

WESTERN AUSTRALIA **FINDING THE ROAD** FORWARD IN FOOD

Opportunities to Increase Western
Australian **Agrifood** Exports
Sept 2015

DOCUMENT OBJECTIVE/PURPOSE

This document seeks to bring new perspectives to the challenge of increasing Western Australia's agrifood exports

Coriolis is a management consulting and market research firm that focuses on agriculture, FMCG (fast moving consumer goods) and retailing, servicing clients across the Asia Pacific region. Coriolis have recently opened an office in Perth, Western Australia as an endorsement of the regions capability and potential to be an agrifood leader in the Asia Century. This document represents our first contribution to assisting Western Australia's agrifood potential.

Western Australia has huge potential for agrifood growth. The State is the size of Western Europe with the population of Jamaica. It is four times the size of Texas, five times the size of the Ukraine and six times the size of California.

For a range of historical reasons, this massive region is not currently intensively farmed. As one example, Israel with 1% of the land and 5% of the water produces twice as much food & beverages as Western Australia.

As well as having spare capacity to produce more, Western Australia has location. The state is on the doorstep of South-East Asia (a third of world population) and close to East Asia (one quarter of world population).

As outlined in this document, **we believe Western Australia has anywhere from \$4b to \$40b in incremental agrifood value upside.**

We are not alone in believing that Western Australia has huge potential for growth. The Western Australia Government is investing \$300m of the Royalty for Regions funding into their "Seizing the Opportunity" program. This investment is intended to catalyse and encourage growth in the agrifood sector in the State.

The objective of this document is to assist the growth of the industry by bringing new perspectives to the challenge of increasing Western Australia's agrifood exports.

The research takes a big picture point of view of the agrifoods sector and identifies key drivers for growth. While its an overused cliché, from our research we believe that many in Western Australia are "missing the forest for the trees" in terms of the size and nature of the opportunity. This document looks at the big picture of the "forest" and scale of the potential size of the prize.

DOCUMENT OBJECTIVE/PURPOSE

As this is an internal “pro bono” project, scope is kept relatively tight and focused; the objective is to frame the questions rather than answer them in detail

IN SCOPE

- Identifying macro drivers for industry value growth
- Focused on growing exports rather than selling more in the relatively small domestic market
- Comparisons of Western Australia with select, relevant peer group countries to provide perspective
- Food agriculture and seafood

OUT OF SCOPE

- Detailed analysis of specific sectors and products
- Excessive discussion of barriers or challenges to growth
- Proposing detailed solutions, business plans or business advice
- Policy advice to government
- Fibres (wool, cotton, etc.), forestry, pearls and other non-food incomes streams

DEFINING RELEVANT COMPARISONS

In order to develop a better perspective on the Western Australian situation and opportunity, this report uses a range of “peer group” countries for comparisons depending on their relevance to the question

Economic development peers but not climatic peers	Economic development peers and climatic peers	Climatic peers but not economic development peers	
Relevant to economic comparisons (e.g. value-added to agrifood exports) Not relevant to climatic comparisons	Relevant to economic and climatic comparisons	Only relevant to climatic comparisons (e.g. water use, irrigation)	
United Kingdom Canada New Zealand France Germany Denmark Switzerland Other Northern Europe	Israel Spain Italy Portugal Chile Parts of the United States (e.g. Arizona) Parts of Argentina	Mexico Turkey Morocco Egypt South Africa Peru Kazakstan Kenya Tunisia Lebanon Saudi Arabia Syria Somalia Botswana Algeria	Yemen Oman Iran Mozambique Ethiopia Iraq Sudan Uzbekistan Chad Azerbaijan Turkmenistan Eretria Jordan Libya

OUTLINE

What we want to achieve

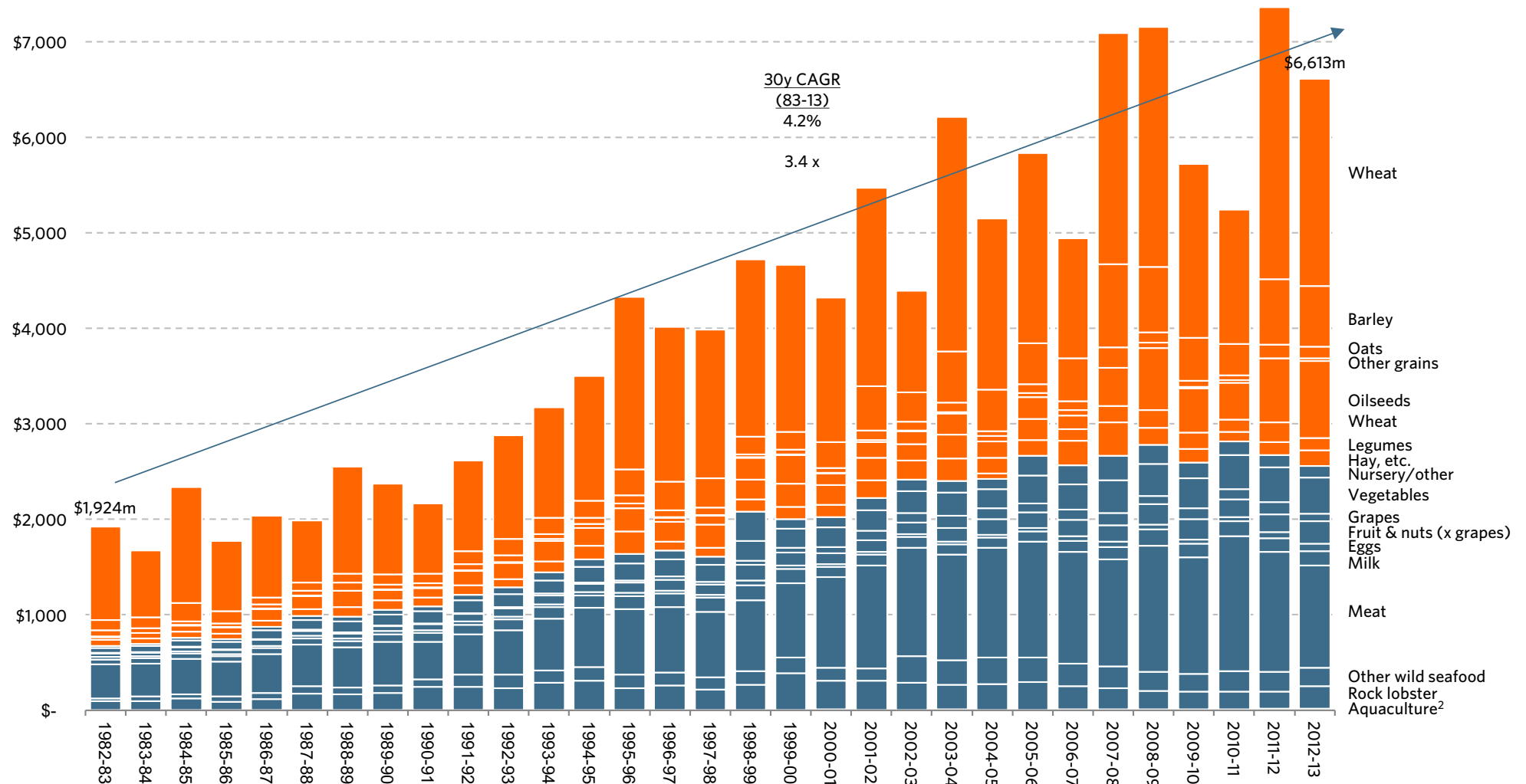
How we could achieve it

VALUE OF PRODUCTION

Western Australia has grown the value of agrifood production from \$1.9b in 1983 to \$6.6b in 2013, achieving a 4.2% compound annual growth rate (CAGR) over the period (non-inflation adjusted)

GROSS VALUE OF AGRI-FOOD¹ PRODUCTION IN WESTERN AUSTRALIA: AGRICULTURE AND SEAFOOD

A\$m; 82/83-12/13



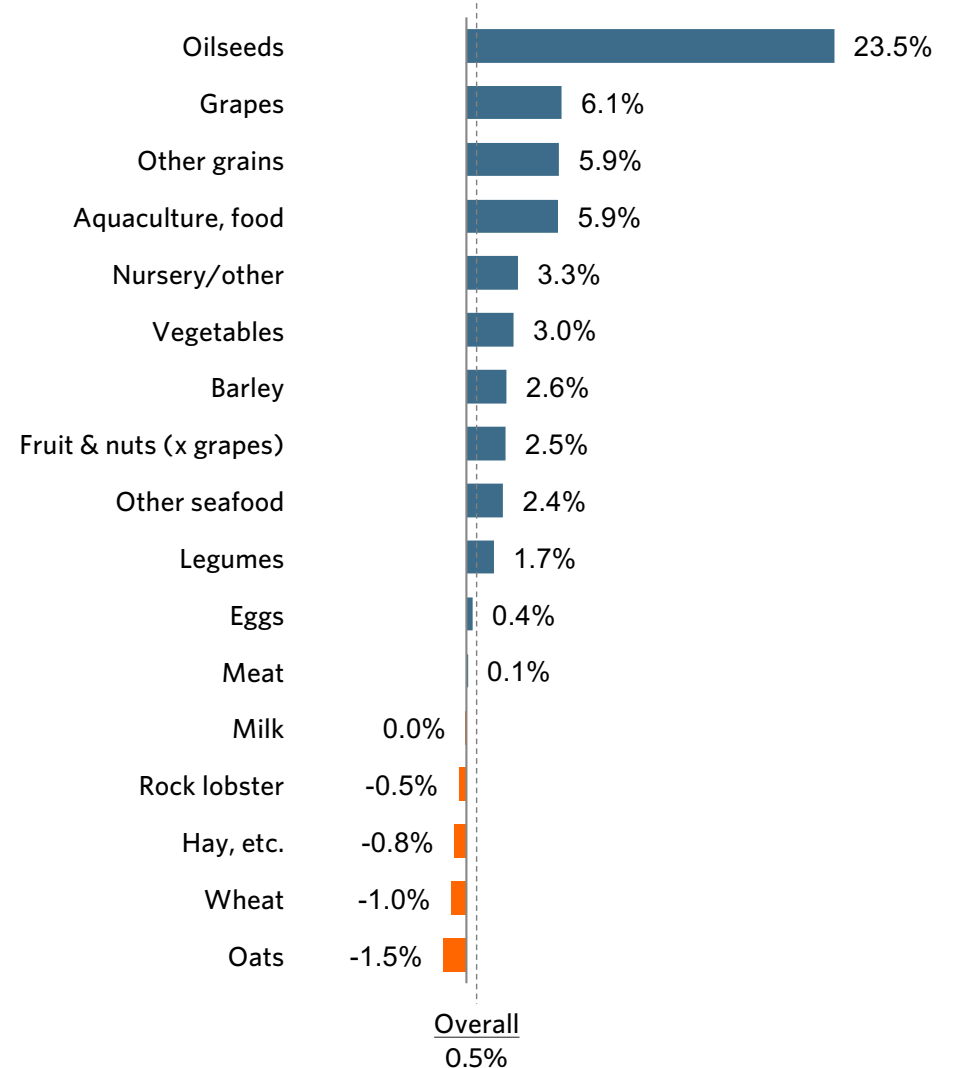
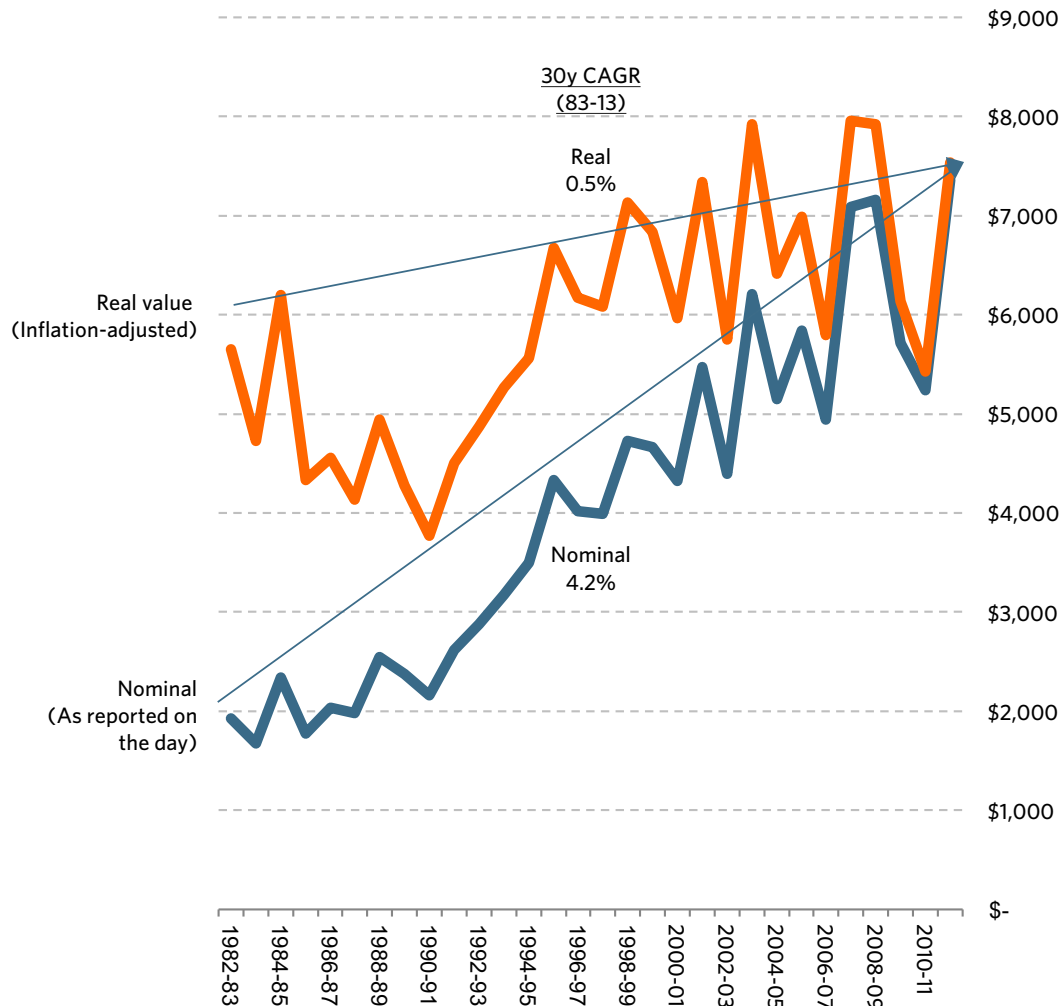
1. Focus is food; chart excludes fibre (wool and cotton) and forestry; 2. Food aquaculture, excludes pearls; Source: ABS 7503.0 Value of Agricultural Commodities Produced (various); ABS 7501.0 Value of Principal Ag Commodities Preliminary (various); ABARE Australian Fisheries Statistics (various years); WA Statistical Yearbook (various years); Coriolis analysis and estimates

INFLATION-ADJUSTED

However, adjusting for inflation reveals an industry struggling to grow in real terms; a handful of sectors stand out for having created meaningful long-term growth (particularly oilseeds)

VALUE OF AGRI-FOOD PRODUCTION: NOMINAL & REAL
A\$m; 82/83-12/13

30 YEAR REAL PRODUCTION VALUE GROWTH RATE CAGR
% of A\$; CAGR; inflation-adjusted; 82/83-12/13



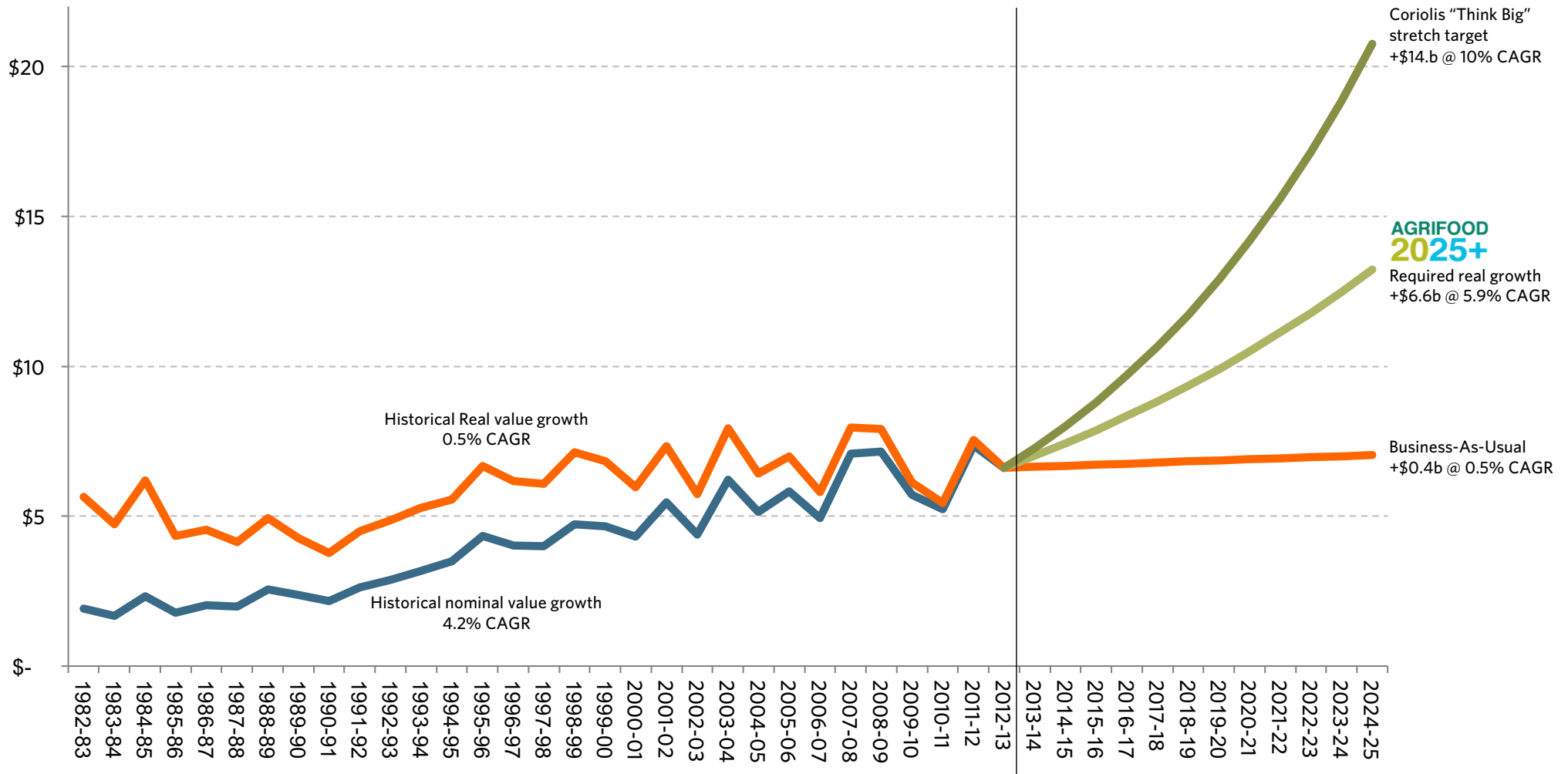
Source: page prior sources; ABS 6401.0 Consumer Price Index; Coriolis analysis

GROWTH TARGETS

The government has set the goal of doubling agrifood in real terms by 2025; this will require real growth of 5.9%/pa creating \$6.6b in new activity; we believe this is possible and propose a stretch target of +\$14b

VALUE OF AGRI-FOOD PRODUCTION IN WESTERN AUSTRALIA: HISTORICAL ACTUAL AND THREE MODELS FOR GROWTH

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



GOVERNMENT INVESTING

The State Government recognises the challenges involved in transforming Western Australian agriculture and is investing almost \$300m in the Seizing the Opportunity program, itself building on past investment

The State Government will deliver on key commitments in agriculture with \$297.5m over four years to help Western Australia's agriculture and food sector to capture market opportunities in Asia.

