

Industry insights

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Fishing, Aquaculture & Seafood

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Summary

The Fishing, Aquaculture and Seafood sector is experiencing falling employment, lacklustre long-term export revenue growth, and increasing challenges over the politically-charged issue of recreational versus commercial fishing rights.

At the same time, the sector faces opportunities that could allow for strong growth. The Quota Management System (QMS) has helped improve the long-term sustainability of a number of fish stocks, new wild-catch techniques such as Precision Seafood Harvesting (PSH) look promising, and the scope to move up the seafood value chain is huge.

Why Fishing, Aquaculture and Seafood?

The Fishing, Aquaculture and Seafood sector employed 7,200 full-time equivalent workers (FTEs) across New Zealand in 2014, and generated \$786 million in value added. These are relatively small shares of the total economy, but the sector is one of this country's largest merchandise export industries. It exported around the same dollar value of products as the wine industry, and twice as much as New Zealand's oil exports.

The sector fits well with New Zealand's natural advantages. New Zealand has an exclusive economic zone (EEZ) of four million square kilometres, one of the largest in the world. Bold targets for growth in exports to \$2 billion per year were set in the late 1990s, but we have failed to achieve this.

Instead, the contribution of Fishing, Aquaculture and Seafood to GDP peaked at \$940 million in 2003, and has fallen 16% since then. This makes an examination of the current operating environment, recent trends, risks and opportunities to grow the sector all the more important.

Recent performance of the sector

Since the peak in 2002, Fishing, Aquaculture and Seafood employment has fallen by 26%, in part because of weak export demand, and in part due to automation. Combined with the 16% decline in value added since 2003, this implies some productivity gains, but not a level of productivity growth and better than the rest of the economy.

Yet within the headline data, a couple of important trends have emerged:

- Export values for 2015 were the highest ever recorded in New Zealand dollar terms, and constituted an increase of 2.9% a year since the trough of 2007 although in real terms, the 2015 figure was still below the 2002 peak.
- Our major seafood export markets have changed radically, with China accounting for 32% of export values in 2015, up from 3% in 2000. Japan's role has plunged from 23% to 6% of export values, and Hong Kong's intermediary role for the Chinese market has waned, as more product has been direct-sold into China.

Key issues and the sector outlook

Overcoming modest growth in seafood exports will require one or both of two things to occur:

- The **volume** of seafood exported will need to grow. Opportunities to grow volumes will come through more aquaculture, as the QMS restricts growth in wild-catch fishing in the interests of fishery sustainability. However, local opposition to aquaculture often makes the approval of new waterspace for that purpose a challenge.
- The **prices** received for New Zealand seafood will need to rise. In our view, the opportunity to achieve higher prices lies in collectively marketing New Zealand's sustainable fisheries, to introduce new species to the market, and to steer customers away from generic "whitefish" frozen and fillet exports and toward fresh and chilled product. New technologies such as PSH will improve the efficiency of catch while also reducing damage to fish and doing much to bolster New Zealand's environmentally-conscious image. These benefits could provide a useful basis for higher prices.

At the same time, the sector faces several other changes:

- The **tensions between commercial and recreational fishers** will continue and likely intensify. The argument that the economic benefit per fish or kilogram of fish generated by recreational fishing is many times higher than that of commercial fishing is hard to rebutt. Further, the government has expressed a clear interest in creating recreational fishing reserves that may affect the long-term financial viability of some fishing operations, even if they are compensated for loss of quota. Yet questions must be answered over how commercial fishers' property rights will be protected, how more recreational fishing will be monitored, and what more rights for recreational fishers may mean for the price of fish in the shop.
- **Consolidation and automation** of the sector will continue. Larger players will buy up quotas and look to consolidate operations where possible. The industry structure may be hollowed out such that large processors and small independent fishers dominate. We may see more joint venture processing facilities across firms to improve efficiency.
- **Significant capital investment in the fishing fleet** is required. This equates to tens or hundreds of millions of dollars of investment, but many businesses are looking to see how the commercial-recreational fishing debate plays out before making big-ticket investments.
- **Increased market concentration** will continue to raise the risks of exposure to a handful of key markets. Given the growth in lobster exports to China, and Australia's dominance in the chilled / fresh fish category, this increasing market concentration is unlikely to reverse soon.

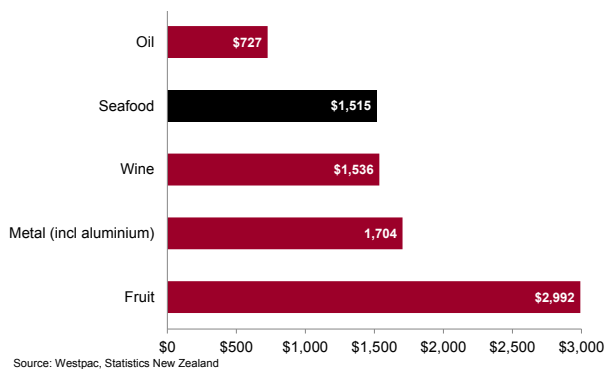
David Norman - Industry Economist

Introducing the sector

- The Fishing, Aquaculture and Seafood sector is one of New Zealand's largest exporters although it accounts for a small share of workers and value added to New Zealand GDP. More than 70% of its production is exported.
- Over the last 14 years, employment in the sector has fallen by 26% with modest gains in production per worker.
- There is significant vertical integration in the sector, with many of the businesses that own fishing quotas or have leased waterspace for aquaculture doing their own harvesting, processing, exporting and domestic marketing and in some cases, domestic wholesaling.
- We expect more consolidation in the years ahead as larger players seek to buy more quotas.

The Fishing, Aquaculture and Seafood sector employed nearly 7,200 full-time equivalent workers (FTEs) across New Zealand in 2014,¹ and generated \$786 million in value added.² Although small in scale, it was one of this country's largest merchandise export industries in 2015, around the same size as wine exports, and twice the size of New Zealand's oil exports in value terms.

