Conclusion

This study covers various aspects of the development of the fisheries resources in eastern Canada. We have drawn a relatively complex picture of an economic sector in transition, a sector in which traditional practices like mass production coexist with modern techniques that focus on innovation and the search for greater profitability. Obviously, the breakdown is not clear, given that there are over one thousand producers-processors-marketers based in five provinces, operating eight hundred processing plants, and exploiting approximately fifty commercial species.

It soon becomes evident that the very nature of the fish-processing industry is complex because it is part of a much broader industry with ramifications far beyond the strictly maritime environment. We have identified the various segments of the industry, from downstream to upstream, and assessed their contribution to the economy in each province. And the bottom line is clear: this essentially export-based industry provides nearly 134,000 jobs in the region, 38,500 of which are in processing, and generates $2.6 billion annually. The export value of seafood products continues to rise (from $1.23 billion in 1990 to $2.72 billion in 1999), despite moratoriums that still deprive the industry of its main basic resource — groundfish.

It is not true, as many people believe, that the industry as a whole is in a crisis, even though the moratoriums are still in effect. Our analyses reveal instead a sector that is adjusting successfully to changes in the industry, a sector still based on solid regional foundations and on diversity, regional expertise, active entrepreneurship, unexpected networks and institutions, the public and private sectors, and business networks in Canada and other countries. It is evident from the industry's product shipments that processors and producers have profited from new developments at various levels: from a technological standpoint, they have profited from the adoption of high-performance methods and tools designed to process, shell, vacuum-pack, can, and package products differentiated by content, format, and presentation; from a management standpoint, they have profited from the advent

of international quality-control standards and the search for security of supply requiring integrated management of operations; from a distribution-marketing standpoint, they have profited from the restructuring of the roles of brokers and wholesale distributors, from the gradual lowering of customs tariffs, and from the massive entry of Third World countries into the market, particularly countries that focus on intensive farming of seafood species; and from a research and development standpoint, neglected until now but catching up, they have profited from the successes of aquaculture. Technology is transferred by contracts, by contacts among companies, and through training and the ever-essential cooperation of government centres of expertise, which have become increasingly accessible to regional producers and small processors.

With regard to value-added processing itself, the subject of this study, some agreement is needed on a definition of *value added*, or at the very least we need to agree on what we mean by *value-added production*. Our analyses and interviews with industry players have led us to the conclusion that the term *value added* has been and still is overused, and no specific definition has yet been advanced by the trade, government agencies, or scientists. That is why we decided to prepare a typology of regional seafood products based on established and internationally recognized industrial codes, knowing, however, that significant grey areas remain and that the very concept of value-added processing will change as products change.

We believe that with the typology and the various industry profiles presented, we have gone some way toward demystifying a concept that is still poorly understood in the sector and could result in biased assessments. In the final analysis, whether we talk about value added, value-added products, differentiated production, or product innovation, the process is the same, and the results are a more effective use of seafood resources. The challenge remains unchanged and requires various industry players to look beyond their own field of endeavour and to think in terms of the industry as a whole, of an integrated management of the entire production-marketing process, and of improved cost control.

Our analyses show that Canada's East Coast fisheries and the fish-processing industry as a whole have indeed survived the unprecedented groundfish crisis that paralyzed those segments of the industry with the greatest value-added potential. Some may say that the expansion of the snow crab and Northern shrimp fisheries contributed extensively to the unexpected turnaround. Although there is no

doubt that their commercial success helped the industry, particularly in Newfoundland, to overcome the devastating effects of the moratoriums, that alone does not explain the renewed activity in the seafood industry as a whole over the last ten years.

We have seen the major changes that have taken place on the demand side, particularly the demand for ready-to-eat prepared products. New processing, preservation, and packaging technology has also helped some industry sectors to reduce costs and to remain competitive. Elsewhere, developments in aquaculture have helped local processors to extend production cycles and to maintain consistent quality. With the implementation of quality-control and management programs (under the umbrella of international HACCP standards), processors have had to modernize both their management styles and their production systems. The advent of international trading blocs, trade liberalization, and the subsequent downward pressure on customs tariffs (the Uruguay Round of GATT) have cleared the way for intensified trade in seafood products. In many cases, the creation of groups of companies and partnerships as well as mergers and other forms of alliances have renewed activity in the sector. By importing basic products to counter the effects of the moratorium, producers were able to maintain a certain level of processing, but had to increase the level of value-added processing in secondary production. The development of research centres and their ties with industry have helped producers not only to apply new regulatory standards but also to develop the so-called value-added product sector.

