



report

Sustainable Aquaculture

January 2009





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1 Introduction

Food Security is a growing concern not only for developing economies but increasingly for developed economies. FAO predicts that by 2030 there will be a global deficit of 40 million tons of fish per year which will be unable to be met through wild capture production. While the aquaculture industry continues grow rapidly worldwide and partially bridge the growing gap between supply and demand, the development of sustainable practices in aquaculture will be essential to ensuring long term food security for Australia and the world.

2 Market Drivers

2.1.1 Global

Continuous population growth, elevated consumer preference and the growing acknowledgement of the health benefits associated with seafood consumption are all factors contributing to a growing demand for seafood products. On the supply side, human development is impacting on the aquatic environment and threatening the available supply of fish and other marine life. One of the major problems is that global warming has resulted in increasing ocean temperatures, a rising sea level and increasing salinity. All these changes have contributed to diminishing fish stocks. Increasing atmospheric carbon dioxide is also causing a phenomenon known as Ocean Acidification, which threatens any marine organism that uses calcium carbonate to build its body ie: coral and crustaceans. Finally, fish stocks are threatened by over exploitation, which in some regions has reached a point where marine organisms are being removed at such a rate that they are no longer able to replenish their population by breeding.

Table 1 below outlines global reported fisheries production from 2000 to 2006¹. In 2006, global wild capture fishery production was at 92 million tonnes. Based on these figures it appears likely that the maximum production potential of wild capture fisheries has been reached and while net quantity for human consumption may rise, it is unlikely that production will increase beyond this. Furthermore, if measures are not taken to protect wild fish stock from exploitation, stocks will continue to decline and production will be even further constrained in the future.

Table 1: Global Reported Fisheries Production

	Global Reported Fisheries Production (million tonnes)						
	2000	2001	2002	2003	2004	2005	2006
Total Capture	95.6	93.1	93.3	90.5	95.0	93.8	92.0
Total Aquaculture	35.5	37.9	40.4	42.7	45.5	47.8	51.7
Total World Fisheries	131.1	131	133.7	133.2	140.5	141.6	143.7

Aquaculture has emerged as an increasingly important contributor to the global supply of fish. Unlike wild capture fisheries production which is either in decline or experiencing a plateau; aquaculture production continues to grow rapidly with an average growth rate of 8.8 per cent since 1970. If global growth in the aquaculture industry can be sustained it has the potential to fill the future global shortage in fish supplies.

¹ State of World fisheries and Aquaculture (2006) FAO Fisheries and Aquaculture Department



2.1.2 Australia

In global terms, Australia is a relatively small producer and exporter of seafood. Currently, Australia's wild capture fish stocks are either static or in a state of decline. Wild capture production levels have remained fairly static in recent years as management of fisheries resources limit production to sustainable levels. Whilst Australia has a growing aquaculture industry; it is under constant threat from cheap Asian imports and has been unable to compensate for the static growth in wild capture production. As wild capture production has now reached its production potential Australia will be forced to rely increasingly on overseas imports to satisfy local demand unless significant developments are made in Australia's aquaculture industry.



3 Problems

Faced with declining wild fish stocks, Australia needs to grow its aquaculture industry in order to meet domestic demand and reduce the nation's dependence on foreign imports as well as develop an export product to meet growing global demand.

A large proportion of world aquaculture still relies on wild capture fisheries as a source of juveniles and as a source of food. From a food security perspective, aquaculture that is still largely dependent on wild capture fisheries does not represent a net gain in fish supply. Therefore there is a significant opportunity to develop more sustainable aquaculture practices and reduce reliance on natural fish stocks.

The growth of a sustainable aquaculture industry is largely dependent on the management of genetic resources. It is expected that in the near future the genetic improvement of farmed fish will undertake a similar trend to that of crops and livestock and thus significant research and development is needed to identify fish strains, hybrids and other genetically altered forms that will perform well in farming conditions.



4 Generic Solution

Significant investment must be made into infrastructure, research and development to create a viable and sustainable aquaculture industry and bridge the growing gap between supply and demand for seafood in Australia and the world.



5 Specific Solution

Currently in Western Australian, an open-ocean fish farm trial is underway on the coast of Two Rocks. The farm has the potential to be producing 100,000 tonnes of seafood a year within five years which would supply both the local and export markets. The presence of the fish farm trial at Two Rocks represents a significant competitive advantage for the region in terms of further development of aquaculture related facilities.

Potential related businesses may include:

- A plant which is able to process and package the aquaculture product for local and export markets
- Research and development facilities – focusing on the study and management of genetic resources and developing new aquaculture production techniques both for application domestically and internationally
- A hatchery to supply the juvenile fish to both to the local industry as well as to overseas aquaculture producers

By leveraging the competitive advantage the region has and encouraging the agglomeration of related businesses, there is potential to develop a viable and sustainable aquaculture industry which will generate significant strategic employment for the region, generate export revenues for the State, and help ensure the long term food security of both Australia and the world.