

**An overview  
of the  
Australian seafood industry**

*A quick reference guide to the essential characteristics of  
an unusually complex industry and its business environment*

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*April 2006*

In this document, the principal challenges facing the seafood industry appear in **bold indigo** font.

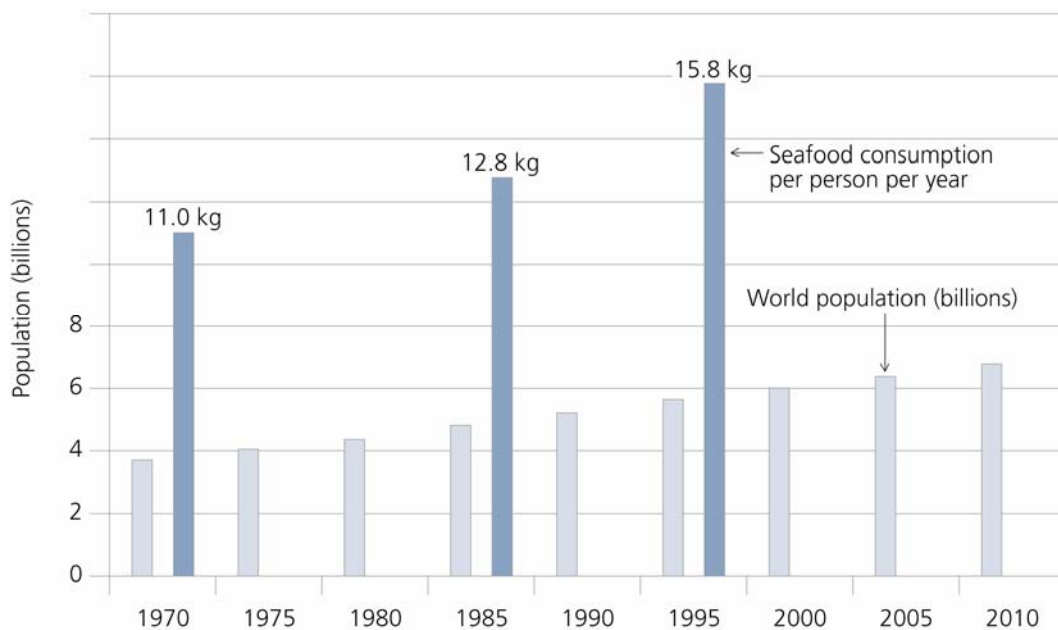
Of those challenges, the following four are paramount:

1. Australian seafood producers meet about 40% of domestic demand at present, but will supply less than 25% by 2020.
2. The seafood industry has a production culture that is not strongly focused on consumer requirements.
3. Profitability throughout the Australian seafood value chain is being jeopardised by under-investment, rising costs, inconsistent approaches to product quality, ill-defined value chains, and consumers' resistance to rising prices.
4. Seafood's prominent role in a healthy diet is becoming increasingly evident through research world-wide, but the links need to be substantiated between health and the consumption of seafoods of various types and qualities, especially to meet FSANZ standards for food labelling.

## Australian seafood production in the context of global and Australian demand

In 1999, the world's population reached 6 billion: four times the population of a century before. By 2020, world population is expected to be more than 7 billion. This larger population will increase global demand for seafood. Moreover, as people in developing countries increasingly enter the middle classes, they consume more protein, including seafood, as reflected in figure 1.

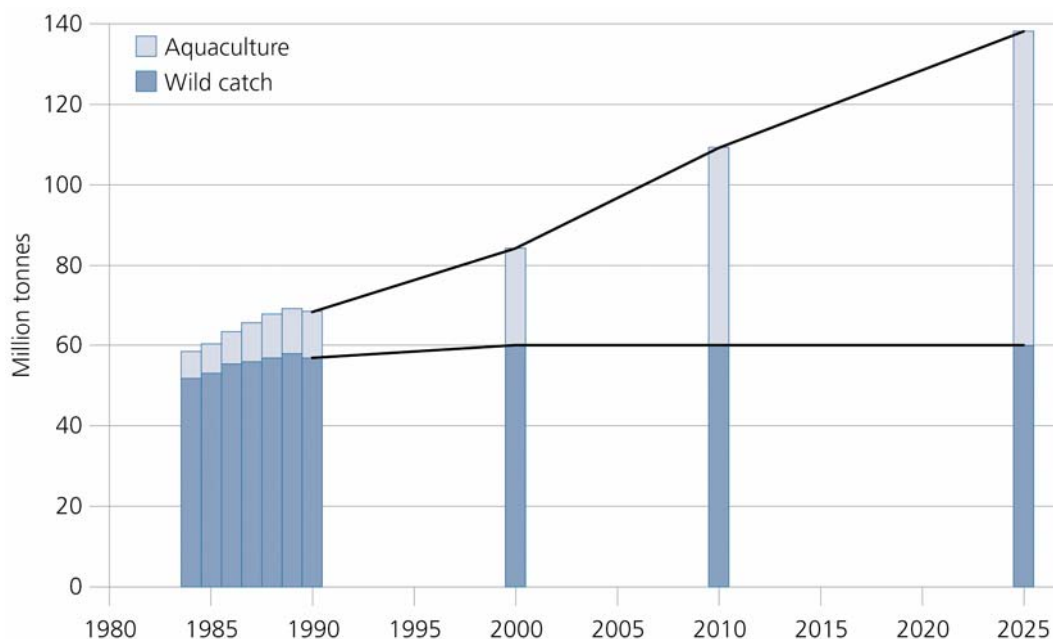
**Figure 1: World population and annual per capita seafood consumption**



