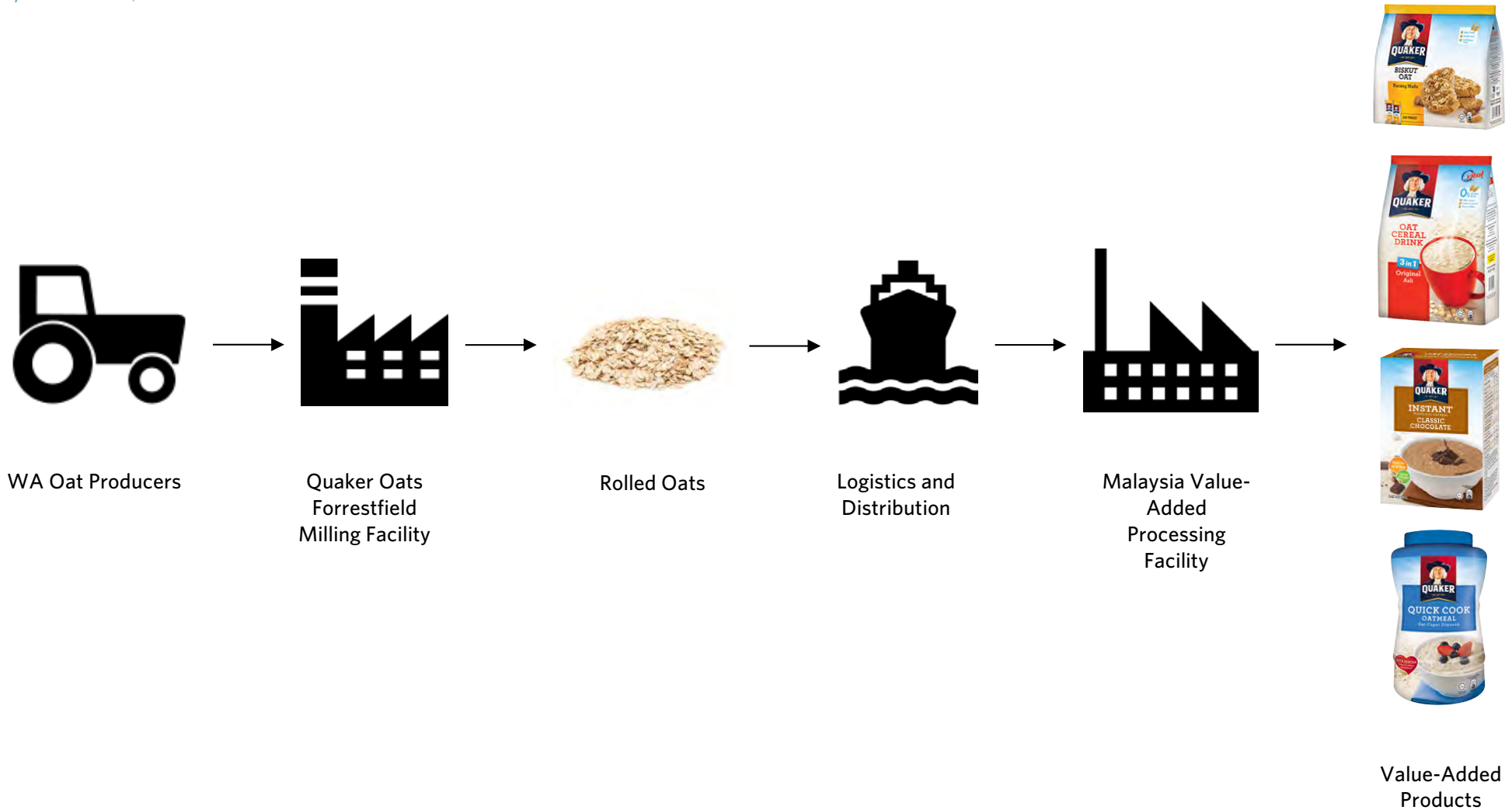
EXAMPLE: QUAKER OATS MILLS FORRESTFIELD VS. CEDAR RAPIDS

2016 or as available



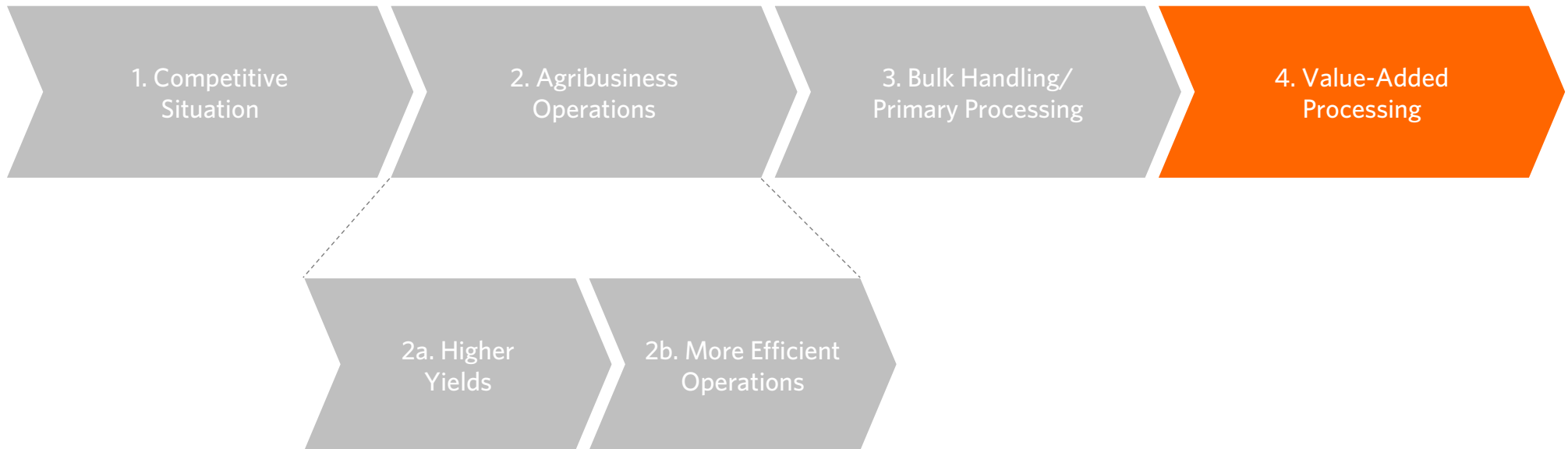
Western Australia predominantly exports raw material ingredient oats to Asia where they are processed into further value-added products, as this example from Quaker Oats shows

PRODUCT FLOW OF QUAKER OATS ORIGINATING IN WESTERN AUSTRALIA
Simplified model; 2016



The final section of this case study looks for further growth opportunities in value-added oat processing in WA

SECTION STRUCTURE: OAT INDUSTRY CASE STUDY



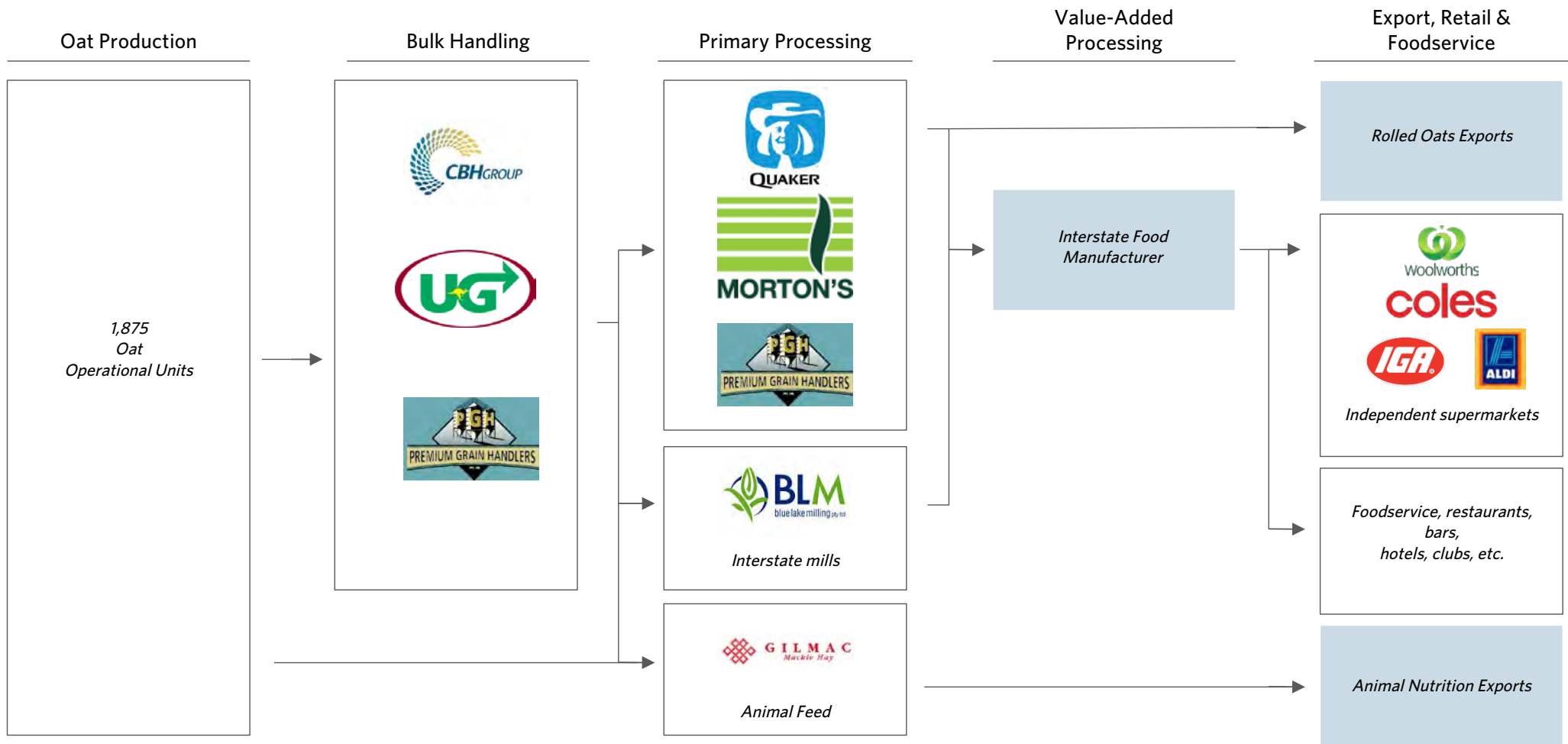
The logical next step for the Western Australian oat industry is to add more value domestically through processing into actual consumer-ready products

