



Mainstream Aquaculture

Australian Barramundi:
Sustainable Premium White Fish
to Feed the World

www.mainstreamaquaculture.com



contents

aquaculture: the global food security imperative	4
changing populations with changing diets	5
capture versus culture	9
the aquaculture advantage	11
barramundi	13
the preferred consumer option	14
a proven performer in intensive aquaculture	18
attractive industry growth rates	22
mainstream aquaculture: enduring competitive advantages	26



aquaculture: the global food security imperative

- changing populations with changing diets
- capture versus culture
- the aquaculture advantage

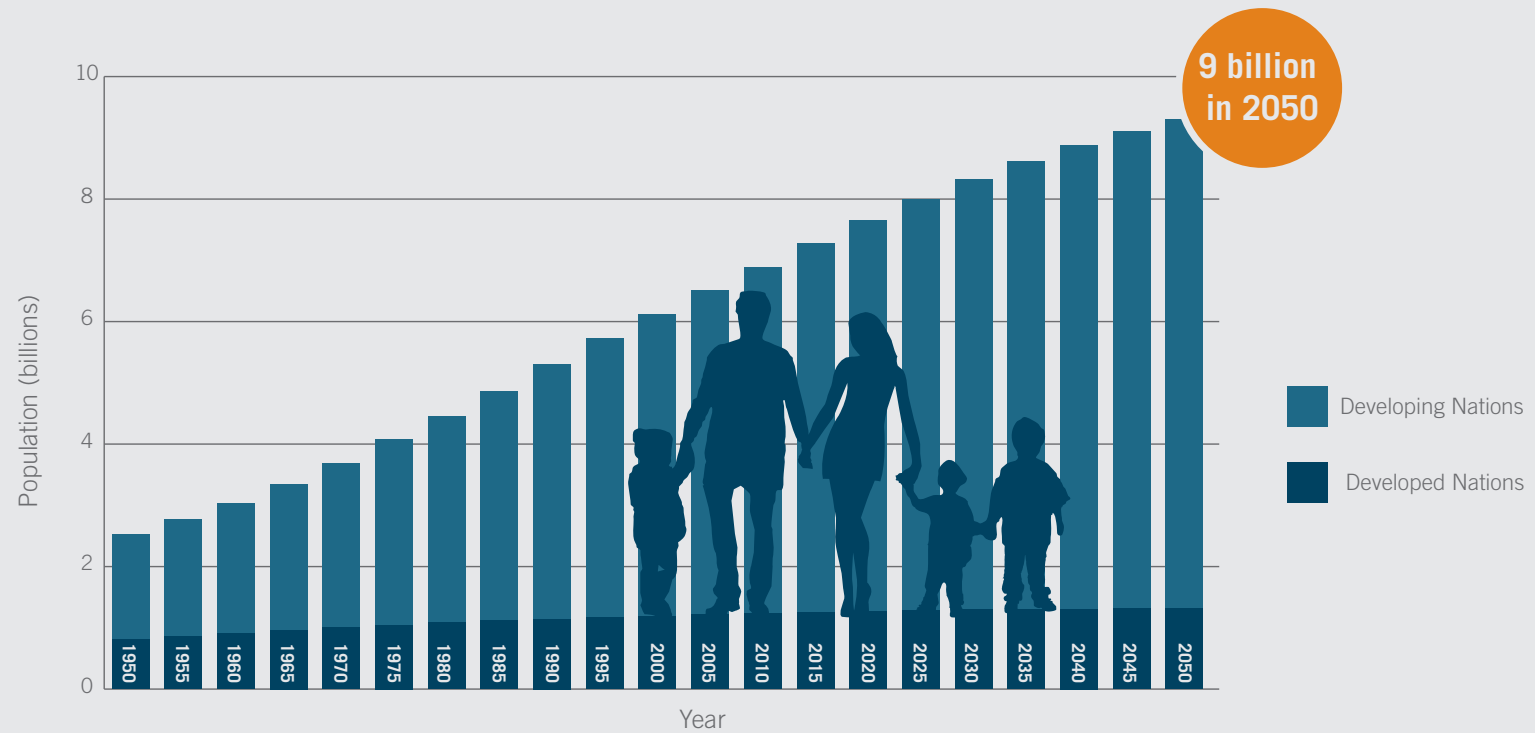


“The world faces an inescapable fact, we need to feed more people, with changing diets, using finite resources.”

More food will have to be produced over the next 50 years than has been produced during the past 10,000 years combined.”¹

changing populations with changing diets

The global population is forecast to exceed 9 billion in 2050.
Most of this growth is expected from developing nations.²

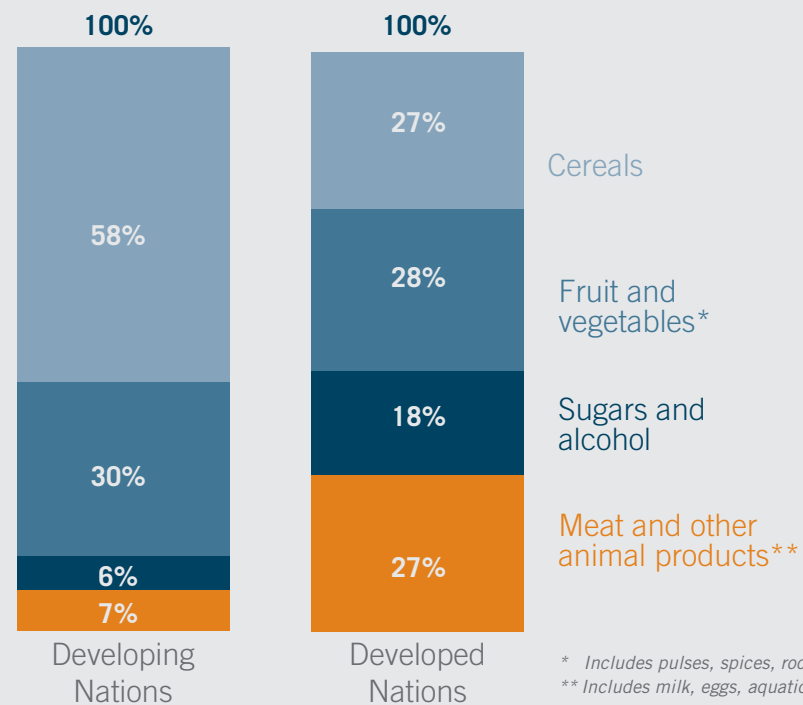


changing populations with changing diets

The population of developing countries is shifting towards greater incomes and levels of urbanisation. This will result in dramatic changes to calorie intake.

