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Department:
Agriculture, Forestry and Fisheries
REPUBLIC OF SOUTH AFRICA



REVIEW OF LEGISLATION AND INSTITUTIONAL ARRANGEMENTS GOVERNING AQUACULTURE IN SOUTH AFRICA

Prepared for:

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EXECUTIVE SUMMARY: FINDINGS AND RECOMMENDATIONS

In South Africa aquaculture is not coherently regulated. It is also not considered to be an agriculture activity even though it is farming. There are a number of laws that apply to an aquaculture facility. These include laws relating to the establishment of a facility, the operation of the facility and the import and export of feeds, products or spat. These laws are also implemented by government in the national, provincial and local spheres. The permits issued by the different spheres of government may be issued for varying periods of time which further complicates matters. Furthermore, each province may have a different set of criteria and impose different conditions on a similar aquaculture facility to that undertaken in another province. The inconsistency continues in that marine aquaculture is treated differently to freshwater aquaculture.

The aquaculture sector is also experiencing difficulty in securing sites and ensuring that sufficient natural resources of high enough quality are available so as not to adversely affect the aquaculture facility. The law relating to medicines and feeds used in aquaculture is also not fully developed and where there are regulations they are not consistently applied or properly monitored. Specific standards with regard to the import and export of aquaculture related products or species would have to be developed and certification standards acceptable at international level would have to be imposed to ensure that South Africa can compete on the international market as well.

We propose that a new aquaculture Act be drafted for the sector which has a developmental focus. This would provide the over-arching environment for aquaculture to thrive in South Africa. The purpose and objects of the Act would be to promote sustainable aquaculture development in South Africa. However, it would also provide for appropriate regulatory mechanisms and controls to ensure that aquaculture facilities do not adversely affect the environment. The measures proposed in the Act would include the designation of aquaculture zones, the setting of norms and standards for the establishment of aquaculture facilities (instead of obtaining environmental authorisation in terms of the National Environmental Management Act, 107 of 1998) as well as certification standards that would allow products to be exported to international markets. The Act would make provision for integrated authorisations, an aquaculture regulatory body, preferential treatment for new entrants (particularly historically disadvantaged individuals and small scale farmers), control measures relating to human health and food safety and enforcement of directives, offences and penalties for non-compliance. In addition to all of the above, the Act would also allow for better co-operative governance between the various organs of state in order to promote sustainable aquaculture development in South Africa.

Issues	Sub-issues	Findings	Recommendations
Legislative framework		Current legislative framework is fragmented and rarely addresses aquaculture in particular. There is also no national legislation governing the freshwater sector.	A dedicated aquaculture Act will serve to simplify and integrate planning, permitting, decision making and enforcement.
		Unclear how aquaculture is defined in current legislation.	Clear definition of aquaculture in dedicated Act.
		Marine aquaculture is regulated as a fishery – in terms of rights process.	New Act should regulate aquaculture as an agriculture sector.
Institutional framework		There is often a lack of co-operation amongst the various government departments and spheres. Although progress has been made between the respective departments more needs to be done to facilitate this sector.	A central aquaculture body with representation from the various organs of state should be established under the new Act to help to streamline decision making and increase co-operation. This body should regulate both freshwater and marine aquaculture.
Authorisation and permitting schemes: an integrated aquaculture permitting regime		The current permitting framework is very complex, requiring stakeholders to apply for a number of permits from various departments in terms of laws emanating from both national and provincial legislation.	Investigate the development of an integrated aquaculture permitting system to streamline the process and align the timeframes and terms of permitting for aquaculture. System to use existing integration provisions in NEMA, NWA and other laws together with new provisions in the dedicated Act.
		Validity periods for some authorisations insufficient to create commercial certainty and allow proposed aquaculture projects to secure funding.	Align permit validity periods with each other and allow for sufficiently longer periods.
		However, sector is young and DAFF needs to maintain oversight and monitor compliance.	Allow for periodic review of permits. Permits may be temporarily suspended to allow time for compliance and then cancelled if problems not rectified.
		Risk assessment provisions in AIS regulations are onerous.	Allow for strategic risk assessments to identify suitable species to reduce the scope of the assessment process at individual permit level. DAFF process already in place could be legislated for.
Securing sites	Strategic approach to	No legislation at the national level to assist with declaring	Permitting process in new Act could include strategic approach

Issues	Sub-issues	Findings	Recommendations
	identifying sites to streamline authorisation process	Aquaculture Development Zones for freshwater sector.	to process where sites are identified in advance using Strategic Environmental Assessments and Environmental Management Frameworks, then applicants invited to submit proposals for those sites. Use of Integrated Coastal Management Act's mechanisms to identify and designate Aquaculture Development Zones.
	Zoning	Aquaculture is not included as a primary or consent use in most current zoning schemes. (Exception: standard zoning scheme under WC Land Use Planning Ordinance, 15 of 1974)	Initiative to engage with municipalities regarding consistent inclusion of aquaculture under agricultural zoning.
		Subdivision of agricultural land is required before rezoning. SALA approval is then necessary to establish aquaculture facility.	This problem will largely be solved if the zoning issue is addressed.
	Security of tenure	Lengthy and difficult process for obtaining leases under the Sea Shore Act. Uncertainty regarding ICMA leases of coastal property – amendments to s65 and 66. Proposed amendments conflate idea of tenure and use.	Implement proposed Integrated Coastal Management Act amendments or draft other amendments that make process simpler. If the former, provide clarity on whether aquaculture will be listed for purposes of coastal use permit and what authorisation process will be and whether coastal use permit will confer exclusive use.
	Protected areas	Protected areas (marine or terrestrial) limit areas available for aquaculture.	Investigate whether a case can be made for allowing the activity to be conducted within protected areas. Most likely protected area to accommodate aquaculture is Protected Environments.
Impact of aquaculture on the environment EIA Regime in terms of NEMA EIA Regulations, 2010		• EIAs are too slow • EIAs are too expensive (require use of experts) • EIA thresholds unduly prejudice small enterprises • Norms and standards could be used in place of listing aquaculture activities but remain problematic as a measure of circumventing EIAs as other activities for operating an	Review existing wording of listed activities and thresholds to determine whether they are effective or may be adjusted. Continue process begun by DAFF to investigate feasibility of norms and standards in lieu of authorisation. Finalise process for determining set back lines to create certainty

Issues	Sub-issues	Findings	Recommendations
		aquaculture facility are likely to be listed/ other laws require EIA.	about whether authorisation is required/set distance from high water mark for aquaculture facilities.
		Water use licences will be required – process is sometimes lengthy and complex especially for HDIs and new entrants.	Investigate whether general authorisations may be used to restrict circumstances in which facilities require water use licences.
Biodiversity	AIS		Finalise and implement regulations. Further stakeholder consultation regarding inclusion of species of importance to aquaculture.
	TOPs	Not clear whether aquaculture needs authorisation as captive breeding facility. Inclusion of marine species means potential overlap of regulation with MLRA.	DEA to clarify definition of captive breeding facility. Allow breeding of TOPs species as part of aquaculture operation without authorisations. Exclude aquaculture species from TOPs regulations (regulate under Aquaculture Act).
	Provincial biodiversity legislation	Permits required for single movement of listed species. In general inconsistencies with NEMBA.	Provision must be made for permits, issued in relation to a specific species, to be valid for a set period of time. In other words, to allow for standing permits. Provinces must review Acts and Ordinances to align with NEMBA and its regulations.
Impact of the environment on aquaculture	Regulation of the impact of other users of the environment on aquaculture facilities. (e.g. upstream users impacting on these facilities.)	Inland facilities: Catchment management legislation has potential to regulate this issue.	Ensure that aquaculture provided for in catchment management plans and strategies. Possibility of water use authorisations (as in Brazil) to secure water resources and protect environment while new aquaculture facility is planned. Strategic approach to identifying suitable sites – see approach in Protected Areas Expansion Strategy.
		Coastal facilities: Coastal Management Programmes (CMP) and Coastal Management	There is a need for CMPs and CMOs, which should include aquaculture areas in the coastal

Issues	Sub-issues	Findings	Recommendations
		Objectives (CMO) are not uniformly in place.	zonings scheme.
Product safety and quality	Certification authorities and standards	The certification regime is lacking because: • There is a lack of capacity and mandate for certifying authorities; and • there is a lack of standards for certifying authorities to rely on.	Create a system where the government creates the standards and the private sector certifies in terms of the standards: 1. Create standards for certification with international standards in mind; and 2. Create a system for approving independent certifying bodies.
	Traceability and labelling	While the framework law is in place [Consumer Protection Act], implementation of standards and regulations is lacking.	Publish standards and regulations for traceability and labelling for aquaculture products under existing legislation (with international standards in mind).
Animal health and welfare	Invertebrates	The legislation that is currently in place does not include invertebrates. Facilities dealing with invertebrates (e.g. abalone) are therefore not entitled to compensation where stock is seized or destroyed.	Legislative amendment to include invertebrates.
	Capacity	Lack of capacity to regulate animal health and welfare.	Capacity building
Operational issues	Drugs, stock remedies	There is currently no list of approved drugs for aquaculture which causes the sector to use any drug available to them.	List of drugs with international precedent and standards in mind can be published under existing legislation.
	Feeds and Fertilizers	The regulation of aquaculture feeds and fertilizers is lacking.	Enactment of regulations/lists specific to aquaculture.

1. INTRODUCTION AND BACKGROUND

1.1 Purpose of the legislative review project

The Department of Agriculture, Forestry and Fisheries (DAFF) is the lead agent for the development and management of the aquaculture sector in South Africa. The development of the aquaculture sector was identified as a government priority and was included in the government's Industrial Policy Action Plan (IPAP) (2010-2013). The IPAP identified the need for a national Aquaculture Strategy and, accordingly, the National Aquaculture Strategic Framework for South Africa (NASF) was finalised by DAFF in 2012.

In the NASF, Government committed to:

> "conduct a comprehensive review of all legislation and any ensuing regulations to identify and amend, where appropriate, constraints to diversify and promote sustainable aquaculture development."[1]

Accordingly, DAFF has commissioned a legislative review of the sector from EnAct International.

The aquaculture sector is regarded as being in its infancy, with much potential for growth and development. The development of the sector is prioritised because it has the potential to:

- supplement dwindling wild fish stocks by providing an alternative food source;
- increase food security;
- create jobs and wealth; and
- contribute to rural development in South Africa.

The sector is currently governed by numerous pieces of legislation and policy, and administered by several different organs of state. There is a general perception that the legal framework is hampering development of the sector. Overregulation, an uncoordinated institutional framework and an un-integrated authorisations process are some of the problems that have been identified.

This review will consider gaps and shortcomings in the legal framework and problems with its implementation. It will make recommendations for improving implementation of the framework and for legislative reform.

1.2 Methodology

The review project involved a desk-top study and a stakeholder consultation on 24 April 2013 at which stakeholders were invited to submit further written comments.

The report has three main components:

1. an assessment of the existing system and its problems;
2. a comparative international analysis; and
3. conclusions and recommendations.

Because the review project is focussed on identifying constraints to the development and promotion of the aquaculture industry, the review will assess the three distinct phases in which legislation and policy will have a bearing on a developing industry namely:

- **the development phase of new facilities**
  This phase includes the acquisition of land, determining of appropriate vehicles for establishing the enterprise, obtaining of necessary authorisations for establishment of a facility, the anticipating and prevention of impacts on the environment and selection of species to be used.

- **the operational phase**
  This phase includes prevention and mitigation of impacts on the receiving environment, compliance with biodiversity protection laws, labour considerations, health and safety considerations, animal health and disease control and managing waste.

- **the "post-production phase"**
  This phase concentrates on the processing of aquaculture products and on the certification and export of products.

This approach is intended to ensure consideration of the whole value chain. The legal requirements for each phase differ from each other, making this the most practical approach to isolate the needs, interactions, inhibitors and shortcomings of the domestic governing framework and the solutions to be found in international governing frameworks.

In considering what legislation is applicable and what the issues are, we have considered the following themes of importance to the aquaculture industry:

- administration of the sector
  - mandates and responsibilities

- securing sites
    - acquisition of ownership or rights to land
    - land use
- impacts of aquaculture on the environment
    - water use
    - impact of effluent on receiving environment
    - biodiversity protection
        - impacts on receiving environment
        - use of antibiotics
        - impact on wild fish populations used as feed for farmed fish
        - impact on wild predators
        - destruction of coastal and inland ecosystems to build facilities
        - impact of genetically modified organisms on genetic diversity if interbreeding takes place
        - impact of selective breeding of favourable traits
        - escape of alien/invasive species into the wild
- impacts of the environment on aquaculture facilities
    - ensuring water quality and avoiding water user conflicts
- product safety and quality
    - human health and food safety including traceability of aquaculture products
- animal health and disease control
- importation of inputs, such as feed
    - marketing and trade controls
    - corporate law applicable to aquaculture

- labour law and health and safety aspects of aquaculture

Although it is not strictly a legal issue, access to finance has up to now presented a considerable barrier to entry to new entrants into the aquaculture industry as banks and lending institutions regard the risks in the industry to be high. This is slowly changing since DAFF has started engaging with the Development Bank of South Africa (DBSA) and the Land Bank on financing of aquaculture projects.

This review report adopts a systems-based approach. Each system, as identified below, is assessed within the context of development, production and post-production phases of an aquaculture facility to ensure practical assessment of the whole value chain.

Assessment

The report assesses the system to be governed (STBG), the current governing system (GS) and the interactions within and between the systems.

The system to be governed includes the social, economic and environmental elements of the industry while the governing system constitutes the international, national, provincial and local laws and policies that regulate the aquaculture industry, as well as the institutional arrangements for governing.

Domestic conflicts/inhibitors are identified:

a) within the STGB;

b) within the GS; and

c) with the GS's regulation of the STBG.

The report also assesses international systems including successful aquaculture sectors in developed countries and in less-developed countries.

Comparative analysis

Next, the report compares and contextualises differences between the domestic and international systems; considers lessons learnt from the inception and development of international aquaculture governance; and considers the implications of contextual differences for application of international lessons, solutions and good practices in the domestic system.

Conclusions and Recommendations

Finally, the report summarises key conclusions relating to:

- conflicts and inhibitors within the system to be governed and between the system to be governed and the governing system;

- aspects of international legal frameworks and institutional arrangements which better promote the development of aquaculture; and
- unique South African solutions for problems which other jurisdictions have no solution for.

It also makes high-level recommendations on solutions for:

1. conflicting economic, social and environmental interests within the system to be governed;
2. integration, procedural, implementation and capacity issues within the governing system which affects the ability to govern efficiently and cooperatively; and
3. deficiencies in the quality and efficiency of interaction between the governing system and the system to be governed which inhibits the development of the domestic aquaculture sector.

1.3 Structure of the report

Chapter 1	explains the background to the project and outlines the structure of this overview report
Chapter 2	provides an overview of the system to be governed and the current governance system
Chapter 3	provides an overview of the policy environment
Chapter 4	contains a detailed assessment of the key legislation pertaining to aquaculture
Chapter 5	covers international conventions and national laws potentially relevant to aquaculture
Chapter 6	records our findings with regard to the system to be governed
Chapter 7	compares and analyses the differences between domestic and international systems and considers lessons to be learned
Chapter 8	draws conclusions and makes recommendations

2. OVERVIEW OF SYSTEMS AND PROBLEMS

2.1. System to be governed

The elements of the STBG can be roughly classified as falling into three main categories: economic, environmental and social.

The economic element is concerned with the accessibility of the industry to potential participants and the economic sustainability of the industry. It involves, among other things, the availability of land and finance, the costs of establishing and operating facilities, trade controls, barriers to importing inputs such as feed and barriers to exporting produce.

The environmental element considers among other things the need for biodiversity protection (including the destruction of natural ecosystems, protection of wild species, water use, land use, use of medicines), the effect of the protected area system on site availability, compliance with the environmental legal framework, the protection of water quality and the prevention of animal disease.

The social element of the STBG encompasses such concerns as the need for rural development, job creation, food security, the effect of aquaculture developments on local communities, fair labour practices, health and safety of aquaculture workers and consumer protection.

2.2. Governing system: The policy, legislative and institutional framework

The governing system for aquaculture includes the policy, legislative and institutional framework governing the aquaculture sector.

Policy

The primary policy instrument specifically relevant to the aquaculture sector is the NASF and the *National Aquaculture Policy Framework for South Africa which was* approved by Cabinet in May 2013. This Aquaculture Policy is intended to provide a unified framework for the establishment and development of an industry that contributes towards sustainable job creation and increased investment.

Other relevant policies include IPAP2 developed by the dti, Delivery Agreements developed by the Presidency and the National Development Plan 2030.

Legislation

With regards to legislation, South Africa is a signatory to several international conventions that have an impact on aquaculture production. In addition, since the environment and agriculture are both matters of concurrent legislative competence,[2] both national and provincial legislation is relevant to the sector. Depending on the municipal area into which it falls, an aquaculture operation may also be affected by bylaws such as those relating to nuisance, scheduled/offensive trades, water use and waste disposal, among others.

Institutions

The aquaculture sector encompasses issues relating to food security, food safety and human health, environmental protection, trade, labour, health and safety and animal health, different aspects of aquaculture operations are administered by several other organs of state including in the national sphere DAFF, DEA, DWA, DoH, DoT, DST, the dti and the DoL as well as provincial departments and agencies responsible for the environment, health and agriculture. In addition, the DRDLR is a stakeholder and, because marine aquaculture operations often involve leases of state land, the cooperation of the Department of Public Works is also currently necessary for the establishment and continued operation of an aquaculture facility.

Table 1 below summarises the responsibilities of the different national organs of state in terms of existing national legislation. Provincial Acts and Ordinances relevant to freshwater aquaculture are administered by the different provincial government departments responsible for the environment and for agriculture.

DEA
Department of Environmental Affairs
- National Environmental Management Act, 107 of 1998
- Environmental Impact Assessment Regulations, 2010
- National Environmental Management: Biodiversity Act, 10 of 2004
- Draft Alien and Invasive Species Regulations, GN 347 Of 3 April 2009
- Threatened or Protected Species Regulations, GNR.152 of 23 February 2007 (TOPS regulations)
- National Environmental Management: Protected Areas Act, 57 of 2003
- National Environmental Management: Integrated Coastal Management Act, 24 of 2008
- Sea-Shore Act, 21 of 1935
- Sea Birds and Seals Protection Act, 46 of 1973
- National Environment Management: Waste Act, 59 of 2008

DAFF
Department of Agriculture Forestry and Fisheries
- Marine Living Resources Act 18 of 1998
- Marine Living Resources Regulations, 1998
- Genetically Modified Organisms Act, 15 of 1997
- Subdivision of Agricultural Land Act, 70 of 1970
- Animal Diseases Act, 35 of 1984
- Fertilizer, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 36 of 1947
- Animal Improvement Act, 62 of 1998
- Agricultural Products Standards Act, 119 of 1990
- Agricultural Pests Act 36, of 1983
- Animal Protection Act, 71 of 1962

DWA
Department of Water Affairs
- National Water Act 36 of 1998

DTI
Department of Trade and Industry
- Consumer Protection Act No.68 of 2008
- CPA Regulations (GNR 293 of 1 April 2011)
- Standards Act, 8 of 2008
- National Regulator for Compulsory Specifications Act, 5 of 2008
- International Trade Administration Act, 71 of 2002 / The African Customs Union Agreement
- Customs and Excise Act, 91 of 1964
- Broad-Based Black Economic Empowerment Act, 53 of 2003

DOH
Department of Health
- Medicines and Related Substances Act, 101 of 1965
- Foodstuffs, Cosmetics and Disinfectants Act, 54 of 1972
- Health Act, 61 of 2003

DOT
Department of Transport
- Perishable Products Export Control Act, 1983

DOL
Department of Labour
- Occupational Health and Safety Act, 85 of 1993
- Basic Conditions of Employment Act, 75 of 1997
- Labour Relations Act, 66 of 1995
- Employment Equity Act, 55 of 1998

CIPC/DOJ
Companies and Intellectual Property Commission/ Department of Justice
- Companies Act, 71 of 2008
- Trust Property Control Act, 57 of 1988
- Co-operatives Act, 14 of 2005

DPW
Department of Public Works
- State Land Disposal Act, 48 of 1961

Table 1

To ensure better communication between government departments and to better manage the development of the aquaculture sector, an **Aquaculture Intergovernmental Forum (AIF)** was established in the national sphere in 2010.

The AIF is intended to "create an enabling environment for cooperation" and "will provide a framework for effective leadership of the aquaculture industry." Its main objective is to provide better management of implementation and reporting of all key government aquaculture programmes through joint planning, facilitation, resource mobilisation, monitoring and evaluation, recording and oversight.[3]

DAFF chairs the forum which also consists of other national government departments, namely, EDD, DST, the dti, DWA, DEA, DoH and DRDLR. Provincial agriculture and environment departments are also invited as are representatives of State Owned Entities when necessary. The Terms of Reference (ToRs) for the forum require it to meet every three months but *ad hoc* meetings are also provided for. The forum was responsible for the development of the NASF.

The **Provincial Aquaculture Intergovernmental Forum (PAIF)** was established in 2011 and is intended to improve coordination between provincial government and national government in the development of a sustainable aquaculture sector. It is unfortunately not well supported by all of the Provinces. The responsibilities of the forum are:

- ensuring cooperation, aligned planning, coordination and resource mobilisation for implementation of key aquaculture programmes between the national departments and the provincial departments that have a mandate in aquaculture development;
- ensuring cooperation and intergovernmental coordination amongst the Provincial departments/ agencies that have a mandate for aquaculture development;
- providing a platform for relevant provincial departments/ agencies responsible for aquaculture development to share experiences and challenges and find solutions to ensure sustainable aquaculture development in the country;
- implementing the recommendations of the PAIF in their respective departments; and
- monitoring and evaluating the prioritised programmes/ projects.

The members of the PAIF include the provincial departments responsible for agriculture, economic development, environmental affairs and rural development and the provincial development agencies. It is intended that the forum will meet at least twice a year.[4] It has in fact been meeting twice a year since its establishment.

In its *Environmental Integrity Framework for Marine Aquaculture guideline* document (2012), DAFF envisages that the AIF should deal with "higher level policy issues or interdepartmental issues" such as:

- the institution of state veterinary services for aquaculture by the DAFF;
- the funding of research in consultation with the DST; and
- customised industrial incentives for aquaculture, with the DTI as the lead agent.

The PAIF should deal with coordination and alignment of aquaculture activities between the DAFF and the provinces.[5]

In order to have a more structured stakeholder engagement, a **Marine Aquaculture Industry Liaison (MAIL)** forum was established. This forum creates a platform for industry to engage and communicate with DAFF as the lead agent for aquaculture development and management on issues affecting the marine aquaculture industry. A key achievement of the group was the resolution to delist abalone from Appendix III of CITES.[6] There is no equivalent forum for the freshwater sector and the establishment of such a forum is recommended.

The **Marine Aquaculture Working Group (MAWG)** was established to provide advice to the department's decision makers on activities relating to aquaculture management and development such as applications for rights and amendments thereof. The key roles of the MAWG are to assess and make recommendations on the right, scientific investigations, permits and practical investigations and permit applications. In addition, the MAWG provides advice on environmental protection; policy and legislation; guidelines and operational management procedures for the marine aquaculture sector.[7]

It is recommended that a Freshwater Aquaculture Working Group be established to perform a similar function in the freshwater sub-sector or that the feasibility of a single Working group for both parts of the sector is considered.

In 2012, the **Aquaculture Value Chain Round Table** was established, which is a partnership between DAFF and the Aquaculture Association of Southern Africa (AASA). The aim of the partnership is to foster collaborative industry-government action that helps to secure an enduring global advantage. It considers domestic sectoral development activities and is intended to involve all role players in the aquaculture value chain.

Despite the establishment of these forums, stakeholders felt strongly that there was still insufficient coordination between the various organs of state responsible for regulating aquaculture.

The view of stakeholders is that lack of cooperation between various organs of state is a major cause of bottlenecks in the development of the sector. Intergovernmental forums often struggle to be effective because of poor attendance at meetings.

Stakeholders also believed that DAFF is underfunded as regards the administration of the aquaculture sector and that there was a lack of capacity in most organs of state to deal with the requirements of the sector.

3. POLICY FRAMEWORK

In this chapter we consider policy relevant to the development of the aquaculture sector in South Africa.

3.1. National Aquaculture Strategic Framework

The NASF identifies a number of challenges faced by aquaculture in South Africa which have resulted in the sector stagnating and even declining and which justified the development of a national strategy. Apart from the lack of an enabling regulatory environment and over-regulation, the other technical challenges include South Africa's high energy coastline, limited number of suitable sites and high water temperature variations.[8]

Although aquaculture is the fastest growing food production sector in the world, South Africa's production has remained relatively small and is largely based on introduced or exotic species.

The NASF identifies as main outcome of the strategy "a pragmatic and supportive pro-aquaculture enabling regulatory and operational environment to ensure food security and promote food sovereignty."[9]

In terms of the NASF, Government should therefore:

- review all legislation and where appropriate, remove constraints to diversify and promote sustainable aquaculture development;[10]
- promote intergovernmental co-operation;
- ensure that other activities do not compromise the resources needed for aquaculture;
- promote voluntary codes of practice and self-regulation;
- establish clear and pragmatic regulations to develop fisheries co-management plans and secure user rights to land and water;
- ensure a participatory approach by all stakeholders, private and public; and
- ensure industrial scale fish feed manufacturers, ingredient suppliers, processors and hatcheries meet agreed standards to ensure nutritionally balanced feed, acceptable aquatic products and seed supply.[11]

3.2. National Aquaculture Policy Framework for South Africa, 2013

The National Aquaculture Policy Framework provides government with a guide to promoting both food security and the objectives of the New Growth Path (2020) and National Development Plan (2030) through job creation, livelihood opportunities and the participation of disadvantaged groups in the South African aquaculture sector.

The policy is intended to apply to all participants in, and facets of, the sector. Various policy objectives and principles applicable to decision-making, management and regulation are outlined with specific attention paid to the need for an integrated multi-departmental and multi-stakeholder approach in developing a sustainable aquaculture sector. Additional guidance is provided concerning the quality and promotion of aquaculture products to export markets, the promotion and regulation of foreign investment in South African aquaculture and means of achieving compliance with ratified and applicable international treaties, protocols and policies.

3.3. DAFF Environmental Integrity Framework for Marine Aquaculture Guideline document (2012)

The Environmental Integrity Framework's (EIF) primary objective is contributing towards sustainable development of the marine aquaculture sector. The EIF provides a framework for setting objectives, indicators, mitigation measures, monitoring and performance standards as a starting point to achieving a balance between optimised human beneficiation and equity from the use of natural resources on the one hand and maintaining biological diversity and protecting ecosystem function on the other.

The EIF deals with Environmental Management Procedures such as EIAs and norms and standards and describes the setting of monitoring objectives, how indicators are determined, quality standards and the approach to monitoring; both at sector and project level. It goes on to address identification and prioritisation of the impacts of aquaculture and finally identifies the roles, responsibilities and mechanisms by which intergovernmental as well as government-sector cooperation takes place in regards to the sector in confirmation of the fact that intergovernmental and stakeholder cooperation is key to sustainable development of the sector.

3.4. National Development Plan 2030 (NDP)

The National Development Plan (NDP) was issued by the National Planning Commission and aims to eliminate poverty and reduce inequality by 2030 by growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society. The NDP is in essence a long term action plan for the implementation of a wide developmental national policy which consequently requires that all actions by lawmakers, executive authorities and the private sector be as closely aligned with the NDP as possible.

The NDP sets out individually defined objectives which contribute cumulatively to a more just society in addressing the most immediate and essential intervention points.

Particular objectives of the NDP which will likely affect or be affected by aquaculture are the stimulation of an inclusive economy and job creation (Chapter 3), ensuring environmentally sustainable development (Chapter 5), stimulating an inclusive rural economy (Chapter 6), increasing regional and international trade (Chapter 7) and providing for skills development strategies (Chapter 9).

Aquaculture is considered an agriculture and agro-processing sector and specific development proposals for these sectors are:

1. Sustainable use of water and development of water saving technology.
2. Greater investment in providing innovative market linkages for small-scale farmers in communal and land-reform areas.
3. Comprehensive support packages for farmers and preferential procurement mechanisms to ensure that new agricultural entrants can also access these markets.
4. Tenure security to secure income for existing farmers and new entrants and to ensure the investment required to grow income.
5. Technology development.
6. Exploration of innovative measures, such as procurement from small-scale farmers to create local buffer stocks and community-owned emergency services.

3.5. Industrial Policy Action Plan 2013 – 2016 (IPAP2)

South Africa's long-term vision of an equitable society is provided by the National Development Plan. The Industrial Policy Action Plan (IPAP), which is developed by **the dti**, is informed by this vision and is both framed by and constitutes a key pillar for the objectives set out in the NDP.

The policy considerations driving the IPAP seeks to achieve diversification into non-traditional tradable goods and services, a labour-absorbing industrialisation path, increased participation of historically disadvantaged people, increased participation of marginalised regions and the long-term intensification of South Africa's industrialisation process and movement towards a knowledge economy.

The plan identifies interventions which will lead to increased investment in the aquaculture sector and marketing of the growth of the aquaculture sub-sector of South Africa which in turn will lead to diversification of the sector, increased production and significant job creation.

Key milestones for the development of aquaculture production are:

1. 2013/14 Q2: DTI and DAFF plan to develop and implement company-level action plans with two abalone companies (on the South and West Coasts of the Western Cape) and a catfish company (in the North West).
2. 2014/15 Q1: DTI plans to facilitate development financing through IDC and National Empowerment Fund (NEF) to support four major new investments, two in the marine finfish sub-

sector (in the Eastern Cape and KwaZulu-Natal) and two in the trout sub-sector (in Mpumalanga and the Western Cape).
3. 2014/15 Q3: DAFF, DTI, industry and Proudly South Africa plans to develop a farmed kabeljou (dusky kob) marketing campaign.
4. 2015/16 Q1: DTI plans to assist the industry to further penetrate Asian markets and achieve sales to the value of R500 million.

3.6. DAFF Strategic Plan 2012 – 2017

This strategic plan is aimed at providing an effective framework to address the challenges facing the agriculture, forestry and fisheries sectors and to set the delivery targets for departmental programmes over a five year period.

The key priorities of the plan are food security, job creation, sustainable use of natural resources, economic growth and rural development.

Aquaculture is addressed under fisheries management and the plan notes that fisheries have great potential but is restricted by factors such as depleted fish stocks, its capital intensive nature and economic factors such as international prices and fluctuating production costs. The strategy is to counter these restrictions by the further implementation of the Aquaculture Programme, among other things.

The Aquaculture Programme is developed from management, technical services and research orientated perspectives and the strategy plan notes that the objectives of Delivery Outcome 4 and 7 (below) as well as the NASF are implemented as part of the Programme. The Programme is presently being implemented by means of fish production projects around the country, in partnership with **the dti**. While presently focusing on primary production, the programme is attentive to the upstream and downstream parts of the value chain.

Apart from its role in job creation and development, the strategic plan also identifies aquaculture as a key driver in the coordination of the government food security initiative.

3.7. Delivery Outcome Agreements

Government has agreed on 12 outcomes as a key focus of work between 2010 and 2014. Each of the 12 outcomes has a delivery agreement which in most cases involves all spheres of government and a range of partners outside government. Combined, these agreements reflect government’s delivery and implementation plans for its foremost priorities. Each outcome has a limited number of measurable outputs with targets and each output is linked to a set of activities that will help achieve the targets and contribute to the outcome.

Outcome 4

Outcome 4 aims to ensure that the growth plan results in the creation of decent employment prospects.

It is identified that our growth potential is not coming to fruition and that unemployment levels are noticeably higher than that of countries with a similar level of development. These facts are attributed to structural constraints of our economy inhibiting the stimulation of growth which effectively inhibits the ability to create jobs and which contributes to the large income gap in our society.

Six primary outputs are listed as measures which would achieve the outcome:

1. Faster and sustainable inclusive growth;
2. More labour absorbing growth;
3. Multi-pronged strategy to reduce youth unemployment;
4. Increased competitiveness, to raise net exports, grow trade as a share of world trade and improve its composition;
5. Improved cost structure in the economy;
6. Improved support to small business and cooperatives; and
7. Implementation of the expanded public works programme.

Aquaculture is particularly flagged as a measure to increase employment in labour intensive sectors which is bolstered by the Department of Science and Technology's pledge to support key partner departments in building stronger research, development, innovation, and technology transfer capabilities that are required to maintain and grow key labour-absorbing sectors of the economy including aquaculture and exports.

Outcome 7

Outcome 7 aims to achieve vibrant, equitable, sustainable rural communities and food security for all.

The challenges to be addressed are identified as being very poor infrastructure and institutional support for meeting minimum or basic human needs such as decent shelter, food security, water and sanitation as well as poor delivery relating to electricity services, social facilities and amenities and decent logistics system. Rural areas are also having challenges in attracting small sustainable enterprises and industries, artisanal and other technical skills, entrepreneurs, rural-urban linkages, local markets and credit facilities.

Accordingly the 5 key outputs to attain the outcome are:

1. Sustainable agrarian reform with thriving farming sector (DRDLR/DWEA);
2. Improved access to affordable and diverse food (DAFF/DRDLR);
3. Improved services to support livelihoods (DRDLR/DPW/MUNICIPALITIY) ;
4. Rural job creation and promoting economic livelihoods (DST/DTI/DHET/DRDLR); and
5. Enabling institutional environment for sustainable and inclusive growth (DoCG/EDD/DRDLR).

Outcome 9

Outcome 9 aims to achieve a responsive, accountable, effective and efficient local governance system.

The challenges identified are that municipalities are distressed on account of poor governance and accountability, weak financial management, high vacancies in critical senior management posts and in a number of instances, an inability to deliver even a core set of critical municipal services efficiently and effectively.

7 key outputs are listed as essential for achieving the overarching goal:

1. Develop a more rigorous, data driven and detailed segmentation of municipalities that better reflect the varied and capacities and contexts within municipalities and lays the basis for a differentiated approach to municipal financing, planning and support;
2. Ensure improved access to essential services;
3. Initiate ward-based programmes to sustain livelihoods;

4. Contribute to the achievement of sustainable human settlements and quality neighbourhoods;
5. Strengthen participatory governance;
6. Strengthen the administrative and financial capability of municipalities; and
7. Address coordination problems and strengthen cross-departmental initiatives.

The relevance of this outcome for aquaculture is the focus on ward-based programmes to sustain livelihoods and strengthen coordination in governance. However, this is not part of DAFF's Medium Term Strategic Framework (2010-2014).

Outcome 10

The purpose of Outcome 10 is to achieve a South Africa where environmental assets and natural resources are valued, protected and continually enhanced.

The major challenges for environmental management are unsustainable water use, rising greenhouse gas emissions/ airborne pollutants, deficient environmental management strategies and loss of biodiversity.

The 4 key outputs listed as essential for achieving the vision are:

1. Enhanced quality and quantity of water resources;
2. Reduced greenhouse gas emissions, climate change impacts and improved air/ atmospheric quality;
3. Sustainable environmental management; and
4. Protected biodiversity.

Aquaculture is specifically identified to assist in increasing numbers of hake, abalone and rock lobster, however, the obligation to improve the quality of water resources will also have significance for aquaculture undertakings.

4. KEY LEGISLATION GOVERNING AQUACULTURE MANAGEMENT AND DEVELOPMENT

The establishment and operation of an aquaculture facility, the input of feed and medicines and the export of species are regulated by numerous laws. In addition to those laws, international conventions on trade and the transboundary movement of species may also have an impact on the aquaculture sector.

The laws and relevant international instruments are dealt with under the following thematic headings as set out below.

- Administration of the Sector
- Environmental Impacts and Permitting
- Impacts of Aquaculture on the Environment
- Impacts of the Environment on Aquaculture
- Product Safety and Quality
- Animal Health and Disease Control
- Importation of Inputs

4.1. Administration of the Sector

There is no single legal definition of aquaculture in South Africa even though the term is referred to in the Marine Living Resources Act (MLRA) and other statutes. The result is that there is no single authority that deals with aquaculture. Each organ of state deals with it differently and different authorisations may be required depending on where the aquaculture facility is proposed to be situated. It is also not clear if aquaculture is included within the meaning of "agriculture" in the Constitution. If aquaculture is to be regarded as a separate function then it would be an exclusive national competence as it is not listed on any of the schedules to the Constitution. This would mean that only the national organ of sphere would be entitled to regulate and control it. All of these factors affect the administration of the sector. Aquaculture is likely to be regarded as a form of "agriculture" which means that it falls within Part A of Schedule 4 of the Constitution which means that it is a functional area of concurrent national and provincial legislative competence.

The various definitions are discussed below.

The Limpopo Environmental Management Act[12] defines aquaculture as follows:

> "The managed production, either through an intervention in the breeding process, or through stocking, feeding or predator control programmes, of fish, invertebrates, amphibians, aquarium plants or other aquatic organisms, including the eggs, ova, spawn, seeds, fruits, bulbs, stems, roots or any other part or derivative of such organisms"[13]

In the Western Cape, the zoning schemes promulgated under the Land Use Planning Ordinance (LUPO) define land-based aquaculture to mean:

> "The cultivation, above the high-water mark, and breeding of water-flora and -fauna, and the harvesting thereof,
>
> a) in artificially-built dams or holding tanks, or
>
> b) suspended from rafts, for commercial purposes, including all directly-related and necessary ancillary facilities."[14]

In the MLRA, "mariculture" means the culture or husbandry of fish in sea water.[15]

A further difficulty is that it is not clear whether the definition of "animal" in some legislation and some provincial ordinances includes fish or shellfish. See also for example the definition of "animal" in the Animals Protection Act (APrA): "any equine, bovine, sheep, goat, pig, fowl, ostrich, dog, cat or other domestic animal or bird, or any wild animal, wild bird or reptile which is in captivity or under the control of any person."

The NASF defines aquaculture widely to mean

> "The farming of aquatic organisms including crocodiles, alligators, amphibians, finfish, molluscs, crustaceans and plants where farming refers to their rearing up to their juvenile and/or adult phase under captive conditions. Aquaculture also encompasses individual, corporate [*sic*] ownership of the organism being reared. This definition encompasses three components (cultured organism, the practice and ownership of product) and all three components must be fulfilled for an activity to be classified as aquaculture."

This definition does not, however, include ranching since ranching (for example, abalone ranching) does not involve captive conditions.

If new comprehensive legislation is drafted to regulate aquaculture, it is recommended that a definition of aquaculture should be included to avoid inconsistency and to deal with these uncertainties.

The Food and Agriculture Organisation of the United Nations (FAO) uses the following definition:

> "The farming of aquatic organisms in inland and coastal areas, involving intervention in the rearing process to enhance production and the individual or corporate ownership of the stock being cultivated."

4.1.1. Constitution of the Republic of South Africa, 1996

Legislative competencies

The Constitution sets out the legislative competence of the different spheres of government.[16] The national and provincial government have concurrent competence with regard to the matters set out in Schedule 4. These include agriculture and the environment. As mentioned above, aquaculture is not specifically provided for in the Schedules but would probably fall within the meaning of agriculture.

Stakeholders were of the view that, while the mandate of DAFF to regulate mariculture is clearly provided for in the MLRA, its mandate to regulate freshwater aquaculture ought to be made clearer in light of the fact that most provinces have Ordinances or provincial Acts dealing with aspects of freshwater aquaculture, which are administered by provincial government organs of state. In many cases, the Ordinances are out-dated (pre-dating 1994) and inconsistent with one another and require revision in light of the TOPs Regulations and the AIS Regulations under NEMBA.

Bill of Rights

The South African government is committed to sustainable development through the Constitution. Section 24 of the Constitution provides that:

> "Everyone has the right –
>
> 1. to an environmental that is not harmful to their health or well-being; and
> 2. to have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that
>   2.1. prevent pollution and ecological degradation;
>   2.2. promote conservation; and
>   2.3. secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

From the point of view of the State, section 24 must be used in the interpretation and application of other legislation pertaining to the environment.

This right must be balanced against section 27 of the Constitution, which gives every person the right to sufficient food and water. As a so-called socio-economic right, the Constitution requires the state to take reasonable and other measures, within its available resources, to achieve the progressive realisation of this right.

The entrenchment of an environmental right and the right to food security in the Bill of Rights of the Constitution uplifts these to the level of fundamental human rights. Branches of the State have a duty to give effect to the Constitution and these rights. However, rights are not unlimited and the Constitution provides that a right may be limited to the extent that the limitation is reasonable and justifiable in an open and democratic society based on human dignity, equality and freedom.[17]

Any proposed new aquaculture legislation or legislative reform of the aquaculture sector must take into account both the right to have the environment protected and the duty to provide for food security and for development that is ecologically sustainable.

Co-operative governance

The Constitution also requires that organs of state cooperate with one another and coordinate their actions. They therefore need to work together in order to achieve the objectives of sustainable development. This is particularly important where different organs of state are responsible for administering different aspects of a sector such as aquaculture.

Section 41 of the Constitution lists the principles which must guide co-operative governance and intergovernmental relations. Included in this list are the following:

All spheres of government must:

- respect the constitutional status of government in the other spheres;
- not assume any power or function except those conferred on them by the Constitution;
- exercise their powers and perform their functions in a manner that does not encroach on the integrity of government in other spheres; and
- co-operate with one another in mutual trust and good faith by,

- fostering friendly relations;
- assisting and supporting one another;
- informing another of, and consulting one another on, matters of common interest;
- co-ordinating their actions and legislation with one another;
- adhering to agreed procedures; and
- avoiding legal proceedings against one another.

4.1.2. Intergovernmental Relations Framework Act, 13 of 2005 (IRFA)

Administered by: Department of Provincial and Local Government

Section 40(2) of the Constitution directs parliament to enact legislation which establishes structures to facilitate intergovernmental relations and to provide appropriate mechanisms to settle intergovernmental disputes. It has done so by enacting the IRFA.

The Act provides for the establishment of the following structures:

The President's Co-ordinating Council which is composed of the President, the Deputy President, representatives of the Presidency and Cabinet, the provincial premiers, and a municipal councillor designated by organised local government. The President's Council is a consultative forum for the President to raise matters of national interest with the provinces and with local government, to consult the provinces and local government on the implementation of national policy and legislation, the co-ordination and alignment of national priorities, other matters of national interest, and to discuss performance in the provision of services and detect failures.

National Intergovernmental Forums which are composed of the national ministers and provincial MECs responsible for the functional area for which the forum is established. The National Intergovernmental Forums were established for the purpose of consultation on matters of national interest within that functional area and alignment and coordination of priorities and implementation of national policy within that functional area.

The Premier's Co-ordinating Council which is composed of the Premier for the province, the MEC responsible for local government, any other designated MECs and the mayors of districts and metropolitan municipalities in the province. The purpose of the Premier's Co-ordinating Council is to facilitate consultation between the Premier and municipalities on matters of mutual interest around issues such as the implementation of policy and legislation affecting local government interests and the coordination of planning and strategy.

Provincial Intergovernmental forums which may be established by the Premier of a province for any specific functional area to promote and facilitate effective intergovernmental relations between the province and local governments or for any specific part of the province to facilitate intergovernmental relations within that part.

District intergovernmental forums composed of the mayor of the district municipality and the mayors of local municipalities in the district or a councillor designated by the local municipality if it does not have a mayor. The purpose of the forum is to serve as a consultative forum for the district and local municipalities to consult on matters of mutual interest including draft national and provincial policy and legislation affecting local government in the area, matters arising from the Premier's intergovernmental forum affecting the district, the provision of services, and coherent planning and development in the district.

Inter-municipality forums may be established by two or more municipalities to promote and facilitate intergovernmental relations between them. They serve as consultative forums for participating municipalities to consult on information sharing, best practice and capacity building, cooperating on municipal developmental challenges, and any other matter of strategic importance which affects participating municipalities.

As discussed above, two intergovernmental forums have been established pertaining to the aquaculture industry, namely, the Provincial Aquaculture Intergovernmental Forum (PAIF) and the Aquaculture Intergovernmental Forum (AIF). Certain aquaculture industry bodies and interest groups have been formally recognised under the MLRA. They include the Marine Finfish Farmers Association[18], the South African Seafood Exporters and Importers Association[19] and the Abalone Farmers Association of South Africa,[20] amongst others.

4.2. Environmental Impacts and Permitting

4.2.1. National Environmental Management Act, 107 of 1998 (NEMA)

NEMA is the framework environmental management legislation, enacted as part of the government's mandate to ensure every person's constitutional right to an environment that is not harmful to his or her health or well-being. It is administered by DEA but several functions have been delegated to the provincial environment departments.

One of the purposes of the Act is to provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment. The Act further aims to provide for institutions that will promote cooperative governance and procedures for co-ordinating environmental functions exercised by organs of state and to provide for the administration and enforcement of other environmental management laws.

The Act has a strong socio-political basis with particular focus on the basic needs of disadvantaged communities, sustainable development and equitable distribution of benefits.

Overview of specific sections/chapters of specific relevance to aquaculture

The main provisions of the Act relevant to the establishment of an aquaculture facility are the general principles for sustainable development outlined in section 2, the provisions relating to Environmental Impact Assessment (EIA), environmental authorisations and environmental management frameworks (section 24 and the regulations made under it). Section 24 of NEMA also has provisions relating to integrated authorisations (this is discussed further in paragraph 1.6.66.6 below) Can integrated permitting be achieved?

In the production or operational phase of an aquaculture facility, the general duty of care to prevent adverse impacts on the environment becomes important (section 28). These are discussed further in the paragraphs following.

Principles for decision-making (section 2 of NEMA)

Section 2 sets out principles that organs of state must take into account when making decisions that may significantly affect the environment. This includes a decision to authorise or refuse an environmental authorisation for an aquaculture facility.

The principles include that “environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.”[21]

Development must also be socially, environmentally and economically sustainable.[22] Among other things, this implies that:

- the disturbance of ecosystems and loss of biological diversity is avoided, or, where it cannot be altogether avoided, is minimised and remedied;
- pollution and degradation of the environment is avoided, or, where it cannot be altogether avoided, is minimised and remedied;
- that the development, use and exploitation of renewable resources and the ecosystems of which they are part of do not exceed the level beyond which their integrity is jeopardised; and
- that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.[23]

Section 2 also requires that

> "Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure"[24]

and that

> "The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment" (the "polluter pays" principle).[25]

The main significance of these principles for the development of the aquaculture industry is that any decision-maker in an application for a permit or authorisation, whether in terms of NEMA, NEMBA, the MLRA or any other law, must apply these principles in deciding whether to grant or refuse the application.

EIA (Section 24 of NEMA)

Section 24(2)(a) allows for the listing of activities that may not commence without environmental authorisation. It specifies the criteria that must be taken into account when deciding an application for environmental authorisation.[26] In the event that such activities are commenced without the requisite environmental authorisations then application for rectification in terms of section 24G of NEMA can be made to the competent authority. However, such an application is subject to the payment of a fine. Despite paying the fine (which is regarded as an administrative penalty) the authorities are of the view that criminal prosecution may also be instituted.

Section 24(2)(d) allows for the listing of activities which do not require an environmental authorisation but must comply with prescribed norms and standards.

The most recent lists of activities requiring environmental authorisation were published in 2010 along with regulations governing the application and EIA processes (collectively referred to here as the EIA Regulations, 2010).

Duty of Care (section 28 of NEMA)

Section 28 of NEMA mainly becomes relevant to an aquaculture facility in its operational phase. It places a duty of care on every person who has caused, may cause or causes any significant pollution or degradation of the environment and to take measures to prevent such pollution or degradation from continuing or recurring. The duty applies to the person responsible for the pollution and degradation as well as the owner of the land on which it occurs and any person in control of the land or who has or had a right to use the land when the situation came about.

"Environment" is defined in section 1 to include the land and water as well as any micro-organism, plant or animal life and the inter-relationships among and between them. All aquaculture activities must be undertaken in accordance with the duty of care in section 28. Therefore, apart from complying with the conditions in the various authorisations for an aquaculture facility, the operator of the facility as well as the owner of the land where the facility is situated must do whatever is reasonable to prevent pollution and degradation. In practical terms this will usually mean monitoring impacts of the facility on the environment and investigating possible causes of pollution or environmental degradation as a first step. Failure to comply with section 28 may result in the DEA Director General or a provincial head of department (or delegated official) issuing a directive to the operator or owner concerned to take reasonable measures.[27]

4.2.2. Marine Living Resources Act 18 of 1998 (MLRA)

The purpose of the Act is to provide for the conservation, protection, sustainable use and orderly access to exploitation of the marine ecosystem and its living resources. There is no equivalent national legislation governing freshwater aquaculture.

The Act is mainly administered by DAFF, although some functions including those relating to the management of marine protected areas (excluding permitting, fishing rights, fisheries related research and related enforcement) are the responsibility of DEA.[28]

The Act further aims to provide equitable benefits accruing from the above for all the citizens of South Africa. The objectives of the Act are set out in section 2 as a series of principles to which the Minister must have regard when exercising a power under the MLRA. They are:

a) the need to achieve optimum utilisation and ecologically sustainable development of marine living resources;
b) the need to conserve marine living resources for both present and future generations;
c) the need to apply precautionary approaches in respect of the management and development of marine living resources;
d) the need to utilise marine living resources to achieve economic growth, human resource development, capacity building within fisheries and mariculture branches, employment creation and a sound ecological balance consistent with the development objectives of the national government;
e) the need to protect the ecosystem as a whole, including species which are not targeted for exploitation;
f) the need to preserve marine biodiversity;
g) the need to minimise marine pollution;
h) the need to achieve to the extent practicable a broad and accountable participation in the decision-making processes provided for in the Act;
i) any relevant obligation of the national government or the Republic in terms of any international agreement or applicable rule of international law; and
j) the need to restructure the fishing industry to address historical imbalances and to achieve equity within all branches of the fishing industry.

Overview of specific sections/chapters of specific relevance to aquaculture

The Act regulates mariculture, which is defined in the Act to mean "the culture or husbandry of fish in sea water" as well as the operation of Fish Processing Establishments (FPEs). The latter are defined as:

> "Any vehicle, vessel, premises or place where any substance or article is produced from fish by any method, including the work of cutting up, dismembering, separating parts of, cleaning, sorting, lining

> and preserving of fish, or where fish are canned, packed, dried, gutted, salted, iced, chilled, frozen or otherwise processed for sale in or outside the territory of the Republic." [29]

"Fish" in the Act means

> "The marine living resources of the sea and the seashore, including any aquatic plant or animal whether piscine or not, and any mollusc, crustacean, coral, sponge, holothurian or other echinoderm, reptile and marine mammal, and includes their eggs, larvae and all juvenile stages."

The definition excludes sea birds and seals.[30]

The MLRA specifically does not apply to fish found in water that does not at any time form part of the sea (section 3(3)).

Most mariculture will also fall within the definition of "related activities" in the MLRA which includes:

a) storing, buying, selling, transhipping, processing or transporting of fish or any fish product taken from South African waters up to the time it is first landed or in the course of high seas fishing;
b) on-shore storing, buying, selling or processing of fish or any fish product from the time it is first landed;
c) refuelling or supplying fishing vessels, selling or supplying fishing equipment or performing any other act in support of fishing;
d) exporting and importing fish or any fish product; or
e) engaging in the business of providing agency, consultancy or other similar services for and in relation to fishing or a related activity.

Mariculture also potentially falls within the definition of "fishing" which includes:

a) harvesting fish or an attempt to any such activity;
b) engaging in any other activity which can reasonably be expected to result in the harvesting of fish; and
c) any operation in support or in preparation of any activity described in the definition.

However, the wording of the Act, especially section 18 (discussed in the next paragraph) suggests that mariculture is distinct from fishing for the purposes of the Act.

The definition of FPE is currently too wide. It is proposed in the Marine Living Resources Amendment Bill, 2013[31] that the definition of FPE be amended to exclude "fishmongers, restaurants, fish shops, large chain stores, cold stores, the drying of legally caught fish, the cleaning, gilling and tailing of fish on board an authorised fishing vessel and authorised fishing vessels that only pack fish in crates or use ice to land fresh fish."

