

# FRDC Submission into the Inquiry into growing Australian agriculture to \$100 billion by 2030

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## Executive Summary

The Australian commercial fishing and aquaculture sectors have considerable future growth potential and are well placed to contribute strongly to a target of growing Australian agriculture to \$100 billion by 2030.

Strong demand from Asia as populations grow and incomes rise will present opportunities to grow export revenue. Further, a strong domestic food market offers opportunities for seafood particularly aligned with increasing demand for healthy food options. Australia's reputation of clean, safe and trusted seafood products will be the foundation for growth, with significant potential to expand aquaculture production across many species and regions.

However, key constraints to growth will remain with an increasing focus on environmental sustainability of agricultural and fishery industries and associated regulatory impacts. Similarly, social license issues focused on the public perception of the sustainability of aquaculture production and wild catch industries will be a threat.

## Recommendations

Based on the details in this submission FRDC proposes the following recommendations of ways the government can enable sector led opportunities and facilitate growth:

### Recommendation 1

*FRDC recommends that government supports the Council of Rural Research and Development Corporation's (CRRDC) new focus on establishing a special purpose vehicle for cross-sectoral collaboration in R&D to realise opportunities where scale, enduring resource availability are key drivers of success. Examining new ways to facilitate and encourage Research and Development Corporations to work together with external partners from private and public parties on problems that impact all sectors is an important aspect of helping grow Australian agriculture to \$100 billion by 2030.*

### Recommendation 2

*FRDC recommends the government consider a more responsive, agile, co-ordinated and national approach to market access. This will enable risk reduction through market diversification and help the sector to adapt to consumer demand and develop higher value markets with the greatest potential (e.g. European Union).*

### **Recommendation 3**

*FRDC recommends the government harmonise regulation across jurisdictions in areas from land and marine use planning, fisheries management to environmental controls and food safety. This will build business confidence as well as social confidence and will encourage private investment, enable businesses in the sector to make informed and timely decisions, operate nationally and enhance global competitiveness.*

### **Recommendation 4**

*FRDC recommends co-ordinated access to and incentivisation of capital across all levels of government to improve supply chain infrastructure for fisheries and aquaculture (e.g. cold chain infrastructure) and to support the adoption of new technology. This will enable the sector to be more efficient across the entire supply chain and reduce costs.*

## **FRDC**

Fisheries Research and Development Corporation (FRDC) is a co-funded partnership between its two stakeholders, the Commonwealth Government and the fishing and aquaculture sectors. The FRDC is a Statutory Agency, fully owned by the Commonwealth Government, and accountable to the Minister for Agriculture.

FRDC's role is to plan and invest in fisheries research, development and extension (RD&E) activities in Australia. The FRDC achieves this through facilitating discussion across its stakeholders to establish RD&E priorities and coordinating government and industry investment to address them.

## **FRDC's position on growing agriculture to \$100 billion by 2030**

FRDC supports the National Farmers' Federation (NFF) '2030 Roadmap' which calls for a staged approach to achieving the \$100 billion vision starting with cultural change, followed by formalising collaboration and then moving to consolidation to maximise resource efficiency across five pillars which detail aspirations, actions, impacts and metrics (NFF, 2018).

FRDC supports the Council of Rural Research and Development Corporation's (CRRDC) report 'Vision 2050' which notes the importance of innovation in securing long term productivity growth and prosperity. The challenges and opportunities that will promote growth in the agrisystem include a focus on consumers and the community, looking beyond food and fibre, recognising the potential for up and downstream value and broader benefits and adopting an outward facing and global approach.

FRDC supports the directional target of \$100 billion, as outlined in AgriFutures Australia report 'Agriculture – a \$100 billion sector by 2030?' (ACIL Allen, 2019). The directional target provides focus and establishes a national dialogue on how to grow the agricultural industry including commercial aquaculture and wild catch fisheries. FRDC notes the target is ambitious and requires a doubling of the current growth rate that is dependent on a large number of external factors such as prices and seasonal conditions. Fisheries and particularly aquaculture are, however, well placed to contribute to this growth.

As outlined in the AgriFutures Australia report, progress toward the target requires alignment and execution of strategies that contribute to and improve enduring profitability for the whole industry. Business as usual will not get us there, and any strategy needs to be flexible to adapt across sectors and over time as circumstances dictate.

## Paths to growth

There are many paths for increasing value for the fisheries sector, but they essentially all require increasing volume availability and increasing the unit catch/harvest price (refer Figure 1). The rest of this submission outlines the drivers of growth for the sector and the key risks that need to be managed to realise the potential for growth.

## Commercial wild catch and aquaculture sector in Australia

Fishing and aquaculture activities, including associated processing industries contribute to local, regional and national wellbeing in many forms. These include economic activity where fishing and aquaculture contributes \$5.3 billion (GVP) to the national economy, directly employs 15,442 full time equivalent (FTE) positions, indirectly supports 25,812 FTEs and contributes to the health benefits of consumers (FRDC, 2019).

Commercial fishers and farmers undertake activities directed at a financial return from the sale of either seafood, or non-edible aquatic products including pearls, algae, kelp sponges, etc. This activity occurs in two sectors:

- Wild catch fishers utilising limited entry marine, estuarine and inland fresh and saline waters; and
- Aquaculture farmers utilising production systems in three categories (semi-open, semi-closed and closed systems).

Figure 2 presents a snapshot of the sector with focus on Gross Value of Production (GVP)<sup>1</sup>, volume and export value, and markets by food or non-food product.<sup>2</sup> Over the last 20 years Australia’s annual seafood harvest has been relatively stable. Data shows that the volume of wild catch has declined since its peak in 2000-01 and its share relative to the volume and value of aquaculture has declined over time. Refer Figure 3 and Figure 4.