- While Western Australia has a robust oat industry, including primary processing into rolled oats, bran and flour, there are currently no value-added oat processors operating at scale
- The global leaders in processed oat products all have operations in Australia, however no value-added processing occurs in Western Australia
- Western Australia is missing the opportunity for value added oat products in the breakfast category
- Beyond the breakfast category, oats provide an extensible platform that can be expanded into a wide range of new products and categories
 1. Oats are used in functional health foods and supplements
 2. Oats are used in milk alternatives and beverages
 3. Oats are used in convenience and snack foods
 4. Oats are used in a range of skincare products

While Western Australia has a robust oat industry, including primary processing into rolled oats, bran and flour, there are currently no value-added oat processors operating at scale

STRUCTURE OF WESTERN AUSTRALIAN PROCESSED OAT PRODUCTS SUPPLY CHAIN






Simplified model; 2016



The global leaders in processed oat products all have operations in Australia, however no value-added processing occurs in Western Australia

IDENTIFIED LEADING GLOBAL FIRMS IN PROCESSED/VALUE-ADDED OAT PRODUCTS

2016 or as available

| FIRM | YEAR EST. | HEAD OFFICE LOCATION OWNERSHIP | GLOBAL SALES # OF EMPLOYEES | KEY PRODUCT(S) | KEY REGIONS | WEBSITES/NOTES |
|---|-----------|---|---|--|--|---|
|  Nestlé | 1866 | Vevry, Switzerland Public (SIX: NESN; EuroNext: NESTS; OTC Pink: NSRGY; BSE: 500790; NSE: NESTLEIND) | CHF88.8b (15) US\$89.2b 335,000 | Dairy products, pet care, beverages (water, coffee, juice), food (prepared, frozen, aids, cereal), nutrition (infant, adult), confectionery | Global | www.nestle.com www.uncl tobys.com.au 447 factories; operates in 197 countries |
|  PEPSICO | 1898 | New York, US Public (NYSE: PEP) | US\$63.1b (15) 263,000 | Processed food (rolled oats, bars, dips, cookies), snack foods (chips, corn chips), beverages (soft drinks, juice, iced tea, sports drinks, water) | Global | www.pepsico.com www.quakeroats.com www.pepsico.com.au Acquired Quaker Oats in '01, milling op. in WA; sells products in more than 200 countries; #2 global food and beverage company |
|  GENERAL MILLS | 1866 | Minnesota, USA Public (NYSE: GIS) | US\$17.6b (15) 42,000 | Baking products, cereals, dough, produce, dairy, processed food | Americas Asia EU South Africa Australasia | www.generalmills.com www.generalmills.com.au Sells more than 100 brands in over 100 countries |
|  Associated British Foods plc | 1935 | London, UK Public (LSE:ABF) Weston Family 54% | £12.8b (15) £3.2b Grocery 124,000 | Grocery (baking ingredients, bread, spices, beverages, cereals, oils, processed meat (KR Castlemaine, Don)), sugar, agriculture, ingredients, retail | Europe Americas Africa Asia Australia | www.abf.co.uk www.georgewestonfoods.com.au Operations in 48 countries |
|  Kellogg's | 1906 | Michigan, US Public (NYSE: K) WK Kellogg Foundation 22% | US\$13.5b (15) 33,577 | Cereals, snack foods, frozen foods, beverages | Americas EU Asia South Africa Australia Sell globally | www.kelloggs.com www.kelloggcompany.com www.kelloggs.com.au Largest cereal company in the world; second largest snack company; manufacture in 20 countries and sell in 180 |

Western Australia is missing the opportunity for value added oat products in the breakfast category

EXAMPLES: VALUE-ADDED OAT BREAKFAST PRODUCTS FROM AUSTRALIA & OTHER MARKETS
2016



Beyond the breakfast category, oats provide an extensible platform that can be expanded into a wide range of new products and categories

DIRECTIONS FOR THE EXTENSION OF WESTERN AUSTRALIAN OATS

Model; 2016



1. Oats are used in functional health foods and supplements

EXAMPLE: FUNCTIONAL HEALTH FOODS AND SUPPLEMENTS MARKETED AS CONTAINING OATS 2016



Herbalife Oat Apple Fibre Drink
Containing oat grain fibre
213g
AU\$50.97 at MyHerbal (AU)

Herbalife (US)
Multinational direct marketing company developing and selling nutrition and weight loss products



Biogrow Oat BG22
Containing 100% Swedish oat bran
480g
MYR61.38 at Guardian (MY)

Biogrow (MY)
Supplement and health products company



Nestle Cerelac Infant Cereal Oats with Prune
Containing oat grain
200g
AU\$4.45 at Coles (AU)

Nestle (CH)
Largest food manufacturing company in the world



Trim Healthy Mama Oat Fiber
Containing oatmeal
453g
US\$11.99 at Trim Healthy Mama (US)

Trim Healthy Mama (US)
Weight loss company

2. Oats are used in milk alternatives and beverages

EXAMPLE: MILK ALTERNATIVES AND BEVERAGES MARKETED AS CONTAINING OATS 2016



Oatworks Oat Powered Fruit Smoothie

Containing oat soluble fibre
355mL
US\$3.79 at Amazon (US)

Oatworks (US)

Startup oat based beverage company



Oatly Oat Drink

Containing 100% Swedish oats
1L
£1.40 at Sainsbury's (UK)

Oatly (SE)

Oat based dairy alternative food manufacturing company



Fitwell Organic PhytoOat Milk

Containing organic oats, oat flake
800g
MYR59.00 at Jointwell (MY)

Jointwell Marketing (MY)

Organic products, dietary supplements trader



Nomadic Blueberry and Oats Yoghurt To Drink

Containing oatmeal
330mL
£1.50 at Tesco (UK)

Nomadic (IE)

Yoghurt manufacturing company

3. Oats are used in convenience and snack foods

EXAMPLE: CONVENIENCE AND SNACK FOODS MARKETED AS CONTAINING OATS

2016



Haagen-Dazs Chocolate Caramelized Oat Ice Cream
Containing whole grain rolled oats
414mL
US\$5.29 at Walmart (US)

General Mills (US)
Multinational consumer foods manufacturing company



Chobani Banana Maple Yoghurt with Steel-Cut Oats
Containing steel-cut oats
140g
AU\$2.89 at Woolworths (AU)

Chobani (US)
Yoghurt manufacturing company with America's #1 yoghurt brand



Nairn's Oatcakes, Biscuits, Snackers & Oat Crackers
Containing wholegrain oats
23g - 291g
£1.49 - £2.03 at Nairn's (UK)

Nairn's (UK)
Biscuit manufacturing company focused on oatcakes and gluten free



Cascadian Farm Organic Oats & Honey Crunchy Granola Bars
Containing organic rolled oats
200g
US\$5.49 at Cascadian Farm (US)

Cascadian Farm Organic (US)
Organic food manufacturing and farming company

4. Oats are being used in a range of skincare products

EXAMPLE: SKINCARE PRODUCTS MARKETED AS CONTAINING OATS 2016



Aveeno Active Naturals range
Containing oatmeal, oat essence
and oat oil
75mL - 1L
AU\$6.69 - 16.99 at Chemist
Warehouse (AU)

Johnson & Johnson (US)
Consumer goods and
pharmaceutical company



**The Body Shop Honey & Oat 3-in-1
Moisturising Scrub Mask**
Containing oat bran
100mL
AU\$24.95 at The Body Shop (AU)

L'Oreal (FR)
World's largest cosmetics
company



St Ives Oatmeal Scrub & Mask
Containing oatmeal extract
150mL
AU\$11.00 at Coles (AU)

Unilever (US/NL)
Multinational consumer goods
company



Aura Cacia Baby Milk & Oat Bath
Containing organic oat powder
47g
AU\$5.60 at Vitamin Grocer (US)

Aura Cacia (US)
Aromatherapy skincare company

DOCUMENT STRUCTURE

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| Executive Summary | 4 |
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| Identify and describe international competitiveness | 32 |
| Document the practices that characterise international competitiveness | 37 |
| Define mechanisms to promote achievement of international competitiveness | 66 |
| Recommend how DAFWA will support WA agrifood businesses to implement the key findings of the investigation to improve and achieve international competitiveness | 84 |
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Three peer group countries/regions are explored through case studies on their pathway to competitiveness:
New Mexico (dairy), Chile (pork) and Peru (overall agrifood)