Exports of selected commodities in 2015 (\$m)



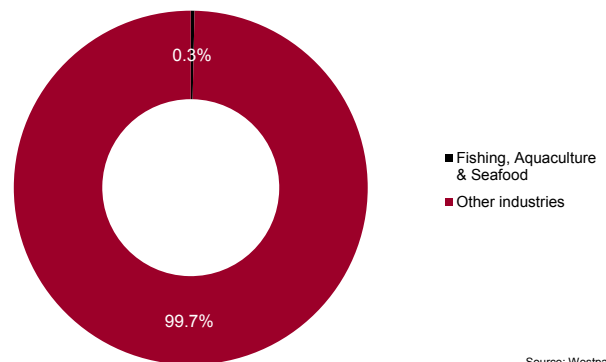
Where practical, this study divides the Fishing, Aquaculture and Seafood sector into the three sub-sectors of Fishing, Aquaculture and Seafood processing:

- Aquaculture, which in New Zealand primarily means the farming of mussels and oysters although there is limited aquaculture involving finfish and other shellfish.
- Fishing, which refers to wild-catch finfish, lobster and other seafood.

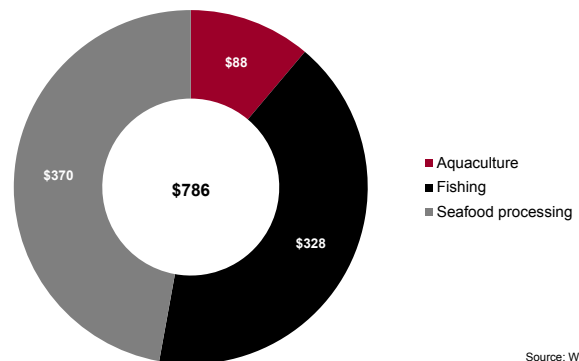
- Seafood processing, which includes processing of all seafood types, including preserves.

In reality, however, one of the distinguishing characteristics of the sector is its vertical integration, meaning many businesses are fishers, processors, exporters and in many cases, local wholesalers. This renders disaggregated data on the sub-sectors of limited value, with overall figures for the Fishing, Aquaculture and Seafood sector likely to be more reliable.

Fishing, Aquaculture & Seafood value added, 2015\$m



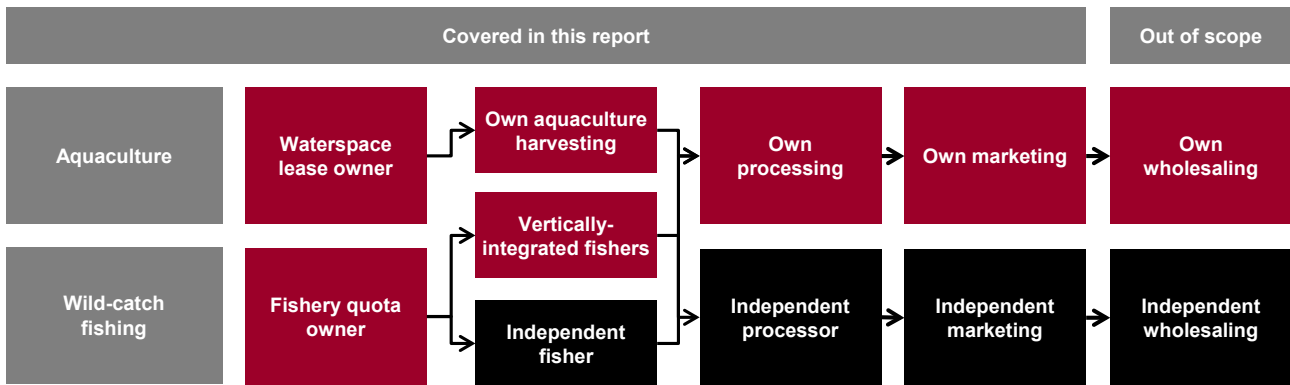
Fishing, Aquaculture & Seafood value added, 2015\$m



The Fishing, Aquaculture and Seafood sector accounts for just 0.3% of all direct value added in the New Zealand economy, but it plays a far more important role in merchandise export receipts. The vast bulk of value is generated by businesses classifying themselves as processors.

¹ We define Fishing, Aquaculture and Seafood using Statistics New Zealand classification codes. This includes A02 Aquaculture, A04 Fishing, and C112 Seafood Processing.

² New Zealand GDP and the constituent value added by specific sectors or sub-sectors consist predominantly of pre-tax and depreciation profits (economic profits) and salaries and wages. All GDP and value added figures in this report are in 2015 dollars.



Structure of the sector: vertical integration

The Fishing, Aquaculture and Seafood sector is characterised by high levels of vertical integration, with a large number of businesses involved in seafood production from fishing to processing, marketing and even wholesaling. The typical business models for aquaculture and wild-catch fishing are set out above.

The right to fish

To operate commercially in New Zealand waters, wild-catch fishers must own or lease a fishing quota issued by the government. The government sets the Total Allowable Commercial Catch (TACC) and within that framework the total tonnage of each fish species covered in the Quota Management System (QMS) that may be caught in each fishery area. Quota owners are then entitled to harvest a given proportion of the TACC. If fish stocks are healthy by government estimates, this figure could rise, while a weaker fishery means less fishing will be allowed.

Many businesses in the sector own quotas for multiple species, which allows them to fish for multiple species that naturally occur together without being liable for deemed value charges. Deemed value charges are imposed on fishers who catch more of a species than they own a quota for. It is effectively a penalty aimed at discouraging the catch of fish for which a fisher does not own quota.

In the case of aquaculture, farmers must receive resource consent to use waterspace for the purpose of aquaculture, as well as a fish farm licence from the Ministry for Primary Industries (MPI). Typically, aquaculture farmers lease waterspace from regional councils for 15 to 25 years.

Harvesting and processing

Aquaculture waterspace owners usually undertake their own harvesting operations, and use their own processing facilities.

In contrast, fishing quota owners often outsource fishing to independent fishers, particularly for inshore work. In the case of deep-sea fishing, where vessels are much more expensive, larger companies may own their own vessels or charter overseas-owned vessels.