This \$297.5m from Royalties for Regions for the 'Seizing the Opportunity' initiative reflects unprecedented State Government investment in agriculture

This builds on the State Government's existing investment in agriculture, including

- \$311m Ord Expansion Project
- \$30m Australian Export Grains Innovation Centre
- \$10m for Muresk
- \$178m investment in upgrading road and rail infrastructure in the Wheatbelt

"This is a **landmark initiative** that provides \$297.5million to ensure our agricultural sector is positioned to capitalise on the growing global demand for food and agricultural products - much of it right on our doorstep. The program will focus on short and medium-term strategies to assist WA businesses to capture the opportunities presented in Asia, the Middle East and other new markets - markets that need to secure food supplies for their population."

Treasurer Troy Buswell, Aug 2013

"60 per cent of the world's population is in the same time zone as WA, which made the State well placed to capitalise on demand from Asia's rapidly expanding middle class. There's never been greater **opportunity** for our agriculture and food sectors to secure new markets and increase productivity and profitability. This funding will help to promote local products and attract new investment in agriculture, as well as build business skills, research and development and create efficient supply chains."

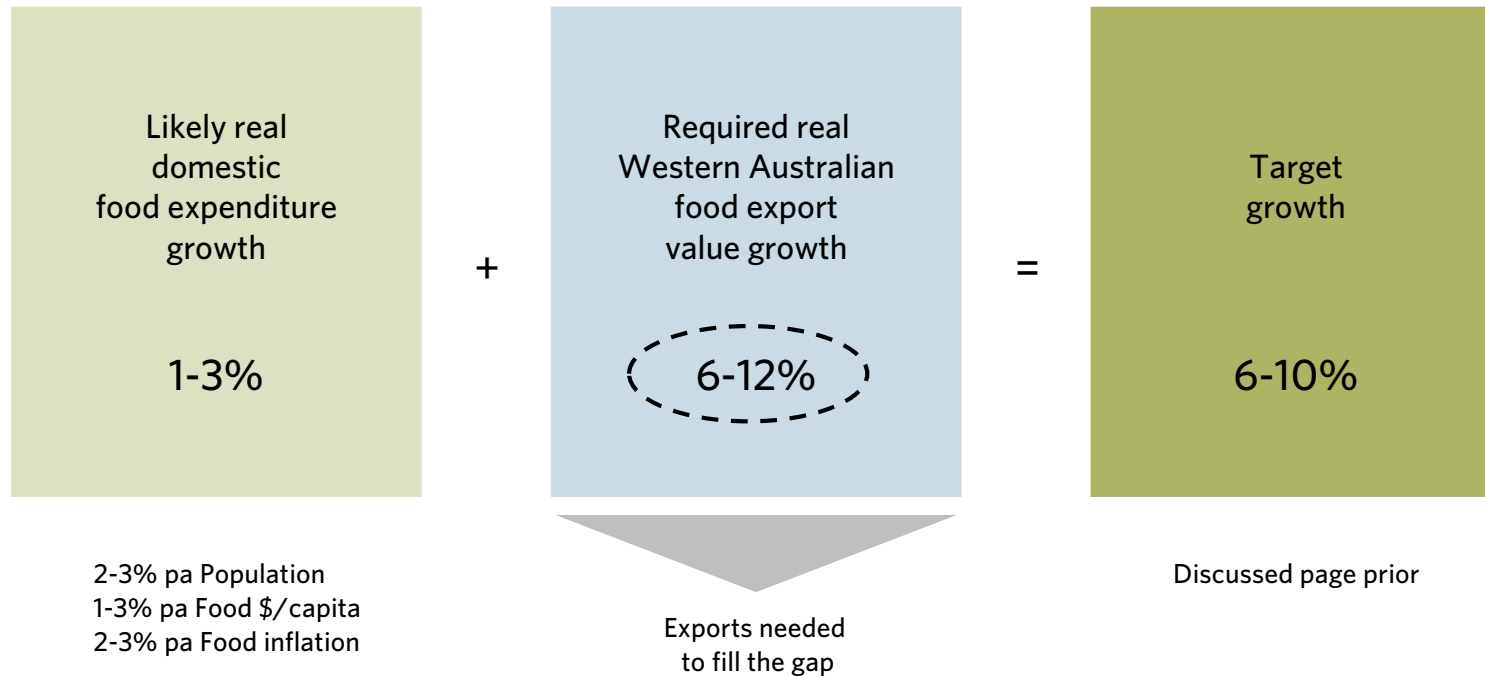
Agriculture and Food Minister Ken Baston, Aug 2013

"There are **huge opportunities** for Australian agriculture, and through this **unprecedented** package we hope to provide the industry with the skills and resources they need to attract investment and capitalise on Asia's growing demand for food. Just as strategic government investment in the resources sector has underpinned economic growth in WA, this package aims to drive similar opportunities for agriculture. This package is an important stimulus for agricultural businesses and will support them as they present products and opportunities to markets and investors."

Regional Development Minister Brendon Grylls, Aug 2013

EXPORT GROWTH REQUIRED

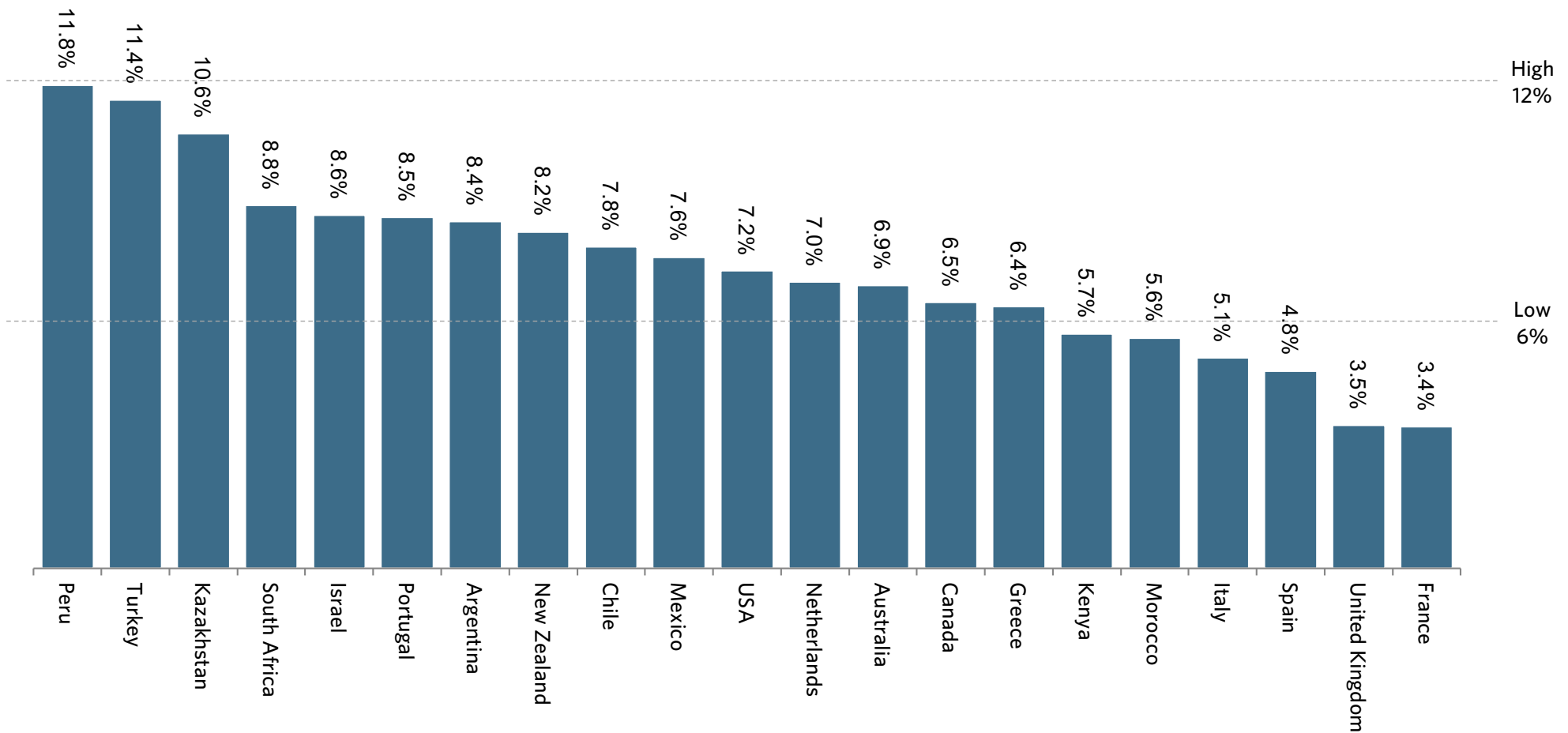
With low domestic food expenditure growth, achieving this target growth will require strong export growth to “fill the gap”



PEERS REAL EXPORT GROWTH

Growing agrifood exports at a 6-12% CAGR is not impossible; many climatic and cultural peers have achieved growth rates in this range over the past decade, through production growth and demand from Asia

10 YEAR REAL GROWTH COMPOUND ANNUAL GROWTH RATE IN TOTAL FOOD & BEVERAGE EXPORTS: WESTERN AUSTRALIA PEERS
CAGR on US\$; inflation-adjusted; 2003-2013



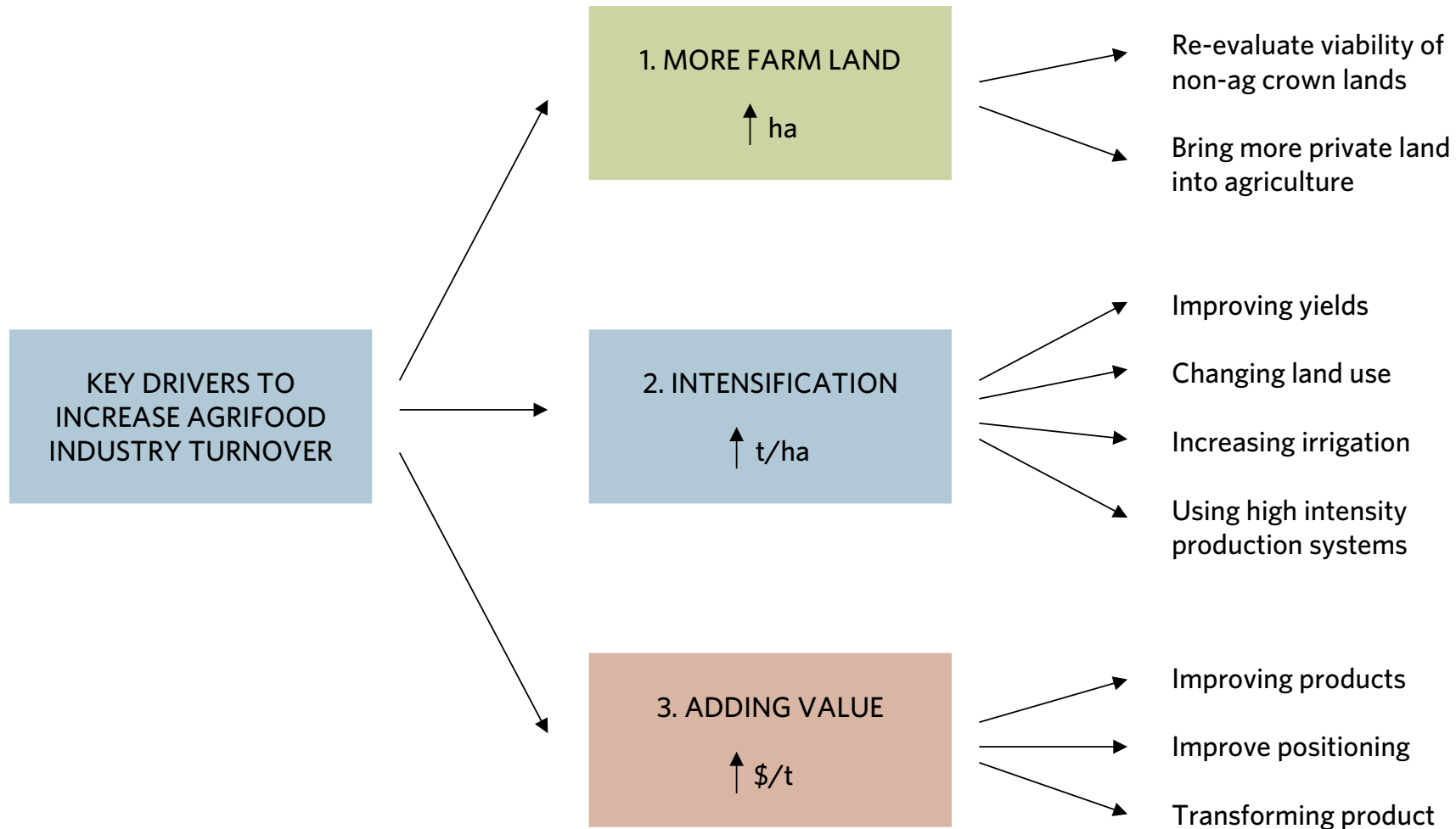
OUTLINE

What we want to achieve

How we could achieve it

KEY DRIVERS

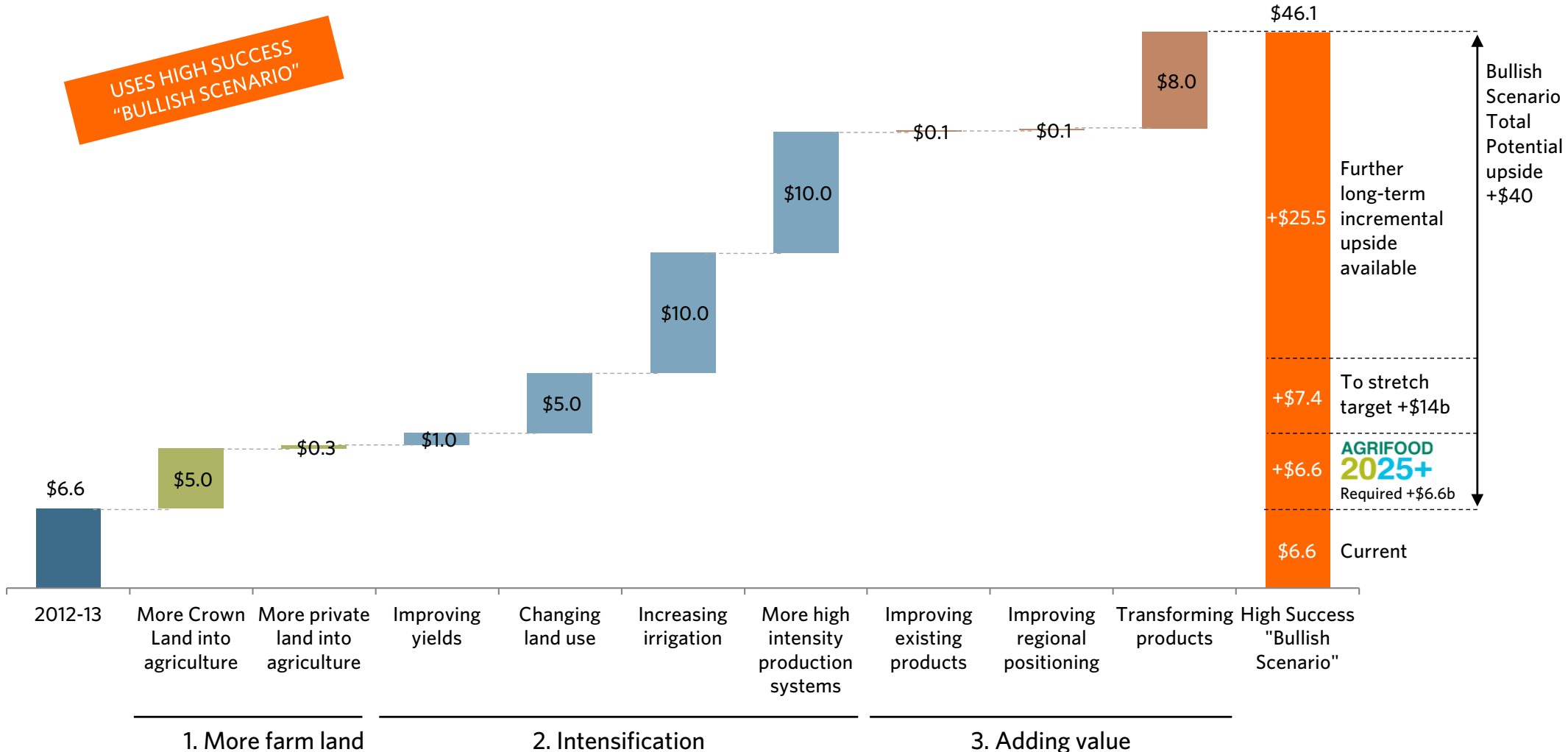
Broadly speaking, there are three key drivers available to increase the turnover of the agrifood industry in Western Australia



SOURCES OF GROWTH

Our analysis suggests these “big picture” drivers have the ability to create all the required growth (+\$6.6b to +\$14b); our “straw man” model (developed later) suggests up to \$40b is available

