

AQUACULTURE INDUSTRY

SEPTEMBER 2015

Aquaculture contributed around 43% of global food fish production in 2013, a share which had more than doubled over the last two decades. Overall, global aquaculture production has increased by nearly 5 times since 1990 and more than doubled since 2000. Global food fish production is estimated to have reached 163mt in 2013 and it is interesting to note that for the first time since 1950, food fish production from wild catch has dipped below 60% in 2012. Marine and Freshwater fishes represent the major share of production at 42% & 31% respectively, followed by Molluscs (14%), Crustaceans (8%) and Diadromous fishes (4%) in 2013.

DEMAND DRIVERS

Fish is considered a major source of micronutrients and long chain omega-3 fatty acids. In terms of global protein supply, fish accounted for around 17% in 2010¹. Furthermore, in 2012, of the 158mt of global fish produce, around 86.2% is used for human consumption, a share which had increased from 71.6% in 1980 and had increased at CAGR of 2.9% since 2000. Increase in population, per capita income and rising health consciousness will be key long term drivers for seafood consumption. According to the FAO, by 2011 90% of marine fish stocks are either overfished (29%) or fully fished (61%)¹ i.e., the increase in production (from wild catch) is unlikely in the near future. This is also reflected in the wild catch fisheries production which has been stagnant in the past two decades (1990-2010). Also, the World Bank, FAO, and UNEP suggest that world fishing effort needs to decline by up to 50% of today's levels to allow fisheries to rebuild¹. Amidst rising consumption, this implies the need for increasing aquaculture production to cater to the rising global fish consumption.

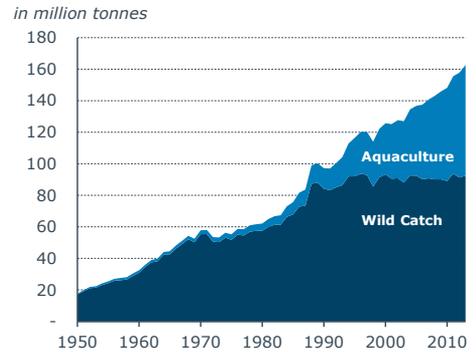
GLOBAL SUPPLY

Asia accounts for 89.1% of global aquaculture production, with a significant concentration in China (over 60% of global production). Other important countries in the region include India, Vietnam, Indonesia and Bangladesh – all the five countries account for over 90% of the region's food fish production. The Americas contribute 4.4% of global aquaculture production, followed by Europe (4.0%), Africa (2.3%) and Oceania (0.3%). The African region, especially the Sub-Saharan Africa experienced significant growth between 2007 to 2013 period. In terms of food fish from aquaculture, Asia is estimated to have produced 62.5mt in 2013, with China dominating production with an estimated 43.5mt of food fish.

GLOBAL AQUACULTURE TRADE

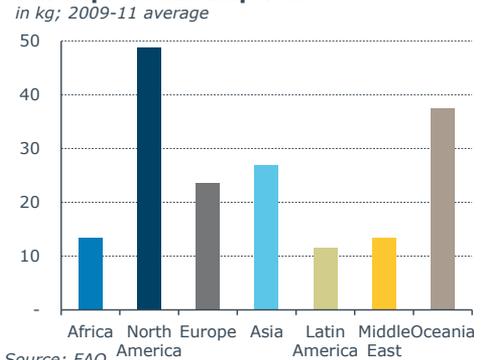
A large share of all production (>35%) enters international marketing channels. The value of global exports and imports is estimated to have reached just under USD 130bn in 2012.

World Food fish Production



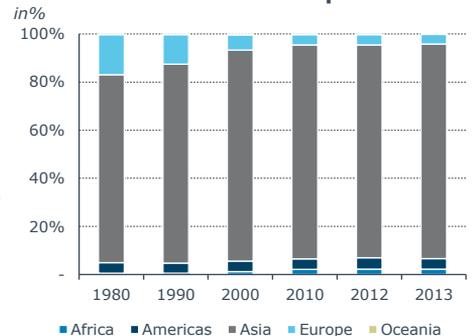
Source: FAO

Per capita consumption



Source: FAO

Share of Global Food fish production



Source: FAO

Major Aquaculture food fish producers in the world



On a regional level, Europe plays an important role in the world trade, with exports estimated at USD 53.5bn (2012) accounting for 41.3% of total exports, as well as 34.3% of global imports.

