

NOTICE 1519 OF 2006

**POLICY FOR THE DEVELOPMENT OF A SUSTAINABLE
FRESHWATER AQUACULTURE SECTOR IN SOUTH AFRICA**

Directorate: Animal and Aquaculture Production
October 2006

CONTENTS

Chapter		Page
1	Introduction	1
2	Problem statement	2
3	Objectives	3
4	Scope of the policy	3
5	Basic principles	4
6	Key deliverables	5
7	Regulatory implications	9
8	Deployment and implementation strategies	11
9	Closing remarks	12

ACRONYMS USED IN THE TEXT

AASA	Aquaculture Association of Southern Africa
ADZ	Aquaculture Development Zone
AGIS	Agricultural Geo-referenced Information System
ASWG	Aquaculture Sector Working Group
DEAT	Department of Environmental Affairs and Tourism
DLA	Department of Land Affairs
DoA	Department of Agriculture
DOH	Department of Health
DTI	Department of Trade and Industry
DWAF	Department of Water Affairs and Forestry
EIA	Environmental Impact Assessment
FARM	Framework for Aquaculture Research Management
GMO	Genetically Modified Organisms
MCM	Marine and Coastal Management
MISA	Mariculture Institute of South Africa
NAI	National Aquaculture Institute
NAP	National Aquaculture Policy
NAWG	Northern Aquaculture Working Group
NEMA	National Environmental Management Act
PDA	Provincial Departments of Agriculture
SADC	Southern African Development Community
SAWG	Southern Aquaculture Working Group
WRC	Water Research Commission

1. INTRODUCTION

By definition, aquaculture refers to the farming of aquatic animals and plants, including fish and molluscs - under controlled or selected aquatic environments (fresh, sea or brackish waters) for any commercial, subsistence, recreational, or other public purpose. In South Africa, this includes freshwater species such as trout, crocodiles, ornamental fish, catfish and tilapia and marine species such as abalone, prawns, oysters and mussels. Candidate species such as eel, crayfish, cob, yellow-tail, grunter, tuna, turbot and seaweed are also receiving attention. The technology and services for species such as trout, crocodiles, catfish, abalone, prawns, oysters, and mussels is well established but lacking for species such as eel, tilapia, cob, tuna and seaweed.

1.1 Some of the factors currently stimulating the development of freshwater aquaculture in South and Southern Africa are as follows:

- i) Availability of resources: water, land, labour, energy, technology, skills;
- ii) Availability of fisheries resources;
- iii) Market factors;
- iv) Agricultural infrastructure;
- v) Access to technologies;
- vi) International partnerships and collaboration; and,
- vii) Socio-economic factors.

1.2 Factors that are currently inhibiting development within the industry include:

- i) The lack of a national policy with regard to aquaculture development;
- ii) Complicated and fragmented statutory procedures;
- iii) The lack of marketing structures and access to global markets;
- iv) Limited access to finance and developmental capital;
- v) Limited human resource capacity, skills and expertise; and,
- vi) Lack of infrastructure for freshwater fisheries for food security.

1.3 Aquaculture development is dependant on the availability and successful integration of the following:

- i) Natural resources: water, land, climate, energy, biodiversity, fish;
- ii) Human resources: labour, skills and technology; and,
- iii) Economic resources: capital, infrastructure and market access.

Although limited, constraints in terms of natural resources include the seasonal variation in climate, particularly in the southern and high lying regions, as well a high energy coastline with limited sheltered areas. Human resources are largely under-developed. This will need to be addressed in order to ensure sustainable and equitable development.

While low cost unskilled labour may provide opportunities in certain labour intensive sectors, expertise on managerial level is limited - particularly with regard to large-scale intensive farming systems. Improved ~~skills~~ and competence to manage fish resources in an environmentally sustainable manner will also be critical. Economic resources provide an opportunity in terms of available infrastructure, though access to capital and markets are difficult.

1.4 Initiatives linked to food security

The most significant initiative to date is a study commissioned by the WRC to investigate the potential of aquaculture for rural livelihoods. This study reviewed past aquaculture projects with a food security objective and found that most had failed due to a lack of policy, lack of extension services, inadequate training, lack of functional government hatcheries, high number of project beneficiaries, lack of marketing and absence of prior feasibility studies; and poor educational level of the farmers.

Of the five surveyed provinces, only Western Cape and Limpopo provinces had functioning projects. Despite public sector initiatives to establish "food security" type rural aquaculture projects in Mpumalanga, Eastern Cape and KwaZulu-Natal, none are currently in operation. A significant initiative was the training and setting up of 48 small-scale "satellite" fish farmers linked to the Amatikulu Hatchery in KwaZulu-Natal an existing small-scale ornamental fish farming project – Limpopo, a small-scale growth out of trout successful implemented at a number of sites of Western Cape province.