ESTIMATED INCREMENTAL VALUE OF DRIVERS/SOURCES OF AGRIFOOD GROWTH AVAILABLE TO WESTERN AUSTRALIA
A\$b; model



SOURCES OF GROWTH

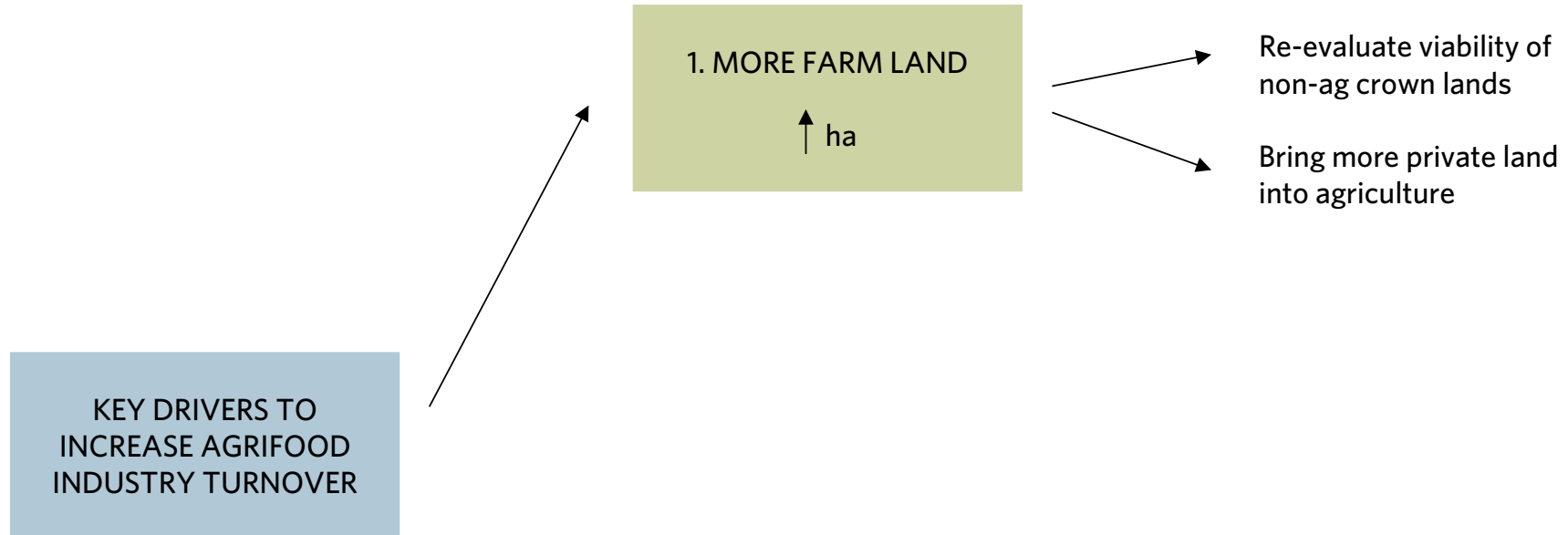
Our “straw man” analysis suggests anywhere from \$4b to \$40b in potential agrifood industry growth upside is available to Western Australia

PRELIMINARY
Likely subject to significant revision

Driver	Potential lever under this driver	Current situation in Western Australia	Incremental “Size of the prize” beyond business-as-usual	
			Low success “Bear scenario”	High success “Bullish scenario”
1. More farm land	Re-evaluate the viability of non-ag crown lands	More than a third of the state is “unallocated” government land and ~15% is non-ag/non-park \$0	Not much that is viable; slow process +\$500m	Infrastructure and irrigation change the equation +\$5b
	Bring more private lands into agriculture	An unclear amount of private land not farmed \$0	All good land already used +\$-	New infrastructure enables new private land use +\$200-300m
2. Intensification	Improving yields	Yields typically trail key competitors for a range of reasons	Competed away; maintain status-quo +\$-	Get to US yields overall 20% increase +\$1b
	Changing land use	832,000 sq km farmed at \$72/ha	Good land already all in crops/hort; hard to change land use +\$500m	Infrastructure and irrigation change the equation +\$5b
	Increasing irrigation	\$800-900m (46,252ha x \$17-20k/ha)	Get to Mozambique Double area +\$1b	Get to Libya or Algeria 10x area +\$10b
	Using high intensity production systems	Very limited use of high intensity systems Greenhouses \$40m; food aquaculture \$16m Intensive chicken/pork/beef/lamb ~\$250m (TBC ?)	Limited success +\$1b	More like California or Texas +\$10b
3. Adding value	Improving products	Opportunities exist to improve the value of existing products to the in-market customer or final consumer	Achieved slowly but competed away to maintain status-quo +\$-	Achieve a 5% price premium on 50% of agrifood exports +\$120-130m
	Improving positioning	Opportunities exist to improve the positioning of WA agrifood to the in-market customer or the consumer	Already built in to buyer pricing; acts to maintain status-quo +\$-	Create a 5% price premium on 50% of agrifood exports +\$120-130m
	Transforming products	Most exports leave as raw material ingredients not consumer/foodservice-ready final products	Get to Finland +\$1b	Get to Denmark +\$8b
TOTAL		Industry \$7b / Exports \$4.9b	Almost double exports +\$4b	8-10x upside on exports +\$40b

1. MORE FARM LAND

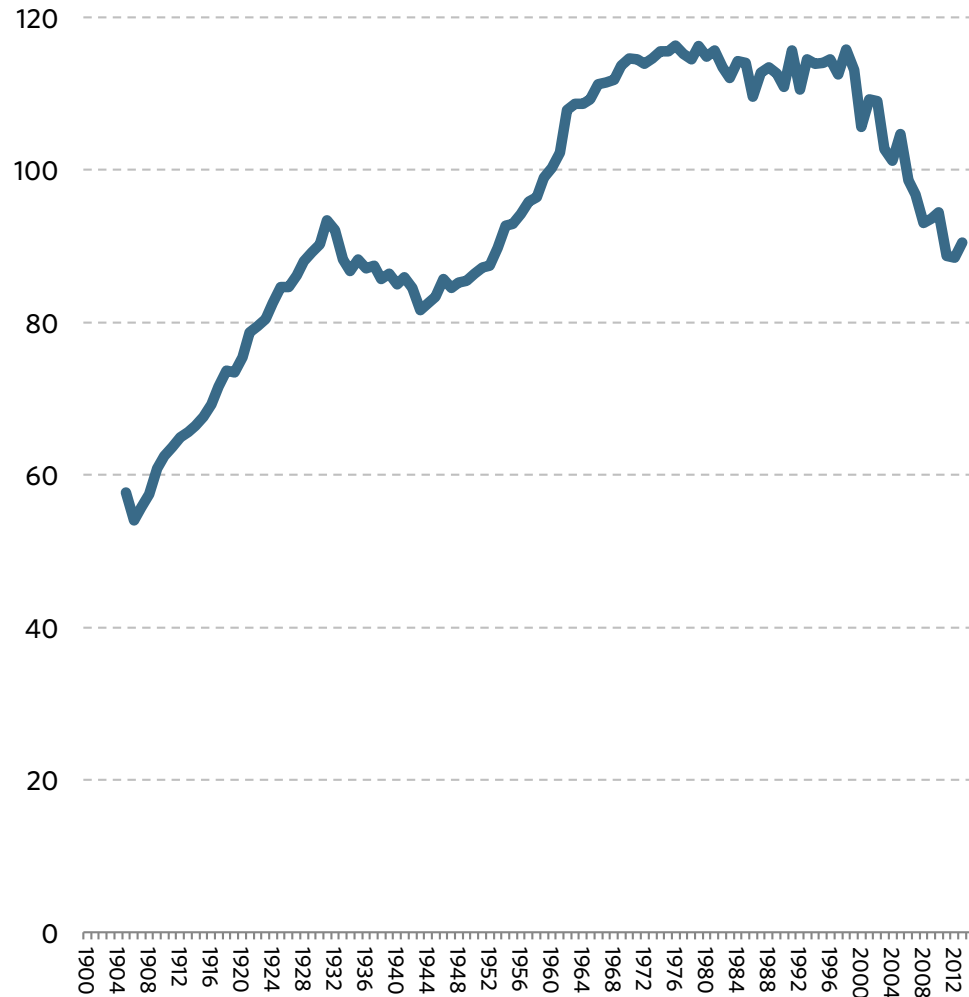
The first potential driver is to bring new land into agriculture



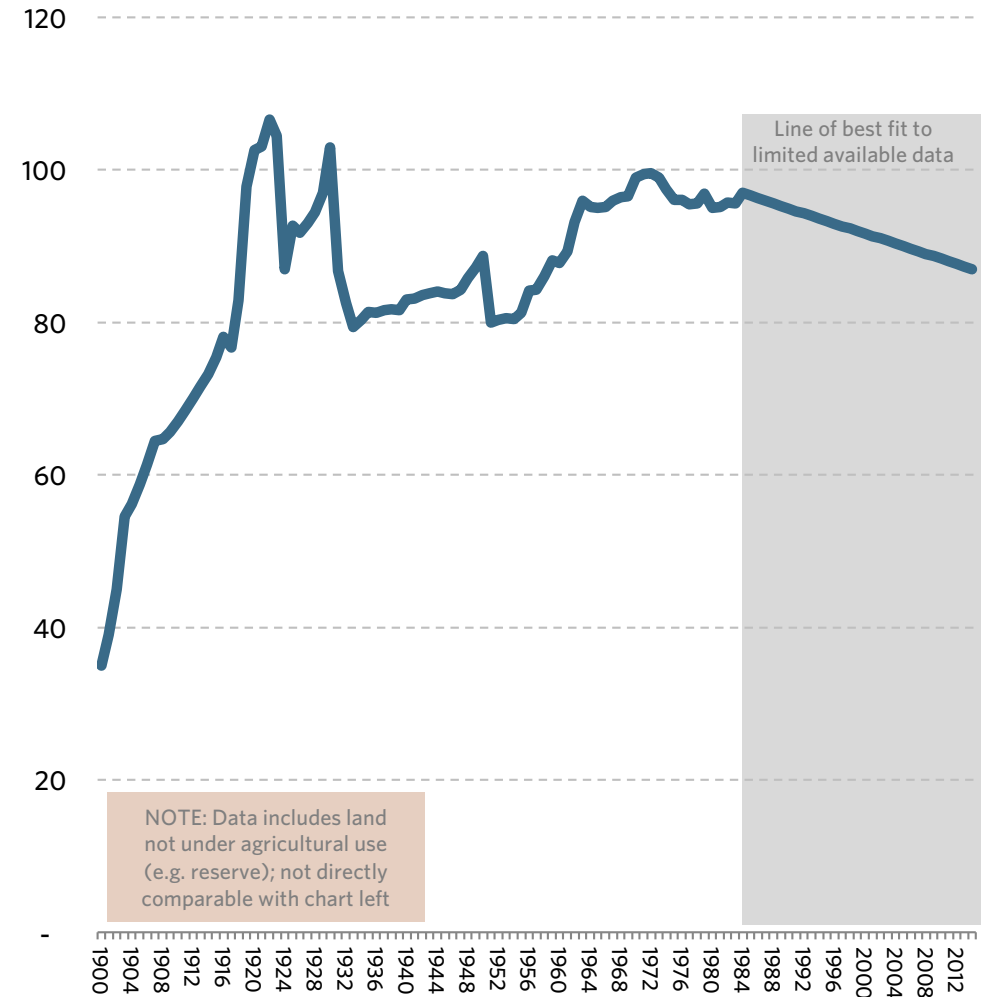
MORE FARM LAND (+\$500m to \$5.3b)

The amount of agricultural land in Western Australia has been trending down

TOTAL LAND USED IN WA IN AGRICULTURAL ESTABLISHMENTS
Ha; m; 1900-2014



AREA UNDER PASTORAL LEASES IN WA
Ha; m; 1900-2014



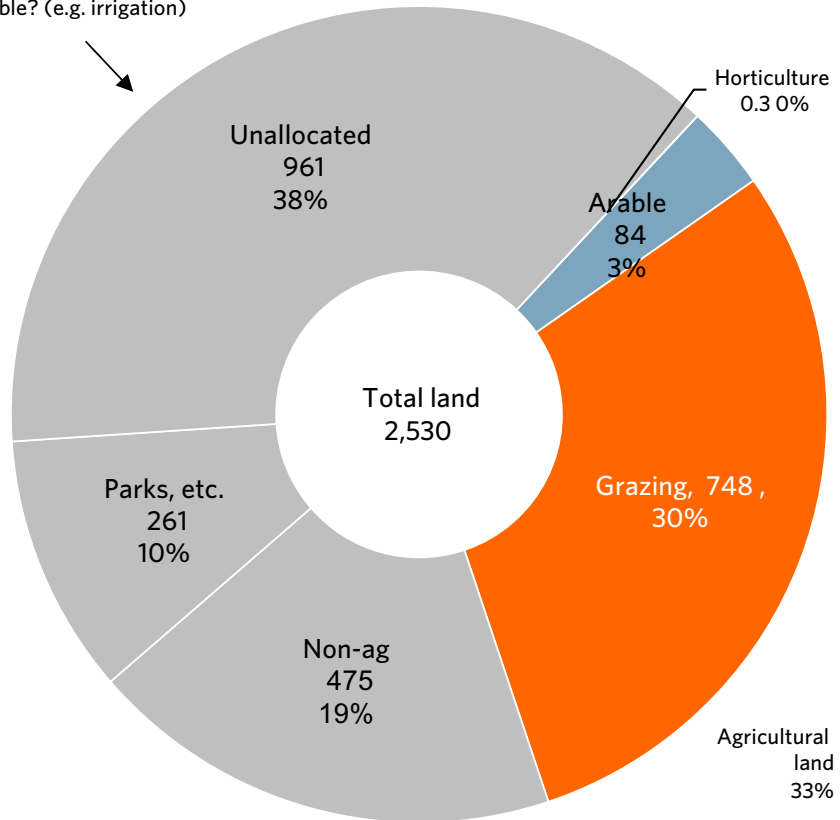
MORE FARM LAND (+\$500m to \$5.3b)

Only a third of Western Australia is farmed and 93% of all land is owned by the government; any significant increase in farmland would need to come from re-evaluating the crown estate

WA LAND USE IN FARMING AND SELECT OTHER USES

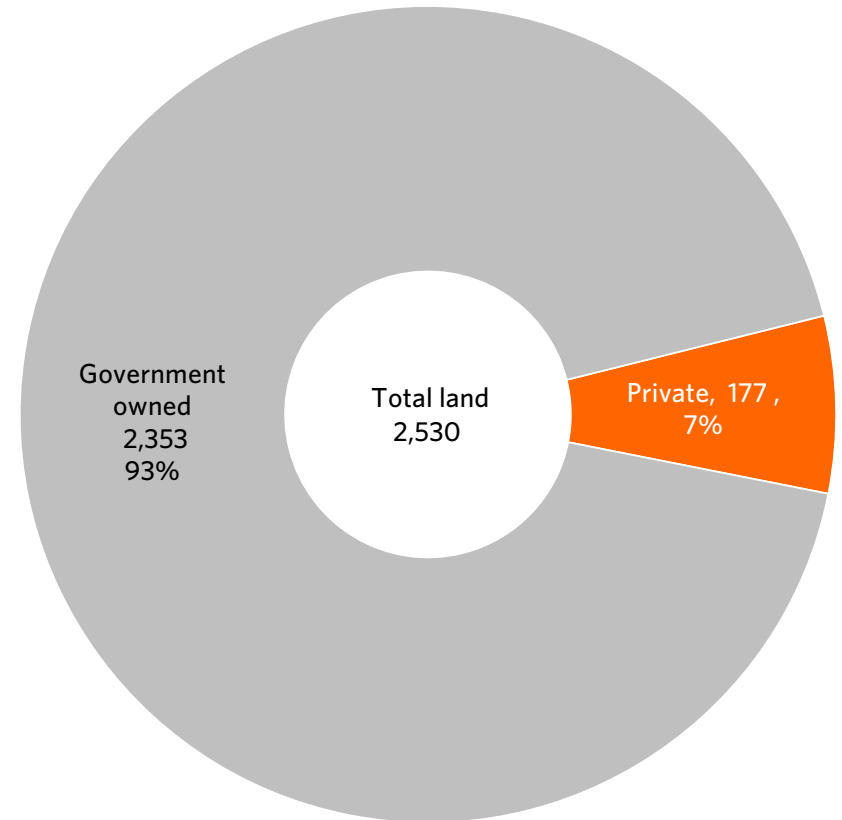
Sq km; 000; 2013

European settlers didn't want this land 100 years ago. Does new technology make any of this viable? (e.g. irrigation)



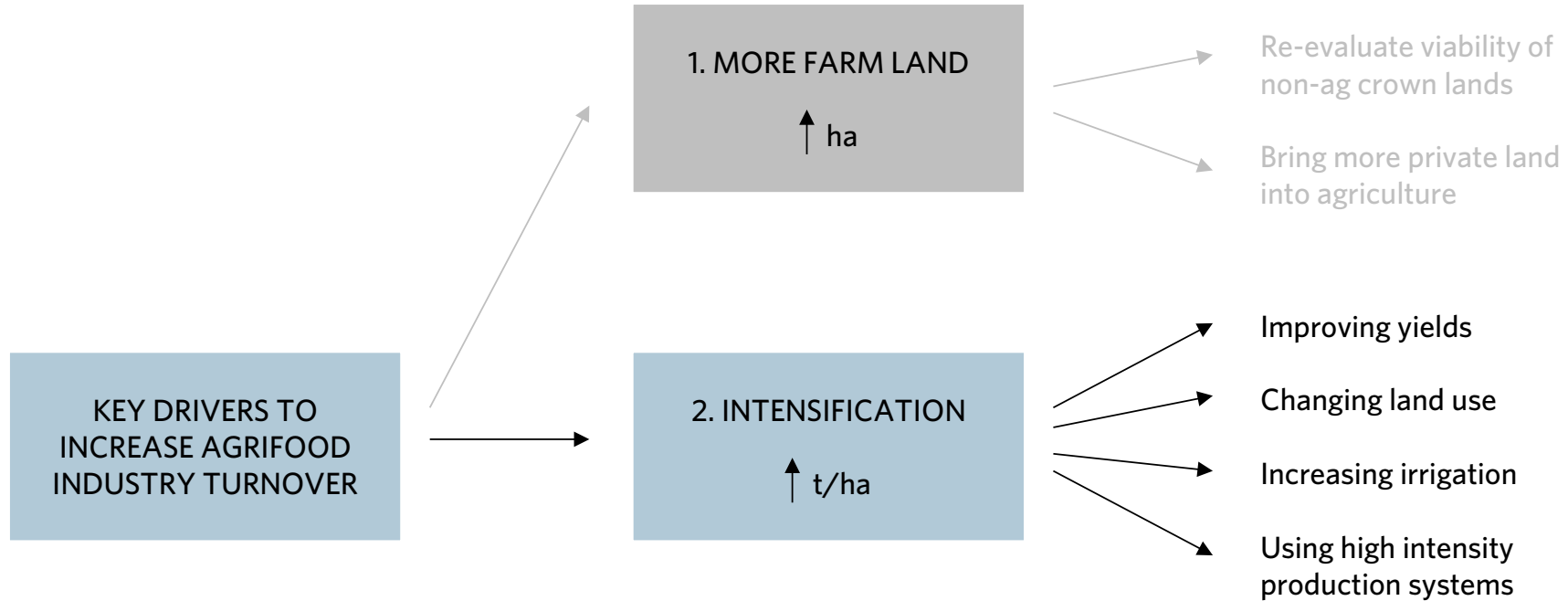
WA LAND OWNERSHIP

Sq km; 000; 2010



2. INTENSIFICATION

The second potential driver is to intensify the use of existing land to increase its output

