

***National Aquaculture Strategic Action Plan Initiative***  
**Strengthening Sustainable Aquaculture Development  
in Canada**

**Discussion Document**

**Prepared by Fisheries and Oceans Canada**

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## Purpose of this Discussion Document

Fisheries and Oceans Canada (DFO), in partnership with other federal departments and agencies and the Provincial and Territorial members of the Canadian Council of Fisheries and Aquaculture Ministers - Aquaculture Task Group (CCFAM-ATG), is leading a collaborative exercise to advance socially and environmentally sustainable aquaculture development in Canada<sup>1</sup>. Achieving Canada's potential as a leading aquaculture producer requires that the principal challenges and constraints to sustainable development be addressed and resolved. Based on consultation, specific objectives, targets and action plans will be necessary to guide the efforts of all pertinent parties. This discussion document has been prepared as background information to facilitate robust dialogue amongst industry, governments and other stakeholders in support of this exercise.

The document explores various topics and seeks contribution from groups and individuals with an interest in the subject. It is intended to focus discussions and stimulate strategic thinking in the interest of generating plausible innovative and progressive solutions.

Canada supports the sustainable development of aquaculture. Federal and provincial governments recognize sustainable aquaculture as a legitimate use of Canadian waters and it is the responsibility of both levels of government to ensure that the environment and other public interests are not unduly compromised by aquaculture development. For more information, please refer to [www.dfo-mpo.gc.ca/aquaculture](http://www.dfo-mpo.gc.ca/aquaculture).

Through extensive engagement via a series of regional workshops in the Spring and Summer of 2009, it is expected that meaningful input will be obtained to:

- confirm our collective understanding of the constraints facing sustainable development of the sector;
- provide a platform from which to generate insight and innovative advice regarding potential means to resolve the identified constraints; and,
- use this feedback to facilitate the activities and decision-making by industry, governments and other stakeholders in development of strategic action plans to strengthen the economically, socially and environmentally sustainable development of the Canadian aquaculture sector.

This discussion document (i) provides a general overview of the Canadian aquaculture sector; (ii) describes the challenges and priorities that have been identified by industry, stakeholders, and Aboriginal peoples over the past number of years; and (iii) seeks to stimulate discussion and input from participants regarding the constraints and possible approaches to resolve them. The document is organized into the following areas for *Strategic Action Planning*:

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<sup>1</sup> As the lead federal agency for aquaculture, it is within the mandate of the Department of Fisheries and Oceans (DFO) to coordinate the roles of other federal departments and agencies as well as to facilitate a cooperative inter-governmental approach with the provinces and territories in the interest of fostering the development of a more vibrant and sustainable industry. There are more than 25 federal departments, agencies, and Crown corporations involved in aquaculture management. Aquaculture occurs in every province and the Yukon Territory.

1. Regulatory and Management Regimes for a Sustainable Sector
  - Environmental Management of Aquaculture
  - Introductions & Transfers of Aquatic Organisms
  - Access to Wild Stocks for Aquaculture Purposes
  - Canadian Shellfish Sanitation Program
2. Sustainability, Competitiveness, Investment & Innovation
  - Innovation
    - Fish & Shellfish Health Management
    - Aquatic Invasive Species
    - Emerging Production Technologies
    - Industry Diversification / Alternative Species
  - Risk Management & Access to Financing
  - Infrastructure
  - Market Access & Certification
3. Social Licence & Reporting

Information presented in this document is based on past initiatives, consultations and reports pertaining to aquaculture development in Canada (and elsewhere). There are no preconceived ideas regarding the outcome of this exercise. Rather, the intention is to work collaboratively and collectively to develop sectoral action plans that will facilitate further development of sustainable aquaculture throughout Canada.

Within the document, strategic questions are posed at the end of each sub-section to facilitate discussions and guide decisions that will lead to the development of strategic action planning initiatives. There are 18 strategic questions in all. Through stakeholder discussion at the regional workshops, however, the emergence of additional factors and questions is likely - and welcomed.

It is also anticipated that different answers will be generated in different regions and/or sectors for the same questions. Therefore, a provincial / regional consultation process has been employed to solicit input, leading to the development of sector-specific Strategic Action Plans that effectively target the various sub-sectors of the Canadian aquaculture industry; namely: Shellfish (East Coast), Shellfish (West Coast), Freshwater, Marine Finfish (East Coast) and Marine Finfish (West Coast). The resulting action plans will address specific needs within each of these industry sub-sectors. It is also inevitable that there will be many factors in common to the different sectors and regions so it is envisaged that the sectoral action plans will be consolidated within an overarching national action plan pertaining to generic needs and challenges within the industry.

## **1.0 INTRODUCTION**

Aquatic resources have long played an important role in Canada's development and growth as a nation. They are integral to the historical, economic and cultural fabric of Canada's coastal communities, providing a strong and reliable resource base around which Canada's national economy and sense of nationhood grew. More recently, aquaculture, the farming of aquatic organisms such as fish, molluscs, crustaceans, and aquatic plants, has emerged as a principal force within the Canadian fish and seafood sector. Unlike commercial fisheries, farming implies some form of intervention in the rearing process – e.g. regular stocking, feeding, or protection from predators – that enhances production. Farming also implies individual or corporate ownership of the stock being cultivated.

Since the first National Aquaculture Conference in St. Andrews, NB in 1983, the capacity to develop aquaculture in Canada has been recognized and encouraged. Nevertheless, after 25 years of development, Canadian aquaculture still has considerable untapped potential. Now more than ever, circumstances warrant development of a vibrant and innovative aquaculture industry to complement commercial fisheries in a manner that is environmentally and socially responsible, economically prosperous and internationally competitive. It is time to develop this opportunity.

Within each of the industry sub-sectors, there exists a tremendous potential for expansion that is enhanced by the many competitive advantages stemming from Canada's bio-physical geography and inherent experience and expertise in the fish and seafood industry. The realization of this potential, however, requires the collective and collaborative effort of all stakeholders (industry, governments, First Nations, Aboriginal groups and interested parties) to develop concise strategic Action Plans targeted toward specific initiatives intended to resolve the most pressing constraints to sustainable industry development.

In 2008, DFO's new Sustainable Aquaculture Program was established to develop the conditions for the success of a more vibrant and innovative Canadian aquaculture sector that is environmentally and socially sustainable and internationally competitive for the benefit of all Canadians. This new initiative has four pillars including regulatory reform, increased regulatory science to inform decision-making, innovation, and certification and market access.

Under the leadership and direction of DFO, and with the support of the Provinces and Territories, the National Aquaculture Strategic Action Planning Initiative (NASAPI) has been launched to develop targeted action plans to facilitate sustainable growth in all regions of the country. Each Strategic Action Plan will target precise and realistic objectives to be achieved within a 5-year time frame. Implementation will be facilitated through a national agreement endorsed by the Canadian Council of Fisheries and Aquaculture Ministers (CCFAM) and coordinated amongst the federal and provincial / territorial governments via MOUs or other similar mechanisms.

This discussion document has been prepared as background information to support robust discussions amongst industry, governments, First Nations, Aboriginal groups and other stakeholders regarding the future growth and sustainable development of commercial aquaculture in Canada.

## 2.0 AQUACULTURE – FARMING A BRIGHTER FUTURE

World aquaculture output increased from 18 million tonnes valued at US\$29.4 billion in 1991 to 66.7 million tonnes worth US\$86.2 billion in 2006, reflecting an average annual tonnage growth rate of 9%. Aquaculture is the fastest growing food sector in the world.

Two major factors contribute to the extraordinary growth in aquaculture: (i) technological advances to improve husbandry techniques and enhance productivity for an increasing variety of species; and (ii) the rising global demand for fish and seafood due to population growth and increased affluence. World *per capita* consumption of fishery products rose from less than 15 kg/yr in the 1990s to almost 17 kg/yr in 2007. Since this trend is expected to continue, the FAO has forecast a sizeable deficit in fish and seafood supply by 2020. Furthermore, the potential for capture fisheries is finite, so continued growth in aquaculture is expected.