In short, all of these factors and many others have contributed significantly to changing the thinking of a sector that is still too dependent on traditional structures. One factor that has to be weighed is the psychological effect of the moratoriums, which have deeply affected the outlook and behaviour of people in the industry. Other changes besides the ones arising from the moratoriums are the new attitudes of workers towards employment in the fisheries: no longer is a job seen as merely a way to qualify for unemployment insurance. This climate of change has also caused producers to think less in terms of volume and mass production and more in terms of differentiated, value-added production. Producers are also concentrating more on targeting specific market niches than they did before. And instead of confining their attention to their own sphere of activity, they are now looking beyond to the needs and requirements of players upstream in the industry. In general, whereas technology and innovation were once viewed as a threat to employment, as perceived as limiting and

as replacing human workers, technology and innovation are more essential tools for progress in the industry as a whole.

These then are some of the changes that have transformed the fishing and fish-processing industries in the space of barely a decade. As a result of these changes as well as the expansion of some lucrative fisheries, the entire industry in each of the provinces has been able not only to maintain what it has built but also to position itself favourably on the international scene.

This profile of a changing industry is confirmed by our analyses. They show that its export base has expanded to include new products, particularly tertiary-processed products, which now represent over 16 percent of total export value compared to approximately 10 percent in 1990. At the same time, the data indicate that between 1995 and 1999 imports of basic seafood products grew from $444 million to $711 million, a clear sign that processors want to maintain their market share and most of all to upgrade their production facilities.

We have also seen that marketing prospects for seafood products are constantly expanding. However, because of the limited shelf life of more value-added products, the product-innovation option was introduced, which involves changes in manufacturing, content, format, appearance, and type of packaging. That is why there are so many different fish products on the market — at least seven hundred in the US, while producers in eastern Canada are offering three hundred products, by-products, and derived products. Considerable effort has been made by some processors to minimize losses by recycling industrial waste (shells, seafood juice, fish oil, shell-based chitosan, and seaweed for therapeutic purposes) and by using nontraditional species as much as possible, such as small inshore crab and rock crab (over 8,600 tonnes landed in 1998 compared to 864 tonnes in 1990), green sea urchin (3,700 tonnes in 1998, a conservative figure according to many), and lumpfish to name only a few.

An exciting aspect of the changing structure of the fisheries on Canada's East Coast is the expansion of the aquaculture sector, where production went from 16,000 to 39,000 tonnes (from $99 million to $178 million) between 1990 and 1999. Just as significant is the relative change in the percentage share of the aquaculture sector compared to the traditional fisheries: it increased from 1.2 to 5.1 percent in volume and from 10.5 to 15.1 percent in value over the same period. The aquaculture industry is interesting for a number of rea-

sons. One is its increasing product diversification together with its role as a complement to traditional fish products. Another is the fact that the sector has become resolutely high-tech and contributes to technology transfers across the processing industry. It is also a sector in which management is less traditional and patterned more on the model of new economy companies. The integration (vertical and horizontal) of leaders in this sector and its many interindustry links — a typical salmon-farming company does business with over two hundred suppliers — reflect the highly strategic profile of this industry. The proliferation of companies that offer products and services to the aquaculture industry attests to its many and often complex needs. Logistical support ranges from scientific and technical assessment of production sites to disease control, equipment supply, and other specialized services such as genetic improvement, reproduction, incubation, hatchery, and nutrition. Almost a thousand companies in Canada supply goods and services to the aquaculture industry, and there are nearly one hundred training groups and agencies, most linked to public post-secondary institutions (universities and community colleges), and 172 research groups and units entirely or partially dedicated to the development of the industry.[111] The many specialized centres for marine and aquaculture studies, working mainly within universities, attest to the close ties that can exist between the aquaculture industry and the institutions. And partnerships between governments, institutions, and companies are becoming more common in the various provinces, evidence of their firm commitment to developing the aquaculture industry as a whole and to maximizing its social and economic spin-offs.