Processing is typically done either at a facility owned by the quota-owner, or at an aggregating independent processor that takes catches from a number of quota-owners.

Marketing and wholesaling

Marketing is undertaken directly by many of the larger quota-owners. This involves establishing their own direct relationships with agents in overseas markets, and their own marketing strategies if they want to market a previously un-exported species into international markets. Independent processors similarly run their own marketing programmes.

There is no comprehensive marketing agency that markets a number of New Zealand species on behalf of the sector, using either a consolidated or separate brands. The result is fragmented promotion activity. We return to this discussion later.

Although not covered in this report, some quota owners also conduct their own domestic wholesaling through their own stores or distribution centres.

Barriers to entry and consolidation

The barriers to entry in both aquaculture and wild-catch are high. The Quota Management System (QMS) has been largely successful at managing fish stocks and making them sustainable. This has made quota ownership desirable. The cost of purchasing fishing quotas, and the resource consent and leasing arrangements for an aquaculture venture are high. Deep-sea fishing vessels cost in the tens of millions to purchase. Processing facilities similarly are capital-intensive investments.

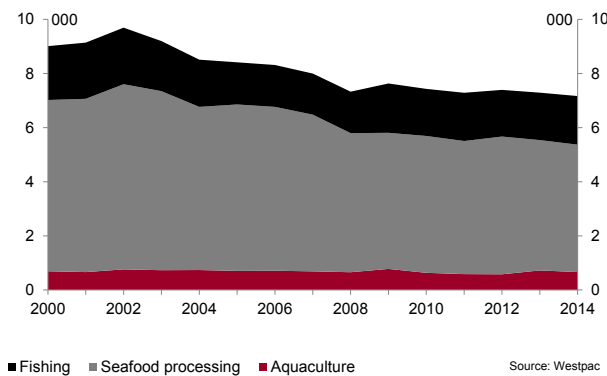
This makes entry into the sector difficult, and makes further consolidation likely. New technologies, many of which are targeting more efficient and environmentally-sound fishing practices, are expensive, and will be the domain of the larger players. We expect to see larger players buying up more quotas, and an increasing gap between larger players and smaller independent fishers, with fewer mid-sized firms over the years to come.

Employment sinks

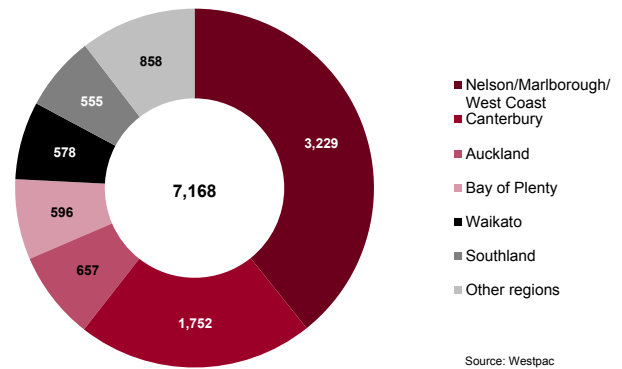
The sector's strongest year for exports in real value terms was 2002. Weaker exports and increasing automation since that time have seen significant job losses especially in processing.

Aquaculture employment has been flat at around 600 to 700 FTEs since 2000, and fishing employment has fallen from 2,000 to 1,800. However, processing has shed 2,100 FTEs over the last 12 years, with the closure of several processing plants, and the introduction of greater automation. This trend is expected to continue for several years even if exports hold up.

Fishing, Aquaculture & Seafood employment (FTEs), 2000 to 2014



Fishing, Aquaculture & Seafood employment by region



Seafood pie: regional distribution of the sector

The top of the South Island is well-known for its seafood sector, but as important as the region is, it accounts for less than half of employment in the sector. There are also strong seafood industries across several other regions, most notably Canterbury, Auckland and the Bay of Plenty.

As a result, this study includes insights from industry players across a wide geographic distribution.

The most meaningful analysis is to consider inputs and outputs for the seafood processing industry because the bulk of fish and aquaculture harvests feed into this sector.

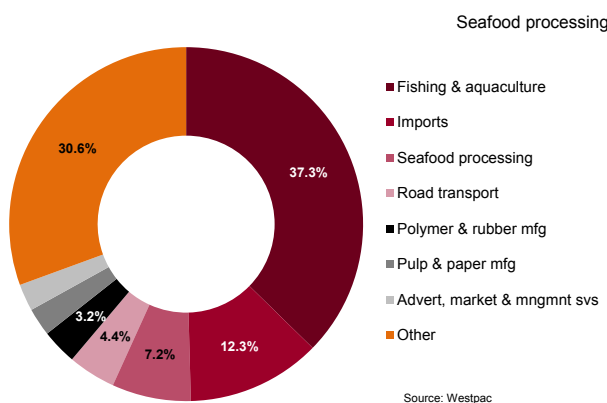
Inputs into seafood processing therefore come largely from fishing and aquaculture, and from imports (of machinery and vessels owned by vertically integrated processors). Some of the inputs (7.2%) come from within seafood processing itself, while a number of packaging related businesses – pulp and paper, and polymer manufacturing, also provide significant inputs.

Where inputs come from and outputs go

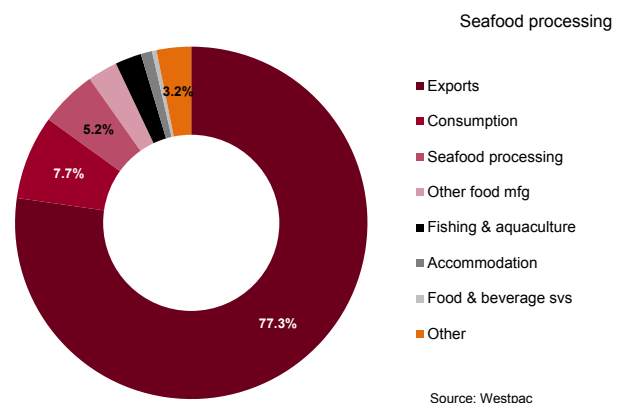
National input-output tables allow us to examine which industries are major suppliers to the Fishing, Aquaculture and Seafood sector, and where the outputs from the sector go. This helps clarify how closely the fortunes of certain industries are linked to Fishing, Aquaculture and Seafood.