2. PROBLEM STATEMENT

There are a variety of reasons for the failure of the aquaculture industry in South Africa. These include:

- i) Pressures on inland fisheries resources by over-exploitation, habitat degradation have negatively impacted upon the biodiversity and availability of freshwater fish for food.
- ii) Lack of human resources skills for sustainable management of fisheries resources has exacerbated the problem.
- iii) Absence of integrated water use and management approaches, coupled to the general water scarcity in South Africa has not been conducive to freshwater aquaculture.
- iv) Complex, inappropriate, un-integrated, unrelated statutory frameworks and procedures have failed to encourage the development of aquaculture and entrepreneurship.

- v) Access to freshwater aquaculture resources and technologies is poor and not well structured and supported from government and from the private sector.
- vi) Investment confidence in freshwater aquaculture is low due to poor feasibility analysis, poor fund distribution and historic unscrupulous use of funding opportunities.
- vii) Lastly factors such as market penetration, product acceptance, product quality, aquaculture feeds, aquaculture stock improvement and species, training and innovation should not hinder poverty alleviation and economic development.
- viii) Timeous collection, reporting and dissemination of reliable production statistics on freshwater aquaculture in South and Southern Africa is a problem that needs to be addressed by the industry and governing authorities. The statistics also do not reflect the substantial increase in interest and business initiatives in a variety of sectors including tilapia, catfish, eel, salmon, tuna and others.
- ix) The poor track record of freshwater aquaculture projects in rural areas points to a fundamental problem in the development approach that has been applied to date. To avoid repetition of previous errors, appropriate strategies for food security need to be implementation.

3. OBJECTIVES

To facilitate the development of a united and prosperous freshwater aquaculture sector (A policy with the capacity to unify and simplify aquaculture legislation, regulation and to facilitate the sustainable and equable use of aquatic resources) – taking the following into consideration:

- i) Integrated norms and standards for sustainable freshwater aquaculture
- ii) Accurate statistics
- iii) Freshwater aquaculture for food security and poverty alleviation
- iv) The development of freshwater aquaculture capacity in the smallholder/emergent producer/rural sector
- v) Infrastructure to support a sustainable freshwater aquaculture sector
- vi) Appropriate and accessible advisory and support services
- vii) Intellectual property rights
- viii) Intergovernmental cooperation
- ix) International Obligations

4. SCOPE OF THE POLICY

The scope of this policy can be defined in terms of (i) its geographical area of application, (ii) the sectors for which it is intended, (iii) the identification of its users, (iv) its application in guiding the quality of products, addressing food security issues, the promotion of exports and export products, the promotion and regulation of foreign investment and its role in achieving

compliance with national and international regulations treaties, protocols and policies.

In the first instance (i) this policy is intended for use in the aquatic environments within South Africa. Secondly (ii) this policy is intended for use in all facets of the on-land freshwater aquaculture sector, from subsistence ventures to the production of high value export products and the ornamental aquaculture trade.

Thirdly (iii) it is intended for use by all parties involved and participating in freshwater aquaculture in South Africa. Participants include producers, suppliers, processors, marketers, consultants, tertiary and educatory bodies, environmental custodians, consumers, the general public and all regulatory and government departments.

The policy should also facilitate the development of the emergent and smallholder sector as well as the development of freshwater aquaculture for food security, either by way of fish for food or fish for sale to generate an income to buy food.

Indirectly, the policy will provide guidance on the quality and promotion of freshwater aquaculture products to export markets, the promotion and regulation of foreign investment in South African freshwater aquaculture and its role in achieving compliance with international treaties, protocols and policies to which South Africa is a signatory on behalf of the entire aquaculture industry.

Whilst the Department of Agriculture (DoA) will be responsible for promoting and implementing the policy and norms and standards for freshwater aquaculture, Marine and Coastal Management (MCM) branch of the Department of Environmental Affairs and Tourism (DEAT) will be responsible for marine aquaculture.

5. BASIC PRINCIPLES

The principles are based on the guidelines in the Protocol on Fisheries (2001) issued by the Southern African Development Community (SADC). This protocol was endorsed by the State Presidents of 13 SADC countries. **As** such, SA's freshwater aquaculture sector must integrate the following principles:

- i) To facilitate and support the optimal economic contribution of freshwater aquaculture to the country.
- ii) To review freshwater aquaculture policies, legislation, plans and institutions.