– From Geoff Allan, 'Fish, aquaculture and food security', ATSE Crawford Fund Conference, Canberra, 11 August 2004.

As shown in figure 2, overleaf, global production from wild-harvest resources has been near or at its limits for the past two decades, leaving only aquaculture available to meet the increasing world demand for seafood. However, **it is highly unlikely that aquaculture is capable of filling the gap between demand and supply. Nevertheless, the predicted shortfall could be moderated by severely reducing the amount of wild-caught fish currently harvested for non-human consumption (for example, for fishmeal) or discarded at sea when there is a limited, or no, market for the fish caught, or when catch quotas are being exceeded.<sup>1</sup> Most of the increase in demand will be in developing countries, for low-value seafood that can be supplied in bulk. Australia is generally poorly equipped to meet this demand.**

<sup>1</sup> In some fisheries, discarding can amount to as much as half the fish caught.

**Figure 2: Projected world demand for wild-caught and farmed seafood**

– From Geoff Allan, 'Fish, aquaculture and food security', Crawford Fund Conference, Canberra, 11 August 2004.

Populations in the major countries that import Australian seafood will be steady or will decline. Growth in demand in these countries is likely to be more closely linked to rising disposable incomes than to population, particularly for high-value seafood species and fisheries products. The growing affluent middle classes in China, India and other Asian countries – who are presently few in relation to their national populations but many in relation to Australia's population – will provide a significant opportunity for Australian seafood supply. In turn, these consumers will compete for access to higher-quality seafood, inducing a level of competition that will result in increased demand for Australian seafood. **Supply to affluent consumers will continue to be limited, giving rise to higher prices.**

**In Australia, the main driver of demand for seafood will probably result from increasing affluence (with more people eating out) and from social factors (such as increased awareness of the health benefits of seafood).**

By 2050, Australia could be home to 20–32 million people. *Fish Futures 2020* (a major FRDC-funded project completed in 2004)<sup>2</sup> assumed 25 million and predicted that per capita seafood consumption could rise to 23 kg per year by 2050.<sup>3</sup>

<sup>2</sup> *Fish Futures 2020* is the short title for FRDC project 1999/160, 'Assessing Australia's future resource requirements to the year 2020 and beyond: strategic options for fisheries', conducted by the University of Canberra (Bob Kearney, Barney Foran, Franzi Poldy and Don Lowe). A summary published in 2003, *Modelling Australia's fisheries to 2050: policy and management implications*, is available from [www.frdc.com.au/bookshop/index.htm](http://www.frdc.com.au/bookshop/index.htm)

<sup>3</sup> 25 million was considered to be the most likely population in a comparison of population options conducted by Barney Foran and Franzi Poldy in 2002: 'Future dilemmas: Options for Australia's population, infrastructure, resource and environment'. CSIRO Resource Futures

Using this population projection, adoption of the “cautious” fisheries management strategies and three alternative per capita seafood consumption rates<sup>4</sup>, a range of likely supply–demand scenarios has been determined as shown in table 1.

**Table 1: Projected shortfall in meeting Australian domestic demand for seafood, 2020 and 2050**

Figures are in tonnes of live weight of commercially caught fish.

Year →	2000	2020		2050		
Consumption →	At 11.33 kg per person	At 14.7 kg per person	At 17.25 kg per person	At 14.7 kg per person	At 17.25 kg per person	At 23 kg per person
1. Domestic demand (note 1)	442,000	661,500	776,000	735,000	862,500	1,150,000
2. Wild-harvest production (“cautious” scenario) (note 2)	198,000	170,000		165,000		
3. Aquaculture production	34,000	66,000		130,000		
4. Seafood exports (note 3)	70,000	70,000		70,000		
5. Shortfall in supply (= demand for imports) (note 4)	280,000	495,000	610,000	510,000	637,500	925,000

Notes:

1. This figure is *gross* domestic demand. In practice, a 50 per cent recovery of edible seafood from live weight means that only 221,000 tonnes are actually consumed, and similarly for other figures in this table.
2. Amounts in the table do not include catch by recreational and Aboriginal and Torres Strait Islander fishers, which for simplicity is presumed to be constant.
3. Seafood exports need to be included in the table, but neither the *Fish Futures 2020* project nor other information sources have a basis for predicting what future amounts might be. Present-day values have therefore been continued, indicatively.
4. As with exports, the *Fish Futures 2020* project was unable to predict imports. The shortfall in this row is calculated in each column by adding wild-harvest and aquaculture production (rows 2 and 3), subtracting exports (row 4), and subtracting the resulting figure from the demand figure in row 1. The nature of imports – for example, canned and highly processed product – make it difficult to translate the figures for shortfall in live weight (row 5) into weight of imported product.

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Working Document 02/01 (consultancy report to the Department of Immigration, Multicultural and Indigenous Affairs, May 2002).

- 4 Based on the *Fish Futures 2020* project and FRDC-funded seafood consumption studies (FRDC projects 1998/345 and 1999/342, Ruello and Associates).

As shown in row 5 of the table, by 2020 the amount of seafood likely to be needed to satisfy Australian domestic demand is predicted to be 215,000 to 330,000 tonnes more than in 2000.

To put the projection in context:

- **in 2000, combined Australian wild-harvest and aquaculture production met about 40 per cent of domestic demand**
- **in 2020, the figure is likely to be less than 25 per cent.**

*in 2020 – only 14 years from now – Australian seafood production is likely to meet less than 25 per cent of Australian demand.*

It is particularly difficult to predict future imports of seafood into Australia. Much will depend on the ability of international wild-harvest and aquaculture production to reach and maintain a sustainable level to address the global deficit in supply. Australian consumers' capacity to pay for seafood will also apply.

**Australian seafood exports will continue to be focused on meeting the demands of the premium-quality end of world markets. As a result, Australians will eat higher proportions of imported seafood than at present. Global factors will affect the demand – hence the price – for Australian seafood exports and imports.**

Even less quantifiable are the possible effects of recreational fishing and green politics. If Australia were to implement the area of marine and freshwater parks that conservationists are seeking, a significant drop in wild-harvest production would result, given that it would be necessary to ensure that fishing effort were sustainable in areas outside those parks. Such a development would also adversely affect the areas available for aquaculture production and the methods of production approved within them.

## The seafood industry in context

**The seafood industry is Australia's fourth most valuable food-based primary industry – after beef, wheat and milk. In 2003–04 it produced about 270,000 tonnes of produce, worth about \$2.2 billion ("landed/farmgate value" – that is, before value-adding) or about 7 per cent of the gross value of Australian food production.** Ten years earlier the figure was \$1.7 billion. However, projections by ABARE for both the industry's position among primary industries and its gross value of production to 2010 show a decline. Most of the sector's product is considered as world-class.

*The \$2.2 billion seafood industry is Australia's fourth most valuable food-based primary industry.*

*Continual emphasis on the high quality of its seafood is the "driver" that will maintain Australia's favourable reputation in the long term.*

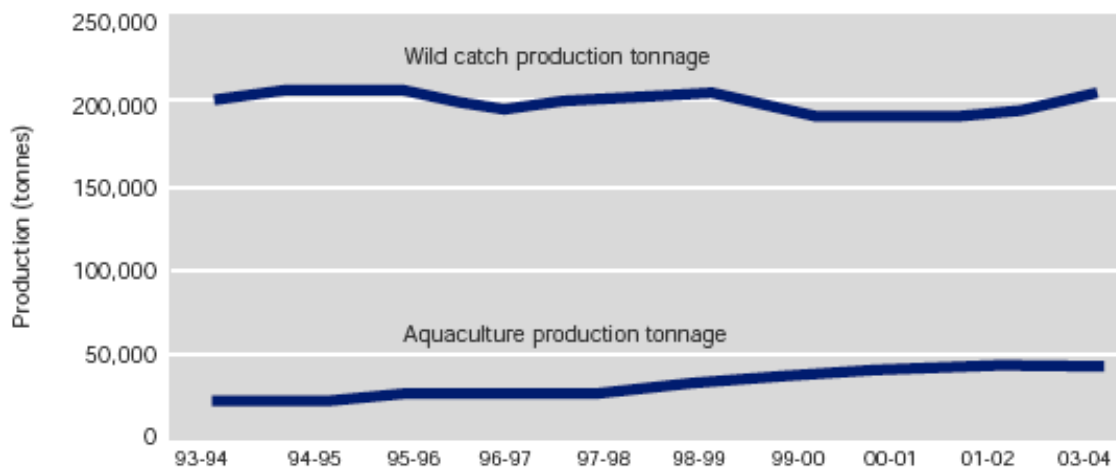
### Recent commercial production

Figures 3 and 4 show, respectively, the production (tonnage) and gross value of production of the Australian seafood industry since 1993–94.