New Mexico



Chile



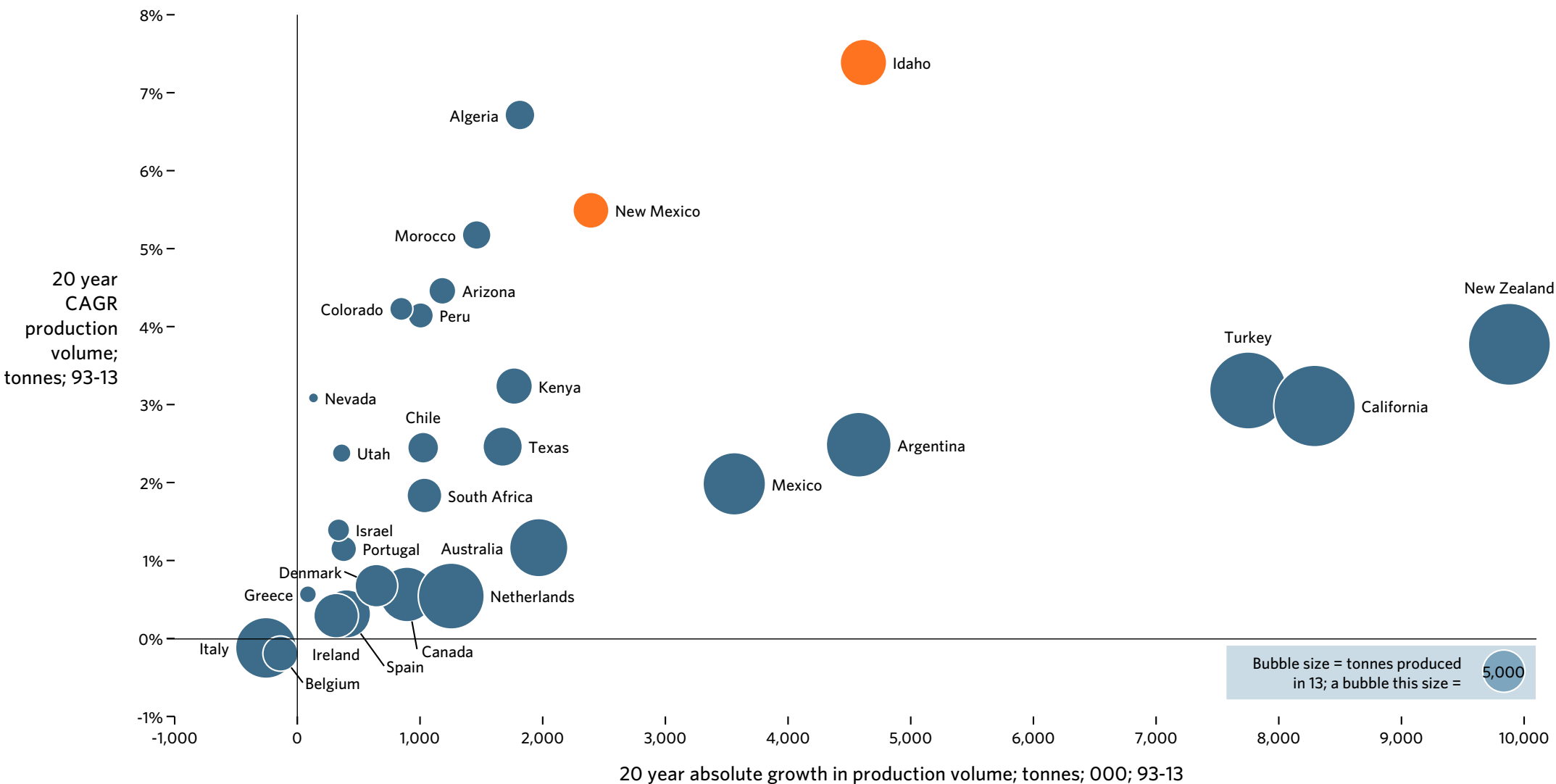
Peru

Search criteria were (1) climatic peers that had (2) achieved “transformative growth”

Evaluation of peer group dairy production growth highlights Idaho and New Mexico; we develop New Mexico in detail in this case study as it has strong climatic parallels

20Y MILK PRODUCTION GROWTH MATRIX: ABSOLUTE GROWTH VS. RATE OF GROWTH VS. PRODUCTION IN 2013

Tonnes; 000; 1993 vs. 2013



Source: UN FAO AgStat database; USDA NASS database; Coriolis analysis

CASE STUDY - 1 - NEW MEXICO DAIRY INDUSTRY - SUMMARY

Through much of the 20th Century, New Mexico had a small, fragmented dairy industry focused on small scale production for local/regional consumption. Starting around the early 90's, the New Mexico dairy industry experienced a period of rapid growth. The New Mexico dairy industry went from 105 dairies with 80,000 cows in 1990 to 145 dairies and 323,000 cows in 2015. Between 1985 and 2015, the New Mexico dairy industry increased production seven fold.

New Mexico is now the seventh largest dairy producing state in the US, producing 4.0% of US milk. In 2013, dairy created a US\$1.5b direct economic impact in the state and a \$2.7b indirect impact. The industry directly employs over 4,200 people and generates 12,524 total jobs. Average income for workers on dairy farms was US\$47,811 (A\$66,274) in 2014.

This transformation was achieved through a rapid implementation of the large scale, intensive dairy model. This growth was driven by a large influx of dairies relocating to New Mexico from primarily California (some Texas, and Arizona) in the early 1990s. This influx is attributed to a combination of several factors, including a push from CA due to significantly increasing costs of production and urban encroachment. NM provided an ideal climate for herd health, availability of ready-made feed supplies and water improved methods of transporting milk, and affordable farm land.

Farmers received significant amounts for their CA farms and were able to invest in new large scale, modern dairies. As a result of the rapid adoption of new, innovative production systems, New Mexico now leads the United States in both number of cows per dairy (2,485 cows/unit in 2014) and milk per cow (11,350 l/cow).

New Mexico dairies operate on a concentrated feeding/feedlot model. Animals are fed alfalfa hay, corn grain, corn silage and soybeans. Much of this feed is produced in New Mexico, from both large-scale pivot irrigation systems and seasonal rain-fed production. The industry is estimated to require over 300,000 hectare of land to produce dairy feed.

New Mexico is a semi-arid state in the Southwest the US, warm days and cool nights, frequently in drought. This arid climate means water is a limiting resource and New Mexico dairies are very efficient in their water use. Dairies directly use less than 5% of total state groundwater diversion. Most dairies recycle and utilize the same water 3-5 times for cooling, sanitation of equipment, flushing of feed lanes, and ultimately as fertilized irrigation water. The wider agricultural sector uses 78% of state water, including indirect dairy water use associated with animal feed production. Increasing pressure on the aquifers have put increasing pressure on farm costs.

The New Mexico dairy industry is highly regionally consolidated, with almost 80% of production occurring in just four counties (Curry, Chaves, Roosevelt & Dona Ana) in the eastern part of the state. This concentrated region is driving production growth and has attracted much of the new processing investment in the state.

With the rapid growth of production, New Mexico first established a Co-op, pooling the milk supply. Since then NM has attracted major investments in new plants, predominantly producing cheese/whey and milk powder leveraging the abundant supply of low cost milk in the state. Investors include Dairy Farmers of America, Fonterra, Dean Foods, Leprino Foods, Glanbia and F&A. The two largest cheese factories in the world are now located in the region: the Glanbia/Southwest Cheese plant in Clovis and the Hilmar cheese plant over the state line in Dalhart, Texas.

As one recent example, the Southwest Cheese plant – a 50/50 JV between Glanbia (Ireland) and two regional dairy cooperatives – cost US\$192m and was opened in 2005. In 2009 a US\$90m expansion was made and in 2015 a US\$140m plant expansion was announced. All of the milk for the plant comes from within a 50 km radius of the plant and over 75% from within a 25 km radius. The milk is delivered by more than 140 articulated trucks running 24 hours per day. Clovis Industrial Development Corporation has spent \$16m on wastewater facilities and road improvements. The New Mexico Department of Economic Development and the local development boards also helped in setting up the plant. The state now produces more cheese than Australia.

The success of the New Mexico dairy industry was created by entrepreneurs and businesspeople working in a (mostly) free market. The state and federal government provided broad economic stability, resource availability and a stable regulatory framework. However, government appears to have done little specifically in the early days of the industry to make dairy a success and certainly had no clear strategy or plan for this to occur. Since the success of the industry, government has assisted the industry, particularly in investment attraction.

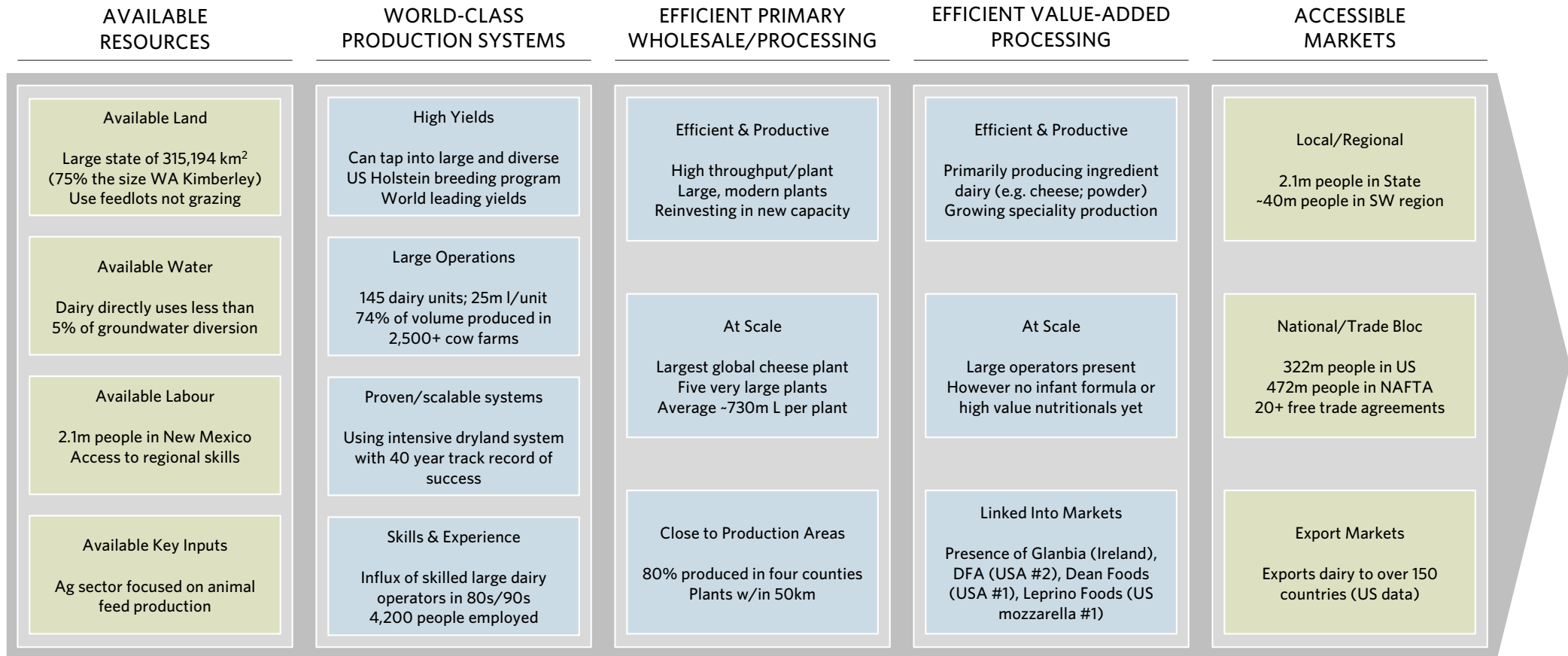
Dairies are regulated by multiple state and federal agencies including the U.S. Food and Drug Administration, U.S. Department of Agriculture (USDA), U.S. Environmental Protection Agency (EPA), New Mexico Department of Agriculture (NMDA), New Mexico Office of the State Engineer (OSE) and the New Mexico Environment Department (NMED).