Today, 50% of fish and seafood products for human consumption (excluding fish meals and oils) are derived from aquaculture, which exceeds FAO's forecasts<sup>2</sup> and suggests an even greater growth potential through 2020. Due to the general increase in affluence of people in many less-developed nations, continuing urbanization, and growing awareness of the health benefits associated with fish consumption, the Organization for Economic Co-operation and Development (OECD) expects that global aquaculture output will continue to grow at a rate of 3.9% per year through 2030. With the output from capture fisheries remaining relatively constant, aquaculture output is projected to surpass 62% of global seafood supply during this period.

The FAO notes that aquaculture "*development has been of the win-win type, as both producers and consumers have gained when prices for cultured species have fallen as a result of increased production.*" Concluding that "*public management of aquaculture is not dissimilar to public management of agriculture and, in developed economies, management and enforcement costs as a share of the value of the produce are lower for aquaculture than for capture fisheries,*" the FAO predicts that "*public policy support for aquaculture is likely to grow worldwide.*" As a result, the world over, governments are evaluating policy and regulatory approaches respecting aquaculture to identify prudent mechanisms that will enable this sector to grow and prosper.

## 3.0 COMMERCIAL AQUACULTURE IN CANADA

Commercial aquaculture in Canada began more than 50 years ago with trout farming in Ontario, Quebec and British Columbia and oyster farming in New Brunswick, Prince Edward Island and British Columbia. At the time, most operations were locally owned and operated. Between 1984 and 1991, industry output increased dramatically, due mainly to growth in salmon farming in BC and NB. Today, commercial aquaculture operations exist in every province as well as in the Yukon Territory, and the sector accounts for one third of the total value of Canada's fisheries production. Nevertheless, Canada's output is a small fraction of global production. In 2006, Canada ranked 23<sup>rd</sup> among world aquaculture producers and contributed less than 0.3% of total output.

<sup>2</sup> FAO projected that the proportion of world seafood derived from aquaculture supply would not reach 50% before 2030. See, Brugère, C. & N. Ridler (2004). *Global Aquaculture Outlook in the Next Decades: An Analysis of National Aquaculture Production Forecasts to 2030.*

Between 1991 and 2007, Canadian aquaculture output increased from 49,000 tonnes valued at Cdn \$233 million to more than 170,000 tonnes valued at Cdn \$846 million (Figure 1).<sup>3</sup> Salmon is the main species produced on Canadian farms, accounting for 69% of total production, followed by mussels (14%), oysters (8%) and trout (3%). British Columbia contributes the most farm-raised fish and seafood, followed by New Brunswick, Prince Edward Island, Nova Scotia, and Newfoundland & Labrador. In the inland provinces, trout is the main product, accounting for more than 92% of total production. Ontario is the largest producer, followed by Quebec, Saskatchewan, Alberta and Manitoba (Figure 2).

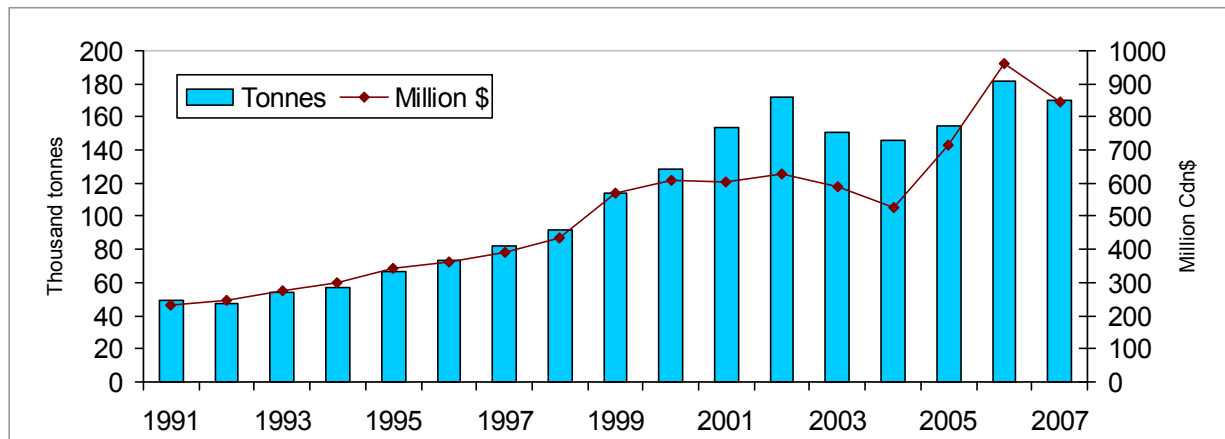


Figure 1: Canadian aquaculture production tonnage and value (1991-2007)  
(Data Source: Statistics Canada 2008)

Aquaculture is vital to rural Canada, particularly in the Atlantic Provinces and British Columbia where regional economies have been affected by the decline in capture fisheries and other natural resource industries. Aquaculture has played a central role in revitalizing many coastal and First Nation communities which depend on the wealth generated through the creation of more than 16,000 stable, year-round, well-paying jobs and by providing the critical economic activity necessary to stimulate infrastructure development and growth in secondary and tertiary businesses. The sector increasingly attracts young people - over half of the employees on aquaculture farms are between the age of 21 and 35 years.

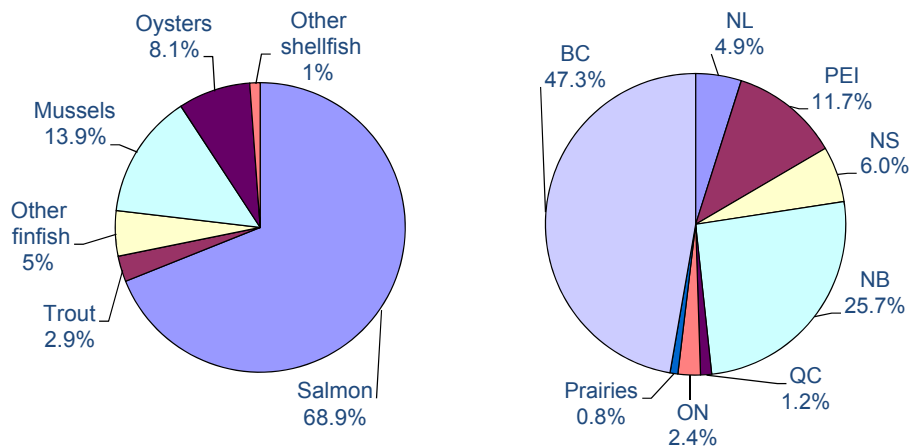
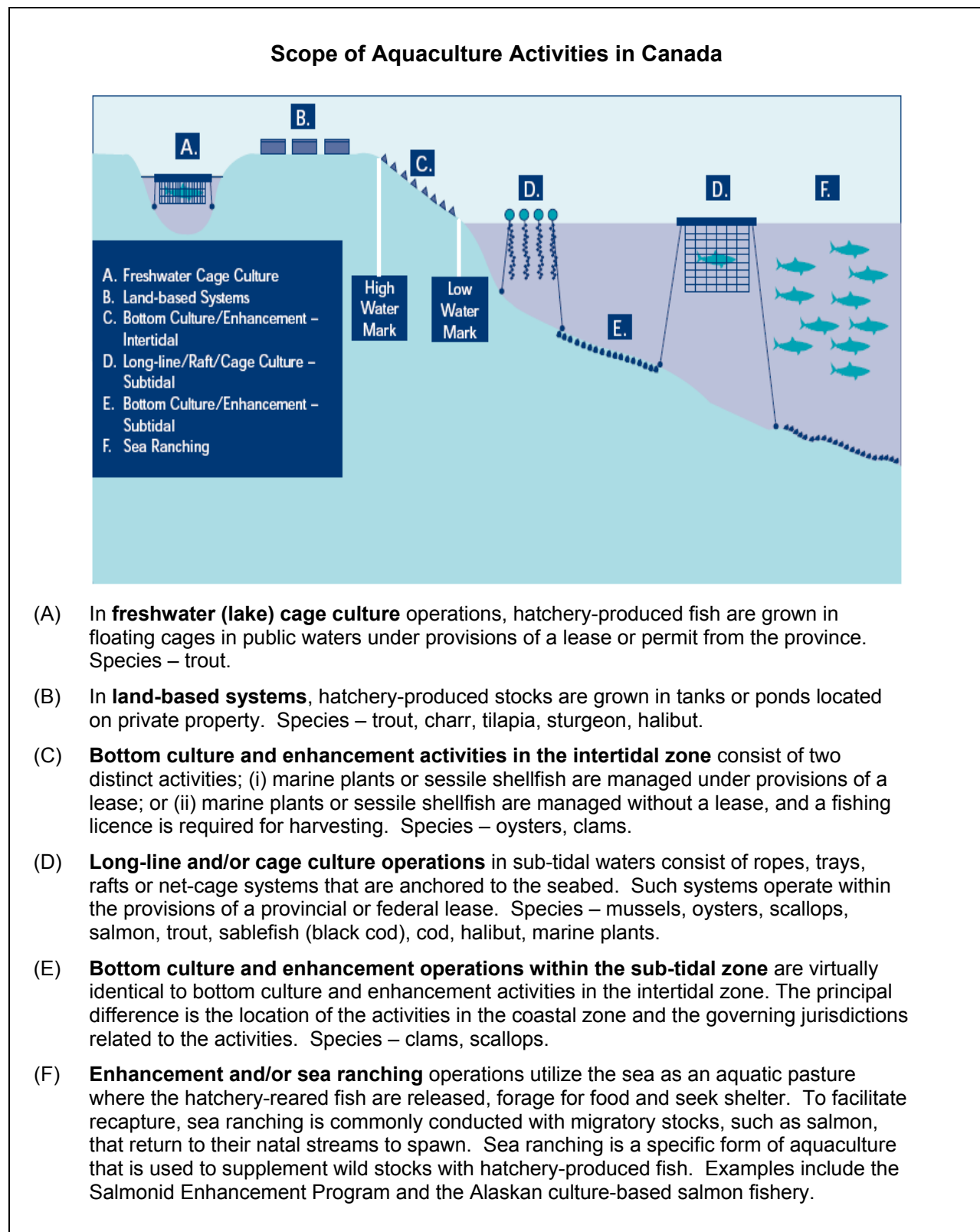