The AgriFutures Australia report (ACIL Allen, 2019) demonstrates that fishery products, valued at \$2.91 billion in 2016-17, are required to increase in value by 31.3 per cent to \$4.24 billion by 2030 just to stay on trend. Figure 5 shows the on trend contribution for fisheries (in shaded blue) relative to the rest of the agriculture industry by 2030. Figure 6 shows the fish specific trend. FRDC believes that the potential value of fish and seafood, provided the right opportunities and economic environment, could deliver much more value and a larger proportion (up to 100 per cent of current value) of the total value of agriculture in 2030. This would go some way to filling the predicted \$15.7 billion gap to achieve \$100 billion for the industry by 2030.

To achieve its part of \$100 billion by 2030, fish and seafood need to focus on the same general drivers of growth as the broader agricultural sector, whilst managing similar risks (refer Table 1). Those drivers and inhibitors with specific significance to fisheries are indicated by ticks in the table.

TABLE 1 Drivers and risks of growth for agriculture

| Drivers  |   | Risk                          |   |
|--|---|-------------------------------|---|
| Market access, diversification and development | √ | Climate change                |   |
| Investment in shared infrastructure            | √ | Inadequate biosecurity        | √ |
| Investment in post-harvest R&D                 |   | Unresponsive regulation       | √ |
| Adoption of technology                         |   | Changing consumer preferences | √ |

<sup>1</sup> GVP is a measure of the gross revenue of goods and services produced by commercial organisations

<sup>2</sup> Non-food products include, for example, fish oil, coral, sponge, shells, pearls etc.

With respect to fisheries more specifically there are other opportunities and barriers to increasing value, as presented in Figure 7.

## Wild catch

Australian wild fisheries are relatively small in comparison with global production, but they have a large geographic and social footprint. Over the last 20 years the share of wild catch as a proportion of total volume has declined by about 30 per cent. Contrary to general consensus, recent work by the CSIRO (Smith et al, 2019) shows that there is actually significant opportunity to increase commercial wild catch fishery production in Australia. The report estimates that maximum sustainable yield could be doubled over what is currently caught with most of that increase being calculated in Commonwealth fisheries. Overall the research suggests that:

- Australian wild catch commercial fisheries are not currently fished at their maximum sustainable yield limits
- A 100 per cent increase in commercial catch (of existing assessed fish stocks) is possible

Even assuming that price per kilo remains constant, a 100 per cent increase in production adds \$1.5 billion in value, and even if only two thirds of this were achieved the increase it still adds \$1 billion to the \$15.7 billion gap.

A further potential gain is to utilise what is considered to be ‘under-utilised catch’ as global protein needs continue to increase. This includes fish and seafood that are caught but are currently not in high demand, or development of markets for new species to meet increasing demand. Changing consumer tastes and preferences offer significant opportunity to capitalise on under-utilised catch as does delivering protein requirements to existing markets overseas. An example of where this has successfully occurred in the past include crab which was not popular 20 years ago and octopus and squid which were not popular 10 years ago.

## Aquaculture

Over the last 20 years aquaculture has increased supply by 208 per cent and aquaculture’s share of GDP has increased by 69 per cent. Growth has been particularly apparent since 2005, driven primarily by South Australian tuna farming and Tasmanian Atlantic salmon.

The scope for growth in aquaculture is very large. For example, the WA aquaculture industry, excluding pearling, currently generates \$15 million per year in economic value. New development zones being implemented by the state government are aimed at lifting this figure 40 fold to more than \$600 million per year within the next decade.

The FRDC has identified the potential in aquaculture over the last five years and has focussed R&D to support developing new and emerging aquaculture opportunities as one of three national priority areas in its RD&E Plan 2015-20.

Aquaculture has some of the same physical constraints as wild catch but there are considerable amounts of land suitable for closed systems which limit the risks of climate change and biosecurity incursions. Closed system aquaculture reduces the risk of biosecurity incursions due to a more controlled environment – this is becoming increasingly important as the frequency of exotic incursions increase over time (refer Figure 8).

There is also potential to farm more non-traditional food and non-food products such as algae which can be farmed in their own right or using the waste water of existing aquaculture or other industries. These emerging products can also have alternative uses such as nutraceuticals<sup>3</sup>, supplements, biofuel, making plastic and blue carbon.

However, barriers to aquaculture growth exist primarily in:

- Regulatory burden particularly with respect to development approvals and compliance with environmental standards especially in Northern Queensland<sup>4</sup>
- High input costs, specifically energy
- Securing a sustainable supply of feed for the farm

Aquaculture is an agribusiness that typically produces high quality seafood and should be managed as a food industry. Separating the regulation of aquaculture from wild catch fisheries will directly and fundamentally lead to different way of thinking, investing and better managing both sectors.

Box 1 Potential for growth – a case study – prawn farming in Northern Australia (June 2019)

*One of the largest agriculture infrastructure projects in Australian history, a massive aquaculture development across two states, has reached 'shovel-ready stage'.*

*All planning, regulatory and Indigenous land-sharing approvals are in place for the first three farms (1120 hectares of ponds), allowing construction to begin as soon as finance is secured.*

*The venture, titled Project Sea Dragon, opened its headquarters in Darwin on 8 May and has been methodically assembled over the past seven years by the Perth-based Seafarms Group. It will be a vertically integrated marine prawn breeding, farming and processing enterprise linking five specialist facilities in Western Australia and the Northern Territory.*

*When fully completed in 2025, the project expects to achieve an annual production of 150,000 tonnes of Black Tiger Prawns (*Penaeus monodon*), valued at \$1.7 billion in annual export earnings. It would take Australia from the 67th largest prawn producer in the world to among the top ten. Media reports have put the cost of the project at about \$2 billion, and a number of large global seafood investors are reported to be in negotiations with Seafarms, with marine product giant Nissui recently signing on.*

*The project brings together 'big science' and 'big commerce' to ensure the operation starts on a large enough scale to be economic from day one. This includes 1120 hectares of grow-out ponds (each pond covering 10 hectares) on a cattle station, Legune Station, on the coast across the Northern Territory border from Kununurra, WA. The operation will have access to clean seawater, plus fresh water from a private dam. Its remoteness is also a crucial biosecurity measure.*

<https://www.frdc.com.au/media-publications/fish/fish-vol-27-2/prawn-venture-heralds-aquaculture-step-up>

<sup>3</sup> Refer: <https://www.frdc.com.au/media-publications/fish/fish-vol-26-2/just-add-algae>

<sup>4</sup> The CSRIO's submission to the Productivity Commission Inquiry, 2016 notes that a recently completed 15-year approval process for a "zero net discharge" prawn farm near Bowen QLD demonstrates the challenge for new sites.