The New Mexico Department of Agriculture (www.nmda.nmsu.edu) is located on and run by New Mexico State University. It has about 120 employees and a state-provided budget of \$16.5m (13). It focuses on regulation and is responsible for the administration of over 30 state statutes. The Dairy Division inspects and permits dairy farms, dairy-processing facilities, and milk samplers/haulers. It also performs some market development roles, including the New Mexico Taste The Tradition program (www.newmexicotradition.com). The grass roots Dairy Producers of NM provide a lobbying role and work closely with environmental advisors and regulators to ensure effective and sensible regulations.

CASE STUDY - 1 - NEW MEXICO DAIRY INDUSTRY - DRIVERS OF COMPETITIVENESS

DRIVERS OF INTERNATIONAL COMPETITIVENESS OF NEW MEXICO DAIRY INDUSTRY

Model; 2016

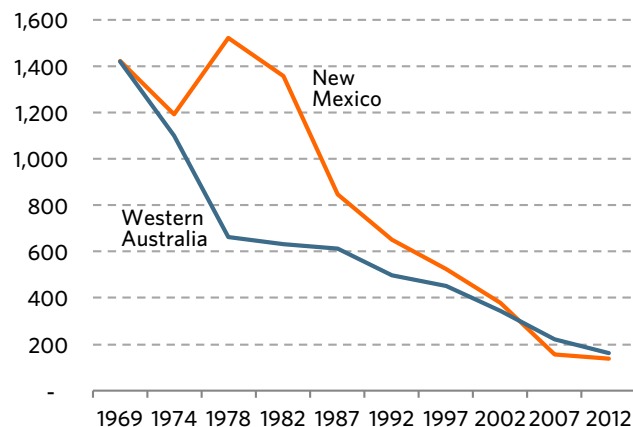


CASE STUDY - 1 - NEW MEXICO DAIRY INDUSTRY - RESULTS

New Mexico (a dry USA state) is succeeding where WA is struggling by having seven times more cows per operational unit and getting twice as much milk per cow through intensive feeding

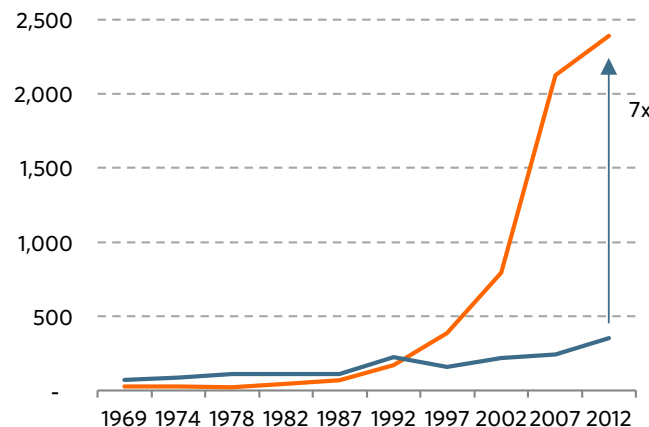
OF DAIRY UNITS: WA VS. NM

Actual; 1969-2012



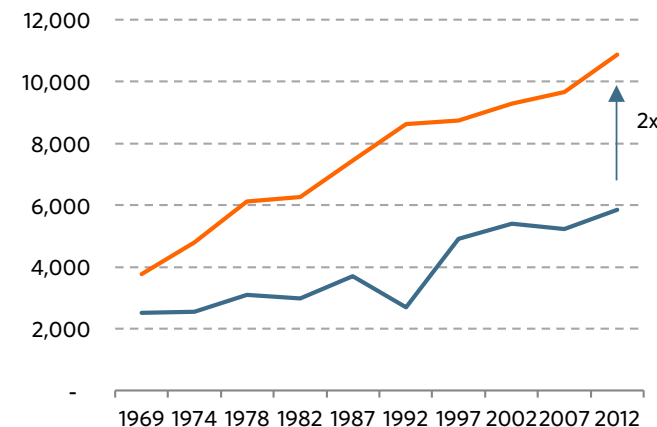
COWS PER UNIT: WA VS. NM

Actual; 1969-2012



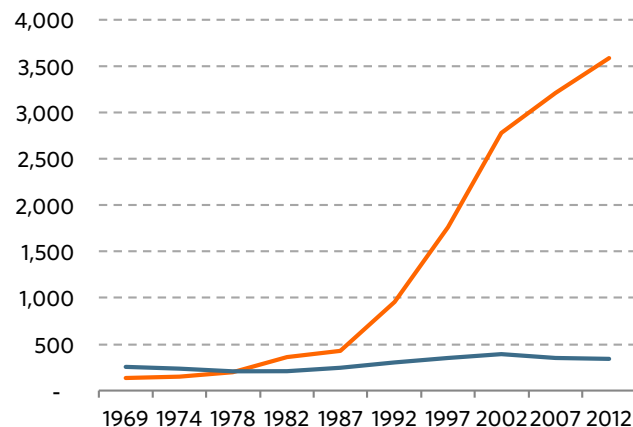
MILK PER COW: WA VS. NM

L/year; 1969-2012



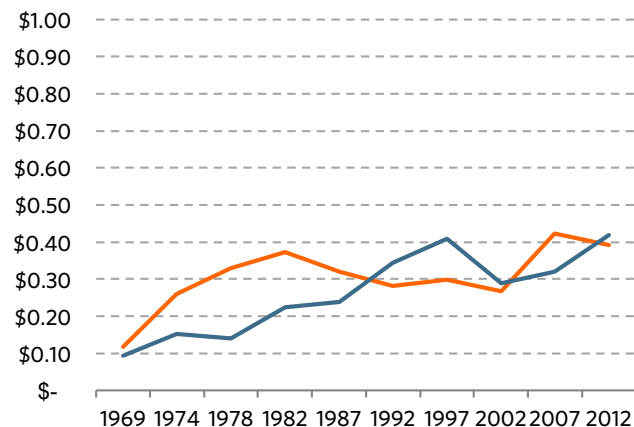
MILK PRODUCED: WA VS. NM

L; m; 1969-2012



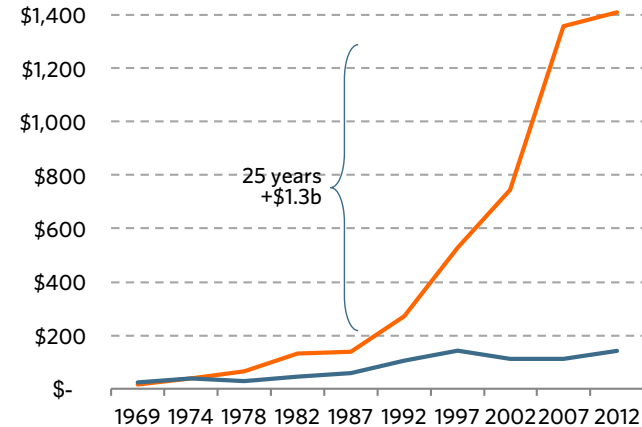
PRODUCER \$/L: WA VS. NM

A\$ or US\$; actual; 1969-2012



GROSS PRODUCT VALUE: WA VS. NM

A\$ or US\$; m; 1969-2012



Source: Dairy Australia "Dairy Industry In Focus" (various years); USDA Census of Agriculture (various years); ABS (various reports); USDA NASS (various reports); Coriolis analysis and estimates

CASE STUDY - 1 - NEW MEXICO DAIRY INDUSTRY - KEY INSIGHTS/TAKEAWAYS

KEY BUSINESS INSIGHTS FROM NEW MEXICO DAIRY INDUSTRY PATHWAY TO COMPETITIVENESS



WHO?

- Dairy operators from neighbouring dryland regions, primarily California, Texas and Arizona
- Well capitalised dairy - and wider agribusiness operators - from within New Mexico able to copy and adapt rapidly

HOW?

- Success was achieved through effectively bringing climatic best practice technology and systems to a remote dry state with an undeveloped dairy industry
- Reduction in production cost reduction through:
 - Implementation of large scale intensive dairy production systems and related animal feed production systems to increase cows per production unit
 - Leveraging huge, high performance pool of U.S. Holstein dairy genetics to increase milk per cow