Figure 2: Canadian aquaculture output by species and province (2007).  
(Data Source: Statistics Canada 2008)

<sup>3</sup> Statistics Canada. (2008). Aquaculture Statistics 2007.

The scope of aquaculture is not uniform across the country. Depending upon the species being farmed, and even upon the life-stage of the species, culture technologies and methodologies vary considerably. The principal categories of commercial and enhancement aquaculture are described below.



## 4.0 THE PATH FORWARD: THE NATIONAL AQUACULTURE STRATEGIC PLAN INITIATIVE

It has long been recognized that Canada is capable of being a more significant producer of aquaculture products. Over the years, several efforts have been launched to stimulate growth in the sector dating back to the 1983 report of the Science Council of Canada entitled “Strategies for Aquaculture Development in Canada.” The most recent and relevant initiatives include:

- |   |  |
|---|--|
| 1995 Federal Aquaculture Development Strategy   | ▪ A comprehensive plan to identify the needs of a growing aquaculture sector and coordinate the activities of federal departments and agencies toward fulfilling such needs.   |
| 2000 DFO Program for Sustainable Aquaculture  | ▪ A new program providing the aquaculture industry and government with support and opportunities to conduct leading-edge research and development, strengthen measures to protect human health through an enhanced shellfish water quality monitoring program, and implement legislative and regulatory reform for the industry. |
| 2002 DFO Aquaculture Policy Framework   | ▪ Outline of a cooperative federal / provincial / territorial framework to create the conditions necessary to enable responsible growth.   |
| 2004 Recommendations for Changes – Report of the Commissioner for Aquaculture Development | ▪ Development of a national vision for sustainable aquaculture development and presentation of 9 recommendations and 3 organizational scenarios for aquaculture in Canada.   |

Building upon these earlier initiatives, today, more than ever, national aquaculture *strategic action plans* targeted to each sub-sector are required to facilitate renewed understanding and co-operation amongst all stakeholders to address and resolve challenges pertaining to both industry and governments. By implementing technologies and practices that recognize and uphold the social and environmental values of Canadians, and by operating within a cohesive and transparent policy and regulatory framework, aquaculture will evolve into a more dynamic and sustainable sector that generates benefits for all Canadians. As outlined in *Achieving the Vision*, responsible aquaculture offers:

- economic and social revitalization in coastal and rural communities in which opportunities for sustainable development can be elusive;
- enhanced participation in the aquaculture sector by Aboriginal peoples in a manner consistent with native cultures, values and traditions;
- increased public confidence in the social and environmental sustainability of aquaculture and in Governments’ ability and intent to manage the sector on a sustainable basis;
- increased industry and investor confidence in the sector, allowing for enhanced private sector financing of industry expansion;
- practical and equitable solutions for the resolution of user-group conflict among stakeholders in Canada’s coastal regions;

- enhanced consumer confidence in the safety, health benefits and wholesomeness of high quality Canadian seafood products; and
- broad based public acceptance of aquaculture, and confidence that aquaculture development is being managed in a manner that is congruent with the values of Canadians.

The Department of Fisheries and Oceans believes that “*Canada has enormous potential to be a world aquaculture leader. Strengths include extensive coastlines and productive marine and freshwater resources, a reputation for quality products, proximity to established and growing markets, an effective and efficient transportation infrastructure, an internationally reputable food inspection system, a skilled workforce and strong management expertise. However, obstacles, such as a cumbersome regulatory framework and trade barriers, keep Canada from realizing its potential*”<sup>4</sup>.

Therefore, in keeping with its lead federal role in aquaculture, DFO established the **New Sustainable Aquaculture Program** in June 2008. The program has four main pillars:

- Regulatory Reform - Improved regulatory certainty through better coordination among federal, provincial and territorial governments;
- Regulatory Science - Increase the relevant science knowledge base to support informed DFO environmental regulation and decision-making and, secondarily, to inform provincial environmental regulation;
- Aquaculture Innovation and Market Access Program (AIMAP) - Improved competitiveness and increased investment in Canadian industry; and
- Certification and Market Access - Assist the aquaculture industry to develop approaches to ensure that fish produced in Canada meet rigorous international market requirements.

Among the objectives of the program are (i) to have all stakeholders, including industry, governments and others, agree upon 5-Year Strategic Action Plans for each industry sub-sector to help the Canadian aquaculture industry reach its full potential; and (ii) to develop a national strategic agreement for sustainable aquaculture development with coordinated provincial and territorial implementation through MOUs or other mechanisms. The program builds on past initiatives to advance aquaculture in manner that respects DFO’s broader mandate in fisheries (e.g. Policy for Conservation of Wild Pacific Salmon; Wild Atlantic Salmon Conservation Policy) and fish habitat (e.g. Policy for the Management of Fish Habitat).

The development of sectoral Strategic Action Plans is fundamental to achieving these objectives. Regional and sectoral needs and challenges vary in several important ways and many will require specific rather than generic actions to address and resolve them. Success, therefore, will be contingent upon development of regional / sectoral solutions for regional / sector challenges.

In all sub-sectors, the intention is not to duplicate or repeat previous efforts but, rather, to take full advantage of existing initiatives (such as regional / provincial strategies or action plans) and to work within the frameworks established under existing groups (such as industry associations, regional committees, etc.). The following factors are fundamental to the success of this initiative:

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<sup>4</sup> DFO Strategic Plan 2005-10

- Establishing clear national objectives
- Addressing specific provincial / regional sub-objectives
- Targeting realistic goals within a 5-yr horizon
- Engaging all relevant stakeholders
- Securing Ministerial and senior management support
- Communicating effectively

The sectoral strategic action planning initiative is national in scope and is intended to be complementary to other, on-going initiatives of the federal and provincial / territorial governments and industry.