Aquaculture rights and permits

The Act prohibits the undertaking of mariculture or the operation of a fish processing establishment unless a right has first been obtained from the Minister of Agriculture, Forestry & Fisheries in accordance with the procedure in section 18. A person to whom a right has been granted must then obtain a permit in terms of section 13. The permit is only valid for a year and may be issued subject to conditions. Further permits may be refused if the conditions are not adhered to.

In granting rights, the Minister is constrained by a number of factors:

- only South Africans may hold rights;

- the Minister must have particular regard to the need to permit new entrants to and address historical imbalances in the sector. He or she must have regard to the objectives of the Act (set out in section 2) including "the need to restructure the fishing industry to address historical imbalances and to achieve equity within all branches of the fishing industry."[32]; and
- the maximum period for which a right can be granted is 15 years.

The Marine Living Resources Amendment Bill proposes to amend section 18 so that a right must be obtained for commercial fishing, small-scale fishing, operating a fishing processing establishment or engaging in "non-consumptive use as determined by the Minister". A decision has been taken that aquaculture should no longer be regulated by the MLRA but that a separate Aquaculture Bill should be developed.

In 2011 the Minister published notice of her intention to allocate rights to engage in abalone ranching or stock enhancement pilot projects and an invitation for interested parties to apply for rights was advertised.[33] The notice prescribed a two-stage rights allocation process and identified concession areas in the Northern, Eastern and Western Cape Provinces for pilot projects.

She also published criteria for the allocation of rights.[34] They consist of exclusionary criteria to be applied in phase 1 of a rights allocation process as follows:

CRITERIA	RATIONALE
Application form	All applicants must complete an application form. Applications will not be considered if the application forms are incorrectly completed or incomplete. All applicants are required to pay the application fee as required by the Department and the proof of payment must be attached to the application form. Applications that do not have the proof of payment attached to their application will not be considered. All applications must be accompanied by a valid tax clearance certificate from SARS.
Compliance	A right to engage in a Pilot Project for abalone Ranching or Stock Enhancement will not be allocated to an applicant if the applicant, or its members, directors or controlling shareholders, had any fishing and/or aquaculture right cancelled, suspended or revoked in terms of the MLRA, or if their assets were seized under the MLRA or the Prevention of Organised Crime Act, 1998 (Act 121 of 1998). If an applicant, or its members, directors or controlling shareholders have been convicted of any offence in terms of the MLRA or any other fishery-related and/or aquaculture legislation the applicant will not be allocated a Marine Ranching or Stock Enhancement Pilot Project right. Applicants that have been convicted of one of the offences as listed above, and that have paid an admission of guilt fine will not be disqualified in their application for a Marine Ranching or Stock Enhancement Pilot Project right.
Access to finance	The applicant(s) must demonstrate that they will have access to finance in order to implement the project.
Access to seed/spat	The applicant(s) must demonstrate that they have access to spat/seed from a reputable hatchery that is authorised by the Department. A hatchery seed supply agreement must be signed and submitted to the Department.

Transformation	The participation of historically disadvantaged individuals ("HDI") in the marine aquaculture industry, i.e. BEE, BBBEE and including BBBEE SMME, is a national priority and therefore applicants who accommodate this priority will be preferred. Compliance with the Employment Equity Act, 1998 (Act 55 of 1998) and the representativity of HDIs at the various levels of employment will be a requirement.

Balancing criteria are also specified for phase 2 of the allocation process:

CRITERIA	RATIONALE
Equity and job creation	Inequalities of the past and the decline in fish stocks have compromised the viability of coastal livelihoods resulting in hardships for coastal communities. These communities should thus be the primary beneficiaries and partners of opportunities for the marine-based component of Ranching and Stock Enhancement of abalone Pilot Projects. Although the nature of the Pilot Projects for Marine Ranching and Stock Enhancement of abalone activities are recognised, provision for permanent jobs or greater levels of job security for lower level skilled and unskilled staff is promoted. Applicants who are able to create or indicate how they will create significant amounts of jobs per tonnage harvested will score higher.
Capacity (Technical)	Pilot Projects for Marine Ranching and Stock Enhancement of abalone require a widespread, level of technical ability (involvement in related fishing sector, fish farming, diving, etc.) and an understanding of the marine aquaculture sector. A successful Marine Ranching or Stock Enhancement Pilot Project enterprise will need to display a well-rounded technical capability and capacity.
Future Investment in the sector	Applicants must be able to demonstrate plans to invest in fixed assets and research done in the development of marine ranching products. Applicants will have to show how they intend to process and market marine ranching products and whether they have invested in any research into the harvesting and marketing of these products.
Environment considerations	The applicant should be able to identify key environmental risks and demonstrate how the risks will be managed by a specialist. A copy of an agreement for the appointment of a specialist to monitor environmental impacts should be attached to the application.

Also of relevance to the applicant for mariculture or fish processing rights is the fact that the Minister may require an EIA process to be carried out by the applicant (this is further regulated by the MLRA Regulations: see below). He or she may also determine sustainable conservation and management measures, including the use of a particular type of vessel or gear, or area of fishing, to which a right may be subject.

It is a strongly-held view of stakeholders that mariculture ought not to be subjected to the rights process set out in section 18 of the MLRA. The reason being that since mariculture is in most cases not using common marine resources for inputs, it is unfair to include it in the rights process because rights to exploit a public resource is not in question. There is a perception among stakeholders that mariculture should not be treated as a fishery by the authorities, but rather as an agricultural sector.

Stakeholders reported that aquaculture is a capital-intensive business which means that investors are looking for reasonably long-term security for their businesses. Too much uncertainty is created by the requirement that a permit under section 13 must be granted on a year-by-year basis.

However, from a regulatory point of view some control by DAFF is necessary during the life of the right/permit. Section 28 of the MLRA allows for the suspension of rights and permits if conditions are not adhered to or if the right or permit is not being used effectively. It is recommended that rights and permits should be valid for a longer period than it is currently to create more commercial certainty. For example, water use licences under the NWA may be valid for up to 40 years and consideration should be given to making aquaculture permits valid for a similar period to allow the two authorisations to run parallel to one another.

At the same time, new permitting provisions for aquaculture should also include for regular review of permits/licence (for example, every five years, as is the case with water use licences under the NWA) and the power to suspend these temporarily where non-compliances are found or permanently where the non-compliances are not remedied within a reasonable period after notice to do so. This will allow DAFF to monitor and control non-compliances on a regular basis.

The definition of FPE is extremely wide and in effect means that for example, fish cleaning operations will require a right under section 18 which outcome does not make sense taking into account the purpose of the MLRA. This is also problematic from a practical point of view since the rights process is a lengthy one. The proposed amendment to the definition will not cure this problem.

There is a legislative gap in that neither the MLRA nor any other legislation regulates the traceability of aquaculture products. DAFF has created and is currently implementing traceability protocols which are implemented in terms of the permit conditions for marine aquaculture permits issued under the MLRA. There are however no similar protocols for freshwater aquaculture species.

The DAFF is also currently implementing the South African Molluscan Shellfish Monitoring and Control Programme and has recently also developed a Finfish Monitoring and Control Programme to ensure that farmed shellfish and finfish are safe for human consumption . There are however no similar food safety programmes for freshwater aquaculture species. The South African Molluscan Shellfish Monitoring and Control Programme is thus currently implemented through permit conditions under the MLRA.

Chapter 2 of the MLRA concerns the establishment and functioning of a Consultative Advisory Forum for Marine Living Resources to advise the Minister on matters including the establishment and amendment of operational management procedures, including management plans. The Act also establishes the Fisheries Transformation Council. The Council is empowered to lease rights to small / medium enterprises from historically disadvantaged sectors and is intended to assist in the development and capacity building of persons from historically disadvantaged sectors of society and small and medium size enterprises. However, both of these forums have failed to promote the development of the sector and are in fact no longer operational.

Finally, in terms of section 77 of the MLRA, the Minister is empowered to make regulations:

> "(l) regarding the catching, loading, landing, handling, processing, transshipping, transporting, possession and disposal of fish;
> (m) regarding the import, export, trade in, distribution and marketing of fish and fish products;
> (v) regulating and controlling the operation of fish processing establishments, including quality control measures and inspection of such establishments; and

> (z) governing the administration of fishing harbours and any other matter incidental thereto…(cc) to ensure the orderly development and control of mariculture in the Republic".

Marine Ranching and Stock Enhancement

Recognising that "environmental degradation and poor fisheries management have caused several of the world's fisheries to decline or even collapse" while at the same time "the demand for fishery products globally is expanding", in 2011, DAFF published under the MLRA *General Guidelines for Marine Ranching and Stock Enhancement in South Africa"* as well as *Guidelines and Potential Areas for Marine Ranching and Stock Enhancement of Abalone (Haliotis midae) in South Africa.*[35]

The General Guideline defines ranching as "identifiable stock released with the intention of being harvested by the releasing agency" and stock enhancement as "the releasing of stock for the public good without the intention of directly benefiting an exclusive user group".[36] It envisages ranching and stock enhancement as a fishery management tool to restore and/or enhance fishery production. The emerging of the South African aquaculture industry, which is capable of mass producing seed, potentially provides the necessary technology and capacity to undertake the release of stock into the sea.[37]

The MLRA and its regulations do not define or specifically refer to ranching or stock enhancement. Ranching and stock enhancement will arguably fall within the definition of mariculture in the MLRA and these operations will therefore require rights and permits to be granted in terms of sections 18 and 13, respectively. However, the lack of specific regulations for ranching is a gap in the current MLRA leading to legal uncertainty.

A further legal uncertainty concerns legal ownership of released stock. Under the common law wild animals are defined as "all animals originating from the sea, the land or the air" and are classified as *res nullius* (belonging to no one but capable of being owned) unless they are within the control of a person. The common law was modified to an extent by the Game Theft Act, 105 of 1991 which provided that animals defined as "game" do not become res nullius once they are no longer under the control of a person. However, our view is that the Game Theft Act does not apply to organisms released as part of a marine ranching operation. Ownership of such organisms should be clarified in any new law governing marine ranching.

4.2.3. Marine Living Resources Regulations, 1998 (MLRA Regulations)

Species Restrictions

Chapter 5 (species restrictions) of the MLRA applies restrictions on, among other things, possessing, selling, importing and exporting of fish and aquatic plants without a permit. It includes provisions relating to the control of certain species including abalone, oyster, shellfish and other invertebrate species and rock lobster and sets minimum sizes for those species. The effect of Chapter 5 size regulations is that aquaculture operations are required to obtain a separate permit/ exemption in order to possess, transport or sell products that the MLRA regards as undersized, even where they are not regarded as undersized by the market.[38] It may be necessary to have a separate system for farmed populations of marine living resources where "proof of origin" certificates may be required for farmed species. The certificates would include sufficient detail to make it possible for law enforcement agencies to trace and verify the origin of a farmed species.

Mariculture Permits

Chapter 6 of the MLRA Regulations further regulates mariculture for commercial, experimental or research purposes. The MLRA Regulations impose a duty on the operator of a mariculture operation to take reasonable measures to avoid or minimise environmental harm from their operations including specifically the disposal of effluent and sludge.[39]

The regulations set out the information that must be submitted by an applicant for a mariculture permit in terms of the MLRA which includes:

a) the scientific name of each species for which an application is made;
b) origin of the stock;
c) if imported species are being considered, the measures to be taken to avoid introduction of exotic commensals, parasites and pathogens, and measures to be taken to avoid establishment of introduced species in the wild, shall be stated;
d) details of the method—
   i. of cultivation; and
   ii. of mitigating against potential environmental impacts;
e) details of chemicals, such as antifoulants, fertilizers, disinfectants, therapeutants, pesticides, herbicides, hormones and anaesthetics, and methods of application that are being considered for use in the operation;
f) detailed map indicating the site where the proposed mariculture operations will take place;
g) quality of seawater and potential sources of pollution in the proposed area of operation;
h) marketing strategy; and
i) facilities and employment opportunities that will be created.[40]

If an EIA process has been required then a copy of the EIA Report must also be furnished.

Separate mariculture permits must be given for each site and they are not transferable.

Certain compulsory conditions apply to mariculture products:

- cultivation and harvesting may only be undertaken only on the premises or location in respect of which the permit has been granted;
- the permit holder may only possess, harvest, transport or market the mariculture product in accordance with the permit; and
- the permit holder must provide information to DAFF on request in respect of—
    - the mass, size, and number of mariculture products harvested and sold; and
    - details of price, sales and purchasers.[41]

A mariculture permit may be unilaterally amended by the Minister of Agriculture, Forestry and Fisheries if he or she "considers that the modification is desirable in order to reduce the risk of disease spreading among aquatic organisms, to prevent, or reduce the risk of damage to the environment or to deal with any circumstances which were not foreseen at the time the permit was issued." A permit holder does, however, have the right to make representations regarding any proposed modification, although the Minister's decision on the matter is final.[42]

The Minister of Agriculture, Forestry and Fisheries may also suspend a permit for a specified period if he or she believes that it is necessary to prevent the spread of disease or environmental harm or because permit conditions are not being complied with.[43]

All mariculture permits must be subject to the condition that the permit will be cancelled or not renewed if:

a) the permit holder has not commenced mariculture activities within six months of the date of issue of the permit, unless the permit holder can show good cause why he or she has not yet commenced such mariculture activity;
b) the permit holder has not complied with any term or condition of the permit;

c) the permit has been suspended and the Minister is satisfied that the suspension is unlikely to be lifted in the foreseeable future; or

d) the Minister is of the opinion that the continuation of the mariculture activity is not in the public interest.

The permit holder has the right to make representations before the permit is cancelled.[44]

With regard to EIAs, the Minister of Agriculture, Forestry and Fisheries may require either an applicant or a permit holder to undertake an EIA if he or she has reason to believe that "the activities at any mariculture premises or any proposed mariculture operations may be having, or may in future have, a detrimental impact on the environment." The assessment must take place in accordance with guidelines determined by the Minister. In practice, EIA processes are normally undertaken in terms of the NEMA EIA Regulations rather than the MLRA.

The Minister may grant an exemption from the requirement to undertake an EIA if the operation or proposed operation is situated in a mariculture development area and an appropriate environmental impact assessment has been conducted in respect of that area.[45]

Regulation 68 of Chapter 6 prohibits the unauthorised release of live fish (except for indigenous wild fish caught in the Republic) into South African waters[46] without the written permission of the Minister.

4.2.4. National Environmental Management: Biodiversity Act, 10 of 2004 (NEMBA)

As the principal national Act regulating biodiversity protection, NEMBA, which is administered by DEA, is concerned with the management and conservation of biological diversity as well as the use of indigenous biological resources, including fish and shellfish, in a sustainable manner.

Overview of specific sections/chapters of specific relevance to aquaculture

This Act will affect the establishment of an aquaculture facility in respect of:

- Initial choice of fish species.
- registration and permits, and
- emergency action plans.

Chapter 4 of NEMBA provides for the declaration of threatened or protected species and the restriction of activities involving those species (including keeping or breeding, killing, importing and exporting) through a permit system. The Act also allows for the declaration of ecosystems that are threatened or in need of protection and of processes regarded as threatening to those ecosystems. An aquaculture operation involving a threatened or protected species of fish or shellfish would therefore require authorisation under this chapter as read with the TOPs Regulations (see below).

If the operation were situated in a listed ecosystem and involved a declared threatening process, then an environmental authorisation in terms of section 24 of NEMA would be necessary for that operation.

Chapter 5 provides for the protection of biodiversity from alien and invasive species. The Act defines alien species and contemplates the listing of invasive species in regulations. As for TOPs, the Act defines certain activities that are restricted in connection with alien or listed invasive species, including importing, exporting, growing, breeding, transporting and selling those species, among others. Interim AIS Regulations have been published. These regulations will commence on a date to be determined by the Minister. An aquaculture facility may need to obtain a permit to use AIS.

Chapter 6 of NEMBA deals with bioprospecting, access and benefit sharing. Aquaculture activities involving fresh water and marine species producing specimens for consumption purposes have been exempted from the provisions of the chapter.[47]

Section 89 of NEMBA provides that an issuing authority in respect of a permit for either a TOP species or an alien or invasive species may require a risk assessment to be undertaken.

4.2.5. AIS Regulations[48]

The regulations give further effect to the provisions of Chapter 5 of NEMBA which, among other things, prohibits the carrying out of restricted activities involving alien or listed invasive species without a permit.[49]

The Draft AIS Regulations (2009) stated that its purpose was to prevent the unauthorised introduction and spread of alien species and to manage and control invasive species to prevent harm to the environment. In our view the AIS Regulations (2013) serves a similar purpose although it now no longer expressly states so.

Overview of specific sections/chapters of specific relevance to aquaculture

The Minister of Environmental Affairs is the issuing authority as well as the competent authority for permits involving alien or listed invasive species.

Listed invasive species are divided into two categories: invasive species requiring compulsory control (these are identified as Category 1a listed invasive species); and invasive species controlled by an invasive species management programme (identified as Category 1b listed invasive species).[50] Further restricted activities are also prescribed in the regulations in addition to those restricted activities listed under NEMBA. These activities include:

- Spreading or allowing the spread of any specimen of a listed invasive species;
- releasing any of those species;
- interfacing transfer of alien and listed invasive species; and
- discharging of or disposing into any waterway or the ocean water from an aquarium, tank or other receptacle that has been used to keep a prohibited alien species or a listed invasive species.

Persons in the control of prohibited alien species must notify the competent authority and control all eradicated species as directed by the competent authority.[51] Category 1a listed invasive species must notify the competent authority and take steps to prevent the listed invasive species from spreading.[52] For listed invasive species that are Category 1b listed invasive species, a person must notify the competent authority and take steps to manage the listed invasive species.[53] Permits will be issued for multiple restricted activities, specimens of species or multiple instances of the same restricted activity.[54] However, the importation of alien or listed invasive species by means of sea cargo is valid for one consignment, unless otherwise stipulated.[55] Risk assessments will also have to be undertaken in appropriate circumstances.[56]

A stakeholder has indicated that in his view the delay in the implementation of the AIS Regulations has facilitated smuggling of alien species into South Africa and the potential threat of disease from unregulated import of alien species could impact negatively on the sector as a whole. Other stakeholders were of the view that the delay has created uncertainty which is hampering the development of the sector.

4.2.6. Threatened or Protected Species Regulations, GNR.152 of 23 February 2007 (TOPs regulations)

Broadly speaking, the regulations allow for the declaration of certain species (both flora and fauna) as 'listed threatened or protected species' ('listed TOP species')[57] and, in Chapter 2, create a permit system for restricted activities (as defined in NEMBA, see above) involving those species.

Lists of TOP species were published simultaneously with the regulations. The listed TOP species are divided into categories as contemplated in section 56(1) of the Biodiversity Act, namely, critically endangered, endangered, vulnerable and protected species.[58] Certain restricted activities involving specific listed TOP species are prohibited outright. Fish species are listed in each category. Nile Crocodile (*Crocodylus niloticus*) is listed as a protected species.

A difficulty arises with interpretation of the regulations as "animal" is not defined here or in the NEMBA. Therefore it is not clear whether such definitions as "captive breeding operation", "bred in captivity" and "damage causing animal" apply to fish or invertebrate species.

A permit is necessary for each restricted activity involving a listed TOP species. However, registered captive breeding operations may apply for a standing permit.

The regulations make provision for integration of permits. A permit issued in terms of provincial legislation by a provincial department that is an issuing authority in terms of TOPs Regulations for a restricted activity involving a listed threatened or protected species is regarded as a permit issued in terms of TOPs regulations. Likewise, a permit issued in terms of the MLRA by an organ of state that is an issuing authority in terms of the TOPs Regulations for a restricted activity involving a listed threatened or protected species is regarded as a permit issued under the TOPs regulations. Exemptions in terms of other legislation are not regarded as permits under the TOPs regulations.[59]

The Minister of Environmental Affairs is designated in the regulations as the issuing authority for permits relating to the carrying out of restricted activities involving any listed threatened or protected species that are marine species, including listed threatened or protected marine species in marine protected areas,[60] but this power has been delegated to the Director: Regulation and Monitoring Services for aquatic, terrestrial species and marine species, DEA.[61]

Chapters 3 and 4 of the regulations provide for the registration of captive breeding operations among other kinds of facilities. Captive breeding operations are defined in the regulations to include "a facility where specimens of a listed threatened or protected animal species are bred in a controlled environment for … commercial purposes." "Commercial purposes" in the Regulations means:

> "The primary purpose of the restricted activity is to obtain economic benefit, including profit in cash or in kind, and is directed towards trade, exchange or another form of economic use or benefit."

Therefore, providing the definition of animal includes fish and invertebrates, an aquaculture operation involving a listed TOP animal species must register in terms of the TOPs regulations as well as obtaining permits or a standing permit for specific activities carried out by that operation. A permit to release a TOP animal into an extensive wildlife system must be refused where there is a risk of hybridisation with other species.[62] It is not clear whether marine or freshwater aquatic systems fall within the definition of "extensive wildlife system".

An issuing authority for permits under the TOPs regulations has a discretion whether to require a risk assessment to be undertaken as part of the application process for registration, a permit or a renewal of these.

Most permits under the regulations may only be issued for a maximum of 12 months except in the case of standing permits for registered captive breeding operations (36 months).[63]

The regulations requiring registration and permitting of captive breeding operations do not take into account the fact that the breeding of TOP species may actually contribute to biological diversity. In addition, it could potentially take the pressure off wild populations of commercially harvested wild TOP species, such as abalone. However, no exemption from the provisions of the regulations is provided for in respect of species that may benefit from captive breeding operations. It is recommended that the breeding of TOP aquaculture species should be exempt from the provisions of the TOPs regulations.

Draft amendments to the TOPs regulations were published for comment on 16 April 2013.[64] Specific instances when a risk assessment will be required have been inserted including importation of indigenous species and "release of captive-bred specimens of a listed threatened or protected species into an extensive wildlife system where a population of such species already occurs". A number of compulsory conditions for permits have been added and an example affecting hatcheries (captive breeding facilities) is that the owner must avoid hybridisation.

Marine species have been added to the lists of TOP species which means that if the amendments come into force the breeding of these species will potentially be doubly regulated under the MLRA and these regulations, unless aquaculture facilities are specifically excluded from the definition of captive breeding operations/facilities. The amendments to the regulations thus have the potential to add further complexity to the legal framework governing aquaculture.

4.2.7. National Environmental Management: Protected Areas Act, 57 of 2003 (NEMPAA)

The NEMPAA, which is administered by DEA, further enforces the constitutional commitment to protect the environment by providing for the declaration and management of protected areas. It must be read with the provisions of NEMBA.[65]

The Act has among its objectives:

- promotion of sustainable utilisation of protected areas for the benefit of people, in a manner that would preserve the ecological character of such areas; and
- promotion of participation of local communities in the management of protected areas, where appropriate.[66]

The main significance of the Act for the aquaculture sector is that it restricts the activities that may take place in protected areas. "Protected area" is defined as "any of the protected areas referred to in section 9". These are:

a) special nature reserves, national parks, nature reserves (including wilderness areas) and protected environments;
b) world heritage sites;
c) marine protected areas;
d) specially protected forest areas[67], forest nature reserves and forest wilderness areas declared in terms of the National Forest Act; and
e) mountain catchment areas declared in terms of the Mountain Catchment Areas Act.

"Marine protected area" in the NEMPAA means an area declared as a marine protected area in terms of section 43 of the MRLA. Although marine protected areas are deemed protected areas under NEMPAA, most of the provisions of NEMPAA do not apply to marine protected areas.

The Act requires that each kind of protected area may only be declared for the purposes specified.

Section 38 of NEMPAA provides that the Minister of Environmental Affairs must, in writing, assign the management of a special nature reserve or nature reserve to a suitable person, organisation or organ of state. The management of a national park must be assigned to SANParks or another suitable person, organisation or organ of state.

The Minister has discretion to assign the management of a protected environment to a suitable person, organisation or organ of state provided that the owner and lawful occupier of the land in question have requested or consented to such assignment as the Minister has given the owner and lawful occupier notice in writing in terms of section 33 of NEMPAA.

Marine and terrestrial protected areas with common boundaries must be managed as an integrated protected area by a single management authority. However, the NEMPAA does not prescribe who the management authority for other marine protected areas must be.

Once assigned, the management authority of a protected area must within 12 months, submit a management plan for the protected area to the Minister or the MEC for approval.[68] The object of the management plan is to ensure the protection, conservation and management of the protected area. Included among the requirements of the management plan are a coordinated policy framework, a programme for its implementation and costing and procedures for public participation.[69]

The Minister of Environmental Affairs may prescribe norms and standards for the management and development of protected areas.[70] Section 49 prescribes what is permitted in a particular protected area. This depends on:

- the restrictions in NEMPAA itself on commercial activities in protected areas;
- regulations made in terms of NEMPAA for the proper management of specific kinds of protected area;
- bylaws made by the relevant municipality, in the case of local protected areas; and
- internal rules made by the managing authority of the area, which rules must be made in accordance with the management plan for the protected area and any prescribed norms and standards.[71]

Regulations have been made for proper administration of Special Nature Reserves, National Parks and World Heritage Sites[72] and of nature reserves.[73] In the case of the latter, commercial and community activities are permitted in areas set aside in nature reserves by means of an internal rule for the nature reserve in question, made by the management authority and provided that the activity does not compromise the purpose for which the nature reserve was established.[74]

The management authority of a national park, nature reserve and world heritage site may, despite any regulation or by-law referred to in section 49 but subject to the management plan of the park, reserve or site—

a) carry out or allow—

(i) a commercial activity in the park, reserve or site; or
(ii) an activity in the park, reserve or site aimed at raising revenue;

b) enter into a written agreement with a local community inside or adjacent to the park, reserve or site to allow members of the community to use in a sustainable manner biological resources in the park, reserve or site; and

c) set norms and standards for any activity allowed,

provided that the activity does not negatively affect the survival of any species in or significantly disrupt the integrity of the ecological systems of the protected area in question.[75]

Accordingly, a person wishing to undertake aquaculture activities in a protected area is not necessarily prohibited outright. This depends on how the protected area has been declared in terms of NEMPAA, any rules or regulations made regarding that kind of protected area, or that specific area and the management plan for the specific area. The first port of call for such a person would be to approach the management authority of the protected area in question. The register of protected areas should also be checked to confirm the area's legal status. An aquaculture facility in a protected area may not be developed in such a way that it obstructed the resolution of land rights issues in protected areas.[76]

Consideration could be given to the promulgation of regulations in terms of NEMPAA in terms of which aquaculture is expressly permitted in certain kinds of protected areas. (Note that this is not possible in terms of marine protected areas which are mainly regulated by the MLRA). For example, in terms of the prescribed purposes for which they may be declared (including as a buffer zone for more formal protected areas), protected environments are usually suitable for mixed conservation/commercial agricultural activities.

4.2.8. National Environment Management: Waste Act, 59 of 2008 (NEMWA)

The broad purpose of the Act, which is administered by DEA, is to "regulate waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development."[77]

Overview of specific sections/chapters of specific relevance to aquaculture

The Act does not apply to the disposal of animal carcasses (that is regulated by the Animal Health Act, 2002), however, an aquaculture operation may generate other waste streams.

Of relevance to the establishment and operation of an aquaculture facility is that section 19 of NEMWA provides for the publication of a list of waste management activities pertaining to both general and hazardous waste which have, or are likely to have a detrimental effect on the environment. No person may commence, undertake or conduct a listed waste management activity unless a licence has been issued in respect of that activity.[78]

Waste management activities requiring a licence have been listed in the schedule to GN 718 of 3 July 2009. Activity 17 in Category A of the notice requires any person who stores, treats or processes animal manure at a facility which has the capacity to process in excess of 1 ton per day to obtain a waste management licence in terms of section 19. Animal manure is defined as a by-product of animal excreta which is biodegradable in nature and could further be used for fertilisation purposes. "Animal" is not defined and it is therefore not clear whether this includes fish. In terms of activities 18, 19 and 20 a waste management licence is also required for the construction, alteration and decommissioning facilities where a listed waste management activity will take place.

Of relevance to the operational phase of an aquaculture undertaking is section 16 of the Act which imposes a general duty of care on any holder of waste to take all reasonable measures to avoid the generation of waste, or where generation cannot be avoided, to minimize the toxicity and amount of waste that is being generated. Waste must be managed in a manner that does not endanger health or the environment or cause a nuisance through noise, odour or visual impacts.

4.2.9. National Environmental Management: Integrated Coastal Management Act, 24 of 2008 (ICMA)

The purpose of the ICMA, administered by DEA is to establish a system of integrated coastal and estuarine management in South Africa and to ensure that development and the use of natural resources within the coastal zone is socially and economically justifiable and ecologically sustainable; to define rights and duties in relation to coastal areas and to determine the responsibilities of organs of state in relation to coastal areas, pollution in the coastal zone, inappropriate development of the coastal environment and other adverse effects on the coastal environment.

Overview of specific sections/chapters of specific relevance to aquaculture

Broadly speaking, the ICMA is significant for marine aquaculture activities because it restricts the use of land in the coastal zone for marine aquaculture and regulates pollution in the coastal zone.

Component areas of the coastal zone

Chapter 2 of the ICMA is concerned with identifying and defining the legal status of the various spatial areas that make up the coastal zone of South Africa. These include:

- Coastal public property;
- Coastal protection zone;
- Coastal waters;
- Coastal protected areas;
- Special management areas; and
- Coastal set-back lines.

We discuss the significance of those areas for aquaculture facilities in the paragraphs following.

Coastal public property (CPP) in the ICMA is essentially everything below the high water mark and includes coastal waters, the seashore, the admiralty reserve, state-owned land that is declared as CPP and any natural resources in any CPP, the exclusive economic zone and in any harbour, work or other installation on or in any CPP that is owned by an organ of state.[79] Regulation of the CPP will therefore directly affect most marine aquaculture facilities.

As discussed below, key provisions of the ICMA (sections 11, 65 and 66 in particular) relating to the ownership and use of the CPP have not yet come into effect and are not likely to come into force as published, since further amendments are now proposed in the National Environmental Management: Integrated Coastal Management Amendment Bill[80] ("the ICMA Amendment Bill"). The effect is that ownership and use (in the form of leases) of the CPP is still regulated by the Sea Shore Act and will continue to do so until either the ICMA Amendment Bill becomes law or those sections come into force as originally drafted.

Section 11 of the ICMA intended to vest ownership of coastal public property in the hands of the citizens of South Africa and with the State as trustee to ensure that coastal public property is managed in the best interests of the whole community. The ICMA Amendment Bill seeks to make it clear that the CPP is inalienable and that no person may use or exploit natural resources in the CPP unless authorised by national legislation.

The Amendment Bill also seeks to make it clear that infrastructure and assets below the high water mark that are the subject of leases by organs of state such as Transnet do not fall within the CPP.

Any natural person in South Africa has a reasonable right of access to coastal public property and the right to use it in a way that doesn't adversely affect others' rights, hinder the State in protecting the environment or have adverse effects. The state may impose restrictions on access and use of coastal public property.

The ICMA Amendment Bill intends to replace the proposed system of leases in section 65 and 66 with a coastal use permit. In terms of the explanatory summary to the Bill, it was cumbersome and unnecessary to require a lease for any activity in the CPP. The Bill will create a system where specific activities that are prohibited in the CPP will be listed by the Minister of Environmental Affairs and a coastal use permit will be required for those activities only.

No limits are prescribed for the validity of a coastal use permit but it must be issued for a fixed period and may only be renewed once before a new application must be made. If this section comes into force it will lift the restriction in the Sea Shore Act on leases over 20 years, which will be a benefit for aquaculture facilities. Existing aquaculture leases under the Sea Shore Act are preserved for a period of 24 months, within which an application for a coastal use permit must be made if aquaculture leases are listed as requiring coastal use permits. This will potentially allow existing lease-holders to extend the life of their operations.

A coastal use permit will not relieve the holder of the permit from the obligation to obtain a permit in terms of any other law. Regulations under the ICMA will be needed to give further effect to the amended sections 65 and 66.

The purpose of the **coastal protection zone**, which is essentially the land adjacent to the CPP is to manage, regulate and restrict the use of land that plays a significant role in the coastal ecosystem, including maintaining ecological integrity of the coastal environment and the natural function of the littoral active zone. The main significance of the coastal protection zone for aquaculture is that organs of state responsible for implementing planning legislation must ensure that the land use supports the objectives of the coastal protection zone.[81] If an application for authorisation under the NEMA EIA Regulations is made that involves land in the coastal protection zone, the decision-maker in that application must consider whether the proposed facility is consistent with the purposes of the coastal protection zone.[82]

Coastal waters are defined by reference to the Maritime Zones Act, 1994 but include the marine waters that form the internal or territorial waters of South Africa. The discharge of effluent from land into coastal waters requires a discharge permit in terms of section 69 of the ICMA. There is provision for the Minister of Environmental Affairs to issue a general authorisation which permits certain categories of persons to discharge effluent without a permit but this has not yet been done.[83] Effluent for the purposes of the ICMA includes both water that contains waste, and water that has a different temperature from the body of water into which it is being discharged.[84] These provisions don't apply to discharges from marine cage culture operations since the discharge from these does not originate on land.

Coastal protected areas are those areas that were protected areas in the coastal zone, immediately before the coming into effect of the ICMA. They are managed under NEMPAA.

Special management areas are those areas declared as such by the Minister of Environmental Affairs under section 23 of the ICMA. An area may only be so declared "if environmental, cultural or socio-economic conditions in that area require the introduction of measures which are necessary in order to more effectively—

a) attain the objectives of any coastal management programme in the area;
b) facilitate the management of coastal resources by a local community;
c) promote sustainable livelihoods for a local community; or
d) conserve, protect or enhance coastal ecosystems and biodiversity in the area."[85]

The Minister must also appoint a manager for each special management area and must prescribe the duties and powers of the manager and rules for the management of the area. To date no such areas have been declared. There is potential for using the provisions of section 23 to declare Aquaculture Development Zones in the coastal zone. No similar possibility exists for declaring Aquaculture Development Zones for freshwater aquaculture.

The determination of **coastal set-back lines** is a significant tool for regulating development in the coastal zone. The intention of coastal set-back lines is to protect or preserve:

- Coastal public property such as beach amenities and other infrastructure such as parking ;
- Coastal private property such as private residences and business properties;
- Public safety in the face of extreme climate and other natural events;
- The coastal protection zone as described in Section 16 and 17; and
- The aesthetics or "sense-of-place" of the coastal zone.

In essence, the Act requires the MECs of coastal provinces to make regulations that establish set-back lines and then prohibit the building, alteration or extension of structures seaward of the set-back line.[86] The position of the set-back line is thus potentially very important both for existing marine aquaculture facilities and proposed new ones.

Estuaries

Chapter 4 of the Act regulates management of estuaries. In terms of section 33, an estuary management plan ("EMP") must be prepared by the person designated by the Minister (through the Protocol) but section 33 does not specify who must implement it. Estuaries "must be managed in a co-ordinated and efficient manner and in accordance with a national estuarine management protocol."

Section 34 requires that the national estuarine management protocol must "establish procedures or give guidance regarding how estuaries must be managed and how the management responsibilities are to be exercised by different organs of state and other parties."

The Protocol sets out the objectives for effective integrated management of estuaries, which include managing estuaries "co-operatively through relevant organs of state across all spheres of government" and engaging the private sector and civil society in estuarine management (para 3.2.3).

Paragraph 5.1 provides that where an estuary falls within the jurisdiction of a single municipality, the municipality must develop and implement an EMP.

There is a mechanism in the Protocol for DEA to provide assistance to municipalities with capacity issues. Paragraph 5.8 requires the provincial lead agencies for the ICMA to identify a priority list of estuaries within the province and inform DEA about the capacity needs of the municipality to implement the EMP. DEA "may provide technical, management support to capacitate the municipality" depending on the importance of the estuary in terms of the targets and objectives of

DEA. Therefore there is a clear mechanism for DEA to provide management support but it depends on the estuary having been identified by DEDEA as a priority estuary.

Estuarine management plans and other ICMA plans

In terms of the ICMA, a provincial coastal management programme must include “priorities and strategies…

a) to achieve the coastal management objectives of the province;
b) to assist in the achievement of the national coastal management objectives as applicable in the province; and
c) to develop estuarine management plans for estuaries in the province…”

A provincial coastal management programme may include a programme of projected expenditure and investment by the provincial government in order to implement the provincial coastal management programme.

Section 34 of the ICMA provides that an EMP may form part of a provincial or a municipal coastal management programme. However, the Protocol contemplates that only EMPs developed by the provincial environment department may be incorporated into the provincial coastal management programme and EMPs developed by municipalities must be incorporated into municipal coastal management programmes.

Coastal planning schemes

The Act allows the Minister of Environmental Affairs, MEC concerned, a municipality or the management authority of a coastal protected area or special management area to establish a coastal planning scheme which may define areas which may be used exclusively or mainly for specified purposes.[87]

Coastal Management Programmes

The ICMA requires coastal management programmes to be prepared and adopted in the national, provincial and local government spheres. The programmes must be reviewed every five years and must be consistent with one another and with the national estuarine protocol. The national coastal management programme must be a policy directive on integrated coastal management and must provide for an integrated and coordinated approach by both the public and private sector to coastal management. It must include a vision for coastal management including sustainable use of resources, national coastal management objectives and a framework for cooperative governance, among other things.

A provincial coastal management programme must similarly be a provincial policy directive, must provide for an integrated approach, set coastal management objectives and include a vision for coastal management and the sustainable use of coastal resources. It must be consistent with the national programme. Municipal coastal management programmes have similar requirements but may include a description of specific areas within the coastal zone that require special coastal management and strategies for those areas.

We recommend that coastal management programmes could be used to facilitate a strategic approach to the designation of areas suitable for aquaculture and to set objectives that will support the aquaculture sector, for example, by setting water quality objectives in those designated areas. The national programme could be used to identify broad principles for the designation of sites with specific areas designated in the provincial and municipal programmes, which could then be rezoned specifically for aquaculture in the relevant coastal planning scheme.

4.2.10. MLRA

As mentioned above, the MLRA provides for the declaration of MPAs in which certain activities may not take place without permission from the Minister of Environmental Affairs.[88] The activities that are prohibited include constructing buildings and structures and disposing of waste in an MPA, which effectively prohibit aquaculture activities in MPAs without a permit. Even the MLRA does provide for an exemption from complying with provisions regulating a MPA, those exemptions are only if the activity would benefit a MPA which would be difficult to justify in relation to an aquaculture facility.

4.2.11. Sea-Shore Act, 21 of 1935 (SSA)

The SSA was intended to be repealed by section 98 and Schedule 1 of the ICMA, but to date section 98 has not come into effect and the SSA remains in force. It is administered by DEA save for areas comprising ports and harbours which are the responsibility of the Department of Transport.

The SSA regulates the legal status of the sea and the sea-shore. Ownership of the sea shore is vested in the President who owns it not for his or her own benefit, but for the 'general use and enjoyment of the whole community'. The sea and the sea-shore are, in effect therefore, owned by the State and the President is the custodian of it on behalf of the public.

The "sea" is defined in section 1 of the SSA as "the water and the bed of the sea below the low-water mark and within the territorial waters of the Republic including the water and bed of any tidal river and of any tidal lagoon", and the "sea-shore" as "the water and land between the low-water mark and the high-water mark."

The low-water mark is defined as the "lowest line to which the water of the sea recedes during periods of ordinary spring tides"; and the high-water mark as "the highest line reached by the water of the sea during ordinary storms occurring during the stormiest period of the year, excluding exceptional or abnormal floods."

In terms of the SSA, the power to let the sea and the sea shore vests in the National Assembly, Minister of Transport, or the provincial premiers.[89] The SSA contemplates two classes of lease: leases under Section 3 which may be granted by the competent provincial authority and leases under section 6 which may only be granted if approved by a resolution of the National Assembly (i.e. Parliament). Section 3 leases empowers the Minister (the provincial premiers as the power has been delegated) at their discretion to lease a portion of the sea or sea-shore for any of the purposes identified in that subsection provided that in their opinion such letting is in the interests of the general public or will not seriously affect the general public's enjoyment of the sea-shore and the sea. The purposes include the construction, among other things, of buildings or other structures and the carrying out of any work which in the opinion of the Minister (premiers) serve a necessary or useful purpose.

Section 6 leases refers to the alienation, letting or permission with regard to the sea-shore or the sea which is not authorised elsewhere in the SSA or in any other law, may only take place by resolution of the National Assembly. Where a lease can be authorised in terms of section 3 (which will always be a factual enquiry) it is not necessary to obtain a lease in terms of section 6. Only in instances where section 3 does not apply then it will become necessary to obtain a lease in terms of section 6.

A resolution of the National Assembly (Parliament) is a lengthy process and has been identified by stakeholders as an obstacle to the development of aquaculture facilities since new leases and extensions to existing leases take too long to effect, creating commercial uncertainty. Bringing sections 65 and 66 of the ICMA into effect may alleviate this but it depends on whether aquaculture activities will require a coastal use permit and what process is prescribed for the granting of a coastal use permit.

Regulations under the Sea-Shore Act (SSA Regulations)

The ICMA specifically saves any regulations made under the SSA to the extent that they are consistent with the ICMA.

General regulations made under the SSA prohibit the erection of buildings and structures and the laying of pipes in the sea or on the sea shore without a lease in terms of the SSA. There is a further general prohibition on dredging or reclaiming activities on the sea shore or in the sea or depositing any "offal, refuse or anything which may be a nuisance or dangerous to health" without the permission of the Minister of Transport.[90] In addition, specific regulations apply to several coastal areas in South Africa which prohibit the use of vehicles, causing of nuisances, carrying on of a trade or business without consent and construction of buildings on the sea shore, among other things.

Since a marine aquaculture operation may involve some of these activities additional consent may be required by a marine aquaculture operation in terms of these regulations. It is recommended that these regulations should be repealed as soon as the proposed new coastal use permit regime under the ICMA comes into effect (or sections 65 and 66 of the ICMA come into effect as currently drafted).

4.2.12. National Water Act, 36 of 1998 (NWA)

The NWA, which is administered by DWA was enacted to ensure that South Africa's water resources are protected, used, developed, conserved, managed and controlled in order to promote the efficient, sustainable and beneficial use of water in the public interest as well as facilitating social and economic development, among other things. Further, the NWA aims to protect aquatic and associated ecosystems and their biological diversity, promote dam safety and prevent and/or mitigate pollution of water resources.

The provisions of the NWA relate to freshwater aquaculture where aquaculture activities may impact on a water resources as defined in the NWA or where they constitute water uses. Any freshwater aquaculture activity using water impoundments or resources is subject to the provisions of the NWA.

Water use

The main relevance of the NWA to the establishment of an aquaculture facility will be the fact that the NWA defines certain water uses which are regulated by a licensing procedure. Section 21 of the NWA lists those water uses which include taking and storing water, impeding or diverting the flow of water in a watercourse, altering the characteristics of a water course and discharging waste into a watercourse, among others, all of which may be required for the establishment of a freshwater aquaculture facility. The engaging in a controlled activity as defined in section 37(1) or declared under section 38(1) is also a water use. "Controlled activity" includes the irrigation of any land with waste or water containing waste generated through any industrial activity.

A licence is not required where the user is using that water in terms of an existing lawful use, which is a use that was lawfully exercised in the 2 years preceding the NWA coming into force in 1998, or where the use is listed on Schedule 1 to the NWA (this does not apply to aquaculture) or where there is a general authorisation in place.

Therefore the establishment of a new freshwater aquaculture facility is likely to require a water use licence unless a general authorisation applies. General authorisations currently exist for the following water uses which may apply to aquaculture facilities:

- the taking of water from a water resource and storage of water;
- engaging in a controlled activity, identified as such in section 37 (1):

    - irrigation of any land with waste or water containing waste generated through any industrial activity or by a waterwork
    - discharge of waste or water containing waste into a water resource through a pipe, canal, sewer or other conduit; and
    - disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process; and
- disposing of waste in a manner which may detrimentally impact on a water resource.[91]

Authorising certain uses via general authorisation is a possible way to restrict the circumstances in which aquaculture facilities are required to obtain water use licences. The criteria which the DWA must take into account when considering issuing a general authorisation include the need to address past racial discrimination, the socio-economic effect of not authorising the water use and the strategic importance of the water use.[92] We recommend that consideration should be given to the issue of general authorisations that may facilitate the development of new aquaculture facilities.

An application for a water use licence must be made on the prescribed forms and the issuing authority may require that an EIA process to be carried out and/or that the application is advertised to the public. A licence must be issued for a specific period (up to 40 years) but must be reviewed at least every 5 years. This extensive period of validity allows not only for a water use licence period to be aligned with the licence period for other authorisations required by an aquaculture facility, but also provides a reasonable degree of certainty which is important for securing finance for facilities. However, on reviewing a licence, the DWA may amend the conditions in terms of which it was granted if it is necessary for certain socio-economic or environmental reasons, including licensing a lesser use than the one originally granted.

Integrated authorisations

The NWA allows the DWA to dispense with the need for a water use licence if it is satisfied that the purpose of the NWA will be met by an authorisation granted under any other law.[93] The DWA may also arrange with other organs of state to combine their respective licence requirements into a single licence requirement.[94] The possible use of this provision in creating an integrated permitting system for aquaculture is discussed further in paragraph 6.1below.

Duty of care

Of relevance to aquaculture facilities during the operational phase is section 19 of the NWA, which imposes a duty of care similar to that in section 28 of the NEMA. Section 19 provides that any person in control of land or a person who occupies or uses land on which any activity or process is or was performed or undertaken or any other situation exists which causes or is likely to cause pollution of the water resource must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring. These measures may include the containment or prevention of the movement of pollutants as well as the remedying of the effects of any disturbance to the bed and banks of water resource.

Emergency incidents

Part 5 of the NWA deals with pollution of water resources following an emergency incident, such as an accident involving the spilling of a harmful substance that finds or may find its way into a water resource. It imposes the duty to report emergency incidents and empowers the DWA officials to issue directives regarding the remediation of any resulting pollution.

4.2.13. <u>Provincial legislation</u>

As mentioned above, both agriculture and environment are functional areas of concurrent legislative competence for the province and national spheres of government. Accordingly, certain aspects of aquaculture are governed by provincial legislation.

In many cases, the provincial environmental legislation dates back to the pre-1994 era. Accordingly, a single Ordinance may apply in several provinces or several Ordinances may apply to one province. We have included as Appendix 3 a list of provincial legislation applicable in each province. The list indicates the competent authority for each statute.

4.2.13.1. WESTERN CAPE

Nature and Environmental Conservation Ordinance, 14 of 1974 (CAPE–NECO)

Administering Authority: Cape Nature

Purpose of legislation as it relates to aquaculture

This Ordinance regulates nature conservation in the Western, Eastern and Northern Cape and the North West provinces. It addresses issues like pollution, obstruction, damming and it provides that permits will be required for the introduction of fish and importing of live fish or spawning. Permits are specifically required to trade in or transport Protected or Endangered fish, live carp, bluegill sunfish, trout, black bass, banded tilapia or exotic freshwater invertebrates.

Land Use Planning Ordinance, 15 of 1985 (LUPO)

Administering Authority: Municipalities

Purpose of legislation as it relates to aquaculture

LUPO regulates land use planning in the Western, Eastern and Northern Cape provinces. The ordinance provides for zoning schemes in terms of which particular sections of land are zoned in accordance with the uses allowed on such land.

Aquaculture may not be conducted on land unless the zoning allows for it. If aquaculture is not provided for as a permitted use or consent use in respect of a particular piece of land the aquaculturist will have to apply for a departure from the zoning on the land or for the land to be rezoned.

4.2.13.2. EASTERN CAPE

Nature and Environmental Conservation Ordinance, 14 of 1974 (CAPE–NECO)

Administering Authority: Eastern Cape Parks and Tourism Agency; and
EC Department of Economic Development and Environment Affairs

Purpose of legislation as it relates to aquaculture

See Cape – NECO at Western Cape above.

Nature Conservation Act (Ciskei), 10 of 1987 (EC-NCA)

Administering Authority: Eastern Cape Parks and Tourism Agency; and
EC Department of Economic Development and Environment Affairs

Purpose of legislation as it relates to aquaculture

The EC-NCA provided for nature conservation in the former Ciskei and is still effective in the Eastern Cape. As it relates to aquaculture the EC-NCA is more concerned with coastal areas than with inland waters. It creates a coastal conservation area along the entire coast 1 km inland from the high tide mark. Within this area a permit will be required to clear land, erect buildings, build dams, lay a pipeline, construct roads or carry on any activity which disturbs the natural state of the vegetation, the land or any waters within the area. A permit is also required to sell Trout in the province.

Animal Diseases Act (Ciskei), 21 of 1986 (EC-ADA)

Administering Authority: The Director of Veterinary Services in the Eastern Cape Department of Agriculture and Land Affairs

Purpose of legislation as it relates to aquaculture

EC - ADA provides for the combating and control of animal diseases and parasites and for measures to promote animal health. A permit is required to import animals into the province and any illegally imported fish may be seized and destroyed. The use of experimental vaccines or tests is prohibited and documentation for importation must be retained by the owner of the stock.

Land Use Planning Ordinance, 15 of 1985 (LUPO)

Administering Authority: Municipalities

Purpose of legislation as it relates to aquaculture

See LUPO at Western Cape above.

Land Use Regulation Act (Ciskei), 15 of 1987 (EC-LURA)

Administering Authority: Municipalities

Purpose of legislation as it relates to aquaculture

The EC-LURA regulates land use planning in the former Ciskei region. The EC-LURA, like LUPO, provides for zoning schemes in terms of which particular sections of land are zoned in accordance with the uses allowed on such land.

Aquaculture may not be conducted on land unless the zoning allows for it. If aquaculture is not provided for as a permitted use or consent use in respect of a particular piece of land the aquaculturist will have to apply for a special consent to depart from the zoning on the land or for the land to be rezoned.

4.2.13.3. NORTHERN CAPE

Nature and Environmental Conservation Ordinance, 14 of 1974 (CAPE–NECO)

Administering Authority: Northern Cape Department of Environment and Nature Conservation

Purpose of legislation as it relates to aquaculture

See Cape–NECO at Western Cape above.

Northern Cape Nature Conservation Act, 9 of 2009 (NC-NCA)

Administering Authority: Northern Cape Department of Environment and Nature Conservation

Purpose of legislation as it relates to aquaculture

The NC-NCA regulates nature conservation in the Northern Cape. The NC-NCA as it pertains to aquaculture is a reiteration of the provisions of the Cape-NECO above as it relates to importing, exporting, transporting, introduction and breeding of fish. The NC-NCA deals specifically with permits required to import, export, transport, keep, possess, breed or trade in Protected and Specially Protected Fish species.

Land Use Planning Ordinance, 15 of 1985 (LUPO)

Administering Authority: Municipalities

Purpose of legislation as it relates to aquaculture

See LUPO at Western Cape above.

4.2.13.4. KWAZULU NATAL

Nature Conservation Ordinance, 15 of 1974 (KZN-NCO)

Administering Authority: Natal Parks Board / Ezemvelo KZN Wildlife

Purpose of legislation as it relates to aquaculture

The purpose of the KZN-NCO is to regulate nature conservation in Kwazulu Natal which includes activities concerning inland and coastal fish.

This Ordinance regulates the province's right to establish fish hatcheries for the purpose of stocking provincial waters and no person may establish a hatchery or stock provincial waters without a permit. Permits are also required to import or export fish into the province and to release live fish into provincial waters. The pollution of provincial waters is prohibited and there is a duty to contain accidents.

Kwazulu Nature Conservation Act, 29 of 1992 (KZN-NCA)

Administering Authority: Natal Parks Board / Ezemvelo KZN Wildlife

Purpose of legislation as it relates to aquaculture

The KZN - NCA as it pertains to aquaculture is a reiteration of the provisions of the KZN - NCO above as it relates to pollution, hatcheries, stocking, importing, exporting, and introduction of fish. The KZN - NCA requires a permit to trade in or export Bass or Trout from the province.