Country-wise, Japan and USA lead the global imports, accounting for 13.9% and 13.6% of the total imports on value basis. In terms of import CAGR, Hong Kong and China experienced high growth rates of 11% and 9.7% respectively, between 2008-12 period. In addition, China is the largest exporter, accounting for over 14.1% of the global exports in 2012 valued at USD 18.2bn., while imports were valued at USD 7.4bn, representing ~5.7% of global imports.

On the surface, this indicates a majority of the imported product in China is low value and it is processed and re-exported to USA or European countries. However, according to USDA², this trend has recently changed with Chinese processors increasingly focussing on the untapped domestic market, where fish is considered to be a luxury item.

With increasing concerns over food safety, security and improved storage & transportation infrastructure, demand for fish and fish products is likely to increase. Given its proximity to key demand markets and world renowned as quality food supplier, Australia, despite its small aquaculture industry, is well positioned to cater to the Asian markets.

GLOBAL FISH PRODUCTION OUTLOOK

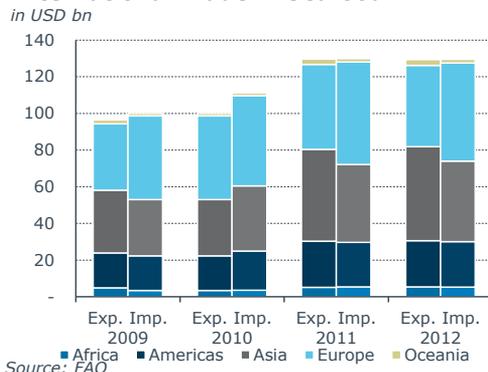
According to OECD-FAO, global fish production is projected to reach 186Mt in 2023, with ~49% expected to come from aquaculture production. Estimates highlight that fish production from wild catch may increase by a marginal 2% (compared to 31% in case of aquaculture production) over 2013 levels. This stable wild catch production is driven by recovery in fish stocks and improved fishing methods. Aquaculture production, which is estimated to grow significantly through the forecast period may face some pressure from environmental restriction. Asia is likely to continue its dominance in the aquaculture production, with China, India, Indonesia leading the volumes through 2030.

GLOBAL FISH CONSUMPTION OUTLOOK

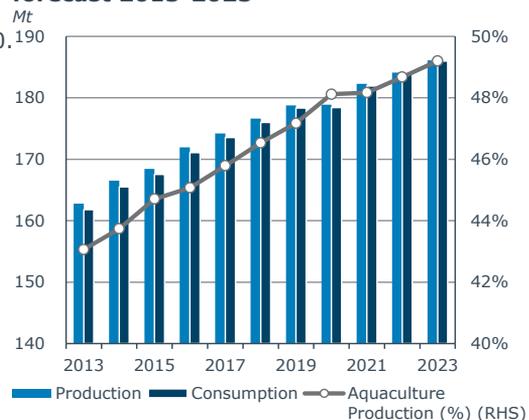
Global fish consumption is forecasted to increase to reach 186Mt in 2023, largely due to increasing populations, rising disposable incomes, increasing health consciousness along with the rise in aquaculture production. In terms of per capita consumption basis, Brazil is anticipated to register major growth, followed by Saudi Arabia, Eastern European countries and China. Apart from the increase in aquaculture production, government initiative to promote seafood consumption are likely to drive the growth in consumption. At a regional level, over 80% of growth is coming from Asia.

Fish prices, which are currently soaring, are expected to moderate in the medium term, due to increasing productivity gains from aquaculture production. With respect to trade, rising demand coupled with increased outsourcing of the processing is likely to push the trade towards Asian region with supply being sourced from European and North American countries.