## 5.0 POTENTIAL ELEMENTS OF THE STRATEGIC ACTION PLANS

To be successful, vibrant and innovative, Canadian aquaculture must be sustainable. That is, it must not compromise the quality of healthy and productive ecosystems, it must be in tune with the social values of regional communities and consumers, and it must be internationally competitive - for the benefit of all Canadians.

Achieving Canada's potential as a leading aquaculture producer requires a collaborative and efficient effort to resolve those challenges that are most detrimental to sustainable aquaculture development. Specific objectives, targets and action plans are necessary to enable successful resolution of the challenges.

In this section, factors related to the principal challenges to sustainable aquaculture development are briefly presented to enable all stakeholders to focus collectively on the issues that need to be addressed. In this way, it is hoped that meaningful and vibrant discussion will be generated, leading to effective solutions.

### 5.1 A Vision for Sustainable Aquaculture Development

The Canadian aquaculture industry has the potential to become a leading player in a global sustainable seafood sector. The Strategic Action Planning Initiative represents another step in the process toward realization of this potential. In doing so, it capitalizes on past efforts and re-focuses essential efforts on those factors deemed to be critical to success.

A Vision is an essential component of any strategic initiative since it focuses the efforts of all stakeholders upon common objectives. The following *draft* Vision statement for sustainable aquaculture development throughout Canada has been compiled for the Strategic Action Planning Initiative using input from vision statements developed in industry sub-sectors and provinces.

*The Canadian aquaculture sector generates prosperity through the application of innovative technologies and best practices developed from leading-edge research and development. Striving to fulfil its potential as a global leader in the sustainable production of safe, quality foods, the sector is committed to earning and upholding public confidence by operating in a manner that is respectful of local communities and the environment, for the benefit of all Canadians.*

Strategic Question: Vision

1. Does the proposed Vision appropriately address the principal challenges within the industry?
2. Does it reflect the interests of all pertinent stakeholders?

Canadian Aquaculture Industry - Future Potential

The Canadian aquaculture sector is positioned to benefit from a variety of factors that, collectively, present the necessary components for expanded production and competitiveness in domestic and international markets. With the world's longest coastline and largest system of freshwater lakes and rivers, Canada has an aquatic resource base that is capable of sustaining a significant increase in aquaculture production. Additionally, Canadian producers benefit from proximity to the world's largest seafood markets in Asia, the EU and the United States of America; particularly the latter.

Actually, the United States is the largest market for Canadian aquaculture, and Canadian products benefit from strong consumer support. Moreover, due to the limited domestic opportunity to expand capture fisheries and minimal growth potential in aquaculture, the U.S. is increasingly dependent upon imported seafood. Imports now account for more than 81% of total U.S. fish and seafood consumption, generating an annual trade deficit in excess of US \$9 billion<sup>5</sup>. Driven by population increases and favourable demographics, U.S. seafood consumption has been rising over the past decade and could exceed 9 kg/yr per capita by 2020, fuelling demand for an additional 1.4 million tonnes (live weight) of fish and seafood products<sup>5</sup>.

Globally, demand for finfish and shellfish is growing by 9 percent a year. Traditional "capture" fisheries can meet less than half the current and anticipated demand. Canadian aquaculture is uniquely positioned to capitalize on that growing demand. Building upon years of experience, and supported by world-class researchers and facilities, Canada's aquaculture sector has every opportunity to lead the world in sustainable aquaculture.

With immediate strategic action, Canadian aquaculture output could increase by approximately 8% to ~214 000 mt within 5 years, generating farm-gate revenues of ~\$1.1 billion. By 2020, sector output could exceed 308 000 mt and generate total farm-gate revenues in excess of \$1.5 billion (Table 1).

Table 1: Projected growth in Canadian aquaculture through 2020

	Salmon	Trout	Other Finfish	Mussels	Oysters	Other Shellfish	Total
<b>Production (000 tonnes)</b>							
2013	140,000	10,700	10,400	31,700	18,400	2,600	213,800
2020	197,000	16,000	15,600	47,700	27,600	4,000	307,900
<b>Value (\$ million)</b>							
2013	850,000	60,000	72,000	46,000	27,000	24,000	1,079,000
2020	1,200,000	90,000	108,000	68,000	41,000	36,000	1,543,000

<sup>5</sup> H.M. Johnson & Associates (2007). 2006/2007 Annual Report on the United States Seafood Industry – Fourteenth Edition. 98 p.

These projections are based on the assumption that there will be very modest growth in the BC and NB salmon sectors in the near-term. Other industry sub-sectors, however, are projected to grow at a rate of 5% per year through 2013. Thereafter, following full implementation of the strategic action plans, it is assumed that all sectors of the Canadian aquaculture industry will grow at 6% annually to 2020.

Presently in BC there exists a range of public opinion pertaining to aquaculture, particularly Atlantic salmon aquaculture. As governments attempt to balance the often divergent demands of the public as a whole, expansion within the aquaculture sector has been slow. Many of the issues stem from socio-economic and resource conflicts.

In NB, the availability of suitable near-shore sites for cage culture operations is largely exhausted. Similarly, near-shore sites for mussel and oyster production in Atlantic Canada are becoming scarce. Hence, further growth is expected to come from technological developments in offshore (higher energy) production systems. It is anticipated, therefore, that within approximately five years, the sector could experience another wave of growth; albeit a modest one at only 5% to 6% increase in output per year. This expansion is intended to bring major benefits to scores of economically challenged coastal, rural and Aboriginal communities.

Even with these projected increases in production, there will be unmet demand for fish and seafood within the growing US market.

Strategic Question: Projections

3. *Are these projections reasonable targets that can be attained within the suggest time frames?*

Moving Forward

It is widely recognized by industry, governments and other parties that a variety of factors contribute to the current status of the Canadian aquaculture sector. Such factors include the governing policy and regulatory framework as well as the scope and nature of programming to facilitate investment, productivity, trade, risk management, research and development, infrastructure, communications, etc. The following sections of this discussion document present an overview of these factors as they pertain to aquaculture development in Canada. This information is presented to focus dialogue at the consultative workshops in the interest of identifying practical solutions to advance sustainable aquaculture in Canada.

A collaborative approach amongst governments, industry, First Nations and Aboriginal groups, ENGOs and other interested parties is envisaged to advance research, innovation, commercial development and trade. Through a collective approach, ideas, resources and influence can be pooled to advance complex tasks that may otherwise be difficult to accomplish by smaller groups or by organizations operating in isolation.

## 5.2 Regulatory & Management Regimes for a Sustainable Sector

Aquaculture is dependent upon access to, and the responsible use of, a common property resource, either in surface waters as in cage culture, long-line or bottom culture operations or from groundwater reserves for land-based operations. Use of the common resource is shared with various parties with a range of municipal (water supply, tourism, real estate development) commercial (fisheries, shipping / navigation, oil and gas exploration, other aquaculturists), recreational (boating, fishing), Aboriginal (fisheries, traditional ways of life, land claims) and other interests.

In Canada, due to the constitutional division of powers, aquaculture activities cannot be wholly regulated by either the federal Parliament or the provincial / territorial Legislatures. Rather, aquaculture is administered within a regulatory framework that engages both levels of government. Furthermore, perceptions regarding aquaculture governance in Canada are divided. The aquaculture sector has long expressed concerns about the efficient and effective delivery of the regulatory framework. In contrast to industry concerns, some First Nations, ENGOs and community groups have expressed a lack of confidence in governments' ability to adequately protect public interests from the effects of aquaculture development.

Recognizing that good governance demands a transparent, accountable and collaborative approach, both the federal and provincial/territorial governments have committed to collectively resolving these issues. Under the direction of the Canadian Council of Fisheries and Aquaculture Ministers, the Aquaculture Task Group has begun to work on renewal of the F-P/T environmental regulatory regime as a priority within the scope of the three pillars of sustainable development – environmental protection, economic prosperity and social well-being.