Calorie intake by food type

Percent of daily calorific intake^{1,2}

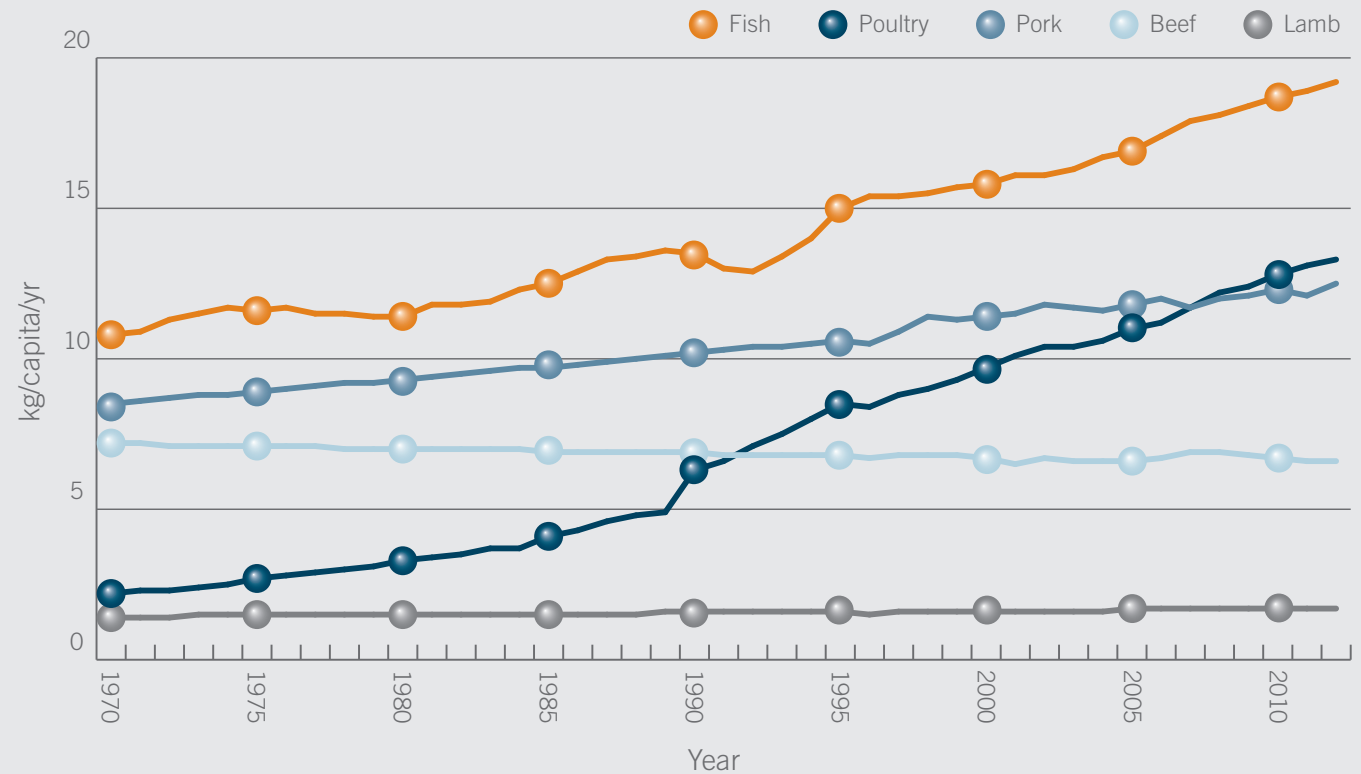


changing populations with changing diets

Per capita demand for fish and poultry demonstrate higher growth than alternative sources of protein.

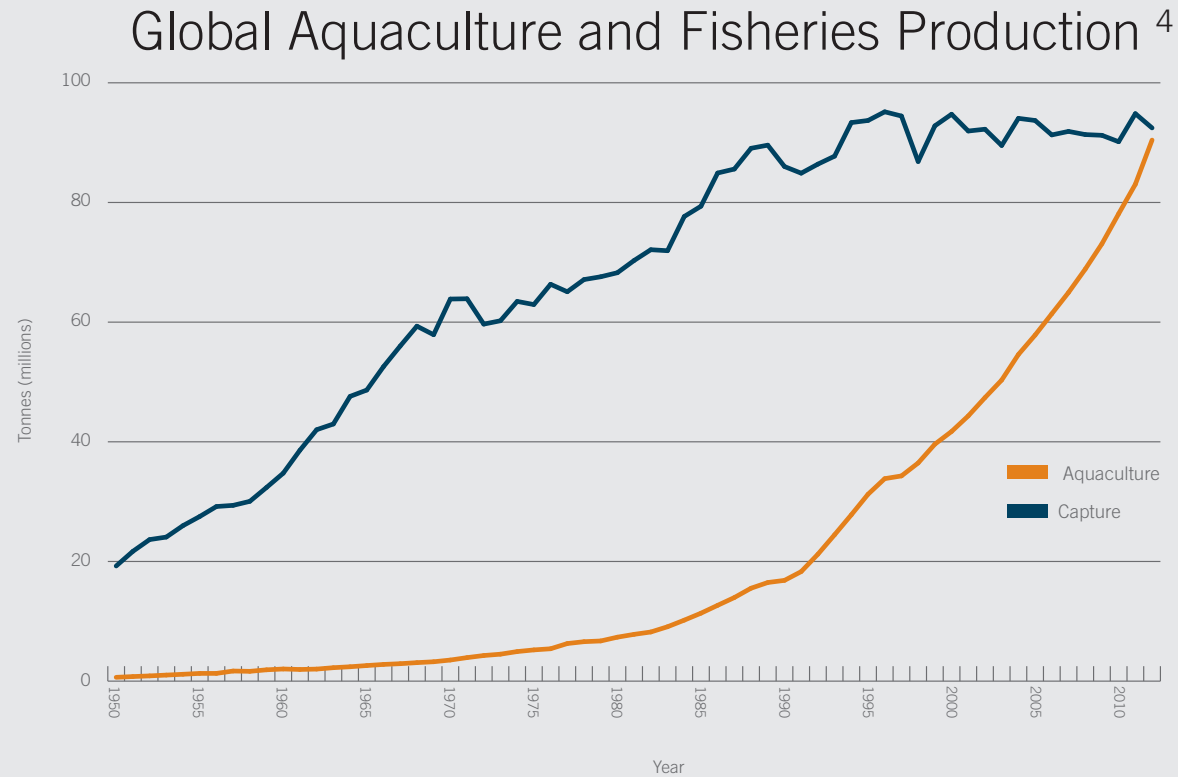
Poultry has led the way through greater production efficiencies as the sector rapidly industrialised. Aquaculture has greater potential than poultry but is decades behind in industry development as the continued exploitation of wild fish stocks delayed innovation and investment.

Global Meat Consumption per capita ³



capture versus culture

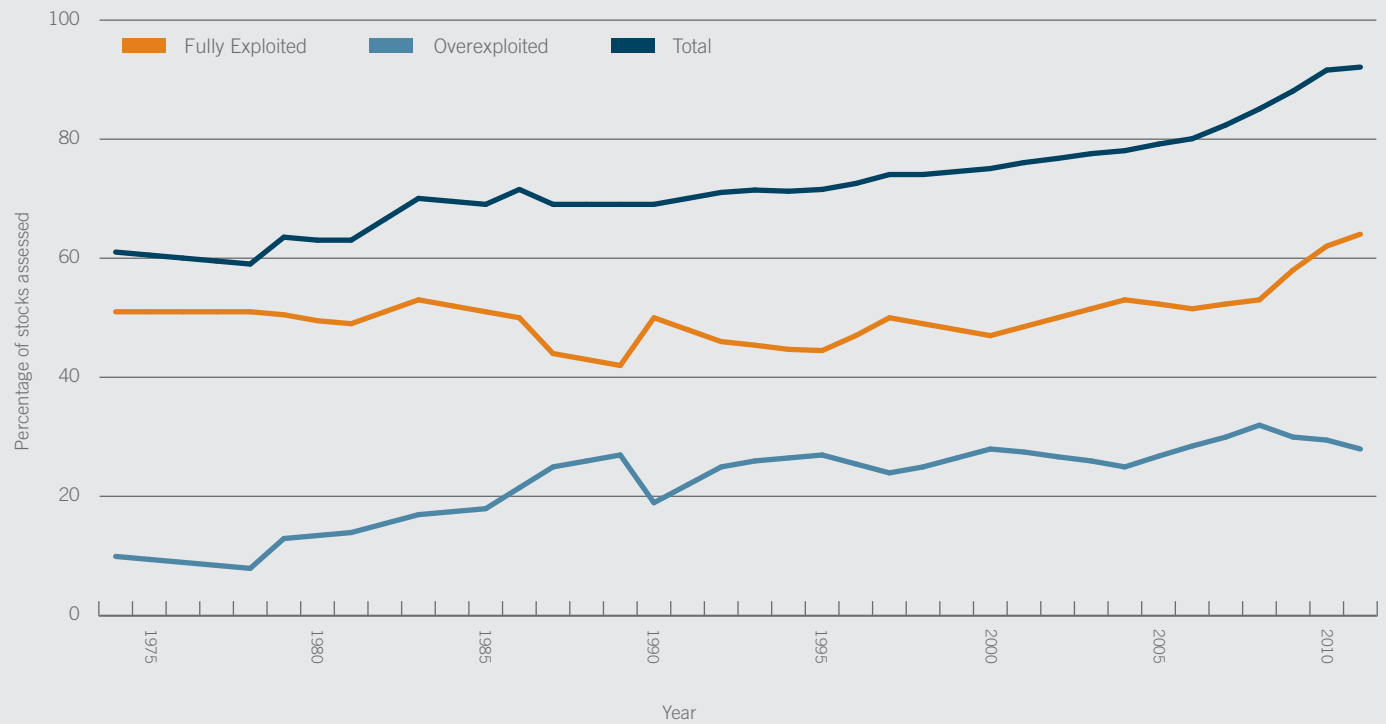
However, increasing demand for fish cannot be supplied from the world's natural resources.