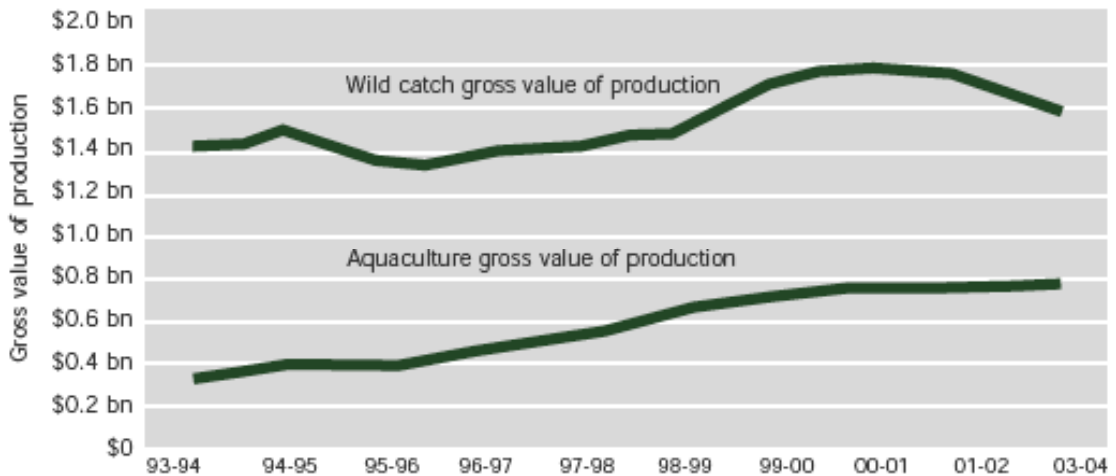
Statistics for 2004–05 are not yet available from ABARE.

More information on production is in *Australian Fisheries Statistics 2004*, published by the Australian Bureau of Agricultural and Resource Economics and available as a free download from <http://abareonlineshop.com>

**Figure 3: Australian seafood production since 1993–94**



**Figure 4: Value of Australian seafood production since 1993–94**

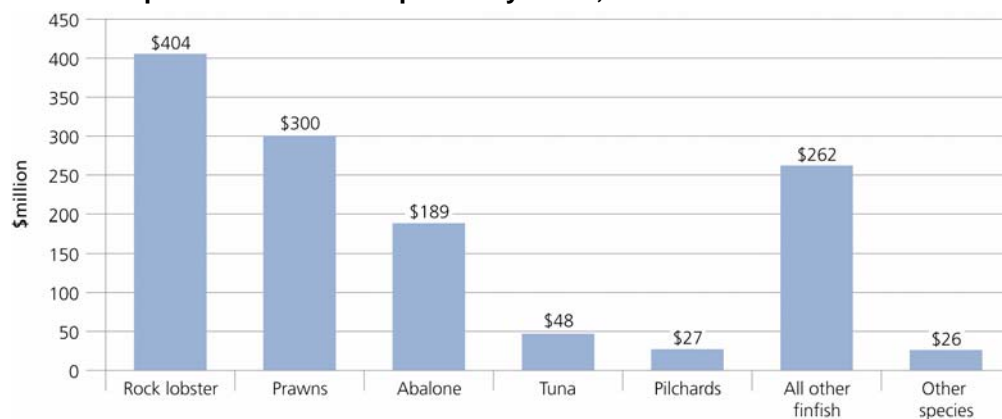


– From *Australian Fisheries Statistics*, various editions

## Commercial wild-harvest fishing

The landed value of the commercial wild-harvest increased from \$1.3 billion in 1994–95 to \$1.48 billion in 2003–04. About three-quarters of the total value is derived from five species (figure 5).

**Figure 5: The top five wild-harvest species by value, 2003–04**



— From *Australian Fisheries Statistics 2004*, table 2

**Commercial wild-harvest fishing activities take many forms, in about 160 fisheries nationally. In rural and coastal communities, commercial fishing — for which there are more than 15,000 licences — provides significant employment and often provides robustness to communities whose economic prosperity would otherwise be in question.**

Insecure property rights have led to persistent under-investment by the thousands of disparate small businesses comprising much of the wild-harvest sector. For the past two decades, actions by governments to move towards sustainable levels of use in Australia's fisheries have significantly reduced productive capacity. A widespread focus on economic survival has resulted. One consequence is that, despite revolutionary developments in the Australian food industry in recent times, many wild-harvest producers do not even regard themselves as part of that wider food industry — they “just go out to fish”.

To an extent far greater than for any other primary industry, the seafood industry shares the natural resources it uses with other human activities — particularly those of five million recreational fishers, and of Aboriginal and Torres Strait Islander fishers following traditional practices.