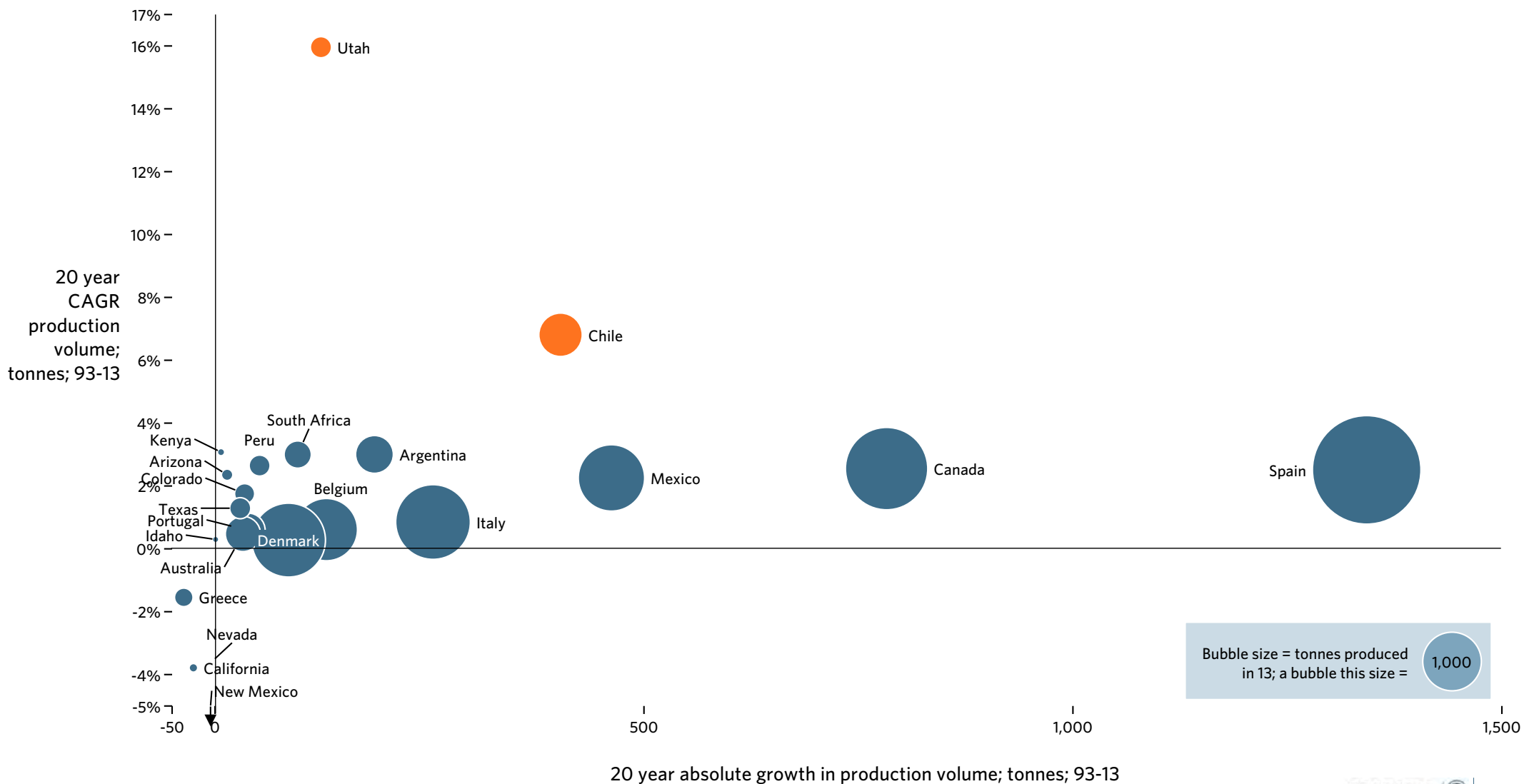
WHY?

- An unexploited opportunity existed: New Mexico had a small, underdeveloped dairy industry
- There was an arbitrage opportunity: New arrivals could sell existing operations (e.g. in California) and build newer, larger operations in New Mexico
- It would be highly profitable: Newer, larger dairies with higher yields are more profitable (data shows they are, in fact, the only dairies that are profitable)
- There were underutilised resources available: Readily available inputs were available in New Mexico at the time (e.g. cheap land, available water)

Evaluation of peer group pig meat production growth highlights Chile and Utah; we develop Chile in detail in this case study (however Utah data is used in the pork section of this document)

20Y PIG MEAT PRODUCTION GROWTH MATRIX: ABSOLUTE GROWTH VS. RATE OF GROWTH VS. PRODUCTION IN 2013

Tonnes; 1993 vs. 2013



Source: UN FAO AgStat database; USDA NASS database; Coriolis analysis

CASE STUDY - 2 - CHILE PORK INDUSTRY - SUMMARY

Chile is a long, thin country in South America. Chile has a diverse climate ranging from the Atacama desert ("the world's driest desert") in the North, through a Mediterranean climate in the centre, to a cool climate in the South. Chile has a population of 18m, with roughly a third living in and around the capital Santiago. The Chilean economy is dominated by the mining industry, which makes up 20% of GDP and 60% of exports. The wider agro-food industry accounts for 16% of GDP, 25% of exports and employs more than a million people. Key agricultural products include grains, horticulture, wine, beef, sheep and aquaculture.

Chile has shown strong growth in both pork production and pork exports over the past two decades. Pork production has grown from 20,000 t in 1960 to 520,000 t in 2014, with 51% exported. Chilean pork exports have grown rapidly and the country is now the sixth largest pork exporter (after the EU, the US, Canada, China and Brazil). The key markets for Chilean pork are Japan (37%) followed by South Korea, China and Russia. China is growing strongly.

"Instead of focusing on mass production, Chilean exporters chose the path of niche specialisation. Thus, high demanding markets [e.g. Japan & South Korea], quality and higher added value were the concepts of choice... The country's industry worked on the development of new products with added value: cuts, processed, and frozen products... on the list. Besides, we also worked on the integration of quality and management systems to the production chain." *Felipe de la Carrera, Asprocer, quoted in Pig Progress 2008*

The Chilean pork industry is highly consolidated, with four companies (Agrosuper, Friosa, MaxAgro and AASA) accounting for 95%+ of production. Vertical integration has enabled producers to maintain a strict product traceability and ensured product safety, quality and reliability from the production site to the final consumer. Large investments have been made in state-of-the-art technology to strengthen sanitary and production efficiency levels. The industry is also highly geographically concentrated, with 90%+ of production occurring near Santiago.

Unlike Australia, the Chilean pig industry uses the latest, high performance global genetics, with PIC being the main supplier. Pig producers are achieving 29 weaned piglets per sow per year (vs. 20 per sow in Australia). Market weight for hogs is around 110kg and most hogs are full grown by 5.5 months. The Chilean pig industry is significantly more efficient than WA.

The main cost in the Chilean pig industry is feed, which is 74% of total production cost. This is one of the weak points of the industry, as Chile is heavily dependent on imported maize and soybeans. As a result, the Chilean industry is highly focused on feed efficiency.

Chile has a high health status, and this is due, mainly, to its natural barriers (the Andes and the Ocean) and to plant and animal health border controls. The country is free from most major pig diseases.

The success of the Chilean pork industry is primarily the result of the efforts of one company: Agrosuper. Agrosuper had sales of US\$2.3b in FY15 and has more than 15,000 employees. Agrosuper was founded in 1955 as an egg producer. Since then, the company has expanded into a wide range of vertically integrated, intensively fed meats: chicken (1974), pork (1983), salmon (1983) and turkey (2011). Agrosuper is the market leader in Chile for all of these products, with a domestic market share ranging from 50%-75% and an export market share ranging from 65-85% (other than salmon). Exports account for 35% of sales and the company exports to 60 countries on 5 continents.

Since entering the pork industry in 1983, Agrosuper has continued to reinvest in production growth and pork now accounts for 39% of group sales. Agrosuper is highly vertically integrated, with control of its own feed production, production sites, processing, marketing and exporting, including sales offices in all key markets. Agrosuper uses the latest global genetics, has large modern production facilities and large, automated processing plants. Most pork is sold case-ready under the Super Cerdo brand.

Agrosuper produced 360,000 tonnes of pork in 2013, or about ten times as much as Western Australia (31,000 t in 2015). Agrosuper accounts for 55% of Chilean domestic pork sales and 84% of Chile's pork exports. Agrosuper is now the 24th largest global pig processor.

In 2005, Agrosuper began construction of the first stage of Project Huasco, a US\$200m large scale pig farm in the Atacama desert. Project Huasco was a totally vertically integrated operation, encompassing a grain receiving port, a feed mill, pig breeding operation, grow-out sheds and meatworks. The first stage of this project opened in 2011 and the company was planning to double its capacity to 150,000 sows and an output of 3.8 million pigs a year. Total investment at the site was to be USD\$800 million. However, "unforeseeable technical failure" occurred with the US\$54m "most modern environmental management technology in the world." As a result, odours from the plant impacted the local community leading to major protests. Agrosuper ultimately closed its first stage facility and moved production elsewhere.

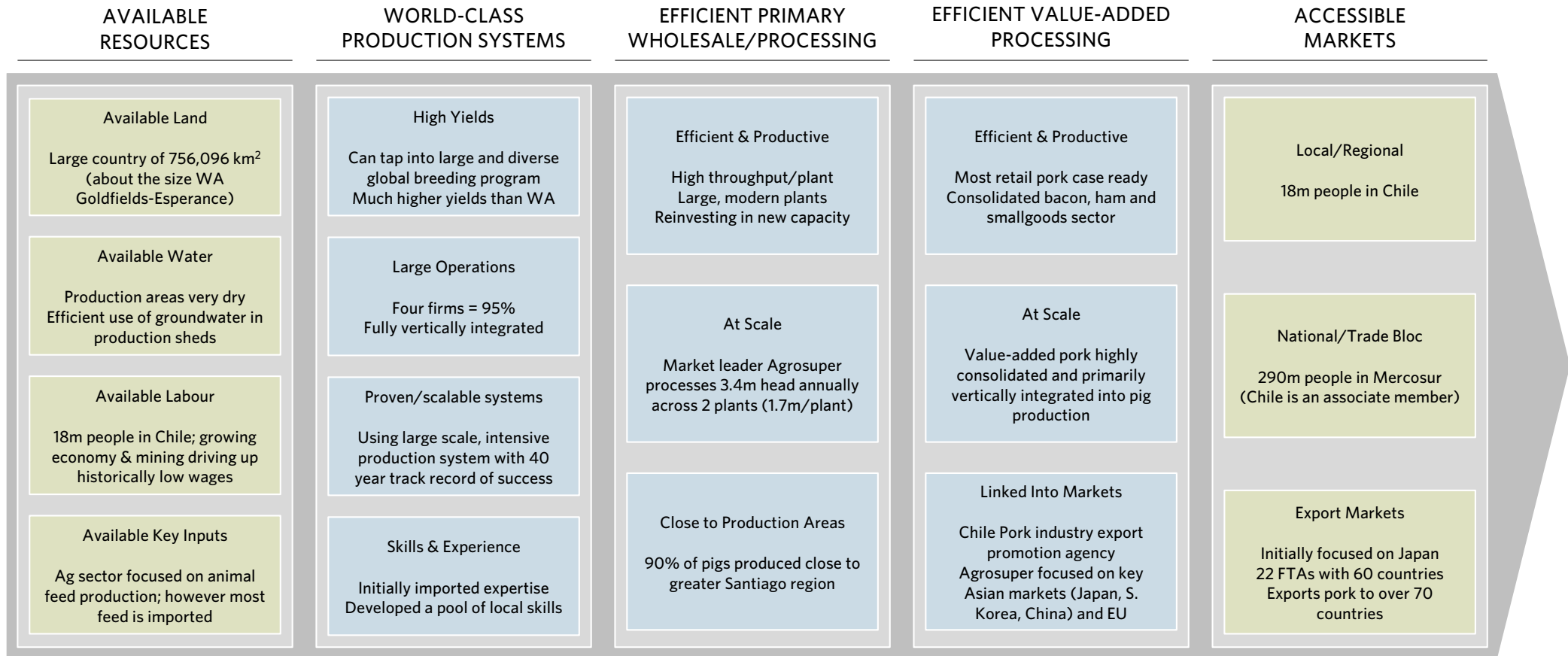
The success of the Chilean pork industry was created by entrepreneurs and businesspeople working in a (mostly) free market. The industry is well organised, with an Association of Pork Producers (ASPROCER) and an export focused industry program (ChilePork).