capture versus culture

As almost 100% of capture fisheries are fully or overexploited.

Global trends in the state of world fish stocks⁴

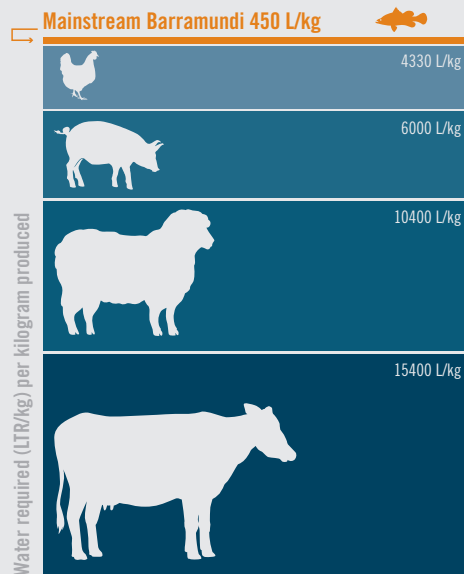


the aquaculture advantage

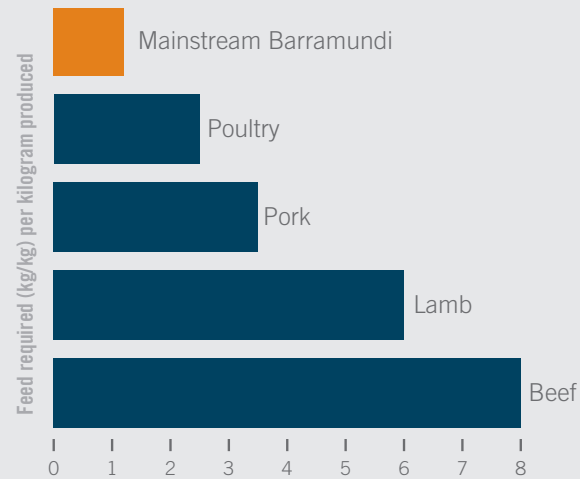
Aquaculture is the most efficient form of traditional protein production.

With increasing exploitation of finite natural resources like feed, water and space, aquaculture product will feature more prominently as a percentage of overall protein intake in the future.

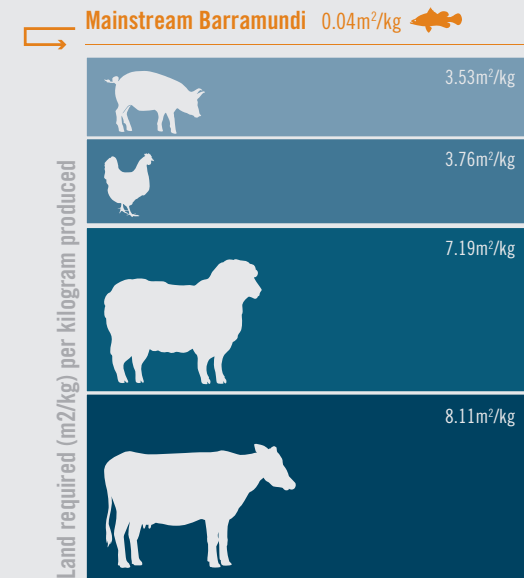
Water Conversion Efficiency ⁵



Feed Conversion Efficiency ^{6,7,8}



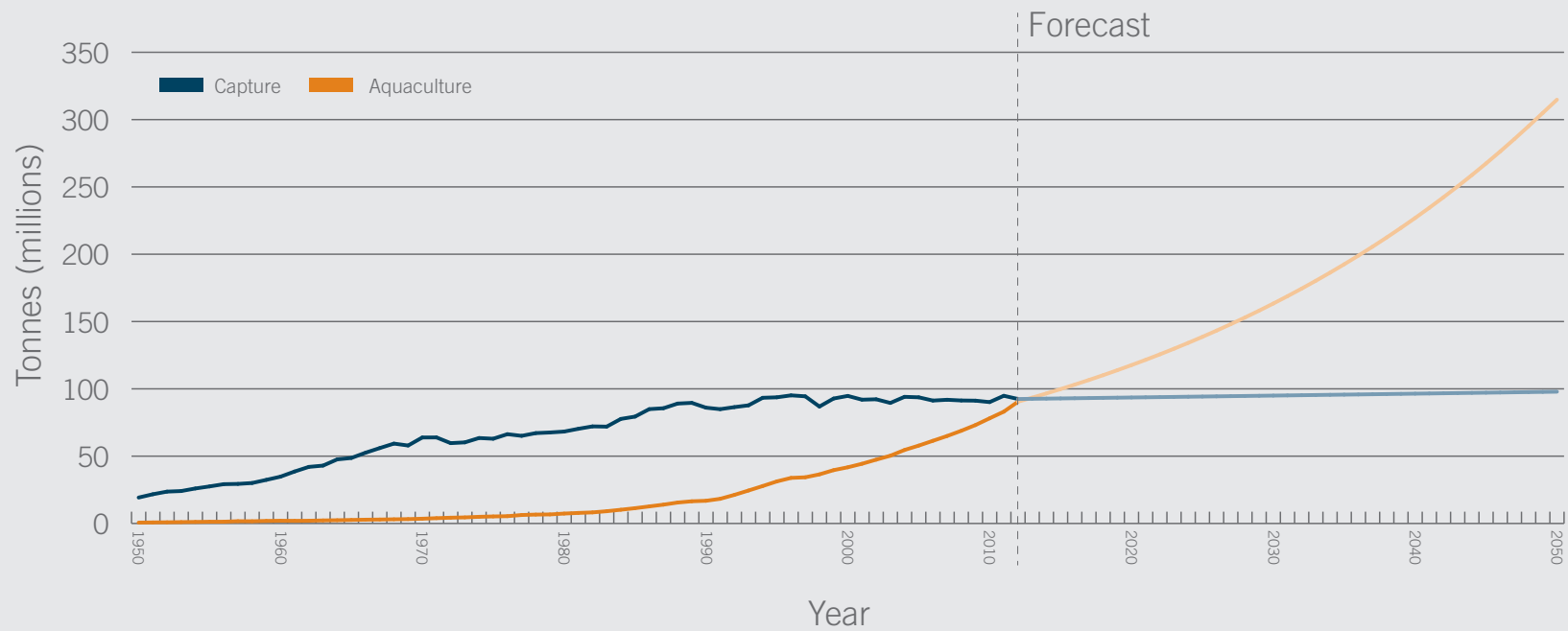
Space Conversion Efficiency ⁹



the aquaculture advantage

Based on population projections and current growth in per capita fish consumption, aquaculture will be a 300 million tonne+, \$US2 trillion+ per year industry by 2050.