On the outputs side, the vast bulk of production from seafood processing is exported (77%). Just 7.7% is bought directly by consumers for consumption, while smaller proportions are used to supply other industries including food and beverage, and accommodation services. These figures emphasise that exports are the lifeblood of the sector.

Where inputs come from



Where outputs go



ISSUE ONE:

Room for export growth

- Seafood export growth has been relatively weak over the last 13 years compared to growth in other New Zealand exports and world seafood exports.
- New Zealand seafood exports are increasingly concentrated in a small number of markets, with 90% of lobster sold to China and 53% of chilled fish sold to Australia. This poses significant risks if there is a major demand shock in one or two major markets.
- Comparatively weak seafood export growth is the result of limits on wild-catch fishing imposed by the QMS and the difficulty in developing new aquaculture.
- Uncoordinated promotion of New Zealand seafood as premium products, and the cost structure of our more distant, smaller scale producers are also limiting growth in exports.

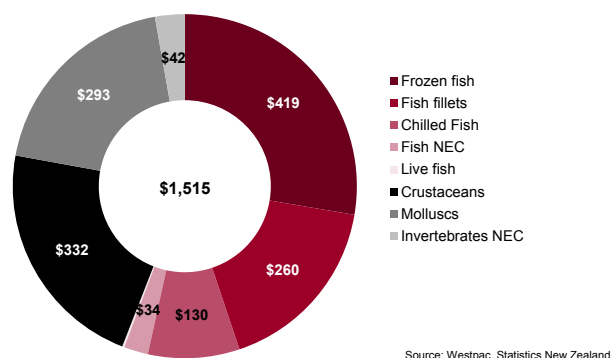
What we export, and where it goes

In 2015, more than a quarter of New Zealand's seafood exports were in the form of frozen fish. A further \$260 million, or 17%, was in the form of fish fillets, generally viewed as the lowest value way to export seafood. Chilled (fresh) fish, one of the highest value ways to export finfish, accounted for just 8.6% of exports.

Crustaceans (mostly lobster), and molluscs (mostly mussels and oysters) together accounted for \$625 million in exports in 2015, or 41% of all seafood export values.

By far the most important export market for New Zealand seafood is China, which took 32% of our exports by value in 2015. China completely dominates lobster exports, taking 91% of total export values last year. Hong Kong, which used to be the means of access for lobster into China, is now a small player in the crustaceans market. China also takes 34% of New Zealand's frozen fish exports, but much smaller shares of other seafood exports.

Seafood exports, \$m in 2015



Australia is the main destination for our chilled fish (53% of the total) and fish fillets (33% of the total), while the United States is our key market for mollusc exports (25%) and an important player in chilled fish (29%) as well.

This analysis of exports highlights two key points:

- 45% of export values are generated from lower value frozen fish and fish fillet sales, often sold as generic "whitefish"
- Some product markets are highly exposed – in particular lobster sales to China, and to a lesser extent chilled fish (where the two main markets take 82% of exports).

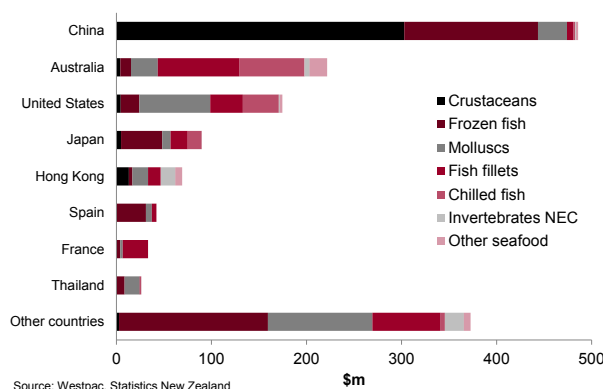
How exports have changed, 2000 to 2015

Total exports of seafood by value in New Zealand dollars have been relatively flat for more than a decade. This is to a large extent a function of the exchange rate and the large proportion of seafood exports that were highly commoditised over this period, making them more price sensitive. The strongest growth was in crustaceans, which grew its share from 11% to 22% of all seafood exports. Frozen fish grew from 21% to 28% over this same time, meaning there was a reduction in the shares of most other seafood types.

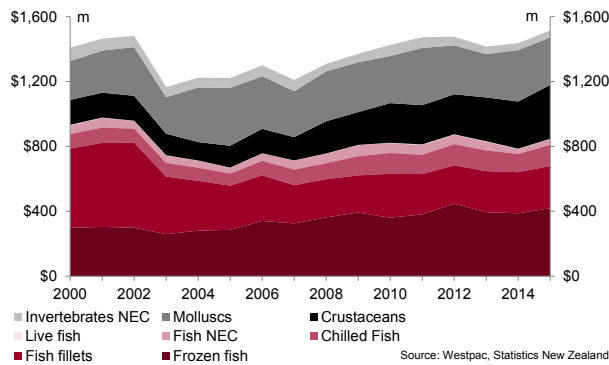
China continues to grow in importance for New Zealand seafood exports. Exports in 2015 were up 14% over 2014, and nearly 1,200% since 2000. Meanwhile, exports to Japan and Australia have fallen fast after strong growth from Australia in particular to 2010. Nevertheless, Australia remains by far the most important destination for chilled fish.

Some industry sources implied that this was as much the result of the type of Australian customers purchasing fish from New Zealand, who had a preference for chilled fish, as it was a result of close proximity. This raises the question of why, when the challenge is not necessarily geographic distance, New Zealand has not been able to increase higher value chilled fish exports to other countries more.