## Markets and trade

Australia's fisheries and aquaculture sector is a minor global player, producing less than 0.2 per cent of global fisheries and aquaculture supply, this presents some challenges but also a range of opportunities.

### Domestic markets

Australia's domestic market is relatively small and the food market is considered saturated. Fish and seafood consumption could be increased but this would likely be at the expense of another protein (e.g. chicken or meat) which does not see increased value for the agricultural industry as a whole. Nevertheless, replacement of imported seafood is an option for seafood to grow the domestic market.

Australia imports a large amount of fish products (72 per cent) noting that most of this is low value, highly processed products that Australia cannot produce competitively. The National Marine Science Plan notes that Australia needs to address its current and potential future gaps in food self-sufficiency and improve production as part of reducing its reliance on imports.

Australia's largest seafood production enterprise, Tassal Ltd, notes in its latest Annual Report that domestic seafood demand appears to be unfulfilled, resulting in a likely upward price outlook in the near term (Tassal Ltd, 2018).

### Export markets

In 2018-19 the major fisheries product export destinations for Australia were:

- China \$889 m
- Japan \$213 m
- Hong Kong \$175 m
- USA \$55 m
- Singapore \$43 m

Together, these five leading markets accounted for 90 per cent of Australian fishery products exports in 2018-19.<sup>5</sup>

Over the last few years there has been change following Australia's Free Trade Agreement (FTA) with China (since December 2015) which has seen much of the previous grey trade via Vietnam now reverting to direct trade to China or via Hong Kong.

Under FTAs, tariffs on many seafood exports from Australia to key Asian markets (China, Japan, South Korea) are expected to decline. The China FTA is the major agreement likely to impact fisheries product exports long-term due to the forecast consumer market scope and growth.

Analysts estimate that growth of around 6-10 per cent in global seafood volume is required to maintain price parity and stop global prices from increasing (Tassal Ltd., 2018).

However, such a high dependence on just five markets with 60 per cent of exports to China alone is risky and the sector should look to diversify its export markets. For example, market access to the UK and the EU would provide significant export opportunities. To achieve access to high value markets there needs to be more agility in the system. Market access is a slow process and although the

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<sup>5</sup> Refer: <https://www.frdc.com.au/en/services/seafood-trade-data/seafood-import-and-export-by-commodity>

complexities are well understood there is potential for a more co-ordinated and streamlined approach which enables flexibility in terms of negotiation as well as more flexible standards and less prescriptive regulation.

## Issues common across wild catch and aquaculture

In addition to the barriers and opportunities that are specific to wild catch and aquaculture there are a series of issues that are common across both areas.

### Significant regulatory costs

Australian governments have closely regulated commercial fishing for decades. Over time, regulatory challenges, technologies and objectives have changed, but the regulatory response has typically been to overlay additional requirements onto existing fisheries management practices.

Australian fisheries and aquafarms are managed to a science-based sustainability standard that is near or at world's best practice. These higher performance standards result in reduced access to marine waters and fisheries and to higher operating costs than would exist at a lower mandated level of sustainability. As a result, Australia (as an open trading economy) is not economically competitive against many global seafood producers and traders. Opportunities exist in leveraging the sustainability of our fish and seafood to gain market share and attract premiums however consideration needs to be given to appropriate regulation and potential for implementation of sector led standards as distinct to government imposed regulation.

The Productivity Commission (2016) recommends that, in addition to statutory reviews of fisheries laws, fisheries regulators should regularly review whether the specific controls and management arrangements applying to fisheries remain appropriate for each fishery.

The commission suggests there is scope for some streamlining and simplification of market mechanisms (e.g. ITQ trade) as well as adoption of new technologies (including electronic data collection systems) to allow more efficient monitoring of fisheries.

### Environmental regulation

The 2016 Productivity Commission Inquiry noted that regulatory arrangements for aquaculture had not changed significantly since 2004 and the Commonwealth Government should reduce the regulatory burden involved in environmental approvals by:

- continuing to move fisheries that represent lower environmental risk to 10-yearly approvals under the Environment Protection and Biodiversity Conservation Act 1999 (Cth),
- not requiring fisheries to be accredited or their accreditation to be periodically renewed if satisfied that they present low environmental risk.

(This recommendation was supported in principle by Government.)

### Food safety

The Seafood Food Safety Scheme applies to all aquaculture and fisheries license holders catching or producing fish for human consumption.

SafeFish (refer [www.safefish.com.au](http://www.safefish.com.au)) is an Industry – Government partnership of seafood experts that assist industry and regulators to resolve technical (e.g. food safety and hygiene) and trade matters (e.g. CODEX). Initiatives like this can be leveraged by the sector for marketing purposes – that is to promote the 'clean and green' image of fish and seafood.



## Energy intensity

For decades sustainability has been a fundamental tenant of the global fisheries and aquaculture triple bottom line (social, environmental and economic). Carbon emissions (i.e. Greenhouse gases (GHG)) are only now being assessed and embedded into this sustainability metric. Carbon lifecycle measurement and management is complex in the sector, given its diverse, global, multiuser, hunting and culturing activities.