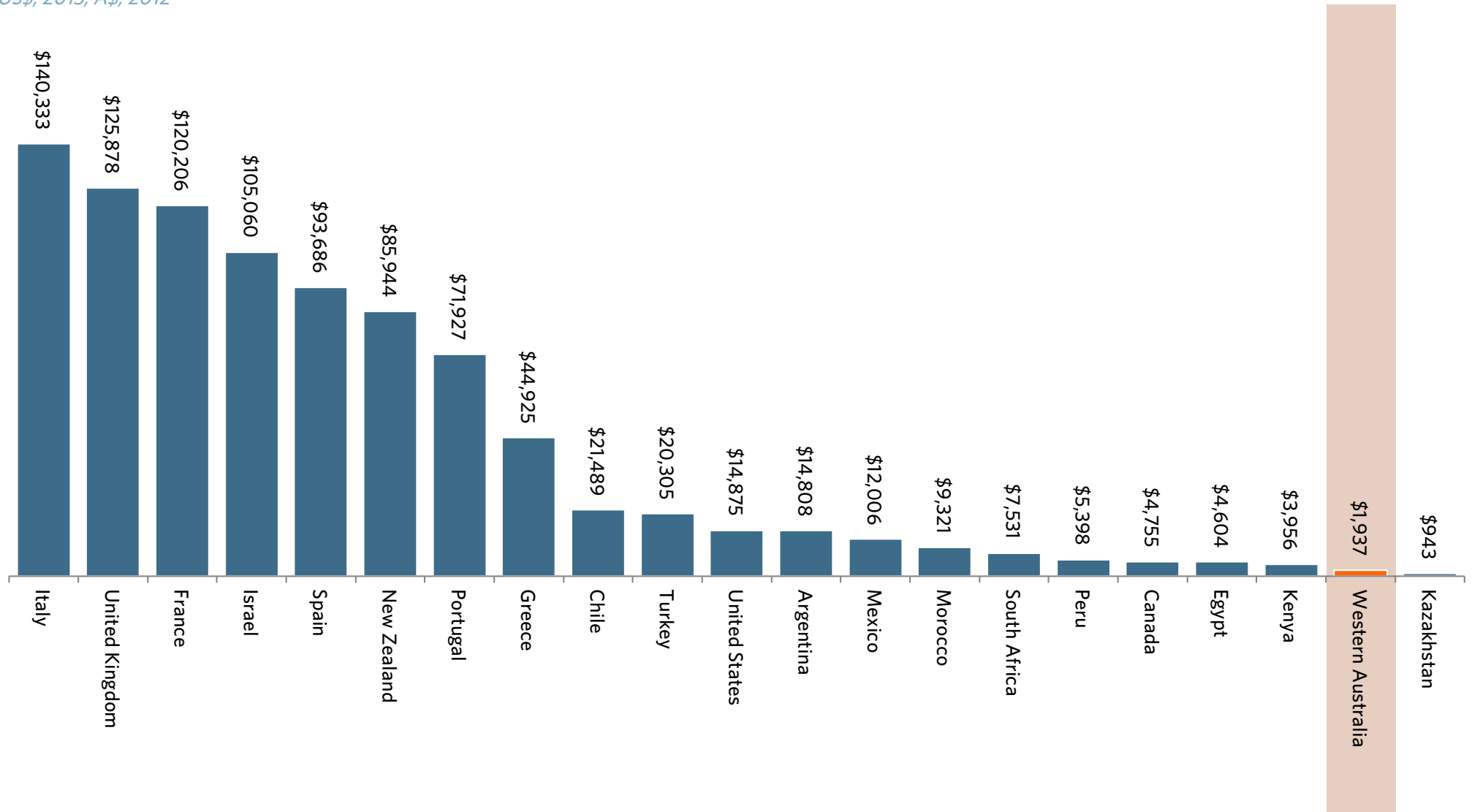


LOW EXPORTS PER SQUARE KM

Western Australia is not intensively farmed; the broad strategic direction for the state is to increase food & beverage exports per square kilometre

FOOD & BEVERAGE EXPORTS PER SQUARE KILOMETRE: WESTERN AUSTRALIA VS. SELECT PEERS

US\$; 2013; A\$; 2012

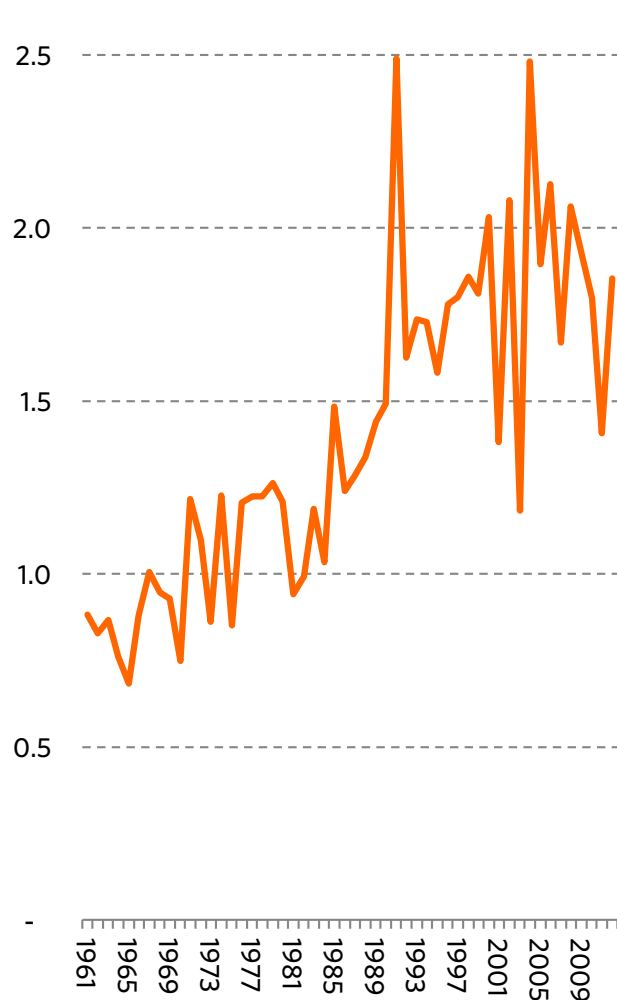


IMPROVING YIELDS (\$0 to \$1b)

Western Australian yields typically trail those in other regions, with the state constantly playing “catch-up,” as this example from barley shows

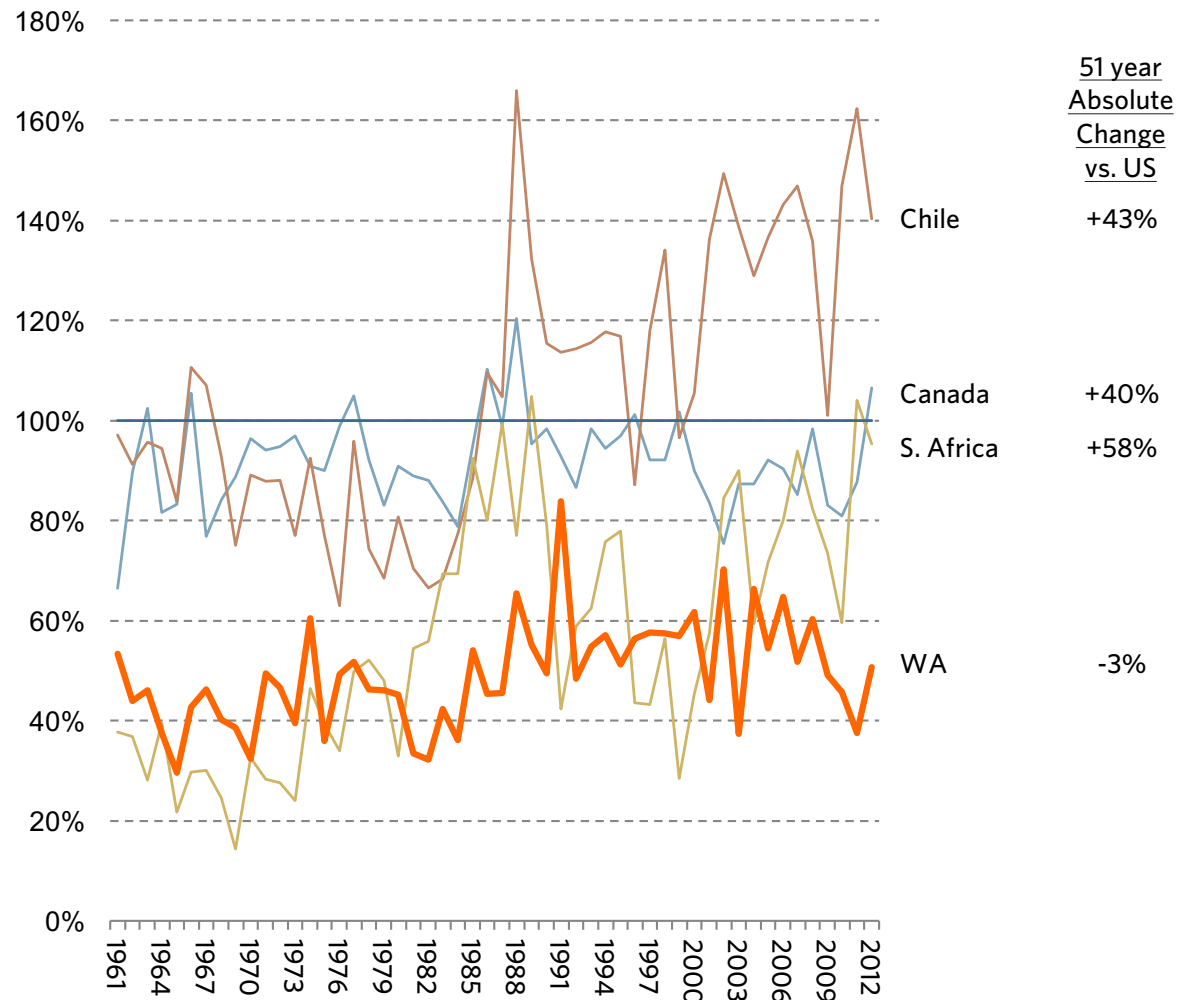
EXAMPLE: WA BARLEY YIELD

T/ha; 1961-2012



YIELD AS A % OF USA YIELD

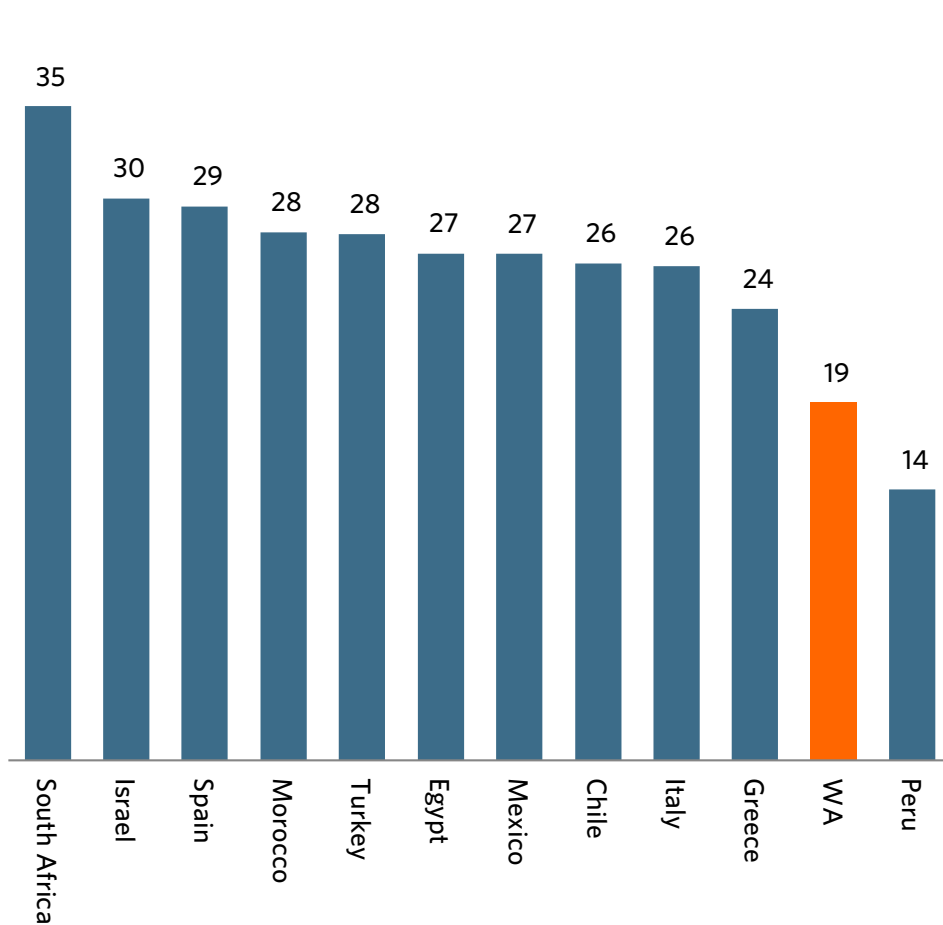
% of US yield; 1961-2012



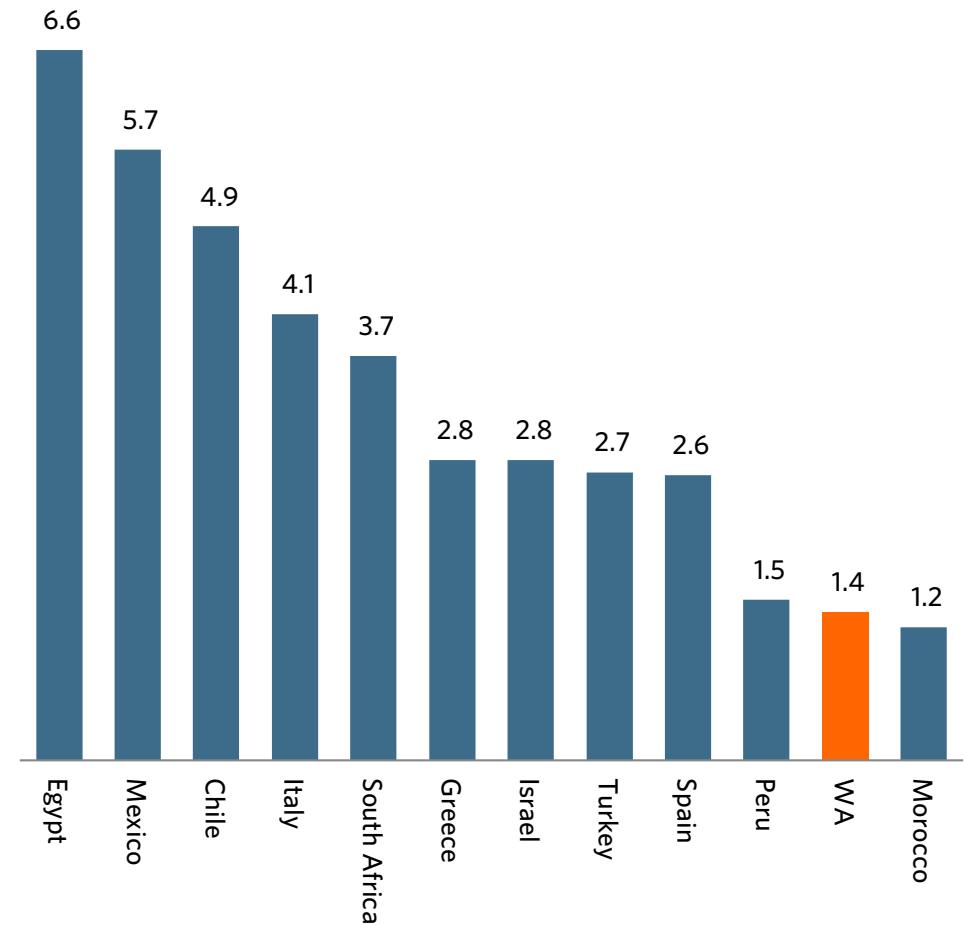
IMPROVING YIELDS (\$0 to \$1b)

Almost across the board, Western Australia achieves low yields relative to a wide range of climatic peers