Where New Zealand seafood exports go, 2015



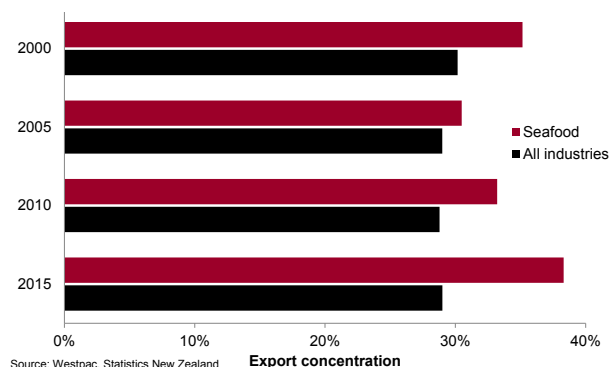
Seafood exports by sub-sector, 2000 to 2015



Since 2000, the proportion of seafood exports going to countries other than the top eight has remained constant at around a quarter. Nevertheless, the sector's increasing concentration in just a few markets has left it more exposed than New Zealand exporters in general, and compared to the seafood sector's market concentration 15 years ago.

Export market concentration estimates how well spread exports are across multiple countries. By not having all their eggs in one basket, it is possible to reduce the impact of a major demand shock in one or two markets. The lower the market concentration, the less exposed New Zealand is to just a few major markets. A value of 100% would imply just one market accounting for all exports.

Export market concentration, 2000 to 2015



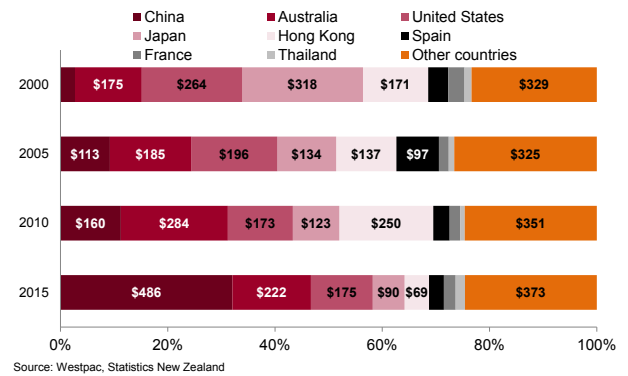
The seafood sector has had a higher level of concentration than New Zealand exports overall across the last 15 years. Between 2000 and 2005 the exposure diversified, but a large part of this change was simply the reduction in importance of Hong Kong, as more seafood was shipped direct into China. As these two territories are counted as separate markets, this actually improved the market concentration index temporarily.

As China grew exponentially as a market for New Zealand seafood, the level of exposure grew sharply again. By 2015, market concentration was its highest over the 15 years.

Between 2000 and 2015, total New Zealand exports grew by 67% in New Zealand dollar terms compared to just 7.6% growth in seafood exports. And since the previous peak in 2002, seafood exports are up just 2.3%.

As already highlighted, looking at New Zealand seafood exports in

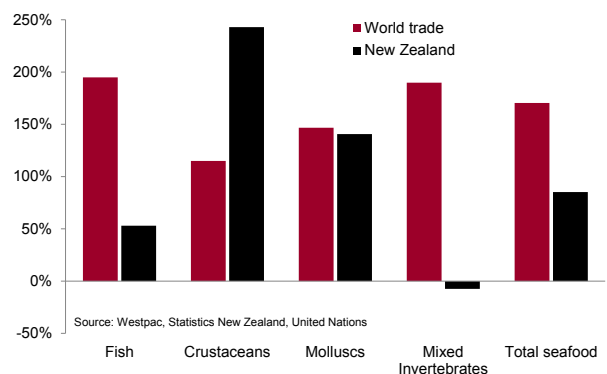
Change in seafood export focus, 2000 to 2015 (values in \$m)



New Zealand dollar terms only is a little misleading. In 2000, the value of one New Zealand dollar averaged 46 US cents. In 2014, it averaged 83 US cents. So in US dollar terms, New Zealand's 2000 seafood exports were worth around US\$645 million, compared to US\$1.2 billion in 2014, an increase of 85%. But this was half the 170% growth in global seafood exports in that time.

Considering export growth in US dollars by sub-category, the one area in which New Zealand has excelled is in crustaceans. New Zealand exports surged 243% in 14 years compared to world crustacean export growth of 115%.

Export value growth measured in US\$, 2000 to 2014



Yet fish exports (the lion's share of total seafood exports) grew just 53% from New Zealand compared to nearly 200% global growth.

Why has export growth been sluggish?

Industry sources and our own analysis suggest there were a number of reasons for slow export growth in New Zealand over the last 15 years:

- Limitations placed on wild-catch fishing by the QMS:** Because of the quota system, put in place to ensure the sustainability of fishing stocks, New Zealand's commercial fishers have upper limits on their catch. Most industry sources were of the view that they could sell whatever they were allowed to catch – demand was never a problem although the prices received were not always good. Thus the quantity of wild-caught finfish in particular was limited, unlike in other parts of the world where less comprehensive management of fisheries was in place (often to the detriment of fisheries).

- **The barriers to developing new aquaculture:** Because of the mandated limits on wild-caught fish and some other seafood products, the only way to increase the quantity of seafood harvested was to increase aquaculture. But the costs and other difficulties associated with getting new aquaculture ventures approved was acting as a strong barrier to growth in this sub-sector.
- **Uncoordinated promotion of New Zealand seafood:** The vast bulk of New Zealand finfish is commoditised – it is sold frozen or filleted as “whitefish” in competition with pollock and cod. Individual processors in New Zealand typically conduct their own promotion and marketing programme in international markets. This fragmented approach has reduced New Zealand’s ability to extract a premium for seafood products, and to introduce new species to the international market.
- **Disadvantage of distance and size:** Several industry sources pointed to the scale and location of North American fishing businesses in particular as a real challenge. Larger businesses could often fish more efficiently with better equipment and technology, and combined with their proximity to market, this constituted a major advantage over New Zealand firms.

Limits on wild-catch fishing, barriers to new aquaculture, and commoditisation of New Zealand seafood have limited export growth.