*Although the tonnage of fish produced by the Australian seafood industry is small by international standards, the sector produces a wide range of high-quality, high-value products.*

## Aquaculture

**Aquaculture is one of Australia's fastest-growing primary food industries. In 2003–04 the real value of production was \$732 million, representing an average annual rate of growth of 4 per cent in real terms during the past decade, although the gross value of production has been virtually static in the past three years.<sup>5</sup> In the same year,**

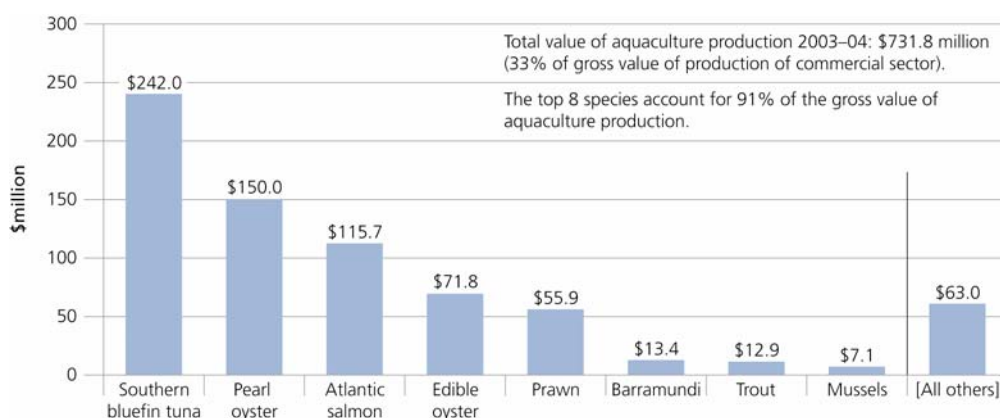
<sup>5</sup> Respectively \$733 million, \$743 million and \$732 million.



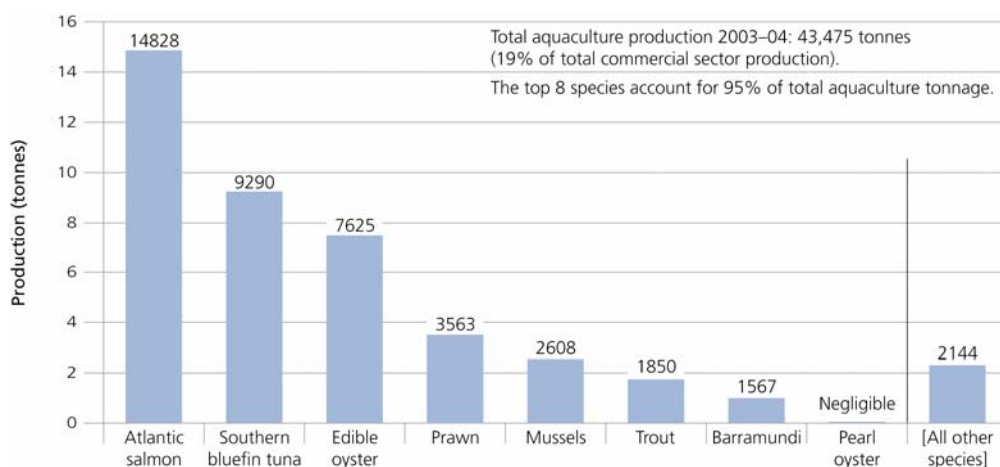
**aquaculture contributed 33 per cent of the landed value of all seafood industry production.**

Australian aquaculture uses both marine and freshwater resources, although most production is from the coastal zone. About 50 species are being produced commercially. The most valuable are the eight species shown in figure 6, which account for 91 per cent of the total gross value of aquaculture production. If pearl oysters are removed from the list, the remaining seven species account for 95 per cent of the weight of Australian farmed seafood (figure 7).

**Figure 6: The top eight aquaculture species by value, 2003–04**



**Figure 7: The top eight aquaculture species by production, 2003–04**



– From *Australian Fisheries Statistics 2004*, table 16

The aquaculture sector’s expansion during the 1990s was underpinned by innovation in southern bluefin tuna farming, growth in existing industries (including pearling, edible oyster, prawn and salmonid aquaculture) and significant developments in other new industries (including barramundi, abalone, silver perch, mulloway and yellowtail kingfish). Investment was also directed to “blue sky” innovation for which high risk was accompanied by the prospect of high return, such as through closing the lifecycle of rock lobster.

**Australian aquaculture currently lacks the capability to produce high-tonnage species that meet Australian consumers’ requirements for inexpensive, boneless, skinless white-flesh fillets. To make a significant contribution to offsetting imports of seafood,**

such production would need to exceed 30,000 tonnes — about twice the production of the present first-ranked species, Atlantic salmon.