EXAMPLE: WA POTATO YIELD VS. SELECT PEERS
T/ha; 2012



EXAMPLE: WA WHEAT YIELD VS. SELECT PEERS
T/ha; 2012

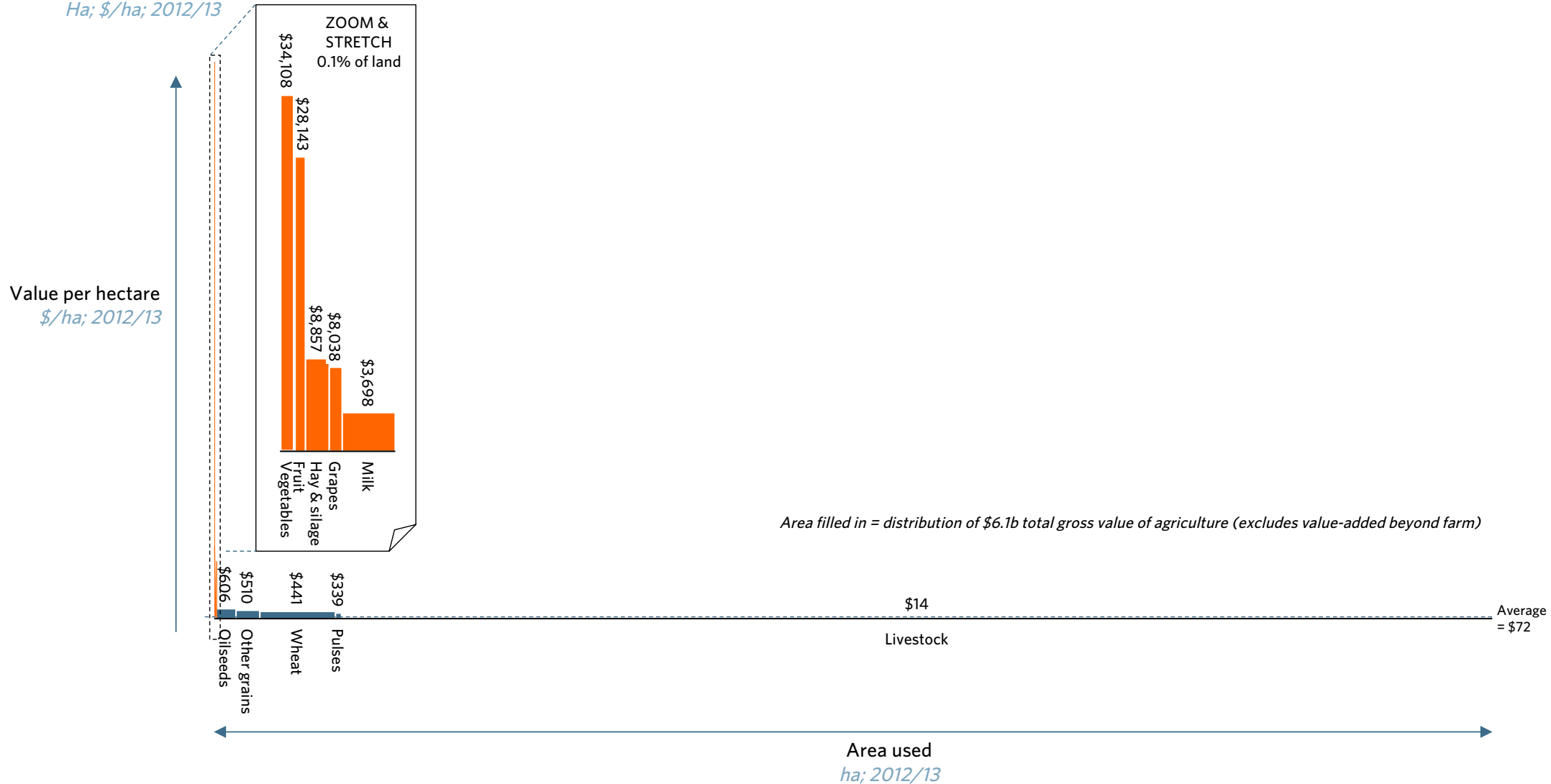


CHANGING LAND USE (\$500m to \$5b)

The vast majority of Western Australian agricultural land currently generates very low value per hectare; only 0.1% of land generates over \$1,000 per hectare

LAND-BASED AGRICULTURE IN WA: AREA USED VS. VALUE PER HECTARE

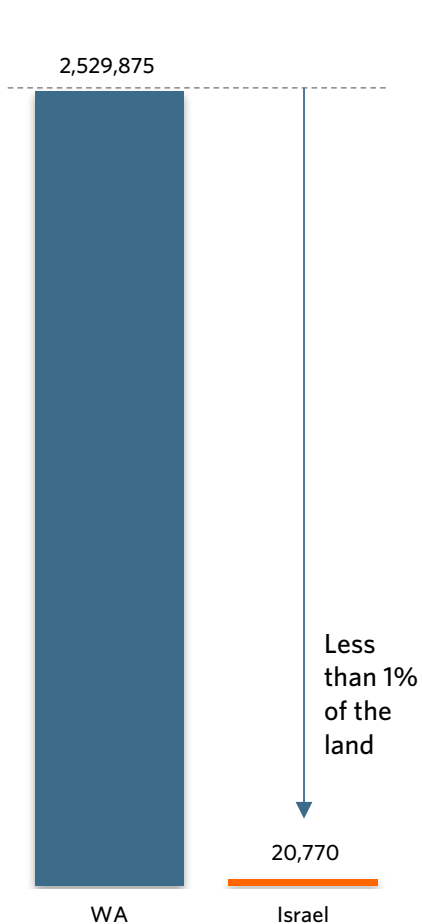
Ha; \$/ha; 2012/13



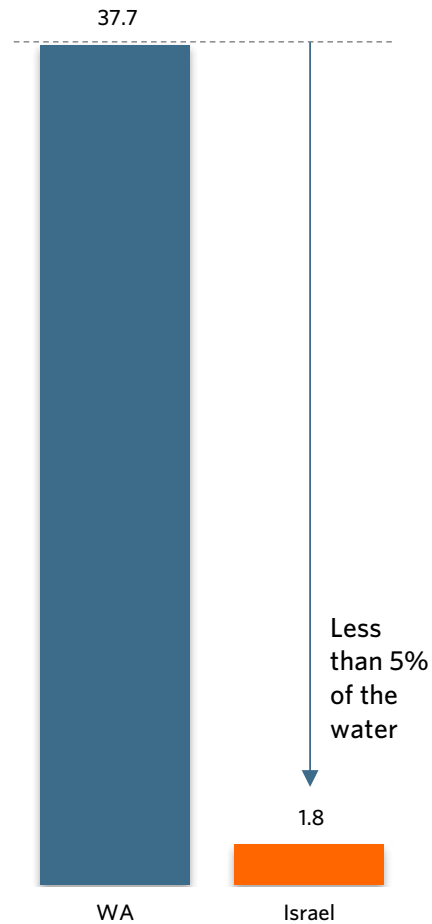
CHANGING LAND USE (\$500m to \$5b)

Israel demonstrates what is possible, generating twice the value of Western Australia on 1% of the land and 5% of the water

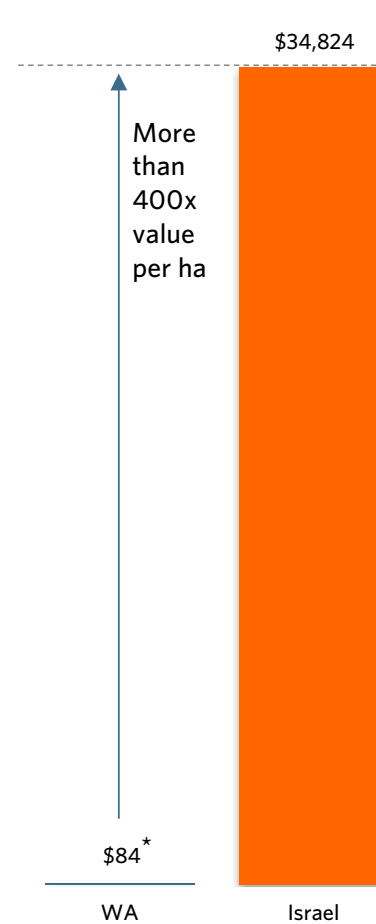
TOTAL REGIONAL AREA
Sq km; 2014



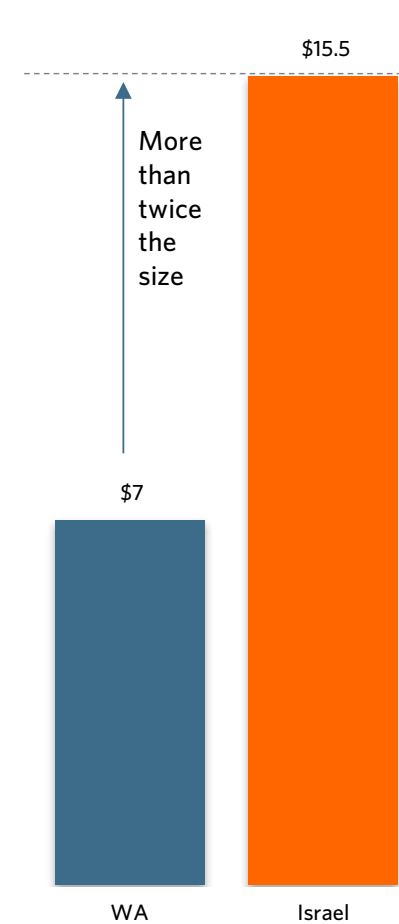
RENEWABLE WATER
Cu km; 2013



TOTAL F&B VALUE/AG HA
\$/ha; 2013



TOTAL F&B INDUSTRY VALUE
A\$/US\$; billions; 2013



* Includes value added to agricultural products (unlike \$72 page prior)

Source: CIA World Fact Book; ABS (various data sets); DAFWA; National Water Commission Australian Water Resource 2005; Coriolis analysis

CHANGING LAND USE - MORE HORTICULTURE

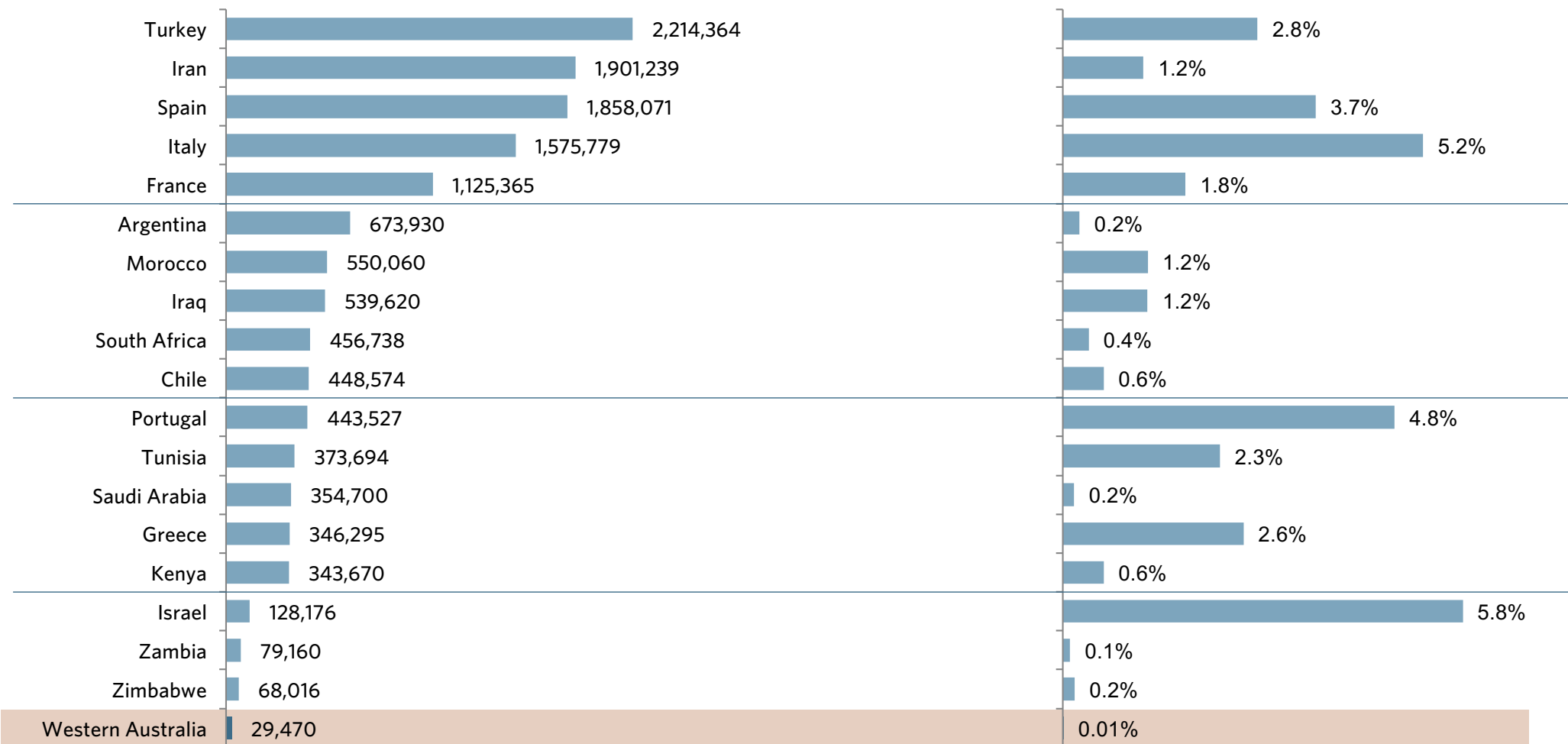
Peer group suggest using more land in high-value horticulture is possible

AREA IN FRUIT & VEGETABLES: WESTERN AUSTRALIA VS. SELECT PEERS

Hectare; 2012

PERCENT OF TOTAL COUNTRY/REGION AREA

% of ha; 2013

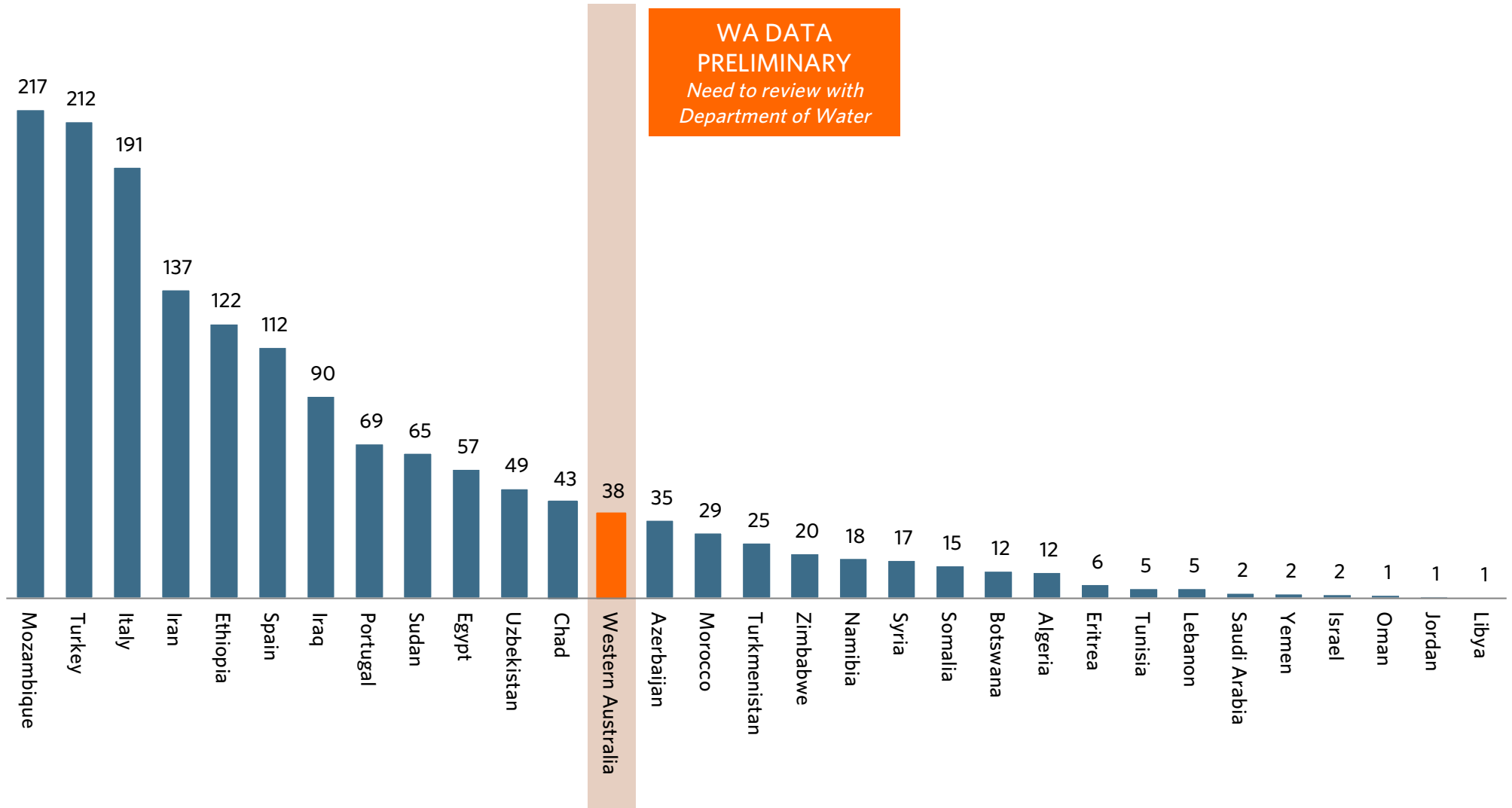


INCREASING IRRIGATION (\$1b to \$10b)

While Australia may be “the driest continent”, Western Australia has a reasonable amount of water relative to climatic peers

TOTAL RENEWABLE WATER RESOURCE: WESTERN AUSTRALIA VS. CLIMATIC PEERS

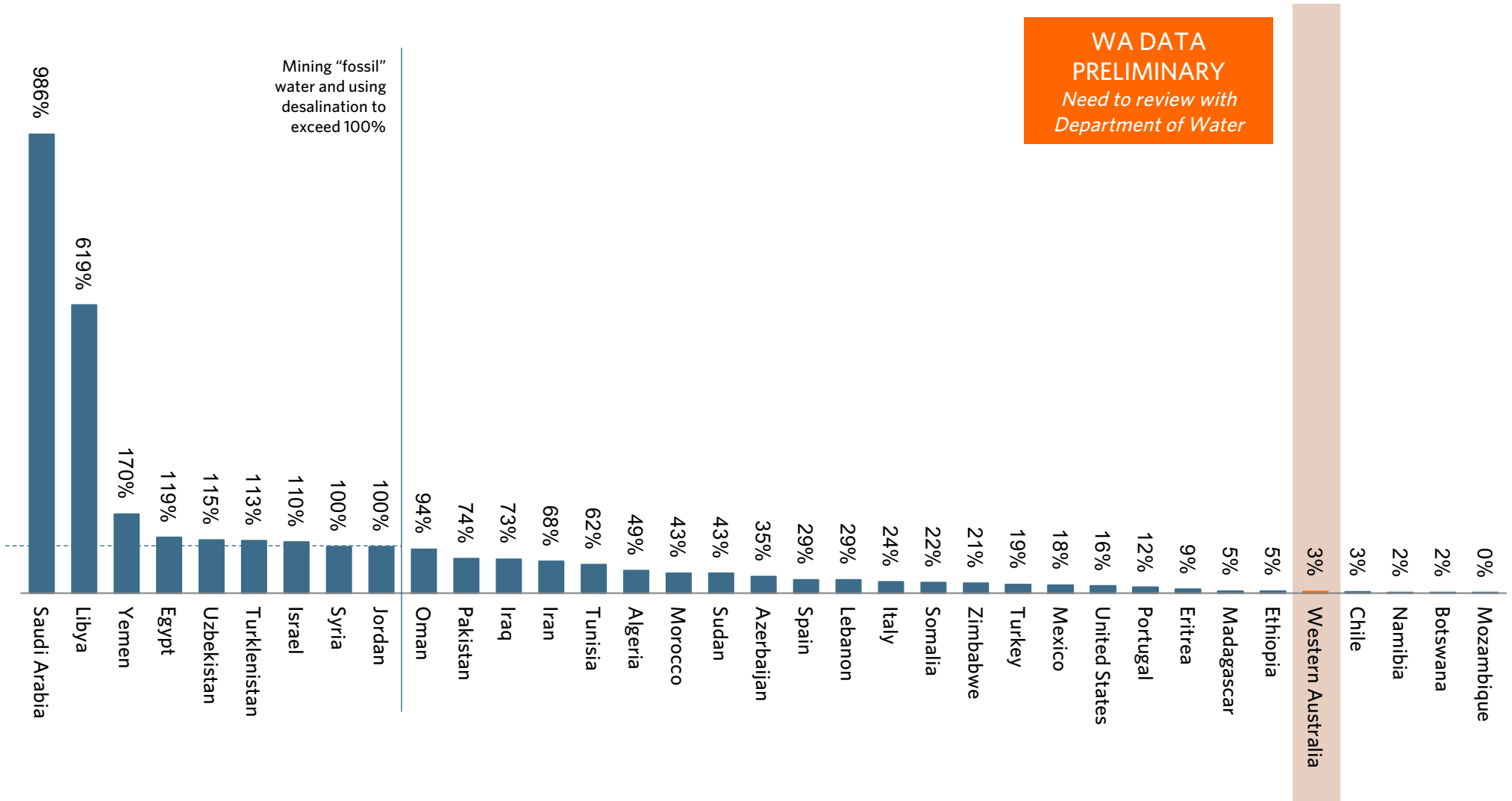
Cubic kilometres; 2011



INCREASING IRRIGATION (\$1b to \$10b)