Projected Aquaculture and Capture Growth¹⁰





barramundi

- ➡ the preferred consumer option
- ➡ a proven performer in intensive aquaculture
- ➡ attractive industry growth rates

the preferred consumer option

A premium fish in Australia and around the world, Barramundi, which is a member of the Perch family, is known for: ¹¹

- Firm, white, succulent flesh.
- Fine grained, moist texture.
- Mild flavour.
- Low fat and cholesterol levels.
- High protein and Omega-3 content.
- Versatility in cooking.



premium fish

Omega-3 fatty acids are well known to be beneficial to our health. Barramundi is one of the richest sources available for these valuable nutrients.

100 grams of farmed Barramundi provides the same Omega-3 content as approximately 1.7 kilograms of scotch fillet steak. ⁴



FOOD	MG/150G
WILD AUSTRALIAN SEAFOOD	
White Fleshed Fish	350 (average)
Shellfish	225
Prawns	180
Lobster	160
FARMED AUSTRALIAN FISH	
Atlantic salmon	2985
Barramundi	2960
Rainbow Trout	2000
Silver perch	1200
OTHER FOOD GROUPS	
Turkey	40
Beef	40
Chicken	40
Pork	40
Lamb	30

premium fish

Nutritional Information for Farmed Barramundi. ⁴

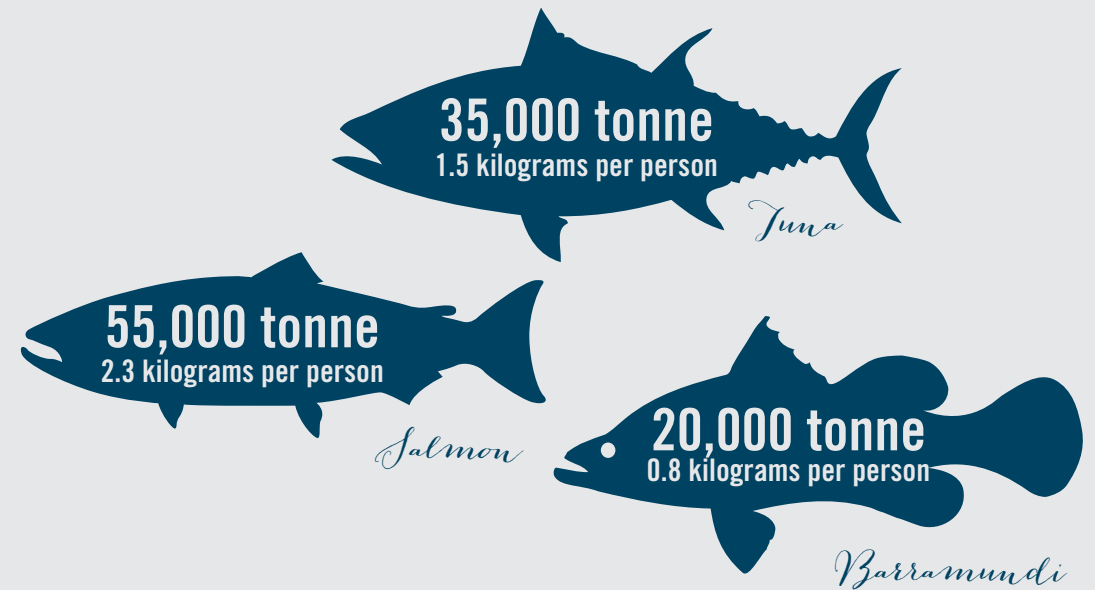
Serving size 100g	Average Quantity per serving	% Daily Intake per serving	
Energy	605kJ	7	
Protein	19.5g	39	
Fat (Total)	7.36g	10.5	
Sugars	0g	0	
Carbohydrate	0.25g	0.1	
Sodium	55.5mg	2.4	
Phosphorous	170mg	17	Protects the bloods acid base balance
Selenium	0.027mg	38.9	Anti-oxidant which boosts the body's immune system

the preferred consumer option



Consumers consider Barramundi to be the number one Australian fish for taste, texture and quality.¹²

Annual Consumption^{13,14,15}



However, Barramundi is consumed less frequently than Salmon and Tuna.

the preferred consumer option

Barramundi is the third most consumed fish in Australia despite being consistently rated the most popular. This can be attributed to the fact the industry has not provided the consumer with consistent supply and consistent quality.

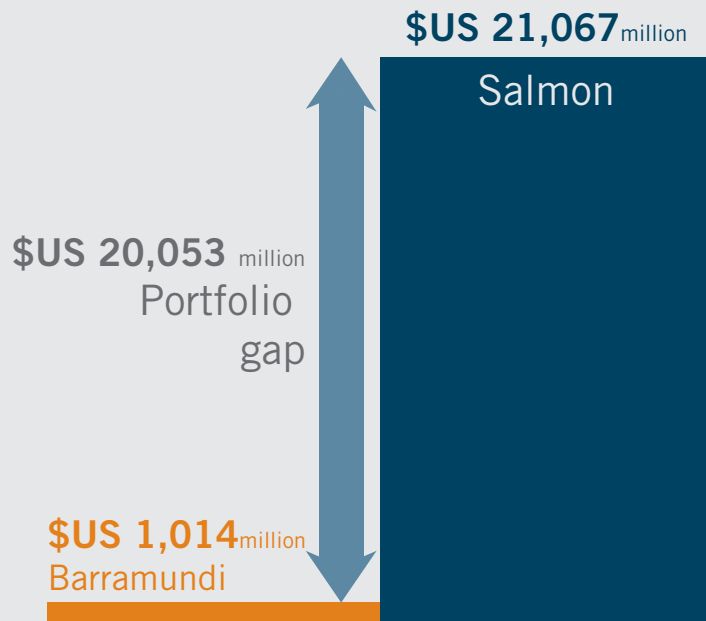
There is substantial latent demand for a premium white flesh fish in Australia and globally. Barramundi can fill this 'portfolio' gap.