### 5.2.1 Environmental Management of Aquaculture

The most significant challenges identified by both industry and other interest groups relate to environmental management of the sector, where the term “environmental management” encompasses federally Fisheries Act provisions, regulations, policies and activities related to fish habitat protection, water protection and management of Introductions and Transfers and the *Canadian Environmental Assessment Act*; and provincially such legislation, regulation, policies and activities as relate to aquaculture fish health management, water and benthic impacts, etc.

The current environmental regulatory framework governing aquaculture is encumbered by federal/provincial overlap and uncertainty, has a substantial influence on market acceptance, compromises industry access to production sites and timeliness of decisions, and increases operational costs.

An internationally competitive and sustainable Canadian seafood sector must be based on long-term sustainable use of fisheries and aquaculture resources, and on healthy and productive aquatic ecosystems. Countries that will capitalize most from the opportunity offered by sustainable aquaculture are those having transparent, efficient and effective regulatory frameworks that are recognized as being socially acceptable. Such regimes will facilitate:

- Market access through support to sustainability certification and related labelling;

- Access to investment capital to support development in coastal and Aboriginal communities, many of which have few such opportunities; and
- Public awareness and support for sustainable use of aquatic resources.

While governments remain confident that current environmental measures address the most significant risks, they also agree that there is considerable opportunity for improvement. The collective desire is to establish a coordinated federal-provincial environmental management regime for aquaculture that is credible, science-informed and affordable, and which contributes to the sustainable wealth of Canadians. Canada needs a more efficient, transparent and predictable environmental management regime to further enhance economic development and to provide assurances to the public that the sector is managed in a sustainable manner (Table 2).

Table 2: Scope of change envisaged to establish a more efficient, transparent and predictable environmental management regime for aquaculture in Canada.

FROM:	→	TO:
<ul style="list-style-type: none"> <li>▪ Fractured environmental management regimes with many and varied regulations and policies</li> </ul>		<ul style="list-style-type: none"> <li>▪ A designed regime with fewer, more consistent regulations &amp; policies while still managing significant risks</li> </ul>
<ul style="list-style-type: none"> <li>▪ Regimes lacking transparency and public credibility</li> </ul>		<ul style="list-style-type: none"> <li>▪ Regime that transparently demonstrates how the sector is managed and the basis for decisions on policy and individual sites</li> </ul>
<ul style="list-style-type: none"> <li>▪ Regions/provinces developing their own policies/approaches; applications evaluated on site-by-site basis</li> </ul>		<ul style="list-style-type: none"> <li>▪ Common tools for common issues</li> </ul>
<ul style="list-style-type: none"> <li>▪ Lethargic processes, not easily responsive to changes in knowledge, public expectations, etc.</li> </ul>		<ul style="list-style-type: none"> <li>▪ Proactive regulation, with rapid response to emerging issues / knowledge</li> </ul>

Strategic Questions: Environmental Management of Aquaculture

4. *What are the specific policy and/or regulatory changes required to establish a more efficient, effective, transparent and predictable environmental management regime governing aquaculture?*

### 5.2.2 Introductions and Transfers of Aquatic Organisms

In 2005, over 2,000 applications were approved to transfer more than 700 million finfish, 3 billion shellfish and nearly 2 million kg of shellfish seed stock. These approvals included importation, inter-provincial shipment and intra-provincial shipment of aquatic animals into and within Canada. Licensed introductions and transfers (I&T) of aquatic animals into Canadian facilities and waters occurs to support aquaculture operations (55%); the enhancement of wild populations for recreation and commercial fisheries (32%); and the trade of live finfish and shellfish for food, live bait, the aquarium industry and the use of fish in biological control programs (13%).

The National Program on Introductions and Transfers of Aquatic Organisms (I&T) is administered by a combination of federal and provincial agencies under the *Fisheries Act*. The Fisheries (General) Regulations authorize DFO to issue I&T licences in all provinces except Quebec (in freshwater), Ontario and the Prairies where provincial regulations under the *Act* apply. These regulations collectively govern the licencing of I&T activities in Canada. Through these regulations, governments seek to maximize the economic and social benefits associated with introductions or transfers while ensuring that conservation and protection of aquatic resources is respected to uphold the proper management of fisheries and to effectively manage ecological and diseases risks.

A National Code on I&T, endorsed by the CCFAM in 2003, provides uniform guidelines for reviewing applications for licences and a standardized risk assessment procedure for assessing the associated disease, ecological or genetic/competition risks, when applicable.

Initially I&T permits were required primarily for fish imported into Canada, particularly non-local species, or for fish that were being moved between provinces. Gradually, the requirement for permits has expanded to include all human-managed, deliberate movements of fish except within local watersheds.

A number of needs have been identified pertaining to I&T. While not exclusively focused on aquaculture, this regulation is the only regulation that has aquaculture activity as a significant directed target. In the last year, as a component of implementation of the National Aquatic Animal Health Program, the CFIA consulted on changes to the *Health of Animals Act* Regulations (HAAR), which are intended to consolidate aquatic disease control. During consultations, it was recommended that DFO and the provinces remove or limit disease management considerations from their introduction and transfer regulatory framework to avoid regulatory overlap. As well, the regulatory reform agenda for aquaculture will encompass the I&T regulations as this is a key federal regulation implicated in the environmental management of the aquaculture sector. Finally, over the past several years, the F-P/T National Introductions & Transfers Committee identified the need to review the regulations underlying the I&T program to address other issues.

*Strategic Questions – Introductions & Transfers of Aquatic Organism*

5. *How should the I&T regime be transformed to enhance its efficiency, transparency and effectiveness without compromising the underlying objectives of the Code?*

### **5.2.3 Access to Wild Aquatic Resources as it Applies to Aquaculture**

This DFO policy provides a framework and criteria to facilitate access to wild fish and aquatic plant resources for aquaculture purposes in situations where access to wild stocks is essential to the development and expansion of the Canadian industry. Since most fisheries are managed under limited entry regimes, and recognizing that many fisheries are fully subscribed, the policy has been designed to ensure that the requirements of the aquaculture sector are factored into Integrated Fisheries Management Plans (IFMPs). When the Total Allowable Catch (TAC) is fully subscribed (both in competitive and Individual Quota fisheries), the Policy is intended to accommodate requests from the aquaculture sector within the fisheries management plans for the species. The stock access policy is not intended to reduce access to the resource for existing fishers.

As the numbers of fish required for aquaculture purposes are generally very low relative to the stocks, requests from the aquaculture sector are not expected to negatively impact existing users. Allocations for aquaculture may be in addition to existing allocations. In considering access requests, the first priority in managing fish stocks is conservation, followed by First Nations obligations. Beyond that, the needs of aquaculture will be given equitable consideration to those of other users in the commercial and recreational sectors. Specifically, the Policy accommodates the following needs within the aquaculture sector:

- Access to Shellfish “Spat” and Seedstock;
- Access to Plants for Feed for “On-Growing” Operations;
- Access for Broodstock Development;
- Access for “On-Growing” and “Relaying”; and
- Collection of animals not deliberately placed on the lease (i.e. by-catch).

The long-term goal of the aquaculture industry is to minimize the requirement for access to wild stocks. However, since the technology does not yet exist for hatchery production of some species or the costs for such production is prohibitively expensive, situations remain where access to wild stocks is essential to the development of the Canadian aquaculture industry.

Over the next year, DFO intends to review this policy to determine if:

- it has been effective in providing adequate access to aquaculturalists to wild stocks;
- there has been an impact on conservation objectives of wild stocks; and
- provision of access to stocks for aquaculturalists is contributing to increased Canadian economic prosperity.

*Access to Wild Aquatic Resources for Aquaculture Purposes*

6. *Has the Access to Wild Aquatic Resources Policy been effective? Where constraints remain, what can be done to amend the policy or its implementation to facilitate enhanced access to stocks for aquaculture without compromising the intent of the policy?*

#### **5.2.4 Canadian Shellfish Sanitation Program (CSSP)**

The Canadian Shellfish Sanitation Program (CSSP) was implemented to protect the public from the consumption of contaminated shellfish (Class Mollusca) and to facilitate unencumbered international trade in shellfish.