Prevention of Environmental Pollution Ordinance, 21 of 1981 (KZN-PEPO)

Administering Authority: Municipalities

Purpose of legislation as it relates to aquaculture

The KZN-PEPO provides for the prevention of pollution of the environment without a permit in Kwazulu Natal. Pollution of inland and coastal waters is regulated.

Kwazulu-Natal Planning and Development Act, 6 of 2008 (KZN-PDA)

Administering Authority: KwaZulu-Natal Department of Co-operative Governance and Traditional Affairs

Purpose of legislation as it relates to aquaculture

KZN-PDA regulates land use planning in KZN. It provides for zoning schemes in terms of which particular sections of land are zoned in accordance with the uses allowed on such land.

Aquaculture may not be conducted on land unless the zoning allows for it. If aquaculture is not provided for as a permitted use or consent use in respect of a particular piece of land the aquaculturist will have to apply for a special consent to depart from the zoning of the land or for the land to be rezoned.

4.2.13.5. FREE STATE

Nature Conservation Ordinance, 8 of 1969 (FS-NCO)

Administering Authority: Free State Department of Economic Development, Tourism and Environmental Affairs

Purpose of legislation as it relates to aquaculture

The purpose of the FS-NCO is to regulate nature conservation in the Free State province.

Overview of specific sections/chapters of specific relevance to aquaculture

The FS-NCO requires a permit to import or sell live fish in the Province or to introduce live fish into provincial waters.

4.2.13.6. GAUTENG

Transvaal Nature Conservation Ordinance, 12 of 1983 (TV-NCO)

Administering Authority: Directorate of Nature Conservation: Gauteng Department of Agriculture and Rural Development (GDARD)

Purpose of legislation as it relates to aquaculture

The purpose of the TV-NCO is to regulate conservation in the former Transvaal territories which causes it to apply in various northern provinces. The TV-NCO requires a permit to import or sell live fish in the province or to introduce live fish into provincial waters. Trout dams may not be built unless the administrator deems it sufficiently removed from other water courses. It's an offence to allow any substance into waters if that substance will or is likely to injure fish or fish food.

4.2.13.7. LIMPOPO

Limpopo Environmental Management Act, 7 of 2003 (LEMA)

Administering Authority: Limpopo Department of Economic Development, Environment and Tourism

Purpose of legislation as it relates to aquaculture

LEMA regulates conservation and sustainable development in Limpopo. LEMA deals specifically with the protection of aquatic systems and is the only Provincial Act in the RSA which expressly requires a permit for aquaculture processes. LEMA also requires permits to transport, import, introduce and sell live aquatic biota in the province. The MEC is empowered to publish a list of species for which the above activities will not require permits.

4.2.13.8. NORTH WEST

Transvaal Nature Conservation Ordinance, 12 of 1983 (TV - NCO)

Administering Authority: North West Department of Economic Development, Environment, Conservation, and Tourism.

Purpose of legislation as it relates to aquaculture

See TV–NCO at Gauteng above.

Nature and Environmental Conservation Ordinance, 14 of 1974 (CAPE–NECO)

Administering Authority: North West Department of Economic Development, Environment, Conservation, and Tourism

Purpose of legislation as it relates to aquaculture

See Cape–NECO at Western Cape above.

Land Use Planning Ordinance, 15 of 1985 (LUPO)

Administering Authority: Municipalities

Purpose of legislation as it relates to aquaculture

See LUPO at Western Cape above.

4.2.13.9. MPUMALANGA

Transvaal Nature Conservation Ordinance, 12 of 1983 (TV-NCO)

Administering Authority: Mpumalanga Department of Economic Development, Environment and Tourism

Purpose of legislation as it relates to aquaculture

See TV–NCO at Gauteng above.

TABLE 2: KEY AUTHORISATIONS (NATIONAL LEGISLATION) AT A GLANCE

Authorisation		Law	Authority	Trigger
Environmental (EIA)	Authorisation	NEMA: EIA Regulations, 2010	DEA (delegated to Provincial environmental departments)	- listed activity
Heritage	Authorisation	NHRA	South African Heritage Resource Agency; or Provincial heritage agency	- activities in proximity to heritage sites including graves, building older than 60 years, archaeological and paleontological sites - section 38 listed activities
Protected Areas	Written consent to undertake aquaculture activities in a protected area	NEMPAA	Managing authority of Protected Area	- aquaculture facility within proclaimed protected area
Water Use	Licence or registration of General Authorisation	NWA	DWA	- taking water - storing water - impeding or diverting flow - discharging waste or water containing waste - disposing of waste in a manner which may detrimentally impact on a water resource - altering the bed, banks, course or characteristics of a watercourse
	Coastal discharge permit	ICMA	DEA	- discharging effluent into coastal waters

Authorisation		Law	Authority	Trigger
Marine resource use	Marine aquaculture right Marine aquaculture permit Fish processing establishment right and permit.	MLRA	DAFF: Fisheries Branch	- farming - ranching - fish processing of marine living resources
Threatened or protected species	Registration Permit for restricted activity	NEMBA: TOPs Regulations: MLRA	– DEA; and/or Provincial conservation authorities – DEA	- restricted activities involving listed TOPs species
Alien or Invasive Species (AIS)	Permit	NEMBA Provincial biodiversity Legislation	– National Minister	- restricted activities involving listed AIS species
Abalone	Certification	NRCSA National Regulator for Compulsory Specifications Act, 5 of 2008 Abalone regulations	– NRCS	- import, sell or supply Abalone
Waste Management	Licence	Waste Act	DEA	- listed activities under Waste Act
Land Use	- Departure - Rezoning - Subdivision	Provincial Ordinances and municipal zoning schemes e.g. W. Cape Land Use Planning Ordinance (LUPO)	- Municipality	- if site not zoned suitably for aquaculture
Lease of coastal areas/ sea space	- Resolution of Parliament	Sea-Shore Act	– Parliament – Decision by competent authority – Coastal provinces designated by the	- any activity on the sea shore

Authorisation		Law	Authority	Trigger
			Premier of that province	
Agricultural Land: Subdivision	- Ministerial Consent	SALA	- DAFF	-subdivision of agricultural land.
Agricultural Land: Lease exceeding 10 year term	- Ministerial Consent	SALA	- DAFF	-lease over agricultural land exceeding 10 year term.
Import / Export	- Import Permit - Export Certification (health of animal) - permit	ADA International Animal Health Code of the World Organisation for Animal Health (i.e. OIE – Office International des Epizooties). MLRA	– DAFF veterinary services – NRCS – SABS – DAFF	-import of animals including fish into SA -import/export of fish/fish products
Food safety	Certificate of acceptability for food premises	Health Act and Food Premises Regulations	DoH and local authority	-handling of food at premises

4.3. Securing Sites and Zoning

4.3.1. Environmental Impact Assessment Regulations, 2010

The purpose of the EIA Regulations, 2010 is to regulate the submission, processing and consideration of, and decision on, applications for environmental authorisation (EA) for the commencement of activities in order to avoid detrimental and optimise positive environmental impacts, or where it cannot be avoided, ensure mitigation and management of impacts to acceptable levels.

These regulations will affect the establishment of an aquaculture facility in respect to the initial design and construction of facilities, the choice of species and scale of the facility.

The EIA Regulations, 2010 will also affect the continued operation of the facility in that environmental authorisations are always issued subject to conditions relating to the operation of the facility. Secondly, in terms of the EIA Regulations, 2010, a Basic Assessment Report (BA) or Environmental Impact Assessment Report must contain a draft Environmental Management Programme (EMPr) to be approved by the competent authority. The contents of an EMPr are prescribed in section 24N of NEMA as read with regulation 33 of the EIA Regulations, 2010 but must include information about addressing the environmental impacts and mitigation measures with regards to the operation or undertaking of the listed activity in question.

The EIA Regulations, 2010 make it compulsory that an applicant appoint an independent Environmental Assessment Practitioner (EAP) at the applicant's own cost to manage the application. This adds significantly to the cost of the application.

Before commencing construction, the developer of an aquaculture facility must determine whether any activities involved in the establishment of the facility are Listed Activities which require an EA. Activities regarded by the legislature as having the potential for less significant impacts are listed in Listing Notices 1[95] and 3,[96] which require an applicant to undertake the significantly shorter and less complex BA process for EA. Activities that are likely to have more serious impacts are listed in Listing Notice 2[97] and applicants are required to undertake what is known as a Scoping and Environmental Impact Assessment process, a more comprehensive and time-consuming assessment process.

Certain core activities will be "triggered" in respect of most aquaculture facilities, depending on the type of facility, the province it is situated in and provided the thresholds in the regulations are met. The following core activities have been identified by DEA in its draft *Environmental Impact Assessment Guideline for Aquaculture in South Africa* (DEA Aquaculture EIA guide) gazetted for public comment in February 2013.[98]

No	Activity	Notes
Listing Notice 1		
4	The construction of facilities or infrastructure for the concentration of animals for the purpose of commercial production in densities that exceed - (iii) 30 square metres per crocodile at any level of production, excluding crocodiles younger than 6 months.	Applies to crocodile farming only (including the expansion or modification of crocodile farms to this level as per activity 31(iii) of Listing Notice 1).
6	The construction of facilities, infrastructure or structures for aquaculture of: (i) finfish, crustaceans, reptiles or amphibians where such facility, infrastructure or structures will have a production output exceeding 20 000 kg but less than	Applies to aquaculture of finfish, crustaceans, reptiles, amphibians, molluscs and aquatic plants (including the expansion or modification of aquaculture with these species to the stipulated levels as per activity

No	Activity	Notes
	200 000 kg per annum (wet weight); (ii) molluscs where such facility, infrastructure or structures will have a production output exceeding 30 000 kg but not exceeding 150 000 kg per annum (wet weight); (iii) aquatic plants where such facility, infrastructure or structures will have a production output exceeding 60 000 kg but not exceeding 200 000 kg per annum (wet weight); excluding where the construction of facilities, infrastructure or structures is for purposes of offshore cage culture in which case activity 7 in this Notice will apply.	33 of Listing Notice 1).
7	The construction of facilities, infrastructure or structures for aquaculture of offshore cage culture of finfish, crustaceans, reptiles, amphibians, molluscs and aquatic plants where the facility, infrastructure or structures will have a production output exceeding 50 000 kg but not exceeding 100 000 kg per annum (wet weight).	Applies to all offshore cage culture (including the expansion or modification of offshore cage culture to this level as per activity 34).
8	The construction of a hatchery or agri-industrial infrastructure outside industrial complexes where the development footprint covers an area of 2 000 square metres or more.	Applies mainly to large hatchery complexes and certain high density industrial type aquaculture ventures (including expansion or modification of aquaculture activities to incorporate these scenarios as per activities 35 and 36 of Listing Notice 1).
Listing Notice 2		
12	The construction of facilities, infrastructure or structures for aquaculture of -	Applies to aquaculture of finfish, crustaceans, reptiles, amphibians, molluscs and aquatic plants.
	(i) finfish, crustaceans, reptiles or amphibians where the facility, infrastructure or structures will have a production output of 200 000 or more kg per annum (live round weight);	
	(ii) molluscs where the facility, infrastructure or structures will have a production output of 150000 or more kg per annum (live round weight);	
	(iii) aquatic plants where the facility, infrastructure or structures will have a production output of 200 000 or more kg per annum (live round weight); excluding where the construction of facilities, infrastructure or structures is for purposes of offshore cage culture in which case activity 13 in this Notice will apply.	
13	The construction of facilities, infrastructure or structures for aquaculture of offshore cage culture of finfish, crustaceans, reptiles, amphibians, molluscs and aquatic plants where the facility, infrastructure or structures will have a production output of 100 000 or more kg per annum (live round weight)	Applies to all offshore cage culture.
Listing Notice 3		
15	The construction of facilities, infrastructure or structures of any size for any form of aquaculture.	This applies to all forms of aquaculture irrespective of scale. In addition, this activity is also triggered by any expansion or modification of existing aquaculture activities in which the expansion or modification takes

No	Activity	Notes
		place within the areas as stipulated (including the expansion or modification of aquaculture within these areas as per activity 25 of Listing Notice 3).

The EIA Regulations, 2010 do not specifically distinguish between freshwater aquaculture and marine aquaculture and the prescribed process for assessing impacts is the same, although the impacts may differ.

Other listed activities are likely to be triggered by the development and/or operation of an aquaculture facility depending on factors like the sensitivity of the environment (mainly proximity to watercourses, coastal areas and protected areas) in which the facility is to be situated or the size of the facility (tonnage thresholds). A more comprehensive, illustrative list of core aquaculture listed activities and other potentially relevant listed activities are included in Appendix 1.

As we have noted above, the NASF definition of aquaculture includes crocodiles. We have therefore included activity 4 in Listing Notice 1 but any future legislative definition should make it clear which species are included.

EAs are issued by the “competent authority” (CA) identified in the Listing Notices. In practice, in almost all cases the competent authority is an official of the relevant provincial environment department.

Some exceptions are provided for in NEMA. The Minister of Environmental Affairs is the CA for all applications where the activity—

a) has implications for international environmental commitments or relations;
b) will take place within an area protected by means of an international environmental instrument, other than—

    (i) any area falling within the sea-shore or within 150 meters seawards from the high-water mark, whichever is the greater;
    (ii) a conservancy;
    (iii) a protected natural environment;
    (iv) a proclaimed private nature reserve;
    (v) a natural heritage site;
    (vi) the buffer zone or transitional area of a biosphere reserve; or
    (vii) the buffer zone or transitional area of a world heritage site;

c) has a development footprint that falls within the boundaries of more than one province or traverses international boundaries;
d) is undertaken, or is to be undertaken, by—

    (i) a national department;
    (ii) a provincial department responsible for environmental affairs or any other organ of state performing a regulatory function and reporting to the MEC; or
    (iii) a statutory body, excluding any municipality, performing an exclusive competence of the national sphere of government; or

e) will take place within a national proclaimed protected area or other conservation area under control of a national authority.

While time-limits are provided in the EIA Regulations, 2010, both for actions by the applicant and responses by the CA, in practice there are no sanctions for failure by the CA to meet the prescribed deadlines. Hence the applicant is at the mercy of the CA as far as time-frames for applications for EAs.

In terms of the time-frames specified in the EIA Regulations, 2010 the decision on a BA process can take between 76 and 226 calendar days, with the entire BA process taking between 8 to 14 months to conclude.

With regard to the full scoping and EIA process, the decision-making process can range from 165 to 375 calendar days with the whole process normally taking between 12 to 24 months to conclude. This is excluding the administrative appeal process provided for in NEMA and the EIA Regulations, 2010, which can add months and even years to the authorisation process, since the time limits for decision on appeal are similarly open-ended.

In terms of the cost to the applicant, conservative estimates for a BA process is in the region of R 120 000 and for a Scoping and EIA process R 250 000.

Proposed amendments to Listing Notices 1 and 2 have been published that will effectively require EA (instead of a waste management licence) for the construction of wastewater and effluent treatment facilities.[99]

What amendments are possible to the EIA Regulations to make them less restrictive to the aquaculture sector?

The EIA Regulations can be made less restrictive in terms of the aquaculture industry by increasing the thresholds beyond which an EA is required or by restricting the definitions of listed activities to exclude activities that have a less significant impact. Consideration can also be given to whether activities ought to be on Listing Notice 2 or whether the simpler BA process can be justified in respect of a particular activity. A further mechanism that can be used is to define the development setback line in all coastal areas and for watercourses so that activities on the landward side of those setback lines can be excluded from the EIA process in respect of certain listed activities. Neither NEMA nor the EIA Regulations, 2010 prescribe such a process and the way forward with this process should be clarified with DEA and the Provinces.

As mentioned above, it is also potentially possible for aquaculture activities to be listed in terms of section 24(2)(d), meaning that they do not require authorisation. If that is the case then norms and standards must be published in respect of those activities and compliance with norms and standards would need to be monitored. The provincial Department of Environmental Affairs in the Western Cape is in the process of developing norms and standards for trout and abalone. DAFF is assisting them with that project.

However, all such amendments would need to be justifiable in terms of the impact of those activities on the environment.

The word “animals” is not defined in the EIA Regulations, 2010 leaving doubt as to whether fish are included in the definition. This should be clarified since it is not clear whether other listed activities involving the concentration of animals might apply to aquaculture operations. As mentioned above, any new legislative definition of aquaculture should indicate whether crocodile production is included.

The requirement that an EAP is appointed in respect of each application could be reconsidered in the case of applications for authorisation for smaller or simpler facilities.

How can the EIA process be streamlined?

The publication of guidelines such as the DEA Aquaculture EIA guide can assist all parties in an EIA process to meet the requirements of the legislation more quickly and efficiently. It can also be helpful for standard terms of reference for specialists undertaking specialist studies in an EIA process for an aquaculture facility to be developed as well as standard conditions of approval or standard EMPrs to be developed to guide competent authorities and streamline decision-making (DAFF has developed standard permit conditions for marine aquaculture permits under the MLRA).

Finally, the EA process can be integrated with other relevant authorisation processes. This is discussed further in paragraph 1.6.6 below.

4.3.2. ICMA

Protection of the coastal environment

The ICMA allows the Minister of Environmental Affairs to order that structures in the coastal zone be removed or repaired if they are likely to have adverse environmental effects.[100] This section could potentially apply to marine aquaculture infrastructure. It is important that any marine aquaculture infrastructure is implemented in such a way that the likelihood of adverse environmental effects arising is reduced significantly so as to minimise the likelihood of the Minister of Environmental Affairs using this power.

As mentioned above, the ICMA prescribes further considerations that a decision-maker for an application for EA under NEMA must take into account when the application involves coastal activities, i.e. marine aquaculture activities, including circumstances in which an EA must be refused.[101] These considerations are fairly widely drafted, making it more difficult for applications to be granted and easier for decisions where an EA was granted, to be challenged by interested and affected parties.

4.3.3. Sea-Shore Act, 21 of 1935

Section 98 of the ICMA will repeal the Sea Shore Act to the extent that it has not been assigned to provinces. The date on which section 98 will come into effect has not as yet been proclaimed.

The Sea-Shore Act is referred to in paragraph 4.2.9 above. The Minister of Transport or a Provincial Premier has the power to let the sea and the sea-shore. The Sea Shore Act contemplates two classes of lease:

(i) leases under section 3 which may be granted by the competent provincial authority; and
(ii) leases under section 6, which may only be granted if approved by a resolution of the National Assembly (i.e. Parliament).

The President assigned the administration of the Sea-Shore Act to the competent authority in each of the four coastal provinces designated by the Premier of that province.[102] For section 3 leases the competent authority, at its discretion, may lease a portion of the sea or sea-shore for any of the purposes identified in that subsection, provided that in the opinion of the Minister such letting either is in the interests of the general public or will not seriously affect the general public's enjoyment of the sea shore and the sea.

The purposes identified in section 3(1) include:

(i) the construction of breakwaters, sea walls, promenades, embankments, esplanades, buildings or other structures" (section 3(1)(g)); and
(ii) the carrying out of any work which in the opinion of the Minister serves a necessary or useful purpose:" (section 3(1)(o)).

This means that in order for the competent authority to grant a lease under section 3, two conditions must be met:

(i) the relevant official must be of the opinion that letting that portion of the sea or seashore is either in the interests of the general public or will not seriously affect the general public's enjoyment of the sea shore and the sea; and
(ii) the lease must be for a purpose identified in section 3(1).

The second class of lease is provided for in section 6 of the Sea Shore Act. Section 6(1) provides:

> "Any alienation, letting or permission with regard to the sea-shore or the sea which is not authorized elsewhere in this Act or in any other law, may only take place with the approval, by resolution, of the National Assembly."

Parliament must pass a resolution to let or otherwise alienate part of the sea or the sea-shore.

General regulations published under the Sea-Shore Act also prohibit the erection of buildings and structures as well as the laying of pipes in the sea or on the sea-shore without a lease in terms of the Sea Shore Act. Permission is also required for the depositing of any refuse or anything which may be a nuisance or dangerous to health. There are also specific regulations that apply to several coastal areas prohibiting the carrying on of a trade or business on the sea-shore without consent.

4.3.4. National Ports Act, 12 of 2005

All ports fall under the jurisdiction of the National Ports Authority (NPA), which is a Transnet subsidiary company. The NPA's main function is to fund, manage, control and administer ports to ensure their efficient and economic functioning. The NPA is responsible for controlling land use in ports and to provide access to and services for those ports, as well as protection of the port environment.

The NPA may lease land within the ports and sea space within their jurisdiction under such conditions as it determines and may also regulate activities by means of the licensing process. Not only would a lease be required in terms of the Sea-Shore Act but also from the NPA who may have additional licensing requirements. These additional permitting requirements make it difficult for aquaculture facilities to be established on the sea-shore and create economic uncertainty for existing aquaculture facilities.

4.3.5. Provincial Legislation

Please refer to paragraph 4.4.4 where the provincial land use planning ordinances were discussed. In terms of the Constitution, municipal planning is a municipal competence. This means that each municipality is responsible for determining the appropriate municipal plan, which is normally done by means of zoning. Municipal approval in addition to any other authorisation would therefore be required to establish aquaculture facilities on specific land.

4.3.6. Subdivision of Agricultural Land Act, 70 of 1970 (SALA)

The purpose of the SALA, which is administered by DAFF, is to regulate the subdivision and use of agricultural land in order to protect agricultural resources.

The main relevance of the SALA to the establishment of aquaculture facilities is that the subdivision of agricultural land and the creation of long leases requires the Minister of Agriculture's approval. Subdivision of land is a pre-requisite to re-zoning and may be necessary where the zoning of the land identified for the facility (in terms of a local authority zoning scheme) does not permit aquaculture activities. The approval process is known to be lengthy. This creates a lack of flexibility in the process of identifying suitable sites for freshwater aquaculture facilities.

4.4. Environmental Constraints

Aquaculture facilities need to be situated in areas where there is access to sufficient natural resources and where existing land uses and activities in that area would not detrimentally impact on the aquaculture facility. Environmental constraints may therefore be determined by whether an aquaculture facility may be established in a particular area.

4.4.1. Environmental Management Frameworks

Section 24(3) of NEMA allows the Minister of Environmental Affairs and every MEC, to compile "information and maps that specify the attributes of the environment in particular geographical areas, including the sensitivity, extent, interrelationship and significance of such attributes which must be taken into account by every competent authority."[103] Environmental attributes thus identified "must be considered" as part of any EIA process.[104]

In 2010, the Minister of Environmental Affairs made regulations under section 24(3), known as the Environmental Management Framework ("EMF") Regulations, 2010.[105]

The EMF Regulations, 2010 provides that the Minister of Environmental Affairs (or an MEC with the concurrence of the Minister of Environmental Affairs) may initiate the compilation of the information and maps referred to in section 24(3) and for such information and maps to be used as EMFs.

Once an EMF has been finalised and adopted according to the process prescribed in regulation 5, competent authorities must consider it when deciding applications for EAs in, or affecting, the geographical area to which the framework applies.[106] Therefore, the law is clear that an EMF, where a relevant one exists, must be considered by the decision-maker in applications for EA.

A guideline to EMFs was published by DEA in 2012.[107] The guideline states that "EMFs provide applicants with an early indication of the areas in which it would be potentially appropriate to undertake an activity". Their purpose is also to:

- facilitate co-operative governance through the identification of different regulatory responsibilities and recommending mechanisms for addressing the needs of the relevant authorities; and

- provide the CA with information which will guide and inform decision-making.[108]

EMFs ought to identify if there are any environmental constraints against the establishment of an aquaculture facility in that geographical area.

4.4.2. The NWA

As mentioned in paragraph 4.2.12 above, aquaculture activities may impact on water quality or activities of up-stream users may impact on water quality. Accordingly, when approving an aquaculture facility or considering where such a facility ought to be established, it is important to take into account the availability of water as well as the activities of upstream water users. Master plans that set out new proposed aquaculture developments are to be established indicating the 1:100 year floodline, buffer zones, riparian habitat, watercourses, demarcated no-go areas, conservation zones and valued features in the landscape. Master plans may provide a holistic picture of where aquaculture facilities may be established. These plans can be dovetailed or informed by Existing Resource Management Plans which are already an initiative by the DWA.

The DWA also published an operational policy (April 2006) for the use of water for aquaculture purposes and guidelines for authorising the use of water for aquaculture (March 2007). These are discussed briefly below.

Operational Policy: Use of Water for Aquaculture Purposes, April 2006

The Operational Policy sets out the DWA's responsibility in regulating and facilitating the use of water for aquaculture. It sets out the principles to be applied by the DWA, the authorisation procedures for the use of water in aquaculture, resource allocations and pricing, access to water related infrastructure, the establishment of institutional arrangements, internal and external coordination mechanisms, implementation responsibilities, and the development of best practice around this use.

Guideline for Authorising the Use of Water for Aquaculture, March 2007

The purpose of the Guideline is the protection of water resources given the expansion of the Aquaculture sector. It simplifies the authorisation process for aquaculture water users and provides standardisation of the process for the DWA officials who have limited exposure to the technical nature of water use in aquaculture.

The Guideline outlines the procedures which are to be followed by proponents of aquaculture projects and the DWA officials when considering applications for water use licences. It provides guidance on the respective responsibilities of the applicants and Departmental officials when considering authorising the use of water for aquaculture.

4.4.3. The ICMA: Coastal Management Programmes

The ICMA's provisions relating to aquaculture are discussed at paragraph 4.2.9 above. However, it is in coastal management programmes where integrated coastal management is to provide for an integrated and coordinated approach that sets out both the public and private sector's involvement in coastal management. The coastal management programme must include provision for the sustainable use of coastal resources, national coastal management objectives and a framework for cooperative governance.

In the same way that coastal management programmes may be used for the setting aside of an area for aquaculture facilities, it could also be used to identify areas that are not suitable for aquaculture facilities because of the possible impact of the facility in a specific environment.

4.4.4. Provincial land use planning ordinances

The various provincial land use planning ordinances are discussed at paragraph 4.2.13 above. Generally the ordinances provide for and regulate land uses. Land uses adjacent to an aquaculture facility may negatively impact on that facility as it may affect the water quality either as a result of the abstraction of water or water run-off. Particular neighbouring land uses may therefore impose environmental constraints on the establishment and operation of aquaculture facilities.

4.4.5. The Mountain Catchment Areas Act, 63 of 1970

The Minister (which in this case means the competent authority in the provincial department to whom this power has been assigned) may declare mountain catchment areas in terms of the Mountain Catchment Areas Act (MCAA).[109] Mountain catchment areas are not defined however the long title of the MCAA states that the MCAA is to provide for the conservation, use, management and control of land situated in mountain catchment areas.

The Minister (which in this case means the competent authority in the provincial department to whom this power has been assigned) may issue a ‘direction’ regarding a mountain catchment area, or an area within 5 km around a catchment area, relating to the conservation, use, management and control of such land or for any other matter necessary or expedient for the achievement of the objects of the MCAA.[110] These directions are binding on owners, occupiers and successors in title. The administration of mountain catchment areas was assigned to provincial authorities in 1995.

Proclaimed mountain catchment areas are protected areas under the NEMPAA.[111] Chapters 1 and 2 of the NEMPAA apply to these areas[112] which restricts activities in these areas.[113]

4.4.6. Conservation of Agricultural Resources Act, 43 of 1983 (CARA)

The purpose of the CARA (administered by DAFF) is to provide for control over the utilization of natural agricultural resources and to promote the conservation of soil, water sources and vegetation.

The importance of the CARA for the establishment of an aquaculture facility include the assessment of the facility’s obligations to conserve the agricultural land on which it is despite the land not directly being utilised for land based crops and control measures relating to likely activities / consequences of an aquaculture facility.

4.5. Product Safety and Quality

This section outlines the relevant international conventions and guidelines that deal with product safety and quality and thereafter deal with the relevant South African law.

4.5.1. OIE Aquatic Animal Health Code (the Aquatic Code)

The Aquatic Code is administered by the World Organisation for Animal Health (OIE) of which South Africa is a member. Modifications to the Aquatic Code were formally adopted by the World Assembly of the Delegates of the OIE Members during the 80th General Session in May 2012.

The Aquatic Code sets out standards for the improvement of aquatic animal health and welfare and veterinary public health worldwide, including through standards for safe international trade in aquatic animals (amphibians, crustaceans, fish and molluscs) and their products.

The health measures in the Aquatic Code can be used by the veterinary authorities of importing and exporting countries. The Aquatic Code provides for early detection, reporting and control agents pathogenic to aquatic animals and, in the case of zoonotic diseases, for humans and to prevent their transfer via international trade in aquatic animals and aquatic animal products, while avoiding unjustified sanitary barriers to trade.

Overview of specific sections/chapters of specific relevance to aquaculture

Part 1 of the Aquatic Code:

- includes provisions for aquatic animal disease diagnosis, surveillance and notification, on risk analysis and on the quality of competent authorities;
- includes general recommendations on disease prevention and control;
- sets out trade measures, import/export procedures and model health certificates; and
- provides guidelines on the welfare of farmed fish during transport.

Article 5, in particular, provides for trade measures, importation/exportation procedures and health certification and includes various options for these measures as animal health will vary in different countries . The requirements for trade are determined by the aquatic animal health situation in the exporting country, in the transit country or countries and in the importing country.

To maximise harmonisation of the aquatic animal health aspects of international trade, competent authorities of OIE Members should base their import requirements on the OIE standards.

Article 5.1.3 specifies the responsibilities of the exporting country, namely:

> "1. [A]n exporting country should, on request, supply the following to importing countries:
>   a) information on the aquatic animal health situation and national aquatic animal health information systems to determine whether that country is free or has zones or compartments free from OIE listed diseases, and on the pathway followed to achieve disease freedom e.g. historical freedom, absence of susceptible species or targeted surveillance, including the regulations and procedures in force to maintain the free status;
>   b) regular and prompt information on the occurrence of OIE listed diseases;
>   c) details of the country's ability to apply measures to control and prevent OIE listed diseases;
>   d) information on the structure of the Competent Authority and the authority that they exercise;
>   e) technical information, particularly on biological tests and vaccines applied in all or part of the country.
>
> 2. Competent Authorities of exporting countries should:
>   a) have official procedures for the authorisation of certifying officials, defining their functions and duties as well as conditions of oversight and accountability, including possible suspension and termination of the authorisation;
>   b) ensure that relevant instructions and training are provided to certifying officials;
>   c) monitor the activities of the certifying officials to verify their integrity and impartiality.
>
> 3. The Competent Authority of the exporting country is ultimately accountable for certification used in international trade."

The recommendations in articles 8 to 11 of the Aquatic Code are intended to prevent the pathogen in question being introduced into the importing country, taking into account the nature of the traded commodity and the aquatic animal health status of the exporting country. Correctly applied, the recommendations provide for trade with an optimal level of animal health security, incorporating the latest scientific findings and available techniques.

The Manual of Diagnostic Tests for Aquatic Animals (the Aquatic Manual) provides a standardised approach to the diagnosis of the diseases listed in the Aquatic Code, to facilitate health certification for trade in aquatic animals and aquatic animal products. It is recommended that South Africa incorporate the principles of this Code into the country's domestic legislation in order to have a regulatory system that promotes biosecurity for the whole aquaculture sector. Currently few state veterinarians have knowledge of fish health and diseases affecting aquaculture. It is therefore recommended that training is introduced to increase the capacity of state veterinarians.

4.5.2. FAO Technical Guidelines on Aquaculture Certification (Adopted by the 29th Session of Committee on Fisheries (COFI) held in Rome, Italy from 31 January to 04 February 2011)

The intention of the Guidelines, adopted by the FAO in 2011, is "to provide guidance for the development, organization and implementation of credible aquaculture certification schemes." The Guidelines provide information on the institutional and organisational arrangements for aquaculture certification, including governance requirements, particularly to ensure that conflicts of interest are avoided.

The Guidelines recognise that the application of certification in aquaculture is now viewed as a potential market-based tool for minimising potential negative impacts and increasing societal and consumer benefits and confidence in the process of aquaculture production and marketing.

Secondly, although aquatic animal health and food safety issues of aquaculture have been subjected to certification and international compliance for many years, aspects of animal welfare, environmental issues and socio-economic aspects have historically not been subjected to compliance or certification.

We recommend that the legislative framework in South Africa provides for the inclusion of these technical guidelines by expressly incorporating it by reference or making provision for relevant guidelines to be considered. Independent certifying bodies are also required in order to implement the technical guidelines.

4.5.3. CODEX Guidelines for the Design and Implementation of National Regulatory Food Safety Assurance Programme Associated with the Use of Veterinary Drugs in Food Producing Animals

The Guidelines were developed by The Codex Alimentarius Commission, a body established by the FAO and WHO to develop harmonised international food standards, guidelines and codes of practice to protect the health of consumers and ensure fair practices in the food trade.

The rationale for the Guidelines is that "[m]odern food production systems should be designed and managed to ensure that the exposure of food producing animals to veterinary drugs does not pose a risk to human health." It is intended to provide overarching principles and guidance for governments on the design and implementation of national and trade related food safety assurance programmes for residues of veterinary drugs. It assumes that a control and verification assurance programme designed and implemented according to the Guidelines should provide reassurance for importing countries to accept consignments certified as safe by the exporting country.

The Guidelines assume that the commercial entities involved in the production and marketing of food have the primary responsibility for ensuring food safety. The role of authorities is to control the use of veterinary drugs and to verify that appropriate practices are being applied and effective measures are in place within the veterinary drug distribution and food production systems. All parties should be responsible for providing consumers with information and education to allow them to make sound choices with respect to purchasing food products of animal origin.

The Guidelines set out general principles for the design of programmes for the control of residues of veterinary drugs in foods. Such programmes should:

(i) be based on risk using realistic risk profiles assessed as reasonably likely to be associated with food derived from the relevant production system(s);
(ii) be prevention-focussed, based on the realistic risk profiles associated with the probable or known use of approved, non-approved and prohibited veterinary drugs in the production system;
(iii) include regulatory measures proportionate to the relative human health risk associated with these hazards compared with other food-associated hazards;
(iv) ensure all parties involved in the production, marketing and processing system of the animals and/or the food products derived from them are held accountable to ensure that unsafe animal products will not be sold as a result of their action or inaction;
(v) recognise that pre-harvest controls and practices are the primary means for ensuring safe food;
(vi) recognise that the primary role of audits and sampling programmes is to verify the implementation and effectiveness of the pre-harvest controls and practices;
(vii) focus on system and population based assurances; and
(viii) be cost effective and have the support of stakeholders.

The reliability of laboratory results is important for proper decision-making by authorities. Official laboratories should use methods validated as fit for purpose and work under internationally accepted (e.g. ISO 17025) quality management principles.

Recommended regulatory framework

In terms of the necessary regulatory framework, the Guidelines set out the required role of authorities. This includes regulating the use of veterinary drugs, verifying that appropriate practices are applied and verifying that effective measures are in place within the veterinary drug distribution and food production system to provide effective protection of consumers as well as facilitate trade. Authorities must therefore ensure that they have sufficient knowledge of and control over veterinary drugs that are being sold and used within the production systems.

The criteria that should be used for approving veterinary drugs must be established and should be specified in appropriate national regulations. An approval system should:

(i) require an evaluation of the human safety of residues of the veterinary drug relying on a risk analysis and establishing, where appropriate, maximum residue limits; and
(ii) take into account the needs of the producers in order to reduce the temptation to use unapproved veterinary drugs or prohibited substances.

Restrictions may then be imposed on:

(a) formulations;

(b) criteria of use (e.g. time, species) and route of administration;

(c) indications for use; and

(d) withdrawal time/withholding time/food harvest restriction.

The Guidelines advocate that all formulations of veterinary drugs approved in a country should be recorded in a national register. Information and/or education programmes should be provided for each approved veterinary product formulation and these programmes should relate to suitable use in order to provide effective treatment while affording protection of consumers.

National/regional regulations should also establish which veterinary drugs may be sold domestically and how these may be used. Formulations not recorded in the national register should not be used and sanctions should be in place to act as a deterrent against such use.

Sale and use conditions may include:

(a) requiring all sales to be subject to a prescription from a veterinarian or other professional with approved competencies;

(b) restricting administration to individuals or professionals with approved competencies;

(c) requiring all treated animals/production systems to be identified in specified ways;

(d) requiring all uses to be recorded and/or notified to a unified database(s).

We recommend that any food safety assurance scheme established in South Africa at least conform to the principles in the Guidelines. No veterinary drugs suitable for aquaculture are registered in terms of current legislation in South Africa.

4.5.4. Foodstuffs, Cosmetics and Disinfectants Act, 54 of 1972 (FCDA)

The FCDA, which is mainly administered by DoH, controls, among other things, the handling, import and export of foodstuffs. Inspection and enforcement responsibilities under the FCDA can be delegated to provincial officials or "any other suitable person" and have in several cases been delegated to local authorities.

Foodstuffs are widely defined in the FCDA to include any substance "ordinarily eaten or drunk by a person or purporting to be suitable, or manufactured or sold, for human consumption" and its ingredients, apart from medicines controlled by the Medicines and Related Substances Act, 1965 (see next section).[114] Aquaculture products would clearly fall within the definition.

Overview of specific sections/chapters of specific relevance to aquaculture

Section 2 contains a prohibition on the sale, manufacture or import of certain articles. Section 4 contains a prohibition on the use or employment of prohibited processes, method, appliance, container or object.

Section 15A of the FCDA allows the Minister to make regulations pertaining to molluscs and fish farming on the following issues:

(a) the control, restriction or prohibition of the supply for human consumption of molluscs, crustaceans, echinoderms, algae or fish originating from mollusc nurseries, fish breeding stations or fish farms;

(b) the purity, chemical composition and source of and the addition of substances to water used in the cultivation or breeding of molluscs, crustaceans, echinoderms, algae or fish intended for human consumption;

(c) the location of mollusc nurseries, fish breeding stations or fish farms; and

(d) the control, restriction or prohibition of the cultivation, breeding, storage or transport of molluscs, crustaceans, echinoderms, algae or fish cultivated or bred for the purposes of human consumption.

Regulations have been made under the FCDA relating to, among others, marine food and the Hazard Analysis and Critical Control Points (HACCP) system relating to food safety.

Marine Food

The Marine Food Regulations[115] prescribe the additives that may lawfully be added to fish products, require that "fish for processing both at sea and on land shall be stored, handled and transported under hygienic conditions" and that fish must be processed as soon after being caught as is possible. Further regulations specify temperatures for keeping frozen fish and how frozen fish must be thawed.

Food Handling

Regulations governing General Hygiene requirements for Food Premises and the Transport of Food[116] affect aquaculture operations because all aquaculture products that are intended for human consumption fall within the definition of "food" in the regulations. Furthermore, "any building or structure where food is handled" is defined as a "food premises" and "handle" means to "manufacture, process, produce, pack, prepare, keep, offer, store and transport". Therefore many processing facilities will be designated as food premises for the purposes of these regulations.

The main implication of being designated as food premises is that the facility must hold a valid Certificate of Acceptability from the Department of Health. If an inspector decides that despite there being a valid Certificate of Acceptability available, food at the premises is being improperly handled and the premises is a health hazard, he or she may issue a notice and have the premises shut down until the hazard is remedied.

HACCP

Regulation 2 of the HACCP Regulations prohibits food handling enterprises (which are defined to include most aquaculture enterprises) listed on Annex B from handling any food without an HACCP system in place and a certificate issued under the regulations by a certifying body that is accredited by SANAS. However, this regulation has not yet been made applicable to enterprises handling aquaculture products. The HACCP Regulations provide that a sector can be listed on Annex B by the Minister at the request of the sector itself. The regulations contain provisions and a guideline relating to the implementation of the system.

What is HACCP?

HACCP is a systematic preventive approach to food safety and allergenic, chemical, and biological hazards. The objective of HACCP is preventing hazards during production rather than detecting them after production on inspection. HACCP methodology has been standardized internationally by the Codex Alimentarius Commission. In South Africa, SABS is a certifying body.

HACCP is implemented either by Prerequisite Programs which create conditions that are favourable to the production of safe food products or via HACCP Plans, designed to control hazards directly related to the food being processed or the manufacturing process.

HACCP Plans are developed through a process of hazard analysis to determine hazards significant to food safety. Control measures are then put into place to prevent, reduce or eliminate these hazards. The control measures are monitored for effectiveness. If a hazard is not adequately controlled (i.e. the control measure fails), actions are taken to correct the failure.

Microbiological standards

Regulations under the FCDA also prescribe the maximum levels of residue of veterinary drugs that may be present in foodstuffs, including fish.[117] In the *Regulations governing microbiological standards for foodstuffs and related matters*[118] made under the FCDA, regulation 6 sets microbiological standards for sea-water and fresh-water foods including for the presence of histamines, E. Coli, salmonella and others and the requirement that no antibiotics may be present.

Food labelling

Detailed regulations regarding labelling and advertising[119] made under the FCDA prescribe that containers for any foodstuff manufactured, sold, imported or offered must conform to the regulations.

The regulations prescribe what must appear on the label of pre-packaged foods as including:

(a) the name of the foodstuff and an appropriate description if necessary (and where a name or names have been established for a food in a Codex Alimentarius Standard, at least one of these names);
(b) name and address of the manufacturer, importer or seller;
(c) instructions for use of a foodstuff, where it would be difficult to make appropriate use of such foodstuff without such instructions;
(d) list of ingredients;
(e) special storage conditions, where applicable; and
(f) the net contents of the container in the SI-units.

They also prescribe how the label should appear (legibility, language to be used) and that the batch number and country of origin should be declared, unless otherwise prescribed by the APA or the NRCSA.

Date markings are compulsory for any foodstuff produced, sold or distributed in South Africa and certain additives must be declared on the label. Certain statements about foodstuffs and claims are prohibited from the label or advertising for that foodstuff.

Fish is defined as a “common allergen” in the regulations and its presence in a foodstuff must be indicated on the label.

Several further sets of regulations prescribe, among other things:

- substances that may or may not be added to or be present in foodstuffs;
- substances and that may be used to preserve foodstuffs;
- levels of biotoxins that must be present in shellfish or shellfish products for them to be deemed contaminated;
- powers and duties of inspectors under the Act to inspect premises, issue orders and seize foodstuffs and of analysts.

4.5.5. Agricultural Products Standards Act, 119 of 1990 (APSA)

The APSA, which is the responsibility of DAFF, controls the sale and export of certain agricultural products, the sale of certain imported agricultural products; and other related products (and connected matters). A "product" is defined as:

> "(a) any commodity of vegetable or animal origin, or produced from a substance of vegetable or animal origin, and which consists wholly or partially of such substance; and (b) any other commodity which in general appearance, presentation and intended use corresponds to a commodity referred to in … (a)."

Overview of specific sections/chapters of specific relevance to aquaculture

The Minister of Agriculture has the power to control the export of products including prohibiting the export of a prescribed product without prior approval. Sections 6 and 6A prohibit false or misleading product descriptions and prohibit and exempts the use of certain names.[120] Section 7 regulates powers of entry, investigation and sampling.

Applicable notices under the APSA include:

- BN 41 of 27 March 2009: Perishable Products Export Control Board: Agricultural Product Standards (Government Gazette No. 32043) impose inspection levies and tariffs for products to be exported.

- GN 1347 of 22 September 2006: Procedures for the application, administration and allocation of export permits under the trade, development and co-operation agreement between the European Community and the Republic of South Africa was published following the enforcement of a Trade, Development and Co-operation Agreement (TDCA) between the European Community (EC) and the Republic of South Africa on 1 January 2000. The TDCA (detailed further below) provides for the establishment of a Bilateral Free Trade Area between the EC and South Africa in accordance with the World Trade Organization (WTO) rules and the strengthening of European development assistance to South Africa. The tariff preferences applied under the TDCA and in accordance with the APS are unlikely to apply as yet to the fisheries industry as the products specified in Table 1 to this notice do not overlap with this sector except to the extent that aquaculture might include "edible parts of plants".

4.5.6. Agricultural Pests Act, 36 of 1983 (APA)

Importing agricultural pests / preservation of biodiversity / Spat / Juveniles imports

The APA, which is administered by DAFF, provides measures by which agricultural pests may be prevented and combated. The presence of agricultural pests may adversely impact aquaculture activities and the spreading of insects, exotic animals or pathogens has the potential to impact on biodiversity.

Overview of specific sections/chapters of specific relevance to aquaculture

The APA provides that no person may import into South Africa, any plant, pathogen, insect, exotic animal, growth medium, infectious thing or any other good as determined by the Minister of Agriculture without being in possession of a permit. Prescribed measures may be adopted by the Minister in order to prevent and combat the spreading of pathogens, red-billed quelea, insects and exotic animals. These measures must be complied with or carried out by a user of land.

These measures may relate, but are not limited to, the keeping, planting or cultivating of plants or the keeping of pathogens, insects, exotic animals or any particular thing. An "exotic animal" is defined in the APA as meaning any vertebrate member of the animal kingdom which is not indigenous to the Republic and specifically excludes fish as defined in section 1 of the Sea Fisheries Act, 1988. Further, "plant" is defined in section 1 to include any live or dead part of a plant and any derivation of a plant.

Should an aquaculture facility require the importing of any controlled good as defined in section 3 (which includes any exotic animal or plant) a permit may be required. Further, the aquaculture facility will be required to comply with or carry out any control measures prescribed by the Minister in relation to that specific good.

4.5.7. The Standards Act, 8 of 2008 (SA)

The SA, which is administered by **the dti**, provides for the development, promotion and maintenance of standardisation and quality in connection with commodities and the rendering of related conformity assessment services; and for that purpose to provide for the continued existence of the SABS, as the peak national institution, and the establishment of the Board of the SABS. A "commodity" is defined broadly to include an element or characteristic, or a category or system, of some commodity. The SA defines "product" as "any commodity that is manufactured and any agricultural product, including fish and fish products" clearly indicates the application of the SA to aquaculture.

Overview of specific sections/chapters of specific relevance to aquaculture

Under section 4(2), in order to achieve its objects, the SABS is empowered, amongst other things, to:

- develop South African National Standards and related normative publications serving the standardisation needs of the South African community;
- manage international and bilateral interaction with other national standards bodies from other countries;
- maintain the South African notification system in terms of the Technical Barriers to Trade Agreement of the World Trade Organisation;

Part 4 of the SA provides for the South African National Standards (SANS) which are standards approved by the SABS under the SA. The SANS are published by notice in the Government Gazette and must comply with the Agricultural Product Standards Act (APSA), where applicable. Section 27 prohibits the false impression of compliance with a SANS or other publication of the SABS.

Compulsory specifications dealing with fish/ frozen fish include VC 8017, 8020, 8021, 8031. Standards that may be applicable to the post-production phase of aquaculture operations include:

- ISO 12875:2011-Traceability of finfish products -- Specification on the information to be recorded in captured finfish distribution chains;
- SANS 587- Canned fish, canned marine molluscs and canned crustaceans, and products derived therefrom.

4.5.8. Genetically Modified Organisms Act, 15 of 1997 (GMO Act)

The GMO Act[121] introduces measures to promote the reasonable development, production, use and application of genetically modified organisms and to provide for a level of protection during all activities involving genetically modified organisms that may have an adverse impact on biological diversity, human and animal health. "Genetically modified organism" in the GMO Act means:

> "an organism the genes or genetic material of which has been modified in a way that does not occur naturally through mating or natural recombination or both."[122]

The GMO Act endeavours to ensure that genetically modified organisms are appropriate and do not present a hazard to the environment. The GMO Act applies to the genetic modification of organisms as well as the development, production, release, use and application of genetically modified organisms, including viruses and bacteriophages.

It is important to note that "activity" in this context means any activity with genetically modified organisms but is not limited to the importation, exportation, transit, production, use, storage and application of genetically modified organisms.

Overview of specific sections/chapters of specific relevance to aquaculture

Section 14 of the GMO Act provides that the Minister may, on recommendation, publish in the gazette any activities which are prohibited which involve genetically modified organisms.

Section 17 provides that users shall ensure that appropriate measures are taken to avoid any adverse impacts on the environment and human and animal health which may arise from the use of genetically modified organisms. The liability for damage caused by such activities shall be borne by the user concerned. In the event of damage, a user must immediately inform the registrar and take steps to implement measures which include ceasing, modifying or controlling any act or activity which is causing the damage, eliminate the source of the damage and remedy the effects of the damage caused by that activity.

The GMO regulations, 2010, were introduced to regulate the use of genetically modified organisms. Regulation 2 provides that no person may conduct any activity in relation to genetically modified organisms in the Republic of South Africa except in terms of a permit to undertake that activity. No person may undertake an activity unless a suitable and sufficient assessment of the potential adverse effects to the environment, human and animal health and safety has been made. This assessment must include an evaluation of the consequences should any adverse effects be realised.

Regulation 5 requires that an assessment of socio-economic impacts be included and consideration should be given to cultural traditions, knowledge and practices, income, competitiveness or economic markets as well as future security. An applicant may be required to conduct an environmental impact assessment in accordance with section 78 of NEMBA. Regulation 8 requires that all facilities conducting activities are registered with the registrar.

As long ago as 2003, the FAO recognised that "the production of appropriate genetically modified organisms (GMOs) offers considerable opportunities for more efficient and more effective aquaculture across a wide range of species."[123] Accordingly the GMO Act is likely to be relevant to aquaculture in future.

4.5.9. Consumer Protection Act No. 68 of 2008 (CPA)

The CPA, which is administered by **the dti**, aims to promote a fair, accessible and sustainable marketplace for consumer products and services, which marketplace includes the full participation of historically disadvantaged persons as consumers. A "consumer" is defined as including: a person to whom goods or services are marketed in the ordinary course of the supplier's business; a person who has entered into a transaction with a supplier in the ordinary course of the supplier's business (unless the transaction is exempt under the CPA); a user of particular goods or a recipient or beneficiary of particular services, irrespective of whether that user, recipient or beneficiary was a party to a transaction concerning the supply of those particular goods or services; and a franchisee in terms of a franchise agreement, to the extent applicable in terms of section 5 (6) (b) to (e) of the CPA.

In protecting consumer rights, the CPA creates liability for every link in the production chain: Production information and assessment systems must be in place. The CPA applies, subject to certain specified exemptions, to every transaction occurring in South Africa. It is unlikely that the aquaculture industry will qualify for an exemption unless a regulatory scheme is administered for the aquaculture industry under any other national or international law. Much of the protection offered under the CPA does not apply if the consumer is a juristic person (including a trust, body corporate, partnership or association) falling above a certain threshold but it is unlikely that this will affect the aquaculture industry.

Overview of specific sections/chapters of specific relevance to aquaculture

Chapter 2 of the CPA provides for the protection of fundamental consumer rights. The provisions have general application to the aquaculture industry although particular sections may be irrelevant. Part A upholds the consumers' right to equality and protects consumers against discriminatory marketing (that, for example, excludes or prefers any persons when granting access to goods or services, provides different quality or charges different prices to different persons) on the basis of unfair discrimination. It is not unfair discrimination if the particular goods or services are reasonably intended or designed to satisfy any specific needs or interests common to, or uniquely characteristic of, a particular group of consumers.

Part C protects the consumers' right to choose suppliers and includes provisions applicable to the aquaculture industry in a more limited manner including: the restriction on forcing a consumer to accept the bundling of goods or services, expiry and renewal of fixed term agreements; the right to obtain a quotation prior to accepting repair or maintenance services above a certain prescribed value. Part C, section 18 provides that the consumer is not responsible for any loss or damage to any goods displayed by a supplier, unless the loss or damage results from the consumer's gross negligence, reckless, malicious or criminal conduct. If the sale of the goods is based solely on a description, the goods must reasonably correspond with this description.

Part D protects the consumers' rights to disclosure and information. Under section 22 of Part D, any information the industry supplies to consumers must be in plain and understandable language. In the normal course goods may not be displayed without a price and there must be no misleading trade descriptions (sections 23 and 24). Unless exempt as a category of goods and services under section 26, a supplier of goods or services must provide a written record of each transaction to the consumer to whom any goods or services are supplied with those details specified under section 26(3).

Part E protects the right to fair and responsible marketing and protects consumers from false and misleading representations whilst Part F protects the consumer's right to fair and honest dealing. Part G protects the rights of consumers to be supplied goods on fair, reasonable and just terms, whilst Part H protects the consumer's rights to fair value, good quality and safety. Under section 82, the National Consumer Commission set up under the CPA must promote the development, adoption and application of industry-wide codes of practice providing for effective and efficient systems to monitor the safety and recall of goods and services. Section 61 provides for a general liability on producers and distributors for any harm caused by supplying unsafe goods.