The Portfolio Gap for a Premium White Fish¹⁶

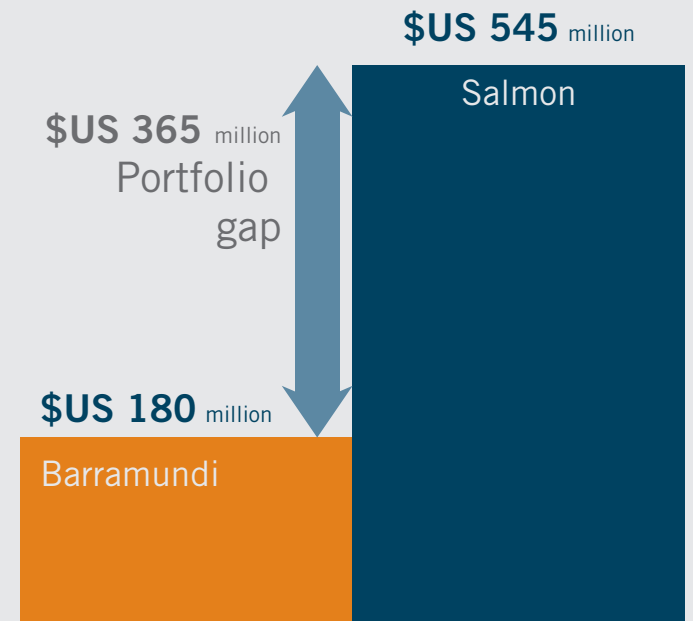
premium category	<i>Barramundi</i> INDUSTRY VOLUME 169,000 tonne INDUSTRY VALUE \$US 1,014 million VALUE PER KG \$US 6.00 SOURCE 55% capture 45% aquaculture	<i>Salmon</i> INDUSTRY VOLUME 3,192,000 tonne INDUSTRY VALUE \$US 21,067 million VALUE PER KG \$US 6.60 SOURCE 28% capture 72% aquaculture
	<i>Carp & Tilapia</i> INDUSTRY VOLUME 24,598,000 tonne INDUSTRY VALUE \$US 53,624 million VALUE PER KG \$US 2.18 SOURCE 3% capture 97% aquaculture	<i>Tuna</i> INDUSTRY VOLUME 5,286,000 tonne INDUSTRY VALUE \$US 19,134 million VALUE PER KG \$US 3.62 SOURCE 100% capture 0% aquaculture
value category	white fish	pink fish

the preferred consumer option

The addressable market for Barramundi could ultimately be of a similar size to Salmon.



GLOBAL MARKET SIZE



AUSTRALIAN MARKET SIZE

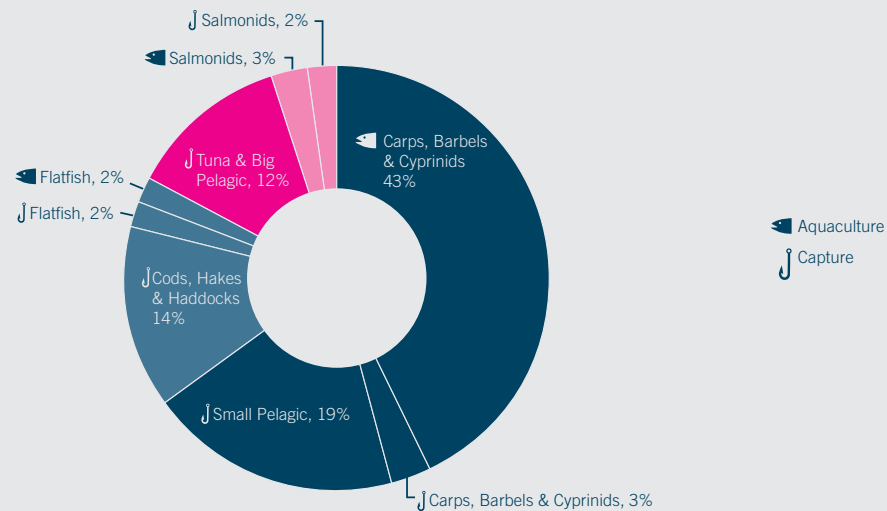
the preferred consumer option

Barramundi could become the world's dominant premium white fish.

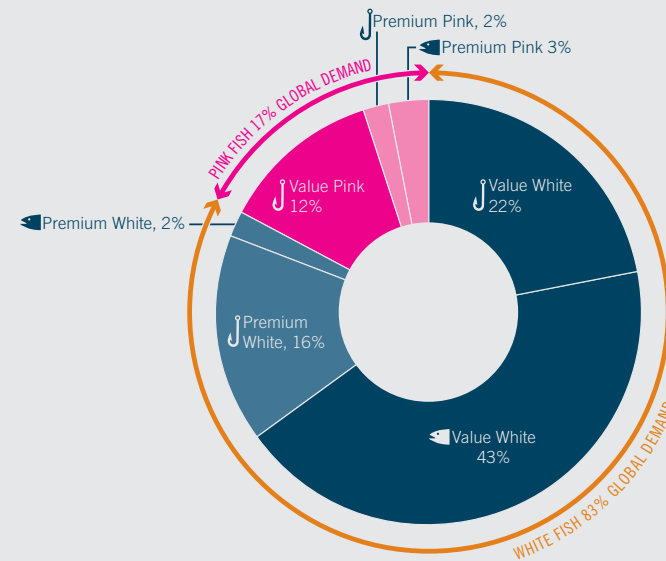
The premium white segment is almost four times larger than the premium pink segment.

Supply of premium white fish is highly fragmented and 90% is sourced from wild fish stocks.

Source of Fish by Species ¹⁶



Portfolio by Category ¹⁶



An aerial view of a massive school of barramundi fish swimming in clear, turquoise water. The fish are densely packed in the lower right portion of the frame, creating a shimmering, textured effect. The water is a vibrant blue-green color, and the fish are silvery with dark stripes along their sides.

a proven performer in intensive aquaculture

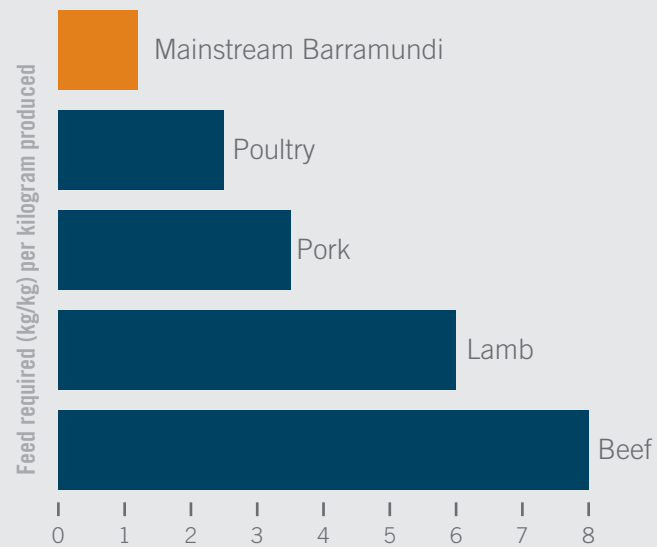
Barramundi:

- Are an efficient convertor of feed.
- Perform well on manufactured diets and thrive in high stocking densities.
- Demonstrate industry leading fertility metrics.

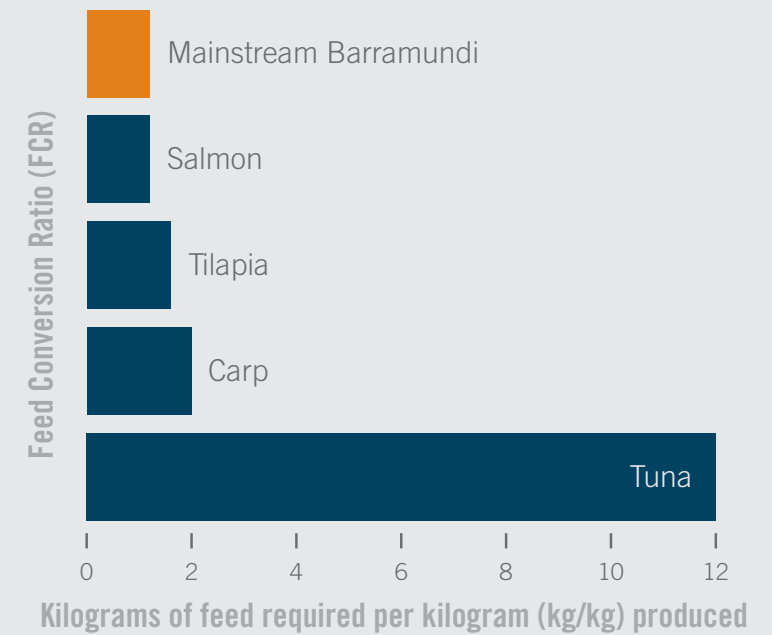
a proven performer in intensive aquaculture

Barramundi are an efficient convertor of feed.