- iii) To promote on-site research, demonstrations and practitioner-to-practitioner agricultural advise to increase economic and social benefits from freshwater aquaculture.
- iv) To promote private sector participation through access arrangements to areas specifically designated for freshwater aquaculture and through the provision or facilitation of the necessary support services.
- v) To co-operate, where necessary, in the promotion of inland ranching and stock enhancement.
- vi) To undertake research and technological development related to freshwater aquaculture production
- vii) To monitor and regulate the introduction of exotic species or biologically transformed (e.g. genetically modified) species to aquatic eco-systems.
- viii) To establish norms and standards (including regulations) and guidelines for environmental impact assessments.
- ix) To monitor diseases and control the spread of diseases relevant to aquatic species (feral and cultured).
- x) To promote sustainable freshwater aquaculture development from a social, economic and environmental perspective. This includes the provision of Agricultural advisory services to cater for needs such as statutory assistance to participants.
- xi) To facilitate the integration of previously disadvantaged individuals, communities and demographic entities into the freshwater aquaculture development process.

6. KEY DELIVERABLES

6.1 Norms and Standards for Sustainable Freshwater Aquaculture

Norms and standards for sustainable freshwater aquaculture at different levels and for different production systems will be developed. These will include large to small-scale operations with guiding principles and in harmony with relevant legislation. Area-wide planning and zoning should also be taken into consideration. This is of critical importance as the provisions of the Biodiversity Act and the NEMA regulations will require impact studies and risk assessments. The sale of 'farmed fish and fish products' will also require permits. Clearly other government departments (e.g. DEAT, DWAF, Dept of Labour etc) must have a role in the regulation of inland fisheries.

Compliance to all norms and standards shall be achieved through cooperative governance and consultation with all interested and affected parties. In this regard, new entrants and established producers need to be aware of all new developments.

6.2 Freshwater Aquaculture Database

5

As accurate and easily available statistics form a key component of effective strategic planning and management, it would be advisable to establish and maintain a National Freshwater Aquaculture database. This database should be developed and maintained by a competent focal point that would collect and coordinate statistics provided by the various sub sectors. This information will also be included in the DoA annual statistical review. **As** public good, these statistics will also be available on the DoA website and AGIS.

6.3 Promoting Freshwater Aquaculture for Food Security – Fish for Food and Fish to Generate Income

(i) Smallholder and Community Aquaculture

Programs to involve smallholders and rural communities from areas with suitable water resources in sustainable forms of freshwater aquaculture shall be part of any implementation strategy. These programs will include integrated systems, advisory and support services starter packs and other means of support and would require inputs from all relevant stakeholders and role players. The village head of traditional/local government have responsibility to ensure that local resources such as water and fish are managed to provide an optimal level of income to the community. It is also important that such programs take all the relevant regulations (NEMA, Biodiversity) into consideration.

(ii) Community Based Fisheries Program

A system whereby suitable impoundments can be stocked with suitable fingerlings for natural growth and capture by way of netting will be developed and implemented as a food security initiative wherever possible. This will require surveys of suitable impoundments, training and equipment of artisanal fisher people and the provision of fingerlings. In addition, there will be established links to centres providing freshwater aquaculture services and inputs. In addition, a system of pilot projects will be considered as a priority action.

(iii) Freshwater Aquaculture Starter Packs

Taking fish for food and fish to generate an income to buy food as a guideline, attention will be given to the development of working models for starter packs. These will include training, equipment and feeding. Community based fisheries will also be considered where local

impoundments can be fished and stocked/restocked with suitable species.

6.4 Aquaculture Development Zones (ADZs)

(i) Site selection and zoning

In order to promote investment in aquaculture, there is a need to zone for aquaculture and thereby prevent or minimize conflict with other users. There is a need to identify, secure, and where appropriate promote suitable species and specific sites for future investment opportunities. The lack of “ready to invest” sites zoned for aquaculture is seen as one of the most significant impediments to rapid growth and investment, while the process of obtaining approval for access to sites is time-consuming and costly and involves the evaluation of a variety of issues across physical, biological, ecological, economic, social and legal dimensions. Identification of sites that have full or partial approval for aquaculture will have significant impact on the marketability of aquaculture, and subsequent investment and development.

(ii) Environmental impact assessment (EIA)

Inappropriately sited and poorly planned aquaculture ventures have the potential to be environmentally degrading leading to loss of biodiversity and impairment of ecosystem function. All potential aquaculture endeavours should be subject to an environmental impact assessment process including participation by interested and effected parties prior to initiation.