For both wild catch and aquaculture, production typically creates more carbon emissions than post-harvest or freight. Marine fleet liquid energy (diesel) efficiency is a major GHG emission source (and cost) in the industry, especially for trawling. Part of the issue is that fishers are restricted in the choice of location of fishing to reduce emissions as a skipper's best vessel management choices are made jointly with fishery managers who control spatial access to biomass. Electric marine vessels will go some way to addressing a major component of GHG emissions and they are coming.

Aquaculture carbon emissions and energy intensity vary with farm scale, culture intensity, marine or terrestrial pondage, feed source, and process and logistics. There is scope to explore more energy efficiency options for pumping etc.

## Labour requirements in regional areas

A concerning trend is that employment in commercial fishing has fallen by half since 2001 reflecting the loss of fishers access to waters, price competition from imported fish and seafood (especially frozen prawns, and canned tuna), and the aging of wild catch fishers and their capital equipment and technology.

Building the capability in an aging and declining workforce is important to growing the sector but presents a range of issues. Skills and capability as well as access and incentives can facilitate the adoption of new technology and enable people to overcome regulatory burden and consider developing new markets.

## Infrastructure

As with other aspects of the agriculture industry, the fisheries sector would benefit from investment in off-farm infrastructure, from sector specific infrastructure such as cold chain facilities in regional areas to more general infrastructure such as improved telecommunications and space based infrastructure systems, better roads and transport, including solving 'last mile' issues (e.g. B-double access to Ports) and social infrastructure in regional and rural areas like schools and hospitals.

Infrastructure improves access to markets and lowers transaction costs for businesses, reduces reliance on government support, increases regional productivity and output and creates new jobs in regional areas.

## Social License

All elements of the agrisystem, including Australia's fishing and aquaculture community, need to build mutual trust with the community, termed social license. A gap between industry and community perceptions presents an impediment to acceptance, and growth of Australia's wild harvest and aquaculture sectors.

Key elements in building trust are now [well understood](#), and include:

- the degree to which fisheries and aquaculture activities are well regulated to deliver sustainable outcomes
- the degree to which an industry or sector is responsive to community sentiment



- the degree of alignment between values of the industry or sector in question, and those of the community
- the degree to which benefits to community outweigh the costs (Refer Figure 9).

There is currently a misalignment between public perceptions and expectations, and contemporary knowledge with respect to fisheries sustainability. This is demonstrated by the [recent community survey](#) conducted in 2018 which shows that 36 per cent of surveyed Australians currently think fishing in Australia is sustainable (down 5 per cent from 2017). This contrasts strongly with reported performance under the [Status of Australian Fish Stocks](#) which shows 90.5 per cent of stocks assessed by weight, a vast majority of the catch in Australia's fisheries, are sustainable.

## Innovation

RD&E is front and foremost in the development and adoption of technology and is central to FRDC's remit and the ongoing productivity and profitability of the fisheries industry. There are many examples of R&D resulting in sectoral growth. Recent R&D projects include:

- Aquaculture farmers may be able to turn their wastewater into a new income stream by producing high-value nutraceutical compounds<sup>6</sup>
- Huon Aquaculture's development of Fortress Pens that allows expansion into more exposed marine environment that are further off-shore
- The new "Deckhand" digital platform that is improving the use of real-time data to improve fishing efficiency
- Expansion of the sub-Antarctic fishery using high levels of environmental performance (carbon neutral) and improved providence tracking
- Australian Seafood Industries joint initiative with Oysters Australia to establish a selective breeding program that delivers disease resistant oyster spat.

To accelerate innovation the Research and Development Corporations (RDCs), including FRDC, are developing novel approaches to facilitate knowledge development e.g. Fish-X <http://fish-x.com.au/>. Platforms like these are designed to address and improve Australia's innovation capability and bring new ideas to light.

## Key strategies for growth and how the government can support the sector

A SWOT analysis (refer Figure 10) of wild catch and aquaculture sector identifies four sector led opportunities designed to match internal and external factors, which take advantage of opportunities, reduce threats, overcome weaknesses and exploit sectoral strengths. These opportunities assist the sector to increase its value and longer term viability.

- The capacity for growth in both aquaculture and wild catch (maximum sustainable yield) can create consistent supply for domestic and export markets in food and non-food products
- Development of aquaculture to further mitigate risk and reduce external threats such as climate change
- Collaboration within the sector and across the broader agricultural industry can reduce fragmentation and strengthen resilience in the broader agricultural industry with focus on cross-sectoral R&D such as climate change and biosecurity

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<sup>6</sup> See: <https://www.frdc.com.au/media-publications/fish/fish-vol-26-2/just-add-algae>

- Building capability to enable the sector to deal with regulatory requirements, develop markets and adapt to changing consumer preferences

These sector led opportunities can be achieved through four key recommendations for government support through:

1. Provision of support for the Council of Rural Research and Development Corporation's (CRRDC) new focus on establishing a special purpose vehicle for cross-sectoral collaboration in R&D to realise opportunities where scale, enduring resource availability are key drivers of success. Examining new ways to facilitate and encourage Research and Development Corporations to work together with external partners from private and public parties on problems that impact all sectors is an important aspect of helping grow Australian agriculture to \$100 billion by 2030.
2. Consideration of a more responsive, agile, co-ordinated and national approach to market access. This will enable risk reduction through market diversification and help the sector to adapt to consumer demand and develop higher value markets with the greatest potential (e.g. European Union).
3. Harmonisation of regulation across jurisdictions in areas from land and marine use planning, fisheries management to environmental controls and food safety. This will build business confidence as well as social confidence and will encourage private investment, enable businesses in the sector to make informed and timely decisions, operate nationally and enhance global competitiveness.
4. Co-ordination of access to and incentivisation of capital across all levels of government to improve supply chain infrastructure for fisheries and aquaculture (e.g. cold chain infrastructure) and to support the adoption of new technology. This will enable the sector to be more efficient across the entire supply chain and reduce costs.