The Chilean government provided broad economic stability, resource availability and a stable regulatory framework. It also negotiated a wide range of free trade agreements. As of June 2013, Chile had 22 FTAs with 60 countries, which allows privileged access to a market of 4.3 billion people (60% of the global population and 80% of world GDP).

CASE STUDY - 2 - CHILE PORK INDUSTRY - DRIVERS OF COMPETITIVENESS

DRIVERS OF INTERNATIONAL COMPETITIVENESS OF CHILEAN PORK INDUSTRY

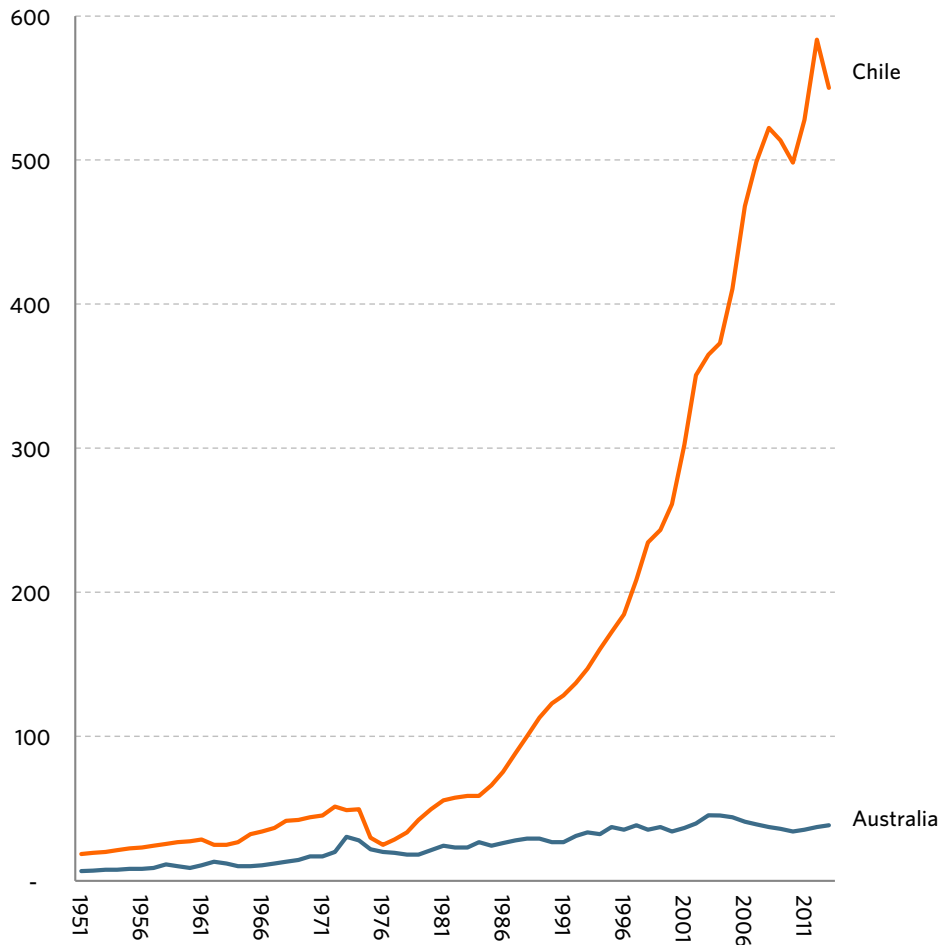
Model; 2016



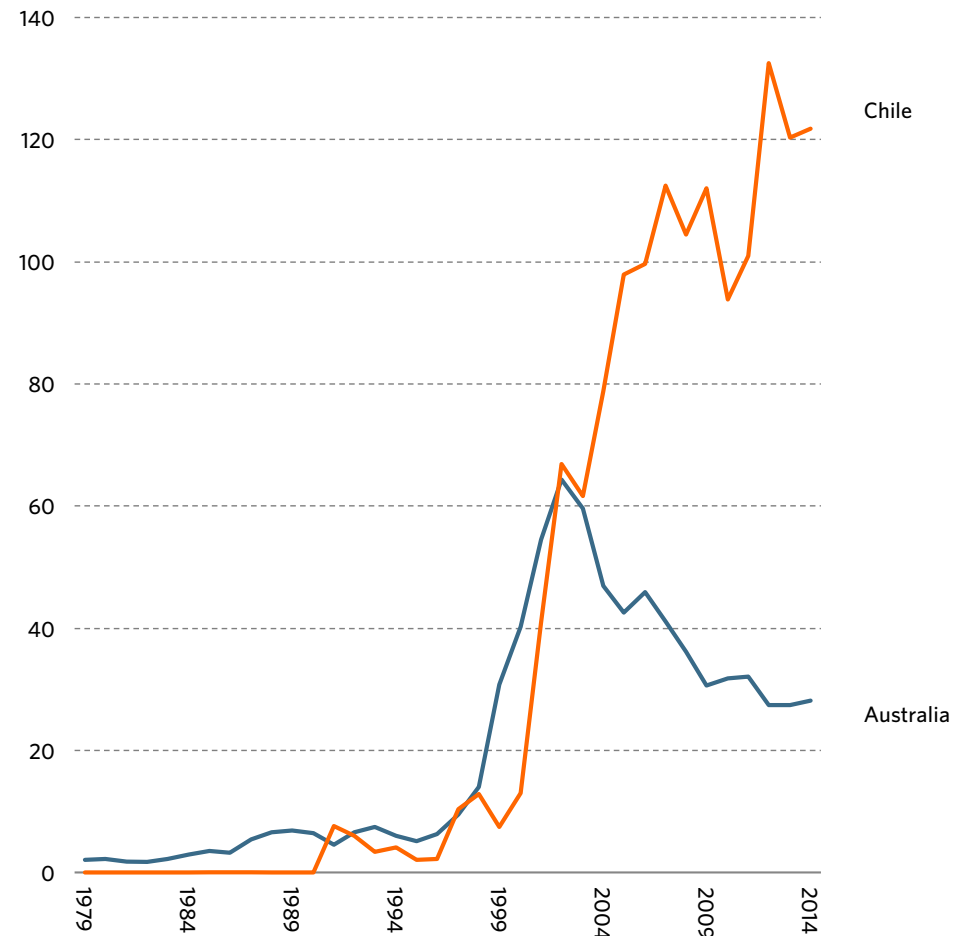
CASE STUDY - 2 - CHILE PORK INDUSTRY - RESULTS

The Chilean pork industry is outperforming Australia

PORK PRODUCTION: AUSTRALIA VS. CHILE
Tonnes; 000; 1951-2013



PORK EXPORT VOLUME: AUSTRALIA VS. CHILE
Tonnes; 000; 1979-2014



CASE STUDY - 2 - CHILE PORK INDUSTRY - KEY INSIGHTS/TAKEAWAYS

KEY BUSINESS INSIGHTS FROM CHILEAN PORK INDUSTRY PATHWAY TO COMPETITIVENESS



WHO?

- A single firm can drive export success
- Four large vertically integrated pork producers (Agrosuper, Friosa, MaxAgro and AASA) account for 95%+ of production
- Agrosuper – the market leader in Chile in chicken, pork, turkey and salmon – was effectively single handedly responsible for the export success of Chile in pork
- Early relationship with Nippon Meat

HOW?

- Success was achieved through effectively bringing climatic best practice technology and systems to a remote dry country with an undeveloped pork industry
- Reduction in production cost was achieved through:
 - Implementation of large scale intensive pork production systems to increase pigs per unit
 - Leveraging huge, high performance global pool of pig genetics to increase (1) feed conversion efficiency and (2) rate of growth
 - At the same time, dramatically increasing average weight at slaughter through vertical integration and control of the total animal through branding and value-added processing
- Industry initially focused on supplying the highly demanding Japanese market with value-added pork products via supply contracts with Nippon Meat
- Agrosuper established its own international marketing networks to ensure products matched market demand