ISSUE TWO:

Social licence and competing interests

- Commercial fishing is increasingly facing challenges from fast-growing recreational fishing, with political pressure to increase the fish-take for recreational fishers.
- As a result, the value of fishing quotas may be eroded, especially if compensation for this loss does not occur.
- At the same time, aquaculture is struggling to expand due to opposition, limiting opportunities to grow the volume of New Zealand exports.
- The Fishing, Aquaculture and Seafood sector will need to communicate its economic value clearly if its interests are to be balanced with those of the community and recreational fishers.

A more expensive social licence

Several years ago, one of the biggest challenges to the New Zealand Fishing, Aquaculture and Seafood sector was showing **overseas customers** that our seafood was harvested sustainably. Today, that challenge has largely been met, and instead the sector is being challenged to show New Zealanders why it should be allowed to operate **here**.

At the same time that recreational fishing is growing strongly, the seafood sector's social licence to operate is becoming harder to maintain. Often-misinformed views of commercial fishing as "pillaging the seas" as one industry source put it, rather than being subject to a stringent QMS, are pervasive. Loose regulations on over-fishing seen overseas are assumed by many to apply here. Recreational fishers are increasingly coming into conflict with commercial fishers.

Aquaculture, once seen as a novel, highly productive and efficient way to increase seafood production without degrading wild-catch stocks, has to some extent been tarred with the same brush as other types of farming. This makes it hard to get new aquaculture projects or waterspace lease renewals approved.

The result is that the sector is fighting an uphill battle in convincing the public about the value it generates and its sustainable practices.

Have boat, will fish

Almost universally, industry sources expressed concern over the growing impact of recreational fishing and its associated political strength, and over proposals for recreational fishing reserves that could erode the property rights of quota owners.

900,000

recreational fishers

7,200

seafood sector workers

23,000

direct & total workers

420,000

power & sail boats

\$1.52 bn

exports in 2015

\$2.21 bn

direct & total value added in 2014

The QMS sets a total allowable catch (TAC) for each fish stock. A sub-set of this is the total allowable commercial catch (TACC), which is the share of the fish stock that is allocated to commercial fishing. As the demands for fish grow from recreational fishing, the share of the TAC set aside for commercial fishing is likely to shrink. This reduces the value of the quota for that fish stock all else held equal.

But the biggest concern was the proposed Marine Protected Areas Act, which would allow for the creation of recreational fishing reserves in areas where commercial fishers hold quotas. Current proposals for recreational fishing reserves include both the Hauraki Gulf and the Marlborough Sounds. Although the government has discussed compensation, the details are yet to be finalised. Commercial fishers are worried about the potential erosion of property rights and the financial viability of commercial fishing in areas in which recreational fishing reserves are established (including "inconvenience costs" of skirting reserves and so on). The impact on deep-sea fishing would be more limited than the impact on inshore fishing, meaning some seafood businesses would be affected more than others.

In addition to concerns about the erosion of property rights, industry sources suggested a number of other potential impacts. For instance, the large number of recreational fishers cannot be monitored to the same extent. There are strict quotas and monitoring of commercial fishing through the observer programme, and increased backing for cameras on vessels and the like to ensure commercial fishers comply with the rules. But far less monitoring occurs among recreational fishers or the 420,000 power and sail boats that may be used for recreational fishing in any given year.

On a related note, recreational fishers also pay no marine safety charges or other costs that are borne directly by the commercial fleet to the benefit of all water-users. This means there is an unequal distribution of financial burden and responsibilities between recreational and commercial fishers.

Commercial fishers argue that the food standards and safety implications of fish they catch are higher and better monitored, which dramatically reduces the risk to consumers.

At a broader level, some have questioned what will happen to the price of seafood retail in New Zealand if commercial fishing loses out to recreational fishing. New Zealand is largely a price-taker in an open world seafood market. It is unlikely the impacts of higher operating costs or reduced quota value for commercial fishers will be passed on to New Zealand consumers to any great extent.

But the argument for more recreational fishing can also be made strongly. The key argument in favour of recreational fishing is that the economic benefit that recreational fishing generates (per fish or kilogram of fish) is many times higher than that of commercial fishing.

Recreational fishers spend far more per kilogram of fish caught than commercial fishers, whether through purchasing their own vessel, or chartering someone else's. But recreational fishers continue to grow in number, and are willing to spend a whole day

catching a handful of fish, imposing the additional opportunity cost of whatever else they could do with that time. These facts imply that the value to recreational fishers of the fish they catch, which are perhaps just a symbol of a day spent relaxing, are far higher than the protein value of fish caught by commercial fishers and sold in the supermarket. The argument concludes that therefore, faced with the choice of one more fish caught recreationally versus one caught commercially, recreational fishing would win out.

Where the balance lies between an appropriate level of commercial and recreational fishing is hard to tell. The argument on the value recreational fishers manifestly place on the right to fish is hard to rebutt although there are clear concerns over the erosion of commercial fisher property rights and a number of other sustainability, cost-sharing and equity questions to tackle as well.



The key argument in favour of recreational fishing is that the economic benefit that recreational fishing generates (per fish or kilogram of fish) is many times higher than that of commercial fishing.

ISSUE THREE:

Operational challenges

- The Fishing, Aquaculture and Seafood sector faces a number of operational challenges.
- The QMS is widely acknowledged as a world-leading system, but struggles with how to manage by-catch in a way that limits perverse outcomes, as well as with varying conditions across fisheries.
- Even as the QMS seeks to improve sustainability of fisheries, inshore commercial fishers and aquaculture operators face the challenge of environmental degradation through deforestation, increased run-off from farming, and climate change.
- An ageing workforce (particularly on fishing vessels) and difficulties in attracting workers for the factory-floor or for management, engineering and administrative roles in smaller towns is making it hard to maintain skill levels in the sector.
- Industry sources acknowledge that the sector is overdue significant capital investment, especially on vessels, but are hesitant to make capital investments given the increased uncertainty around commercial fishing quotas.