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Figures

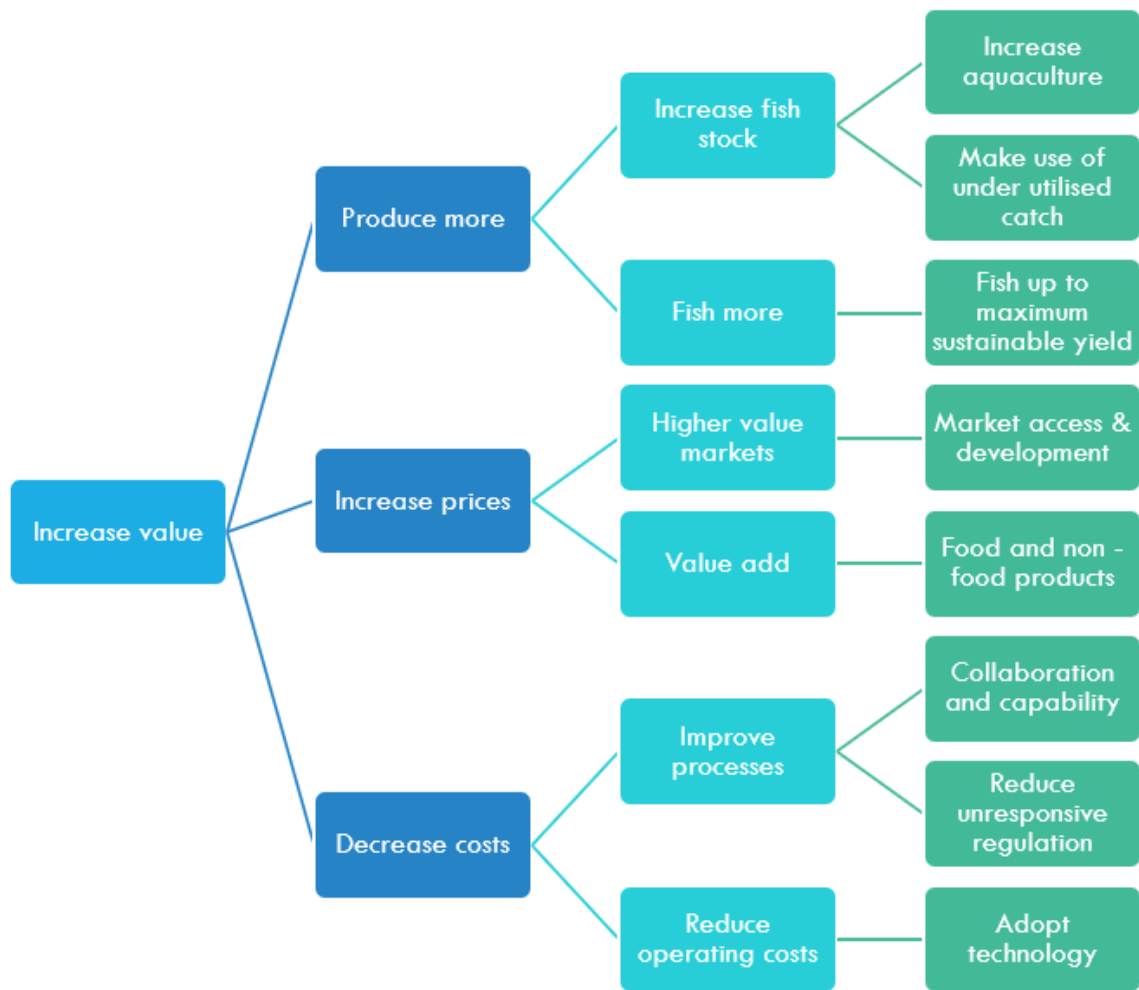


FIGURE 1 Increasing value for the sector

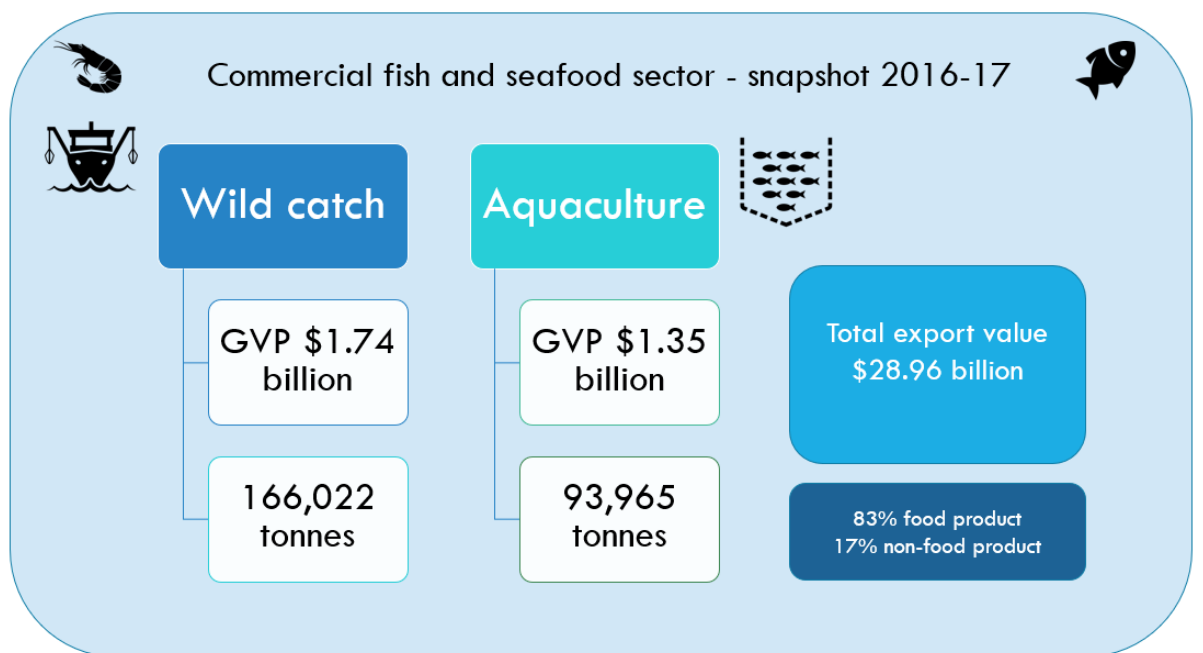


FIGURE 2 Sector snapshot, ABARES, 2016-17



FIGURE 3 Aquaculture and wild catch volume (tonnes) and share of volume over time (ABARES)