*The farmgate value of aquaculture in 2003-04 was 33 per cent of the landed value of all seafood industry production, up from 15 per cent in 1989-90.*

Exports account for more than 60 per cent of the value of Australian aquaculture. Some aquaculture species are produced exclusively for the export market, such as southern bluefin tuna and kuruma prawns for export to Japan, and abalone for export to Asia. Other species such as Atlantic salmon, edible oysters, prawns, trout, barramundi, mussels and silver perch are sold mostly in the domestic market.

Like its wild-harvest counterpart, aquaculture provides development and employment opportunities in rural Australia, and contributes to export growth. More than 3,000 aquaculture licences are currently held in Australia, although many are held by small-scale operators for whom aquaculture may not be the primary source of income.

Operational responsibility for the development and management of aquaculture in Australia rests with state and territory governments. In some jurisdictions, local government plays a key role in planning and approving aquaculture sites. Several states have in place aquaculture and coastal development plans that take account of the needs of multiple user groups, providing the conditions and constraints for access to the water and land that aquaculture requires.

Notwithstanding these plans, approval delays, commonly up to two or three years, and lack of certainty in gaining access to sites, remain both significant obstacles to the expansion of existing aquaculture operations and entry barriers for new investment. **There are further investment challenges once businesses are established, including competing effectively against imports.**<sup>6</sup>

The aquaculture industry, with funding by the Australian Government, has completed an Australian Aquaculture Industry Action Agenda<sup>7</sup>, which among other things addresses the regulatory and business environment that supports aquaculture; industry development in an ecologically sustainable framework; aquatic animal health and bio-security; investment; global and local product promotion; research and development; and development of the capacities of people in the industry. To some extent this will redress the **lack of understanding of aquaculture in Australia by industry, governments and the community**, and correct the historical trend of **governments, in particular, under-investing in key areas by spreading investments too widely and not concentrating on species or technology that have most commercial potential.**

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<sup>6</sup> A current example is large-scale imports of *Litopenaeus vannamei* (vannamei prawns) at landed prices below the cost of production of Australian farmed prawns.

<sup>7</sup> [www.australian-aquacultureportal.com/action\\_agenda/action\\_agenda.html](http://www.australian-aquacultureportal.com/action_agenda/action_agenda.html)

## Domestic supply and demand

More than 90 per cent of Australians eat seafood. A survey conducted in Sydney in 1999 showed total seafood consumption of 15.3 kilograms per person per year.<sup>8</sup>

Consumption of seafood outside the home has been growing steadily during the past decade – because people eat out more often – leading to higher demand from the catering and restaurant sector.

**Enterprises throughout the supply chain, from the fisher or farmer through to the retailer and restaurateur, are attempting to respond to these market forces. Nevertheless, business has become more difficult in recent years. The main causes have been changes to regulatory limits or quotas; competition from cheaper imported seafood; increased operating and licensing costs; ill-defined value chains; and consumer resistance to rising prices.**

**The benefits of seafood as a cornerstone of a healthy diet have been widely acknowledged for a long time. However, stronger links have recently been made between seafood consumption and positive effects on a range of diseases and conditions. There is substantial evidence that coronary heart disease, heart arrhythmia, rheumatoid arthritis, diabetes, obesity and hypertension may benefit from seafood, or fish oil, intake as part of a balanced diet. Preliminary results from studies indicate other health benefits, but with less certainty. Australian consumers are keenly interested in health information, and seafood consumption is rising in response to this new knowledge.**

Recently, Food Standards Australia New Zealand (FSANZ) has allowed health claims to be made on food packaging. However, such claims must be based on knowledge that meets strict FSANZ guidelines. The extent to which claims about seafood meet the guidelines has not yet been established.

## Overseas supply and demand

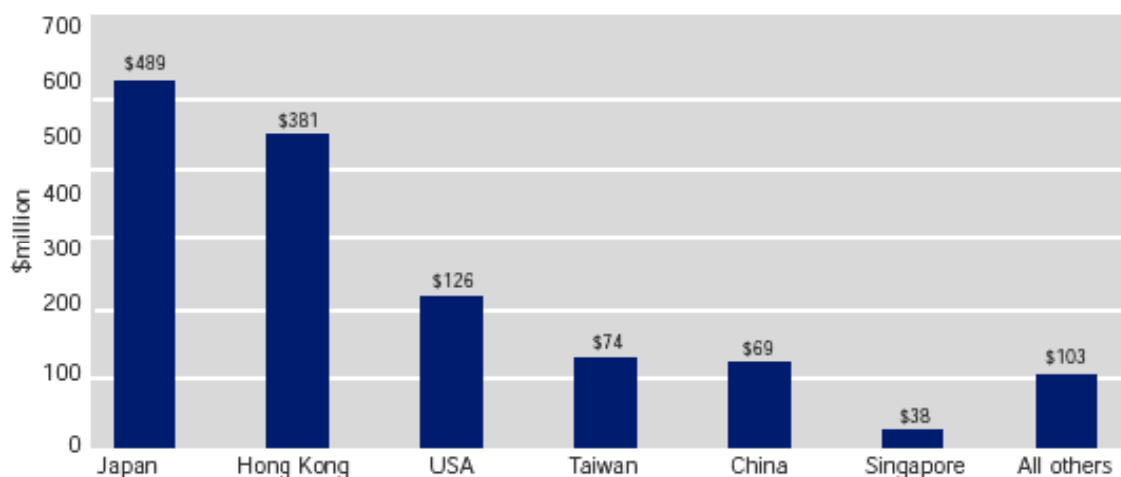
**In 2003–04, the industry's export sales totalled \$1.65 billion, placing it fourth among food-based primary industries – after beef, wheat and dairy products.**