Working within the QMS

Most industry sources we spoke to were complimentary about the QMS. It was described as world-class and world-leading. It is not a perfect system, however, mostly because of its perceived rigidity:

1 QMS **100** species **10** fisheries management areas **638** fisheries / fish stocks

- **One size does not fit all:** Many of the regulations associated with the QMS relate to by-catch. In some fisheries, a significant by-catch of other species is inevitable, and regulating this is essential. However, other fisheries are not characterised by high by-catch volumes, but are still subject to the same stringent regulations, which creates additional costs.
- **Perverse outcomes:** Because of the deemed value penalty applied to some by-catch species, fishers were strongly incentivised to dispose of by-catch at sea. While this would be illegal, and some businesses were installing cameras on vessels to show that they did not do this, some industry sources felt the QMS did not incentivise fishers correctly in some instances.
- **Theory versus practice:** The large number of fisheries across species and geography make it all but impossible for scientists involved in TAC and TACC setting to be fully aware of the state of a particular fishery between major reviews. This may lead to less accurate TACC setting.

Environmental degradation

Several industry sources highlighted a number of changing environmental conditions that were, or could, negatively affect commercial seafood operations.

Sedimentation from deforestation and run-off from dairy were two factors thought to be having a significant impact on in-shore water quality in some parts of the country, with an especially meaningful impact on aquaculture operations. Without specific action by local and central government to reduce these impacts, water conditions were unlikely to improve.

Some industry sources have also described more volatile climatic conditions. Warmer weather in particular affects nutrient pass-through and therefore growth of mussels and other aquaculture products. This creates greater uncertainty with regard to production from year to year with implications for financial stability.

Finding labour

Three major challenges on the labour front have emerged and are likely to continue to worsen over the years ahead. First, the average age of fishing boat staff is rising. Fewer young people are interested in a career that in some cases has been the family business for generations. This means as fishers get older in what is a physically demanding job, it will be more difficult to replace them.

Second, processors in some parts of the country find it hard to find factory-floor workers. At the same time that many businesses are consolidating and automating processing operations (evidenced by the 30% decline in employment since 2002), many still find it difficult to source labour for processing. Larger urban centres, in particular, struggled to find factory-floor workers who faced the prospect of a nine-month work season in a physically difficult working environment.

A third obstacle was finding management, engineering and administrative staff for processors in smaller towns. In an increasingly services-oriented economy and labour market, the Fishing, Aquaculture and Seafood sector is expected to continue to find it challenging to attract staff across these three types of role.

Capital expenditure

The sector is characterised by large capital investments – processing facilities and vessels. Many vessels are approaching replacement age. Technology improvements including automation are also making upgrades to processing facilities necessary.

Offsetting the need to invest in new capital, many businesses are waiting to see what comes of the Marine Protected Areas Act proposals. While we expect to see significant investment in new capital over the next few years, this will be tempered by a hesitancy associated with developments affecting the financial viability of commercial fishing.

Fishing for opportunities

- Despite the challenges facing the sector, there are opportunities for growth.
- Demand for better quality, fresher, unique and healthier nutrition options plays to the strengths of New Zealand's seafood sector.
- But a coordinated approach to marketing the quality of New Zealand seafood products is lacking, and hindering potential for price premiums.
- High-end aquaculture and Precision Seafood Harvesting are two examples of opportunities to increase the average quality and value of New Zealand seafood.

Thus far, this report has set out the challenges facing the Fishing, Aquaculture and Seafood sector. It has made the point that the opportunities to boost the **quantity** of seafood exported are mostly limited by the extent to which aquaculture can grow. However, significant opportunities exist to boost the **value** of exports and the profitability of the sector.

0.9% NZ share of world seafood export values
204% growth in world fresh fish export values since 2000
9 NZ seafood businesses with 100+ employees

What customers want

Several industry sources pointed to growing demand for premium products, including:

- **Fresher and better quality:** Consumers want chilled or fresh fish rather than fish fillets or undifferentiated frozen fish. Globally, fresh and chilled fish exports grew 204% between 2000 and 2014, while from New Zealand, exports grew 130% in US dollar terms. Yet by 2015, chilled fish still accounted for just 15% of all finfish export values from New Zealand. And as some argued, chilled fish can actually be cheaper to produce than fillet or frozen fish (which requires blast freezing), yet commands a higher price.
- Industry sources also offered the changing demographics of New Zealand, with strong Asian migration, as a reason for stronger demand for better premium seafood products and a more informed purchaser here. In Australia, where more than 50% of New Zealand's chilled and fresh finfish goes, the traditional role of the Greek and now the Asian community were once again tipped as reasons for strong demand.
- **Unique:** It is evident that world demand is not simply for another source of protein, but for a higher quality product, as shown by the strong growth in lobster (another premium product) exports for example. Demographic changes plus the prevalence of cooking shows on TV that have exposed households to a wider range of seafood and ways of cooking,

are changing demand here and abroad for fresher seafood, and more species.

- **Healthier:** Seafood is seen as a healthier protein option. As a fat-free alternative to, for instance, red meat, its benefits have long been espoused, but there is increasing interest in the nutraceutical properties of fish, seen primarily at this point in the popularity of omega fat supplements.

Seafood needs to be about New Zealand

Marketing New Zealand seafood is generally undertaken individually by each business that exports. Any attempt to bring a new species to market must be promoted by each individual business. There is no "New Zealand seafood" brand or label.

Many industry sources were opposed to a consolidated brand like the Zespri model. Each company is looking to build its own brand. Nevertheless, it seems to us that marketing dollars from a relatively small global player like New Zealand (0.9% of global seafood exports in 2014) would go much further if pooled together.

For instance, the view of New Zealand's largest finfish exports as just another "whitefish" protein source does not maximise the value that may be extracted from the fact that this seafood is caught in arguably the most sustainably managed fisheries in the world. Joint certification and / or a marketing campaign that emphasises the premium value of New Zealand seafood products may be more effective than the current fragmented approach.

The opportunity is not to replace independent brands with a single brand, but rather a consistent labelling and marketing approach that will help export consumers understand the value of New Zealand-caught or farmed seafood.