Chapter 4 regulates business names and industry codes of conduct. A person may only conduct business in their own name or a registered business name satisfying the specified criteria and must comply with any prescribed industry codes.

Food labelling regulation

In 2010 **the dti** Minister published regulations[124] under the CPA including a regulation relating to labelling of food containing genetically modified organisms (GMOs). In terms of the regulations, all food containing more than five percent of GMOs must carry a declaration which states, “contains at least 5 percent genetically modified organisms in “a conspicuous and easily legible manner and size”. If it is impossible or not feasible to test goods for the presence of GMOs, the product must be labelled “may contain GMO ingredients”. Those products that contain less that 5 percent of GMOs may be labelled “genetically modified content is below 5 percent.”[125]

4.1. Animal Health and Disease Control

4.6.1. Animal Improvement Act, 62 of 1998 (AIA)

Standards potentially applicable to importation of specimens and genetic material

The object of the AIA, which is administered by DAFF is to provide for the breeding, identification and utilisation of genetically superior animals in order to improve the production and performance of animals.

The AIA seeks to achieve this by imposing controls on the import and export of animals and genetic material. The AIA defines animal as an animal belonging to a kind or specified breed that has been declared in terms of section 2 of the Act. Genetic material is defined to mean “ova, embryos, semen and any other material originating from an animal through which the hereditary factors of such animal can be transferred”.

As such, the provisions of the AIA apply only to animals that have been declared under the Act. The Department in GNR.1682 of 21 November 2003 published general regulations in table 7 of which breeds of animals to which the Act applies are identified. **The list does not include any aquatic organism and therefore the Act does not currently have any relevance to aquaculture.**

4.6.2. Animals Protection Act, 71 of 1962 (APrA)

The APrA makes it an offence to cause suffering to domestic animals or wild animals in captivity. The APrA is enforced via the Societies for Prevention of Cruelty to Animals Act[126] which empowers SPCA inspectors to investigate and prosecute offences under the APrA.

“Animal” is defined as any “equine, bovine, sheep, goat, pig, fowl, ostrich, dog, cat or other domestic animal or bird, or any wild animal, wild bird or reptile which is in captivity or under the control of any person.” There may be some doubt as to whether the APrA applies to fish. However, input from the SPCA indicates that it does apply to fish as well. In Norway, the relevant animal welfare legislation[127] prescribes basic principles for the keeping and treatment of animals and explicitly includes fish and crustaceans.

4.6.3. Agricultural Pests Act, 36 of 1983 (APA)

The APA was discussed at paragraph 4.5.6. Please refer to that paragraph.

4.6.4. Foodstuffs, Cosmetics and Disinfectants Act, 54 of 1972 (FCDA)

The FCDA, administered by the DoH together with local authorities, is important mainly for regulations made under it that affect aquaculture operations such as the Regulations governing general hygiene requirements for food premises and the transport of food[128] which were originally made under the mostly-repealed Health Act, 1977 but republished under the FCDA. This is because all aquaculture products that are intended for human consumption will fall within the definition of "food" in the regulations.[129]

Any building or structure where food is handled is defined as "food premises". "Handle" in the regulations includes "manufacture, process, produce, pack, prepare, keep, offer, store, transport"[130] and accordingly many aquaculture facilities will be designated as food premises for the purposes of the regulations. The main implication of being so designated is that the facility that processes aquaculture products must at all times hold a valid certificate of acceptability from the DoH.[131] The operator of an aquaculture facility must therefore in the development phase of the facility apply to the relevant local authority on the form prescribed in the regulations for a certificate before the facility is permitted to handle food. An inspection by the local authority is necessary before a certificate is issued. No time limit is prescribed for the validity of the certificate but it is issued to a specific "person in charge" and is not transferrable from one person to another. It is also issued for specific premises and may not be transferred to another. A certificate is issued subject to conditions and these may be changed at any time by the local authority.[132] Notwithstanding that a premises holds a certificate of acceptability, if an inspector is of the opinion that the way food is handled at the premises constitutes a health hazard, he or she may by a notice summarily shut down the premises and require the hazard to be remedied. The certificate of acceptability is deemed temporarily expired for the period until the authority has performed a further inspection (which must occur within 72 days) and is satisfied that there is no longer a health hazard at the premises.[133]

The Food Premises regulations also set detailed standards for food premises relating to:

- construction of premises;[134]
- use of containers for food;[135]
- storage, display and temperature of food;[136]
- protective clothing for workers;[137]
- conduct of workers handling food;[138] and
- transport of food (certain concessions are made for the transport of raw fish or seafood from the place where they are caught or harvested).[139] Note that the Codex standard for bulk transport has been expressly incorporated into the Food Hygiene regulations.

4.6.5. National Health Act, 61 of 2003 (NHA)

Some aquaculture operations will fall within the definition of "offensive trade" in regulations under the NHA[140] as the definition includes the following:

> "fish-curing or fish-canning works...
>
> works for the extraction of fish oil from sharks or other fish...
>
> works or premises used for the manufacture, storage or mixing of meal derived from fish, crustacea, poultry, meat, offal from animals or poultry, or other organic matter derived from animals or poultry..."

Other aspects of the aquaculture industry may also be caught depending on the interpretation of the word "animal" in the regulations (this is not defined). The effect of inclusion as an offensive trade is that separate permission from the DoH is needed for the erection or subsequent alteration of buildings connected with an offensive trade.

Other regulations under the NHA specify standards for the composition of food containers (tins)[141] and further regulate perishable products.

4.6.6. Medicines and Related Substances Act, 101 of 1965 (MRSA)

One of the objects of the MRSA, which is administered by the DoH, is to provide for the registration of medicines and related substances intended for human and for animal use and to provide for the control of medicines and scheduled substances.

"Veterinary medicine" is defined to mean substances, other than stock remedies, "used or purporting to be suitable for use or manufactured or sold for use in connection with vertebrates..." The MRSA places controls on the use or possession of different classes of substances.

Overview of specific sections/chapters of specific relevance to aquaculture

Section 22A of the MRSA deals with the control of medicines and scheduled substances. The section prohibits the sale of any substance listed in Schedules 1 to 6 to the public other than by one of a closed list of different categories of medical practitioners, including a veterinarian.

Section 22A(9) prohibits the acquisition, use, possession, manufacture or supply of any substances listed in Schedule 7 or Schedule 8 of the MRSA without a permit issued by the Director-General. The Director-General may only authorise the use of such a substance by a medical practitioner, analyst, researcher or veterinarian to treat or prevent a medical condition in a particular patient or for the purposes of education, analysis and research.

As per the recommendation made under the FFASA below, a list of approved veterinary medicines needs to be developed and registered under the MRSA for the aquaculture sector as soon as possible.

4.6.7. National Regulator for Compulsory Specifications Act, 5 of 2008 (NRCSA)

The purpose of the NRCSA, which is administered by **the dti**, is to establish the National Regulator for Compulsory Specifications (NRCS), a body intended to provide for the administration and maintenance of compulsory specifications in the interests of public safety and health or for environmental protection.

Overview of specific sections/chapters of specific relevance to aquaculture

In terms of the NRCSA, the NRCS makes recommendations to **the dti** Minister regarding the declaration of new compulsory specifications, maintains specifications and is responsible for enforcement via inspections.

Compulsory specifications have been established for the manufacture, production, processing and treatment of canned fish, canned marine molluscs and canned crustaceans;[142] and for live aquaculture Abalone.[143]

NRCS is currently assisting the State Veterinary Services with health certifications, a system which works well in practice because the NRCS has international standing, although the NRCS does not have certification capacity in all centres, which creates a gap in access to the service. There is potential for this system of cooperation between the State Veterinary Services and NRCS to be implemented more comprehensively.

4.6.8. Animal Diseases Act, 35 of 1984 (ADA)

The broad purpose of the ADA, which is administered by DAFF, is to control animal diseases and parasites and provide measures to promote animal health. The ADA is thus mainly relevant to the operational phase of an aquaculture facility.

An "animal" in the ADA includes any mammal, bird, fish, reptile or amphibian which is a vertebrate, including the carcass of any such animal. As such invertebrate species such as abalone do not fall within the ambit of the Act.

Overview of specific sections/chapters of specific relevance to aquaculture

Section 6 of the ABA provides that no person may import into or convey through South Africa any animal, parasite or contaminated or infectious thing except under the authority of a permit and in compliance with the conditions imposed in that permit. A permit application must be submitted six weeks in advance and may be issued to allow the regular import of an animal or thing of the same class from the same country for a specified period.

Section 9 of the ADA provides that the Minister may prescribe general or particular control measures in respect of particular animal diseases and parasites. These measures may be prescribed in respect of the whole of South Africa, or in respect of a particular defined area. They may relate to restrictions on and control of the killing or catching and removal of certain animals where an animal disease or parasite occurs or is suspected to be present. The Animal Diseases Regulations[144] list control measures relating to controlled animal diseases.[145] Only four diseases of relevance to the aquaculture sector, all specifically relating to Trout, are listed in these regulations. Other diseases of significance to the aquaculture industry are not notifiable under the ADA.

Section 11 requires that any owner or manager of land must take all reasonable steps to prevent the infection of the animals with any animal disease or parasite, to prevent the spreading of the disease or parasite and steps necessary to eradicate that disease or parasite. Further, the owner must take steps to apply the prescribed treatment or any other treatment deemed suitable in the event the owner has reasonable suspicion that the animal has been infected with any animal disease or parasite. Any person who finds the incidence or suspected incidence of any controlled animal disease in any animal or progeny or product thereof must immediately report this incident to DAFF.

The ADA provides for compensation to be available to the owner of animals that are destroyed or seized because of contamination or infection. Of concern to the aquaculture industry is that because invertebrates fall outside the scope of the ADA, no compensation is available to the owners of aquaculture operations involving shellfish or other invertebrates and animal health certificates cannot be issued for invertebrates under the ADA, which may be needed by importing countries.

This gap in the legislation should be closed. The ADA was intended to be repealed by the Animal Health Act, 7 of 2002 but this has not yet occurred. The definition of "animal" in the Animal Health Act is identical to that in the ADA except that it includes certain invertebrates prescribed as animals for the purposes of the Act. Therefore either an amendment of the ADA or regulations under the Animal Health Act (if it is due to come into force soon) are necessary to bring shellfish or other invertebrates within the ambit of this legislation and to provide for disaster relief in the case of disease in operations involving invertebrates.

4.6.9. Fertilizer, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 36 of 1947 (FFASA)

The FFASA, which is administered by DAFF, provides for the registration of fertilizers, farm feeds, agricultural remedies, stock remedies, sterilising plants and pest control operators and regulates and (in some instances prohibits) the importing, sale, acquisition, disposal or use of these remedies.

"Stock remedy" in the FFASA means:

> "a substance intended or offered to be used in connection with domestic animals, livestock, poultry, fish or wild animals (including wild birds), for the diagnosis, prevention, treatment or cure of any disease, infection or other unhealthy condition, or for the maintenance or improvement of health, growth, production or working capacity".

The definition explicitly excludes any substance controlled by the Medicines and Related Substances Control Act (see above).

An agricultural remedy means any chemical substance or biological remedy which is used for the destruction, control, repelling, attraction or prevention of any undesired fungus, insect, plant or similar.

Overview of specific sections/chapters of specific relevance to aquaculture

An application for registration of a fertiliser, farm feed, agricultural remedy, stock remedy, sterilizing plant or pest control operator must be made to the registrar in the prescribed manner.[146]

The Minister may prohibit the acquisition, disposal or use of certain farm feeds or agricultural remedies or prohibit the acquisition, disposal or use except in accordance with specific conditions.[147]

No person may import a farm feed or agricultural remedy unless the remedy is registered in terms of the FFASA.[148]
Animal feeds are subject to contamination from a wide range of organic and inorganic compounds. These contaminants include pesticides, industrial pollutants, radionuclides and heavy metals, which have a negative impact on the environment when applied incorrectly.

In the event that farm feeds or agricultural remedies are required for the effective implementation of an aquaculture project, the provisions of the FFASA must be considered and complied with. However a gap exists in that the stock remedies currently being used by aquaculture operations are not registered in terms of the FFASA. It is recommended that a list of approved stock remedies should be registered in terms of the FFASA as soon as possible to avoid owners of facilities being tempted to use unregistered remedies. A preliminary list could be developed of the drugs approved for use in other countries.

4.6.10. Provincial Ordinances – Animal Health

Please refer to paragraph 4.2.13 above where we deal with the respective Provinces, especially the nature conservation ordinances or Acts.

4.7 Importation of Inputs

Stakeholders mentioned the difficulties experienced in importing inputs such as feeds, medicine and spat from other countries. Even though the specific legislation has already been dealt with elsewhere we have included a chapter that deals with inputs as this was raised by stakeholders. We specifically deal with those issues raised as well as cross-referencing to the specific paragraphs in the legal review where more information is provided on that specific law. In this chapter we are only dealing with the importation of inputs and not the export of aquaculture products. To avoid duplication we refer to the specific law and indicate whether it applies to feeds, medicines or spat.

4.7.1. The Aquatic Code

The Aquatic Code sets standards for safe international trade in aquatic animals and their products.[149] It applies to spat. The measures in the Aquatic Code may be used by the veterinary authorities of both the importing and exporting countries as a means to provide for early detection, reporting and control of pathogenic agents related to aquaculture. Provision is made for trade measures, importation and exportation procedures and health certification.[150] The Aquatic Code provides for recommendations to prevent pathogens being introduced to an import country as well as providing a standardised approach for the diagnosis of diseases listed in the Aquatic Code in order to facilitate health certification for trade in aquaculture products.[151] The measures proposed may therefore affect whether spat may be imported.

4.7.2. The GMO Act

The GMO Act applies to genetic modification of organisms as well as the development, production, release, use and application of genetically modified organisms (including viruses and bacteriophages). The GMO Act might apply to both spat and feeds. A permit is required to undertake any activity in relation to genetically modified organisms in order to undertake such an activity a suitable and sufficient assessment of the potential adverse effects to the environment, human and animal health and safety must be undertaken. [152] This includes an assessment of the socio-economic impact, cultural traditions as well as future security.[153] An EIA that complies with section 78 of NEMBA may also be required. All facilities conducting activities with GMOs are to be registered with the Registrar.[154]

Where GMOs are being used a permit as well as registration of the premises may be required.

4.7.3. The APA

The APA states that no person may import any plant, exotic animal, growth medium, infectious thing or any other good without being in possession of a permit. “Exotic animal” does not include fish as defined in the then Sea Fisheries Act. However, if a controlled good as defined in the APA is to be imported then a permit would be required. The APA may therefore apply to the importation of feeds, medicine and spat.

4.7.4. CODEX Guidelines

No veterinary drugs that are suitable for aquaculture are registered under the current laws in South Africa. The CODEX Guidelines for the Design and Implementation of National Regulatory Food Safety Assurance Programmes Associated with the use of Veterinary Drugs in Food Producing Animals states that the role of authorities is to control the use of veterinary drugs. In addition, those authorities must verify that appropriate practices are being applied and effective measures are in place within the drug distribution and food production systems.[155] All parties are responsible for providing consumers with information and education to allow them to make sound choices when purchasing food products of animal origin.

4.7.5. The Medicine Related Substances Act (MRSA)

The MRSA provides for the registration of medicines and related substances intended for human and animal use. "Veterinary medicine" excludes "stock remedies" and is limited to uses suitable for use in connection with vertebrates. It is recommended that a list of approved veterinary medicines must be developed and registered under the MRSA for the aquaculture sector as soon as possible.

4.7.6. The Animal Diseases Act (ADA)

The ADA applies to fish but not to invertebrate species such as abalone. A permit is required to import into or convey any animal or infectious thing but that permit may be issued to allow regular import of that animal or thing from the same country for a specified period.[156] As invertebrates fall outside of the scope of the ADA no compensation would be payable if those animals were to be destroyed if they were to contract any diseases.

4.7.7. Fertiliser, Farm foods, Agricultural remedies and Stock remedies Act (FFASA)

The Minister of Agriculture may prohibit the acquisition, disposal or use of farm feeds or agricultural remedies. Stock remedies are defined widely to include a substance used for the diagnosis, prevention, treatment or cure of any disease, infection or for the maintenance or improvement of health, growth, production or working capacity. Farm feeds or agricultural remedies may not be imported unless the remedy is registered in terms of the FFASA. The stock remedies, however, currently being used by aquaculture operations are not registered under the FFASA. It is recommended that these substances should be registered in terms of the Act as soon as possible.

It is important that the stock remedies are registered so it can be used lawfully specifically in relation to aquaculture.

4.2. Transformation of the Aquaculture Sector

Transformation is a cross-sectoral issue and is primarily concretized in current labour and preferential procurement legislation (discussed in paragraph 5.2.3 of this report) and certain provisions in the MLRA that relate to exclusionary criteria in respect of rights allocation and the establishment of a Fisheries Transformation Council. These legislative provisions are described in paragraph 4.2.2 of this report.

Besides these legislative provisions, there are various policy directives and government initiatives which prioritise transformation. For example, the need to transform the aquaculture sector into a "vibrant commercial industry"[157] which will contribute to food security, job creation, economic development and rural development, is recognized as one of the guiding principles for aquaculture development in the NASF. Transformation also forms an integral part of government's vision for the sector:

> *"[A]n expanding sustainable and competitive aquaculture sector that meaningfully contributes to job creation, economic development and sustainable livelihoods, food security, rural development and transformation through increased production, and a diversity of production systems that produce safe and nutritious food while safeguarding sustainable environmental integrity."*[158]

Government's commitment to driving the transformation agenda of the aquaculture sector is reflected in the goals and objectives of the NASF and various government led initiatives and programmes. For example, aquaculture is identified as a priority in the Industrial Policy Action Plan (IPAP) and New Growth Path (NGP) and **the dti** has established an Aquaculture Development and Enhancement Programme (ADEP). ADEP is aimed at attracting investment to mitigate the financial challenges of limited access to development finance and competition that the aquaculture sector, and particularly new entrants and SMMEs, face. The incentive programme is available to South African registered entities engaged in primary, secondary and ancillary aquaculture activities. ADEP offers a "reimbursable cost-sharing grant of up to a maximum of R40 million qualifying costs in machinery and equipment; bulk infrastructure; owned land and/or buildings; leasehold improvements; and competitiveness improvement activities".[159] The grants are provided directly to approved applications for new, upgrading or expansion projects.

Government has focussed its transformation interventions on the following aspects and areas:

- the role that transformation of the sector can play in improving social cohesion, specifically with regard to the youth;[160]
- prioritising employment and wealth creation opportunities;[161]
- access to finance and competitiveness;
- research and development (on species, technologies, etc) to support new entrants and SMME's;
- creating an enabling regulatory environment; and
- promoting broad based black economic empowerment.

To this end the NASF includes a set of clear Transformation commitments for both government and the private sector.[162] These commitments are reflected in the figure below:

5. INTERNATIONAL CONVENTIONS AND NATIONAL LAWS POTENTIALLY RELEVANT TO AQUACULTURE

5.1. International Instruments

5.1.1. SADC Protocol: Fisheries

The Protocol came into force on 8 August 2003. Article 13 requires parties to the Protocol to take the necessary steps to optimise the economic contribution of aquaculture to the SADC region. This includes:

- reviewing policies, legislation, plans and institutions to recognise that aquaculture is a distinct enterprise;

  - DAFF has already commenced with considering its laws and policies as well as institutional reform that may be required to promote aquaculture;
- promoting on-site research, demonstrations and increased practitioner-to-practitioner extension as ways to increase economic and social benefits from aquaculture;
  - this is still lacking;
- promoting private sector participation in aquaculture through access arrangements to designated areas and provide or facilitate the necessary support services and access to finance;
  - the discussions with various funding institutions have started, for example with the IDC;
- co-operating with other parties, in the promotion of inland and marine ranching and stock enhancement;
  - guidelines for marine ranching and stock enhancement were finalised and pilot projects rights were allocated. There is a need to promote inland fisheries;
- undertaking research and technological development, particularly in identifying new sources of locally available raw materials for fish feed;
  - DAFF has also published an Aquaculture Research and Technology Development Programme for South Africa. This is being implemented through numerous partnerships with universities in South Africa to promote aquaculture research and technology development;
- not introducing exotic species or genetically modified species to shared aquatic eco-systems without the consent of other affected parties;
  - The AIS Regulations and the GMO Act regulate the introduction of species which will usually require an authorisation from the competent authorities prior to those species being introduced;
- establishing standard guidelines and regulations for the application of environmental impact assessments;
  - the Listed Activities and the EIA Regulations, 2010 published under NEMA means that standard guidelines and regulations has already been established;
- monitoring and exchanging information on diseases and the spread of diseases of relevance to cultured aquatic species;
  - there is a system in South Africa for reporting notifiable diseases. Specific aquaculture legislation may provide mandatory reporting of certain diseases to the competent authorities so that appropriate action can be taken to prevent the destruction of wild or farmed populations or the environment or of significant environmental degradation.

5.1.2. United Nations Convention on Biological Diversity (CBD)

As a signatory to the United Nations Convention on Biological Diversity, South Africa is obliged to develop national strategies, plans or programmes to implement the provisions of the Convention and to integrate the conservation of biodiversity into sectoral and cross-sectoral plans, programmes and policies.[163]

Partly in response to this obligation, DEA has developed the National Biodiversity Strategy and Action Plan, which identifies five strategic outcomes (SOs). These are:

1. an enabling policy and legislative framework that integrates biodiversity management objectives into the economy (SO1);
2. enhanced institutional effectiveness and efficiency ensures good governance in the biodiversity sector (SO2);
3. integrated terrestrial and aquatic management across the country minimises the impacts of threatening processes on biodiversity, enhances ecosystem services and improves social and economic security (SO3);
4. human development and well-being is enhanced through sustainable use of biological resources and equitable sharing of the benefits (SO4); and
5. a network of conservation areas conserves a representative sample of biodiversity and maintains key ecological processes across the landscape and seascape (SO5).

One of the general measures which parties to the Convention must undertake "as far as possible and as appropriate" in order to promote *in situ* conservation is preventing the introduction of, and controlling or eradicating those alien species which threaten ecosystems, habitats or species.[164]

Parties to the Convention are also required to "develop or maintain necessary legislation and/or other regulatory provisions for the protection of threatened species and populations".[165] For the purposes of doing so, parties must "identify processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity, and monitor their effects through sampling and other techniques."[166] Where a significant adverse effect on biological diversity has been determined, parties must "regulate or manage the relevant processes and categories of activities."[167] This Convention has been translated into national legislation through the NEMBA.

5.1.3. The Convention on Wetlands of International Importance (the Ramsar Convention)

The Ramsar Convention, administered in South Africa by DEA was enacted in 1971 to provide a framework for international cooperation and national action regarding the conservation and "wise use" of wetlands and wetland resources.

A Ramsar Site is selected on the basis of designated criteria as a "wetland of international importance" under the Ramsar Convention, and accurately documented and included in the Ramsar Sites database.[168] South Africa acceded to the Convention in 1975 and has 20 designated Ramsar sites. The significance of the Convention for aquaculture is that wetlands protected under this convention are more likely to be declared as formal protected areas with consequent restrictions on development within them (see the discussion regarding the NEMPAA). Certain activities taking place in a Ramsar site will trigger the requirement for an EA under Listing Notice 3 of the NEMA EIA Regulations, 2010 and the discharge or disposal of wastewater into water resources situated in Ramsar sites is restricted in terms of the current General Authorisations under the NWA. Accordingly, designation of a Ramsar site makes it less likely that the site will be feasible as a site for an aquaculture facility.

5.1.4. Convention on the Conservation of Migratory Species of Wild Animals, 1979 (the Bonn Convention)

The Bonn Convention was developed under the United Nations Environment Programme to facilitate cooperation between states in the conservation of migratory species across their (potentially trans-boundary) range. South Africa acceded to the Convention in 1991 and it is administered by DEA. Parties that fall within the geographical range of an endangered migratory species (Range States) are, amongst other things, to endeavour to conserve and, where possible, to restore the habitats of such species with a view to reducing the threat of extinction. Measures taken under this Convention may have an indirect effect on proposed aquaculture undertakings. For example, an issuing authority for an EA under the EIA Regulations, 2010 might take into account the effect of the facility on habitats of species listed in the Appendices to this Convention.

5.1.5. Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES Convention)

South Africa is a party to the CITES Convention, which is the responsibility of DEA in South Africa. This Convention is relevant to aquaculture since it requires member states to regulate the trade in, export and import of rare or endangered animal species. The CITES Convention has been implemented in South African law mainly through the various provincial acts and ordinances, and recently through the CITES Regulations promulgated under NEMBA.[169] Several fish and mussel species are listed on CITES appendices as requiring controls to prevent extinction. Abalone (*Haliotis midae)* was recently removed from Appendix III of CITES.[170]

5.1.6. The United Nations Convention On The Law Of The Sea, 1972 (UNCLOS)

UNCLOS enshrines the notion that all problems of ocean space are closely interrelated and need to be addressed as a whole. South Africa ratified UNCLOS in 1997 and it is administered by the DoT.

Article 196(1) of UNCLOS provides that "[S]tates shall take all measures necessary to prevent, reduce and control … the intentional or accidental introduction of species, alien or new, to a particular part of the marine environment, which may cause significant and harmful changes thereto". No specific provisions have been enacted in South African law to give effect to Article 196(1) of the Convention and its significance for aquaculture is therefore minor.

5.1.7. International Convention For The Control And Management Of Ships' Ballast Water And Sediments (Ballast Water Convention)

The Ballast Water Convention was adopted in 2004 by Member States of the International Maritime Organisation. Ballast water is loaded by ships to stabilise them and, particularly with a continued growth of shipping traffic, often contain organisms including alien species or substances which are released upon discharge. The Ballast Water Convention comprehensively addresses the impact of invasive alien species released into the environment when ballast water is discharged to ensure ships' ballast water is handled and managed in a manner that will minimise the transfer of harmful aquatic organisms and pathogens to new territories where they have the potential to establish and become a harmful nuisance species. By no later than 2016 the Ballast Water Convention requires that a ballast water management system be established on board ships. The Convention is not yet in force in South Africa.

Ballast water has the potential to affect aquaculture facilities adversely. For example, a study by the CSIR in 2002/2003,[171] found that "there exists a significantly high possibility of *A. anophagefferens*, a form of algae, being transported via ballast water in ships to the waters in Saldanha Bay."[172]

The study noted that *A. anophagefferens* blooms have

> "a severe toxic effect on bivalves e.g. shellfish, inhibiting their ability to eat, grow and reproduce. This negatively affects both the ecology of the bays and the shell fishing industry. In addition to wiping out scallop and mussel populations and diminishing the size and quality of hard clams, *A. anophagefferens* blooms can do harm to other marine life. It has been shown to decrease the feeding and growth rates of ciliates which are major grazers of phytoplankton as well as being

> important food sources to other organisms like the zooplankton and fish larvae. This indicates how *A. anophagefferens* bloom's toxic effect can literally ripple through the ecological food-chain."[173]

It concluded that "should bay-wide blooms of *A. anophagefferens* become a more frequent feature of the system, this would have serious economic consequences for mussel mariculture in Saldanha Bay."[174]

The GEF-funded GloBallast Programme was established in 2000 and is aimed at assisting developing countries to reduce the transfer of harmful aquatic organisms and pathogens in ships' ballast water and implementing the Convention. A pilot has been established at Saldanha Bay. However, legislation is needed to bring the Convention into effect in South Africa.

The DoT recently published for comment the South African Maritime Draft Ballast Water Management Bill, 2013, which will be administered by the DoT and South African Maritime Safety Authority (SAMSA). The Bill's purpose is to minimise or prevent where possible the transfer of alien and invasive species (AIS) into coastal waters via ship's ballast water and to minimise or prevent harmful impacts by AIS on biodiversity, the environment, human health and South Africa's resources. The Bill further aims to promote cooperative governance and give full effect to our obligations in terms of the Ballast Water Convention.

If enacted, the Bill's intended effect on aquaculture is to eliminate biodiversity and health threats for aquaculture in ports and coastal areas by ensuring that every ship in South African waters not exempted must have and implement a Ballast Water Management plan approved by SAMSA. Ships will accordingly be required to exchange or treat ballast water only as provided for by the management plan which must conform to the standards provided for in the Act and which will identify procedures, actions and responsible officers relating to ballast water management.

5.1.8. WTO Agreements

South Africa became a member of the WTO in 1995. WTO's General Agreement on Tariffs and Trade, 1994, (GATT) and other agreements and arrangements have been absorbed into a more general WTO framework under the Final Act of the Uruguay Round (the Final Act) which affects aquaculture through provisions including those outlined below.

South Africa may also benefit by qualifying for lower tariffs as a developing country under the Generalised System of Preferences.

Specific relevance to aquaculture

As included in the Final Act, article VI of GATT provides for the right of contracting parties to apply anti-dumping measures, i.e. measures against imports of a product at an export price below its "normal value" (usually the price of the product in the domestic market of the exporting country) if such dumped imports cause injury to a domestic industry in the territory of the importing contracting party. More detailed rules governing the application of such measures are currently provided in an Anti-dumping Agreement concluded at the end of the Tokyo Round. Negotiations in the Uruguay Round have resulted in a revision of this Agreement which addresses many areas in which the current Agreement lacks precision and detail.

The Final Act generally comprises:

- the Agreement on Agriculture;

- the concessions and commitments Members are to undertake on market access, domestic support and export subsidies;
- the Agreement on Sanitary and Phytosanitary Measures; and
- the Ministerial Decision concerning Least-Developed and Net Food-Importing Developing countries.

The agricultural package includes provisions that encourage the use of less trade-distorting domestic support policies to maintain the rural economy. It provides for commitments in the area of market access, domestic support and export competition. The text of the Agricultural Agreement is mirrored in the GATT Schedules of legal commitments relating to individual countries.

The Generalized System of Preferences, or GSP, is a formal system of exemption from the more general rules of the WTO. Specifically, it's a system of exemption from the most favoured nation principle (MFN) that obliges WTO member countries to treat the imports of all other WTO member countries no worse than they treat the imports of their "most favored" trading partner. In essence, MFN requires WTO member countries to treat imports coming from all other WTO member countries equally, that is, by imposing equal tariffs on them, etc. GSP exempts WTO member countries from MFN for the purpose of lowering tariffs for the least developed countries, without also lowering tariffs for rich countries.

5.1.9. Agreements with the European Community (EC): The Trade, Development and Co-operation Agreement (TDCA) between the EC and the Republic of South Africa of 1 January 2000 and the Partnership Agreement between the members of the African, Caribbean and Pacific Group of States, of the one part, and the EC and its Member States, on the other part, signed in Cotonou on 23 June 2000 (the Cotonou Agreement)

The Agreements establish a free trade area that covers 90% of bilateral trade between the EU and South Africa.

South Africa is a signatory to the Cotonou Agreement. However, as provided in Schedule 3 to the Cotonou Agreement, although the general, institutional and final provisions of this Agreement apply to South Africa, the provisions of the TDCA take precedence. The provisions of the Cotonou Agreement on economic and trade cooperation do not apply to South Africa.

Protocol 1 to the TDCA concerns the definition of originating products (including requirements for proof of origin) and methods of administrative cooperation whilst Protocol 2 provides for mutual administrative assistance in customs matters.

Under Article 1 of Protocol 2, customs legislation means “any legal or regulatory provisions applicable in the territories of the Contracting Parties governing the import, export and transit of goods and their placing under any other customs regime or procedure, including measures of prohibition, restriction and control.” Under Protocol 2, upon request from the applicant authority, the requested authority shall provide it with all relevant information to enable the applicant to ensure that customs legislation of the requested authority is correctly applied; including information regarding activities noted or planned which are or could be operations in breach of customs legislation.

5.1.10. Agreements with EFTA: the Free Trade Agreement between the European Free Trade Association States (Iceland, Liechtenstein, Norway and Switzerland) and the Southern African Customs Union States (Botswana, Lesotho, Namibia, South Africa and Swaziland)

This agreement has been signed but is still in the process of ratification. Most of SACU's industrial goods, including fish and other marine products, will benefit from duty-free access to the markets of the EFTA States as of the entry into force of the Agreement.

Specific relevance to aquaculture

The main objective of the Free Trade Agreement (FTA) is to achieve the liberalisation of trade in goods in conformity with the relevant WTO provisions. The dismantling of tariffs is asymmetrical in that the EFTA States liberalise trade in goods in all fields on the entry into force of the agreement while the SACU States will do so gradually until 2014 on almost all industrial products.

The FTA also takes account of the Parties' diverse levels of development by allowing for special treatment of Botswana, Lesotho, Namibia and Swaziland in some respects, and by setting out principles of economic co-operation and technical assistance.

Most industrial goods, including fish and other marine products, will benefit from duty-free access to the markets of the EFTA States as at the entry into force of the Agreement. For products imported into SACU, customs duties are to be eliminated after transitional periods of different duration or a joint review by the Parties depending on which products are at stake. This asymmetrical treatment reflects the variations in the economic development of the Parties. The Agreement also contains provisions on special treatment for Botswana, Lesotho, Namibia and Swaziland under certain circumstances.

5.1.11. Arrangement with the United States of America: The African Growth and Opportunity Act (AGOA)

AGOA provides reforming African countries with the most liberal access to the U.S. market available to any country or region with which the United States does not have a Free Trade Agreement. AGOA expands the list of products which eligible Sub-Saharan African countries may export to the United States subject to zero import duty under the Generalized System of Preferences (GSP). While general GSP covers approximately 4,600 items, AGOA GSP applies to more than 6,400 items. AGOA GSP provisions are in effect until September 30, 2015. South Africa is a beneficiary under the AGOA. This status can fluctuate as each year the President of the United States of America evaluates the sub-Saharan African countries and determines which countries should remain eligible. Under the AGOA fish are defined to be included as "agricultural commodities".

Specific relevance to aquaculture

Title I provides for the "[E]xtension of Certain Trade Benefits to Sub-Saharan Africa" with Subtitle A detailing the Sub-Saharan African trade policy and Subtitle B the Sub-Saharan African benefits.

Title IV is a more general section providing for, amongst other things, agricultural products.

5.2. National legislation

5.2.1. Sea Birds and Seals Protection Act, 46 of 1973 (SBSPA)

DEA administers the SBSPA. Its purpose is to provide for the control over certain islands and rocks for the protection and the control of the capture and killing, of certain sea birds and seals; and for the disposal of the products of sea birds and seals.

Overview of specific sections/chapters of specific relevance to aquaculture

The main significance of the SBSPA is that sea birds and seals are predators of fish and aquatic organisms and therefore conflicts may arise with marine aquaculture facilities. The SBSPA prohibits shooting, wilfully disturbing, killing or capturing of sea birds or seals without a permit.

Policy on the management of seals, seabirds and shorebirds[175]

The policy outlines a framework of principles and approaches to guide and direct the responsible and orderly management of seals, seabirds and shorebirds. Of concern to aquaculture facilities is avoiding potential degradation of habitats and avoiding pollution that may adversely affect seals and sea-birds. The policy confirms that killing of seals or seabirds in conflict with aquaculture operations should be by permit and should be done humanely but other measures for protection of stock (for example, the use of acoustic harassment devices) are not dealt with. Further consideration should be given to the development of responsible protection measures.

5.2.2. Perishable Products Export Control Act, 1983 (PPECA)

The PPECA, which is the legislative responsibility of DoT, provides for the control of perishable products intended for export from the Republic of South Africa and for matters connected therewith. A "perishable product" is defined to mean:

> "any of the following products intended for export, and any by-product derived from such product, where such product or by-product requires storage in refrigerated chambers or requires to be conveyed under cold storage conditions, namely, vegetables, fruit, flowers, butter, deep frozen foods, eggs, cheese, <u>fish (including shellfish and crustaceans)</u>, meat and any other product which the Minister may by notice in the Gazette declare to be a perishable product". (Emphasis added)

Overview of specific sections/chapters of specific relevance to aquaculture

The PPECA establishes the continuation of the Perishable Products Export Control Board, established in terms of the Perishable Products Export Control Act, 1926. The Board co-ordinates the export of perishable products from South Africa.

The Board controls the export of shipment of perishable products from South Africa and the order of such shipment at all ports. Included in the Board's powers is the ability to impose a levy, by notice in the Gazette, on any perishable product exported in any calendar year under contract or other arrangement made by, through or with the consent of the board (section 17). (Examples of these levies are listed under the APS above.)

Under section 22, the Minister may exclude, by notice in the Gazette, the application of the PPECA to the export of perishable products to and for consumption in any country or territory.

The most recent notice in respect of imposed levies is the Perishable Products Export Control Board: Imposition of levies on perishable products (BN 44 of 30 March 2012, Government Gazette No. 35173) which imposes sea levies on the transit of perishable products, "other levies" and inspection levies (in conjunction with the PPECA).

5.2.3. Labour and associated law

Labour laws are mainly administered by the DoL but **the dti** is responsible for the BBBEEA. Considerations of labour law relevant to the establishment of an aquaculture facility include the creation of basic fair conditions of employment, a labour relations regime, the economic empowerment of historically disadvantaged persons and equality in the work place.

In the establishment of an aquaculture facility due consideration will have to be given to the workforce required. In the case of unskilled labour, workers will require extra legal protection, skills development and empowerment.

Issues that were identified as causing instability within the aquaculture sector include: seasonal labour; new labour unions; foreign workers; pending elective conferences; poverty; lack of service delivery; and unfair labour practices. These issues are not peculiar to the aquaculture sector but are applicable and of concern to most agricultural industries or industries situated in rural areas.

Basic Conditions of Employment Act, 75 of 1997 (BCEA)

The BCEA aims to give effect to the right to fair labour practices referred to in section 23 (1) of the Constitution by establishing and making provision for the regulation of basic conditions of employment; and thereby to comply with the obligations of the Republic as a member state of the International Labour Organisation. Of particular relevance is the Sectoral Determination 13: Farm Worker Sector, South Africa (*Government Gazette* No. 28518, GNR.149 of 17 February 2006).

Labour Relations Act, 66 of 1995 (LRA)

The LRA aims to change the law administering labour relations to give effect to section 27 of the Constitution. The LRA provides for trade unions; collective bargaining at the work-place and at sectoral level; the right to strike, work-place forums; mediation and arbitration (for which purpose the Commission for Conciliation, Mediation and Arbitration is established); and for Labour and Labour Appeal Courts to be superior courts.

Employment Equity Act, 55 of 1998 (EEA)

The EEA aims to promote the constitutional right of equality and the exercise of true democracy, eliminate unfair discrimination in employment, ensure the implementation of employment equity to redress the effects of discrimination, achieve a diverse workforce broadly representative of our people, promote economic development and efficiency in the workforce, and give effect to the obligations of the Republic as a member of the International Labour Organisation.

Broad-Based Black Economic Empowerment Act, 53 of 2003 (BBBEEA)

The BBBEEA aims to establish a legislative framework for the promotion of black economic empowerment as a counter measure to the inequalities of the past and establish a national policy on broad-based black economic empowerment so as to promote the economic unity of the nation, protect the common market, and promote equal opportunity and equal access to government services.

The AgriBEE Sector Charter on Black Economic Empowerment

The scope of the AgriBEE Transformation Charter includes any enterprise which derives the majority of its turnover from:

- the primary production of agricultural products,
  - the provision of inputs and services to:
    - enterprises engaged in the production of agricultural products;
    - the beneficiation of agricultural products whether of a primary or semi-beneficiated form; and
    - the storage, distribution, and/or trading and allied activities related to non-beneficiated agricultural products.

DRDLR Delivery Outcome Agreements

The delivery outcome agreements show a strong policy in favour of rural job creation and for those in the relevant communities to benefit directly from development in their area. For example:

Outcome 4 : decent employment through inclusive economic growth
Outcome 7: vibrant, equitable and sustainable rural communities and food security for all.

5.2.4. Occupational Health and Safety Act, 85 of 1993 (OHSA)

The OHSA, administered by DoL, provides for the health and safety of persons at work and for the health and safety of persons in connection with the use of machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; to establish an advisory council for occupational health and safety; and to provide for matters connected therewith. Consequently it governs the health and safety of all persons involved in aquaculture post-production processes.

Under the OHSA a "health and safety standard" is

> "any standard, irrespective of whether or not it has the force of law, which, if applied for the purposes of this Act, will in the opinion of the Minister promote the attainment of an object of this Act."

"Work" is defined as

> "work as an employee or as a self-employed person, and for such purpose an employee is deemed to be at work during the time that he is in the course of his employment, and a self-employed person is deemed to be at work during such time as he devotes to work as a self-employed person."

A "workplace" is the place where a person performs work in the course of employment.

5.2.5. Corporate law (CA, TPCA, COA)

In the establishment of an aquaculture facility due consideration will have to be given to the kind of legal entity that will comprise the facility.

Overview of Acts of specific relevance to aquaculture

Companies Act,2008:	A company provides legal personality separate from the natural person having a share in or being on the board of the company. There are however stringent administrative controls and annual reporting requirements which makes a company more expensive to operate than other options hereunder.
Trust Property Control Act:	A business trust is a legal vehicle affording its trustees and beneficiaries a degree of separate legal personality. A trust is registered with the Master of the High Court and managed by its trustees in terms of the trust deed and the TPCA.
Co-operatives Act:	A co-operative is an autonomous association of persons united voluntarily to meet their common economic and social needs and aspirations through a jointly owned and democratically controlled enterprise organised and operated on co-operative principles. This is a

potentially useful vehicle for persons with limited or specialised produce output, e.g. a number of aquaculture facilities in a particular area wanting to offer a larger range of produce as a unit to the market.

5.2.6. Customs and Excise Act, 91 of 1964 (CEA)

The CEA, which is administered by **the dti** provides for the levying of customs and excise duties and prohibits and controls the import, export, manufacture or use of certain goods. "Goods" are defined to include "generally all wares, articles, merchandise, animals, currency, matter or things". "Animal" is not defined.

Overview of specific sections/chapters of relevance to aquaculture

Chapter 3 governs the "importation, exportation and transit and coastwise carriage of goods". It is of general relevance. In particular, section 7 regulates the arrival and departure of ships or aircraft, section 8 governs the provision of cargo reports in accordance with any requirements that may be prescribed by the Commissioner and section 18A provides for the export of goods from a custom and excise warehouse.

Chapter 4 governs customs and excise warehouses and the storage and manufacture of goods therein. Customs and excise warehouses are places licensed by the Commissioner:

- to store dutiable imported or locally-produced goods;
- for the manufacture of dutiable goods from imported or locally-produced materials; or
- for any imported and such locally-produced materials the Commissioner approves in respect of the warehouse.

Section 27 provides that goods liable to excise duty or fuel levy may not be manufactured except under section 27 and in a customs and excise manufacturing warehouse licensed under the CEA. Under section 36A every manufacturer of excisable goods specified in Section B of Part 2 of Schedule No. 1 (which schedule is not attached to the CEA but obtainable only in the Jacobsens Harmonized Customs Tariff publication by LexisNexis as well as at the Office of the Commissioner of Customs and Excise), and every owner of excisable goods specified in Section B of Part 2 of Schedule No. 1 manufactured for him at least partly by his own materials must license his premises as a special customs and excise warehouse for purposes of excise duty. Section 37 governs the duty applicable to goods manufactured in customs and excise warehouses.

Section 46A relates to the non-reciprocal preferential tariff treatment of goods exported from the Republic into any country on compliance with any relevant enactment of that country. Section 49 provides for agreements in respect of rates of duty lower than general rates of duty and other agreements providing for matters requiring customs administration. These agreements include (as regulated by the Rules) the Treaty of the Southern African Development Community (the SADC Treaty) and the Protocol on Trade concluded under Article 22 of the SADC Treaty and the Free Trade Agreement between the European Free Trade Association States and the Southern African Customs Union States. Goods under the SADC Protocol on Trade are defined as both "materials", meaning "any ingredient, raw material, component or part and the like, used in the manufacture of the product, and "products" meaning the product being manufactured, even if it is intended for later use in another manufacturing operation.

Under chapter 9, section 72, the value of goods exported is determined by the price of those goods free on board at the place of despatch from the Republic, which value must be declared on the bill of entry export. If there is no such free on board price, the export value shall be the value as if the goods would have been sold at a free on board price.

5.2.7. International Trade Administration Act, 71 of 2002, (ITAA)/ South African Customs Union Agreement

Purpose of legislation as relates to aquaculture

The purpose of the ITAA, which is administered by **the dti**, is to:

- establish the International Trade Administration Commission;
- provide for the functions of the Commission and for the regulation of its procedures;
- provide for the implementation of certain aspects of the Southern African Customs Union (SACU) Agreement in the Republic;
- provide, within the framework of the SACU Agreement, for the continued control of import and export of goods and amendment of customs duties; and
- provide for matters connected therewith.

Subject to specific exceptions in subsection 2(2), the ITAA applies to all economic activity within, or having an effect within, the Republic. "Goods" are defined so as to include "all wares, articles, merchandise, animals, currency, material or objects of whatsoever nature"; and "in relation to any particular goods, any other goods that are reasonably capable of being substituted for them, taking into account ordinary commercial practice and geographical, technical and temporal constraints."

The SACU comprises Botswana, Lesotho, Namibia, South Africa and Swaziland. The aims of the SACU Agreement include eliminating import tariffs and non-tariff barriers and harmonise product standards and technical regulations within SACU.

Overview of specific sections/chapters of specific relevance to aquaculture

Although the ITAA pertains in large part to the SACU Agreement, and the SACU Agreement is said to be annexed at schedule 1 to the ITAA, at schedule 1 it provides that the SACU Agreement will only be inserted following its final conclusion and the meeting of the constitutional requirements pertaining to international agreements. A new SACU Agreement was concluded in 2002 and was ratified by all members in July 2004. The SACU Agreement has been criticised as largely theoretical and lacks a well-functioning institutional framework.

The International Trade Administration Commission is established under chapter 3. This Commission operates, amongst other things, to carry out functions arising out of South Africa's trade agreement obligations (if these functions have been assigned by the Minister) (section 15), to investigate and evaluate applications in terms of section 26 of the ITAA with regard to alleged dumping, or subsidised exports, in or into the Republic or the Common Customs Area, safeguard measures and the amendment of customs duties (section 16), and to issue certain permits and certificates including those under chapter 4 of the ITAA (section 17).

Investigating officers are empowered to inspect import and export controls (chapter 4, section 41) and to search and enter premises (with a warrant unless in exceptional circumstances) (chapter 4, sections 42- 45). Fines up to R500 000 can be imposed under section 55.

Regulations passed under the ITAA include those for:

- anti-dumping in GN 3197 of 14 November 2003 (relating primarily to imported products although similar provisions should cover goods exported from South Africa to the other SACU members); and
- counter-vailing in GNR 356 of 15 April which regulate special measures imposed to offset subsidies bestowed directly or indirectly upon the manufacture, production or export of any merchandise.

On 10 February 2012, the Minister for Economic Development published a notice for "International Trade Administration Commission of South Africa: Export control" (Under GNR.92, Government Gazette No. 35007). The Notice lists certain products for which permits are required prior to export. Fish and fisheries products are not included in these lists.

6. FINDINGS REGARDING CURRENT SYSTEM

In this chapter we summarise our findings regarding the current system including the major issues raised by stakeholders.

6.1. Stakeholder views on current system

Stakeholders were asked to identify problems with the current system and to describe what is needed:

- to develop the sector; and
- to control or manage the sector better. Their responses are summarised below.

6.1.1. New Act

The aquaculture sector, particularly the marine aquaculture sector, is perceived as over-regulated by stakeholders and some felt that a rights/permit system is not necessary for aquaculture. One stakeholder believed that the current legislation is biased towards protection of the environment rather than development of the industry. The new Act should therefore be developmental in nature.

Stakeholders felt strongly that development of dedicated aquaculture legislation is necessary to develop the sector. The legislation should regulate both freshwater and marine aquaculture. This should replace rather than supplement existing legal controls in the sector, since it is already perceived as over-regulated. The legislation should embody a movement away from regulating aquaculture as a fishery sector and towards regulation as an agricultural sector. It should be clear on which organisms are regulated – for example, invertebrates must be included.

The Act should also deal with the issues outlined below.

Permits

Aquaculture should be removed from the rights regime under the MLRA. Some stakeholders felt that no permitting is necessary for the sector. Others were of the view that a streamlined, integrated permitting system is needed for all the necessary approvals. A faster, clearer and less complex approval process should be provided for including, the right to attend the meeting where the opposition is assessed in order to supply additional information as needed. Different permits should be available for the research, pilot and commercial phases of a project and the permitting regime should differentiate between commercial and small scale facilities, with the latter being less-regulated.

The use of general authorisations under the NWA for aquaculture activities should be investigated to streamline the permitting process. The permitting regime should be less restrictive so as to allow small scale enterprises to enter the market. The thresholds in the EIA Regulations, 2010 should be re-considered and made less restrictive.

The period for which authorisations are issued should be longer to promote long-term certainty and security for enterprises, and thus the ability to secure funding.

Introduction of alien species must be properly regulated but the law in this regard should be made simpler.

Certification scheme
Stakeholders believed that food safety is a significant gap in the legal framework – South Africa needs to be able to comply with international standards if the industry is to be developed. An accredited certification scheme for aquaculture products must be developed, including the establishment of a certification body.

The traceability of products must be better regulated to meet international standards and ensure food safety. Legislation must provide for eco-labelling of aquaculture products.

Strategic approach
Tools such as SEAs and EMFs should be used to assess potentially suitable zones for aquaculture on a larger scale. Aquaculture development nodes should be identified and declared for both marine and freshwater sectors.

Strategic risk assessments could be provided for to avoid comprehensive risk assessments having to be done at the individual permit level.

Animal health and welfare
Many stakeholders believed that the current animal health legislation is insufficient to develop the sector. A mechanism and system is needed to monitor and control disease outbreaks and there must be a mechanism for compensation where stock is destroyed or seized, including for operations involving invertebrates which are currently excluded from the ADA.

Feed must be properly regulated to meet international standards and a list of approved veterinary drugs for aquaculture should be published.

International certification requires animal welfare to be considered. The law in this regard should be clarified but not made more onerous.

Reporting
There must be an obligation placed on industry to report and provide useful information to the regulator to assist with decision-making. Currently this is done in the marine aquaculture sector through the permitting system.

There must also be an obligation for the regulator to make useful information, for example, on successful and unsuccessful projects available to the industry.

Institutions
A dedicated and capacitated body is needed to deal with enforcement of aquaculture (e.g.: aquaculture inspectors). More inspections are needed.

A body or mechanism is necessary to coordinate customs and importation. Customs officers do not understand how important it is to get larvae/eggs to the aquaculture facility within a certain time period as the eggs and larvae can perish if left for long periods of time.

Other

Cooperatives must be promoted as legal entities to operate aquaculture facilities.

Intellectual property rights must be protected and indigenous genetic resources must be protected, perhaps by means of a country of origin register.

Provision should be made for norms and standards to be developed (for example, in respect of discharge permits).

The industry should be allowed to police and monitor itself to ensure compliance and reduce the enforcement burden on government. Standards should be set for operator responsibility.

Provisions to deal with the breeding of fish for ornamental purposes must be carefully considered. This is because ornamental species may pose a significant threat to biodiversity even though the operations may be on a smaller case. However, integration of the laws that apply to the sector might result in standard and enforceable permit conditions which are supported by the different spheres of government and give effect to biodiversity conservation.

6.1.2. Support for the sector

Stakeholders in industry believed that more needs to be done to make the industry accessible to Historically Disadvantaged Individuals (HDIs) and small scale enterprises. This includes technical support, help with marketing and extension services.

Stakeholders were of the view that there should be extension officers available to liaise with all spheres of government and who can assist with the whole production process. For example, help is needed with concluding leases of state land. However, such capacity does not exist in government at the moment and would need to be developed. In particular, development of animal health capacity was identified as a need.

Support services offered by government should cover the following areas:

- animal health;
- food safety;
- market development;
- research;
- compliance with international requirements; and
- access to finance.