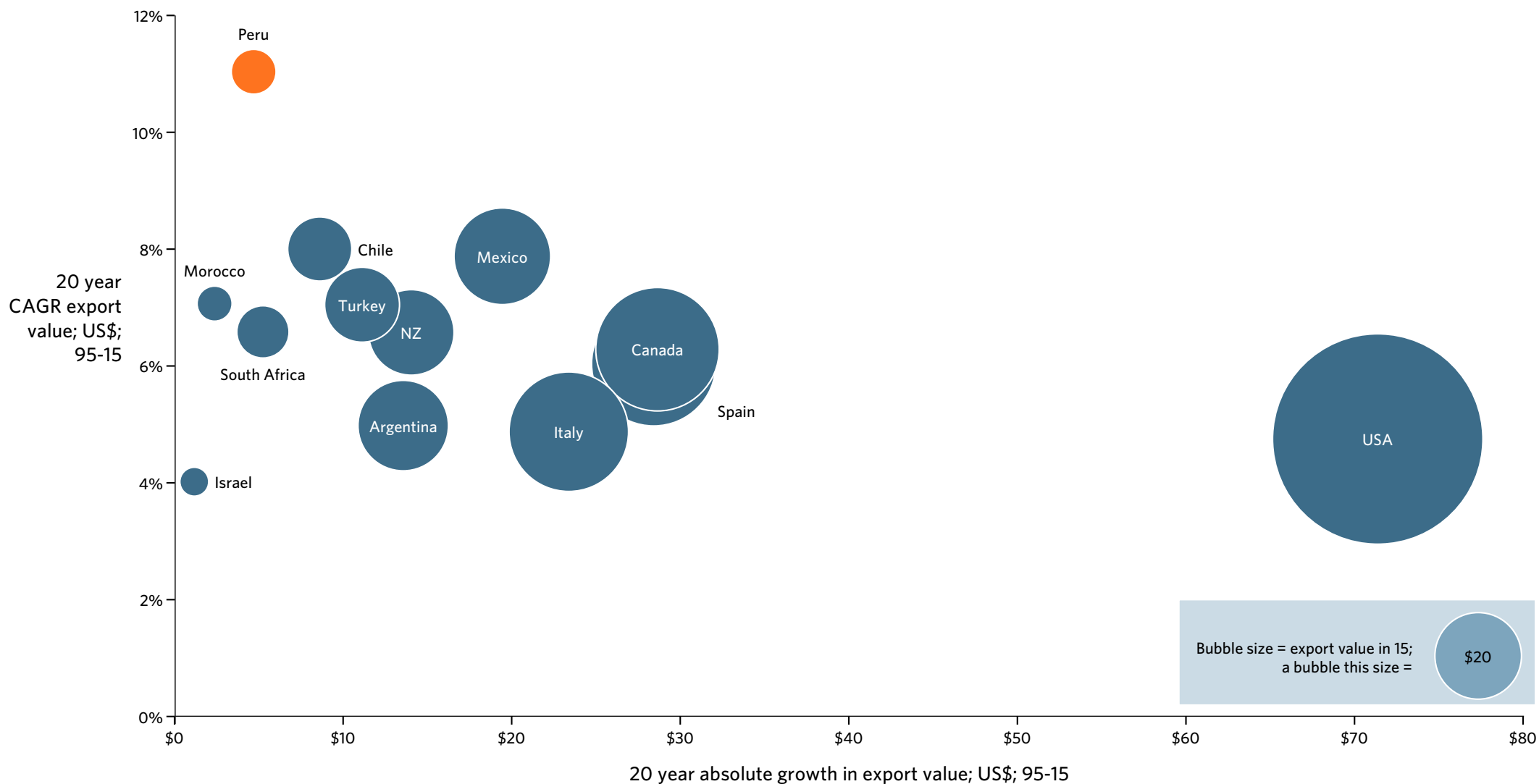
WHY?

- An unexploited opportunity existed: Chile had a small, underdeveloped pork industry and low per capita pork consumption
- Once the industry outgrew the local market, it turned to exports to maintain growth
- Nippon Meat looked to South America when Foot and mouth impacted supply from Denmark and Taiwan, supply contracts with Agrosuper targeted specific products for the Japanese markets

Evaluation of overall peer group agrifood export growth highlights Peru; we therefore develop Peru in detail in this case study

20Y AGRIFOOD EXPORT GROWTH MATRIX: ABSOLUTE GROWTH VS. RATE OF GROWTH VS. VALUE IN 2014

US\$; b ; 1995 vs. 2015



Note: Morocco and Israel use 95-14 data and values; Source: UN FAO AgStat database; Coriolis analysis

CASE STUDY – 3 – PERU AGRIFOOD INDUSTRY – SUMMARY

Peru is a mid-sized country of 1.28m square kilometres, similar in size to South Africa, Mongolia, Alaska or north of WA (Kimberley, Pilbara & Gascoyne). Peru has a diverse climate, ranging from the a dry arid coastal strip through the high Andes in the middle to the jungles of the upper Amazon in the East. Peru has a population of 31m, with about a third living in Lima. Poor infrastructure hinders the spread of growth beyond the costal areas around the capital Lima.

Peru has been well run economically for the last few decades and seen growth as a result. Key economic policies supporting growth include prudent government spending, government surpluses, an independent Central Bank focused on inflation and business friendly policies targeted at growth industries.

The main economic activities are mining, agriculture, fishing, manufacturing and tourism. Commodities exports still make up the majority of exports. Metals and minerals account for 60% of the country's total exports. Peru is second worldwide in gold production, second in copper, and is among the top 5 producers of lead and zinc. The government passed several economic stimulus packages in 2014 to bolster growth, including reforms to environmental regulations in order to spur investment in Peru's lucrative mining sector, a move that was opposed by some environmental groups. However, in 2015, mining investment fell as global commodity prices remained low.

Peru has signed trade deals with the US, Canada, Singapore, China, Korea, Mexico, Japan, the EU, the European Free Trade Association, Chile, Thailand, Costa Rica, Panama, Venezuela, concluded negotiations with Guatemala and the Trans-Pacific Partnership, and begun trade talks with Honduras, El Salvador, India, Indonesia, and Turkey. Peru also has signed a trade pact with Chile, Colombia, and Mexico, called the Pacific Alliance, that seeks integration of services, capital, investment and movement of people.

Agriculture is an important sector for Peru, accounting for 7% of GDP and 26% of employment. Peru's agricultural exports include artichokes, grapes, avocados, mangoes, peppers, sugarcane, coffee and cotton. From a base of \$0.7b in 2001, exports of agricultural and fish products have grown at 10-15% per annum and reached \$5.4b in 2015. By 2020 horticulture exports alone aim to be US\$3.8b. Multiple sources attribute Peru's success to a climate that favours food production, investment in irrigation, a favourable business environment, trade agreements, and stable macro-economic settings.

Extract from "Agricultural exports on the rise in Peru", Oxford Business Group, 2016

"The growth of agriculture for export is one of the success stories of Peru's recent economic development. The country's coast is scored with numerous rivers, but the desert plains between the valleys remained uncultivated until the 1990s. The creation of large reservoirs due to the construction of hydroelectric plants gave the country a reliable water supply, and under former-president Alberto Fujimori large-scale investment in public irrigation schemes began.

In 1993 the law was changed to allow the private acquisition of land and remove size restrictions on land holdings. Large land packages on the coast, with minimum sizes typically 500-1000 ha, were auctioned with minimum investment requirements, incentivising large agribusiness firms to take a stake in Peru. To date, over 200,000 ha of land has been irrigated under the scheme, with 30 companies holding land packages of over 2500 ha.

Peru continues to expand the agricultural frontier into the desert. There are three major irrigation schemes under development, with the potential to bring an additional 150,000 ha into agricultural production... In December 2013 ProInversión promoted the project to Asian investors during the Road Show Asia 2015... The Majes-Siguas II project was given a boost in September 2015 by the provision of a \$122m loan...taking total investment in the project to \$550m. When complete, the project will bring 46,500 ha under irrigation. Two further projects...will add 41,600 ha and 19,000 ha, respectively.

Together, Peru's completed irrigation projects and those under construction have required public investment of \$3.2bn, according to the Ministry of Agriculture and Irrigation (Ministerio de Agricultura y Riego, MINAGRI). Only a small proportion of this is recovered through the auctioning of plots. Agribusiness firms also benefit from government incentives, paying half the rate of corporate tax and employing workers on flexible contracts. This has led to criticism of the cost of developing public irrigation projects. Fernando Erguen, president of the Peruvian Centre for Social Studies, told OBG, "We estimate that since the 1990s, private agribusiness has benefitted from what amounts to a \$6bn subsidy from the state."

CASE STUDY - 3 - PERU AGRIFOOD INDUSTRY - SUMMARY

Extract from "Agricultural exports on the rise in Peru", Oxford Business Group, 2016

Others point to the wider benefits of the scheme. "Depending on the project, it may cost \$20,000-40,000 to irrigate a hectare of land, which is then auctioned to companies at a typical price of \$5000," Angel Manero, president of Grupo Agronegocios, told OBG. "However, these projects provide huge employment opportunities that feed back into the economy through increased consumption of goods and services." The Olmos Tinajones, Chavimochic and Puyango projects are estimated to create over half a million direct and indirect jobs.

The effect of the irrigation scheme on Peruvian agricultural exports has been dramatic. While the country's largest private landowner Grupo Gloria, which owns close to 80,000 ha, built its empire on the traditional sugar industry, some of the most notable export successes have been fruits and vegetables. Peru is the leading exporter of asparagus globally, reaching sales of \$571m in 2014, according to Agrodaperu. Exports of grapes increased 55% from 2013 to 2014, reaching \$639m, while avocado exports grew 71% to \$306m...

Peru's agribusiness sector has a history of looking south for inspiration and many of its most profitable exports were previously cultivated by Chilean farms. The agribusiness success story of 2014 was blueberries, with exports hitting \$30m, twice the previous year's total. That figure is expected to hit \$70m in 2015. "In recent years we have seen 2000 ha of new land seeded with blueberries, with investments of around \$100m," said Manero. "In Peru we can seed in any month and export in September and October, when supplies from other countries such as Chile dry up." Using this model Peruvian blueberry producers can demand higher prices.

According to research by Agronegocios, a local digital information platform, blueberries were the most profitable agri-export product in 2014, offering profits of 69%, compared to 31% for avocados and 13% for asparagus. The cultivation of raspberries is the logical progression, and kiwifruit, of which Chile exports \$200m worth every year, could be the next focus for Peruvian export farms.

Another star agricultural product in recent years has been palm oil, which has seen continuous growth. While in 2000 production totalled 181,000 tonnes, by the end of 2012 Peru was producing some 518,300 tonnes. The last few years, however, haven't come without challenges. The sector has seen an increase in competition from Argentina and a decrease in the international market price, which had fallen by 14% in the first half of 2015. "The palm oil chain has high aggregate value. Crude palm oil in the future will be absorbed - mainly by the

biodiesel market, which we expect to pick up after the imposition of the antidumping compensations currently in process - but also by the food industry, where demand for palm oil derivative is increasing," Renzo Balarezo, CEO of local grower Grupo Palmas, told OBG...