The opening of new, more demanding markets and the implementation of industrial standardization in the agri-food industry as a whole are giving fish and seafood processors the incentive to improve quality management standards and production management techniques. Industrial processes will also improve, and as they do, new avenues of innovation in the industry will gradually emerge. Armed with an array of techniques (cooking, dehydration, ionization, analytical biotechnology, vacuum deep-freezing, etc.), processors are focusing on innovative approaches to product composition (new ingredients, new recipes, and combinations), manufacturing processes and techniques (quality improvement), and packaging and services

111. According to *Canadian Aquaculture 2000 Directory* (Georgetown, ON: Contact Canada, 2000).

incorporated in products (improved image among distributors and consumers, particularly with respect to colour, legibility, and convenience).

As regards value-added processing, in spite of the considerable effort the industry has devoted to this area of the fisheries (product development and modernization of production facilities), there are still serious weaknesses in distribution and marketing. Although the industry as a whole is exporting the majority of its products and doing its best to organize a domestic marketing network, it is still too focused on primary-processed products, most of which are destined for traditional niche markets in Boston and Tokyo.

Developing market segments individually still puts at risk the very survival of too many processors. We have seen, in fact, that the industry as a whole is not as productive as it should be, which is largely reflected in profit margins and other performance indicators. The situation varies from one subsector to another, but in general the ratio of GPM to sales barely manages to stay at 15 percent (it was 17 to 18 percent in the mid-1980s) as compared to 30 percent or more in manufacturing industries as a whole. The problem, though, is not with salary costs: they are not eating into processors' profit margins. In fact, they represented only 14.5 percent of total production costs in 1997, and average hourly wages in this sector were relatively static in the 1990s. Furthermore, worker productivity actually improved during this period: the value of shipments per hour worked increased over 50 percent, from $62 in 1989 to nearly $95 in 1996. Static labour-force costs, the adoption of new technology, and sound management all contributed to gains in productivity.

In the final analysis, the real problem for the industry is the supply of raw materials: their relative costs have increased everywhere. In 1997 raw materials represented an average of 83.6 percent of direct production costs in Atlantic Canada as compared to 75 percent in the mid-1980s.

Strategic groups, whether formed on the basis of product family (precooked foods) or type of trade (canneries and deep-freezing plants), have had good results, although they imply a gradual change of attitude in the industry. We might add that cooperative alliances of this kind are increasingly on the agenda of industry associations as they implement their strategy for the new economy.

In this regard, there is an important role to be played by the two senior levels of government. Although some efforts have been made

in recent years to create a vision for the development of value-added seafood products in eastern Canada, there is still a great deal to be done. Providing support and strategic guidance for the industry, particularly in nontraditional activities, is proving to be an essential element in the development of the seafood industry, and to this end the role of some agencies in the Atlantic provinces, such as ACOA, is particularly important. Their support for the promotion of regional industry-related products and expertise must be part of a long-term strategy.

A number of challenges and issues have been raised during the course of this study. As we have shown, the future prospects of the industry are bright. New products and value-added processes are being developed all the time, some particularly suited for technology transfer. Although expectations are high in many of these new fields, we believe they must not only be realistic but also be part of an approach that has sustainable development as its goal.

Undeniable progress has been made in eastern Canada over the past ten to twenty years in the processing and value-added seafood sector. Elsewhere in the world, similar signs of progress are evident. One only has to look at the numerous international fairs each year that present a host of new products and innovations from an impressive array of maritime nations. Although Canada has established a reputation as a supplier of basic seafood products, efforts aimed at increasing diversification and especially value-added processing have only just begun. Ultimately, our goals in this study have been to contribute to a fair and reasoned assessment of the place of the fisheries in the regional economy, to help bring some of the issues that are central to the industry more clearly into focus, and, most important, to convey a sense of the huge potential of a sector that is vital to the Atlantic provinces and eastern Quebec. If our efforts have met with success in any of these areas, we have been suitably rewarded.