6.5 Government Hatcheries/Aquaculture Centers

As there have been changes in small-scale freshwater aquaculture throughout Africa it's important that Governments re-assess the role of hatcheries on an ongoing basis. Notably, the role of hatcheries has remained static while small-scale freshwater aquaculture has progressed. Hatcheries will play a supporting role and will also be considered for use as freshwater aquaculture centers that provide training and advice on an ongoing basis.

6.6 Centers of Excellence/Service Centers

Centers with the capacity to provide information, training, fingerlings, equipment and marketing and other services will be established in suitable production areas. Existing structures will be reviewed and improved where necessary and new structures should be established wherever necessary.

It's important to ensure that such centres promote public-private partnerships as well as interdepartmental cooperation to ensure that clients at all levels have access to high quality service. The recent survey by Rouhani and Britz can be used as a framework for the development of centres to serve the emergent /resource poor sector.

6.7 Agricultural Advisory Services

Agricultural advisory services linked to provincial departments of agriculture and other service providers will pay attention to issues such as technology transfer to farmers particularly those in development programs. Training trainers and providing for aquaculture specialists within various Provincial Departments of Agriculture (PDA) will be taken into consideration in any Aquaculture development programs.

6.8 National Aquaculture Sector Working Group

A National Aquaculture Sector Working Group (ASWG), a body made of all stakeholders within the freshwater aquaculture sector will be established as a forum to advise DoA on issues related to policy implementation. It will have two regional sub-groups viz. Northern Aquaculture Working Group (NAWG) and the Southern Aquaculture Working Group (SAWG). The forum will also facilitate issues of research and technology development, knowledge sharing, promotion of activities within the industry and effective communication within the entire sector. The forum will also assist in the development of the Framework for Aquaculture Research Management (FARM).

6.9 National Aquaculture Institute

A National Mariculture Institute for South Africa (MISA) is in the process of being established to National Aquaculture Institute (NAI). In this regard, the role of MISA may be revised.

As aquaculture is clearly a multi-departmental responsibility, this existing structure could be adapted to form a National Aquaculture Institute with Directorates for Marine Aquaculture and Freshwater Aquaculture to reflect this and to facilitate and support an integrated approach to aquaculture in South Africa. Roles could include promotion of aquaculture activities, management and implementation of FARM, technology transfer, capacity building and technical inputs to policy and legislation. Other functions could include coordination of ADZs, EIAs and development of guidelines for aquaculture.

6.10 Intellectual Property Rights

Debates on genetic resources and intellectual property rights have raised interest in South Africa's fish resources. For example, interest in species such as *Clarias gariepinus* and *Tilapia mossambicus* raised the issue of the rights of those who have improved the indigenous species by selection and biotechnology.

The issue of intellectual property relating to South African aquatic species that have been improved or modified locally needs to be carefully reviewed and linked to other initiatives to secure and protect the rights of breeders and developers. A review of the current status of species that have been improved locally or overseas needs will be done as soon as possible. The local/traditional municipality is to be entrenched within the local/traditional laws of particular culture and must be supported by law. This will lead to the development of a management approach for intellectual property on fish resources that should be integrated with other national systems.

6.11 Human Resource Development

A joint venture strategy based on complementary partnerships is proposed to address weaknesses in terms of human and economic resources in the short term. It is important however that the initiative is taken by South Africans to ensure equitable participation in such ventures. Previously, there has been exploitation of natural and human resources of third world countries by foreign interest groups with local benefits limited to unskilled jobs and poor revenue collection. A long term strategy is required to develop local human resources and to assure access to economic resources, i.e. capital and markets.

7. REGULATORY IMPLICATIONS

To prevent the current regulatory fragmentation in dealing with aquaculture, all South African statutory bodies will apply the existing legislation in a manner that ensures that:

- i) Freshwater aquaculture is made accessible to all sectors of the South African community.
- ii) Natural resources (such as water) and land are responsibly allocated and used in freshwater aquaculture.
- iii) Aquatic and greater ecosystems, including their biodiversity and unique habitats, are conserved.
- iv) Environmental degradation through freshwater aquaculture is minimal or eliminated.
- v) South Africa meets its international obligations for sustainable use of fish resources.

7.1 Current Legislative Environment

At present, the legislation controlling freshwater aquaculture is administered by three lead Departments.

- (i) DEAT administers Acts that deal with the sustainable use of natural resources:
- The National Environmental Management Act, 1998 (Act No.107 of 1998), and
 - The Biodiversity Act, 2004 (Act No. 10 of 2004).

The legislation would affect any freshwater aquaculture development, as this would be subject to an environmental impact assessment and / or risk assessment. This can be expensive and could hamper smallholder/ food security Aquaculture ventures in particular.