International Trade in Seafood

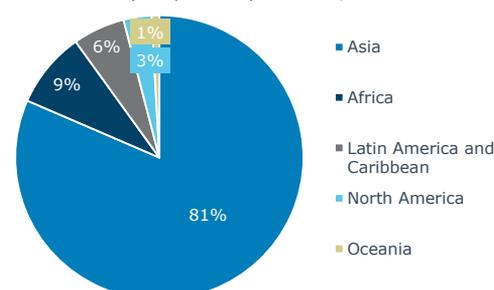


Global Fish Production and Consumption forecast 2013-2023



Increase in fish consumption by region

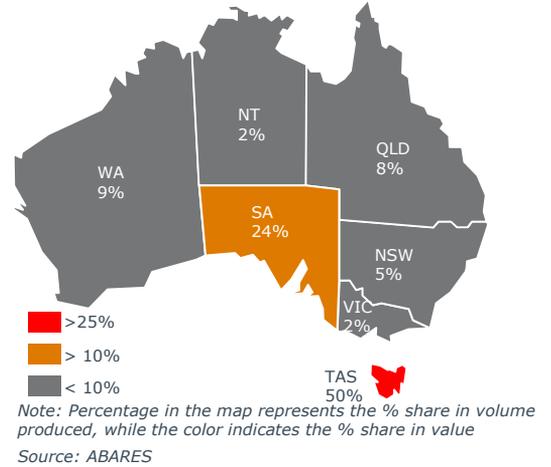
Between base year (2011-13) and 2023; Mt



Source: OECD - FAO Outlook 2014-2023

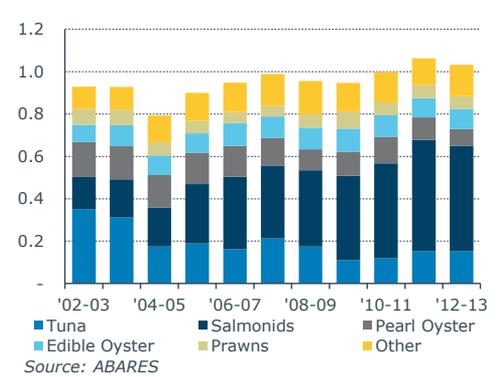
Australia has the world's third largest fishing zone, with a coastline spanning around 60,000km. Despite this, in global terms Australia is a small player, producing less than 0.2% of global seafood supply. Commercial fishing and the aquaculture industry is an important primary industry in Australia, generating AUD 2.4bn annually and employing around 10,600 people. In 2012-13, aquaculture comprised 43% of gross value and 35% of the volume of Australian fisheries production. In 2012-13, the gross value of aquaculture production actually decreased by AUD6.7 million to AUD1 billion, largely driven by declines in the production value of finfish, molluscs and crustaceans which declined by 3 per cent (\$24 million), 6 per cent (\$14 million) and 1 per cent (\$0.3 million), respectively. Since 2002-03, however, overall aquaculture production value has risen by 12% - in particular, the value production of salmonids rose by 222% or AUD343m.

Aquaculture production by State
(In 2012-13)



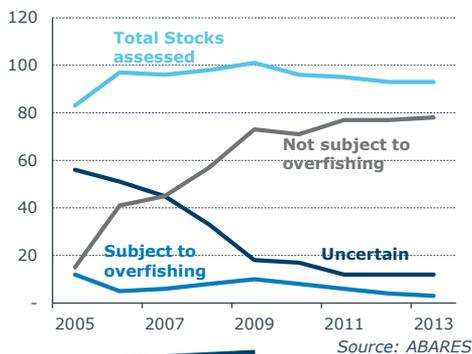
Farmed salmonids are the largest aquaculture species group produced and also the most valuable fisheries product in Australia (21% of value of total fisheries). Salmonids & oysters are mainly sold in the domestic market and therefore are not affected by the exchange rate. The Australian aquaculture industry revenue is estimated at AUD 1.2bn in 2013-14, which is estimated to have increased from AUD 964.5m in 2008-09 at a CAGR of 3.9%. The industry has benefitted from the fall in production from wild catch and rising consumption. Over the next five years to 2019-20⁴, overall industry revenue is anticipated to rise to AUD 1.3bn at 2.0% CAGR, on the backdrop of rise in domestic retail prices for seafood, which would be offset (to certain extent) by rising input costs.