Relative to a wide-ranging peer group, Western Australia uses a small percent (3%) of its total renewable water resource

FRESHWATER WITHDRAWAL AS A PERCENT OF TOTAL RENEWABLE WATER RESOURCE: WESTERN AUSTRALIA VS. CLIMATIC PEERS
% of cu km; 2011

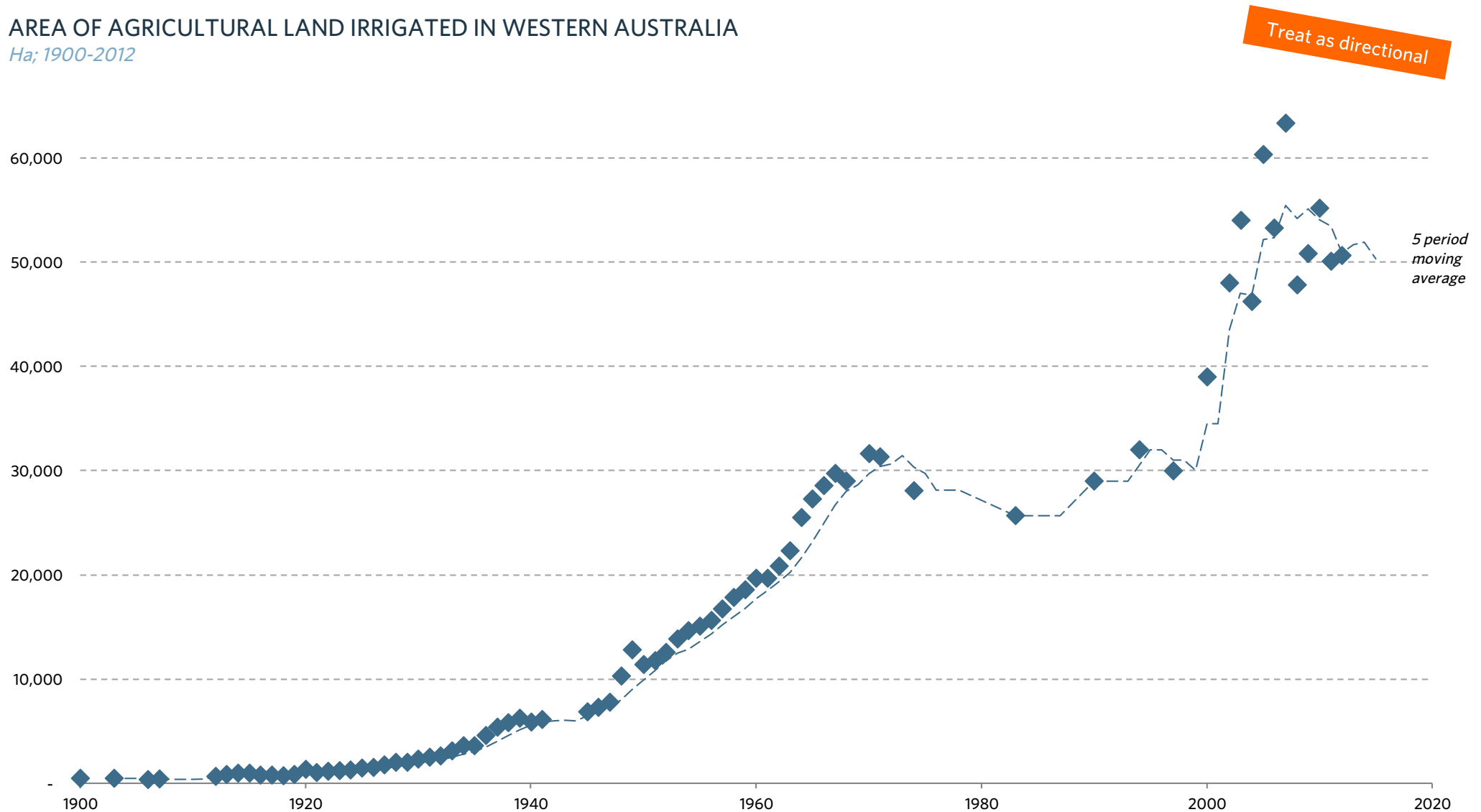


INCREASING IRRIGATION (\$1b to \$10b)

The amount of land irrigated in Western Australia has been growing long term

AREA OF AGRICULTURAL LAND IRRIGATED IN WESTERN AUSTRALIA

Ha; 1900-2012

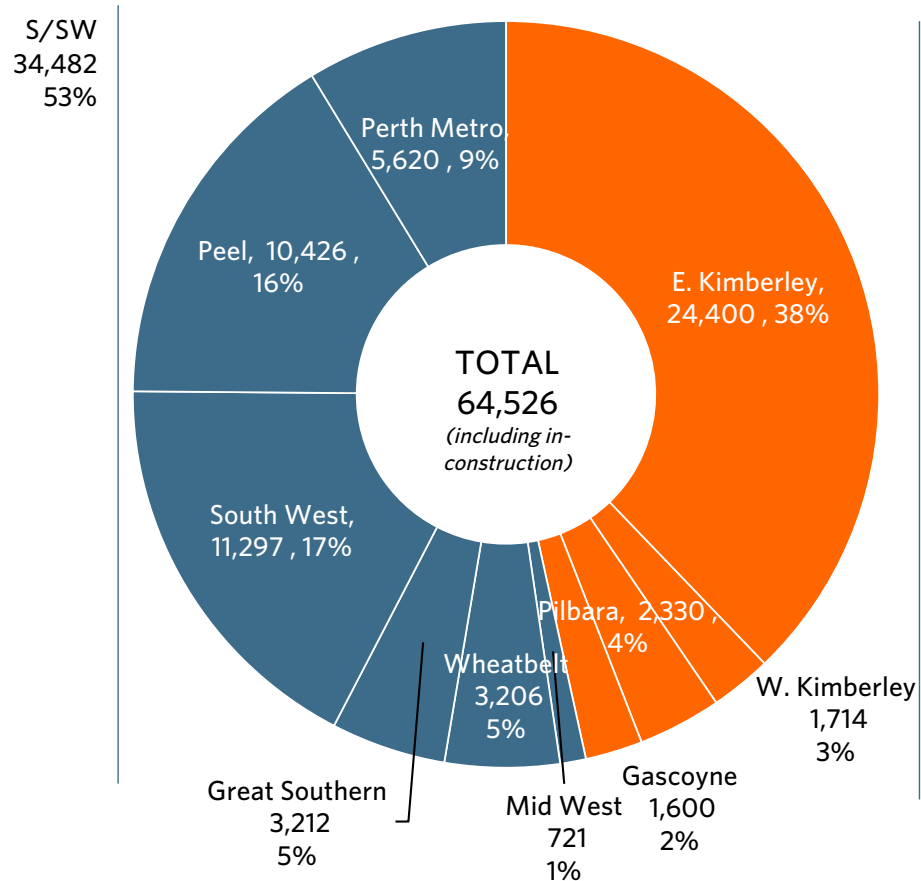


INCREASING IRRIGATION (\$1b to \$10b)

Currently the North and South of the state have about the same amount of irrigated area; long term growth in irrigated area has been stronger in the North of the state

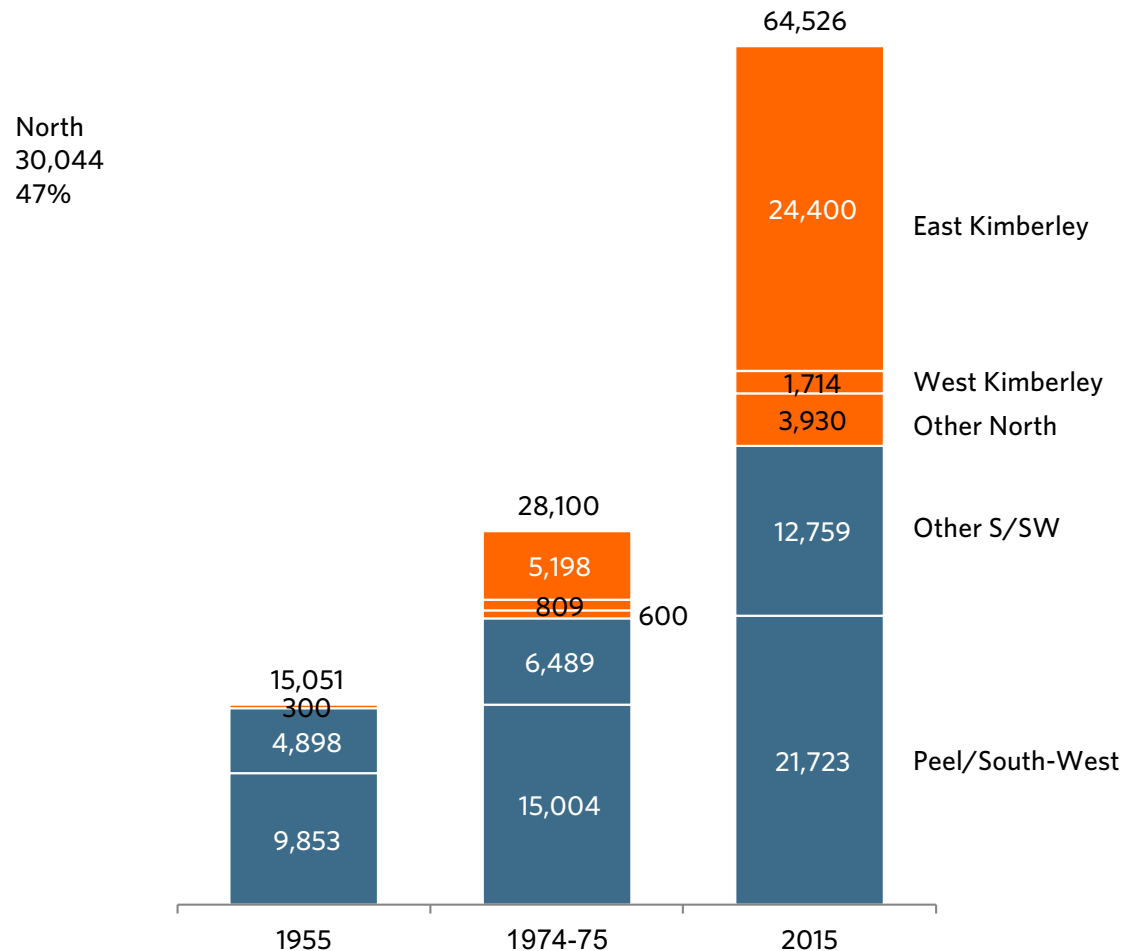
IRRIGATION AREA BY REGION: CURRENT & IN-CONSTRUCTION

Hectare; 2015



IRRIGATION AREA BY SUPER-REGION

Ha; 1955/1974-75/2015



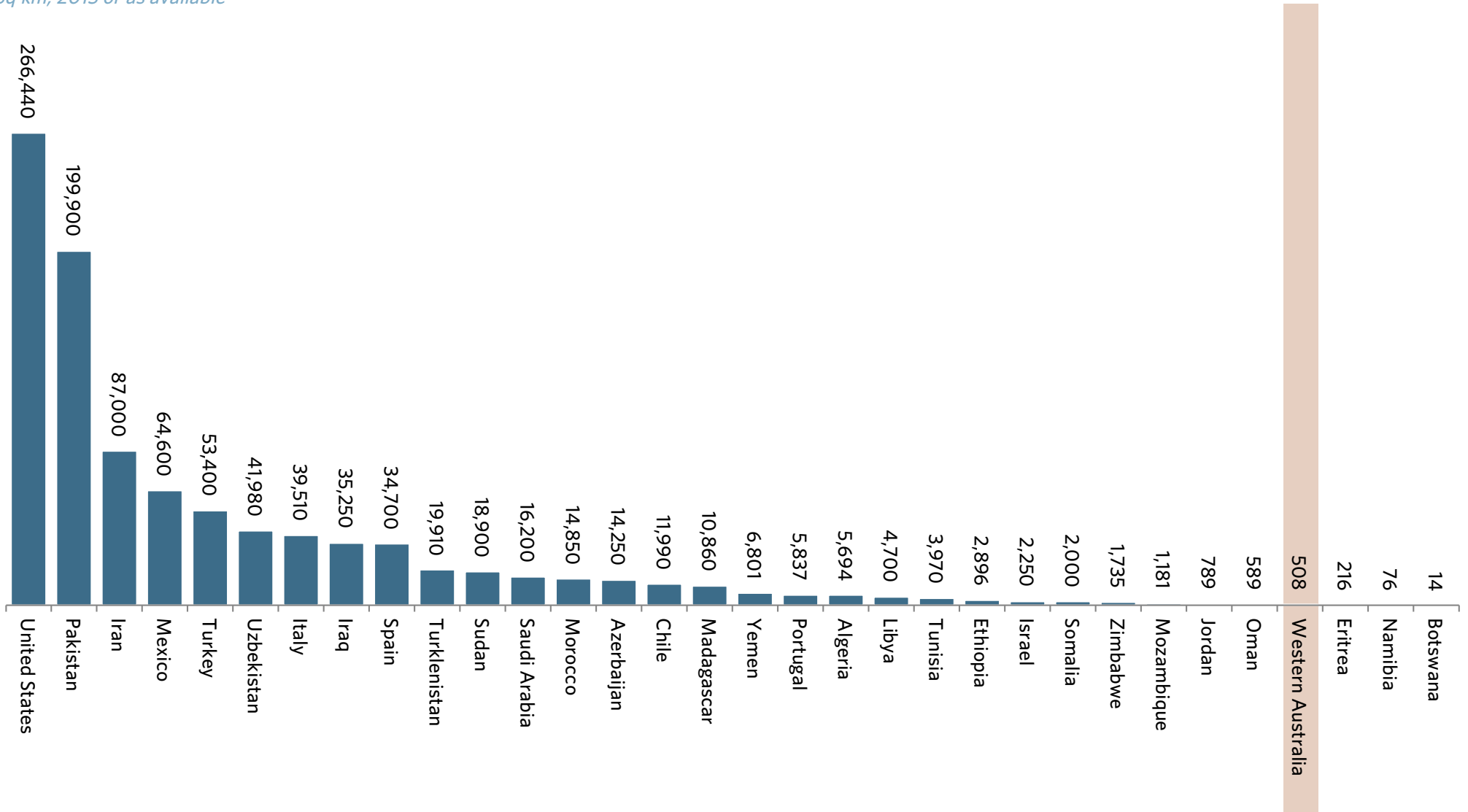
Note: "Other North" 1955 (300) and 1974 (600) currently Coriolis estimate; Source: Water For Food brochure (p3); Planning to develop sustainable irrigated agriculture in Northern Western Australia (George, et al; 2004); State Water Strategy - Irrigation in Western Australia; ABS Gross Value of Irrigated Agricultural Production (various); various historical ABS publications; Coriolis analysis and estimates

INCREASING IRRIGATION (\$1b to \$10b)

Western Australia does not have a lot of irrigated land relative to a wide range of climatic peers