- (ii) DoA legislation deals with the sustainable use of agricultural resources:
- Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983);

Zoo sanitary and phytosanitary control:

- Agricultural Pests Act, 1983 (Act No. 36 of 1983)
- Animal Diseases Act, 1984 (Act No. 35 of 1984)

and the control over any genetic improvement and modifications to animal and plant resources used for food and agriculture:

- Animal Improvement Act, 1998 (Act No. 62 of 1998)
- The Genetically Modified Organisms Act, 1997 (Act No.15 of 1997), (GMO Amendment Bill)

Any agricultural development involving freshwater aquaculture would be subject to this legislation as well as the DEAT legislation. In addition, any movement of aquatic animals would be subject to both DoA and DEAT legislation requiring more than one permit. This adds expense and can also be time consuming as there is no one-stop service at present.

- (iii) DWAF in turn administers legislation that provides for the management of water resources:
- The National Water Act, 1998 (Act No. 36 of 1998)

Any freshwater aquaculture activity using water impoundments or resources would therefore be subject to this legislation as well.

Other Departments – DLA, DTI and DOH also administer legislation that impacts directly or indirectly on Aquaculture.

The relevant Acts are not integrated and this has created a situation where no single Department has either the mandate or the capacity to provide the one stop service that the sector would need for sustainable development.

This situation (regulatory fragmentation) has highlighted critical shortfalls in the following service delivery areas

- (i) Management - the capacity (HR, Skills, Competence, Technical expertise etc.) to provide an effective user friendly service
- (ii) Resources – the capacity (Financial resources, R&D Infrastructure , hatcheries, training, information networks etc.) to support and maintain a viable aquaculture sector
- (iii) Compliance – the capacity to facilitate and maintain (Public awareness, monitoring and evaluation, inspection services etc.) a climate of pro-active compliance

With these factors in mind, it is clear that, if freshwater aquaculture is to develop as a sector with the capacity to provide food and to generate income to buy food, there will have to be a system of uniform legislation and regulation.

Departments such as Agriculture, DEAT, DTI, DST and Labour will be tasked to develop national legislation in consultation with interested and affected parties. For the South African aquaculture industry to grow and keep up with world trends, this industry specific legislation will be drafted by 2005. Initially the legal and administrative framework will be simple with the intention that it will facilitate and not burden the development of aquaculture.

8. DEPLOYMENT AND IMPLEMENTATION STRATEGIES

In achieving the goals of this policy the strategies for deployment will include the following steps:

- i) Once approved by DoA, the policy will be integrated with any existing policies for marine aquaculture commissioned by the MCM section of DEAT. The result will be a single National Aquaculture Policy (NAP) covering both freshwater aquaculture and marine aquaculture.
- ii) The National Aquaculture Policy once approved by DoA, DEAT and DWAF, will be implemented through provincial departments with the requisite resources.
- iii) Once distributed, all officially commissioned industry sector or structure plans will be aligned with the policy on a national, provincial and regional level. This will set the stage to develop a single national sector plan for aquaculture.

- iv) The resultant sector plans and the policy will be used in the formulation of a legislative and administrative framework for the aquaculture industry. This **will** lead to the establishment of improved institutional arrangements.

9

9. CONCLUDING REMARKS

This document has highlighted the need for an integrated multi-departmental approach to the development of a sustainable aquaculture sector with the capacity to provide basic food and income (through the sale of products and employment opportunities) to buy food.

In achieving this goal, there are a number of critical key deliverables that can also be used as indicators of performance. These have been included in the table below

5

1

Table1: Critical Outputs/Indicators of Performance and their impact on Freshwater Aquaculture in South Africa

Key output	Measurable indicator	Impact on Aquaculture
Norms and standards for sustainable freshwater aquaculture	Published norms and standards for all freshwater aquaculture activities	More effective and orderly development
Program to promote freshwater aquaculture for food security	Functional programs	Increase freshwater aquaculture activity aimed at basic food supply
Community based fisheries	Operational community based fisheries	Increased food security through fish for food and income
Freshwater aquaculture starter packs	Functional starter packs	Increased involvement in freshwater aquaculture and an increase in participants progressing to economic units
Aquaculture Development Zones	Identified zones in municipal areas	Promote investment and growth of industry
Government hatcheries/Centers of excellence	Active hatcheries and centers providing fingerlings, training and advisory and logistical support	Increased involvement in freshwater aquaculture
Freshwater aquaculture advisory services	Active advisory services	More effective and sustainable freshwater aquaculture
Human resource development	Increased HR capacity for freshwater aquaculture at provincial level	More effective advisory services