Development funding should be available, particularly in the form of project finance, to make the industry accessible to Small, Medium and Micro-Enterprises and new entrants. More guidelines are needed for the sector (for example, regarding permitting requirements), especially the freshwater sector, and there needs to be more training and awareness for members of the public. A mechanism is needed for existing facilities to determine whether they comply with legislation and seek help with compliance without compromising themselves.

6.1.3. Role of government

Stakeholders felt that the roles and mandates of the different spheres need to be clarified. For example, the mandate of DAFF with regard to freshwater aquaculture must be clarified. A stakeholder was of the view that provincial government should become more proactive in the sector.

DAFF is underfunded and more funding should be available for example to improve institutional arrangements. There is a lack of capacity, particularly technical capacity, in all spheres of government. A particular need that was identified was for State Veterinarians that are specialists in aquatic organisms. Funding should be provided for training and capacity building and staff numbers greatly increased. There was a perception among stakeholders that unlawful activity is not being adequately controlled in the sector.

Stakeholders felt that there should be a "National Aquaculture Development Initiative" – a national coordinating agency at government and industry level to serve as developmental and management agency. It was felt that although there was progress in cooperative governance, there was room for improvement.

Service standards and benchmarks to measure the performance of regulators should be established. Recognition of formalised sector bodies so that they are able to enforce self-policing needs to be explored and investigated further.

6.2. Our findings regarding the current system

6.2.1. Administration of the sector

There is no clear legal definition of aquaculture. The major problem regarding the current legal framework is that aquaculture straddles a number of legal issues. Most laws applicable to it pre-date the development of the aquaculture sector, and this means that the legal controls on aquaculture are fragmentary and duplicated.

Marine and freshwater aquaculture are regulated separately – marine by national legislation administered mainly by DAFF and freshwater by provincial legislation administered by provincial departments responsible for the environment. That provincial legislation is for the most part outdated, inconsistent from province to province and not aligned with national legislation.

There is no legal or other justification for aquaculture to be regulated in terms of the rights process in the MLRA. Any aquaculture facility is likely to require multiple authorisations from various organs of state. There is currently no integrated process in place for obtaining the authorisations, although mechanisms do exist in current laws for integrated permitting.

Many organs of state are involved in the administration of the sector and despite the establishment of forums such as the MAWG, AIF and PAIF, intergovernmental cooperation is not regarded as sufficient.

The promulgation of a dedicated aquaculture Act is not inevitability. However, there are strong reasons for doing so, which include promoting an integrated and strategic approach to planning (including land use planning and biodiversity protection), decision-making (including integrated permitting dealt with in more detail below) and enforcement; and to provide a better mechanism for intergovernmental cooperation.

6.2.2. Securing sites

Freshwater aquaculture

Aquaculture is not consistently permitted as a use within the "agriculture" zoning in the schemes of the various local authorities, leading to the need for rezoning applications. Subdivision of land is a prerequisite for rezoning. Therefore, the permission of the Minister of Agriculture is often necessary in terms of the SALA. The publications of zoning schemes are the responsibility of local government; therefore cooperation is needed with local authorities nationally to ensure zoning schemes enable aquaculture facilities to be established without the need for re-zoning applications.

Aquaculture is not necessarily excluded from inland protected areas. However, whether it will be permitted depends on the management plan and authority for the area in question. In general, since aquaculture is an agricultural activity, a very strong case would have to be made for permitting this kind of activity in most kinds of protected areas. A potential exception is Protected Environments under NEMPAA which accommodate a more mixed use of land.

Marine aquaculture

The proposed amendments to the ICMA regarding leases of coastal public property are creating uncertainty around the future of leases and how coastal use permits will be regulated, in particular, whether aquaculture will be listed as an activity requiring a coastal use permit. A potential problem arises if it is not, in that coastal permits will not provide for the exclusive use of the area in question. Bearing in mind that in terms of the ICMA everyone has the right to use coastal public property, a legal question arises as to whether the owner of a facility can assert exclusive rights over the area in question. A further question arises as to whether it is advisable to dispense with leases (which have the ability to generate revenue for the maintenance of the coastal area) in favour of permits, which do not.

The Minister of Environmental Affairs may allow the construction or erection of any building or other structure on or over any land within a marine protected area (MPA) if that activity is required for the proper management of the MPA. It is unlikely that the building or structure for an aquaculture facility would be required for the proper management of a MPA. The Minister would therefore not be able to approve such an activity within the MPA. It is recommended that this section in the MLRA be amended and that appropriate safeguards be provided to ensure that wild populations or the MPA is not affected by the aquaculture facility.

Aquaculture may specifically be provided for in coastal zoning schemes but it appears that this has not yet occurred. The provisions of the ICMA may also be used to identify suitable aquaculture development zones: for example, using the provisions relating to special management areas or developing coastal management programmes in conjunction with coastal zoning schemes to designate areas suitable for aquaculture and to set objectives that will support the aquaculture sector. A national strategic environmental assessment may also assist with informing and identifying suitable aquaculture areas. This could be used in conjunction with the coastal zoning schemes provided in the ICMA.

Stakeholders have also raised the prohibitive costs in securing leases, the short duration period for which these leases are issued and the difficulty in getting officials to sign-off on these leases. The uncertainty makes it difficult to justify capital expenditure which poses a significant limitation on future long-term investment in aquaculture projects. Given that these leases are usually entered into with an organ of state and in light of government's commitment to promote this sector, the security of tenure issue must be dealt with. It seems that for now it should be dealt with at ministerial level and delegated to other officials once the respective organs of state have developed or adopted policy positions (preferably in conjunction with or after consulting DAFF) clearly identifying how they are going to deal with any of the above factors.

6.2.3. Impacts of aquaculture on the environment

As indicated above, one of the main issues identified by stakeholders is the number of permits required in terms of environmental legislation. The EIA process is too slow and is expensive (for example, because consultants must by law be used to conduct the process). It is also complex and difficult for new and disadvantaged entrants to the market to navigate.

There is potential for making the regulations less restrictive on the aquaculture sector, particularly small enterprises, by investigating whether the listed activities can be less restrictively drafted or the thresholds set higher without defeating the purposes of the regulations. The declaration of set-back lines in terms of the regulations may provide areas where facilities do not require authorisation. The determination of set-back lines under the ICMA would have a similar effect.

The development of norms and standards under section 24(2)(d) of NEMA may remove the requirement of environmental authorisations for aquaculture facilities and hence for EIA processes which are lengthy and expensive. An investigation into this is already under way. Due to the fact that laws other than NEMA also require EIAs for listed activities, it may not be possible to regulate all types of facility via norms and standards.

The water use licence process under the NWA is also lengthy and complex but General Authorisations may be used as a mechanism to avoid issuing separate water use licenses for aquaculture facilities, since General Authorisations can specify conditions.

The TOPs regulations may have the anomalous effect of restricting the breeding of protected aquatic organisms by aquaculture facilities which may relieve the pressure on wild stocks and contribute to the viability of the species.

It is not clear how the TOPs regulations apply to aquaculture facilities, in relation to whether they are regarded as "captive breeding facilities". There is potential for overlap with the MLRA regulations where marine species are declared as TOPs.

6.2.4. Impacts of the environment on aquaculture facilities

In freshwater aquaculture, the provisions of the NWA potentially allow for adverse impacts on aquaculture to be managed in a strategic manner via catchment management plans and strategies.

In the coastal zone, coastal management programmes which set coastal management objectives and estuary management plans may potentially protect aquaculture facilities from adverse environmental impacts such as poor water quality resulting from other water uses in the area.

6.2.5. Product safety and quality

As identified by stakeholders, there are no certification standards and no accredited certification authority with regard to food safety. DAFF is currently applying international best practice with regard to health surveillance and implementing food safety programmes through the MLRA standard permit conditions, but there is no equivalent mechanism in the freshwater industry.

Although standards, including international standards may be adopted under existing legislation such as the NRCSA and the SA and (in the case of labelling) under the CPA, this has not been done.

6.2.6. Animal health and disease control

There are no lists of approved stock remedies or veterinary drugs although these can be achieved under existing legislation.

There is no justification for invertebrates to be excluded from the ambit of the ADA. The AHA will potentially resolve this but it has not yet been enacted.

6.3. Are the problems legislative or institutional?

As is evident from the above paragraphs, there are both institutional and legislative constraints to the development of the aquaculture sector.

6.4. Why do we have the problems?

The problem of over-regulation is because aquaculture is a relatively new sector in South Africa and, especially with regard to provincial ordinances, much of the legislation that governs it was not developed specifically with aquaculture in mind. This has given rise to unintended consequences in the legislation resulting in gaps while at the same time making the framework excessively complex. Delays in implementing new legislation such as the TOPs Regulations and the AIS Regulations have meant that there have also been delays in streamlining and aligning provincial biodiversity legislation with national biodiversity legislation.

The institutional constraints are as a consequence of under-funding of DAFF and lack of capacity in all organs of state involved, as well as a need for better intergovernmental cooperation.

6.5. What are the consequences of the problems?

The main consequence for the aquaculture sector is the plethora of authorisations that must be obtained before a facility can be constructed and operated.

The two halves of the industry – marine aquaculture and freshwater aquaculture are separately regulated. There are substantial gaps in the legal framework, particularly relating to the traceability of aquaculture products, certification for export and control of use of veterinary drugs in aquaculture.

Lack of cooperation between departments and lack of capacity mean that the authorisation process is not currently streamlined or integrated.

The entry into the sector of HDIs and new entrants is not currently well promoted in the legal framework, and in general the legal framework does not provide an enabling environment for the development of the sector.

6.6. Can integrated permitting be achieved?

Overview of integration under the current framework

There are a number environmental or land use authorisations that are potentially relevant to the establishment and operation of an aquaculture facility. Of the authorisations, arguably the most crucial is an environmental authorisation under NEMA since it requires the applicant to undertake a detailed and often lengthy EIA process involving extensive public participation as part of the application process. Depending on the nature of the enterprise, aquaculturists may be obliged to undertake either a shorter BA process or the more comprehensive scoping and environmental impact assessment.

Authorities responsible for making decisions in other consent processes may consider the reports in the prepared EIA process in their own decision. Therefore this recommendation focuses on the environmental authorisation process but also considers opportunities to create an integrated authorisation process.

Measures to allow for integrated authorisation under the current legislative framework

Establishment of an intergovernmental authorisations committee

If mandates under various laws cannot be consolidated under one law then those empowered to exercise the mandate may cooperate. For example, an intergovernmental authorisations committee could be established, consisting of at least the principal national government departments involved in authorising aquaculture projects. It is obviously desirable for Provincial and Local Authorities to be represented on the committee.

The committee's purpose would be to facilitate a so-called one-stop-shop for permitting and authorisation as it relates to aquaculture. If it is not possible for the committee to decide applications, it should at least coordinate and review applications and make recommendations to decision-makers.

The success of the committee would depend on good systems being developed for its operation as well as political support. Strong support and guidance from DEA and DAFF for the process would be needed to maintain the momentum of the committee.

Ideally, the work of the committee could be regulated by an intergovernmental agreement or Memorandum of Understanding (MoU) in which its purpose, scope and method of working should be clearly spelled out as well as the roles and responsibilities of the parties. There is legislative provision for such an agreement in section 24K of NEMA which:

1. allows the Minister or an MEC to consult with any organ of state responsible for administering the legislation relating to any aspect of an activity that also requires environmental authorisation under NEMA in order to coordinate the respective requirements of such legislation and to avoid duplication;
2. allows the Minister or an MEC to enter (after consultation with the organ of state contemplated above) into a written agreement with the organ of state in order to avoid duplication in the submission of information or the carrying out of a process relating to any aspect of an activity that also requires environmental authorisation under NEMA; and
3. allows the Minister or MEC, when he or she considers an application for environmental authorisation that also requires authorisation in terms of other legislation, to take account of any process authorised under that legislation as adequate for meeting the requirements of NEMA relating to intergovernmental cooperation and proper investigation.

In the short-term, the committee should concentrate on fast-tracking the environmental authorisation process for selected facilities since the EIA process is potentially the most time-consuming to follow and because in terms of NEMA, all the other decision-makers for an aquaculture facility that may significantly affect the environment are required to consider, among other things, whether the development is environmentally sustainable.[176] In practice, that information will not be before them until the EIA process is completed.

A third key reason for focussing on the environmental authorisation process is that it is the most easily integrated with other important authorisations. The committee should make use of provisions in the key environmental management Acts to develop an integrated authorisations process for aquaculture applications, the end result of which is the issue of an integrated authorisation comprising at least all of the authorisations for which the DEA and the DWA are responsible, that is, an environmental authorisation, waste management licence and water use licence. There is already provision in NEMA, the Waste Act and the NWA for the issuing of integrated authorisations. These are discussed below.

NEMA

The most effective means of streamlining the application process is to make use of the provisions of section 24L of NEMA, which allows:

1. authorities empowered by other laws to act jointly with the competent authority under NEMA in order to issue integrated authorisations;
2. DEA to regard an environmental authorisation issued under NEMA as a sufficient basis for the granting or refusing of an authorisation, a permit or a licence under a specific environmental management Act (SEMA)[177] if that SEMA is also administered by DEA (e.g. a waste management licence); and
3. DEA to regard an authorisation in terms of any other legislation to be an environmental authorisation for the purposes of NEMA.

NWA

The NWA allows the DWA to dispense with the need for a water use licence if it is satisfied that the purpose of the NWA will be met by the granting of an authorisation under any other law.[178] The DWA may also arrange with other organs of state to combine their respective licence requirements into a single licence requirement.[179]

WASTE ACT

A waste management licence is required for undertaking waste management activities and for constructing facilities for waste management activities. The Waste Act requires a licensing authority under the Act to co-ordinate or consolidate the application and decision-making processes in the Waste Act with the decision-making process in NEMA and other legislation administered by other organs of state, without whose authorisation of the waste management activity may not commence.[180] A licensing authority may either:

1. issue an integrated licence, which must be regarded as an integrated authorisation under NEMA;[181] or
2. issue the licence as part of a consolidated authorisation consisting of different authorisations issued under different legislation by the persons competent to do so, consolidated into a single document "in order to ensure that the conditions that are imposed by each competent authority are comprehensive and mutually consistent."[182]

An integrated licence may be enforced in terms of any of the laws under which it was granted but conditions may only be enforced in terms of the specific laws that authorised them.[183]

Other authorisations

The approval process under the NHRA is already integrated with NEMA and the EIA Regulations, 2010 since it provides that where a heritage impact assessment will be carried out as part of the NEMA process then a separate assessment is not necessary under the NHRA.

The TOPs Regulations allow for integration of TOPs permits with MLRA permits and with corresponding authorisations in terms of provincial legislation.

The EIA process, which is discretionary in an application for an MLRA permit, can be aligned with the NEMA EIA process.

Delegations

Consideration should also be given to whether responsibility for deciding other applications for authorisations for aquaculture could be delegated to DAFF or DEA in the short term or, where DEA was originally the delegating authority, whether those delegations can be revoked or DEA's authority to decide applications exercised concurrently with DAFF.

Alignment of Conditions and Time Periods

Consideration should also be given to the alignment of the conditions of permits and licences once awarded. Where time periods running concurrently expire at approximately the same time it makes the administration simpler. An example would be for a DAFF aquaculture licence to be valid for 40 years in order to align with the maximum time periods for a DWA water use licences. Regular reviews can also be synchronised to assess compliance with permit conditions and the suitability of permit conditions.

Long-term measures

Expansion of intergovernmental authorisations committee

The committee could be expanded to include other authorities, including provincial authorities (where it is undesirable for their decision-making functions to be delegated) and local authorities. If the committee performs a decision-making function, it may not be possible for decisions that are the responsibility of local authorities to be made by the committee since these are usually made by political structures within the local authorities. In addition, the procedure to be followed varies from one province to the other and from one local government area to another.

In our view, there is need for consultation with local authorities since most zoning schemes do not provide for a suitable zoning for the establishment of aquaculture facilities and it would be helpful if guidance could be provided to local authorities on why and how provision should be made for the development of aquaculture facilities in their various planning instruments.

Guidance to Stakeholders

In general, stakeholders should be given as much advice as possible about the application procedure and about the nature and quality of information that will be required during the integrated authorisation process to help them to avoid making errors that must be corrected or having to repeat steps in the process. Guidelines can also help to streamline the decision-making process since, if an application complies with all applicable guidelines as well as any legal requirements, a decision-maker has a rational basis for assessing and approving the application.

The status of all existing, draft and proposed guidelines should be clarified and communicated to stakeholders and decision-makers and any conflicts between guidelines should be resolved. In our view there is scope for a further guideline for the integrated aquaculture authorisation process, if this can be established. The information that should be provided in the guideline should include, among other things:

- a checklist of questions to be addressed at the initial phase of the EIA process and of alternatives that authorities would expect to be assessed;

- draft Terms of Reference for the specialist studies or risk assessments that applicants must undertake;
- guidance on the public participation process that authorities will regard as sufficient; and
- a checklist of issues to be addressed by the environmental management plan for a particular species or aquaculture process.

Exemptions

Most of the legislation governing the environmental and land-use consents allows for exemptions to be obtained from performing certain steps in the process. It would be useful for each competent authority to determine in advance the circumstances in which exemptions can be obtained by applicants in order to shorten the authorisations process or to avoid applications for exemptions where it is unlikely that the authorities would grant them.

7. COMPARATIVE ANALYSIS AND ASSESSMENT OF AQUACULTURE REGULATION IN OTHER COUNTRIES

The aquaculture governance systems reviewed in this chapter include nine countries with aquaculture sectors at varying stages of development from across the globe including countries from Africa (Mozambique and Namibia), Australasia (Australia), Asia (China, India, Indonesia), Europe (Norway), North America (Canada) and South America (Brazil).

This chapter describes how some of the key challenges that arise in developing and regulating an aquaculture sector have been addressed by the legal systems and institutional frameworks of selected foreign countries. The challenges explored below were identified from the issues and findings regarding the current system in South Africa (discussed above). The information in this chapter is intended to identify different legal techniques and approaches that have been adopted by other countries in addressing the key challenges that face South Africa and to identify any lessons that South Africa could learn from the experience of other countries while bearing in mind the substantial differences between those countries and South Africa.

The different approaches taken in the countries reviewed are discussed below in relation to:

1. the nature and structure of the aquaculture legislation;
2. the authorisations required;
3. control on the movement of aquaculture species;
4. aquaculture zones;
5. animal health, pharmaceuticals and feeds; and
6. food safety.

Further information on the governance systems for aquaculture in each of the countries referred to above is available in **Appendix 4**.

7.1. Nature and structure of aquaculture legislation

The nature and structure of aquaculture legislation varies widely between countries. In many countries when aquaculture first emerged responsibility for regulating it was allocated to existing departments responsible for capture fisheries because of their knowledge of fish and aquatic species. However many countries have subsequently appreciated the considerable differences between capture fisheries (which is a form of hunting wild species) and aquaculture (which is a farming activity) and the different regulatory approaches that each requires. This has resulted in a move away from regulating aquaculture under legislation designed for capture fisheries and the development of aquaculture-specific legislation. However, some countries still retain a distinction between marine aquaculture and inland aquaculture, in some cases this is due to the different constitutional allocation of responsibilities. For example, in **Malaysia** marine aquaculture is a federal concern while inland aquaculture is regulated at state level.

Aquaculture may be regulated under:

- fisheries legislation that has been modified to deal with aquaculture;
- comprehensive aquaculture-specific legislation dealing with all types of aquaculture (which, depending on the constitutional structure of the State in question may exist at federal, state, provincial or municipal levels);
- aquaculture-specific legislation dealing with marine aquaculture and separate aquaculture legislation dealing with inland aquaculture (i.e. non-marine aquaculture);
- under many different legislative instruments which each regulate a particular aspect of aquaculture.

7.1.1 Modified marine fisheries legislation

In **Brazil** aquaculture is regulated under existing fisheries legislation (which is not very comprehensive) but aquaculture specific decrees have been promulgated since 2003. Similarly in **Malaysia** and **China** licences to undertake aquaculture projects are granted under existing fisheries law.

In **Mozambique**, General Aquaculture Regulations made under the Fisheries Act apply to both marine and inland aquaculture.

In Australian states other than South Australia, aquaculture is dealt with under general fisheries legislation. **Tasmania** has two separate pieces of legislation governing marine and inland fisheries respectively.

7.1.2 Comprehensive aquaculture specific legislation

Norway has a single Act, enacted in 2005, which governs both inland and marine aquaculture. The Aquaculture Act regulates such aspects as environmental standards and land utilisation as well as control and enforcement.

Namibia has a relatively simple aquaculture-specific Act that mainly deals with licensing, health management, disease control, access to land and water and environmental protection.

In **Australia**, aquaculture legislation is enacted at state or territory level and the various areas regulate differently. **South Australia** has a single dedicated Aquaculture Act.

7.2. Authorisations required

7.2.1. Aquaculture authorisations

In **Norway**, an application for an aquaculture licence under the Aquaculture Act, 2005, is filed with the appropriate regional office of the Directorate of Fisheries, who acts as a one-stop-shop, forwarding the application to other relevant authorities including the Food Safety Authority, County Governor, National Coastal Administration and Water Resources and Energy directorate. Most aspects including environmental impact, water, waste and land use are dealt with in terms of the single aquaculture licence. However, separate authorisations may be required for water abstraction and for using either marine waters or freshwater watercourses and surface water.

In **Namibia** an aquaculture licence may not be issued until all other land use, environmental and water use rights have been obtained.

7.2.2. Authorisations to use a site

Separate land use licences are required in most of the countries surveyed, including **Australia, China, Brazil**, and **Namibia**.

In **China** there has been a move away from communal ownership towards granting formal rights to parcels of land for individuals for a period of 30 years

Australian marine aquaculture projects require an aquaculture lease as well as a licence.

7.2.3. Authorisations to abstract and discharge into water

Authorisations to abstract water for aquaculture or to discharge effluent from aquaculture into water bodies must be obtained in many countries including **China, Brazil, Malaysia**, and **Namibia**. The complexity of water law in **Brazil** has been identified as a restricting factor in the development of the aquaculture sector.

In **China** water use permits are required and use rights for marine areas also requires a permit. In **Malaysia** as many as three wastewater discharge licences may be required. In **Namibia**, water rights are required for abstraction and discharge.

7.2.4. Environmental authorisations

In **Australia** an environmental approval may be necessary at federal level if the development has or may have a significant impact on “matters of national environmental significance.” Other approvals may be necessary at state level.

In **Brazil**, a 3 stage environmental licence (preliminary, installation and operation) is required as well as a water right and land use licence. The position regarding alien and invasive species varies from state to state within Brazil.

Indian EIA legislation uses thresholds based on the size of the mariculture facility to determine the process that must be followed to assess environmental impacts. A similar approach is taken in **Vietnam** where small scale projects do not require an EIA process but only a statement of “Commitment to Environmental Protection”. The application must be advertised in the region by the applicant.

In **Malaysia** EIA for aquaculture projects is not automatically a requirement and thresholds are set relating to the size of the project.

In **Namibia** water and environmental authorisations are not always required.

In **China**, a relatively new law extends the requirement for environmental impact statements for individual construction and large-scale development projects to also apply to government planning for the development of the aquaculture sector.

7.3. Controls on movement of aquaculture species

In **Brazil**, permits are required under the Fisheries Act for the import and export of live fish and in **China** permission is required for the transport, import and export of protected species.

In **Norway**, a system of disease free zones and aquaculture facilities has been established and there are controls on movement of susceptible molluscs, live fish, eggs and gametes into the zone and organisms moving out of the zone must be accompanied by a certificate to the effect that they come from an approved zone. Movement of live animals into Norway is also strictly controlled and the import of some live organisms is prohibited.

7.4. Aquaculture zones

Many countries zone areas for aquaculture and prohibit activities that would harm aquaculture or significantly impair the quality of water from being undertaken within the aquaculture zone.

Brazil has a more strategic approach than South Africa in that suitable sites are identified in advance and a preventative water use licence is obtained by the authorities to protect the resource in the planning phases. This can later be converted into a water right. The environmental and maritime authorities work with the fisheries authorities to do at least a partial assessment of the suitability of the site before inviting proposals from the market for the development of the site.

A similar approach is also adopted in **Malaysia** where suitable sites are selected and zoned by the state. Entities or individuals who wish to use the designated areas must then apply for an aquaculture permit. Similarly in **China** the State identifies areas suitable for aquaculture purposes. Individuals or organisations may then apply for permits or contracts to use those areas.

The **Namibian Aquaculture Act** allows the Minister responsible for fisheries to declare aquaculture development zones for purposes of developing facilities in the area, to manage and control aquaculture in the area, to encourage transfer of technology and responsible practices, to generate or increase employment in the area, to protect developments in the area and “to ensure responsible planning of aquaculture”. [184] Once an area has been declared as an aquaculture development zone, the Minister may by notice in the Gazette, specify restrictions on the conduct of activities and uses in the zone, in the waters draining into the zone and on any adjacent land or water area.[185]

7.5. Animal health, pharmaceuticals and feeds

In **China** the legislative framework regarding the use of chemicals in aquaculture is complex and controls import, export, storage, transport, disposal and use of certain chemicals. Other aspects of the aquaculture industry such as feed, drug feed additives, food safety, disease control and water pollution appear to be governed mainly through the setting of standards, rather than through an authorisation process.

In **Namibia** specific aquaculture regulations include detailed provisions regarding health management and disease control. The use of veterinary drugs may be regulated either through permit conditions or the Minister may specify a list of approved drugs in regulations. There is provision for notifiable diseases and notification of unusually high mortality incidents. The Regulations include a specific list of diseases of aquatic organisms which require controls.

In **Brazil**, aquaculture establishments are subject to the supervision of the Official Veterinary Service at local, state and federal levels. There is provision for mandatory disease notification. There is separate legislation which is not specific to aquaculture but which establishes sanitary controls relating to animal feedstuff. A lack of biosafety controls has been identified as a factor inhibiting the growth of the industry in Brazil. Drugs and feed for aquaculture are not currently regulated.

In **Australia**, very comprehensive general and aquaculture-specific legislation contains measures relating to control or eradication of notifiable diseases, movement of diseased fish, measures for the prevention and control of aquatic diseases, the use of veterinary chemicals and products, and treatment of aquatic diseases.

In **Norway**, a system of disease free zones and aquaculture facilities has been established under the Food Safety Act. Regulations under the Act contain a list of diseases and of aquatic animals susceptible to the diseases. There are controls on movement of susceptible molluscs, live fish, eggs and gametes into the zone and organisms moving out of the zone must be accompanied by a certificate to the effect that they come from an approved zone. Veterinary drugs are controlled by separate legislation.

7.6. Food safety

In **Brazil** food safety is regulated mainly by the setting of standards under the Food Act, 1983, as amended.

In **Namibia**, the use of feed, fertilisers, hormones, drugs or other chemicals is regulated via permit conditions in the aquaculture licence. This process may be streamlined by developing standard permit conditions for various kinds of aquaculture licences.

In **Malaysia**, the quality and safety of food products is guaranteed by a logo awarded under the Veterinary Inspection and Accreditation Programme of the Department of Veterinary Services at the Ministry of Agriculture. This is not legally required for aquaculture products but is arguably made mandatory by the certification requirements set by importing countries. The program provides guidelines and codes on veterinary best practice and on construction of processing plants.

In **South Australia**, fish processors and their premises must be registered. Australia and New Zealand have established a joint food standards agency and developed a joint food standards code.

Norway has comprehensive food safety legislation, primarily a Food Safety Act which covers the production, processing and distribution of aquatic foodstuffs. Food processing establishments are required to obtain an authorisation from the Food Safety Authority. Processing facilities must use the HACCP system. Products must be labelled with information including the name of the product, ingredients, content, expiry date, storage as well as country of origin.

Establishments are responsible for undertaking internal audits. Regulations under the Act require that it must be possible to trace the origin of food, feedstuffs, animals used in food or mixed with food or mixed with food or feedstuffs. The regulations require records to be kept regarding any person that has delivered food, feedstuffs or animals to be mixed into food or feedstuffs to the establishments and where the establishment's products have been sent.

In **India**, specific rules have been developed for the export of fresh, frozen and processed fish. These rules also contain provisions on certification of aquaculture products. Annexes to the rules specify requirements relating to the premises, building and equipment, storage, transport, packaging and HACCP system, among others. A separate Act regulates the export of live fish. Maximum Residual Limits for pesticides, heavy metals and antibiotics and other pharmacologically active substances in fish and fishery products have been prescribed in separate legislation as well as lists of prohibited antibiotics and pharmacologically active substances.

7.7. Factors that contribute to the development of a successful aquaculture sector

A wide range of factors affect the prospects for successfully developing an aquaculture sector. These include climatic and geographical factors that governance will have no influence over. However, our research indicates that the presence or absence of an appropriate governance framework that is tailored to the needs of aquaculture (including appropriate policies, laws and institutions) is a significant determinant of the success of the sector.

From a regulatory perspective the following factors have been identified as important in promoting the growth of a healthy and sustainable aquaculture sector:

- a proactive approach by government which gives priority to the sector (particularly when allocating sites and protecting aquaculture from pollution and other adverse impacts from other economic activities);
- maintaining phyto-sanitary controls that meet international standards (this is critical to gain a share of foreign markets); and
- the development of aquaculture specific zones and disease-free zones.

The development of extension services and education also appear to be a critical factor for the successful development of rural aquaculture.

Specific inhibitors of the development for the sector in the countries reviewed have included:

- fragmented or complex regulatory regime;
- bureaucratic and slow systems for obtaining the necessary authorisations; and
- poor monitoring and enforcement (e.g. of food safety controls);

In some countries a lack of technical know-how has also been a significant inhibiting factor.

Countries that have shown sustained recent growth in their aquaculture sector include Brazil, China, Malaysia, Australia, Norway and India. China is currently the largest aquaculture producer in the world. According to the FAO, the major reasons behind **China's success** have been a proactive policy by government on aquaculture development and the liberalisation of fish production and trade. A well-established education and extension system has also contributed to development of the sector in rural areas.

Namibia and **Mozambique** have not been able to sustain growth in the sector. Although Namibia's aquaculture sector is seen as largely successful, problems with the development of the sector recently identified include a shortage of suitable sites, lack of technical know-how and qualified biologists, poor private sector involvement and the need to secure international markets for export.[186] According to the Namibian Fisheries Minister the freshwater aquaculture sector has failed to perform as expected and needs re-planning. Problems include poor site selection (areas prone to flooding) and poor quality feed. [187]

According to Rabobank, an agribusiness research consultancy commenting in May 2013, **Brazil** has enormous potential for growth, but growth is still "crawling". One of the bottlenecks to growth includes the regulatory system:

> "On the regulatory side, one of the weaknesses is the legal framework concerning the use of water for aquaculture. There is considerable bureaucracy to overcome to obtain all of the permits/licenses to start an aquaculture operation. In addition, a common complaint from the industry is the lack of biosafety standards for production of the majority of the species."

Also an issue is lack of public information which "has likely prevented investors from better assessing the potential of such a market."[188]

7.8. Potential lessons to be learnt

It is important not to assume that a regulatory measure that has worked in one country will work as well if transplanted to a very different country and legal system. However, an examination of the development of regulatory frameworks for aquaculture in other countries suggests that in developing its regulatory system South Africa should:

- develop aquaculture specific legislation rather than merely adapt capture fisheries legislation;
- be proactive about identifying suitable aquaculture zones and take strong regulatory measures to ensure that the interests of aquaculture are prioritised within that area and that conflicting economic activities (e.g. that would impair water quality within the zone) are prohibited;

- ensure that very strict control is exercised over the introduction of species for aquaculture both to prevent the control of invasive alien species and to maintain animal health;

- enforce strict phyto-sanitary and other requirements to ensure that aquaculture products meet international food safety standards and can be traced from point of origin to the plate.

8. RECOMMENDATIONS

8.1. Development of new aquaculture legislation

The recommendations are drawn from inputs made by stakeholders at the consultation workshop held on 24 April 2013; engagement with the Aquaculture Intergovernmental Forum (AIF) on 12 July 2013; and written comments and submissions made by various stakeholders, DAFF officials and AIF members.

It is recommended that new aquaculture legislation be developed and the MLRA be amended to enable aquaculture to be regulated as an animal husbandry activity for which DAFF is responsible instead of being regulated in conjunction with capture fisheries.

In order to achieve the objectives of the DAFF and other stakeholders, the new legislation should at least include provisions relating to:

- the establishment, powers and functions of an entity with specific responsibility for regulating aquaculture;

- the granting of aquaculture licences that integrate several authorisations or separate aquaculture licences but with provision for an integrated authorisations process;

- preferential treatment for new entrants, particularly HDI groups and small-scale fish farmers;

- the designation of aquaculture development zones (ADZs) and the preparation, implementation and monitoring of resource management plans for ADZ;

- control measures relating to animal health including disease reporting, emergency measures, compensation, water quality monitoring, controls on introduction, transfer, import and export of organisms, use of permitted drugs and chemicals and animal welfare;

- control measures relating to human health/food safety;

- environmental protection and ecosystem integrity;

- certification regime including traceability protocols and labelling;

- handling and marketing of aquaculture products;

- ownership of aquatic organisms used for aquaculture (particularly in the case of marine ranching);

- an empowering provision that obliges the state to undertake and fund research that will contribute to aquaculture development and in particular research that will facilitate aquaculture development by HDI groups and small-scale fish farmers; and

- enforcement – directives, offences and penalties for non-compliance;

- achieving certain of DAFF's objectives (e.g. to establish hatcheries within protected areas) would require amendment to other legislation such as NEMPAA).[189]

The new legislation should address:

Definitions

- a new legal definition of aquaculture is needed, in accordance with international definitions and clarifying the kinds of operations included and which aquatic species;

- the definition should include invertebrates;

- with regard to ornamental species the definition should clarify government policy on whether or not such species are included, and if they are excluded, the criteria for exclusion must be clearly specified. Ornamentals regulated in terms of the AIS and TOPs Regulations may require authorisation. If ornamentals are included a decision needs to be made as to the mechanism for dealing with ornamental species that are not included on the lists of AIS and TOPs species. This could be done through setting thresholds, compliance with norms and standards, exemptions or general authorisation;

Permits/licences

- the use of processes like section 24(2) of NEMA – development of norms and standards so that authorisation is not required, the raising of thresholds in the EIA Regulations to exclude smaller enterprises, the determination of development set back lines and other mechanisms to restrict the circumstances in which permits are required in terms of other legislation;

- an integrated permitting system. It may be possible for the legislation to create a single aquaculture permit that can be deemed to be a permit for the purposes of other legislation, namely the MLRA, the EIA regulations, the TOPs regulations, the AIS regulations, the NWA and provincial ordinances. The feasibility of this must be further investigated. If this is not feasible, a second possibility is of providing an integrated process that meets the requirements of all applicable legislation without duplication and allows for permits in terms of all applicable legislation to be issued simultaneously (a "stapled together" permit). Legislative amendments may be necessary to ensure that all permits are able to be valid for a similar length of time, sufficient to give commercial certainty and to allow operators to secure funding;

- the legislation should allow for a strategic approach to aquaculture permitting:

    - <u>Strategic Risk Assessment (SRA)</u>
      Streamline risk assessments needed e.g.: in terms of AIS and TOPs Regulations by allowing for SAs for aquaculture species to be undertaken – i.e.: what is the risk of that species in South Africa? This would mean that individual facilities need only conduct a risk assessment relating to the site itself. Criteria for assessing sites where an SRA has been done for the species should be developed/ site risk assessment could also form part of the EIA process;

    - <u>Strategic Environmental Impact Assessment</u>
      Use of the EMF provisions in NEMA to identify areas suitable for aquaculture - to give an early indication of areas potentially suitable for aquaculture;

  - Possible use of coastal management plans and coastal zoning scheme provisions in ICMA to pre-determine areas suitable for aquaculture/declaration of special aquaculture zones;

- provide for long-term security in terms of permits to operate and leases (reflecting that aquaculture is a capital intensive industry);

- at the same time, provide for regular review of compliance with permit conditions and the power to suspend or cancel permits if non-compliances found with the possibility of cancelling permits where non-compliances are not rectified;

- Resource Management Plans (RMPs) should be compiled by the new aquaculture regulatory body in consultation with other affected organs of state. This body should also be responsible for coordinating the implementation of RMPs and for monitoring implementation;

- an industry delegation to comply with RMPs for ADZs where applicable;

- RMPs should be reviewed and revised every 3 to 5 years;

- provision for transfer of licences, notification to DAFF;

- possible exemptions from permitting requirements or simpler permitting for small-scale aquaculture enterprises;

- similar to the provisions in the NEMA EIA Regulations, 2010 that require an assessment of information to be submitted by applicants within a specific period to ensure the completeness of the application;

- consider establishing a decision-making and appeal body to consider applications and appeals, where appropriate provision should be made for oral submissions;

- RMPs should be published for public comment;

- RMPs should be published in the Government Gazette as statutory plans.

Certification

- establishment of an accredited phytosanitary certification scheme – with supporting documentation;

- alignment with international certification regimes;

- a system for tracing products to meet international requirements and ensure food safety;

- labelling requirements;

Monitoring and reporting

- an industry obligation to comply with monitoring requirements in respect of food safety, traceability and environmental impacts and to give access to information to the relevant permitting authority;

- an industry obligation to report to a regulator and also give a Department or permitting authority access to information in order to inform decision-making. Information provided to

Department should also be reasonably available to industry to assist it (i.e. records of successes and failures);

- an industry obligation to report on the outbreak of diseases. Clarification should be provided as to the procedure to be followed in reporting diseases;

Animal health control measures

- provision for approved list of veterinary drugs including antibiotics, and chemicals to be published;
- disease management– mechanisms and system to monitor and control disease outbreaks;
- mechanism for compensation across the sector (i.e. including shellfish) in respect of disease outbreaks and consequent destruction of stock;

Human health control measures

- public health contingency measures;

Other

- intellectual property rights and protection of indigenous genetic resources – (provide for country of origin register);
- assistance to operators in the form of extension services, guidelines and information;
- recognition of producer associations;
- more norms and standards should be specified (e.g.: for discharge);
- legislative regime needs to be pro-HDI and have developmental and transformation bias – purpose must be to develop sector and develop SMMEs and HDIs;
- allowance made for cooperatives – developmental issue for small-scale farmers;
- clarify roles and mandates between different spheres; and
- clarify law relating to introduction of new alien species.

8.2. Other recommendations

In order to give effect to national transformation goals and commitments DAFF and other competent authorities should consider giving preference to HDI groups and small-scale fish farmers in authorising aquaculture applications. In the interests of promoting transformation of the sector it is recommended that an aquaculture BBBEE scorecard is developed.

Members of the AIF made the following recommendations:

- that Master Plans be composed for proposed aquaculture developments including temporary and permanent structures, 1:100 year flood lines, buffer zones, riparian habitat, watercourses, demarcated no-go areas, conservation zones, valued features in the landscape on a logical scale to obtain a holistic picture;
- risk assessments for different aquaculture scenarios determined by government must be initiated and compiled;

- although the idea of General Authorisations is supported, for water uses this must be based on the carrying capacities and water quality and treatment of different scenarios in aquaculture and dams must be researched as well as possible pollution plumes;
- current RMPs as an initiative by the DWA to zone state dams and watercourses for development and conservation on the water surface and state land surrounding the water needs to be respected and integrated in aquaculture planning. However, where no RMP is available then an estimate of the kind of aquaculture facility and where it may be allowed may have to be taken without jeopardising potential uses and users;
- The DWA is undertaking a Strategic Rehabilitation Policy which must look at activities like harvesting alien fish, decommissioning of dams, monitoring fishways, ecological restoration, erosion protection and implementing plant plans. This must be taken into account by DAFF and other decision-makers;
- The National Freshwater Ecosystem Priority Area maps must be consulted when making decisions on aquaculture facilities, where the facility is to be constructed or undertaken in freshwater;
- One aquaculture committee to oversee licencing of permits, much like a National Co-ordinating Agency. It is proposed that MAWG terms of reference may be expanded to deal with freshwater and marine aquaculture as well as with the different organs of state. Organs of state will need to co-operate with each other, particularly in relation to local authorities where those authorities would have to ensure that zoning schemes enable aquaculture facilities to be established without any need for applying for rezoning.

TABLE OF ABBREVIATIONS & ACRONYMS

ADA	Animal Diseases Act, 35 of 1984
AHA	Animal Health Act, 7 of 2002
AIA	Animal Improvement Act, 62 of 1998
AIF	Aquaculture Intergovernmental Forum
AIS Regulations	Alien and Invasive Species Regulations, 2013
ALA	Alienation of Land Act, 68 of 1981
APA	Agricultural Pests Act, 36 of 1983
APIS	Agricultural Products Inspection Services
APO	Annual Plans of Operation
APrA	Animals Protection Act, 71 of 1962
APSA	Agricultural Products Standards Act, 119 of 1990
ARC	Agricultural Research Council
BCU	Biodiversity Crime Unit (BCU)
CA	Competent Authority
CAPE – NECO	Cape Nature and Environmental Conservation Ordinance, 19 of 1974
CARA	Conservation of Agricultural Resources Act, 43 of 1983
CBD	Convention on Biological Diversity
CEA	Customs and Excise Act, 91 of 1964
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
Constitution	Constitution of the Republic of South Africa, 1996
CPA	Consumer Protection Act, 68 of 2008
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DEADP	Western Cape Department of Environmental Affairs and Development Planning
DEDEAT	Department of Economic Development, Environmental Affairs and Tourism
DG	Director-General
DoH	Department of Health
DoT	Department of Transport
DRDLR	Department of Rural Development and Land Reform
DST	Department of Science and Technology
DTI	Department of Trade and Industry
DWA	Department of Water Affairs
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECA	Environment Conservation Act,73 of 1989
EC - ADA	Animal Diseases Act (Ciskei), 21 of 1986
EC - LURA	Land Use Regulation Act (Ciskei), 15 of 1987
EC – NCA	Nature Conservation Act (Ciskei), 10 of 1987
EDD	Economic Development Department
EIA Regulations	Environmental Impact Assessment Regulations, 2010
EMP	Estuary Management Plan
FAO	Food and Agricultural Organisation (UN)
FFASA	Fertilizer, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 36 of 1947
FPE	Fish Processing Establishment

GMO Act	Genetically Modified Organisms Act, 15 of 1997
FS – NCO	Nature Conservation Ordinance, 8 of 1969 (Free State)
GS	Governing system
HACCP	Hazard Analysis and Critical Control Points
HDI	Historically Disadvantaged Individual
ICMA	National Environmental Management: Integrated Coastal Management Act, 24 of 2008
ITAA	International Trade Administration Act, 71 of 2002
IPAP2	Industrial Policy Action Plan 2011/12 to 2013/14, February 2011
KZN – NCA	Kwazulu-Natal Nature Conservation Act, 29 of 1992
KZN - NCO	Kwazulu-Natal Nature Conservation Ordinance, 15 of 1974
KZN – PEPO	Kwazulu-Natal Prevention of Environmental Pollution Ordinance, 21 of 1981
KZN - PDA	Kwazulu-Natal Planning And Development Act, 6 Of 2008
LEDET	Limpopo Department of Economic Development, Environment and Tourism
LEMA	Limpopo Environmental Management Act, 7 of 2003
LUPO	Land Use Planning Ordinance 15 of 1985 – Cape
MAIL	Marine Aquaculture Industry Liaison
MAWG	Marine Aquaculture Working Group3
MLRA	Marine Living Resources Act, 18 of 1998
MRSA	Medicines and Related Substances Act, 101 of 1965
MTPA	Mpumalanga Tourism and Parks Agency
NASF	National Aquaculture Strategic Framework for South Africa
NC – NCA	Northern Cape Nature Conservation Act, 9 of 2009
NCO – GT / NW / MP	Nature Conservation Ordinance, 12 of 1983 – Transvaal
NDP	National Development Plan 2030
NEMA	National Environmental Management Act, 107 of 1998
DEA Aquaculture EIA guide	Draft Aquaculture Environmental Impact Assessment Guidelines, 11 February 2013
NEMBA	National Environmental Management: Biodiversity Act, 10 of 2004
NEMPAA	National Environmental Management: Protected Areas Act, 57 of 2003
WASTE ACT	National Environmental Management: Waste Act, 59 of 2008
NRCS	National Regulator for Compulsory Specifications
NRCSA	National Regulator for Compulsory Specifications Act, 5 of 2008
NWA	National Water Act, 36 of 1998.
OHSA	Occupational Health and Safety Act, 85 of 1993
OIE	World Organisation for Animal Health
PAIF	Provincial Aquaculture Intergovernmental Forum
PPECA	Perishable Products Export Control Act, 9 of 1983
SA	Standards Act, 8 of 2008
SALA	Subdivision of Agricultural Land Act, 70 of 1970
SANBI	South African National Biodiversity Institute
SBSPA	Sea Birds and Seals Protection Act, 46 of 1973
SLDA	State Land Disposal Act, 48 of 1961
SRA	Strategic Risk Assessment
SSA	Sea-Shore Act, 21 of 1935
STBG	System To Be Governed
TOPs Regulations	Threatened or Protected Species, 2007
TOR	Terms of Reference
UNCLOS	United Nations Convention on the Law of the Sea, 1972

WIMS	Water Information Management System
NECO	Nature and Environmental Conservation Ordinance, 14 of 1974

APPENDIX 1: LISTED ACTIVITIES PERTAINING TO AQUACULTURE IN TERMS OF THE EIA REGULATIONS, 2010.

Core activities relevant to aquaculture

Listing Notice 1	
Selected Definitions	
"agri-industrial"	means an undertaking involving the beneficiation of agricultural produce;
"construction"	means the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint;
Activities	
Activity 4	The construction of facilities or infrastructure for the concentration of animals for the purpose of commercial production in densities that exceed— 30 square metres per crocodile at any level of production, excluding crocodiles younger than 6 months;
Activity 6 and 33	The <u>construction and expansion</u> of facilities, infrastructure or structures for aquaculture of— finfish, crustaceans, reptiles or amphibians where such facility, infrastructure or structures will have a production output exceeding 20 000 kg but less than 200 000 kg per annum (wet weight); molluscs where such facility, infrastructure or structures will have a production output exceeding 30 000 kg but not exceeding 150 000 kg per annum (wet weight); aquatic plants where such facility, infrastructure or structures will have a production output exceeding 60 000 kg but not exceeding 200 000 kg per annum (wet weight); excluding where the construction of facilities, infrastructure or structures is for purposes of offshore cage culture in which case activity 7 in this Notice will apply.
Activity 7 and 34	The <u>construction and expansion</u> of facilities, infrastructure or structures for aquaculture of offshore cage culture of finfish, crustaceans, reptiles, amphibians, molluscs and aquatic plants where the facility, infrastructure or structures will have a production output exceeding 50 000 kg but not exceeding 100 000 kg per annum (wet weight).
Activity 8, 35 and 36	The <u>construction and expansion</u> of a hatchery or agri-industrial infrastructure outside industrial complexes where the development footprint covers an area of 2 000 square metres or more.
Listing Notice 2	
Activity 5	The construction of facilities or infrastructure for any process or activity which requires a permit or license in terms of national or provincial legislation governing the generation or release of

	emissions, pollution or effluent and which is not identified in Notice No. 544 of 2010 or included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act in which case that Act will apply.	
Activity 12	The construction of facilities, infrastructure or structures for aquaculture of— finfish, crustaceans, reptiles or amphibians where the facility, infrastructure or structures will have a production output of 200 000 or more kg per annum (live round weight); molluscs where the facility, infrastructure or structures will have a production output of 150 000 or more kg per annum (live round weight); aquatic plants where the facility, infrastructure or structures will have a production output of 200 000 or more kg per annum (live round weight); excluding where the construction of facilities, infrastructure or structures is for purposes of offshore cage culture in which case activity 13 in this Notice will apply.	
Activity 13	The construction of facilities, infrastructure or structures for aquaculture of offshore cage culture of finfish, crustaceans, reptiles, amphibians, molluscs and aquatic plants where the facility, infrastructure or structures will have a production output of 100 000 or more kg per annum (live round weight).	
Listing Notice 3		
Selected Definitions		
"protected area"	means those protected areas contemplated in section 9 of the NEMPAA and the core area of a biosphere reserve and shall include their buffers;	
Activities		
Activity 15 and 25	The construction and expansion of facilities, infrastructure or structures of any size for any form of aquaculture	(a) In an estuary; (b) In a Protected Area identified in the NEMPAA; (c) Areas on the watercourse side of the development setback line or within 100 metres from the edge of a watercourse where no such setback line has been determined.

<u>Illustrative list of other activities that may be triggered by aquaculture facilities</u>

Other listed activities may be triggered by the development and/or operation of an aquaculture facility depending on factors like the sensitivity of the environment (mainly proximity to watercourses, coastal areas and protected areas) in which the facility is to be situated or the size of the facility. The following list is not exhaustive but merely illustrative.