Some industry sources believed that New Zealand's "clean green" image was already enough marketing. However, this is not reflected in the prices New Zealand finfish is achieving despite, for example, the "100% Pure New Zealand" marketing campaign running for the last 17 years. A coordinated mind-set across the sector will be required to ensure there is not a race to the bottom of the pricing ladder.

Premium product focus

Extracting a premium price is not just about persuading purchasers of the value of New Zealand fish, but looking for opportunities to increase the export of products that already command a premium. This is difficult in the case of wild-caught species where the QMS is already limiting what can be caught. However, strategies allowing the introduction of new species into markets that may pay more for them may hold some benefit.

Further, growth in high-end aquaculture, including more premium finfish, could be pursued although the difficulties in getting approval are significant.

A further benefit of exporting premium products is that their sale appears to be less dependent on economic conditions and exchange rates. For instance, many industry sources confirmed that there has been little if any slowdown in lobster exports to China despite the economic woes there.

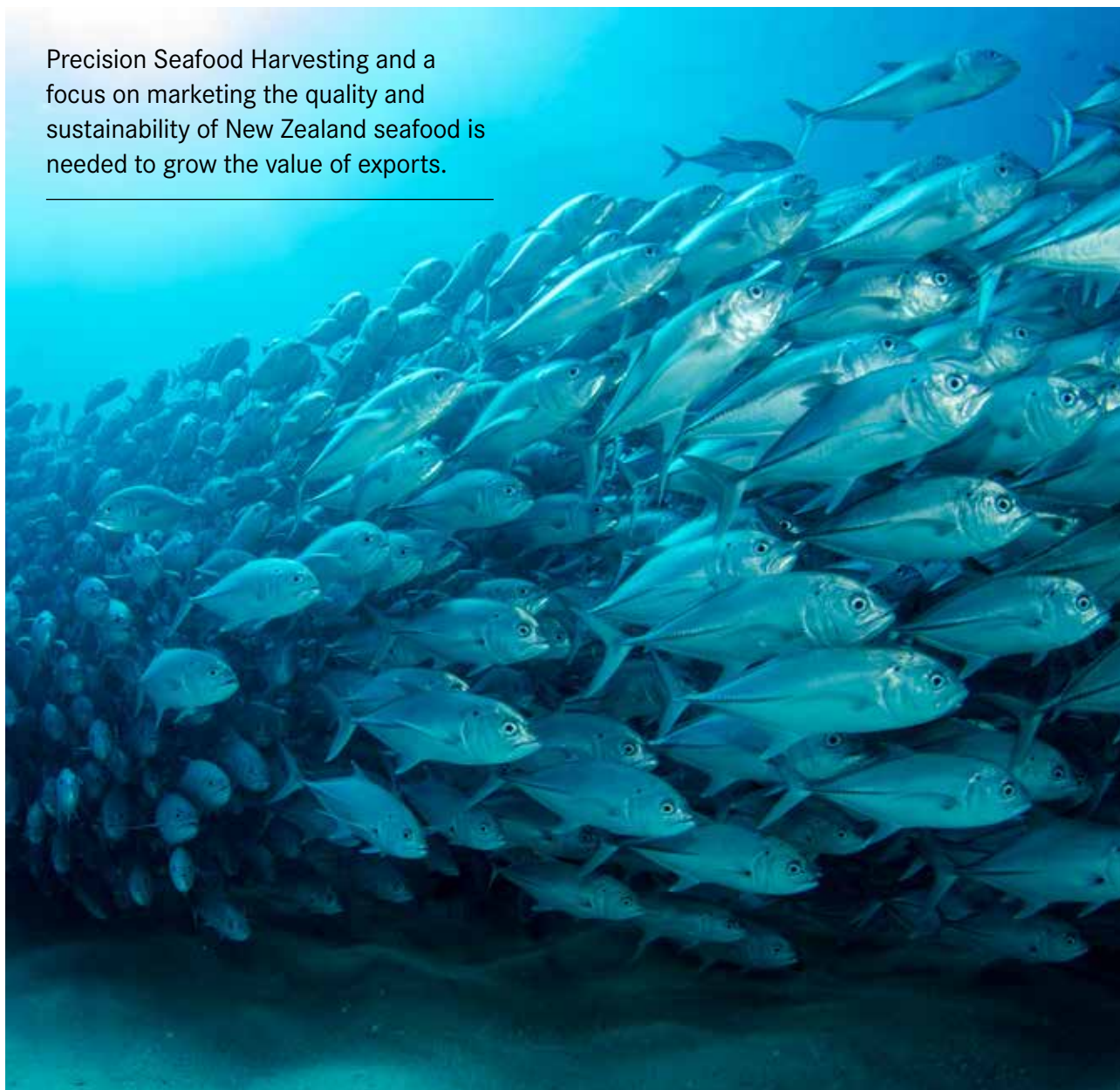
Precision Seafood Harvesting

In conjunction with the government, Aotearoa Fisheries, Sanford and Sealord have invested millions of dollars in developing a new fishing technique known as Precision Seafood Harvesting (PSH). The new technique, currently undergoing further testing, but already showing promising results, is an improvement over traditional trawling in a number of ways. PSH replaces traditional nets, containing fish inside a flexible PVC tubular receptacle that has holes of a sufficient size to allow under-sized fish to escape. Fish are able to be brought on-board largely undamaged, ensuring better quality product.

PSH allows for better targeting of the specific species for which quota is owned, reducing by-catch. Second, it allows under-sized fish to escape. While these two facts will improve the sustainability of New Zealand fisheries, they will also be attractive to environmentally-conscious consumers. Third, PSH will allow for better tracking of when and where the fish was caught, giving better visibility from “sea to plate”.

In other words, PSH has the potential to increase the efficiency of fishing, reducing costs, and to improve the quality of product, increasing revenues.

Precision Seafood Harvesting and a focus on marketing the quality and sustainability of New Zealand seafood is needed to grow the value of exports.



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