While the Canadian Food Inspection Agency (CFIA) plays the lead coordination role, Environment Canada (EC) and Fisheries and Oceans Canada (DFO) are also involved in administering the CSSP. In addition to coordination, CFIA is responsible for overseeing handling, processing, labelling, transportation, import / export of shellfish and for providing liaison with foreign governments; EC conducts shoreline sanitary surveys, monitors growing water quality, and classifies harvesting and growing water areas; and DFO, based on advice received from CFIA and EC related to food safety and water quality, opens and closes harvest areas, enforces closures, and controls relaying, depuration and harvesting from classified areas.

All government partners in the CSSP program are facing challenges to meet the program costs without new resources given the demand to expand testing into new areas. Additionally, U.S. expectations regarding food safety are increasing. U.S. authorities have already taken

measures that have resulted in closure of some Canadian molluscan harvest areas, citing concerns related to the harvest of shellfish in proximity to waste water treatment facilities.

Given these pressures, the Government of Canada is interested in working collaboratively to explore potential new and innovative ways to help meet the CSSP requirements and support aquaculture production.

*Strategic Questions: Canadian Shellfish Sanitation Program*

7. *Are there technological, program and organizational changes related to aquaculture that could contribute to a more effective and functional CSSP?*

*Strategic Question: Regulatory and Management Regimes*

8. *What are other key regulatory and management issues that should be addressed?*

### **5.3 Sustainability, Competitiveness, Investment & Innovation**

Innovation is a central theme of DFO's Sustainable Aquaculture Program and for many provincial/territorial governments. A shared intention among governments is to foster innovative approaches targeted at enhancing competitiveness and sustainability that encourage the on-going development and/or Canadian adaptation of novel technologies and management practices. The objective is to help increase sustainable production, reduce costs of production and generate greater value for Canadian aquaculture products, based on their environmental performance, traceability and other considerations.

Within DFO, two industry-focused programs support different aspects along the research – development – commercialization continuum: the Aquaculture Collaborative Research and Development Program (ACRDP) supports collaborative R&D projects with industry and DFO scientists, and the Aquaculture Innovation and Market Access Program (AIMAP) supports industry development and commercialization activities.

DFO's ACRDP initiative was established in 2001 as part of the Program for Sustainable Aquaculture. The program supports collaborative R&D projects between the aquaculture industry and DFO researchers that are jointly funded by the DFO and industry partners. The key goals of the program are to:

- improve the competitiveness of the Canadian aquaculture industry;
- increase collaboration between the department and industry on scientific research and development that will enhance aquaculture in Canada;
- facilitate and accelerate the process of technology transfer and research commercialization; and
- increase scientific capacity for essential aquaculture research and development.

Specific national and regional priorities have been established under three broad research and development objectives:

- best performance in fish production and new species development;
- fish health management; and
- industry environmental performance.

ACRDP regional and national priorities are determined using consultative committees and processes. It is envisaged that the NASAPI will complement the ACRDP by contributing to national and regional ACRDP priorities.

DFO's Aquaculture Innovation and Market Access Program (AIMAP) has been designed to:

- increase sustainability via improved productivity, reduced costs, and/or increased value;
- focus sectoral diversification through investigation and development of promising emerging species for commercial culture;
- encourage development and application of green technologies; and
- increase market access resulting from (i) development or adoption of traceability, best management practices, standards, third-party audited certification systems or other approaches related to environmental management, on-farm food safety, quality, marine safety, etc.; and/or (ii) participation in strategic international initiatives (e.g., United Nations Food and Agriculture Aquaculture Certification Guidelines, World Wildlife Fund aquaculture certification standards, ISO environmental standards development) aimed at shaping certification standards for the aquaculture industry.

The following sub-sections – fish health management, aquatic invasive species, emerging production systems technologies, and alternative species development for industry diversification – provide examples of how innovation can advance sustainable aquaculture in Canada.

### **5.3.1 Fish & Shellfish Health Management**

Fish/Shellfish Health is a pivotal concern for the aquaculture industry affecting both cost of production and public acceptance. Poor health and disease increase the cost of production (e.g. veterinary services, therapeutic agents) and decrease revenue through mortality, reduced growth and inferior product quality.

The Canadian Aquaculture Fish Health Management Working Group<sup>6</sup> has identified priorities of sea lice (access to a range of therapeutants; integrated management planning); strengthening association capacity to provide leadership on fish health issues; developing a minor use program for approving therapeutants products, establishing a process to facilitate emergency access to products in crises; and treatments for bacterial kidney disease. No shellfish related priorities have been developed to this point.

#### **Strategic Questions: Fish Health Management**

9. *What are the priorities for more effective fish / shellfish health management in aquaculture? What are the roles of industry, governments and other stakeholders?*

<sup>6</sup> This group has been formed by DFO to address a range of issues related to therapeutants and includes representatives from industry, provinces, the veterinary community, academia, CFIA, Health Canada, and DFO.

### **5.3.2 Aquatic Invasive Species**

Species are defined as ‘invasive’ when they are introduced into an environment where they are not native and, by proliferation in number and geographic distribution, become a nuisance, sometimes to the detriment of native species. Identified vectors for transferring invasive species in marine and freshwater environments include: attachment to ship/boat hulls, transfer through ballast water, the use of live bait, aquarium / water garden trade, live food fish and the movement of aquaculture gear and product<sup>7,8</sup>.

In the aquaculture sector, East Coast shellfish operations are compromised by the Atlantic oyster drill, oyster thief, green crab, and multiple species of tunicates. Tunicates and green crabs are also a problem in BC. Some of these species out-compete cultured organisms for habitat and resources while others prey directly upon the cultured species. Perhaps the most urgent situation concerns the PEI mussel industry where four species of tunicate have imposed a significant increase in on-farm labour costs. In the absence of a practical solution, it is likely that production could decline substantially.

Potentially, innovation can be applied to develop practical solutions to invasive species. For example, since tunicates are already established in the waters of PEI, it is unlikely that they will be eradicated. Rather, the development of cost-effective solutions to tunicate infestation (and other invasive species) is more likely to result from innovative technologies and practices applied to manage infestations at the farm site. It may also be possible to introduce measures to control the spread of invasive species through renewed I&T regulations or other mechanisms.

#### **Strategic Questions: Aquatic Invasive Species**

10. *What are the essential elements in terms of research, development & commercialization (innovation) for effective invasive species management strategies within the various sub-sectors of the Canadian aquaculture industry where invasive species are a problem? Are there other program or organization changes that could contribute to more effective management of aquatic invasive species issues.*

### **5.3.3 Emerging Production Technologies and Systems**

There is growing interest throughout the industry to develop alternative production technologies such as integrated multi-trophic aquaculture and closed containment systems that target reduction of environmental risks. Additionally, as the availability of near-shore sites becomes further constrained, technologies are evolving to enable the finfish and shellfish sectors to move further offshore into more open, higher-energy waters. These moves are anticipated to generate another wave in industry growth.

Key considerations are environmental costs and benefits, technical feasibility, financial costs and benefits, and market drive for eco-certification. A more comprehensive understanding of the potential “eco-benefits and costs” for these and other emerging technologies needs further evaluation to support informed decision-making.

<sup>7</sup> Ramsay, A., J. Davidson, T. Landry and G. Arsenault (2008). Process of invasiveness among exotic tunicates in Prince Edward Island, Canada. *J. Biological Invasions* 10:1311-1316.

<sup>8</sup> Canadian Council of Fisheries and Aquaculture Ministers (CCFAM) Aquatic Invasive Species Task Group: A Canadian Action Plan to Address the Threat of Aquatic Invasive Species.