Agricultural Feed Conversion Efficiency ^{6,7,8}

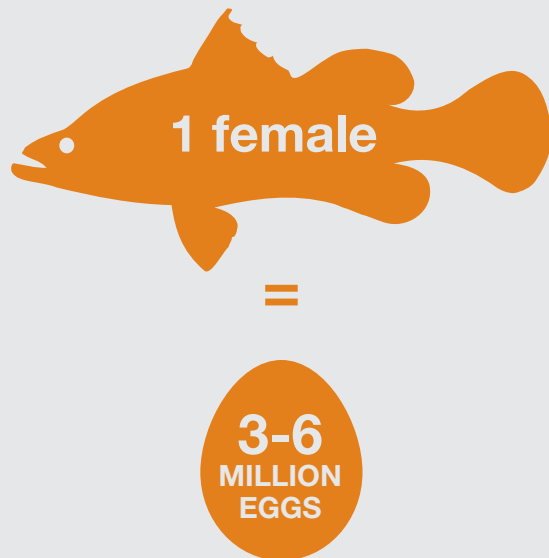


Aquaculture Feed Conversion Efficiency ^{17,18,19}



a proven performer in intensive aquaculture

A single female Barramundi typically produces 3-6 million eggs at spawning. Unlike most species, this allows the production of large numbers of fish with a minimal number of brood stock. ^{20,21,22,23}

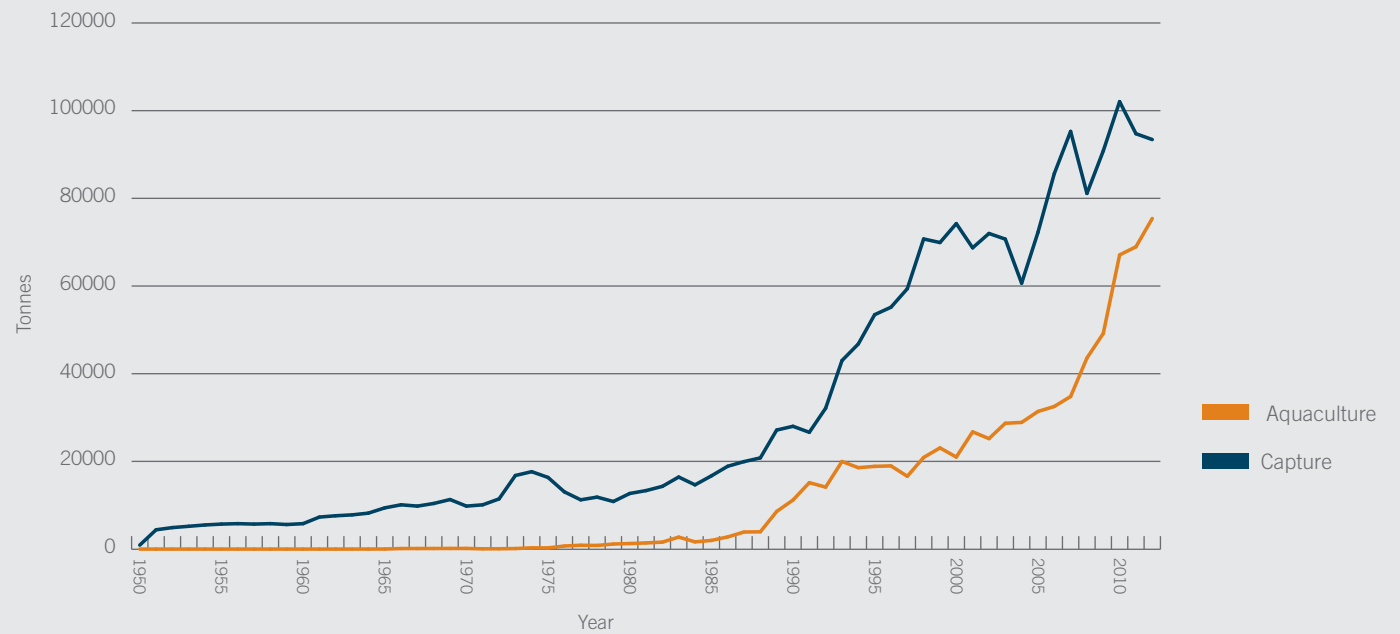


Species	No. Eggs/Kg
Barramundi	300,000
Red seabream	300,000
Striped bass	220,000
Carp	150,000
Tilapia	80,000
Rainbow Trout	2,200
Atlantic Salmon	1,800
Coho Salmon	990
Pink Salmon	900
Chinook Salmon	770

attractive industry growth rates

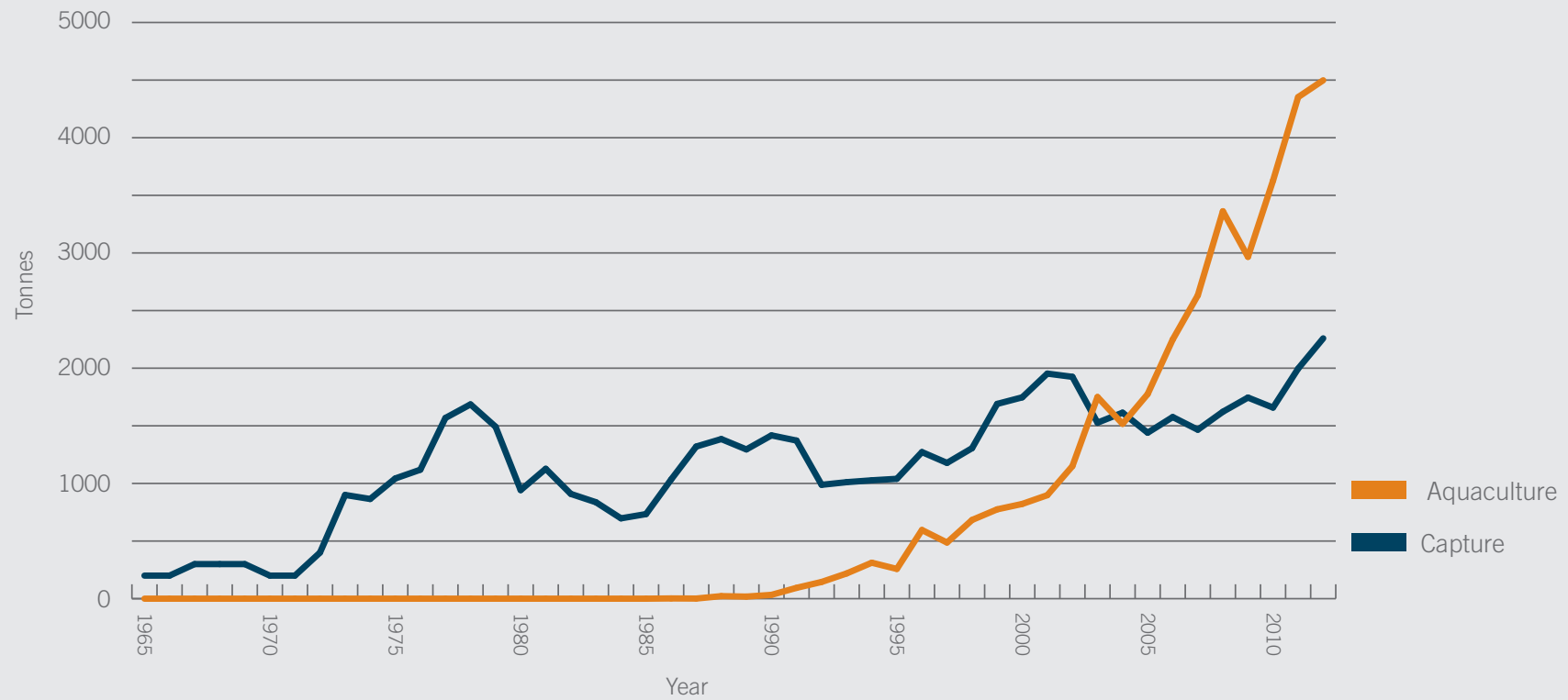
The rapid growth of the global Barramundi culture industry provides evidence these fish are desired by consumers and perform well in intensive production systems.