On the back of the success of Peru's agriculture-for-export model, MINAGRI and the Ministry of Production (Ministerio de la Producción, PRODUCE) continue to develop policies to increase the added value of the agricultural sector.

PRODUCE has identified the aquaculture and forestry sectors as two areas of particular potential. MINAGRI has supported the development of Sierra Exportadora, a public company that aims to move the country's Andean and jungle crops up the value chain. With a wide range of products from cranberry juice to cheeses, the company reached sales of \$200m in 2014, more than double its results for the year. Public backing has allowed Sierra Exportadora to expand its business model across the highlands and rainforest. "For 2015 we have decided to focus on expanding the number of beneficiaries of our services beyond the current 78,000," Alfonso Velásquez Tuesta, CEO of Sierra Exportadora, told OBG...

The fall in revenues from Peru's traditional exports has, to a large extent, vindicated the decision to diversify production through irrigation schemes. MINAGRI expects agri-exports to reach \$7bn by 2017, and the country's large agribusiness firms have successfully introduced dozens of new products to Peruvian soils. The focus in the coming years will be on helping national producers compete with imports and developing new industries.

The good news is that - despite the strong growth of non-traditional agriculture exports - the industry has only scratched the surface. The cultivation of new lands combined with PRODUCE's push to develop the forestry and aquaculture sectors should see these industries play an increasingly important role in the economic future of Peru."

CASE STUDY - 3 - PERU AGRIFOOD INDUSTRY - KEY INSIGHTS/TAKEAWAYS

In practice, countries or regions that are transforming their agricultural competitiveness choose a range of policy settings, as this example from Peru shows

EXAMPLE: OPTIONS USED BY PERU TO IMPACT KEY DRIVERS OF INTERNATIONAL COMPETITIVENESS

Model; 2016

AVAILABLE RESOURCES

- Peru is similar in size to North of WA (Kimberley, Pilbara & Gascoyne)
- Major mining region: global #2 silver and #3 copper
- Lots of water in the East; limited amounts in the West
- Public/private partnerships to build seven massive irrigation projects supplying 290,000 hectares
- Dam and aqueduct projects supporting multiple regions (Ica, Piura, Lambayeque, Cajamarca & Olmos)
- US\$400m invested in Ica region
- US\$580m in Olmos region
- Multiple projects to tunnel through Andes to bring water to dry regions
- 90%+ of land in new irrigation regions auctioned off in large blocks to large scale corporate operations
- Regional Governor is Chair of the "Promotion Committee for the Public Land Auction"
- Reforms to environmental regulations in 2014 in order to spur investment

WORLD-CLASS PRODUCTION SYSTEMS

- Investment/business friendly government focused on agricultural development
- Chilean and US agribusiness operators invited in and invest (e.g. Mission Produce (US) in avocados)
- New irrigation projects "favoured agroindustry over small [operations]"
- Large scale operations developed
- Modern genetics easily introduced through limited biosecurity
- Yields increasing across major agricultural exports (e.g. avocado yields +67% above US) through good genetics and modern systems
- Major "non-traditional" new crops emerging and now account for ~80% of agrifood exports
- Agricultural area devoted to export is expected to double

EFFICIENT WHOLESALE/PROCESSING

- Local agribusiness operators reinvest in growth (e.g. Grupo Palmas; Campersol)
- For example Campersol announced \$100m blueberry project in 2014 targeting 30m kg production for export
- Chilean, US, Israeli and other agribusiness operators invest (e.g. PE-owned Vanguard International acquired Peru's largest grape grower Challapampa)
- New processors build large processing operations at scale (e.g. Gloria Corp \$49m sugar mill)

ACCESSIBLE MARKETS

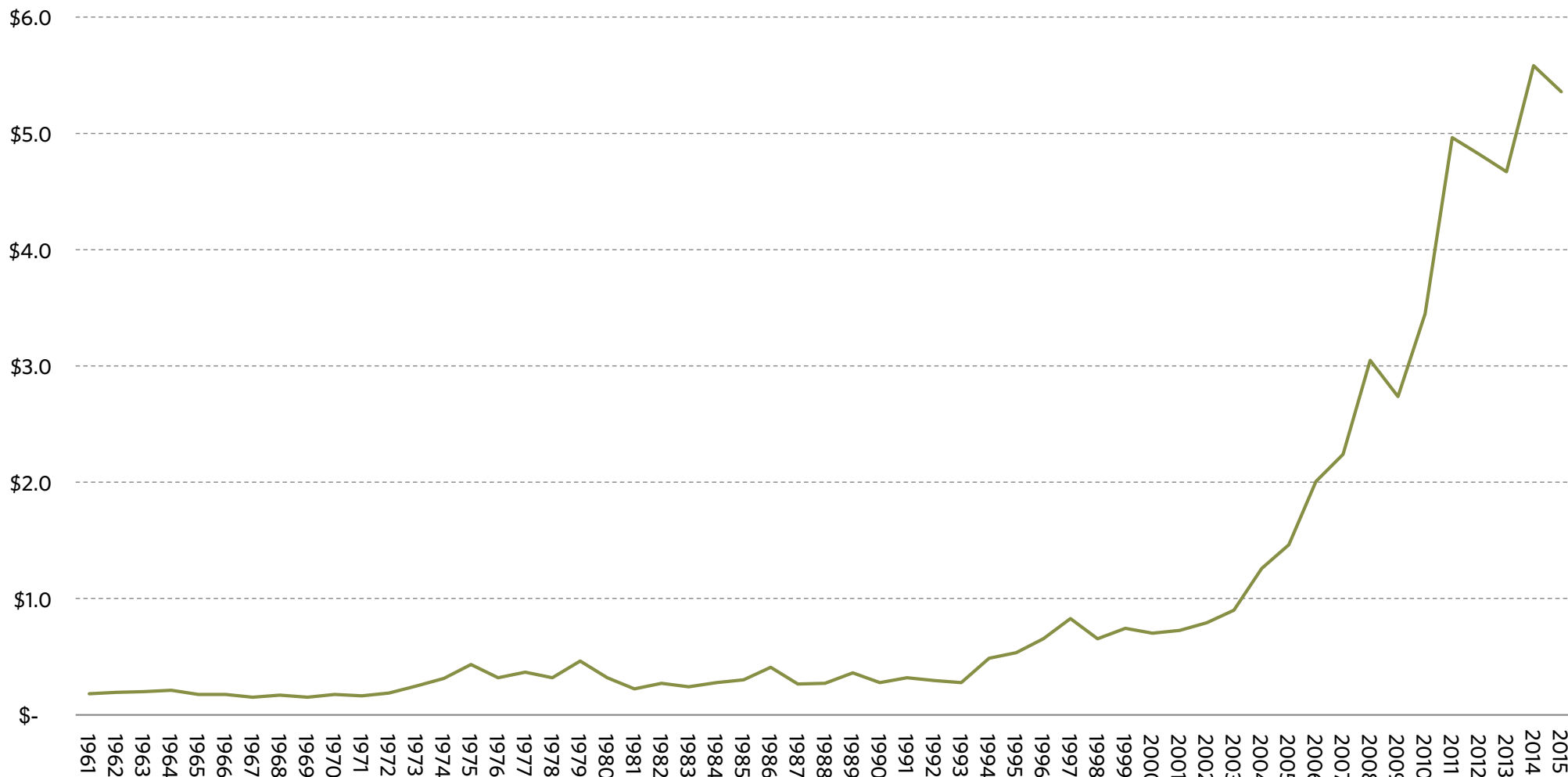
- Peru has a trade pact with Chile, Colombia, and Mexico, called the Pacific Alliance, that seeks integration of services, capital, investment and movement of people.
- Since the US-Peru Trade Promotion Agreement entered into force in February 2009, total trade between Peru and the United States has doubled.
- Since 2006, Peru has signed trade deals with the US, Canada, Singapore, China, Korea, Mexico, Japan, the EU, the European Free Trade Association, Chile, Thailand, Costa Rica, Panama, Venezuela, concluded negotiations with Guatemala and the Trans-Pacific Partnership, and begun trade talks with Honduras, El Salvador, India, Indonesia, and Turkey

CASE STUDY - 3 - PERU AGRIFOOD INDUSTRY - RESULTS

Peru has achieved success on its Pathway To Competitiveness

TOTAL AGRIFOOD EXPORT VALUE: PERU

US\$b; 1961-2014



Source: UN Comtrade database; Coriolis classifications and analysis

CASE STUDY - 3 - PERU AGRIFOOD INDUSTRY - KEY INSIGHTS/TAKEAWAYS

KEY BUSINESS INSIGHTS FROM PERU HORTICULTURE INDUSTRY PATHWAY TO COMPETITIVENESS



WHO?

- Local agribusiness operators reinvest in growth (e.g. Grupo Palmas; Campersol)
- For example Campersol announced \$100m blueberry project in 2014 targeting 30m kg production for export
- Chilean and US agribusiness operators invited in to invest; for example:
 - Mission Produce (US) in avocados
 - PE-owned Vanguard International acquired Peru's largest grape grower Challapampa

HOW?

- New water and new land
- New irrigation projects delivering water to un-exploited regions
- A government focused on developing an export industry at scale (rather than delivering small plots to micro-scale peasant farmers)
- Success was achieved through effectively bringing climatic best practice technology and large-scale systems to a remote dry country with an undeveloped horticulture industry
- Reduction in production cost was achieved through:
 - Implementation of large scale horticulture production systems to increase tonnes per unit
 - Leveraging huge, high performance global pool of plant genetics to increase yields

WHY?

- Neighbouring country Chile provided a proven model/case-study of developing a successful export focused horticulture sector in a Mediterranean-to-arid climate
- Peru needed to diversify its economy away from an overreliance on mining
- An unexploited opportunity existed: Peru had a small, underdeveloped horticulture industry
- New trade agreements provided a wide range of new markets for new export horticultural products

AUSTRALIA

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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 paddock-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.