Strategic Questions: Emerging Production Technologies

11. *Where are future investments in innovation research, development and commercialization likely to foster enhanced industry competitiveness and environmental sustainability (e.g. production technology, IMTA, closed-containment, development of off-shore sites & technologies, processing, value-added products, etc.)? What, if any, are other key actions that should be undertaken to facilitate sustainable (economic, social, environmental) approaches to the development and implementation of alternative systems?*

### **5.3.4 Industry Diversification / Alternative Species**

Currently, the value of Canadian aquaculture production is almost one billion dollars, with the bulk of this being attributed to salmon farming in British Columbia and New Brunswick. This focus on a limited number of species has the potential to leave the Canadian aquaculture industry vulnerable to unfavourable market factors or adverse environmental or production events. Species diversification can enhance industry stability. In 2007, however, there were more than two dozen new candidate species being developed for commercial aquaculture within eight provinces.

Successful development of alternative species to support expansion of commercial aquaculture is dependent on a variety of factors (e.g. biology, engineering, economics, market dynamics, environmental and socio-economic factors, etc.), all of which must come together to create the necessary conditions for the successful production of the species. Furthermore, because sustainable production of a "new species" may require 3 to 10 years of targeted effort, practical pursuit of alternative species for commercial aquaculture development is dependent upon a coordinated and focused research, development and commercialization initiative<sup>9</sup>.

Current financial challenges warrant a rational process to advance industry diversification. Therefore, targeting resources strategically on a select number of emerging species with the greatest potential for economic viability may be a practical diversification strategy. Of the two dozen or more species currently under consideration for industry diversification, some are further along the commercialization continuum than others. Governments are seeking further input regarding which species have the greatest potential in each sub-sector as part of an effort to focus developmental resources on a targeted number of promising species that are biologically and economically capable of achieving commercial success within the foreseeable future.

To this end, in advance of the broader stakeholder discussions for the NASAPI, five collaborative sessions were held with representatives of the 5 sub-sectors of the Canadian aquaculture industry to discuss new species development - East Coast marine finfish, East Coast shellfish, West Coast marine finfish, West Coast shellfish, and freshwater. The exercise brought together subject matter experts, federal and provincial government representatives, and industry stakeholders to review and discuss the candidate species. Each workshop produced a collective and evidence-based agreement on a shortened and focused list of species for development in each region or sector (Table 3). Summaries for each alternative species workshop are available from DFO's Aquaculture Management Directorate in Ottawa or from DFO's Regional Aquaculture Coordinator's offices.

<sup>9</sup> Stechey, D., W.D. Robertson and B. Kingzett (2007). SWOT-Based Technique for New Species Development – An Evaluation and Planning Model. Proc. Aqua. Assoc. Can. (in press).

Table 3: Priority list of alternative species for targeted development within the next five years in each sub-sector of the Canadian aquaculture industry.

West Coast Marine Finfish	West Coast Shellfish	Freshwater	East Coast Marine Finfish	East Coast Shellfish
Sablefish	Geoduck	Arctic Charr	Halibut	Bay Scallops
	Mussels	Sturgeon	Atlantic Cod	Giant Scallops
	Scallop	Walleye / Perch	Wolf Fish	Soft-Shell Clam

***Strategic Questions: Industry Diversification / Alternative Species***

12. *Are the proposed alternative species appropriate for a focused research, development and commercialization initiative intended to foster progress toward commercialization?*

**5.3.5 Risk Management & Access to Financing**

Aquaculture is still widely perceived as a high-risk sector. That is, investors lack confidence in the industry and thus financing is difficult to attract. Common perils encountered in the day-to-day operation of Canadian aquaculture ventures include pure risk (e.g. storm, ice damage), biological risk (e.g. diseases, parasites) and business risk (e.g. pricing, regulation, liability, etc.). Producer consultations in 2005 suggested that weakened performance can be attributed predominantly to business risk among finfish producers and to biological risk among shellfish producers; losses to pure risk factors tend to be least significant<sup>10</sup>.

Developing a more attractive investment climate for all scales of producers is imperative, and thus both industry and governments must define measures to quantify and reduce the risks inherent to aquaculture.

At the farm level, producers could be encouraged to engage robust best management practices (BMPs) and standard operating procedures (SOPs). BMPs are written plans that specify what producers are required to do to maintain responsible and sustainable ventures. SOPs specify how producers are to implement various aspects of the BMPs. Together, BMPs and SOPs are a significant risk management tool.

By enforcing compliance with BMPs and SOPs, investor and public confidence should increase. In addition to reducing on-farm risk, practical and profound supplemental benefits will accrue in the areas of food safety, environmental sustainability and public confidence through common performance measurement systems put in place by producers and validated by multi-purpose 3<sup>rd</sup> party audits. This will serve to enhance industry productivity, competitiveness, profitability and social licence. Nevertheless, applying such risk management strategies across a broad sector of small- and medium-size ventures remains a challenge.

Benchmarking is a process for comparing the performance (in terms of cost, time, value, etc.) of one organization against that of industry peers and competitors to identify weaknesses and make the necessary changes to generate better results. The process is effective across a variety of functional areas, including financial performance, productivity factors, sustainability

<sup>10</sup> Stechey, D., M. Doyon, J. Nolet and E. Gilbert (2005). Canadian Aquaculture Business Risk Management – Phase 1: A Review of Perils and Risk in Aquaculture and Scenarios for Risk Management Programming. Fisheries and Oceans Canada and Canadian Council of Fisheries and Aquaculture Ministers – Aquaculture Task Group. 102 p.

measures, etc. By enabling on-going performance comparisons, individual producers are able to identify areas where they are less productive or competitive than other organizations in the sector, thus enabling them to focus efforts toward performance improvement. In this way, the entire sector is able to continually enhance its performance over time to strengthen individual and sectoral competitiveness and sustainability.

Agriculture & Agri-Food Canada has established an online benchmarking service for a number of livestock (dairy, cattle, hogs, poultry & eggs) and crop (grains & oilseeds, fruits, vegetables, greenhouse & nursery, potatoes) sectors<sup>11</sup>. There is no similar program in the Canadian aquaculture sector.

*Strategic Questions: Risk Management*

13. *What specific management measures could be implemented through Best Management Practices (BMPs) and Standard Operating Procedures (SOPs) to reduce on-farm operating risk?*
14. *Should the industry, with government support, institute a comprehensive performance benchmarking system to help improve competitiveness and investor confidence?*

### **5.3.6 Infrastructure**

Infrastructure is comprised of the core assets that support an economy by providing or supporting the developmental and operational needs of a community or industry. It includes the systems for water supply and treatment, energy utilities and communications networks, as well as the systems for transport and traffic control (roads, waterways, airfields, ports) etc. Infrastructure is also required to support the generation of knowledge to advance sustainable development (e.g. R&D capacity).

Although there have been preliminary efforts to identify aquaculture-specific infrastructure (ASI) needs, a formal planning process to identify ASI requirements has not occurred. As a result, aquaculture development relies largely on infrastructure established for other purposes; however, aspects that distinguish aquaculture from other food production sectors often require unique infrastructure needs. Furthermore, the rural and often remote location of aquaculture operations often leaves producers without adequate basic infrastructure to develop and efficiently operate their businesses. Such limitations can inhibit daily operations, increase the cost of production and/or create barriers to development. Key infrastructure requirements for aquaculture include:

- wharf & landing infrastructure;
- waste disposal;
- processing capacity;
- specialized loading and unloading facilities for biosecurity;
- specialized utility requirements (e.g., 3-phase electricity);
- wireless communications; and
- R&D capacity, etc.

The current action planning initiative provides an opportunity to obtain input on aquaculture-specific infrastructure requirements.

<sup>11</sup> Agriculture & Agri-Food Canada (2008). [https://www2.agr.gc.ca/ren/StepBench/stepbench\\_e.html](https://www2.agr.gc.ca/ren/StepBench/stepbench_e.html)

It is important to note that, within the current Federal Budget (Feb 2009), \$200 million was allocated to DFO for investment into the Small Craft Harbours program. It is conceivable that some of these monies will be available to improve wharf infrastructure that will benefit the aquaculture sector.