Global Barramundi Production ¹



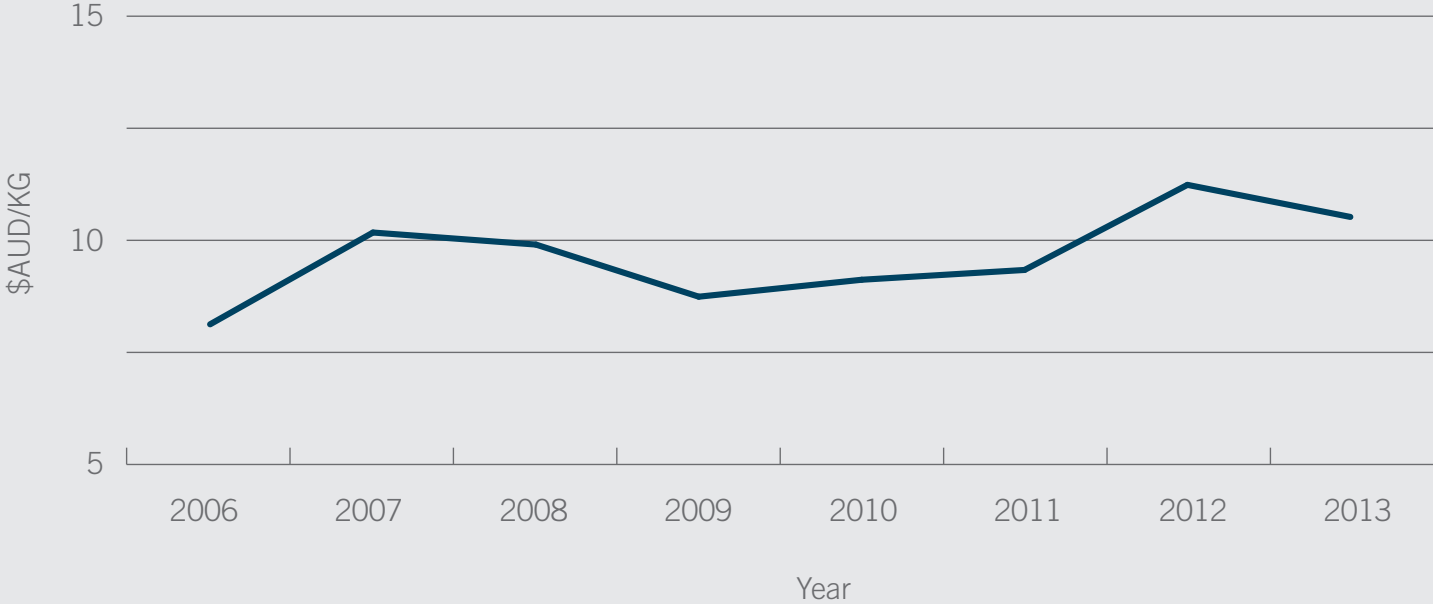
attractive industry growth rates

Australian Barramundi Production ¹



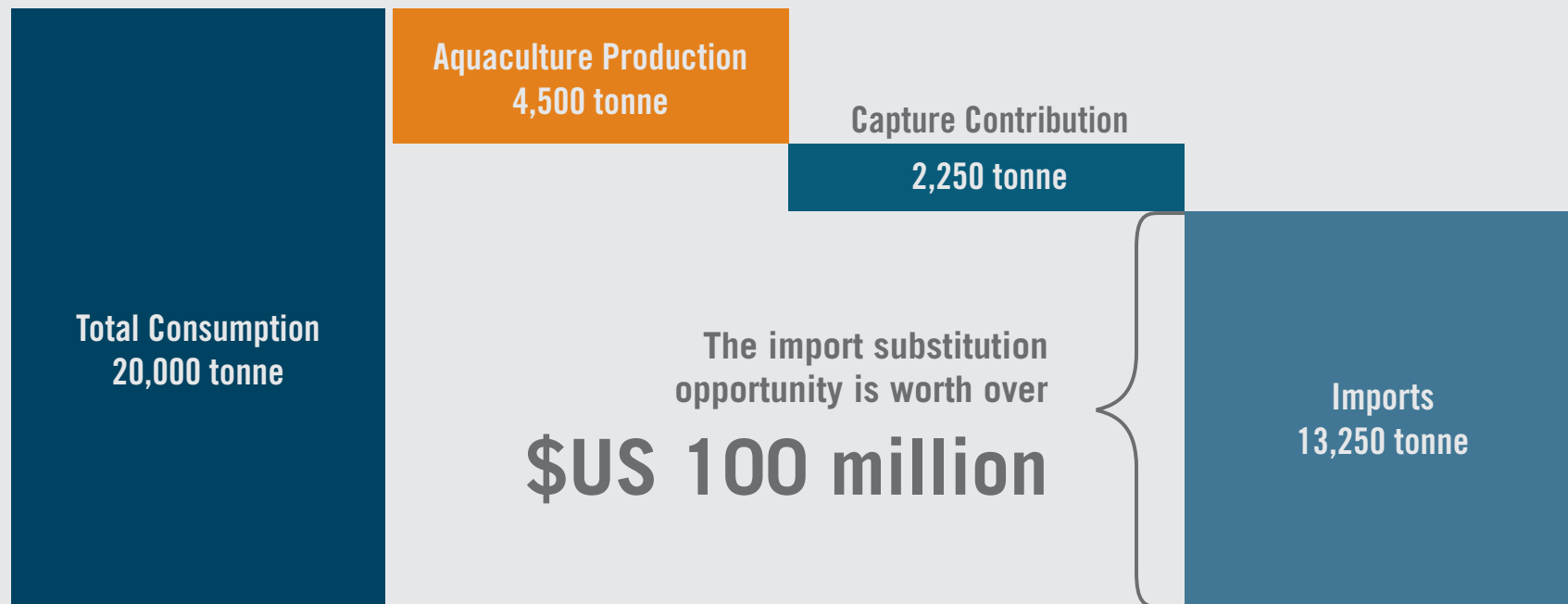
attractive industry growth rates

Barramundi Market Price ²⁴

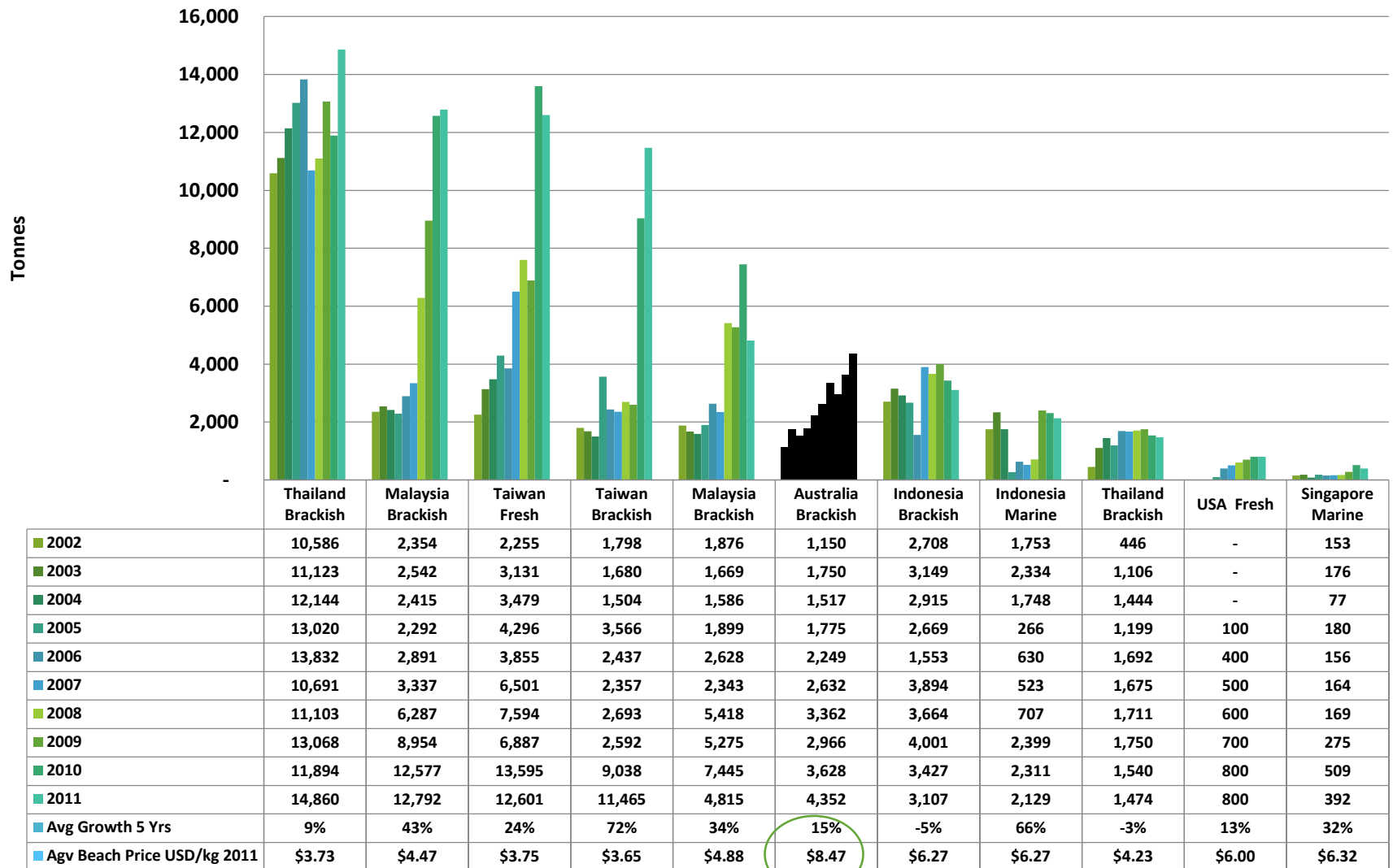


attractive industry growth rates