The Australian seafood industry, although diversified, depends strongly on the Asian market as a destination for its exports.

In 2003–04, sales to Asia accounted for about 85 per cent of the total value of Australian seafood exports, as shown in figure 8. Other significant Asian markets for Australian seafood not shown in the diagram are Malaysia and Thailand; and outside Asia are Spain, Greece, New Zealand and France.

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<sup>8</sup> Average seafood consumption nationally is considered to be lower than in Sydney but has not been quantified recently because of the very high cost of repeating the 1991 National Seafood Consumption Study (PA Consulting Group – FRDC project 1990/116). The 1999 survey project was 'A study of the retail sale and consumption of seafood in Sydney' (Ruello & Associates Pty Ltd – FRDC project 1998/345); its data, gathered over two quarters, was compared with Sydney data for the corresponding quarters in 1991.

**Figure 8: The top six countries to which Australia exported seafood, 2003–04**

Excludes live product.

– From *Australian Fisheries Statistics 2004*, table 24

In a 2001 survey, Asian buyers rated Australia as a supplier of premium quality wild-harvest and aquaculture products. The survey showed that Australia is able to out-compete many trade competitors on quality and food safety. The Asian buyers stated that “proximity and relationships are the best part of doing business with Australia.”<sup>9</sup>

**Because Australia’s non-export seafood production supplies only about 40 per cent of the domestic seafood needed, Australia is a large importer of seafood — especially from New Zealand, South Africa and South-east Asia. Imports are a significant competitive factor for pricing and quality against Australian products.**

*Seafood is one of Australia’s top four food export earners, with annual sales of \$1.4 billion.*

Changing overseas demand affects Australia’s exports, as do international exchange rates, international agreements and trade negotiations. Some of the major impacts on the seafood industry come from international agreements and trade negotiations.

Fishery products are one of the most internationally traded of all foodstuffs, with about 35–40 per cent of fisheries production traded annually. To optimise access for Australian commodities into overseas markets, and to ensure its trade interests are protected, Australia engages in international forums such as the World Trade Organization, Asia-Pacific Economic Cooperation, and the Organisation for Economic Co-operation and Development. World Trade Organization agreements have been ratified by a large majority of the world’s trading nations. Essentially they are contracts that guarantee member countries important trade rights, and bind them to keep their trade policies within agreed limits.

Governments and private companies also engage with other countries through bilateral arrangements. For example, substantial lobbying of the European Union by

<sup>9</sup> Agri Chain Solutions Ltd., Canberra 2005. *Asian Foodbuyers’ Survey*, prepared for the Food and Fibre Chains Programme within the Prime Minister’s *Supermarket to Asia Strategy* in conjunction with Australian Business Ltd.

the former Australian Prawn Promotion Association, Western Australian Fishing Industry Council and the Australian Government resulted in EU import tariffs for prawns and rock lobsters being reduced, albeit only temporarily.

Tariff barriers are an impediment to efficient trading in seafood that affects Australian exporters. However, the majority of Australian seafood exports are subject to non-tariff barriers, such as import quotas, food safety regulations, quarantine regulations, subsidies to domestic producers, and even delays by the importing country in clearing and forwarding imported goods. Meeting increasingly strict food safety and quarantine import requirements from countries also adds to the cost of exporting. On the other hand, recent free-trade agreements with Thailand and the US and further agreements proposed offer excellent opportunities for Australian seafood.

Other forms of non-tariff barriers are requirements by importing countries for traceability and certification, and labelling to identify genetically modified organisms in human foods and in feed for animals destined for human consumption. Some countries also require certification of particular fishing practices (for example, the US in relation to the use of turtle exclusion devices) before access can be gained to their markets.

Given the difficulty in quantifying non-tariff barriers, it is difficult to estimate the extent to which Australian exports are impeded.