Australian Aquaculture production
In AUD bn

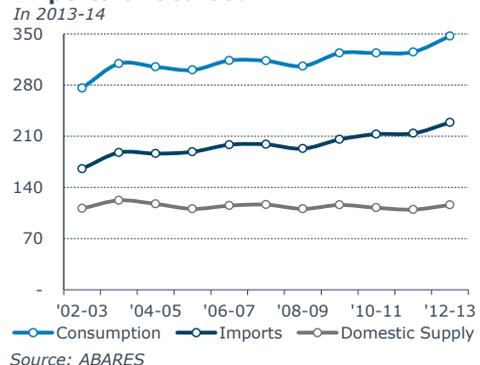


With an aim to replenish the declining marine stocks, Australian governments have increased their focus on wild catch fisheries - which is reflected in a fall in the number of species which are considered 'overfished' between 2005 and 2013. This has proved beneficial to the aquaculture producers in the past, while continued adaptation of sustainable farming practises is expected to drive growth in the industry in the long term. Domestic consumption of seafood is trending upwards due to rising health consciousness and fish being seen as a healthier substitute to other meats. Domestic consumption is estimated to have reached AUD 347.1m in 2012-13, from AUD 313.2m in 2007-08 at a CAGR 2.1%. Australia is largely dependent on imports, accounting for over 70% for its domestic consumption⁵. This indicates a lack of scale and efficiencies in the domestic supply chain, which could be due to lack of sufficient volumes. Looking ahead, promoting alliances between the parts of supply chain may help improve the efficiency across supply chain.

Biological Stock Status in Australia

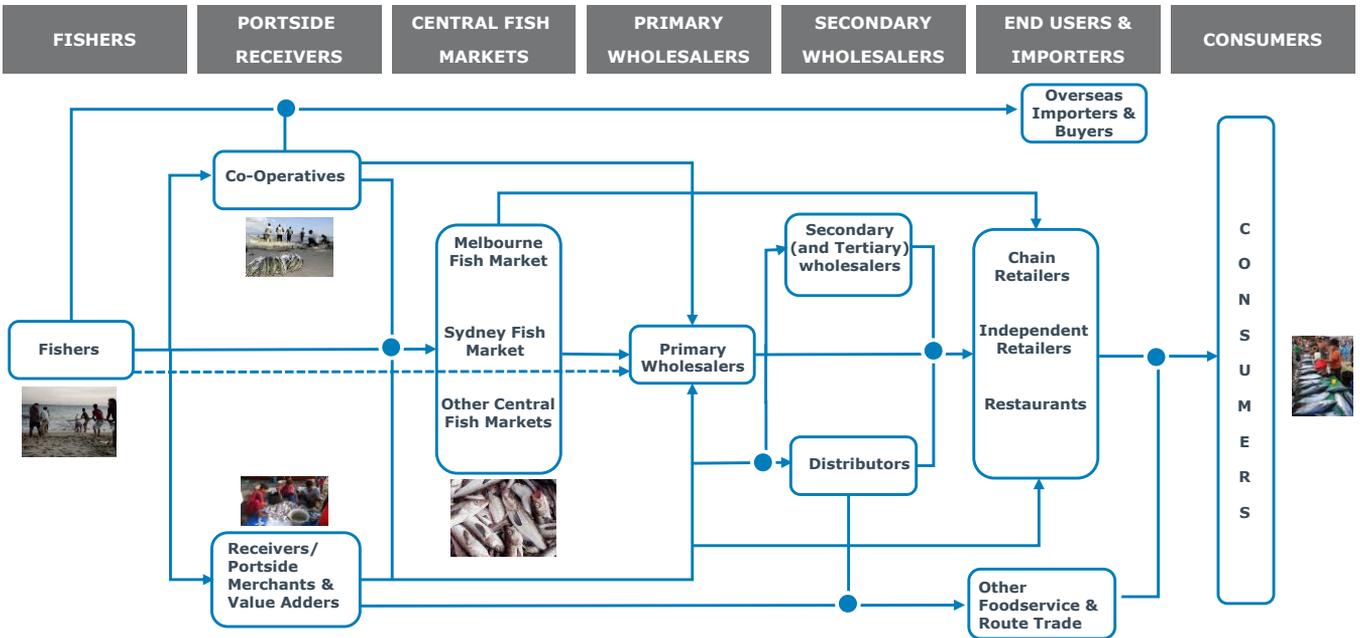


Apparent Consumption, Domestic Supply & Imports Of Seafood
In 2013-14



AUSTRALIAN AQUACULTURE INDUSTRY

Australia Fisheries Supply Chain⁶



Key Challenges:

1. Supply Chain is very complex with up to 16 separate handlings of product before it is consumed
2. Strengthening industry leadership in the supply chain, pushing to achieve improvements in efficiency
3. Low profitability across the supply chain due to the lack of skills and expertise of business operators rather than due to market failure

Source: "Overview of the Australian Fishing and Aquaculture Industry: Present and Future" published in March 2010

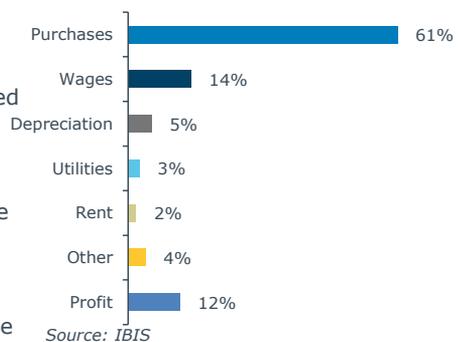
Cost Structure⁴

The profitability of industry players varies across the supply chain and according to the scale of player. Input costs, particularly for fish feed, contribute to majority of the industry costs - license and fuel costs are also high. Purchases are the largest cost for industry operators, with feed costs being the most substantial. Fish and sea life need to grow to a certain size before being sold and it takes about 80 tonnes of feed to produce 50 tonnes of prawns. Fishmeal prices have increased due to the expansion in seafood farming around the world. Licence fees are compulsory across all segments of the industry. Licensing costs vary according to the species farmed and across the states. Depending on the activities of operators, a number of licences may be required. The price of diesel fuels has varied considerably over the past five years. Fuel usage varies across the segments of the industry. While many operators in the industry benefit from rebates and subsidies, fuel is still a significant cost for the industry.

Wages, which is estimated to be around 14% of revenue, are largely attributed to the manpower required for continuous monitoring and fish feeding (in case small and medium players). The recent mining boom led to shortage of labour availability but with the mining activity slowdown, the situation is expected to improve in the future.

Break down of Industry costs

Australian Aquaculture Industry; 2013-14



Source: IBIS

The exchange rate is a dominant factor in determining the industry profitability, with the high AUD resulting in competition from imports in a market which is largely import dependent. As a result, processors in the sector may seek to further invest in high value seafood, to cater for both the domestic and international market.

Market opportunities

By 2018, the FAO predicts that production of farmed fish will exceed wild fisheries. On the backdrop of growing demand, Australian needs to leverage proximity to Asian markets and the growing demand for high value aquaculture products; supported by Australia's reputation as a safe supplier and its environmentally sustainable production practises. Australia's broad variety of marketable species is a strength, which should be customised to direct investment into highest value product lines and markets. More open inward FDI policies could attract investment from Asian producers seeking quality branded high value products for the hospitality distribution channel.

China Australia Free Trade Agreement

The domestic aquaculture sector stands to benefit more than many other agriculture sectors under Australia's various Free Trade Agreements. Under the recent FTA with China, tariffs on seafood, including 15% on rock lobster and 14% on abalone will be phased out over four years. Similarly to the wine sector, this will allow Australian seafood exporters to better compete with countries such as New Zealand and Chile, who already have full access to the Chinese market.

The FTA with China will also likely see the establishment of new direct supply chains, between the two countries, as exports no longer need to go through the "grey channels" such as Vietnam and Hong Kong to avoid Beijing's tariffs. The establishment of these supply chains, and the likely move by Chinese representatives to secure supply, should see further investment and cross-border integration into the local industry.

References:

1. World Research Institute, "Improving Productivity and Environmental performance of Aquaculture"
2. USDA Gain report, "Building the Chinese Market for US seafood", February 2014
3. "Australian fisheries and aquaculture statistics 2013", ABARES, November 2014
4. IBIS Research, "Aquaculture in Australia", September 2014
5. Tasmanian Salmonid Growers Association Submission Agricultural Competitiveness White Paper, April 2014
6. Ridge Partners, "Overview of the Australian Fishing and Aquaculture Industry: Present and Future", March 2010