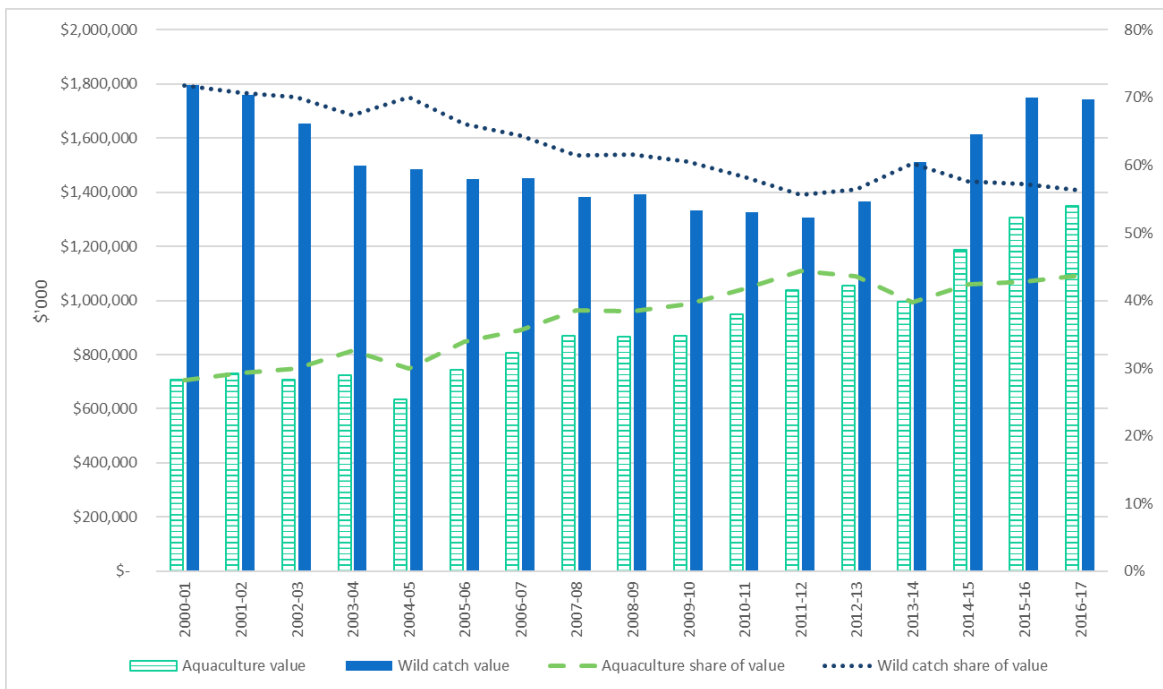


FIGURE 4 Aquaculture and wild catch value (\$'000) and share of value over time (ABARES)

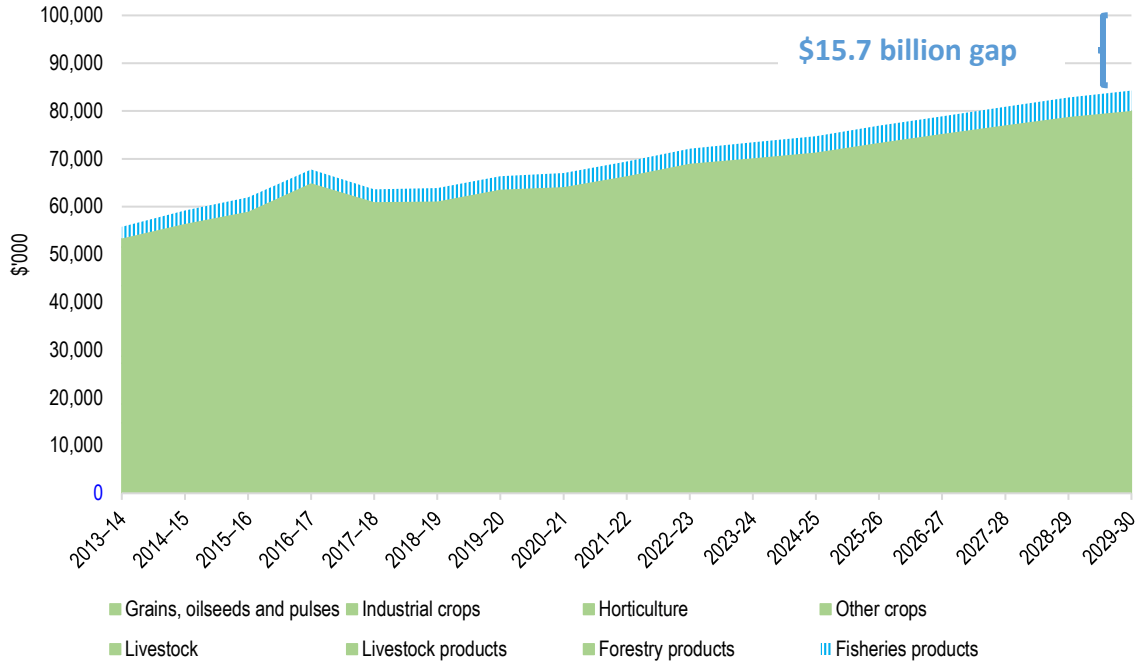


FIGURE 5 Unadjusted projections farm-gate value of agriculture to 2029-30 (ACIL Allen Consulting, 2019)