AREA IRRIGATED: WESTERN AUSTRALIA VS. SELECT CLIMATIC PEERS

Sq km; 2013 or as available

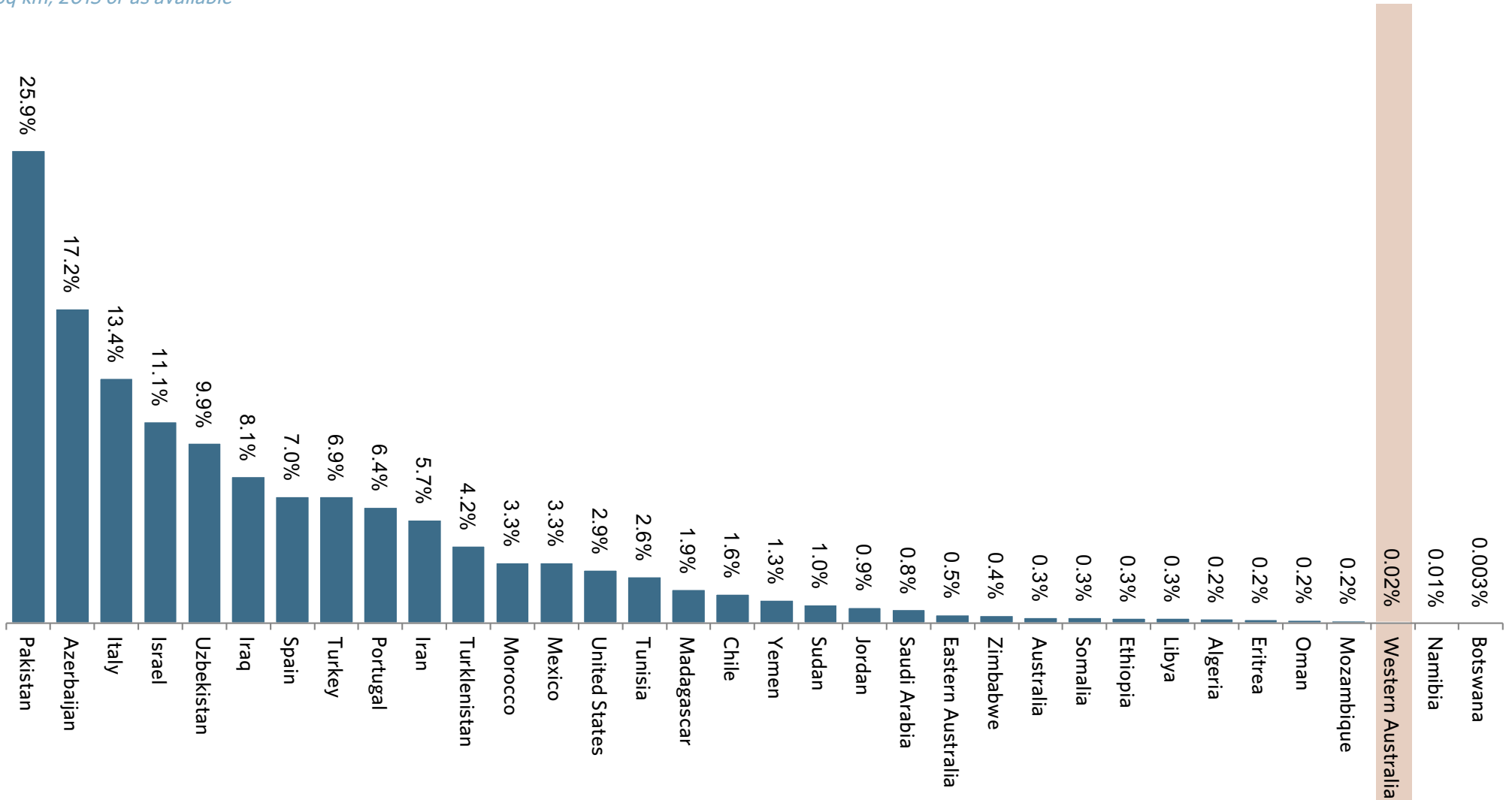


INCREASING IRRIGATION (\$1b to \$10b)

Relative to climatic peers, a very, very small percent of Western Australia is irrigated

PERCENT OF TOTAL LAND AREA IRRIGATED: WESTERN AUSTRALIA VS. SELECT CLIMATIC PEERS

Sq km; 2013 or as available



HIGH INTENSITY PRODUCTION SYSTEMS (\$1b to \$10b)

To date Western Australia has made limited moves into intensive production systems

Greenhouses



Lot Feeding

Barn Feeding



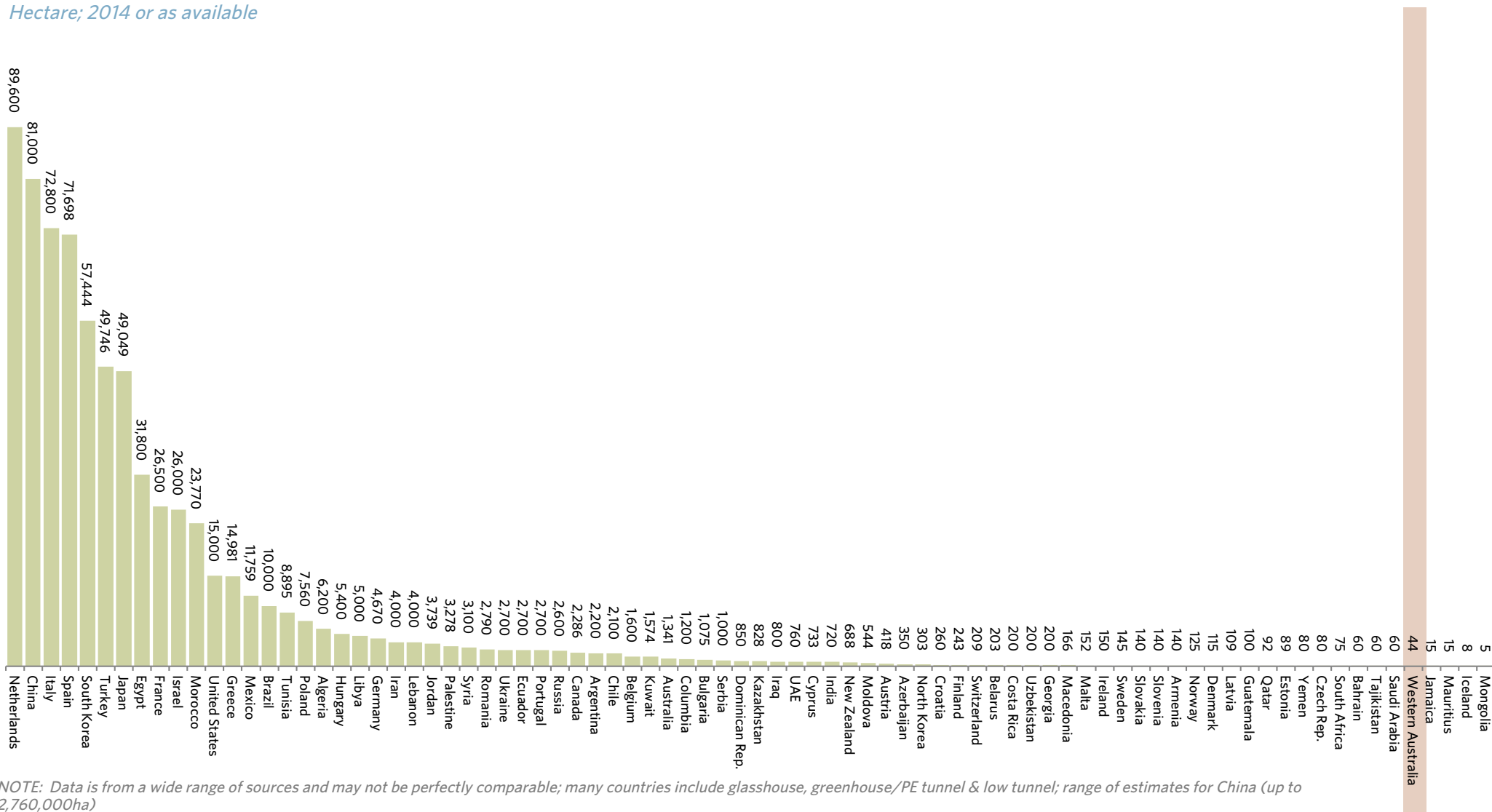
Aquaculture

HIGH INTENSITY PRODUCTION SYSTEMS - GREENHOUSES

Peers suggest there are opportunities to increase the amount of crop produced in greenhouses

AREA IN GREENHOUSE/UNDER COVER: WESTERN AUSTRALIA VS. SELECT PEERS

Hectare; 2014 or as available



NOTE: Data is from a wide range of sources and may not be perfectly comparable; many countries include glasshouse, greenhouse/PE tunnel & low tunnel; range of estimates for China (up to 2,760,000ha)

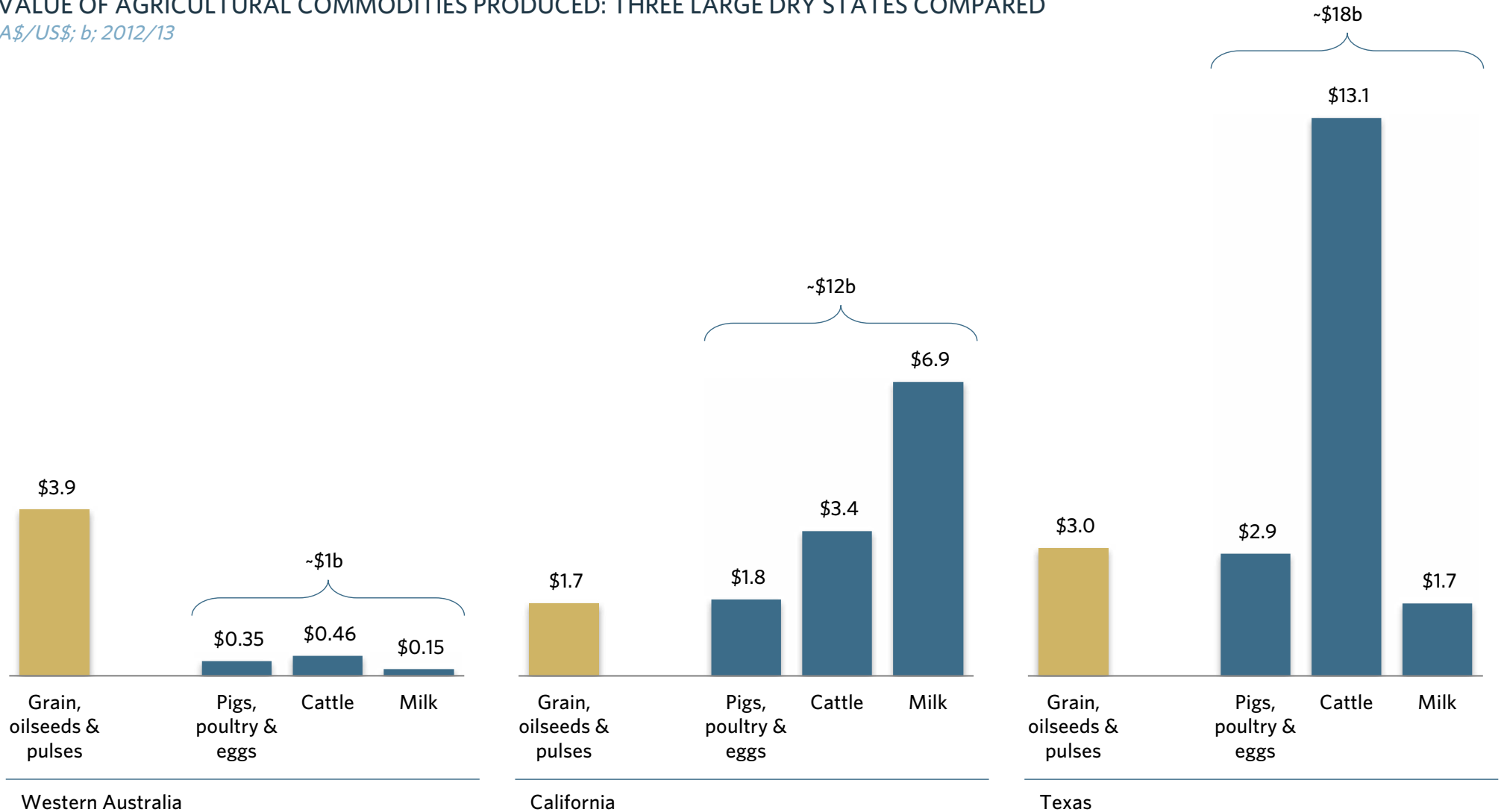
Source: Cuesta Roble Consulting; "Greenhouse production systems in Mediterranean area" Leonardi/De Pascale May 2010; "Greenhouse Technology Globally: The future of food"; Coriolis analysis

HIGH INTENSITY PRODUCTION SYSTEMS - INTENSIVE FEEDING

Peers suggest Western Australia could convert more of its grain into protein

VALUE OF AGRICULTURAL COMMODITIES PRODUCED: THREE LARGE DRY STATES COMPARED

A\$/US\$; b; 2012/13



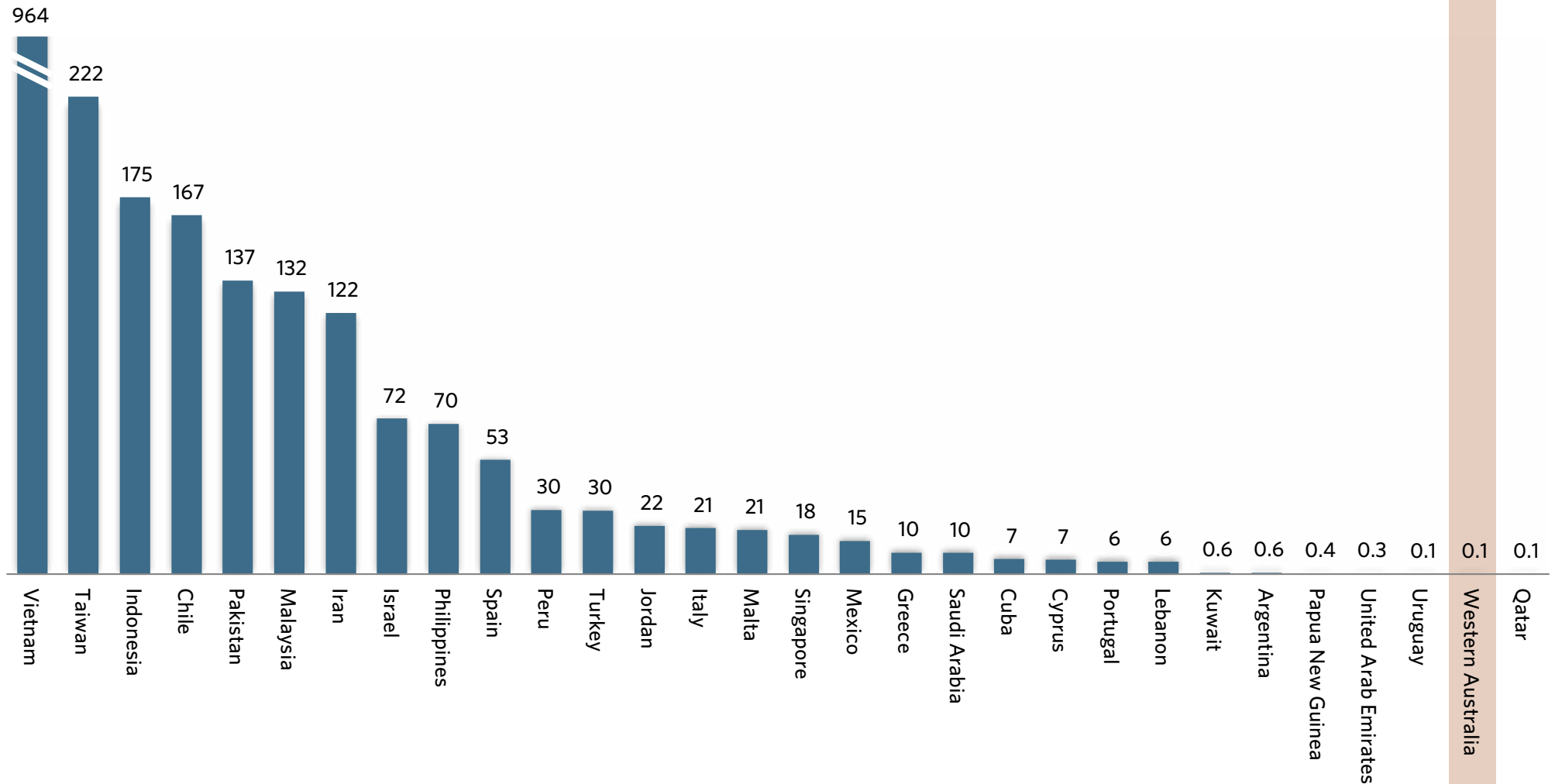
Source: USDA Census of Agriculture 2012 (various tables); ABS (7503.0); Coriolis analysis

HIGH INTENSITY PRODUCTION SYSTEMS - AQUACULTURE

Western Australia currently produces very little aquaculture per kilometre of coastline

AQUACULTURE PRODUCTION PER KILOMETRE OF COASTLINE: WA VS. WIDE RANGE OF PEERS

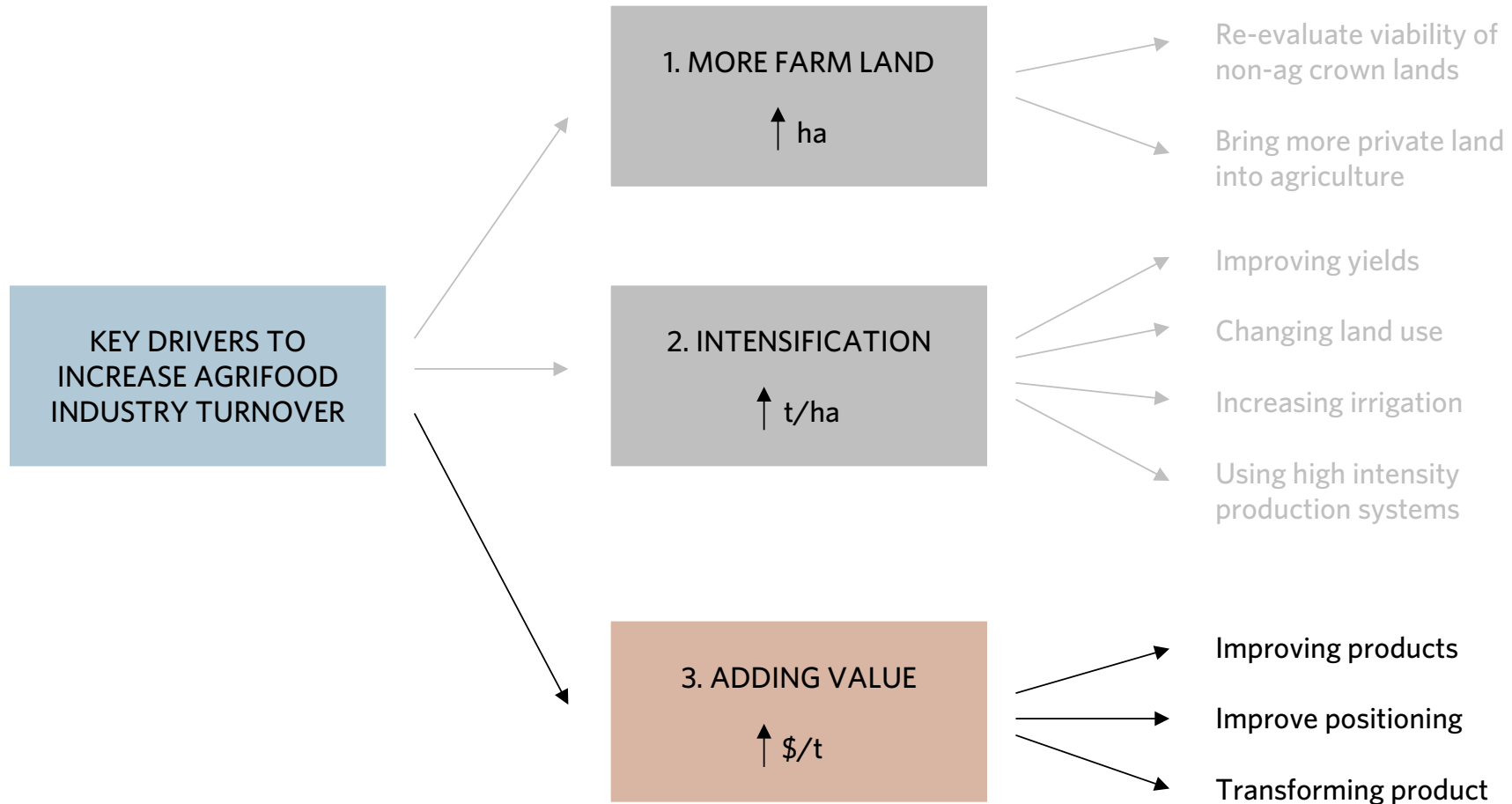
T/km; 2012



Source: UN Fishstat database; ABARES Aquaculture production in 2011/12 by state; CIA World Fact Book; Wikipedia; Coriolis analysis