Listing Notice 1	
Selected Definitions	
“concentration of animals”	means the keeping of animals in a confined space or structure, including a feedlot, where they are fed in order to prepare them for slaughter or to produce products such as milk or eggs;
“dam”	when used in these Regulations means any barrier dam and any other form of impoundment used for the storage of water;
“estuary”	means a body of surface water— (*a*) that is part of a water course that is permanently or periodically open to the sea; (*b*) in which a rise and fall of the water level as a result of the tides is measurable at spring tides when the water course is open to the sea; or (*c*) in respect of which the salinity is measurable higher as a result of the influence of the sea;
“watercourse”	means— (*a*) a river or spring; (*b*) a natural channel or depression in which water flows regularly or intermittently; (*c*) a wetland, lake or dam into which, or from which, water flows; and (*d*) any collection of water which the Minister may, by notice in the *Gazette*, declare to be a watercourse as defined in the National Water Act, and a reference to a watercourse includes, where relevant, its bed and banks;
“wetland”	means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.
The following words relevant to coastal activities will have the meaning so assigned to it in the Integrated Coastal Management Act, 2008 (Act 24 of 2008):	(*a*) “coastal protection zone”; (*b*) “coastal public property”; (*c*) “high-water mark”; (*d*) “littoral active zone”; (*e*) “low-water mark”; (*f*) “sea”; and (*g*) “seashore”.
Activities	
Activity 11, 39 and 40	The <u>construction and expansion</u> of— bridges; dams; weirs; bulk storm water outlet structures; jetties exceeding 50 square metres in size; buildings exceeding 50 square metres in size; or infrastructure or structures covering 50 square metres or more where such construction occurs within a watercourse or within 32

	metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.
Activity 12 and 41	The construction and expansion of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50000 cubic metres or more, unless such storage falls within the ambit of activity 19 of Notice 545 of 2010;
Activity 14 and 43	The construction and expansion of structures in the coastal public property where the development footprint is bigger than 50 square metres.
Activity 16 and 45	Construction and expansion or earth moving activities in the sea, an estuary, or within the littoral active zone or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever is the greater, in respect of— fixed or floating jetties and slipways; tidal pools; embankments; rock revetments or stabilising structures including stabilising walls; buildings of 50 square metres or more; or infrastructure covering 50 square metres or more but excluding— if such construction or earth moving activities will occur behind a development setback line; or where such construction or earth moving activities is undertaken for purposes of maintenance of the facilities mentioned above.
Activity 18	The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from— a watercourse; the sea; the seashore; the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater— but excluding where such infilling, depositing, dredging, excavation, removal or moving; is for maintenance purposes undertaken in accordance with a management plan agreed to by the relevant environmental authority; or occurs behind the development setback line.
Activity 25	The release of genetically modified organisms into the environment, where assessment for such release is required by the Genetically Modified Organisms Act, 1997 (Act No. 15 of 1997) or the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).
Listing Notice 2	
Selected Definitions	
“construction”	means the building, erection or establishment of a facility, structure

	or infrastructure that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint;
The following words relevant to coastal activities will have the meaning so assigned to it in the Integrated Coastal Management Act:	(*a*) “coastal protection zone”; (*b*) “coastal public property”; (*c*) “high-water mark”; (*d*) “littoral active zone”; (*e*) “low-water mark”; (*f*) “sea”; and (*g*) “seashore”.
Activities	
Activity 24	Construction or earth moving activities in the sea, an estuary, or within the littoral active zone or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater, in respect of: facilities associated with the arrival and departure of vessels and the handling of cargo; piers; inter- and sub-tidal structures for entrapment of sand; (iv) breakwater structures; coastal marinas; coastal harbours or ports; structures for reclaiming parts of the sea; tunnels; or underwater channels; but excluding— (*a*) activities listed in activity 16 in Notice 544 of 2010, (*b*) construction or earth moving activities if such construction or earth moving activities will occur behind a development setback line; (*c*) where such construction or earth moving activities will occur in existing ports or harbours where there will be no increase of the development footprint or throughput capacity of the port or harbour; or (*d*) where such construction or earth moving activities takes place for maintenance purposes.
Activity 19	The construction of a dam, where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5 metres or higher or where the high-water mark of the dam covers an area

		of 10 hectares or more.
Listed Notice 3		
Selected Definitions		
Activities		
Activity 16 and 24	The construction and expansion of: buildings with a footprint exceeding 10 square metres in size; or infrastructure covering 10 square metres or more where such construction occurs within a watercourse or within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.	**(*a*) In Eastern Cape, Free State, KwaZulu-Natal, Limpopo, Mpumalanga and Northern Cape:** In an estuary; Outside urban areas, in: (*aa*) A protected area identified in terms of NEMPAA, excluding conservancies; (*bb*) National Protected Area Expansion Strategy Focus areas; (*cc*) World Heritage Sites; (*dd*) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (*ee*) Sites or areas identified in terms of an International Convention; (*ff*) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (*gg*) Core areas in biosphere reserves; (*hh*) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; (*ii*) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined. In urban areas: (*aa*) Areas zoned for use as public open space; (*bb*) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, zoned for a conservation purpose; or (*cc*) Areas seawards of the development setback line
		(*b*) In Gauteng: A protected area identified in terms of NEMPAA, excluding conservancies; National Protected Area Expansion Strategy Focus areas; Sensitive areas as identified in an environmental management framework as

		contemplated in chapter 5 of the Act and as adopted by the competent authority; Sites or areas identified in terms of an International Convention; Sites identified as irreplaceable or important in the Gauteng Conservation Plan; Any declared protected area including Municipal or Provincial Nature Reserves as contemplated by the Environment Conservation Act, 1989 (Act No. 73 of 1989) and the Nature Conservation Ordinance (Ordinance 12 of 1983); Areas zoned for a conservation purpose.
		(*c*) In North West: Outside urban areas, in: (*aa*) A protected area identified in terms of NEMPAA, excluding conservancies; (*bb*) National Protected Area Expansion Strategy Focus areas; (*cc*) World Heritage Sites; (*dd*) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (*ee*) Sites or areas identified in terms of an International Convention; (*ff*) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (*gg*) Core areas in biosphere reserves; (*hh*) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve. Inside urban areas: (*aa*) Areas zoned for use as public open space; (*bb*) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose.
		(*d*) In Western Cape: All watercourses; Outside urban areas, in: (*aa*) A protected area identified in terms of NEMPAA, excluding conservancies; (*bb*) National Protected Area Expansion Strategy Focus areas; (*cc*) World Heritage Sites;

		(*dd*) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; (*ee*) Sites or areas identified in terms of an International Convention: (*ff*) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (*gg*) Core areas in biosphere reserves; (*hh*) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve; (*ii*) Areas seawards of the development setback line or within 1 kilometre from the high-water mark of the sea if no such development setback line is determined. Inside urban areas: (*aa*) Areas zoned for use as public open space; (*bb*) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose; (*cc*) Areas seawards of the development setback line or within 100 metres of the high water mark where no setback line.

APPENDIX 2: SELECTED LISTED SPECIES IN TERMS OF THE ALIEN AND INVASIVE SPECIES REGULATIONS, 2013.

PROHIBITED ALIEN SPECIES

Invertebrates (Fresh-Water)		
No	***Species***	**Common Name**
140.	*Orconectes limosus*	North American Spiny Cheek Crayfish
141.	*Orconectes rusticus*	Rusty Crayfish
142.	*Pacifastacus leniusculus*	North American Signal Crayfish
143.	*Procambarus clarkii*	Red Swamp Crayfish

Marine species		
	Scientific Name	**Common name**
144.	*Asterias amurensis*	Pacific seastar
145.	*Caulerpa taxifolia*	Caulerpa (sea weeds)
146.	*Eriocheir sinensis*	Asian mitten crab
147.	*Undaria pinnatifida*	Asian kelp

Freshwater and anadromous fish		
	Scientific Name	**Common name**
148.	*Abramis spp.*	bream
149.	*Acantharchus spp.*	
150.	*Acheilognathus spp.*	bitterling
151.	*Acipenser spp.*	sturgeon
152.	*Ameiurus spp.*	bullheads
153.	*Amia calva*	Bowfin/Mudfish/Dogfish
154.	*Amphilius spp.*	Golden African kuhli
155.	*Anabas spp.*	Climbing perch/Climbing fish
156.	*Anguilla spp.*	
157.	*Aphanius spp.*	minnow
158.	*Aplocheilichthys spp.*	killifish
159.	*Arapaima gigas*	Arapaima
160.	*Bagrus spp.*	
161.	*Barilius spp.*	
162.	*Bathyclarias spp.*	Catfish
163.	*Centrarchus spp.*	
164.	*Chaca chaca*	Frogmouth catfish
165.	*Channa spp.*	snakeheads
166.	*Chela spp.*	

167.	*Chetia spp.*	
168.	*Chiloglanis spp.*	
169.	*Chologaster cornutus*	
170.	*Chondrostoma spp.*	Nasling
171.	*Chrysichthys spp.*	
172.	*Cichla spp.*	Peacock cichlid
173.	*Colossoma spp.*	pacu
174.	*Coregonus spp.*	
175.	*Cottus spp.*	
176.	*Croilia spp.*	
177.	*Cyprinodon spp.*	pupfish
178.	*Docimodus spp.*	Catfish
179.	*Elassoma spp.*	
180.	*Electrophorus electricus*	Electric eel
181.	*Engraulicyprus spp.*	
182.	*Enneacanthus spp.*	
183.	*Esox spp.*	
184.	*Eutropius spp.* Excluding *E. depressirostris*	
185.	*Fundulus spp.*	
186.	*Galaxias spp.*	galaxias
187.	*Gambusia spp.*	
188.	*Gasterosteus spp.*	
189.	*Gephyroglanis spp.*	
190.	*Glossogobius spp.*	
191.	*Gobio spp.*	
192.	*Gymnallabes spp.*	
193.	*Heterobranchus spp.*	
194.	*Hucho hucho*	Huchen
195.	*Huso huso*	Beluga sturgeon
196.	*Hydrocynus spp.*	African tiger fish
197.	*Ictalurus spp.*	
198.	*Idus idus*	Silver/Golden orf
199.	*Jordanella floridae*	American flagfish
200.	*Lampetra spp.*	
201.	*Lates spp.*	
202.	*Lepomis spp.*	sunfishes
203.	*Leptoglanis spp.*	
204.	*Leuciscus spp.*	
205.	*Liposarcus spp.*	Plecostomus
206.	*Lota lota*	Burbot
207.	*Luciosoma setigerum*	Apollo shark
208.	*Malapterurus spp.*	
209.	*Marcusenius spp.*	
210.	*Mesobola spp.*	
211.	*Micropterus cataractae*	Shoal bass
212.	*Micropterus coosae*	Redeye bass
213.	*Micropterus notius*	Suwannee bass
214.	*Micropterus treculil*	Guadalupe bass
215.	*Misgumus spp*	Weather fish

216.	*Myleus spp.*	Brown metynnis
217.	*Neochanna spp.*	mudfish
218.	*Neomacheilus spp.*	Loaches
219.	*Notemigonus crysoleucas*	Golden shiner
220.	*Notropis spp.*	shiner
221.	*Oncorhynchus spp.*(excluding *O. mykiss)*	Trout, except rainbow trout
222.	*Ophicephalus spp.*	Snakehead
223.	*Opsaridium spp.*	barilius
224.	*Oreochromis spp. (*excluding *O. niloticus* and *O. mossambicus)*	Tilapia
225.	*Oryzias spp.*	Rice fish/Geisha girl/Golden mede
226.	*Osmerus eperlanus*	Smelt
227.	*Paragalaxias spp.*	Paragalaxias
228.	*Perca spp.*	Perch
229.	*Percina spp.*	Percina darters
230.	*Petrocephalus spp.*	Mormyrid
231.	*Petromyzon marinus*	Lamprey
232.	*Phoxinus spp.*	Minnow
233.	*Plecostomus spp.*	plecostomus
234.	*Pogonopoma spp.*	catfish
235.	*Pomoxis spp.*	
236.	*Protopterus spp.*	Lung fish
237.	*Pseudocrenilabrus spp.*	
238.	*Pseudorasbora spp.*	Whiptail sturgeon
239.	*Pseudorinelepis spp.*	catfish
240.	*Pterygoplichthys spp.*	plecos
241.	*Pungitius spp.*	stickleback
242.	*Pygocentrus spp.*	Piranha
243.	*Pygosteus spp.*	stickleback
244.	*Rhinelepis spp.*	catfish
245.	*Rhamdia spp.*	
246.	*Rhinichthys atratulus atratulus*	Black-nose dance
247.	*Rhinichthys atratulus obtusus*	
248.	*Rhodeus spp.*	
249.	*Rooseveltiella spp.*	Piranha
250.	*Rutilus spp.*	Roach
251.	*Salmo spp. (*excluding *S. trutta* and *S. salar)*	Salmon
252.	*Salvelinus spp.*	
253.	*Sargochromis spp.*	
254.	*Sarotherodon spp.*	
255.	*Schilbe spp.*	
256.	*Serrasalmus spp.*	piranha
257.	*Silurus glanis*	European/Wels/Waller catfish
258.	*Thymallus thymallus*	Grayling
259.	*Tilapia spp.* excluding *Tilapia rendalli* and *Tilapia sparrmanii, Tilapia bakossiorum and Tilapia snyderae*	tilapia

LISTED ALIEN SPECIES

Invertebrates (Freshwater)			
No.	**Scientific name**	**Common name**	**Category**
13.	*Aedes albopictus*	Asian tiger mosquito	1b
14.	*Aplexa marmorata*	Marbled tadpole snail	1b
15.	*Astacus leptodactylus*	Danube/Galician Crayfish	1a
16.	*Cherax destructor*	Yabby	1a
17.	*Cherax quadricarinatus*	Redclaw crayfish	1b
18.	*Lymnaea columella*	Amphibious pond snail	1b
19.	*Tarebia granifera*	Quilted malania	1b

Marine species			
No.	**Scientific name**	**Common name**	**Category**
20.	*Carcinus maenas*	European shore crab / Green crab	1b

Freshwater and anadromous fish			
No.	**Scientific name**	**Common name**	**Category**
21.	*Ctenopharyngodon idella*	grass carp	1b
22.	*Cyprinus carpio*	carp	1b
33.	*Hypophthalmichthys molitrix*	silver carp	1b
34.	*Lepomis macrochirus*	bluegill sunfish	1b
35.	*Micropterus dolomieu*	smallmouth bass	1b
36.	*Micropterus floridanus*	Florida bass	1b
37.	*Micropterus punctulatus*	spotted bass	1b
38.	*Micropterus salmoides*	largemouth bass	1b
39.	*Oncorhynchus mykiss*	rainbow trout	1b
40.	*Oreochromis niloticus*	Nile tilapia and hybrids	1b
41.	*Oreochromis niloticus* x *Oreochromis Mossambicus*	Nile tilapia x Mozambique tilapia	1b
42.	*Pterygoplichthys disjunctivus*	Vermiculated sailfin catfish	1b
43.	*Salmo salar*	Atlantic salmon	1b
44.	*Salmo trutta*	brown trout	1b

APPENDIX 3: PROVINCIAL LEGISLATION RELEVANT TO AQUACULTURE, BY PROVINCE

Province	Provincial Ordinance	Provincial Act	Competent / Relevant Authority
Western Cape	Nature and Environmental Conservation Ordinance 19 of 1974 (Cape)		Cape Nature
	Land Use Planning Ordinance 15 of 1985		Municipality
		Western Cape Nature and Environmental Conservation Ordinance Amendment Act 8 of 1999	Cape Nature
		Western Cape Nature Conservation Laws Amendment Act 3 of 2000	Cape Nature

Eastern Cape	Nature and Environmental Conservation Ordinance 19 of 1974 (Cape)		- Eastern Cape Parks and Tourism Agency - EC Department of Economic Development and Environment Affairs
	Land Use Planning Ordinance 15 of 1985		Municipality
		Nature Conservation Act (Ciskei) 10 of 1987	- Eastern Cape Parks and Tourism Agency - EC Department of Economic Development and Environment Affairs
		Agricultural Development Act 8 of 1999	MEC: Eastern Cape Department of Agriculture and Land Affairs
		Livestock Improvement (Eastern Cape) 10 of 2002	The National Registrar of Livestock Improvement in the Department of Agriculture Forestry and Fisheries [The Eastern Cape

			Director of Veterinary Services advises that the province does not implement this Act and all livestock improvement functions are carried out by the National Registrar]
		Animal Diseases Act (Ciskei) 21 of 1986	The Director of Veterinary Services in the Eastern Cape Department of Agriculture and Land Affairs (Mr Mnuta) 082 258 5647 [note: the Eastern Cape Director of Veterinary Services – i.e. the competent authority - is unaware of the existence of this Act]
		Land Use Regulation Act (Ciskei) 15 of 1987	The Eastern Cape Land Use Planning Board
		Land Disposal Act (Eastern Cape) 7 of 2000	The Premier of the Eastern Cape

Northern Cape	Nature and Environmental Conservation Ordinance 19 of 1974 (Cape)		Northern Cape Department of Environment and Nature Conservation
		Northern Cape Nature Conservation Act no. 9 of 2009	Northern Cape Department of Environment and Nature Conservation
Limpopo	None		
		Limpopo Environmental Management Act 7 of 2003	Limpopo Department of Economic Development, Environment and Tourism
		Limpopo Land Administration Act 6 of 1999	Limpopo Department of Economic Development, Environment and Tourism

Gauteng	Nature Conservation Ordinance 12 of 1983 (Transvaal)		Directorate of Nature Conservation: Gauteng Department of Agriculture and Rural Development (GDARD)
		Gauteng Land Administration Act 11 of 1996	The Premier of Gauteng
Mpumalanga	Nature Conservation Ordinance 12 of 1983 (Transvaal)		Department of Economic Development, Environment and Tourism
		Mpumalanga Land Administration Act 5 of 1998	The Department of Agriculture Rural Development and Land Administration

North West	Nature Conservation Ordinance 12 of 1983 (Transvaal)		North West Department of Economic Development, Environment, Conservation, and Tourism
	Nature and Environmental Conservation Ordinance 19 of 1974 (Cape)		North West Department of Economic Development, Environment, Conservation, and Tourism
	Land Use Planning Ordinance 15 of 1985		Municipality
		North West Directorate of Entrepreneurial Development in Natural Resources Act 5 of 2003	Directorate of Entrepreneurial Development in Natural Resources Utilisation in the Provincial Department of Agriculture, Conservation and Environment
		North West Land Administration Act 4 of	The Premier of the North-West Province

		2003	
KZN	Nature Conservation Ordinance 15 of 1974		- Ezemvelo KZN Wildlife - Natal Parks Board
	Prevention of Environmental Pollution Ordinance 21 of 1981		- Ezemvelo KZN Wildlife - Natal Parks Board
		KwaZulu-Natal Nature Conservation Management Act 9 of 1997	- Ezemvelo KZN Wildlife - Natal Parks Board
		KwaZulu-Natal Land Administration Act 3 of 2003	MEC: KwaZulu-Natal Department of Public Works
		Kwazulu-Natal Planning and Development Act 6 of 2008	KwaZulu-Natal Department of Co-operative Governance and Traditional Affairs
		Kwazulu-Natal Rationalisation of Planning and Development Laws Act	KwaZulu-Natal Department of Co-operative Governance

		2 of 2008	and Traditional Affairs
Free State	Nature Conservation Ordinance 8 of 1969		Free State Department of Economic Development, Tourism and Environmental Affairs
		Free State Land Administration Act 1 of 1998	The Premier of the Free State

General	Department of Environmental Affiars and Development Planning 021 483 4091	Department of Economic Development and Environmental Affairs 043 605 7004	Department of Environment and Nature Conservation 053 807 7416	Department of Economic Development Environment, Conservation and Tourism 018 387 7700
Environmental (EIA)	Mr A Barnes (Office of Chief Director) 021 483 4094	Cecilia Gyan 043 605 7099	JJ Mutyorauta 053 807 7431	Mr Mukhola 018 389 5959
Heritage	Andrew Hall (Heritage Resource Management) 021 483 9598	Cecilia Gyan 043 605 7099	Marietjie Smit 053 807 7476	
Protected Areas	Cape Nature 021 483 0000	Linda Nonbo 056 605 7084	Elsabie Swart 053 807 7481	Mashudu Nemutandani 014 597 3597
Water Use	Mr R Khan (Chief Director of DWA) 021 941 6000	Sandiso Zide 046 605 7256	Brian Fisher 053 807 7503	
TOPS	Danelle Kleinhans (Cape Nature Permits) 021 483 0121	Linda Nonbo 056 605 7084	Nature Resources Elsabie or Marietjie 053 807 7476	Mashudu Nemutandani 014 597 3597
AIS	Danelle Kleinhans (Cape Nature Permits) 021 483 0121	Linda Nonbo 056 605 7084	Nature Resources Elsabie or Marietjie 053 807 7476	Mashudu Nemutandani 014 597 3597
Abalone	Deon Jacobs 021 526 3412	Gary Scholtz 083 325 3699		
GMO's	Directorate of Biodiversity 012 319 6382	Directorate of Biodiversity: 012 319 6383	Directorate of Biodiversity: 012 319 6384	Directorate of Biodiversity: 012 319 6385
Waste Management	Mr Arendse (Office of Chief Director) 021 483 5109	Tembela Matukata 046 605 7126	Brian Fisher 053 807 7503	
Waste Water Discharge	Mr Arendse (Office of Chief Director) 021 483 5109	Tembela Matukata 046 605 7126	Brian Fisher 053 807 7503	Bafadi Moselakgomo 018 389
Land Use	Mr Barnes (Office of Chief Director) 021 483 4094	Cecilia Gyan 043 605 7099	JJ Mutyorauta 053 807 7431	
Agricultural Land: Subdivision	Department of Agriculture 021 808 5111	Department of Agriculture 040 639 1180	JJ Mutyorauta 053 807 7431	
Agricultural Land: Lease	Department of Agriculture 021 808 5111	Department of Agriculture 040 639 1180	JJ Mutyorauta 053 807 7431	
Import / Export	Danelle Kleinhans (Cape Nature Permits) 021 483 0121	Linda Nonbo 056 605 7084	Marietjie Smit 053 807 7476	Mashudu Nemutandani 014 597 3597

	KZN	L	M	G	FS
General	Department of Agriculture and Environmental Affairs 033 355 9100	Department of Economic Development, Environment and Tourism 015 293 8300	Department of Economic Development, Environment and Tourism 013 766 4179	011 355 1900	051 408 1105
Environmental (EIA)	Peter Kuyler 079 897 1969 034 299 9664	Victor Mongwe 015 295 4016 082 412 5605	Dr G. Batchelor 013 759 4099		Grace Mkhosana 051 400 4843
Heritage	Annie van der Venter-Radford (Amafa) 033-394 6543				
Protected Areas	Jenny Longmore (Ezemvelo KZN Wildlife) 033 845 1349	Shoni Mthatauli 015 293 8741			
Water Use	Norman Ward (DWA) 031- 336 2737				
TOPS	Jenny Longmore (Ezemvelo KZN Wildlife) 033 845 1349	Sam Makhubele 082 904 5874			
AIS	Jenny Longmore (Ezemvelo KZN Wildlife) 033 845 1349				
Abalone	x	x	x	x	x
GMO's	Directorate of Biodiversity: 012 319 6386	Directorate of Biodiversity: 012 319 6387	Directorate of Biodiversity: 012 319 6388	Directorate of Biodiversity: 012 319 6389	Directorate of Biodiversity: 012 319 6390
Waste Management	Heather Sheard 033 343 1877	Trevor Mphahlele 015 290 7099	Mr M.C Theledi 013 759 4104		
Waste Water Discharge	Norman Ward (DWA) 031- 336 2737				
Land Use					
Agricultural Land: Subdivision	Revival Mnguni (DAFF) 012- 319 7439				
Agricultural Land: Lease	Revival Mnguni (DAFF) 012- 319 7439				
Import / Export	Jenny Longmore (Ezemvelo KZN Wildlife) 033 845 1349				

Authorisation	Western Cape	Eastern Cape	Northern Cape	North West Province	KwaZulu Natal	Limpopo	Mpumalanga	Gauteng	Free State
Introduction	Martine Jordaan (Cape Nature) 021 866 8011	Linda Nonbo 056 605 7084	Marietjie Smit 053 807 7476	Mashudu Nemutandani 014 597 3597	John Craigie (033) 845 1931		Selby Hlatshwayo 013 766 4849		
Selling, buying or transporting of certain fish.	Martine Jordaan (Cape Nature) 021 866 8011	Linda Nonbo 056 605 7084	Marietjie Smit 053 807 7477	Mashudu Nemutandani 014 597 3597	John Craigie (033) 845 1931		Selby Hlatshwayo 013 766 4850		
Import / Export	Dean Impson (Cape Nature) 021 866 8019	Linda Nonbo 056 605 7084	Marietjie Smit 053 807 7478	Mashudu Nemutandani 014 597 3597	John Craigie (033) 845 1931		Selby Hlatshwayo 013 766 4851		
Land Use	Mr Barnes (Office of Chief Director) 021 483 4094	Cecilia Gyan 043 605 7099	JJ Mutyorauta 053 807 7431						
Coastal conservation area		Linda Nonbo 056 605 7084							
Protected and Specially Protected Fish			Marietjie Smit 053 807 7479						
Fish Hatchery					John Craigie (033) 845 1931				
Bass					John Craigie (033) 845 1931				
Trout				Mashudu Nemutandani 014 597 3597	John Craigie (033) 845 1931		Selby Hlatshwayo 013 766 4852		
Aquaculture Project									

APPENDIX 4: FURTHER INFORMATION ON AQUACULTURE IN OTHER JURISDICTIONS[190]

NAMIBIA

Overview of regulatory framework

Namibia has a dedicated Aquaculture Act, adopted in 2002 which is the primary legal instrument governing the industry. It provides for the establishment, administration and conduct of both marine and freshwater aquaculture. The Act deals with, among other things:

- licensing;
- health management;
- disease control;
- access to land and water; and
- environmental protection.

In terms of the Act, regulatory and enforcement powers are vested in the Ministry of Fisheries. Aquaculture licensing is further regulated by the Aquaculture (Licensing) Regulations, adopted in 2003.

Under the Act:

"Aquaculture" means the farming and ranching of aquatic organisms;

"Sea Ranching" means the type of aquaculture in which aquaculture products are intentionally released, without restriction, into the marine environment for the purpose of harvesting them when they mature;

"Aquatic Organisms" includes live forms of fauna and flora that exist in water, excluding mammals, birds, amphibians and reptiles, except for those amphibians and reptiles declared to be aquatic organisms by the regulations.

Under the Act, Aquaculture Development Zones (ADZ) can be established by the Minister. An ADZ refers to any zone or area in Namibia, including water and land, created for the primary purpose of aquaculture and in which specific measures are taken to encourage the development of aquaculture.

In consultation with the Minister responsible for public health, the Minister can determine whether the aquaculture products are fit for human consumption. In consultation with the Minister responsible for trade, the Minister can prevent the sale or marketing of aquaculture products that are unfit for human consumption.

Aquaculture licence

Aquaculture may only be conducted with a licence issued by the Department of Fisheries. The licence must specify the site and species of aquatic organisms that may be farmed and harvested and confer an exclusive right to farm and harvest aquaculture products within that site.

Sea ranching licences confer an exclusive right to release and harvest aquaculture products within the defined site. All aquaculture products which are released or escape into the natural environment, remain the property of the licensee as long as the licensee can prove their identity.

The Minister may issue licences subject to any condition considered appropriate, including:
- quantities of aquatic organisms which may be introduced and retained;
- structures and equipment used and the maintenance practices to be followed at the site;
- water quality
- composition of feed which may be used;
- types of manures or fertilizers which may be used;
- use of hormones for controlling reproduction or promoting growth;
- use of any drugs, antibiotics or other chemicals;
- disposal of dead or diseased aquaculture products;
- material or waste resulting from aquaculture;
- keeping of records; and
- duration of the licence.

In deciding whether to grant an application, the Minister may consider, among other things:

- the technical and financial ability of the applicant;
- the species of aquatic organisms that the applicant proposes to farm;
- the method of aquaculture that the applicant proposes to employ;
- any representations or objections received;
- whether a licence will create a significant risk of pollution or adversely affect the environment; and
- whether the site is unsuited for the planned aquaculture;

The Minister has the discretion to require a public participation process before granting the licence.

Before issuing the licence, the Minister must be satisfied that the applicant has obtained any authorisation, permit or approval required under the laws relating to land or water use and an environmental authorisation, if so required. Whether or not environmental authorisation (involving environmental assessment) will be required is within the discretion of the Minister responsible for environmental affairs.

The Act provides that licensees must keep records and provide the Permanent Secretary with such information as is prescribed annually. The permission of the Minister is required for the transfer and renewal of licences but if a licence is not renewed then it automatically continues in force for a period of one year.

Exemptions are available from the provisions of the Act for a person who conducts scientific investigations, experiments or research, and any other person whom the Minister considers appropriate.

The Minister's written permission is required to introduce any species of aquatic organism or genetically modified aquatic organism into the country or within Namibia or to import or export aquatic organisms. On the advice of the Minister responsible for public health, the Ministry may restrict the movement of any aquatic organisms infected or thought to be infected with a disease or harmful organism.

Any person engaged in aquaculture has a duty to immediately report to the Ministry the presence of any disease or harmful organism in an aquaculture facility and to take all possible measures to prevent the spread of disease or any harmful organism in or from an aquaculture facility. This includes the destruction of aquatic organisms or aquaculture products, and the disinfection of aquaculture facilities.

The Aquaculture (Licensing) Regulations include more detailed provisions regarding health management and disease control. A person engaged in aquaculture must immediately report to the Permanent Secretary or an aquaculture inspector any suspected outbreak of listed diseases or any occurrences of unusually high mortalities of cultured stocks. A national list of diseases of aquatic organisms is annexed to the Regulations.

During the time all or a portion of a facility is placed under quarantine, the Permanent Secretary may apply specific treatment methods, the destruction of infected stocks, their sanitary disposal, and the disinfection of the aquaculture facility and all associated equipment to standards set by the Ministry. Any costs associated with these measures are made payable by the owner of the infected licensed aquaculture facility.

The Minister may establish and maintain zones which are free from specified serious diseases based on the World Animal Health Organization's Aquatic Animal Health Code.

To deal with emergency situations involving the outbreak of highly contagious and pathogenic diseases of aquatic organisms of known or unknown etiology, the Minister is empowered to develop and implement a national contingency plan for disease control.

Any person engaged in aquaculture must maintain accurate and current records of the arrival, final sale or disposal of aquatic organisms kept at the aquaculture facility. Such records are to include full information on any mortalities, clinical signs observed, the nature and results of any diagnostic tests and the nature and results of any treatment applied to cultured stocks.

Licensees are required to maintain accurate records with respect to:

- The type and amount of food used in relation to the aquatic organisms at the site or aquaculture facility.
- The type of any medication, including drugs, antibiotics or other chemicals used in relation to aquatic organisms, including the dosage and treatment date and the duration of any veterinarian treatments.
- The source, number and specific location of all aquatic organisms.
- A record of all disposals and sales of aquaculture products, including the date, number or weight and destination of each disposal and sale.

The use of drugs may be regulated either through permit conditions or the Fisheries and Public Health Minister may specify a list of approved drugs in regulations.

The composition of feed may also be regulated by means of permit conditions.

A national shellfish sanitation monitoring programme is in the process of being implemented to deal with food safety regarding marine bivalves.

<u>Investment</u>

In terms of the Agricultural Bank of Namibia Act (2003), the Bank’s activities may include and benefit persons involved in aquaculture.

Other authorisations

The Water Resources Management Act (2004) provides for licences to abstract and use water. An application for a licence under this act may be issued as a combined permit to abstract and use water and to discharge effluent.

Where aquaculture is authorized under any proclaimed conservation or protected area, it is subject to the specific law governing such proclaimed conservation or protected areas.[191]

BRAZIL

Overview of regulatory framework

The legal framework in Brazil is regarded as still fairly fragmented at the federal level. The principal piece of legislation regulating the sector is the Fisheries Code – Decree-Law. Only three sections are dedicated to aquaculture development. A dedicated aquaculture law is being drafted.

The Special Secretariat for Aquaculture and Fisheries is the main authority for the management and development of fisheries and aquaculture in Brazil. SEAP has advisory, promotional, supervisory and administrative functions. It assists the President in the drafting of policies and guidelines, promotes construction of infrastructure for the development of fisheries, aquaculture and the trade in fish products and implements programmes for the rational development of aquaculture, in cooperation with the Federal District, State and Municipal Authorities.

SEAP is also responsible for the granting of licences, permits and authorisations for fisheries and aquaculture. Within the SEAP, a central role is played by the National Council for Aquaculture and Fisheries (Conselho Nacional de Aqüicultura e Pesca – CONAPE), which has advisory and organisational functions.

The Brazilian Institute for the Environment is also active in the aquaculture sector. Its responsibilities mainly concern environmental issues, such as natural resources conservation (including aquatic resources), environmental licences and water quality control.

The Federal Government is making strategic investments in the aquaculture sector, building hatcheries, installing aquaculture demonstration units and at the same time providing special financial credit lines for aquaculturists. National programs in support of aquaculture cooperatives, extension services, research and marketing are also being planned.

Aquaculture licence

The right to set up aquaculture facilities requires the registration of aquaculture farmers in the General Fisheries Register. Aquaculture registration certificates must be renewed every year.

Environmental licence

An "environmental license" (which includes an EIA process) and Land and Water use licences are also required for all aquaculture projects. Environmental licensing is managed at federal, State or municipal level, mainly depending on the type of activity involved and on the extent of the impact area. Indeed, according to the federal Constitution, both fisheries and environmental matters fall within the concurrent legislative power of the Federation and the States, whereas only residual powers are vested in the Municipalities. There is provision for three separate processes, from a more simple process to a very comprehensive one, depending on the severity of the expected impacts.

Water rights issued for a specified period, are renewable and are valid for a maximum of 35 years. Water use rights may only be granted after a Water Basin Committee is created for the basin where the project will be installed, and a consensual decision is taken on how the water shall be used and how much it will cost for each user.

A separate law (Order (SUDEPE) No. N-1 of 1977) provides that the construction of dams and dykes implying the alteration of water courses must ensure the protection of the aquatic fauna. The federal Water Code (Decree No.24.643 of 1934) does not regulate the use of public water for fisheries purposes, and thus refers to special laws on the matter. The Water Policy Act which requires a licence for wastewater discharge does not make any reference to aquaculture.

A specific decree governs access to public waters for fish farming. It is jointly issued by several government department including SEAP, the Maritime Authority, the National Water Agency and others. Authorisations may only be granted to natural or legal persons included in the category of aquaculture farmers and are not transferable.

A further law classifies water as fresh, brackish and marine waters and establishes quality standards according to the use they are intended for. Water use for aquaculture purposes is listed in classes 2 (freshwater), 5 (marine water) and 7 (brackish water). The resolution also gives directives to competent authorities for the definition of pollution control programmes and determines quality standards for effluents discharge into the water.

Sites

Three different zones are identified in the Brazilian system:

- Aquaculture areas: delimited areas in the aquatic environment intended for the development of individual or collective aquaculture projects.
- Aquaculture parks: delimited areas in aquatic environment composed of several aquaculture areas, and where compatible activities may be carried out in intermediate spaces.
- Preference areas: areas on which indigenous people have priority rights.

Aquaculture activities may also be set up in protected areas. The competent environmental authority may only grant the licence with the approval of the management authority of the area.

Process

The authorisation process starts with the identification of a site and initial environmental assessment. An application is made by SEAP for a preventative authorisation to use water resources (this indicates availability for planning purposes and does not actually grant a water right) and the Maritime Authority decides whether the project does not hinder maritime transportation. Only then are applicants for operation of the project assessed and selection process carried out. .

The legislation provides for three different types of environmental licences according to the stage of development of the project:

- Preliminary Licence: approving the concept and location.
- Installation Licence: authorising the setting up of the activity.

- Operation Licence: authorising the commencement of the project.

AIS

In some States in Brazil, the import of aquatic animals is subject to an authorisation issued by the Animal Health Service of the state where the aquaculture farm is located. In the remaining states, import requests must be sent to the central authority in Brasilia. Authorisations may include particular sanitary restrictions, according to the country of origin.

The introduction of aquatic exotic species and the transfer of species within the country are controlled by the environmental authorities and authorisation is required for the introduction, reintroduction and transfer of fish, crustaceans, molluscs and aquatic macrophytes for aquaculture purposes. The introduction of freshwater species and macrophytes is prohibited. The import or export of any aquatic species, as well as the introduction of native or exotic species in inland waters also requires authorisation. Live imported aquatic organisms must be subjected to a quarantine period while they undergo health testing. The movement of live aquatic animals within the country is also regulated and animals must be accompanied by an Animal Transit Guide.

The production and release of aquatic GMOs is subject to specific legislation on biosafety, and an environmental licence is required for the introduction of exotic species and GMOs.

Normative Instruction No.3 of 2004 requires registration to the RGP of companies trading live aquatic organisms (Empresa que Comercia Organismos Aquáticos Vivos). Applications shall be accompanied by the following documentation:

- Copy of identity document of the applicant.
- Copy of residence certificate of the applicant.
- Information on existing or upcoming infrastructure.
- Information on origin of organisms being traded.
- Register tax receipt.

Animal health

Both federal and state authorities and DFAs are in charge of animal health in Brazil.

Aquaculture farms are classified as follows:

- Reproduction establishment
- Nursing establishment
- Breeding establishment
- Recreational establishment
- Trade establishment

All aquaculture establishments are subject to the supervision of the Official Veterinary Service, attached to the relevant animal health authority at federal, State and municipal level. A mandatory notification to the Official Veterinary Service is required in case of suspicion of exotic disease outbreak, or when the disease is a menace to public economy, public health or the environment.

Feed

This is regulated by separate legislation establishing sanitary controls to be carried out on animal feedstuff

Food Safety

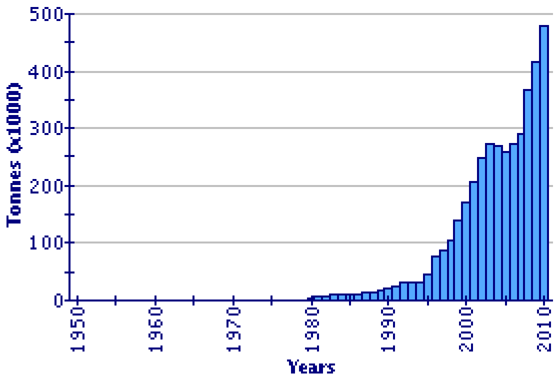
The Ministry of Health is the responsible authority for matters related to food safety and it has a National Sanitary Control Agency. The main principles on health in general and food safety are established by a Federal Sanitary Code. More specifically, food safety is regulated by a Decree establishing basic rules on food products. Neither refers to fish products in particular. In addition, several Technical Regulations establish health standards and good practices for food products derived from animals.

The use of chemical additives in food is also regulated and there is provision for sanitary inspections to be carried out.

Performance of Aquaculture in Brazil

Sector Performance
According to 2003 data, finfish comprise 61percent of Brazilian production with 171 187 tonnes produced, followed by crustaceans with 90 190 tonnes (32.4 percent), molluscs with 10 807 tonnes (3.9 percent) and frogs with 626 tonnes (0.2 percent).
A total carp production of 50 400 tonnes represents 29.4 percent of the total farmed fish production with tilapia production at 64 857 tonnes representing 37.88 percent. Although Nile tilapia was introduced in 1971, significant commercial production has emerged only during the 1990s, as producers have assimilated sex reversal and other modern production technologies.

The graph below shows total aquaculture production in Brazil according to FAO statistics:
Reported aquaculture production in Brazil (from 1950)
(FAO Fishery Statistic



Fisheries and aquaculture account for only 0.4 percent of Brazil's Gross National Product (GNP), if associated industries such as transport and value-added secondary processing are included GNP increases to a total of 2 percent.

Institutions which include aquaculture within their curriculum are located in every Brazilian State, in addition to which there is one undergraduate and three graduate programs in existence specific to aquaculture, there are also 16 middle level courses, 42 undergraduate courses, 28 specialisations, 27 masters and 13 doctorate programs involved in this area. Brazil has 89 research institutions involved in aquaculture, 32 of which are located in the Southeast, 23 in the South, 21 in the Northeast, 8 in the North and 5 in the Middle West region.

Contributing Factors

Brazil is already a superpower in the production of fish feed. The country is the world's second largest producer of soybeans and the world's third largest producer of maize. These are two ingredients which are gaining in importance in the production of fish feed and Brazil is also one of the few countries in the world which can guarantee GMO-free maize and soya.

In mollusc culture, strategic development plans are now being prepared and Brazilian missions are searching the globe for up-to-date technology and to investigate the establishment of technology transfers programs that will lead to increased national production. Implementation of sanitation and water quality programs are also being planned to increase product quality for both national and international markets.

There has been a trend toward increase tilapia production to the northeast states. Xingó reservoir for example, lies across the boundaries of three States and is sustaining a cage production of tilapia of around 4000 tonnes/year. The use of reservoirs for aquaculture is one of the main development programs to have been put in place by SEAP, the national program focuses on the six largest reservoirs located in different regions of the country, and projects a potential production of 18 million tonnes even if only 1 percent of the area contained within these six reservoirs is utilised for aquaculture.

Problems/Solutions

The aquaculture sector currently faces several issues for example, conflicts with environmental agencies and other users of common natural resources as well as market constraints caused by the anti-dumping action initiated by the United States of America, even so, the sector is well organised and is addressing these issues with appropriate strategies. Certification of the feed industries, hatcheries, farms and processing plants, training of small farmers in best management practices, mangrove recuperation, shrimp veterinary health programs, development of new markets and the adoption of a Code of Conduct for responsible shrimp farming are among the current activities being carried out by the Brazilian Association of Shrimp Farmers (ABCC).

Brazilian aquaculture will become increasingly competitive in international markets, with continuing increases of the industry's production capability and constant improvement in product quality. With the creation of the Special Secretariat of Aquaculture and Fisheries, the aquaculture sector is passing through a unique period of organisation and development. Many investors have been waiting for the set up of clear rules for lease permit and environmental licensing of aquaculture in federal waters, both in marine and freshwater environments (dams and reservoirs). Now that these aspects have become defined, many investors are looking to aquaculture as an interesting option for investment, and this is expected to result in increased production and jobs generation in the years to come.

CHINA

Legislative Framework

The Fisheries Law (1986, as amended in 2000) seeks to enhance the production, increase, development and reasonable utilization of the nation’s fishery resources. It requires the state to adopt a policy that calls for simultaneous development of aquaculture, fishing and processing, with special emphasis on aquaculture. The Law is implemented by the Regulation for the Implementation of the Fisheries Law (1987).

Guidelines and Codes: China makes use of codes and guidelines pertaining to aspects of aquaculture production like hatcheries and the use of antibiotics.

Land Administration Law (1998): The use of state-owned and collectively owned land is regulated under the Land Administration Law (1998)

The Water Law (1988, as amended in 2002) regulates the development, utilization, saving, protection, allocation and management of water resources.

Environmental Protection Law (1989) regulates EIAs and biodiversity issues.

The Law on the Prevention and Control of Water Pollution (1984, as amended) aims to prevent and control pollution of rivers, lakes, canals irrigation channels, reservoirs and other surface water bodies and groundwater.

The Hierarchy:
Generally, the highest legislative authority in China is the National People's Congress (NPC) and its permanent body, the Standing Committee. The governments of provinces, autonomous regions and municipalities may exercise legislative power, provided that such local laws do not contravene the Constitution or the laws and regulations adopted by the central government.

International:
China is a member of the World Trade Organization (WTO) and the Network of Aquaculture Centres in Asia and the Pacific (NACA). China is also a party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Convention on Biological Diversity (CBD). It has signed the Biosafety Protocol on 8 August 2000 but is not yet a party to the Protocol.

Institutional Framework

The Bureau of Fisheries falls under the Ministry of Agriculture and is the main administrative body governing the fisheries and aquaculture sector. The major functions assigned to the Bureau are to:

- formulate plans, strategies, policies and programmes for fisheries development,
- guide fisheries economic reform,
- implement and monitor fisheries laws, regulations and international/bilateral fisheries agreements,
- strengthen fisheries management so as to ensure proper utilization of fisheries and aquatic resources,
- protect the fisheries environment, to support fisheries education and scientific research and
- administer the fisheries processing industry.

A Federal Approach: The Constitution divides China administratively into provinces, autonomous regions and centrally administered municipalities. Under the province or the autonomous region are autonomous prefectures, counties and cities. The fisheries departments in the provinces, autonomous regions, municipalities and counties have more or less the same functions as the Bureau of Fisheries in their respective geographical areas. They are under direct leadership of their provincial, autonomous region, municipal and county governments, and guided by the Bureau of Fisheries.

Licencing

Public Resource Licenses: The Fisheries Law and Regulations provide that governments at or above the county level may grant licenses to use state-owned water surfaces and tidal flats to state and collectively-owned units to develop aquaculture. Natural spawning, breeding and feeding grounds of fish, shrimp, crab, shellfish and algae in state owned water surfaces and tidal flats as well as their major migration passages must be protected and cannot be used as aquaculture grounds. Licences can be revoked if water surfaces and tidal flats are neglected for a period of 12 months without a proper reason (this includes the situation in which water surfaces and tidal flats have a stocking quantity below the local standard).

Rights Disputes: Disputes over ownership and rights to the use of water surfaces and tidal flats will be referred to ADR mechanisms first and if no agreement is reached, disputes will be referred to the courts. The use of state-owned and collectively owned land is regulated under the Land Administration Law (1998).

Aquaculture Zoning: The State draws plans for the use of water surface areas and defines those areas of water surface and intertidal zone or mudflats for aquaculture purpose. Units or individuals, who wish to use those designated areas, must apply for an aquaculture permit through the competent fisheries administration at or above the county level, and the aquaculture permit will be granted by the people's government at the same level to allow using the area for aquaculture activities.

Land And Water Authorisations

Land Use Planning: The Land Administration Law (administered by the Ministry of Land and Natural Resources) deals with land ownership, use and planning issues. It requires the state to formulate an overall plan for land utilization, classifying land into agricultural land (including aquaculture), construction land and unused land. The ownership of land has a communal nature in China, however, through zoning and licensing moves have been made towards stronger and more secure individual rights in land used for farming, forestry, livestock and fishery production, in particular where it concerns rights of individual cultivators who make up a collective. The Law provides for peasant contracts of 30 years, thus giving the individual cultivator formal rights over a specific parcel, which can only be altered by the collective management through a specified procedure. The Land Administration Law has been implemented by numerous regulations and measures.

Water Use Permits: All water resources are owned by the state so instead of a water rights system China has a water use permitting system. The Water Law (administered by the Ministry of Water Resources), regulates the development, utilization, saving, protection, allocation and management of water resources. The Law requires the state to implement a system of water withdrawal permits and paid use of water resources. In the development and utilization of water resources, domestic water for urban and rural use has first priority, and then other uses should be taken into account. Although the Law does not contain any direct reference to aquaculture, the establishment of water conservation facilities, particularly the establishment, utilization and management of water reservoirs, will play an important part in fishery production, in particular in freshwater aquaculture development. Reportedly, China currently plans to introduce a water rights system to replace the water use permit system.

Marine Areas: The Sea Area Use Management Law (2002) has recently been adopted. The Law, which is administered by the State Oceanic Administration (SOA) falling under the Ministry of Land and Natural Resources, requires sea area users to obtain use rights by applying for sea area use permits, and to pay user fees. The Law also provides for the establishment of Marine Functional Zonation Schemes, which define the uses of a given sea area in the order of priority. Sectoral development planning (including aquaculture) as well as coastal land use, urban and port planning should be consistent with the Marine Functional Zonation Schemes.

Environmental Impact Assessments

The Environmental Impact Assessment Law (2002): Older EIA requirements (below) have focused mainly on construction and large-scale development projects. The Environmental Impact Assessment Law (2002), which has taken effect on 1 September 2003, expands EIA requirements from individual construction projects to government planning for the development of agriculture, aquaculture, animal husbandry, forestry, water conservation and natural resources.

Environmental Protection Law: The main body of China’s environmental legislative framework is the Environmental Protection Law (1989). The State Environmental Protection Administration (SEPA), having ministerial status and falling directly under the State Council, plays the lead role in overall environmental management. Environmental impact statements of construction projects – including large-scale aquaculture projects – must assess the pollution that the projects are likely to produce, their impact on the environment and describe preventive and curative measures.

The Law on the Prevention and Control of Water Pollution aims to prevent and control pollution of rivers, lakes, canals irrigation channels, reservoirs and other surface water bodies and groundwater. According to the Law, the environmental impact statement of construction projects – including large-scale aquaculture projects – should contain an assessment regarding the water pollution hazards the projects are likely to produce, including their impact on the ecosystem, and a description of measures for prevention and control.

Marine Environment Protection Law (1982, as amended): The prevention and control of marine pollution is dealt with in the Marine Environment Protection Law (1982, as amended). The Law provides for the formulation and submission of environmental impact statements for coastal construction projects – including large-scale aquaculture projects.

Water and Waste

None of the waste water provisions refer expressly to aquaculture.

Standards: The Law on the Prevention and Control of Water Pollution provides for the establishment of national standards for water environment quality and for discharge of water pollutants. The people's governments of provinces, autonomous regions and municipalities may establish their own local standards for items that are not specified in national standards.

Protected Zones: The law also envisages the establishment of integrated and rational plans for the purpose of designating protected zones with regard to major fishery water bodies, which are defined as those parts of water bodies designated for the spawning, feeding, wintering or migratory passage of fish or shrimp, and for breeding fish, shrimp or shellfish or growing algae.

The Rules: The Law is implemented by the Rules for Implementation of the Law on the Prevention and Control of Water Pollution (2000). According to the Rules, enterprises and institutions that discharge pollutants into water bodies – including those involved in aquaculture – must submit a report and registration form for pollutant discharge to the local environment protection department. Upon receipt of the report, and after investigation and verification, the department issues a pollutant discharge licence.

No outlet for discharging sewage will be allowed within aquacultural grounds. The Law prohibits the discharge of toxic and harmful wastewater and when discharging heated wastewater, measures must be taken to ensure that the water temperature in the adjacent fishing areas is kept within state water quality standards in order to avoid damage to aquatic resources by heat pollution. Detailed requirements can be found in the Regulations on the prevention of pollution damage to the marine environment by land-sourced pollutants (1990).

Marine environmental monitoring is undertaken mainly by the SOA and the SEPA, with the former handling marine environmental quality monitoring and the downstream impact of land-based sources, while the latter takes care of monitoring land-based discharges.

Water quality standards for fisheries (1989) have been adopted according to the Environmental Protection Law, the Law on the Prevention and Control of Water Pollution, the Marine Environmental Protection Law and the Fisheries Law. The standards aim at prevention and control of water pollution in fishing areas, ensure the growth and breeding of fish, shells, and algae, and ensure the quality of aquatic products.

TOPs, GMO and Disease Control

The Law on the Protection of Wildlife (1988) aims to protect and save species of wildlife, which are rare or near extinction. The transportation of such species out of a county, the import or introduction of such species from abroad, as well as their export, requires an application to be filed to the competent fishery administration under the people's government of the relevant province, autonomous region or municipality. The import or introduction of such species also requires the scientific authentication of the science research institution designated by the competent department of fishery administration under the people's government at or above the provincial level.

The Safety Administration Regulation on Genetic Engineering (1993) aims at promoting research and development of biotechnology in China, tightening safety control of genetic engineering work, guaranteeing public health of common citizens and genetic engineering workers, preventing environmental pollution and maintaining ecological balance. The Regulation is implemented by the Safety Administration Implementation

Regulation on Agricultural Biological Genetic Engineering (1996), which is applicable to agricultural organisms whose genome constitution has been changed by using genetic engineering technologies, including aquatic animals and plants. The Implementation Regulation closely follows the provisions of the principal Regulation. It describes safety classes and safety evaluation, application and approval procedures and safety control measures. Schedule V to the Implementing Regulation contains a safety assessment of genetic engineered organisms and their products acquired from aquatic animals and plants.

The Entry and Exit of Animal and Plant Quarantine Law (1991) aims to prevent infectious or parasitic diseases from spreading into or out of the country, seeks to protect the production of agriculture, forestry, animal husbandry and fishery as well as human health, and to promote the development of trade. Animals, which according to the Law include fish, shrimp and prawn, crab and shellfish, domesticated or wild, as well as animal products, containers and packaging materials used for carrying animals and animal products, including means of transport from animal epidemic areas, are, on entry or exit, subject to quarantine inspection. They need to be accompanied by quarantine certificates issued by the quarantine departments of the countries of export.

The Law on Animal Diseases (1997), which is applicable to fish, describes the procedure to control and cease animal diseases, including quarantine measures.

Other Control Measures: Other measures include the regular monitoring of aquatic wildlife resources, the designation of aquatic nature reserves and the issuance of special catching licences and domestication and breeding licences.

Drugs

Complex Regulation: The legislative framework on chemicals is complex. Numerous laws and regulations address the production, registration, import and export, storage, transport, usage and/or disposal of certain types of chemicals.

The prevention and control of damage from pollutants: The prevention and control of damage from pollutants, including chemicals, that concern aquaculture is generally addressed in the Environmental Protection Law, the Law on the Prevention and Control of Water Pollution and the Marine Environment Protection Law. Provisions that are more specific can be found in amongst others the Regulations on the Environmental Management of First Import of Chemicals and the Import and Export of Toxic Chemicals (1994), the Regulations on the Management of Pesticides (1997) and the Regulations on the Control over the Safety of Dangerous Chemicals (2002).

Drugs: The Regulations for the Administration of Veterinary Medicines (1988), amended in 2004, govern the production, registration, import, export and sale of veterinary drugs. The Regulations also establish control systems for new drugs and for drug safety monitoring. The Regulations stipulate that the fishery authorities at or above county level are responsible for the administration of drug use and drug residue tests for the aquaculture industry.

Feed

The Regulations for the Administration of Feed and Feed Additives (1999) aim to strengthen the administration of feed and feed additives, improve their quality, increase the development of the feed industry and animal production and enhance public health safety. Feed is defined as material to be used as animal food after industrial manufacture. Feed additives are defined as material to be added in small or micro quantities during feed manufacture.

Drug feed additives remain regulated in the Regulations for the Administration of Veterinary Medicines. The Regulations contain requirements and procedures for the evaluation, registration, import, packaging, labelling and storage of feeds and feed additives, which are subject to quality control tests. The Regulations also stipulate the conditions for the establishment of feed and feed additives enterprises. The Bureau of Animal Production and Health, falling under the Ministry of Agriculture, administers the Law.

The Procedures for Administration of Registration of Imported Feed and Feed Additives (2000): The Regulations are implemented by the Procedures for Administration of Registration of Imported Feed and Feed Additives (2000), which require foreign enterprises to apply to the Ministry of Agriculture for registration of their feed and feed additives if they are to be sold in China, and to obtain a production registration certificate.

Food Safety

The Food Hygiene Law (1995), which contains a wide definition of food ("any finished product or raw material provided for people to eat or drink..") applies to all foods and food additives, including containers, packaging, utensils and equipment used for food, as well as detergents and disinfectants used for washing of food. It also applies to premises and facilities associated with food production and marketing. The Law requires the administrative department of public health under the State Council to formulate and promulgate national hygiene standards, hygiene control regulations and inspection procedures for food, food additives, containers, packaging, utensils and equipment used for food, detergents and disinfectants used for washing of food, as well as for tolerances for contaminants and radioactive substances in food.