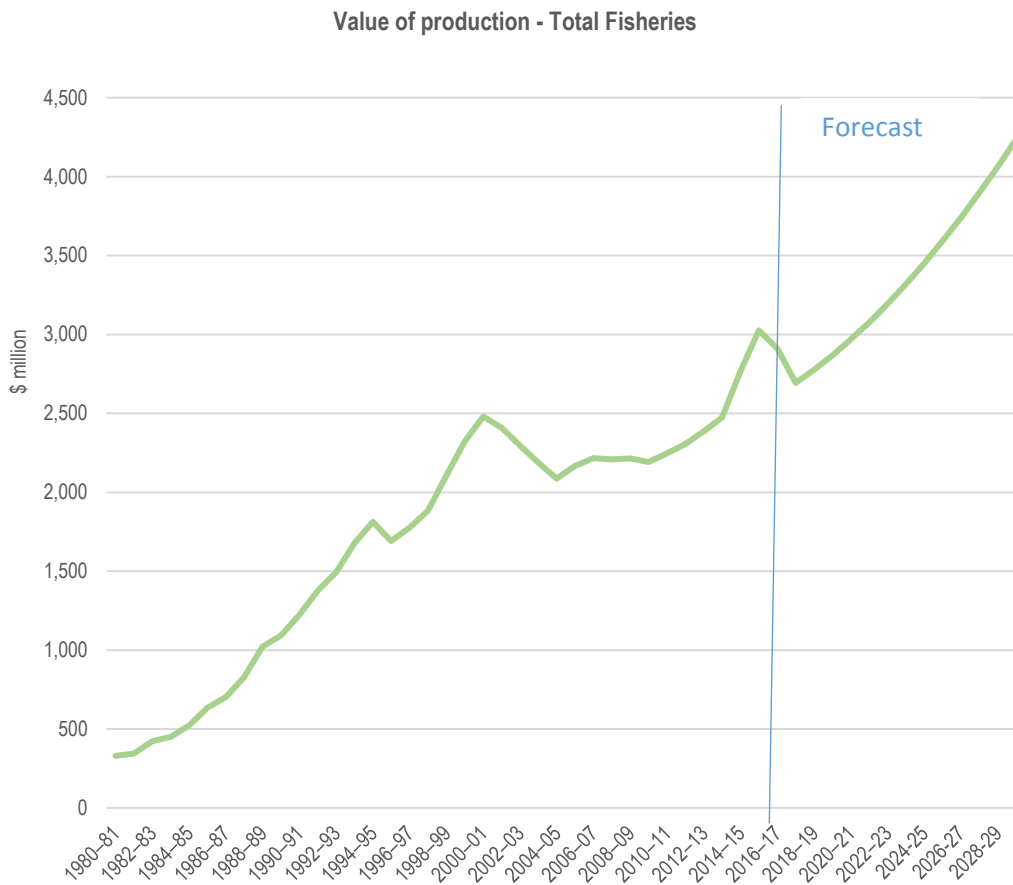


FIGURE 6 Value of production and potential value of production for fisheries (ACIL Allen Consulting, 2019).

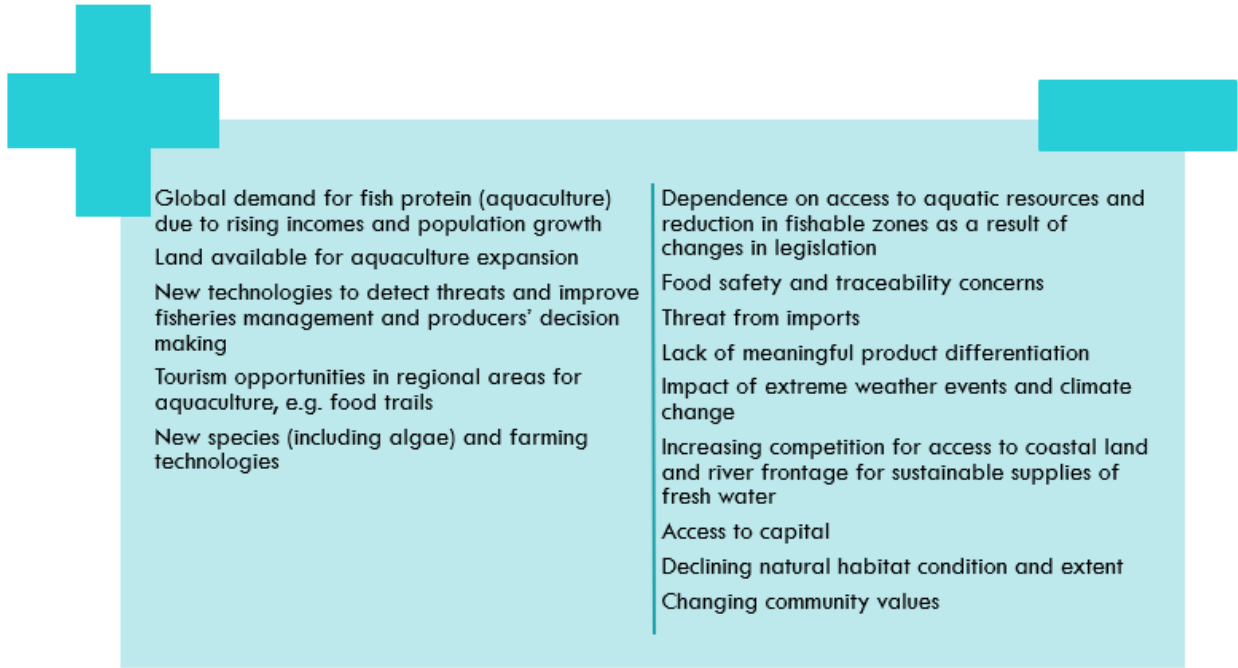


FIGURE 7 Fisheries growth: drivers and inhibitors (FRDC, 2016)