3. ADDING VALUE

The third potential driver is to add more value to existing output

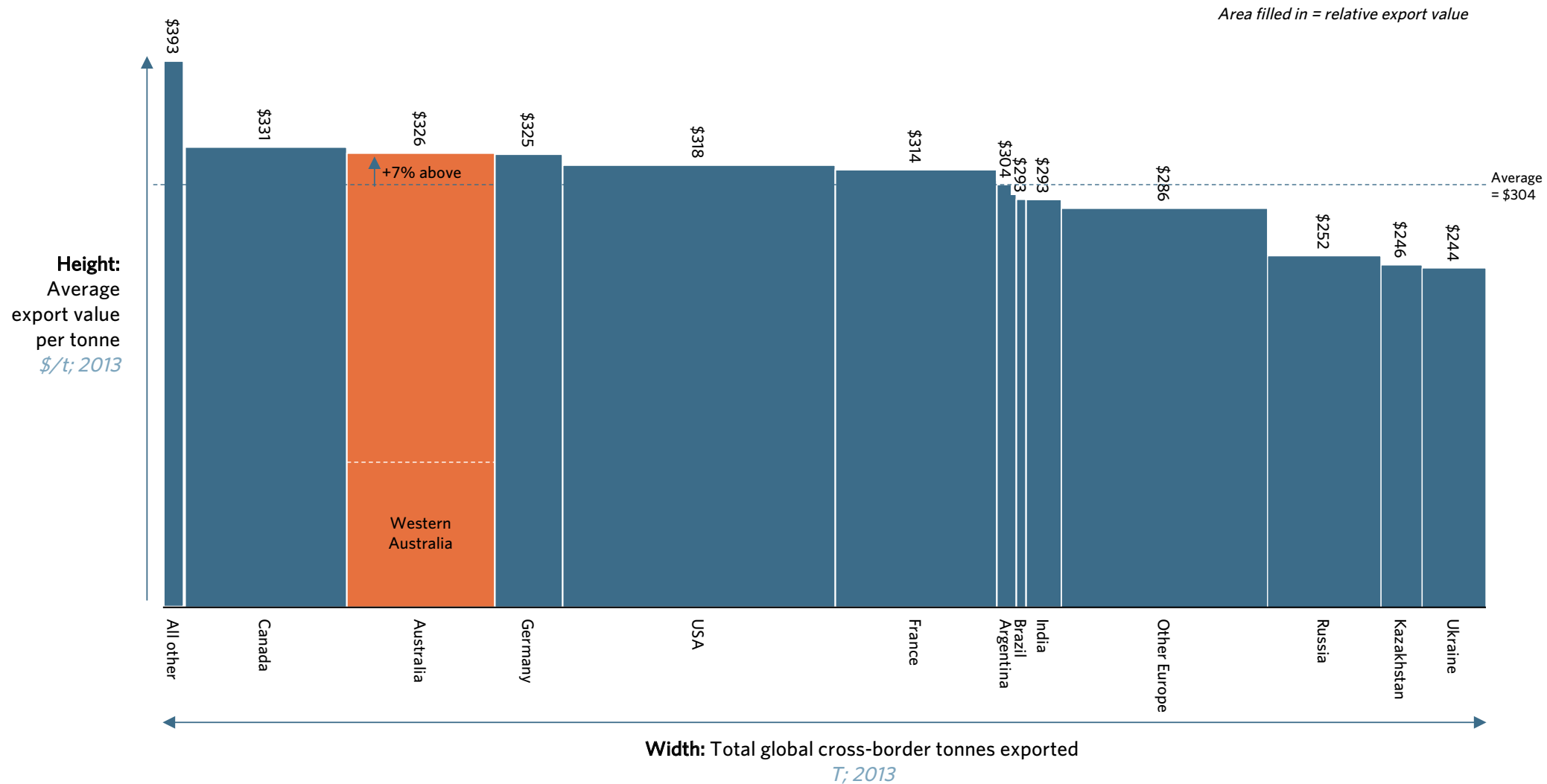


IMPROVING PRODUCTS (\$0 to \$130m)

While there are always opportunities to improve product quality and value, in most cases Western Australia already achieves a premium, as this example from the global wheat trade shows

EXAMPLE: GLOBAL WHEAT EXPORTS: VOLUME VS. AVERAGE VALUE PER TONNE FOR TOP 11 COUNTRIES & OTHER

Tonnes; US\$/tonne; 2013



Note: Currently using Australian price as a proxy for WA price; need to locate WA source

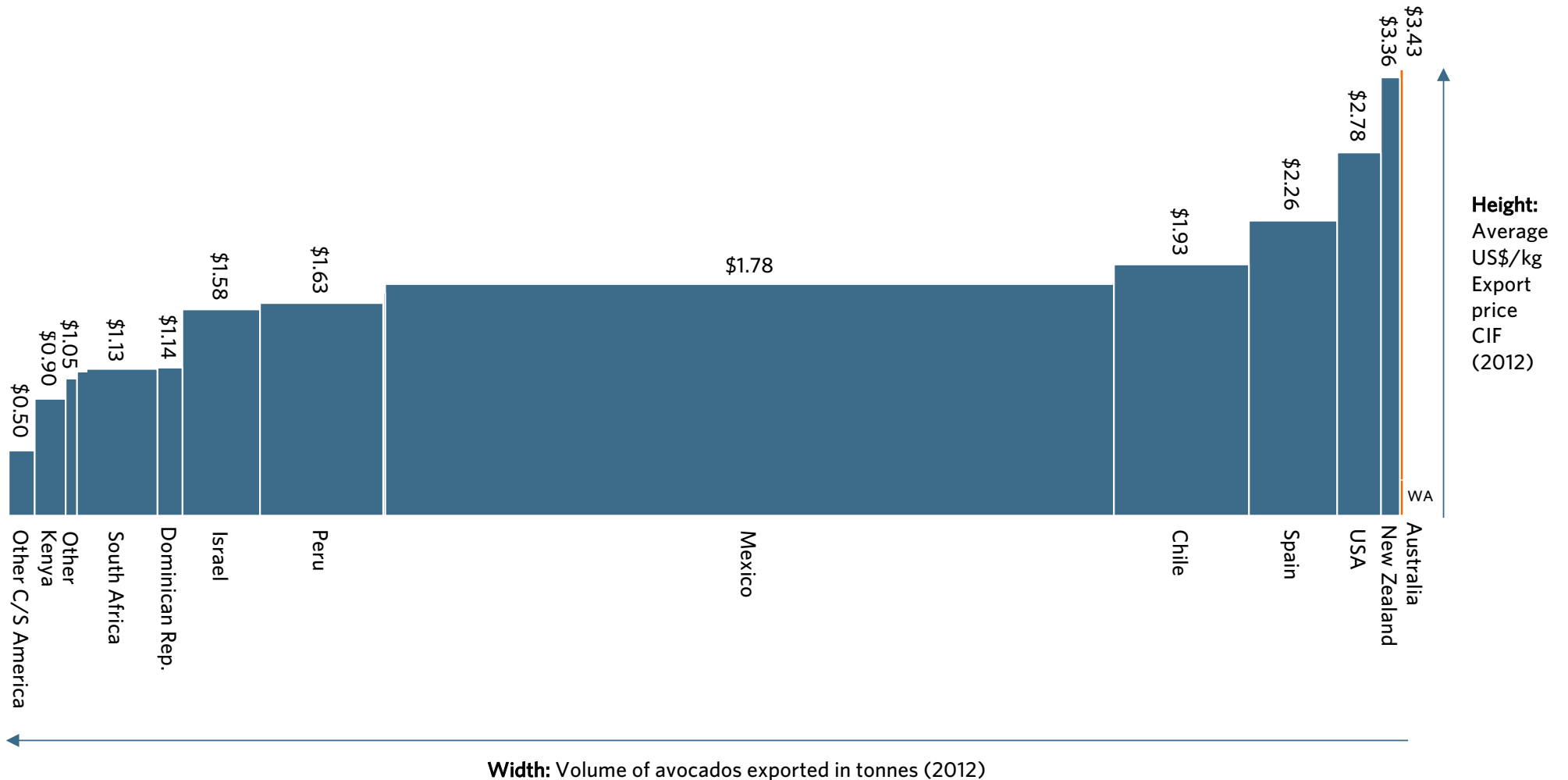
Source: UN Comtrade database; Coriolis analysis and classifications

IMPROVING PRODUCTS (\$0 to \$130m)

In some cases, Western Australia quality may actually be pricing itself out of the market, as this example from the global avocado trade shows

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

Tonnes; US\$/kg; FOB; 2012









IMPROVING POSITIONING (\$0 to \$130m)

There are opportunities to improve the positioning of Western Australian agrifood in export markets

IDENTIFIED TYPES OF COUNTRY, REGIONAL OR INDUSTRY LEVEL POSITIONING USED IN AGRIFOOD

Model; 2015

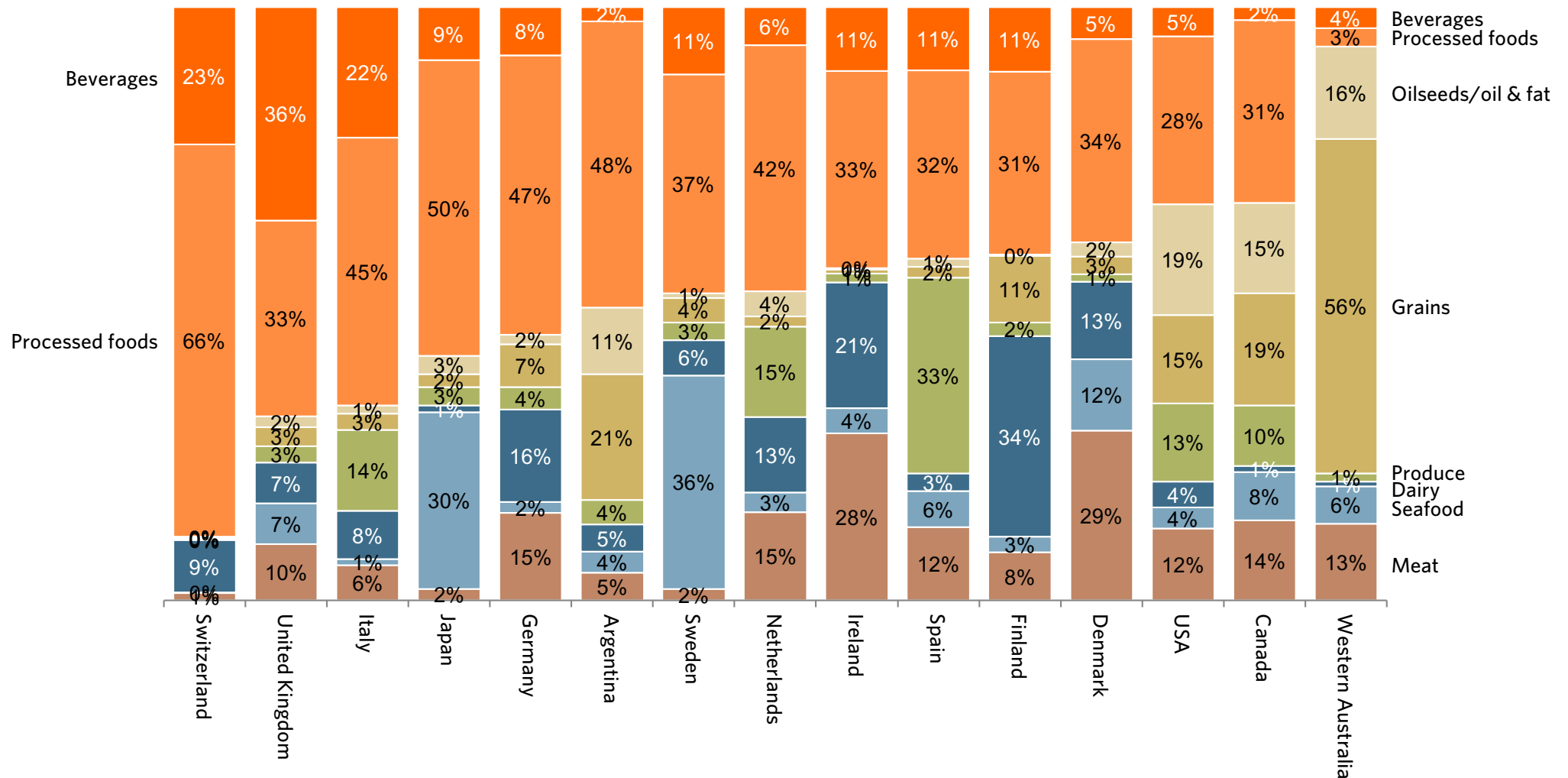
	Ethical claims about the production system	Health claims about the product	Branding/positioning of the producing country or region
Example attributes	Fair trade Organic Free range Cage free Barn laid Sustainable	Low in fat High in calcium Low in salt Heart healthy Cures urinary tract infections Anti-bacterial; anti-microbial	Clean & green Safe food "Provenance" Tradition & culture Authentic Majestic & picturesque
Role of government	Regulating claims In-market promotion	Regulating claims Funding research	Regional branding Regulation/rules
Example certification systems	 	 	 
Example of global leaders/global "best practice"	Alaska (Seafood) Iceland (Seafood) USA (Organic)	NZ Manuka Honey AHA Heart Health	Anglia Switzerland Italy (various) France (various)
Western Australia current performance	<ul style="list-style-type: none"> - Overall: LIMITED - Some positioning around free range - Some seafood sustainable (e.g. rock lobster) and MSC certified - Very limited organic 	<ul style="list-style-type: none"> - Overall: NONE (?) - None WA-unique/specific identified 	<ul style="list-style-type: none"> - Overall: SOME (primarily domestic) - "Buy West Eat Best" campaign targeted locally - Some regional identity development (e.g. Southern Forests, Margret River wine)

TRANSFORMING PRODUCTS (\$1b to \$8b)

Rich country peer group suggest Western Australia (GDP/capita \$102,232) has opportunities to transform more of its ingredient raw materials into value-added processed foods and beverages

AGRIFOOD EXPORTS VALUE SHARE BY SEGMENT: WESTERN AUSTRALIA VS. OTHER RICH COUNTRIES

% of value; 2012/2013



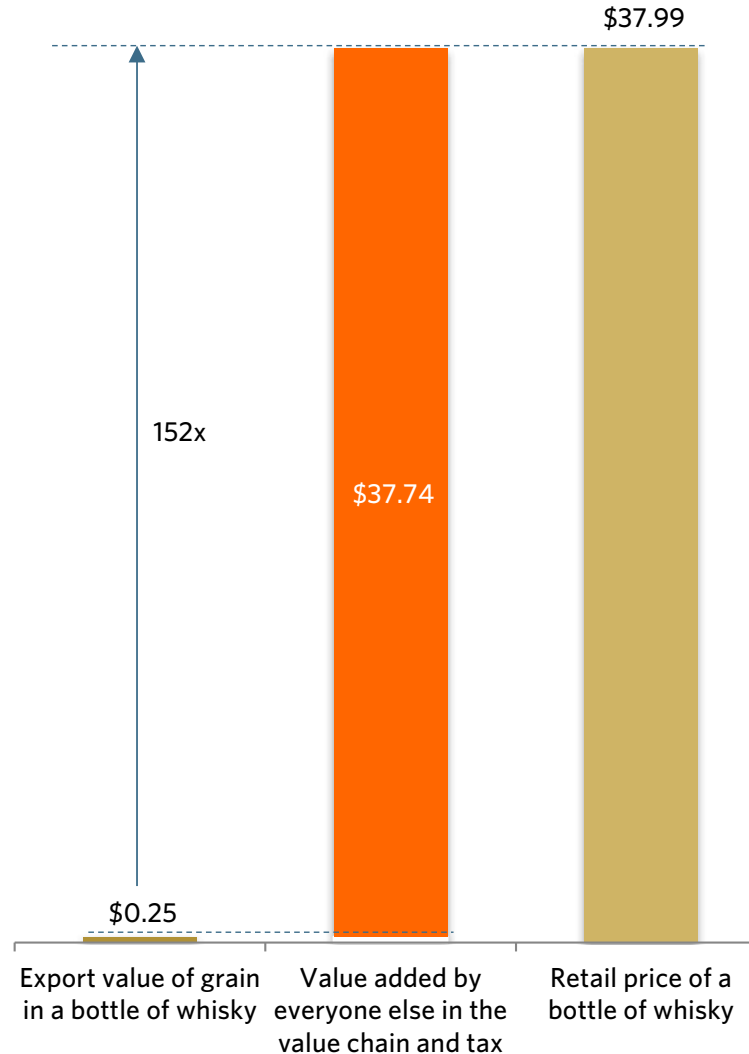
TRANSFORMING PRODUCTS (\$1b to \$8b)

Transforming Western Australian ingredient raw materials into finished packaged foods & beverages has huge potential to add significant value

Western Australia exports \$2.8b worth of this...



Scotland exports \$6.8b worth of this...



Coriolis is a boutique management consulting firm that focuses on food, consumer packaged goods, retailing and foodservice.

Coriolis advises clients on strategy, operations, organization, and mergers and acquisitions. We develop practical, fact-based insights grounded in the real world that guide our clients decisions and actions. Founded in 1999, Coriolis has offices in Australia and New Zealand and works on projects across the Asia Pacific region.

WHAT WE DO

We help our clients assemble the facts needed to guide their big decisions. We make practical recommendations. Where appropriate, we work with clients to make change happen.

HOW WE DO IT

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.

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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.

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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.

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

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