*Strategic Questions: Infrastructure*

15. *Where are the most urgent needs for infrastructure investment to support (i) existing aquaculture activities and (ii) to foster expansion?*

**5.3.7 Market Access & Certification**

Demand for fish and seafood in domestic and international markets is driven largely by consumer perception of product quality, food safety and value. Assurances of environmentally sustainable production, socially acceptable resource use, adherence to stringent food safety protocols, and farm-to-market traceability for all products are increasingly sought by consumers and seafood buyers looking for independent verification of attributes beyond what would be certified by governments. As a result, responsible certification systems with third-party compliance audits are of increasing importance in the fish and seafood sector as evidenced by the emergence of high-profile eco-labelling and quality assurance programs.

To date, however, the Canadian aquaculture industry lacks agreed upon certification and product traceability systems, which impedes industry's ability to respond to market demands. Similarly, as noted above, the industry lacks best practices standards, codes and/or protocols, validated via third-party audit, to demonstrate its performance. Development and implementation of credible certification programs will facilitate access to domestic and international markets for Canadian producers by providing assurances of food safety, quality and sustainability, and thus differentiating certified Canadian products in the marketplace. Through implementation of certification programs, secondary benefits in the form of smart regulation and improved regulatory compliance are expected.

In addition to certification measures, efforts are required to increase current market share and to access new untapped markets. A cooperative generic marketing program amongst producers/processors within the principal sub-sectors of the Canadian aquaculture industry could generate benefits for all participants, including increased consumption, market diversification and expansion, enhanced supplier power, improved profitability and sustained growth in production. The recently-formed North American Mussel Council, which is comprised of the major mussel producers representing over 90% of the Canadian production, is an example of such an initiative.

*Strategic Questions: Market Access & Certification*

16. *What are the key elements of appropriate certification / traceability systems designed to advance the Canadian aquaculture industry? What are the principal roles of industry and governments in the development and implementation of these systems?*

## 5.4 Social Licence & Reporting

The preceding sections of this discussion document outline several areas where improvements can be made in both operations and governance to advance the competitiveness and sustainability of Canadian aquaculture. If we are successful in the design and implementation of measures to address the factors outlined above, then, *de facto*, industry's social licence<sup>12</sup> should be enhanced – but only if pertinent stakeholders, First Nations, Aboriginal groups, community interests and the general public are aware of the progress within the sector. Therefore, timely and transparent communications as well as active community engagement are necessary to disseminate information about the economic, social and environmental sustainability of Canadian aquaculture.

Factual information presenting an objective perspective regarding aquaculture is required so that more informed decisions can be taken.

Following through on communications and social licence issues is central to the Sustainable Aquaculture Program. In this regard, DFO, in collaboration with Statistics Canada and the Provinces, will compile an annual report entitled *Reporting to Canadians* that is intended to:

- provide information regarding aquaculture sustainability in relation to economic, social, and environmental performance across all sectors and regions; and
- engage Canadians in addressing sustainability concerns.

*Reporting to Canadians* is designed to meet the growing need to harmonize federal/provincial/territorial data gathering on sustainability issues. It will describe industry's environmental performance and contributions to socio-economic prosperity and provide objective information regarding competitiveness benchmarks.

Performance measurement and improvement also requires that implementation of the strategic action plans be monitored to collect data and information required to enable an accurate evaluation of the situation and to guide informed decision-making and to keep the initiative on track. Performance indicators must be specific and measurable to reflect "the best knowledge available" for a given initiative, thus enabling reviewers to determine whether objectives are being met effectively and efficiently.

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<sup>12</sup> 'Social licence' is an emerging concept intended to reduce user-group conflict and generate public acceptance in natural resource sectors. Social licence is based principally on the notion that the utilization of natural resources for commercial interests requires a process for acquiring free, prior, and informed consent from communities affected by the proposed development through mutual understandings and agreements, leading to the affected community's broad support for the project. Through the process, local stakeholders and other vested interests are meaningfully engaged to identify their values and beliefs and to identify appropriate measures to mitigate effects of the project. (Sources: Salim, E. (2004). *Striking a Better Balance: The World Bank Group and Extractive Industries: The Final Report of the Extractive Industries Review*. 44 p.; Shepard, R.B. (2008). *Gaining a Social License to Mine*. MINING.com April 2008, p. 20-23.)

**Strategic Question: Performance Monitoring & Management**

17. How can the industry be more transparent with information related to environmental, social and economic issues to enhance public communication about the status of industry performance and progress?
18. A comprehensive performance monitoring & management system will be established to track implementation of the strategic actions plans. Who should be involved in the design and implementation of the Performance Management System?

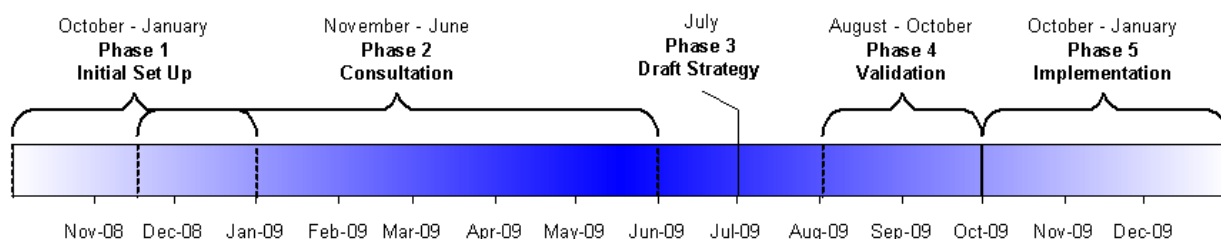
## 6.0 NEXT STEPS

This document has been prepared as background information to support robust discussions amongst industry, governments, First Nations, Aboriginal groups and others regarding the future sustainable operation, growth and development of commercial aquaculture in Canada.

Through a coordinated effort, it is envisaged that Strategic Action Plans will be generated within the framework of an over-arching National Plan to facilitate sustainable growth in all regions of the country. Each Strategic Action Plan will target precise and realistic objectives to be achieved within a 5-year time frame. The Action Plans will identify specifically what needs to be done to achieve the targets and, by clearly delineating federal, provincial / territorial and industry roles and responsibilities, the Action Plans will also outline how the action items are to be implemented.

A comprehensive Performance Monitoring and Management Plan is envisaged to monitor progress and allow for adaptive management to keep the initiative on-track toward realization of the specified goals and objectives. The process to develop the sectoral Strategic Action Plans will progress through the five phases illustrated in the following diagram.

In addition to the work on the development and general oversight of the Strategic Action Plans, it is DFO's intention to separately engage interested parties on initiatives related to the regulation and management of the sector. As well, it is DFO's intention to collaborate with interested parties on a number of focused strategic initiatives as may be identified through the Strategic Action Plans or other venues.



**Figure 3: Strategic Action Plan Initiative Timeline**

**Phase 1 – Initial Set Up / Backgrounders**

- Summarize current status and industry outlook
- Formulate strategic questions to frame discussions / consultations

**Phase 2 – Consultations via Regional Workshops (Spring – Summer 2009)**

- Coordinated by DFO-AMD with essential Federal input from SAPCC, Provincial / Territorial input via CCFAM-ATG, Industry input via associations, First Nations, Aboriginal groups and others (e.g. ENGOs, etc)
- Separate advance initiatives to address alternative species / diversification priorities

**Phase 3 – Draft Strategy**

- For each sub-sector, draft a comprehensive Strategic Action Plan overseen by steering committees including governments, industry and other stakeholders

**Phase 4 – Validation (Summer 2009)**

- Draft Strategic Action Plans to be shared with all stakeholders
- National Workshops organized to finalize the Action Plans

**Phase 5 – Implementation**

- Ministerial endorsement by CCFAM (Fall 2009)
- Renewed aquaculture MOUs or new agreements to facilitate implementation through specific Action Plans outlining objectives, commitments and targets

Based on this consultative process, and through collaborative and cooperative implementation, it is envisaged that Canada will attain its potential as a leading producer of sustainable aquaculture products.