The Standardization Law (1988) requires standards to be formulated for agricultural products. The Law is implemented by the Regulations on the Implementation of the Standardization Law (1990, which defines agricultural products as to include fishery products. According to the Regulation, in formulating national standards for pharmaceuticals, food hygiene and veterinary drugs, the competent departments in charge of public health and agriculture under the State Council will be responsible for organizing, drafting, examination, and approval in their respective departments.

Investment

China is actively trying to create a better investment climate to attract more and more overseas investors setting up their companies or joint ventures in China. The Catalogue for the Guidance of Foreign Investment Industries and its Appendix (2002) classifies foreign investment projects into four categories: encouraged, permitted, restricted and prohibited projects.

Classification: Foreign investment projects belonging to encouraged, restricted and prohibited categories are listed in the Catalogue.

Encouraged foreign investment industries includes the breeding of quality varieties of aquatic offspring (excluding precious quality varieties peculiar to China) and the breeding of famous, special and fine aquatic products, as well as cage culture in deep winter. It also includes aquatic products processing, seashell products cleansing and processing, and development of function food made from seaweed. In addition, it mentions the development and production of new varieties of effective, low poison and low residual agriculture chemicals and pesticides, the development and production of biology agriculture chemicals and pesticides, as well as the production of antibiotic material medicines used for animals (including antibiotics and chemical synthesis medicines).

Prohibited foreign investment industries mentions the cultivation of China's rare precious breeds (including fine genes in the aquatic products industry).

Performance of Aquaculture in China

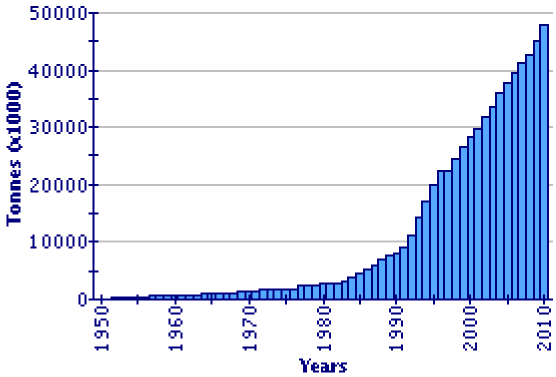
Sector Performance

In 2003 total aquaculture production was 30.28 million tonnes compared with 1.23 million tonnes in 1979. The proportion of aquaculture output to the national fishery total increased from 29 percent in 1979 to 64.33 percent in 2003. In 1979 the area devoted to aquaculture was 2 854 million hectares. This gradually increased to 7 104 million hectares in 2003. Aquaculture has thus replaced capture fisheries as the major fishery activity in China. Inland aquaculture is a very important part of China's aquaculture industry.

Carps are the major species cultured in China, accounting for about 44 percent of total aquaculture production. In 2002 production of silver and bighead carps was 5 102 895 tonnes, followed by grass carp (3 419 593 tonnes), common carp (2 235 634 tonnes), crucian carp (1 697 217 tonnes) and black carp (224 529 tonnes). Chinese bream and blunt-snout bream are also farmed on a large scale with an annual production of 564 086 tonnes.

Molluscs are the major marine species group farmed accounting for approximately 33.20 percent of Chinese aquaculture output. In 2002 of the molluscs cultured, oyster output reached 3.63 million tonnes, followed by clams (2.30 million tonnes), scallops (935 585 tonnes), mussels (663 866 tonnes), and razor clams (635 486 tonnes).

The graph below shows total aquaculture production in China according to FAO statistics:
Chart



Reported aquaculture production in China (from 1950)
(FAO Fishery Statistic)

Contributing Factors

The development of aquaculture has had a positive impact on the social and economic development in rural areas. Fish from capture fisheries and aquaculture as a proportion of total animal products (meat, egg, milk and fish) increased from 20 percent in 1985 to 32 percent in 2002. Aquaculture not only improves food supply to rural farmers, but is also an important means of poverty alleviation in China. From 1985 to 2003 the aquaculture industry generated 4.3 million full-time jobs for rural farmers. The per capita net income of fish farmers reached 4 474 Yuan in 1999, which is much higher than the 1 347 Yuan per capita net income for state defined poor counties in China. Rice fish farming has been extended to the major state designated poor counties as one of the programmes for poverty alleviation and has achieved great success. The rice fish culture system is now practiced mainly in rural poor areas due to small inputs and relatively high economic return.

A proactive policy by the government on aquaculture development as well as the liberalization of fish production and trade are the major reasons behind the fast growth of the industry. Meanwhile, scientific advancements and technological innovations lay down the foundations for massive aquaculture production in China. A well-established education and extension system facilitates the transfer of technologies developed into practices for rural farmers.

Problems/Solutions

The rapid expansion of the aquaculture industry also brings with it problems such as pollution, outbreaks of disease, genetic deteriorations and seasonal oversupply etc. Aquaculture has been threatened by agricultural and industrial effluent, as well as the tourist industry. Fish safety and anti-dumping issues are now posing new threats to the Chinese aquaculture industry. To cope with some of these problems, the government has already taken action by improving the regulatory and legal framework such as the revised Fisheries Law in 2000 and has issued related rules and regulations including the Aqua Seeds Management Directive in 2001 and the Aquaculture Regulation on Quality and Safety Management in 2002. The aim of this legislation is to strengthen and guide aquaculture production in a more sustainable, responsible and healthy way. At the end of 2002 the Government also launched the "Non Human Hazards Agriculture (including aquaculture) Production Action Plan." About 100 production criteria have been developed for fish farmers to follow.

With marine capture fisheries in decline (already in negative growth), aquaculture holds much promise for future fisheries development. With continued proactive government policies, adequate advanced planning, scientific designed production technologies and sound management, aquaculture in China can be stable, sustainable, equitable and profitable.

MALAYSIA

Overview of legislative framework

Fisheries Act No.317 (1985):
Malaysian fisheries are governed by the Fisheries Act No.317 (1985) and its regulations. Inland fisheries and aquaculture regulations are issued by State authorities, whereas marine fisheries and aquaculture are a federal concern. Unfortunately, neither the Kedah State Fisheries (Riverine) Rules (1990) nor the Perak State Fisheries (Riverine) Rules (1992) make any provision on aquaculture.

Aquaculture is defined as "the propagation of fish seed or the raising of fish through husbandry during the whole or part of its life cycle".

Environmental Quality Act No.127 (1974):
The Malaysian EIA system is regulated under the Environmental Quality Act No.127 (1974)

Fishermen's Associations Act (1971):
Aquaculture farmers' associations are formed according to the Fishermen's Associations Act (1971), for the promotion of economic and social interests of the group. Area associations may federate into a State association, and State associations may create a national confederation. All Fishermen associations are registered with the Fisheries Development Authority of Malaysia (LKIM), which supervises and controls their activities.

Codes of Conduct and Guidelines:
Being a member of ASEAN, Malaysia embraces the codes of conduct adopted by the Association. The ASEAN has published two important guidelines on fisheries, namely the Manual on Practical Guidelines for the Development of High Health Penaeus monodon Broodstock and the Harmonization of Hatchery Production of Penaeus monodon in ASEAN Countries.

International:
Malaysia is a member of:

- World Trade Organization (WTO);
- Association of Southeast Asian Nations (ASEAN), which promotes cooperation for the development of aquaculture through the ASEAN Ministerial Understanding on Fisheries Cooperation (1983);
- ASEAN Free Trade Area (AFTA); and
- Network of Aquaculture Centres in Asia and the Pacific (NACA) (1988) – together with Australia, Bangladesh, Cambodia, China, Hong Kong, India, Korea, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand and Viet Nam.

Malaysia is a party to:

- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);

- Convention on Biological Diversity (CBD); and
- Biosafety Protocol.

As part of the Southeast Asian Fisheries Development Centre (SEAFDEC), Malaysia participates not only in the several Departmental Programmes on aquaculture, but also in the SEAFDEC–ASEAN programmes, which include the promotion of mangrove-friendly aquaculture and the regionalization of the Code of Conduct for Responsible Fisheries.

Institutional framework

Ministry of Agriculture and Agro-based Industry (MOA):
The main fisheries authority at federal level is the Ministry of Agriculture and Agro-based Industry. With regard to aquaculture, the Director-General of Fisheries, head of the Fisheries Department, is vested with orientation powers for the development of marine and inland farming, in consultation with the concerned State Authority. In particular, the promotion of inland aquaculture may involve the creation of experimental aquaculture stations for demonstrative purposes, fish-breeding facilities and training centres.

Fisheries Department of the Ministry of Agriculture :
The Freshwater Fisheries Research Centre operates within the Fisheries Department of the Ministry of Agriculture, for the development of freshwater aquaculture, and the conservation and management of aquatic resources.

The Ministry of Natural Resources and the Environment, Department of Environment, is in charge of monitoring pollution levels of marine and inland waters.

Licencing

Marine aquaculture is regulated by the Fisheries (Marine Culture Systems) Regulations (1990). In terms of Regulations, marine aquaculture is subject to a double authorisation system: a permit to set up the facilities, and a licence for their operation.
The whole procedure is managed by the Director-General of Fisheries.

Applications for a permit to set up a mariculture farm must provide the following information:

- Type of marine culture system;
- Proposed aquaculture site; and
- Plan of chosen site.

A permit may only be issued if, after the Director-General's investigation, the site's location does not appear to affect the development of fisheries. No maximum time period is specified for licences. However, a licence may be cancelled if the facility is found to be non-compliant with permit conditions.

Also relevant to aquaculture is the Fisheries (Cockles Conservation and Culture) Regulations (2002), under which a licensing procedure is established for the capture of cockles (Anadara) and cockle seeds.

Authorisations

Double Authorisation:
Pursuant to the 1990 Fisheries Regulations, mariculture is subject to a double authorization system i.e. a permit to set up the facilities, and a licence for their operation. The whole procedure is managed by the Director-General of Fisheries.

Criteria:
The content of the consequent application for the operation licence is determined by the Director-General. Important criteria required on application are information on the type of system/process, the proposed aquaculture site and the plan for the proposed operations site and a permit may only be issued if the site's location does not appear to affect the development of fisheries.

Process:
An inspection is carried out to check compliance with the terms and conditions of the permit. The general terms and conditions of permits and licences are found in the Schedules to the Regulations. Additional terms and conditions may be specifically established by the Director-General. Since the Regulation does not specify any duration, licences are possibly continuing. However, a licence may be cancelled if the farm is found not compliant with the terms and conditions, during an official inspection.

Environmental Impact Assessments

The Malaysian EIA system is regulated under the Environmental Quality Act No.127 (1974), however, the Malaysia National Biodiversity Policy (1998) provides that EIA procedures must be revised in order to focus on biodiversity conservation since the EIA regime seems inconsistently applied and disorganised.

Threshold:
The Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order (1987) establishes that land-based aquaculture projects implying the clearing of mangrove swamp forests, and covering an area of 50 hectares or more, are subject to the EIA procedure described in the Environmental Quality Act.

EIR:
A report, assessing the possible impact of a project on the environment and proposing appropriate prevention, mitigation or control measures, must be submitted to the Director-General of Environmental Quality of the Department of Environment (DOE), Ministry of Natural Resources and the Environment. The Director-General's negative decision may be appealed against, to the Appeal Board appointed by the Minister.

Environmental licences:

Environmental licences are issued by the Director-General of Environmental Quality. Unfortunately, the letter of the law does not clarify to which activities or subjects the licensing procedure applies, and whether the EIA process described above is part of such procedure.

Water and waste

3 Discharge licences might be required.

Waste Water:
The provisions on water pollution from the Waters Act (1920, as amended) apply to freshwater bodies as well as coastal waters. A licence, to be granted by the concerned State Secretary, is required for the discharge of waste matter into any water body. No provisions are made with regard to aquaculture effluents.

Waste Matter:
Under the Environmental Quality Act, a licence is required for the discharge of waste matter in marine and inland waters, above the threshold set by the Minister.

Industrial wastewater:
Industrial wastewater discharge is regulated under the Environmental Quality (Sewage and Industrial Effluents) Regulations (1979, as amended). Despite the lack of reference to fish farming, its provisions seemingly apply to industrial aquaculture facilities.

Fish movement, disease and welfare

Movement:
Under the Fisheries Act, the import and export of live fish to and from Malaysia, as well as the transfer of live fish from East to West Malaysia or vice versa, and the transport among Eastern states, are subject to the granting of a permit from the Director-General of Fisheries. Terms and conditions, which are defined at the Director-General's discretion, shall aim at ensuring food safety and disease control, and at avoiding the release of non-indigenous species into the environment. Furthermore, pursuant to the Fisheries (Prohibition of Import, etc., of Fish) Regulations (1990), the import of certain freshwater species, such as piranhas and pacus, requires a specific permit from the Director-General.

Disease Control:
No provisions could be found on fish disease control. Animal health in general is managed by the Department of Veterinary Services of the Ministry of Agriculture. Fish health is not explicitly included among its tasks by Animals Ordinance No.17 (1953).

Welfare:
Fish is included in the definition of “animals”, applicable to the provisions on animal protection.

Drugs and feed

Drugs and feed are unregulated for aquaculture.

Food safety

Food Act (1983, as amended)
Food safety is regulated by the Food Act (1983, as amended) and by the Food Regulations (1985, as amended), which apply to fish products. The law and its regulations mainly deal with labelling, additives, residues, packaging and sampling procedures. Specific provisions are made in the regulations, with regard to health standards, allowed additives and residues, and labelling requirements for fish and fish products.

Veterinary Health Mark Certification:
The quality and safety of food products is guaranteed by the Veterinary Health Mark Logo (VHM), awarded under the Veterinary Inspection and Accreditation Program of the Department of Veterinary Services (DVS), Ministry of Agriculture. Applications must include information on the

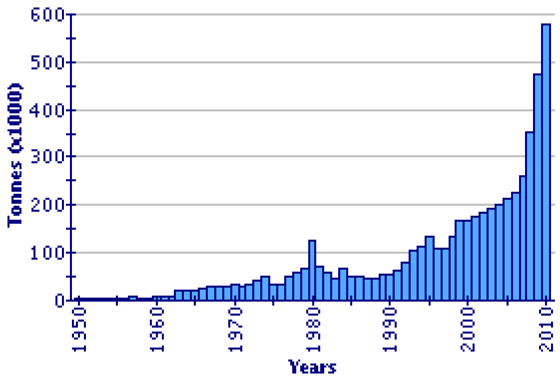
Quality Assurance Program (QAP) and the HACCP (Hazard Analysis Critical Control Points) Plan of the producing company. This certification programme is mainly intended for livestock products processing plants, but is actually open to fish processing plants as well. Due to the veterinary certification requirements set by importing countries, participation in the programme is, de facto, an obligation. Guidelines and codes on best veterinary practice and for building processing plants are provided under the programme.

Performance of Aquaculture sector in Malaysia

Sector Performance

In 1990, production from aquaculture was 52 302 tonnes. By 1994, production had doubled to 114 114 tonnes. In 2003, aquaculture production was at 194 139 tonnes at a value of USD 308 million - about 20 percent of the total value of the fisheries production in Malaysia. Brackish water species accounted for more than 70 percent of the total aquaculture production in terms of value and quantity. Of these, blood cockles recorded the highest production, followed by marine shrimp and other freshwater species, such as tilapia, carps and catfish, as well as marine fish. Cockles account for almost 50 percent of the total brackish water aquaculture production, and about 37 percent of the annual aquaculture production. However, marine shrimp accounted for the highest value of production, with about 65 percent of the total value of brackish water aquaculture production, and 52 percent of the total value of aquaculture production in 2003. Marine and brackish water aquaculture production recorded an increase of more than 20 percent in comparison to production in 2002. Freshwater aquaculture production, however, only recorded an increase of about 7 percent in comparison with production in 2002.
The graph below shows total aquaculture production in Malaysia according to FAO statistics:

Reported aquaculture production in Malaysia (from 1950)
(FAO Fishery Statistic)



Reported aquaculture production in Malaysia (from 1950)
(FAO Fishery Statistic)

Contributing Factors

Aquaculture is becoming economically more important as a way of increasing local fish production for food security. Aquaculture production is still very small compared to capture fisheries: it contributes less than 0.2 percent to GDP. However, it has succeeded in producing high value species for the domestic market as well as for the export market. This aspect is capitalized on in the poverty alleviation programme involving the very poor to improve their household income. The culture of bivalve molluscs is the easiest with few overheads and has proved very successful among the poor households in coastal areas. Seaweed culture in Sabah has proved to be very successful in improving the livelihood of the poor fishermen because the produce is sold in a dried form and exported to the

Philippines. In the inland area, the farming of tilapia in earthen ponds through government - assisted projects has been very successful among the poor households because it breeds naturally. Culture in floating net-cages in lakes and reservoirs through government-assisted projects, has also proved to be successful and likely to improve livelihoods, as well as providing a cheap source of protein.

Problems/Solutions

Aquaculture has been identified as one of the critical activities to ensure food security since the Seventh Malaysia Plan (1996-2000). Further impetus was given to enhancing aquaculture development as the third engine of growth in the Eighth Malaysia Plan (2001-2005). Aquaculture has also been identified as a potential important export earner after oil palm and rubber. Compared with other agricultural sectors such as oil palm, rubber, paddy, fruits and vegetables, aquaculture is one of the most productive in terms of income per hectare per annum and return to investment.

In order to chart the development of the Malaysian agriculture sector, the government formulated the first National Agriculture Policy (NAP) in the early 1980's. In the third NAP (1998-2010), the promotion of sustainable aquaculture development is one of the priorities, where the aim is to increase aquaculture production to 600 000 tonnes by 2010, an increase of about 200 percent from the current production of 200 000 tonnes.

Aquaculture expansion requires land. Although more than 400 000 ha of land and inland water bodies have been identified as suitable for aquaculture, competition with other economic activities makes land acquisition very difficult. Since 2004, agriculture, including aquaculture development, has been given top priority by the government to ensure food security and to reduce the food import bill. In order to overcome the land issue, an Aquaculture Industrial Zone (AIZ) was set up as part of the permanent food production zones by the state governments as a measure to ensure that sufficient land is allocated for aquaculture development. About 40 000 ha are now allocated to aquaculture development by the states which are awaiting investment.

In addition, rising production costs, lack of skilled labour, threat of diseases, and food safety and quality of aquaculture produce have become issues which are making aquaculture development difficult.

Aquaculture products have been identified as the commodity which can contribute towards increasing export revenues. Food safety of aquaculture products has become the most important criteria as stipulated under the Sanitary and Phytosanitary Agreements. The issue of prohibited antibiotic residues in aquaculture products, particularly shrimp, has caused huge losses when consignments for export found to be contaminated are rejected and destroyed. Recently, environmental and social aspects have also been used as additional criteria, in addition to food safety as a mark for sustainable aquaculture produce.

AUSTRALIA

Legislative framework

State or Territorial Legislation

All states or territories have fisheries or aquaculture legislation that regulates aquaculture production. In New South Wales, Victoria, Queensland and Western Australia, aquaculture is regulated under general fisheries legislation covering commercial and recreational fishing, and aquaculture. Tasmania has two pieces of legislation relating to marine and inland fisheries respectively. Separate legislation provides for marine aquaculture leases in Victoria (Land Act 1958), Tasmania (Marine Farming Planning Act 1995), and potentially in Queensland (Land Act 1994). In contrast, South Australia has a single dedicated Aquaculture Act (2001, as amended in 2003 and 2005), while Western Australia has dedicated legislation for pearling (Pearling Act 1990).

Commonwealth Legislation
Aquaculture production may also be subject to Commonwealth legislation, such as the Environment Protection and Biodiversity Conservation Act (1999) and the Great Barrier Reef Marine Park Act (1975) (the latter affects Queensland only). Other Commonwealth legislation that may be relevant includes the Native Title Act (1993) that may affect the use of public land and waters. Commonwealth quarantine legislation can affect aquaculture operators' access to new species, broodstock and feed. South Australia is the largest producer of aquaculture products in Australia, accounting for 38 percent of the gross value of production. In the following, only the legislation of this state will be dealt with. Commonwealth legislation will be mentioned when it is relevant.

South Australia Aquaculture Act
According to the South Australia Aquaculture Act (2001, as amended in 2003 and 2005), aquaculture means "farming of aquatic organisms for the purposes of trade or business or research, but does not include an activity declared by regulation not to be aquaculture."

International Law
Australia is a member of the following international arrangements:
- World Trade Organization (WTO);
- Asia-Pacific Fishery Commission (APFIC);
- Network of Aquaculture Centres in Asia-Pacific (NACA);
- The Secretariat of the Pacific Community (SPC); and
- Forum Fisheries Agency (FFA).

Australia is party to the Convention on Biological Diversity (CBD). The country has not ratified the Biosafety Protocol.

Institutional Framework

Under the Australian Constitution, state and territory governments have primary responsibility for management of land and waters within a state or territory, and management of inland and coastal waters out to the three nautical mile limit. The Australian Government has the responsibility for management of marine waters between the three and two hundred nautical mile limits.

Department of Primary Industries and Resources South Australia (PIRSA)
The South Australian Ministry for Agriculture, Food and Fisheries has the powers to grant aquaculture licences and the power to make decisions on licence conditions, as well as conditions and terms of leases. The Act also establishes bodies to administer or advise on aspects of the Act, as well as giving legal authority for associated activities. The administrative responsibilities under the Act have been delegated to the Department of Primary Industries and Resources South Australia (PIRSA). The Act grants the Governor the power to make regulations with regard to the matters stated in the Act.

Licencing

Aquaculture licence:
According to the Act, no person must carry on aquaculture, whether marine, land-based coastal or land-based freshwater, except as authorised by an aquaculture licence granted by the Minister. An aquaculture licence is granted for a term of 10 years, or a lesser period specified in the licence, and is

renewable for successive terms. The licence authorises an aquaculture farm to operate at a specific location, and specifies the species and type of farming activity to be undertaken on the site.
A marine aquaculture licence can only be granted for an area that is subject to a lease, provided the area is within State waters and/or adjacent land that is the seabed. Applications for aquaculture licences within State waters and/or adjacent land will be a combined application for both the lease and the licence. An aquaculture licence can be suspended or cancelled if the licensee obtained the licence improperly, the licensee has failed to comply with a condition of the licence, or the licensee has committed an offence against any other law relating to aquaculture, fishing or environment protection.

Aquaculture Leasing and Licensing Policy (2004):
In order to establish a leasing and licensing policy framework, the Aquaculture Leasing and Licensing Policy (2004) was made by the Minister under the Act, however many of the matters contemplated by the leasing and licensing Policy are now dealt with by Aquaculture Regulations (2005).

Land and Water Authorisations

Land Use Planning:
All marine-licensing decisions will have regard to relevant Aquaculture Resource Management Policies and Aquaculture Management Zone Policies, which are made in accordance with the South Australia Aquaculture Act (2001, as amended in 2003 and 2005). These documents form the basis for determining the type and level of aquaculture activity allowed. As for the Aquaculture Management Zone Policies, the Minister may identify the following zones within State waters:

- Aquaculture zones, in which specified classes of aquaculture will be permitted;
- Prospective aquaculture zones, that has effect for a specified period not exceeding three years during which investigations are to be completed to determine whether the zone should become an aquaculture zone in which specified classes of aquaculture will be permitted;
- Aquaculture exclusion zones, in which no aquaculture will be permitted; and
- Aquaculture emergency zones, for emergency relocation of aquaculture operations of a specified class.

Marine Licence
The Aquaculture Act sets forth that a marine licence (within State waters and/or adjacent land) may not be granted unless the area is subject of an aquaculture lease granted by the Minister.

Aquaculture Lease
Pursuant to the Act, the aquaculture lease must specify the class of aquaculture that may be carried out in the area of the lease, being either pilot leases, development leases or production leases, and in circumstances of emergency, emergency leases.

Pilot Lease
A pilot lease may be granted in respect of an area comprising or including State waters outside of an aquaculture zone, or within an prospective aquaculture zone if an applicant is determined through an allocation process approved (through a recommendation) by the Aquaculture Tenure Allocation Board (ATAB). The term of a pilot lease is 12 months or a lesser period specified in the lease. A pilot lease is renewable for successive terms but not so the aggregate of the terms exceeds three years.

Development Lease
A development lease may only be granted in respect of an area comprising or including State waters within an aquaculture zone. The term of a development lease is 3 years or a lesser period specified in

the lease. Furthermore, the holder of a pilot lease may apply to the Minister for conversion of the lease to a development lease.

Production Lease

A holder of a development lease may apply to the Minister for conversion of the lease to a production lease. A development lease may be converted on the same conditions as from pilot lease to development lease. The term of a production lease is 20 years or a lesser period, and is renewable.

Access to Land

Access to privately owned land for the running of a land based aquaculture farm must be agreed upon with the land owner. Granting the right to access to public land might be required according to the South Australia Crown Lands Act (1997).

Environmental Impact Assessments

Environment Protection and Biodiversity Conservation Act

The main Commonwealth legislation dealing with environmental impact is the Environment Protection and Biodiversity Conservation Act (EPBC Act 1999, as amended in 2003). The Australian Government's Department of the Environment and Heritage has the assessment and approval role under the Act. An approval may be needed where an aquaculture development has, or may have, a significant impact on 'matters of national environmental significance', being actions that may affect World Heritage properties, national heritage, wetlands of international importance ("Ramsar wetlands"), listed threatened species and communities, listed migratory species and Commonwealth marine environment.

South Australia Aquaculture Act

The South Australia Aquaculture Act has endorsed an Aquaculture Environmental Management Framework Policy (2004), establishing an environmental assessment, monitoring and management framework for all sectors of aquaculture. The Policy describes provisions that will form the basis for license and lease conditions, including aquaculture license assessment, environmental management and monitoring, site management and indemnity, site rehabilitation and remediation.

Aquaculture Regulations (2005)

The Aquaculture Regulations (2005) provides for environmental monitoring and reporting requirements for aquaculture licensees. The report requirements relate to benthic assessment or water quality, supplemental feed, stocks, disease incidents and chemicals used. See the section "Water quality and discharge of wastewater" for more details.

Water and Waste

Environment Protection (Water Quality) Policy (2003)

Environment Protection (Water Quality) Policy (2003), adopted under the South Australian Environment Protection Act (1993), has been introduced by the Environment Protection Authority (EPA) to provide a consistent state-wide approach for the protection of water quality in all water bodies, including marine, estuarine and inland waters, and sets discharge limits on ammonia, oxidised nitrogen, phosphorus and suspended sediments. A separate license issued under the Act is no longer required, but the Policy requires all reasonable and practicable measures to be taken to avoid the discharge or deposit of waste into any waters or onto a place from which it is reasonably likely waste will enter any waters.

Aquaculture Regulations

The Aquaculture Regulations (2005), adopted under the South Australia Aquaculture Act (2001, as amended in 2003 and 2005), set forth provisions regarding environmental monitoring and reporting, addressing, inter alia, benthic assessment and water quality.

Waste

The Aquaculture Regulations also set forth provisions regarding aquaculture waste. According to the regulations, a licensee must ensure that:

- Aquaculture waste does not cause an unsightly or offensive condition at the license area; and
- Aquaculture waste is secured or treated in a manner designed to prevent it being blown, washed or swept off the license area.

A licensee must ensure that if aquaculture waste is blown, washed or swept off the license area, it is recovered as soon as practicable.

TOPs, GMO and Disease Control

Quarantine Act

The Quarantine Act (1908) of the Commonwealth establishes quarantine requirements designed to prevent the introduction into Australia, the establishment in Australia, or the spread within Australia, of human, animal (including fish) or plant pests and diseases. The Quarantine Regulations (2000), adopted under the Act, regulates the performance of quarantine.

South Australia Livestock Act

The South Australia Livestock Act (1997, as amended in 2000) provides provisions regarding the movement of livestock or livestock products. Livestock includes aquatic animals. The Act states that if livestock or livestock products are affected with a notifiable condition (declared by the Minister by notice in the Gazette), or there is reason to suspect this, the livestock or livestock products must not be brought into, removed from or moved within the State without the approval of the Chief Inspector.

The Minister has issued The Livestock (Restrictions on Entry of Aquaculture Organisms) Notice (2005), under the Livestock Act (1997). The Notice provides that aquaculture stock must not enter the State, or a license area, unless accompanied by documentation issued by the supplier of the aquatic organisms.

Aquaculture Regulations

The Aquaculture Regulations (2005), adopted under the South Australia Aquaculture Act (2001, as amended in 2003 and 2005), also includes provisions addressing fish movement. The Regulations provide that if a licensee knows, or ought reasonably to know, that an aquatic organism proposed to be introduced into the license area is, or may be, affected with a disease, the licensee must ensure that the aquatic organism is not introduced into the license area without the prior written approval of the Minister. Furthermore, if a licensee knows, or ought reasonably to know, that an aquatic organism being farmed under the license is, or may be affected, with a disease, the licensee must ensure that the aquatic organism is not removed from the license area, unless it is removed for testing, for disposal (other than by sale or supply to another), or it is removed in accordance with the written approval of the Minister.

The Primary Industries and Resources South Australia (PIRSA) are currently developing a disease zoning and surveillance plan. These zones are the basic geographic units for assessing the risks associated with translocation and trade. For current purposes of disease zoning, the marine sector in

South Australia can be considered a single zone, and each inland drainage division can be considered a single zone.

Disease control
The South Australia Livestock Act (1997, as amended in 2000) provides measures to control or eradicate notified conditions among livestock, including aquatic animals. A notifiable condition is a notifiable disease or a notifiable contaminant as declared by the Minister by notice in the Gazette.

The Aquaculture Regulations (2005), adopted under the South Australia Aquaculture Act (2001, as amended in 2003 and 2005), sets forth provisions addressing the prevention and control of aquatic diseases.

In accordance with the Aquaculture Act, an Aquatic Animal Health Policy (2003) has been developed, addressing disease prevention, emergency response, surveillance, disease management and animal welfare.

Drugs

The Commonwealth Agricultural and Veterinary Chemicals (Administration) Act:
The Commonwealth Agricultural and Veterinary Chemicals (Administration) Act (1992, as amended in 2005) establishes the Australian Pesticides and Veterinary Medicines Authority (APVMA). The functions appointed to the APVMA pursuant to the act includes to assess the suitability for sale in Australia of chemical products, to evaluate the effects of the use of chemical products, to publish information relating to chemical products and their use, as well as to annually publish the approved standards for residues of chemical products in commodities.

The Commonwealth Agricultural and Veterinary Chemicals Code Act:
The Commonwealth Agricultural and Veterinary Chemicals Code Act (1994 , as amended in 2005), establishes provision for the evaluation, registration and control of agricultural and veterinary chemical products, including those treating fish, crustaceans and molluscs.

Commonwealth Agricultural and Veterinary Chemicals Code Regulations:
The Commonwealth Agricultural and Veterinary Chemicals Code Regulations (1995, as amended in 2004), adopted under the Act, includes further definitions of agricultural chemical and veterinary chemical products, rules for the application process and the registration of chemical products, as well as further rules regarding the control and manufacture of such products. The Regulation also includes provisions regarding the duty to notify the supply of hormonal growth promotants.

South Australian Agricultural and Veterinary Products (Control of Use) Act:
The South Australian Agricultural and Veterinary Products (Control of Use) Act (2002) and the Agricultural and Veterinary Products (Control of Use) Regulations (2004), adopted under the Act, specifies how products may legally be used. As regards aquaculture, the chemicals are required to be used according to label or permit instructions and/or under veterinary prescription.

South Australia Veterinary Practices Act:
The South Australia Veterinary Practices Act (2003) sets forth restrictions as to who can provide veterinary treatment, establishing as a main rule that no person can provide such treatment for fee or reward unless the person is authorised under the Act or any other Act.

Fisheries (Exotic Fish, Fish Farming and Fish Diseases) Regulations:

The Fisheries (Exotic Fish, Fish Farming and Fish Diseases) Regulations (2000), adopted under the South Australia Fisheries Act (1982), sets forth provisions addressing the treatment of aquatic diseases.

Aquaculture Regulations:

The Aquaculture Regulations (2005), adopted under the South Australia Aquaculture Act (2001, as amended in 2003 and 2005), provide that a licensee must ensure that a substance is not used for therapeutic or prophylactic purposes or as an antifoulant in the course of aquaculture, unless it is a registered veterinary chemical product, within the meaning of the South Australia Agricultural and Veterinary Products (Control of Use) Act (2002), and is used in accordance with the instructions for the product or a permit, or the licensee has obtained the written approval of the Minister to use the substance in that way.

Feed

South Australia Livestock Act

According to the South Australia Livestock Act (1997, as amended in 2000) a person must not, without the approval of the Chief Inspector, feed to livestock (including aquatic animals), or permit livestock to feed on, a product that may cause the livestock to become affected with a notifiable condition, or sell or supply food for livestock that could cause the livestock to become affected with a notifiable condition.

Aquaculture Regulations

The Aquaculture Regulations (2005), adopted under the South Australia Aquaculture Act (2001, as amended in 2003 and 2005), provides for the duty to report annually on the use of feed in aquaculture.

Food Safety

Australia New Zealand Food Standards Code

In 2000, the Australia New Zealand Food Standards Code was adopted, being part of the Inter-Governmental Food Regulation Agreement between the two countries. The system is implemented by food legislation in each State and Territory and by the Commonwealth Food Standards Australia New Zealand Act (1991).

Commonwealth Food Standards Australia New Zealand Act

The Act establishes the mechanisms for the development of joint food regulatory measures (a food standard or a code of practice) and creates the Food Standards Australia New Zealand (FSANZ) as the agency responsible for the development and maintenance of a joint Australia New Zealand Food Standards Code.

Food Standards Australia New Zealand

FSANZ's function is to develop nationally enforceable primary production and processing standards for food produced by the primary industry sector, as well as codes of practice, within the framework of the Act.

Food Standards Australia New Zealand Regulations

The Food Standards Australia New Zealand Regulations (1994) adopted under the Act, implement provisions of the Act regarding matters related to, inter alia, appropriate government agencies, application, disclosure of confidential commercial information and the Board of Food Standards Australia New Zealand.

South Australia Food Act
The South Australia Food Act (2001) provides for the application of the Australia New Zealand Food Standards Code as defined in the Commonwealth Food Standards Australia New Zealand Act (1991). The Food Regulations (2002), adopted under the South Australia Food Act, adopts the Food Standards Code with certain modifications.

South Australia Fisheries Act
According to the South Australia Fisheries Act (1982), a person must not act as a fish processor unless registered. A registered fish processor must not use any premises in connection with processing, storing or dealing with fish unless the premises is specified in the certificate of registration. According to the Fisheries (Fish Processors) Regulations (1991), adopted under the Act, a person who is registered to conduct a fish farming operation, and who only processes fish taken pursuant to a licence for sale to a registered fish processor or directly to persons who consume such fish, is not required to be registered as fish processor.

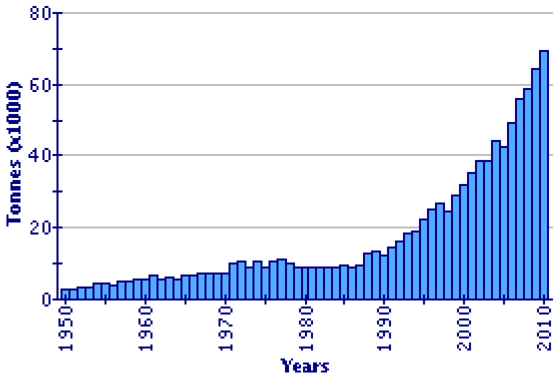
South Australia Primary Produce (Food Safety Schemes) Act
According to the South Australia Primary Produce (Food Safety Schemes) Act (2004), the Governor may make regulations establishing a food safety scheme for a class of activities involved in the production of primary produce. A producer of primary produce, including fish or fish products intended for consumption by humans, must not engage in a class of activities to which a food safety scheme applies, without an accreditation if accreditation is required by the food safety scheme.

Investment

The Aquaculture Resource Management Fund is established under the South Australia Aquaculture Act (2001, as amended in 2003 and 2005). The Fund may be applied by the Minister for the purposes of any investigations or other projects relating to the management of aquaculture resources or towards the costs of administration of the Act.

Performance Of Aquaculture In Australia

Sector Performance
The graph below shows total aquaculture production in Australia according to FAO statistics:



Reported aquaculture production in Australia (from 1950)
(FAO Fishery Statistic)

The industry set itself a vision at a National Aquaculture Workshop held in Canberra in August 1999, which stated that by 2010 a vibrant and rapidly growing Australian aquaculture industry will achieve US$ 1,86 billion in annual sales by being the world's most efficient aquaculture producer.

Problems/Solutions
Major issues expected to influence growth were identified and discussed at the workshop. Issues identified as highest priority were:
- Industry coordination and organisation;
- Promoting the industry and ensuring it had access to resources;
- Environmental issues;
- Markets and marketing; and
- Research and development.

At the workshop the industry also identified the need for some form of national framework or action plan to develop recommendations and implement activities to enhance the sectors growth. The Commonwealth Government responded to this need by announcing an Aquaculture Action Agenda initiative to increase the growth prospects of the industry. Under the Action Agenda, industry and governments have worked together from 2002 to identify and undertake key activities that will enhance the industries sustainable competitive advantages.

The Commonwealth Government, in partnership with State and Territory Governments and the Australian aquaculture industry, has established a National Aquaculture Development Committee to develop and implement the Aquaculture Action Agenda and to act as a high level advisory body to the aquaculture industry and governments.
The Implementation Committee has made significant progress towards implementing the 10 strategic initiatives identified, these being:

Strategic initiative 1
Making a National Aquaculture Policy Statement- The launch of a National Aquaculture Policy Statement that commits the Australian and State and Territory government to work in partnership with the aquaculture industry to achieve sustainable growth.

Strategic initiative 2
Promoting a regulatory and business environment that supports aquaculture

Strategic initiative 3
Implementing an industry driven Action Agenda
Formation of a peak industry body, the National Aquaculture Council (NAC).
Launch of the Australian Aquaculture web portal to centralise the growing body of information, research and business opportunities in the Australian aquaculture industry.

Strategic initiative 4
Growing aquaculture within an ecologically sustainable framework
The report ''Assessment and Reporting of the Ecologically Sustainable Development of Australian Aquaculture - an Industry Perspective" has been published.

Strategic initiative 5
Protecting the aquaculture industry from aquatic diseases and pests
Agreement has been reached between governments and aquaculture industries on the funding for the implementation of AQUAPLAN 2005-2010.
The Aquatic Animal Welfare Guidelines - ''Guidelines on welfare of fish and crustacea held in live holding systems for human consumption'' has been published.

Strategic initiative 6
Investing for growth A booklet has been produced (in cooperation with Invest Australia) that outlines the strengths of the Australian aquaculture industry to international investors.

Strategic initiative 7
Promoting aquaculture products in Australia and globally
The first stage of a marketing and promotions strategy for the aquaculture industry has been completed. DAFF has provided over US$ 0,75 million to the second stage of this initiative to fund a Marketing and Branding Aquaculture Industry Action Agenda project

Strategic initiative 8
Tackling the research and innovation challenges
A project has been completed that looks at research and development issues relating to the Australian aquaculture industry. The Australian Aquaculture Research and Innovation strategy report presents an innovation policy framework for the Australian aquaculture industry. The framework identifies and recommends four innovation pathways for sustainable development of the industry.

Strategic initiative 9
Making the most of education, training and workplace opportunities
A report 'Making the most of Education, Training and Workplace Opportunities for the Australian Aquaculture Industry' has been published and presents an assessment of current and projected needs to support growth in the Australian aquaculture industry.

Strategic initiative 10
Creating an aquaculture industry for all Australians
The Indigenous Aquaculture Unit was established within DAFF in mid 2003, and includes an officer from the Aboriginal and Torres Strait Islander Services. The IAU looks at funding projects that will encourage and provide training and/or jobs to get Indigenous people and communities involved in the aquaculture industry.

NORWAY

Legislative Framework

The Aquaculture Act (2005):
The Aquaculture Act (2005) regulates the management, control and development of aquaculture in both inland waters and marine waters (internal waters, territorial waters, the exclusive economic zone and on the continental shelf), as well as land based aquaculture. The Act covers aquaculture of any aquatic organism - from broodstock and hatchery production, to table fish production, as well as sea ranching.
The Act establishes a licensing system, and broadly applies to issues like environmental standards, land utilisation, registration, transfer and mortgaging of licences, as well as control and enforcement.

The Food Safety Act (2003):
The Act Relative to Food Production and Food Safety Act (The Food Safety Act 2003) is the main act regulating animal health and food safety and quality, and addresses the production, processing and distribution of foodstuffs, including aquaculture production and fish processing.

Prevention of Cruelty to Animals Act:
The Act Relative to Prevention of Cruelty to Animals (1974, as amended in 2003) is also of importance for the aquaculture sector, by prescribing basic principles for the keeping and treatment of animals, including fish and crustaceans.

The Agreement on the European Economic Area (EEA) imposes several obligations on Norwegian legislation. Of particular interest here is the implementation of EC legislation on veterinary inspection, aquatic animal health and food hygiene.

International:
Norway is a member of the following international organizations of relevance to aquaculture:
- World Trade Organization (WTO);
- The European Free Trade Association (EFTA);
- The Agreement on the European Economic Area (EEA);
- North Atlantic Salmon Conservation Organization (NASCO);
- World Organisation of Animal Health (OIE); and
- Codex Alimentarius Commission.

Norway is a party to the following international agreements with implications for the regulation of aquaculture:
- The Convention on Biological Diversity;
- The Biosafety Protocol; and
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Institutional Framework

The Ministry of Fisheries and Coastal Affairs (the Ministry) is the institution in charge of the administration of the act, and may prescribe, by regulations, detailed provisions relating to the provisions of the Act. The Directorate of Fisheries, an executive administrative body within the Ministry, is assigned the responsibility for coordination, administration and execution of surveillance and control of the aquaculture sector, including granting aquaculture licences and enforcing the Act.

The Norwegian Food Safety Authority, a governmental body, is given management and enforcement powers pursuant to the Food Safety Act.

Licencing and Authorisations

The Aquaculture Act (2005) (the Act) establishes a licensing system for aquaculture and provides that the Ministry may, through regulations, prescribe limitations for licences for aquaculture of salmon, trout and rainbow trout that are allocated such as the number of licences to be allocated, geographic distribution of licenses, prioritisation criteria, selection criteria and license fees.

Integrated Authorisation Process:
An application for an aquaculture licence is to be filed with the appropriate regional office of the Directorate of Fisheries, who acts as a one-stop-shop, and who will forward the application to the applicable authorities in order to obtain required licences according to the mentioned acts. These authorities are: The Food Safety Authority, the County Governor, the National Coastal Administration and the Water Resources and Energy Directorate.

The applicant is obliged to make the application available for public scrutiny in the municipality where the aquaculture activity is sought commenced. The application shall also be made public in the Gazette and two newspapers that are read in the region.

No person can establish an aquaculture facility, or expand the production volume in an existing one, without obtaining an authorization from the Food Safety Authority. Before granting an authorization, a risk assessment of disease spread in the aquaculture facility and the surrounding environment has to be conducted.

When conducting the assessment, the following aspects are of relevance:

- distance to watercourses and other aquaculture facilities;
- the type of species to be produced;
- the farming system; and
- production volume.

Licence requirements:
Persons in charge of an aquaculture facility shall have an aquaculture education, or two years of working experience as in charge of an aquaculture facility. In addition, this person shall have the necessary knowledge about how to prevent, detect and limit the escape of fish. Furthermore, the facility shall be sufficiently staffed with persons capable of ensuring the welfare of the fish. The training, which shall be approved by the Food Safety Authority, shall be repeated every five years.
In Finnmark County application must also include documentation verifying that the applicant has minimum NOK 2 million (US$ 331 260) as start-up capital.

The content of the licence:
The aquaculture license permits the production of specific species in limited geographic areas (sites), subject to the prescribed terms. The Ministry may prescribe detailed provisions regarding the content of the aquaculture licences, including the scope, time limitations, etc. by administrative decision or regulations. The Licensing Regulations (2004) establish a maximum breeding biomass for each licence e.g. Fresh water aquaculture of table fish may produce a maximum 325 tonnes per licence.
A licence can cover aquaculture operations on maximum four sites. Two or more licences (maximum six) can cover aquaculture operations on the same site. Furthermore, the Aquaculture Act (2005) provides that an aquaculture licence may not be granted in contravention of nature conservation and cultural heritage legislation.

Breeding:
Under the Regulation relative to authorizations for the breeding of salmon, trout and rainbow trout (Salmon Allocation Decree) (2004), a site cannot be approved for:
Hatchery production in fresh water cages or marine waters and Broodstock production, if there is other aquaculture production on the site.

Prohibited Activities:
Activities on the site that can harm the animals or obstruct the recapture of the released animals are prohibited. The use of nets, beach seine, purse seine, fish traps, fish pots and shell scraper are prohibited unless they are part of the sea ranching activity. The Directorate of Fisheries can, however, make exceptions to this if the activity does not harm the animals or the recapture.

Construction: Land based aquaculture need a construction permit from the municipality before constructions can commence. This application will however, be forwarded by the Directorate of Fisheries.

The following measures will require a permit from the National Coastal Administration:

- Any measures which may alter the course of a river or fairway, or the flow of the current, or may restrict the waters in depth, breadth or height in such a way as to impede traffic.

- Any construction or other measures which may be of importance to installations, facilities or activities of the Defence Forces or the National Coastal Administration.

Protected Areas: The Aquaculture Act (2005) also provides for the protection of specific areas against the impact of aquaculture. The Ministry may establish a ban, order relocation or place other conditions on activities if such actions are necessary to protect areas of special value to aquatic organisms. The Norwegian Parliament has established several protected areas for wild salmon. Within these protected areas the establishment of new salmon and trout farms is prohibited, while already existing fish farms are allowed to continue operating till 2011.

Transfer of licences/changes in ownership:
An aquaculture licences may be transferred, leased (in some cases) and even Mortgaged. A mortgage will be afforded legal protection when it has been registered on the licence's record in the aquaculture register. The State's mortgage takes precedence over any other encumbrances on licences for claims for enforcement damages, claims for the reimbursement of execution expenses, and for violation fines pursuant to the Act.

Aquaculture register:
The Act prescribes that a register of the aquaculture licences shall be kept. Each individual licence shall have a separate record in the register. A journal shall be kept of all the legal rights that are to be registered. Under the Act, the Regulation relative to the aquaculture register (2005) has been adopted, which details out the modalities for the registration scheme, the registration of title, the register authority, journal keeping, etc.

Land and Water Use

Access to and use of land:
The Aquaculture Act (2005) regulates the access to and use of land for aquaculture.
An aquaculture licence (including sea ranching licences), may not be granted in contravention of adopted land use plans pursuant to the Act relative to planning and construction (1985).

Aquaculture development zones:
Municipalities shall adopt a "land use plan," which can also include a coastal zone plan designating specific areas to specific uses within the internal waters bordering the municipality. As a component of the coastal zone plan, an aquaculture zone can be identified. Under the Aquaculture Act (2005), the Directorate of Fisheries are obliged to localize aquaculture production within the aquaculture zones of the municipalities if these have been identified. An aquaculture licence may be granted for production outside this zone if the Municipal Council gives its consent.

Site Authorisation:
The Aquaculture Act (2005) provides that when determining sites for aquaculture, the Ministry (delegated to the Directorate of Fisheries) shall weigh the land use interests and particular importance shall be attached to:

- Applicant's land use requirements for the planned aquaculture production;
- Alternative use of the area for other aquaculture;
- Other use of the area; and
- Conservation interests

Access to and use of water:
As regards access to and use of water for aquaculture, the Aquaculture Act (2005) prescribes that before being granted an aquaculture licence, the applicant will need, as appropriate, to get a permit

pursuant to the Act relating to harbours, fairways, etc. (1984) and the Act relating to watercourses and ground water (2000).

A permit for abstraction of water from a watercourse may be required from the Water Resources and Energy Directorate. This is primarily relevant for land based hatchery production.

Environmental Impact Assessments

Aquaculture Act:
Aquaculture licences may, as a general rule, only be granted if it is "environmentally responsible". The whole of chapter III of the Aquaculture Act (2005) is dedicated to environmental considerations, and establishes an environmental standard for aquaculture operations in Norway, by providing that aquaculture facilities shall be established, operated and abandoned in an environmentally responsible manner.

Environmental Surveys (Basic Assessment):
The Ministry may require that any person who holds or applies for an aquaculture licence shall conduct the necessary environmental surveys and document the environmental condition of the site at the time of the establishment, operation and abandonment of aquaculture facilities.

EIA (Full Assessment):
The Regulation relative to impact assessment (2005), adopted under the Act relative to planning and construction (1985), includes requirements related to the carrying out of environmental impact assessments. According to the regulation, an EIA is to be carried out for large aquaculture installations and hatcheries licensed for 5 million fry or more, if these activities may have significant effects on the environment, natural resources or community. The regulation includes a provision detailing out the activities that can be considered as having these effects.

Marine Surveys:
In terms of the Regulation for the operation of aquaculture facilities (2004), environmental surveys of marine fish farm sites shall also be carried out as part of the operation of the aquaculture facility. A trend analysis of the sea bottom of the site shall be carried out in accordance with the Norwegian standard NS 9410 - "Environmental survey of marine fish farms" - or equivalent.

Fresh Water Surveys:
For aquaculture of salmon, trout and rainbow trout, an environmental survey shall be carried out for the first time when the biomass or the density is at its biggest during a production cycle. For other species, the first survey shall be carried out when the production level has reached one third of the approved maximum biomass.

Directorate's powers:
The results shall be reported to the regional office of the Directorate of Fisheries. Where environmental surveys show that the conditions are unacceptable, new surveys shall be carried out. If the surveys still show unacceptable conditions, the Directorate of Fisheries can order the sites left dormant. This decision will not be annulled before a new survey shows that the environmental conditions are acceptable.

Water and Waste

An applicant for an aquaculture licence is required to obtain a permit to discharge wastewater in order to obtain a licence under the Aquaculture Act (2005). The applicant does not have to send a separate emission application as the application will be forwarded by the Directorate of Fisheries.

Discharge Permits:
Permits to discharge waste water are given or declined based on the documented environmental status of the receiving water body of the site. The result from a test taken in accordance with the Norwegian standard NS 9410 - "Environmental survey of marine fish farms", or equivalent, will be the basis for granting a permit. The permit will indicate the permitted level of discharge of wastewater and chemicals into water and air.

Water Quality:
The Regulation for the operation of aquaculture facilities (2004), adopted under the Aquaculture Act (2005), includes several provision related to water quality. As a general rule, fish shall have sufficient access to quality water which allows them to live under good conditions, and preventing them from suffering from unnecessary pain or damages. The water quality shall be monitored as appropriate, and measures shall be at disposal in case there is a danger of unnecessary pain or damages to the fish. The values of metabolic residues shall stay within acceptable limits.

Aquaculture facilities shall be designed and maintained in a way that assures that there is good circulation of clean water and land based facilities shall have a backup of supplies of oxygen and metabolites in case of system failure.

Antibiotics:
Specific requirements as to the disinfection of inlet water and waste water are prescribed pursuant to the Regulation relative to disinfection and cleaning aquaculture facilities (1997), adopted under the Food Safety Act (2003).

Movement, AIS and GMO

Hatcheries:
As to fish that are being cultivated in hatcheries and aquaculture facilities for the purpose of being released in the wilderness ("culture based fisheries"), the Regulations prescribes restrictions related to the inlet (influx) of water, as well as the source of water, with a view to prevent wild fish from entering the facility.

AIS:
It is prohibited to breed alien species unless a specific permit has been granted for this purpose and a licence for sea ranching can be granted for indigenous animals only.

Escapes:
Risk analysis MUST be carried out with a view to minimise the risk of future escapes. The analysis shall form the basis for systematic measures to be put in place aiming at detecting escapes as fast as possible and minimizing them once they occur. Land based aquaculture facilities must have a particular device that prevents fish from escaping through the drain or in other ways.