Two thirds of Barramundi consumed in Australia are produced offshore.

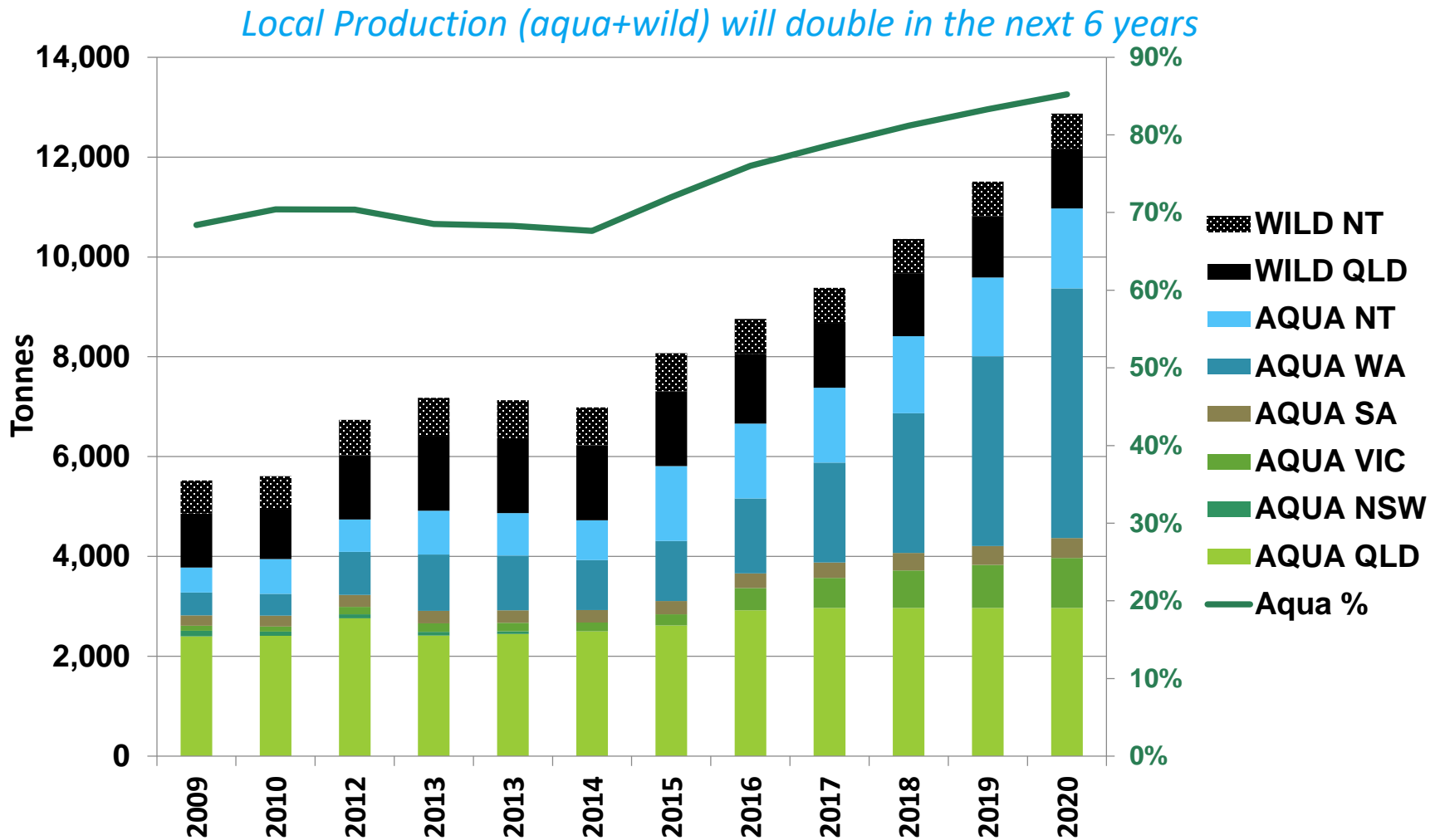


Where will imports come from...



Source: FAO 2013

Feb 2014 Survey: farm supply will be ~11,000t in 2020



Assuming local wild fishery supply starts to fall a little over next 5 years

Survey 2014: aqua growth from WA, VIC & NT...