## Value-adding and promotion of seafood

More than ever, commercial enterprises are recognising that higher long-term incomes will be derived not from increasing wild-harvest production tonnages but from increasing the value of sustainable catches and aquaculture.

The form of value-adding for Australian seafood varies according to consumers' preferences and the species in question. At one end of the market is live fish. This product (exemplified by rock lobster, abalone, kuruma prawns and tropical species) is generally exported to exclusive markets in Asia. Domestically, oysters comprise the live product market almost exclusively. A much smaller domestic market also exists (exemplified by rock lobster and barramundi) for restaurant fish to be kept in display tanks until selected for cooking. Codes of practice govern the procedures in this latter supply chain because effective handling, including quick delivery, is critical to survivability after capture, and to taste and appearance.

Very little value-added processing of fish products occurs in Australia for either export or domestic consumption compared with other food commodities. Processing establishments vary in their size, scope of operations and sophistication of technologies employed. The majority of establishments undertake only basic processing, such as cleaning, filleting, chilling, freezing and packaging, but some have the capacity for significant product transformation – as in the development of smoked Atlantic salmon products. Fish for local consumption are mainly sent fresh-chilled to markets. However, consumers and food service providers are demanding “ready-to-eat meal solutions” and portion-controlled fish. This demand is being met more by imported seafood products than by Australian products.

Like other primary industries, the seafood industry remains largely production-driven, and is a price-taker, not a price-maker. It differs from the other industries, however, by not having an industry-wide marketing capability. Marketing of high-value, premium seafood products is currently undertaken on an enterprise and species basis – for example, western rock lobster, southern bluefin tuna, Atlantic salmon and wild-caught prawns. The lack of a well-funded, dedicated national product promotion capability

**significantly reduces opportunities for value-adding through market development and for improving the sector's national profile.**

**Business-to-business e-commerce trading for the seafood industry was first introduced several years ago and is expanding: for example, the Internet-based system of Sydney Fish Market Pty Ltd, SFMLive, accounted for 10 per cent of the Sydney Fish Market's sales in 2003–04. Expansion of the system will depend on the confidence of buyers. Action is under way to develop a nationally recognised, well understood, practical and uniform system of accurately describing the size grade, quality and name of the products on sale, along the lines of the Quality Index Method (QIM) now widely adopted by European seafood industries.**

Lack of consistency in fish names is one of the major impediments to consumers' confidence when buying seafood. The National Fish Names Committee has issued, and is continuing to develop, a national Fish Names List to standardise seafood names across Australia. The Australian Government has set up a telephone hotline for people to report inaccurate labelling of seafood by retailers. The lack of appropriate legislation, regulations and sanctions for fish names is being addressed through the development of food standard codes.

## **Socio-economic factors relating to the seafood industry**

### ***Employment***

Australian Bureau of Statistics (ABS) data is not broken down in sufficient detail to be very useful for determining the contribution that the seafood industry makes to employment and regional development, among other things. Such data is also inconsistent with data collected by other agencies, such as the number of boats, fishing licences etc, and other forms of fishing regulation. For the present, significant obstacles stand in the way of unambiguously attributing employment to the seafood industry.

Nevertheless, studies undertaken, including under the Aquaculture Industry Action Agenda in 2002, point to direct and indirect seafood industry employment of between 100,000 and 120,000.<sup>10</sup> This estimate includes wild-harvest, aquaculture and all post-harvest processes, including putative seafood components of transport, wholesaling, retailing and restaurants.

### ***Occupational health and safety***

Commercial wild-harvest fishing is a very hazardous occupation because the sea is an inherently dangerous environment. The seafood industry mainly uses small boats; ports are often distant from fishing grounds; and workers are on a mobile platform, usually wet and often at night, close to moving machinery. The fatality rate, at 89 deaths per 100,000 workers per year, is 16 times higher than the all-industry rate of 5.5 deaths. The seafood industry is investing more in improvements in workplace safety and associated training.

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<sup>10</sup> The break-down of this conjectural estimate of direct-plus-indirect employment by sectors is: wild-harvest 60,000–70,000; aquaculture 20,000; post-harvest 20,000–30,000.

***Social fabric***

Commercial wild-harvest fishing is a major social resource in many small coastal communities, where 67% of all fishing industry jobs and 78% of wild-harvest and aquaculture production jobs exist. Such activity often involves several generations of family members; it fosters a unique blend of self-reliance and teamwork; it provides a core for related activities; and it engenders strong levels of “ownership” of the industry by the local community. Commercial wild-harvest fishing and aquaculture activities carry high cultural values that add to the richness and robustness of their community.

The current state of knowledge of the social importance of fisheries to the Australian community is nevertheless inadequate, given the management challenges of the next decades. Increasing this knowledge will be important to fisheries management, which needs to encompass the social impacts of implementing management strategies, particularly those that reduce fishing effort for reasons of sustainability.