There is a duty to recapture escaped fish staying within 500 meters from the facility. The licensee has a duty to receive fish recaptured by others. Release of fish from an aquaculture facility is prohibited.

Disease Control:
The Food Safety Act (2003) provides that aquatic animals shall not be moved or set out when there is a reason to suspect a contagious animal disease that can have considerable social impact.

A system of approved disease free zones and aquaculture facilities is established, whereby specific criteria and procedures for the granting, maintenance, and withdrawal of approval of such zones and facilities apply, as well as the movement between different zones and facilities. Annexed to the Regulation is a list of diseases, as well as of aquatic animals that are susceptible to diseases.

In order for an approved zone to retain its status as such the aquaculture facilities in the zone must ensure that aquaculture animals that enter the zone comes from approved zones or facilities and aquaculture facilities must be subject to inspections and control of the Food Safety Authority.

When live fish susceptible to the listed diseases, as well as their egg and gametes are introduced into an approved zone or facility, they must come from an approved zone or facility. This also applies when live molluscs susceptible to diseases are to be introduced into an approved coastal zone or facility.

Trade and movement:
A movement document certifying that the aquaculture animals come from an approved zone/ facility, or other conditions as mentioned above, has to accompany the batch.

As regards transport, the Regulation prescribes that aquaculture animals shall be transported as fast as possible to its destination, in a vehicle that has been cleaned in the prescribed manner before departure. The transportation shall be carried out in a way that safeguards the health of the animals. The Regulation does also include provision related to the use of water during transportation.

Import of live aquatic animals and products:
It is prohibited to import live fresh water crustaceans, fresh water lobster, as well as live oysters for the purpose of aquaculture and sea ranching.

The Regulation also includes specific rules that apply for the importation of aquaculture animals and products from outside the EEA and are account of this is made in the following. The importation of live crustaceans for the release into or outside an aquaculture facility is prohibited. Imported live aquaculture animals intended for consumption shall not be released.

When importing aquaculture animals and products from outside the EEA, the batch has to be accompanied by a health certificate issued by the official authorities of the exporting third country. Samples of different health certificates are annexed to the Regulation.

When importing products from outside EEA, the aquatic animals and aquatic animal products must:

- Come from country or a region that has been listed (approved) by the Food Safety Authority.
- Not come from a country or region where a ban on import has been enacted based on public health and/or animal health considerations.
- Come from a facility or vehicle/vessel that has been listed (approved) by the Food Safety Authority.
- Be accompanied by a health certificate issued by the export country and which is in compliance with the requirements set by the Food Safety Authority.
- Have passed successfully a border control.

Genetically modified organisms (GMOs):
The Act relating to the production and use of genetically modified organisms (the Gene Technology Act 1993) regulates the introduction, including import and the release for aquaculture purposes, of genetically modified organisms (GMOs). This cannot take place unless a permit has been granted by the Ministry of the Environment. A permit can only be granted if the introduction does not represent a threat to the environment or to health. The application has to include an environmental impact assessment, as well as an assessment of the introduction's impact on health. The Regulation relative

to impact assessments related to the Gene Technology Act (2005) details out the procedure for this. For export, the Act prescribes that no permit or notification is required. The Act prescribes that the Minister may regulate that import and transport of GMOs is done without permit and this has been provided for in the Regulation relative to the labelling, transport, import and export of GMOs (2005).

Drugs and Feed

Drugs:

The production, testing, import, licensing, sale and advertisement of drugs, including veterinary drugs, is regulated in the Act relative to Drugs (1992). The Regulation relative to the prescription, production and distribution of feed containing drugs for animals, birds, fish and other aquatic organisms (1996), has been adopted under the act. Pursuant to the Regulation, any enterprise needs a licence issued by the Norwegian Medicines Agency prior to the manufacture, storage, and distribution, import and export of feed containing drugs. The issues of packing, labelling, storage, transport of drugs are also addressed in the Regulation.

Only a veterinary surgeon, or a fisheries biologist in case of the treatment of most aquatic species, can order or use veterinary drugs that have to be dispensed by prescription.

The person in charge of an aquaculture facility is obliged to put in place necessary measures to ensure that fish are not being given prohibited substances. Necessary measures include monitoring of all documentation, and to control that the withdrawal time (period from when fish have been given drugs till they can be used in the food production) is being observed.

Furthermore, the Regulation prescribes that fish shall not be given any kind of chemical substances, including salt, or be treated with hormones if this can have influence the fish welfare in a negative way. Use of chemicals and hormones is, however, permitted if fish health considerations so prescribe.

Feed:

It is prohibited to trade unsafe feed or to feed aquaculture animals that are destined to become foodstuffs with unsafe feed. The Regulations prohibits the use of dead animals that were not killed for consumption as a component in feed for aquaculture animals and also prohibits the trade in feed that includes processed animal proteins, or the feeding of animals with this kind of feed. An exception to this is made for blood meal from other animals than ruminants, which still can be used in feed for aquaculture animals.

The Regulation relative to feeding stuffs (2002), adopted under the Food Safety Act (2003), prescribes for the production, import, export and trade in feed for animals, including aquatic animals. It details out rules related to the authorization of feed production plants, the use of additives and the composition of feed, the use of genetically modified feed and additives, as well as packing and labelling of feed.

The Regulation relative to the operation of aquaculture facilities (2004), adopted under the Food Safety Act (2003), provides that there shall be sufficient amounts of feed available for the fish and that it shall be composed in a manner that enhances fish welfare.

Food Safety

The Food Safety Act (2003) is the main act addressing food safety, and covers the production, processing and distribution of aquatic foodstuffs. Under the Act, it is prohibited to trade in or distribute unsafe foodstuffs, i.e. foodstuffs that can be considered harmful to human health or unsuitable for consumption.

The Act prescribes that establishments are responsible for immediately notifying the Food Safety Authority if there is reason to suspect that foodstuffs are unsafe or that contagious animal disease that can have substantial social consequences will spread. The establishment shall immediately introduce measures to prevent, reduce or eliminate any harmful effects, including stopping trade and withdrawals from the market.

<u>Antibiotics:</u>
Specific requirements as to the disinfection of inlet water and waste water are prescribed pursuant to the Regulation relative to disinfection and cleaning aquaculture facilities (1997), adopted under the Food Safety Act (2003). The Regulation does also include provisions related to the validations of testing methods and technical equipment.

<u>Design:</u>
Under the Act, establishments are required to make sure that the design and operations of establishments are hygienic. The person responsible for the establishment shall ensure that anyone participating in activities covered in the act has necessary formation.

<u>Processing:</u>
Before commencing operations, processing establishments, including factory vessels (hereafter establishment), need to obtain an authorization from the Food Safety Authority. Before granting authorizations, the Food Safety Authority has to verify that the establishment complies with the provisions in the Regulation. The Food Safety Authority keeps a register of authorized establishments.

<u>Toxins, drugs and additives:</u>
The Regulation reiterates the prohibition to trade in unsafe foodstuffs set forth in the Food Safety Act, and details out under which other conditions fish and fish products shall not be traded. This relates to the physical appearance and quality of the products; levels of toxics, veterinary drugs, additives and residues exceeding the permitted levels, as well as the appearance of parasites and micro-organisms.

<u>HACCP:</u>
Processing facilities must take the necessary measures so that the specifications of the Regulation are complied with at all stages of the production. To that end, the HACCP (the hazard analysis and critical control point) system shall be put in place in the establishment, a system which identifies, evaluates and controls hazards which are significant for food safety. The HACCP system includes the following elements:

- Identification of critical points in the establishment.
- Establishment and implementation of methods for monitoring and checking critical points.
- Taking samples for analysis in an approved laboratory by the competent authority for the purpose of controlling the cleaning and disinfection methods and for the purpose of controlling compliance with the standards established by the Regulation.
- Controlling conditions related to hygiene and construction technology.
- Keeping a written record of the preceding points with a view to submitting it to the Food Safety Authority. The results of the different control and tests will be kept for a period of at least two years.

Internal Audits:
Under the Food Safety Act, the Regulation relative to internal audit for complying with the aquaculture legislation (2004) has been adopted. Pursuant to the Regulation, the responsible for the establishment has to make sure that a system for internal audit is introduced and applied and that this is done in cooperation with the employees.

Labelling:
Foodstuffs shall be labelled with information regarding name of product, ingredients, content, expiry date, storage, as well as country of origin.

Traceability:
The Regulation relative to tracing of food and feeding stuffs (2004) has equally been adopted under the Food Safety Act, and prescribes that it shall be possible to trace back food, feeding stuffs and animals that may be used in food or mixed with food or feeding stuffs. The person in charge of an establishment producing, processing or distributing food shall be able to trace back any person that has delivered to the establishment food, feeding stuffs and animals that will be mixed in food or feeding stuffs. Measures shall be put in place so that an establishment can identify other establishments that have received their products. Information regarding traceability shall be made available to the Food Safety Authority upon request. When selling products within the EEA area, the products shall be labelled for the purpose of traceability.

Animal Welfare

The Act Relative to Prevention of Cruelty to Animals (1974) has several legal implications for the operating of aquaculture facilities. As a general principle, the Act provides that animals, including fish and crustaceans, shall be treated well, and due regard shall be given to their natural instincts and needs so that they are not in danger of suffering unnecessarily. Furthermore, the Act prescribes that animals in captivity shall receive sufficient food; proper care and attention; that restraining ties or barriers do neither injure or harm the animals, and that sick or injured animals receive suitable treatment and are killed if need be. The killing of animals shall be done in a manner that limits their suffering. The Act furthermore restricts the altering of the genes of animals based on animal welfare considerations.

There are several provisions that only apply to the production of fish. Aquaculture facilities for the production of fish shall be designed in such a manner that:

- The fish has space enough to move around and follow their natural instincts;
- They do not have sharp edges that can cause discomfort to the fish;
- They cause minimal risk of damage to the fish, also when fish are being released and captured;
- Inspections of the fish can easily be carried out;
- Care and treatment of the fish can easily be carried out;
- They are designed in way that facilitates good hygiene;
- They are adjusted to the surroundings, with regard to weather conditions; and
- Methods, technical devises and equipment that are being used, including equipment used for moving the fish, shall be suitable from a fish welfare perspective. New methods and technical solutions shall be tested and found safe before use. If the facility relies on electricity for securing the fish welfare, there shall be reliable sources of electricity and access to emergency supplies of electricity (aggregate) and oxygen.

Moreover, the fish shall be kept in an environment that is adapted to the needs of each specific species and that protects them from unnecessary stress, pain and suffering. The fish shall be grouped according to size to the extent this is of importance and taking into consideration fish welfare. The fish shall not be handled and taken out of the water unless this is necessary. If the fish show signs of considerable discomfort or deviant behaviour, measures to secure the welfare of the fish shall be put in place. As regards feed, the Regulation provides that the amount and nature of the feed used shall advance fish welfare.

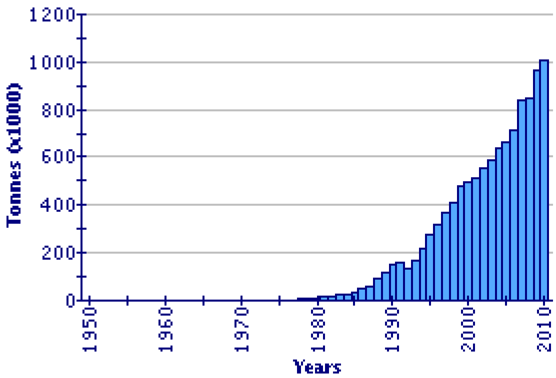
Performance of Aquaculture in Norway

Sector Performance

Total production of salmon and rainbow trout was just below 600 000 tonnes in 2003. As a result of high prices maximum return to the farmer reached a peak in 2000 with US$ 1 720 million, while the value in 2003 has declined to US$ 1 350 million.

Compared with salmon and rainbow trout, the production volumes and values of other species are still very small.

Total aquaculture production in Norway since 1950 according to FAO Fishery statistics is given in the graph below.



Reported aquaculture production in Norway (from 1950)
(FAO Fishery Statistic)

Contributing Factors

Aquaculture is now a major industry along the western and northern coasts of Norway. More than 9 000 man-years are worked directly in the sector (see Table 1) and about the same number is estimated in supporting activities (FHL/Sintef/KPMG, 2004). Salmon and trout have become major export products from Norway, and together with Norwegian fish farming equipment, technology, and consultancy services are sold into many markets around the world. Total turnover in production, processing, and sales/marketing in 2002 was estimated to be about US$ 2 800 millions, a value which is estimated to double when other support activities are included (FHL/Sintef/KPMG, 2004).

The soaring growth of Norwegian salmonid farming is paralleling the growth in aquaculture development worldwide. Market demand for seafood has continuously increased since World War II. An increase in wild caught fisheries cannot meet this increased demand any longer. In order to meet the shortfall the farming of fish in lakes, rivers and at sea seems to be the solution.

Another reason for the success of aquaculture is probably based on logistics. Today's customers and marketing systems demand quality, stability, and reliability which can be difficult to meet from the wild catch. While this area has seen tremendous development the seafood industry still has a long way to go to catch up with the agriculture sector. Improved logistics systems made possible by aquaculture will also provide an advantage in developing the culture of other species in competition with capture fisheries. Although the relationship between production and demand has been rather unstable at times in the farmed salmon sector, there is no reason to believe that market demand has reached its peak. Further growth is therefore likely, both in relation to salmonids and in particular the 'new' species.

What is also seen today is integration between the traditional fisheries and aquaculture. 'Capture-based aquaculture' is now creating quite an interest, where fish is caught and brought ashore alive, graded, held in pens, fed if necessary and harvested in response to market demand.

Shortly after the development of intensive salmon farming, severe problems with bacterial diseases (vibriosis, cold water vibriosis, furunculosis etc.) emerged, but the diseases were treated unsuccessfully with antibiotics. The problem continued to increase and by 1987, antibiotic use reached a peak with close to 50 tonnes being administered during the year. A major review of the industry was then undertaken including the implementation of better environmental practices and the development of fish vaccines. This development was extremely successful and antibiotic use in salmon has remained at less than 1 000 kg a year since 1996 (Directorate of Fisheries, 2003 and FHL Havbruk, 2003).

Problems/Solutions

Norwegian fish farming today is a 'healthy' business in that diseases and parasite problems are relatively well controlled, pollution problems are reduced, and major improvements have also been made relating to other environmental aspects. However, some viral diseases still cause problems, sea lice control demands meticulous attention and salmon escapes need to be reduced. Further attention to these issues, as well as documentation and traceability throughout the production process will be crucial if customer and consumer demand is to be met.

Limited market access has also been a problem. Following accusations of price fixing, in 1996 the European Union imposed restrictions on Norwegian salmon imports to the EU.
In the long term, limited and possibly dwindling supplies of marine protein and oil for the fish feed industry will probably be the main obstacle for future growth. The amount of marine fish available for use in the fish meal and oil industry is limited and the proportion used for this purpose is diminishing. Plant proteins and oils are already being used to substitute nutrients of marine origin in fish feed and much research effort is being put into optimising the use of alternative raw materials.

INDIA

India's aquaculture production is classified as freshwater and brackish water production. Freshwater aquaculture production contributes nearly 55 per cent of the total fish production in India.

Legislative framework

India is a federal republic subdivided into 28 states and 6 union territories with legislative powers at National and State spheres.

Central Legislation:

At a central level the primary regulation of aquaculture is somewhat fractured between the Environment (Protection) Act (1986) which is an umbrella act for all environment related issues together with the Water (Prevention and Control of Pollution) Act (1974) and the Wild Life Protection Act (1972).

Codes and Guidelines:
The Ministry of Agriculture issued Guidelines for Sustainable Development and Management of Brackish Water Aquaculture (1995). The overall purpose of the Guidelines is to assist in formulating appropriate shrimp farming management practices and covers a variety of issues like environmental impact management, land/water use, identifying land for aquaculture, wastewater treatment, hatcheries, feed mills, processing plants and make recommendations on the use of chemicals, fertilizers, pesticides, chemotherapeutants and antibiotics/drugs.

Guidelines for the Application of the Precautionary Principle and Polluter Pays Principle in Shrimp Farming are currently under preparation.

International:
India is a member of:

- World Trade Organization (WTO)
- South Asian Association for Regional Cooperation (SAARC)
- Network of Aquaculture Centres in Asia and the Pacific (NACA).

India is also a party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on Biological Diversity (CBD) and has signed the Biosafety Protocol. India is also a party.

Overview of regulatory framework

Aquaculture Authority:
The Aquaculture authority is an authority dedicated to aquaculture. The Authority, to which specific responsibilities for aquaculture have been allocated, falls under the administrative control of the Ministry of Agriculture (Ministry of Animal Husbandry). The authority came to be when in 1996 the Supreme Court ruled (in a case where the construction of shrimp culture ponds within the Coastal Regulation Zone and within 1000 meters of Chilka Lake and Pulika Lake was prohibited) that an authority should be constituted to protect the ecologically fragile coastal areas, sea shore, water front and other coastal areas and specially to deal with the situation created by the shrimp culture industry in the coastal states/union territories.

State level:
States either have Ministries for Fisheries or the Ministry of Animal Husbandry administers at state level too.

Research and Development:
The Indian Council of Agricultural Research undertakes the RandD on aquaculture and fisheries with the assistance of a number of Research Institutes.
There are about 400 Krishi Vigyan Kendras (Farm Science Centres) in the country, operated through State Agricultural Universities, ICAR Research Institutes and NGOs, most of which also undertake aquaculture development within their scope of activities.

Export and Marketing:
The MPEDA functioning under the Ministry of Commerce regulates the export of aquatic products and also contributes towards the promotion of coastal aquaculture.

Institutional Support:
With a view to providing a greater boost to aquaculture research and development, the Indian Council of Agricultural Research in New Delhi reorganised the fisheries research institutes in 1987, which led to the establishment of three separate institutes namely:

- the Central Institute on Freshwater Aquaculture (CIFA) at Bhubaneswar;
- the Central Institute of Brackish water Aquaculture (CIBA) at Chennai; and
- the National Research Centre on Coldwater Fisheries (NRCCWF) at Bhimtal in Nainital.

The Pond Culture Division of CIFRI later integrated into CIFA which has been instrumental in the development of several technologies used in freshwater aquaculture and with their dissemination through a number of first line extension projects, namely the National Demonstration Project (NDP), Operational Research Project (ORP), Lab-to-Land Program (LLP), Krishi Vigyan Kendra (KVK), Trainer's Training Centre (TTC), Institution-Village Linkage Program (IVLP) and other Mission Mode Programs.
The credit for the development of freshwater aquaculture in the country must also include a number of other agencies and programs undertaken in different parts of the country.

Licencing and Authorisations

Aquaculture Licences are valid for a renewable period of 3 years. Application is made to the Aquaculture Authority. The Aquaculture Authority has constituted State Level Committees (SLCs) and District Level Committees (DLCs). Applications submitted by farmers are received by the DLCs. After verification of the information and field level inspections, wherever necessary, the applications are forwarded to the SLCs for consideration. After recommendation of the SLC, the applications are forwarded to the Aquaculture Authority for approval.

Field Level Inspections (Basic EIA assessments) will be required for farms larger than 2Ha. Projects will never be accepted if within 200 metres from the high tide marks or in other waters within the Coastal Regulation Zone.

Process:
Other authorisations at state and local level must be sought first (i.e. the Aquaculture Authority is merely the primary authority, not necessarily the central authority)
Applications are filed for the authorization/approval for aquaculture establishments outside the Coastal Regulation Zone (and outside 1000 meter of Chilka Lake and Pulicat Lake).

The application needs to specify (amongst other things):

- Details related to the land, including types of land (i.e. mangroves, wet lands, forest lands etc.);
- Furnish Project Report, giving details with sketch (to scale) of design and layout of the farm in operation/proposed along with operational details, and water intake, supply, drainage and treatment facilities;
- Specification (based on EIA/EMP where carried out) whether:
    - The aquaculture activity has the effect of causing salinity of soil or the drinking water of wells;
    - The use of supplementary feeds will consequently increase sedimentation which on decomposition will be harmful to the environment;
    - Such activity would cause siltation, turbidity of water course and estuaries with detrimental implications on local flora and fauna;
- Environmental Impact Assessment (EIA) report, if carried out;
- Details of the Environmental Management Plan (EMP), if drawn up;
- Layout, design and technical details of the Effluent Treatment Plant (ETP), if in operation/proposed; and
- Copies of licenses/consents/approvals for the farm in operation/proposed obtained from any of the central/state authorities.

All licences will be subject to the following conditions:

- The farm may not operate without authorisation;
- The farm should not deviate from the approved design and operation;
- The farm should not cause salinisation of soil or drinking water or wells;
- The farm should not cause increased sedimentation and health hazards;
- The farm should not cause siltation, turbidity of water course and estuaries with detrimental implications on local fauna and flora; and
- The farm should establish and operate an Effluent Treatment Plant and ensure that the effluent quality at discharge point conforms to the specific standards prescribed by the Pollution Control Board of the concerned state/union territory.

Environmental Impact Assessment

The Environmental Impact Assessment Notification (1994), in accordance with the Environment (Protection) Act, specifies the industries and projects (listed in Schedule I) that require an EIA. The Notification also describes the procedure to be followed. Applications must be submitted to the Ministry of Environment and Forests and assessments should be completed within a period of 90 days. Schedule I does not list aquaculture.

The Guidelines for Sustainable Development and Management of Brackish Water Aquaculture (1995), however, recommend carrying out a site selection process, which should include proper environmental impact assessment. They state that all aquaculture units above 40 ha should be subject to an EIA. State Pollution Control Boards should ensure that such an EIA be carried out by the aquaculture units. Shrimp culture units of 40 ha or more should also incorporate an Environmental Monitoring Plan and an Environmental Management Plan.

Access to Land

Acquisition of land is a matter of private law, however, projects within the coastal zone are further regulated as participating in a public resource.

The Coastal Regulation Zone Notification No. SO 114 (E) (1991), issued under the Environment (Protection) Act, defines the entire coastal stretch of seas, bays, estuaries, creeks, rivers and backwaters from the lowest low tide to highest high tide line and the coastal land within 500 m from the high tide line on the landward side as Coastal Regulation Zone (CRZ). Within the CRZ the setting up of industries and the expansion of new industries is prohibited, although exemptions are granted for activities that require direct waterfront or seafront access like hatcheries.

Water and Wastewater

The Water (Prevention and Control of Pollution) Act (1974, as amended) provides for the prevention and control of water pollution, for the maintenance or restoration of the wholesomeness of water, and for the establishment of (central and state) Pollution Control Boards. The Act defines "trade effluent" for these purposes as "any liquid, gaseous or solid substance which is discharged from any premises used for carrying on any industrial operation or any treatment or disposal operation other than domestic sewage treatment". Hence, an aquaculture farmer will be required to obtain an authorization from the Pollution Control Board to set up a treatment and disposal system that is likely to discharge sewage or trade effluent into waters or onto the land.

The Environment (Protection) Act generally prohibits any person carrying on any industry, operation or process to discharge or emit any environmental pollutants in excess of the standards as prescribed in the Schedules under the Act. The Hazardous Wastes (Management and Handling) Rules (1989, as amended) further regulates the collection, reception, treatment storage and disposal of hazardous wastes.

Recently, the Aquaculture Authority issued Guidelines on the need for Effluent Treatment System (ETS) in shrimp farms.

Fish movement and disease control:

India does not have any legislation regulating fish movement or disease control.

Animal Wellbeing:

The Prevention of Cruelty to Animals Act (1960) prevents the infliction of unnecessary pain or suffering on animals. Animal is defined as "any living creature other than a human being". The Breeding of and Experiments on Animals (Control and Supervision) Rules (1998, as amended) state that no establishment shall carry on the business of breeding of animals, perform experiments on animals or trade animals for the purpose of experiments, unless it is registered. Under the Rules, experiments include new technologies involving transgenic or genetic manipulation.

Drugs

At present, there is no specific legislation to control the use of chemicals and drugs in aquaculture. However, Order No 722 (E) (2002) includes a list of antibiotics and other pharmacologically active substances that are prohibited in the culture of, or in any hatchery for producing the juveniles or larvae or nauplii of, or in any unit manufacturing feed for or in any unit pre-processing or processing shrimp, prawns or any other variety of fish and fishery products.

Feed

The Marine Products Export Development Authority (MPEDA) has published standards for shrimp feed (and seed).

Food safety

Standards:
The Export (Quality Control and Inspection) Act (1963) read with Order SO 729 (E) (1995) recognizes that fresh, frozen and processed fish and fishery products must be subject to quality control, inspection and monitoring prior to export, taken into consideration the health requirements of importing countries such as the European Union, the United States and Japan.

MRLs:
Order No 722 (E) provides for the Maximum Residual Limits (MRLs) for pesticides, heavy metals and antibiotics and other pharmacologically active substances in fish and fishery products. MRLs fixed by importing countries should be complied with if these MRLs are more stringent than the MRLs prescribed in the Order. The Order includes a list of antibiotics and other pharmacologically active substances that are prohibited.

Processed Fish:
The Export of Fresh, Frozen and Processed Fish and Fishery Products (Quality Control and Inspection and Monitoring) Rules (1995) establish the primary responsibility of the industry to ensure that fish and fishery products intended for export are handled, processed at all stages of production, stored and transported under proper hygienic conditions so as to meet the health requirements laid down

under these Rules and to conform to the specifications of Order SO 729 (E). The Rules also contain provisions on the sanitary certification of aquaculture products. Several Annexures to the Rules lay down specific conditions and requirements concerning, for example, premises, building and equipment, health control and monitoring of production conditions, storage and transport, packaging, HACCP etc.

Live Fish:

Pursuant to the Export (Quality Control and Inspection) Act, Order SO 477 (E) (2002) recognizes that live fish including molluscs and crustaceans meant for human consumption must be subject quality control and inspection prior to export. Specifications for live fish can be found in Schedule I.

The Export of Live Fish (Quality Control, Inspection and Monitoring) Rules (2002) establish the responsibility of the processor to ensure that live fish intended for export are handled and held at all stages, including transport, under proper hygienic conditions so as to meet the health requirements laid down under these Rules and to conform to the specifications of Order SO 477 (E). The Rules also contain provisions on the sanitary certification of live fish. Two Annexures to the Rules lay down specific requirements during and after landing as well as general conditions relating to premises, building and equipment and relating to hygiene.

GMO:

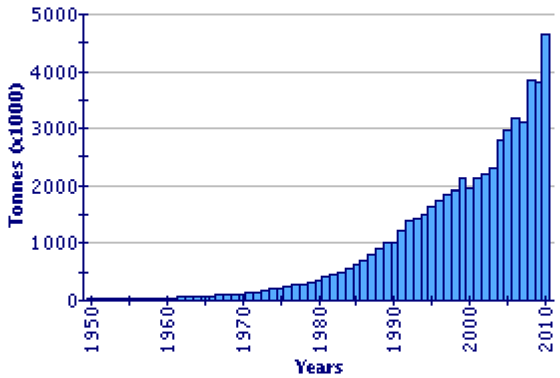
The legal framework for GMOs is constituted by the Rules for the Manufacture, Use, Import, Export and Storage of Hazardous Micro-organisms, Genetically Engineered Organisms or Cells (1989), adopted under the Environment (Protection) Act.

Practical Performance of Aquaculture in India

Sector Performance

Aquaculture contributed over one third of the country's total fish production of 6.1 million tonnes in 2003. The total aquaculture production of 2.2 million tonnes was valued at US$ 2.5 billion of which carp alone was responsible for as much as 1.87 million tonnes. On the other hand the production of high value shellfish species namely, giant river prawn produced 30 000 tonnes while shrimps from brackishwater, mainly P. monodon produced 115 000 tonnes.

The graph below shows total aquaculture production in India according to FAO statistics:



Reported aquaculture production in India (from 1950)
(FAO Fishery Statistic)

The rapid growth of the sector has generated huge employment opportunities for professional, skilled and semi-skilled workers for the different support activities such as construction and the management of farms, hatcheries, feed mills, processing units etc. It has been estimated that over 300 000 jobs have been generated in the brackishwater sector alone in the main and supporting areas for shrimp culture, although information on exact numbers involved in aquaculture is not available.

Contributing Factors

Aquaculture in the past ten years has witnessed both horizontal and vertical expansion, with total production increasing from 1.395 million tonnes in 1992 to 2.202 million tonnes in 2001, an increase of over 57 percent. Conventional farming practices using carp as well as an increased emphasis on diversified culture of freshwater prawns and to some extent catfish, are important areas of growth in the freshwater aquaculture sector. Greater adoption of modern farming techniques and assured higher profit margins in carp culture over most other agricultural enterprises has attracted farmers to fish farming. Freshwater aquaculture has further witnessed diversification through the incorporation of high valued species like freshwater prawn and has increased its production from 455 tonnes in 1992 to over 30 000 tonnes in 2003.

The early 1990s witnessed a spectacular rise in farmed shrimp production with an increase from 40 000 tonnes in 1991–1992 to 82 900 tonnes in 1994. Furthermore, the sector took almost 4–5 years to revive following the damage inflicted by white spot syndrome. A cautious approach and the adoption of good management practices subsequently helped the sector to reach a record production of 115 000 tonnes in 2002–2003 from approximately 152 000 ha under production. A high export potential backed by an assured supply of quality seed through the establishment of large numbers of shrimp hatcheries, the availability of other critical inputs like formulated feed, easily accessed institutional finance, increased entrepreneurial involvement, the entry of several privately owned large companies and above all higher profit margins were the guiding force behind such high growth during last decade.

Aquaculture over recent years has not only led to substantial socio-economic benefits such as increased nutritional levels, income, employment and foreign exchange but has also brought vast un-utilised and under-utilised land and water resources under culture. With freshwater aquaculture being compatible with other farming systems it is largely environmentally friendly and provides for recycling and utilisation of several types of organic wastes.

Problems

Over the years culture practices have undergone considerable intensification and with the possibility of obtaining high productivity levels there has been a state of flux between the different farming practices. In the brackish water sector there were issues of waste generation, conversion of agricultural land, salinization, degradation of soil and the environment due to the extensive use of drugs and chemicals, destruction of mangroves and so on. Though some of these issues posed concerns, most however, were isolated instances with the bulk of farming conforming to eco-requirements.

MOZAMBIQUE

Legislative Framework

Fisheries Act (Law 3/90) and Decree 35/01, General Rules of Aquaculture

The legal framework for the regulation and promotion of aquaculture in Mozambique is established by Law 3/90, Fisheries Act (Lei das Fisheries) and the Decree 35/01, General Rules of Aquaculture

(Aquaculture Geral da Regulamento). The Fisheries Act establishes the main fisheries management action parameters, as well as the activities of economic agents.

General Aquaculture Regulations
The Fisheries Act is regulated by the General Aquaculture Regulations which apply to all individuals and corporations (domestic or foreign) undertaking aquaculture activities in land and / or waters of Mozambique.

Resolution 11/96
The Resolution introduced a fisheries policy that aims to incorporate certain fishing activities, including aquaculture, within larger economic development goals as identified by government.

Strategy for the Development of Aquaculture" for the period 2008 to 2017
The strategy's main objective is the sustainable development of aquaculture and improving the quality of life of communities. It seeks to:

- Establish an institution responsible for the coordination of the actions of aquaculture development.
- Approve an incentive chart for aquaculture.
- Increase government's economic contribution to the development of aquaculture.
- Map and approve priority areas for the development of aquaculture.

International
Mozambique is a member of the following organizations:

- World Trade Organization (WTO);
- World Health Organization (WHO);
- World Organization for Animal Health (OIE);
- African Union (AU);
- Southern African Development Community (SADC);
- Community of Portuguese Language Countries (CPLP); and
- Commonwealth of Nations (Comunidade das Nações).

Mozambique is part of the following International Agreements:

- Convention on International Trade in Endangered Species of Fauna and Flora (CITES);
- Convention on Biological Diversity (CBD); and
- Biotechnology Cartagena Protocol to the Convention on Biological Diversity.

Also at the regional level may be mentioned the following instruments:

- African Convention for the Conservation of Nature and Natural Resources;
- Fisheries Protocol 2001 (SADC); and
- Convention for the Protection, Management and Development of the Marine and Coastal Environment for the East African Region.

Institutional Framework

Ministry of Fisheries
The Ministry of Fisheries (Ministério das Fisheries) is responsible for the development, implementation, monitoring and control of fisheries and aquaculture policy in Mozambique. The primary functions of the Ministry are to:

- Ensure responsible management and protection and conservation of fishery resources;
- Ensure the protection and conservation of marine resources and sustainable exploitation of fisheries resources;

- Promote the development of fisheries;
- Promote and develop fish production waters intended for domestic supply and exports; and
- Promote sector training and contribute to a better quality of life in fishing communities.

National Institute of Aquaculture Development

The National Institute of Aquaculture Development (Instituto Nacional de Desenvolvimento da Aquaculture) of the Ministry of Fisheries is the body responsible for directly ensuring the management and administration of aquaculture in Mozambique, in accordance with the provisions of Decree 28/2008.

The Institute has the following main functions:

- Develop policy proposals for development and management of marine aquaculture activity and freshwater;
- Develop proposals for technical and legal regulation of aquaculture activities;
- Analyse and issue technical opinions on aquaculture projects in accordance with relevant development plans;
- Granting licenses for the development of aquaculture activities and arrange collection of the fees;
- Supervise the activities of aquaculture institute infringement proceedings and proceed to the collection of fines established; and
- Compile a statistics register of aquaculture activities and perform the respective processing and analysis.

National Fisheries Research Institute (Instituto Nacional de Investigaçao Pesqueira-IIP)

The National Fisheries Research Institute (Instituto Nacional de Investigaçao Pesqueira-IIP) is a public body with legal personality and administrative autonomy under the Ministry of Fisheries, which in accordance with the provisions of the Statute approved by Decree 63/98, has the role of scientific management of fishery resources in the waters of Mozambique.

Licencing

Mozambique requires aquiculture licences in accordance with the type of aquaculture practiced. Accordingly:

- Licence for artisanal aquaculture operation;
- Licence for industrial aquaculture operation;
- License for experimental aquaculture operation; and
- Licence for aquaculture research operation

The General Aquacultural Regulations require those wishing to undertake an aquaculture operation to obtain the prior consent and relevant authorisation for the Ministry of Fisheries. Licences are valid for ten years and may be renewed for a period equal to their request. Revocation of an otherwise valid license may also occur in certain circumstances.

Land and Water Authorisations

General Aquaculture Regulations

The General Aquaculture Regulations stipulate land and water constitute public domain and the exploitation of these resources is subject to the provisions issued under land and water law.

Land Law (Law No. 19/97)

The Land Law (Law No. 19/97) states that all land is owned by the state. It provides that any person who submits an application for a right of use and exploit land must show a scan plan (a document which describes the set of activities and construction work to be performed). Holders of a land use and development right are subject to payment of a fee, which value is determined by taking into account the location of the land, its size and intended purpose and uses.

Water Law (Law No. 16/91)

The Water Law (Law No. 16/91) states that inland waters, their bed surfaces and groundwater is owned by the state, constituting water within the public domain. The law provides that the use and exploitation of water must occur under either a shared or exclusive water use. Water rights may be granted for a period of up to 50 years and are renewable. Within this context, it should be noted that the Government of Mozambique has adopted by Resolution 18/2007 a Territorial Planning Policy with the main objective of being to contribute to the sustainable management of Mozambique's natural and human resources.

Environmental Impact Assessments

Environmental Law (Lei do Ambiente)

The Environmental Law (Law No. 20 of 97) establishes the legal basis for the property use and management of the environment and its components to achieve sustainable development. The law applies to all public and private activities that may directly or indirectly influence environmental components.

Decree No. 45/04 Regulation on the Process of Environmental Impact Assessment

The Decree regulates environmental impact assessment and the procedures and classification of activities which should be subject to assessment. Aquaculture is considered within annexure 1 of the regulations, which stipulate that projects are conditional upon the verification of environmental sustainability and the issue of a licence from the Ministry for Coordination of Environmental Action. The Regulations stipulate further that prior to presentation of the environmental impact study the Ministry for Coordination of Environmental Action should be provided with a terms of reference (TOR) document which must contain the parameters and specific information of the development activity.

The competent central or local level authority is required to use the relevant environmental licence after the approval of the project's environmental impact studies and environmental viability.
Environmental Inspections are further regulated by Decree 11/06.

Water and Waste

The General Aquaculture Regulations and the Water Law

The General Aquaculture Regulations require that water discharged from aquaculture facilities containing chemicals, pathogens, and sediment organic matter must be controlled through a proper system of wastewater treatment. Effluent discharge standards must also be observed concerning the discharge of sewage. The Water Law seeks to protect public waters against water pollution so as to achieve and maintain an adequate level of water quality, prevent accumulation of toxic and hazardous compounds which may contaminate groundwater and avoid any action that may cause degradation of the water environment. For these reasons, it is established that the discharge of untreated wastes or other substances, and any activity likely to cause pollution or degradation of public water, require authorization to be granted by regional water authorities, as well as, payment of a fee.

<u>Regulation on Environmental Quality Standards and Effluent Emission</u>
The regulation contains, inter alia, provisions relating to the categories of water, the quality parameters of these categories and establishes certain parameters for water from fish farming.

<u>TOPs, GMO and Disease Control</u>

The General Aquaculture Regulations stipulate that the importation of any species of aquaculture requires an authorization granted by the Ministry of Fisheries, as well as the prior opinion of the National Fisheries Research Institute.

The Ministry of Fisheries must approve quarantine standards that must be met for the import of species.

The Ministries of Fisheries and Health may jointly authorise the conducting genetic manipulations while taking into account the views of the National Fisheries Research Institute.

The General Aquaculture Regulations sets out various provisions for the control of diseases in aquaculture.

<u>Drugs</u>

The General Aquaculture Regulations designate the Ministry of Fisheries as the competent body to set standards for the use of chemical and veterinary drugs in aquacultural activity. The views of the National Institute Fisheries Research and other health institutions should however also be heard.

<u>Ministerial Diploma No 153/2002</u>
The Diploma regulates the use of pesticides and is applicable to the: registration, importation, transportation, distribution, production and application of agricultural pesticides, livestock, public health and related issues.

<u>Food Safety</u>

<u>Decree no. 76/2009 General Rules for hygienic-sanitary control of aquatic food products (Regulamento Geral to or control it-health hígio two products Aquática alimentary origin)</u>
The Regulations set rules for hygiene and quality management concerning, processing, distribution and trade activities, as well as, the criteria for official controls. It aims to: ensure that market requirements, consumer protection and animal health are guaranteed; verify rules concerning compliance controls preventing, eliminating or reducing risks to human and animal health to an acceptable level.

<u>Investment</u>

<u>Investment Law (Law No. 3/93) (Lei de Investimentos) and its Regulations</u>
The Investment Law and its Regulations approved by Decree 14/93 establish the legal framework promoting domestic and foreign investment in Mozambique, as well as establishing the procedures to access government granted investment benefits and incentives.

The Minister of Finance is the competent body to ensure coordination of all investment processes governed by the Investment Law. The Ministry of Finance has created the Centre for Investment Promotion to advise the Minister of Finance, and perform the actions to coordinate promotion processes, analysis and verification of investments in Mozambique.

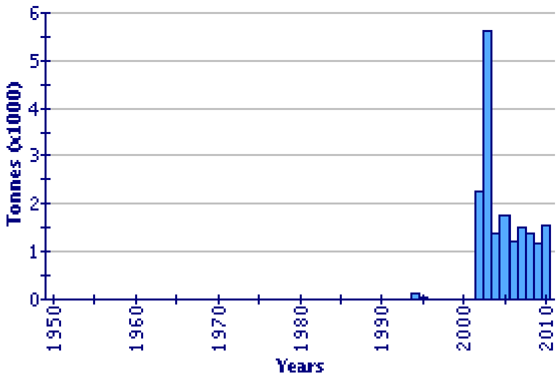
Ministerial Diploma N. 60/2003 has approved the internal regulations of the Fisheries Development Fund (Fundo de Fomento Pesqueiro), a public institution with legal personality with administrative, financial and assets under the Ministry of Fisheries. The funds main objective is to financially support actions which seek to promote private investment activities within the framework of fisheries policy; this includes aquaculture.

Performance of Aquaculture in Mozambique

Sector Performance

In 2002 production from aquaculture (marine shrimp and seaweed) was 757 tonnes at a value of US$ 3 031 000. In 2003 it was 855 tonnes and worth US$ 1 668 300 (DNEP, 2004).

The graph below shows total aquaculture production in Mozambique according to FAO statistics:



Reported aquaculture production in Mozambique (from 1950)
(FAO Fishery Statistic)

Contributing Factors

Exports of aquatic products (shrimp, fish, molluscs, seaweed, etc) amounted to some US$ 73 million in 2003. It is estimated that the population derives 50 percent of its animal protein intake directly from fish and fisheries products. The sector provides direct employment for over 95 000 people. Over three to four times this number is employed in the support services. Annual production of fish and fisheries products including aquaculture is estimated at 100 000 tonnes.

Rural aquaculture programmes contribute significantly to food security and to improving living standards and conditions. They have an enormous positive social impact in rural communities. It is reported that about 3 000 families are involved in subsistence fish farming and 2 000 in seaweed farming. Although there are no records on the profitability of fish farming, local seaweed farmers are reported to earn an average of US$ 60 per month. Shrimp farming provides employment for 1 492 people in Mozambique (Aquaculture Department, 2004).

Problems/Solutions

Aquaculture in Mozambique represents an additional source of animal protein, contributing to food security, stimulating regional development, generating foreign income, creating new jobs and reducing pressure on wild stocks, particularly the shrimp stocks. Shrimp aquaculture currently represents a little more than 2.5 percent of the country's total shrimp production. There is potential for further aquaculture development in Mozambique. The country is well positioned for shrimp farming and shrimp exports command a high price in Europe. Studies have shown there are 33 000 ha available for the short and medium term development of coastal aquaculture, free from conflicting uses and protected resources. The establishment of shrimp and fish farms is one of the Government's major plans.

With regards to land use, tourism and other activities, there is little competition in the areas suitable for aquaculture development.

The Mozambican Government is now in the process of formulating policy for the development of aquaculture and this is an important tool for guiding the development of this sub-sector. A number of issues are being addressed such as more efficient resource utilization (improved water management, better feeding practices, improved health management, increased integration with agriculture), maximization of positive environmental practices and biodiversity conservation.

The Government is promoting bivalve and seaweed culture. These are activities that can provide a positive impact on the environment by removing pollution from the local water systems.

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1 NASF, paragraph 3.5.3, page 24.
2 Part A of Schedule 4 to the Constitution.
3 Terms of Reference for the Aquaculture Intergovernmental Forum, 5 August 2011.
4 Second Draft Terms of Reference for the Provincial Aquaculture Intergovernmental Forum.
5 Page 82.
6 DAFF Aquaculture Annual Report, South Africa, 2011, at page 26.
7 *Ibid*.
8 Paragraph 1.1.
9 Paragraph 2.3.
10 As mentioned above, this document constitutes that review.
11 Paragraph 3.5.6.
12 Act 7 of 2003.
13 Section 1.
14 PN 359 in Western Cape *Provincial Gazette* No. 6662 dated 2 October, 2009.
15 Section 1.
16 See section 22 regarding national competence and section 104 regarding provincial competence.
17 Section 36.
18 GN 28 in *Government Gazette* 34937 of 20 January 2012.
19 GN 479 in *Government Gazette* 34341of 3 June 2011.
20 GN 467 in *Government Gazette* No. 35449 of 22 June 2012.
21 Section 2(2).
22 Section 2(3).
23 Section 2(4)(a).
24 Section 2(4)(r).
25 Section 2(4)(p).
26 Section 24O.
27 Section 28(4).
28 See Proclamation 16 of 2013 in *Government Gazette* 36527 of 23 May 2013**.**
29 Section 1.
30 All definitions are contained in section 1 of the MLRA.
31 GN 434 in *Government Gazette 36413* of 25 April 2013.
32 Section 2(j).
33 GN 353 in *Government Gazette* No. 34241of 21 April 2011.
34 GN 352 in *Government Gazette* No. 34241of 21 April 2011.
35 GN 729 in *Government Gazette* 33470 of 20 August 2010.
36 Paragraph 1.
37 Paragraph 1.

38 Regulation 25 read with Annexure 10.
39 Regulation 63.
40 Regulation 60.
41 Regulation 62.
42 Regulation 64.
43 Regulation 66.
44 Regulation 67.
45 Regulation 69.
46 As defined under the MLRA.
47 GNR.149 of 8 February 2008.
48 GNR 506 GG 36683 of 19 July 2013
49 See sections 65,66,67 and 71 of NEMBA in particular.
50 Regulation 12.
51 Regulation 14.
52 Regulation 15.
53 Regulation 16.
54 Regulation 22(1).
55 Regulation 22(2).
56 Regulation 17 and 18(1).
57 Regulation 1.
58 GNR 151 in *Government Gazette* No. 29657 of 23 February 2007.
59 Regulation 4.
60 Regulation 3.
61 GN 620 in *Government Gazette* 31107 of 6 June 2008.
62 Regulation 23.
63 Regulation 22.
64 GN 388 in *Government Gazette* 36375 of 16 April 2013.
65 Sections 5 and 6.
66 Section 2.
67 Note that reference to specially protected forest areas has been deleted from the National Forests Act by Act 35 of 2005.
68 Section 39(2).
69 Section 41(2).
70 Section 11(1)(a).
71 Section 49 of the NEMPAA.
72 GNR.1061 of 28 October 2005.
73 GNR.99 of 8 February 2012.
74 Regulation 5.
75 Section 50.
76 Section 53.
77 Long title to the Act.
78 Section 19.
79 Section 1.
80 88 of 2013.
81 Section 62.
82 Section 63(1)(c).
83 Section 69(2).
84 Section 1.
85 Section 23(3).
86 Section 25.
87 Section 56.
88 Section 43.
89 Sections 3, 4 and 6 of the Act.
90 GNR.2513 of 5 December 1980: *Regulations relating to the control in general of the sea-shore and the sea*
91 GN399 of 26 March 2004.

92 Section 27.
93 Section 22(3) of the NWA.
94 Section 22(4) of the NWA.
95 GNR 544 in Government Gazette 33306 of 18 June 2010.
96 GNR 546 in Government Gazette 33306 of 18 June 2010.
97 GNR 545 in Government Gazette 33306 of 18 June 2010.
98 GN 101 in *Government Gazette* 36145 of 11 February 2013.
99 GN777 in *Government Gazette* 35716 and GN778 in *Government Gazette* 35717 of 28 September 2012.
100 Section 60.
101 Section 63.
102 Proclomation R27 in GG 16346 of 7 April 1995.
103 Section 24(3).
104 Section 24(4)(i).
105 GNR.547 in *Government Gazette* 33306 of 18 June 2010.
106 Regulation 72(1).
107 GN 806 in *Government Gazette* 35769 of 10 October 2012.
108 Paragraph 3.1.
109 Section 2.
110 Section 3.
111 Section 9(e) of the NEMPAA.
112 Section 16.
113 Part 4: Sections 48 – 53.
114 Section 1.
115 GNR. 2064 of 2 November 1973.
116 GNR. 962 of 23 November 2012
117 GNR.1809 of 3 July 1992.
118 GNR.692 of 16 May 1997.
119 *Labelling and advertising of foodstuffs*, GNR.146 in *Government Gazette* 32975 of 1 March 2010.
120 Section 4.
121 Please also refer to the Food Labelling Regulations under the Consumer Protection Act discussed under paragraph 4.5.9.
122 Section1.
123 Beardmore JA and Porter, JS *Genetically modified organisms and aquaculture,* FAO circular 989, Rome, 2003. ftp://ftp.fao.org/docrep/fao/006/y4955e/Y4955E00.pdf accessed on 14 June 2013.
124 GNR.293 in *Government Gazette* 34180of 1 April 2011.
125 Regulation 7.
126 Act no. 169 of 1993.
127 Prevention of Cruelty to Animals Act, 1974, as amended.
128 R. 962 of 23 November 2012
129 Regulation 1 read with the definition of "food" in the Foodstuffs, Cosmetics and Disinfectants Act, 1972, which is dealt with in more detail below.
130 Regulation 1.
131 Regulation 3.
132 Regulation 3.
133 Regulation 4.
134 Regulations 5 and 6.
135 Regulation 7.
136 Regulation 8.
137 Regulation 9.
138 Regulation 11.
139 Regulation 13.
140 GNR.1287 of 23 June 1978.
141 Food and Water Vessels Regulations, GNR.1575 of 10 September 1971.
142 GNR. 790 of 9 July 2004.
143 GNR.450 in *Government Gazette* 35436 of 15 June 2012.

144 GNR 2026 in Government Gazette 0469 of 26 September 1986.

145 In Table 2.

146 Section 3.

147 Section 7*bis*.

148 Section 16.

149 Refer to paragraph 4.5.1 for a detailed discussion on the Aquatic Code.

150 Section 5.

151 Sections 8 – 11.

152 Regulation 2 of the GMO Regulations, 2010.

153 Regulation 5.

154 Regulation 8

155 Refer to paragraph 4.5.3 for detailed discussion of the CODEX Guidelines.

156 Section 6.

157 NASF, 2012, p18

158 NASF, 2012, p21

159 http://www.thedti.gov.za/financial_assistance/financial_incentive.jsp?id=56&subthemeid=26;The improvement activities are outlined in section 8 of the ADEP guidelines

160 NASF, 2012 Goal (v), p21

161 NASF, 2012 Goal (iii), p21

162 NASF, 2012, paragraph 3.5.15, pp 34 - 35

163 Article 1.

164 Article 8(h).

165 Article 8(k).

166 Article 7 (c).

167 Article 8 (l).

168 Article 1 to the Ramsar Convention.

169 GNR 173 of 5 March 2010.

170 Notice GNR.1205 in *Government Gazette* 33870 of 13 December 2010.

171 *Final Report for Aureococcus anophagefferens Case Study Project, Saldanha Bay, Cape Town for the GloBallast Programme in South Africa*, CSIR.

172 Page 9.

173 Page 3.

174 Page 5.

175 GN 1717 in *Government Gazette 30534* of 7 December 2007.

176 Section 2 of NEMA.

177 The specified environmental management Acts are:
(*a*) the Environment Conservation Act, 73 of 1989;
(*b*) the National Water Act, 36 of 1998;
(*c*) the National Environmental Management: Protected Areas Act, 57 of 2003;
(*d*) the National Environmental Management: Biodiversity Act, 10 of 2004;
(*e*) the National Environmental Management: Air Quality Act, 39 of 2004;
(f) the National Environmental Management: Integrated Coastal Management Act 24 of 2008;
and any regulation or other subordinate legislation made in terms of any of those Acts.

178 Section 22(3) of the NWA.

179 Section 22(4) of the NWA.

180 Section 44(1).

181 Section 44(4).

182 Section 44(2)(b).

183 Section 44(5).

184 Section 32.

185 Section 33(3).

186 Comment made by principal fisheries biologist at Namibian Ministry of Fisheries and Marine Resources, quoted in 2011 on http://www.namibian.com.na/index.php?id=28andtx_ttnews%5Btt_news%5D=89488andno_cache=1 last accessed 30 May 2013.

187 Comment made by Namibian Fisheries Minister during April 2013 on http://www.namibian.com.na/index.php?id=28andtx_ttnews%5Btt_news%5D=80427andno_cache=1 last accessed 30 May 2013.

188 http://rabobank-food-agribusiness-research.pressdoc.com/38868-rabobank-report-brazil-is-a-seafood-industry-giant-in-the-making last accessed 31 May 2013.

189 This could be achieved by introducing thresholds based on the size of the aquaculture facility to determine the process that must be followed to assess environmental impacts, and/or requiring small-scale facilities to provide a statement of "Commitment to Environmental Protection".

190 Except where otherwise stated, information in Appendix 4 is taken from the FAO's National Aquaculture Legislation Overview fact sheets or country profiles, www.fao.org. last accessed 7 June 2013.

191 Information from FAO website, http://www.fao.org/fishery/legalframework/nalo_brazil/en last accessed 31 July 2013.