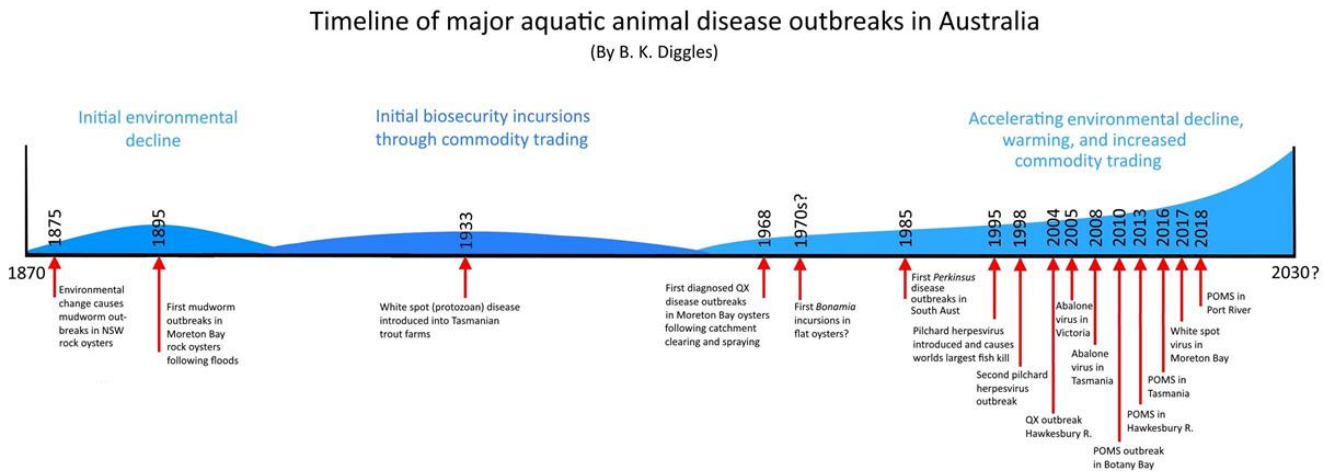


FIGURE 8 Biosecurity incursions over time

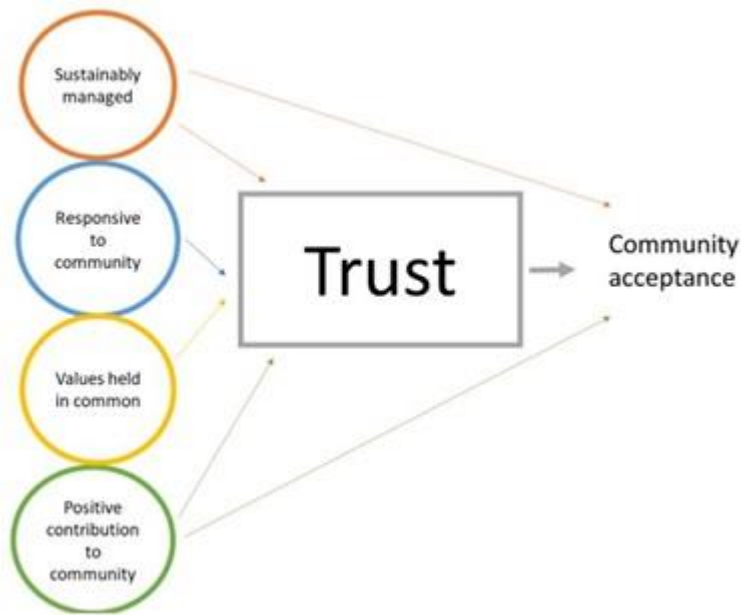


FIGURE 9 Developing consumer acceptance through trust

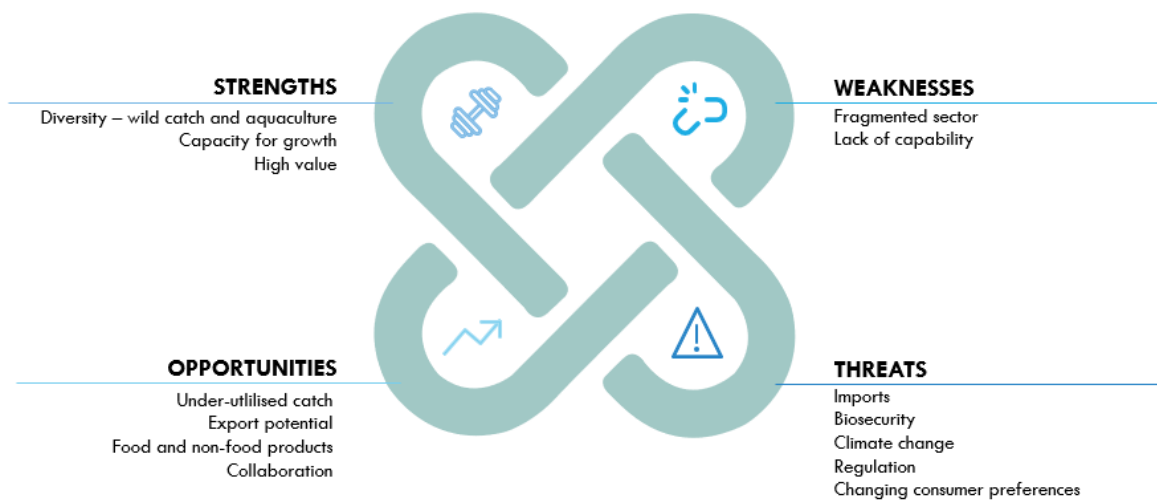


FIGURE 10 SWOT analysis