

Western Cape Microeconomic Strategy Project:

Fishing and Aquaculture Sector

TRENDS, ISSUES, RESPOSITIONING STRATEGIES AND POLICY LEVERS

Part II

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ISSUES IN FISHING:

Resource Management

South Africa, like most other countries endowed with rich marine resources suffer from the conundrum of 'too many fishers, too little fish'. The management of South African marine fish stocks is commendable and compares well to the best resource management regimes in the world. The system is supported by a credible scientific base including committed scientist who are hardly swayed by public and industry opinions and pressures. This often goes unacknowledged due to the overwhelming public opinions that emanate from excessive expectations from the resource allocations. Resource management decisions are however not only an outcome of scientific calculations to determine allowable extraction efforts, but involves adjudication through committees comprised of industry and scientists.

Most of the South African fish stocks are in a healthy state, with two notable exceptions i.e. abalone and linefish. Poaching is considered the main reason for the drastic decline in abalone stocks, despite the concerted efforts made to police illegal harvesting. The results of policing efforts are visible but too late to rescue the resource. Illegal activity continues albeit at a reduced rate. As a result certain traditional areas with good abalone populations are being closed this year for harvesting. The TAC has also been significantly reduced by 35% from the previous year and 34% from the year before.

The situation with linefish stocks appears more intricate. The reason for dwindling stock seems more a result of the volatile interaction between highly cyclical natural stock levels and the catch allocations. Another exacerbating factor is the gear/technology efforts allowed which improves continuously especially in the commercial and recreational sectors. This resource is increasingly lucrative in domestic and foreign markets, which places added economic pressure on the resource. It is also the traditional mainstay of the subsistence, recreational and small commercial sector operators. The socio-economic impact on these groups is significant and is much the reason for the emotionally charged exchanges between these groups and government.

Human Resources

Human resource development is particularly critical at the small scale and emerging business level. This includes: maritime skills, business skills, vocational skills and life skills. Many fishers lack formal education for reasons related to poverty and socio-economic circumstances and impedes their ability to participate in the economic mainstream.

At corporate and marketing levels, human resources appear adequate or may best be handled by existing industry programmes.

Training institutions that cater specifically for the fishing industry includes:

- Universities where various aspects of fisheries sciences are taught. Most prominent are Rhodes University and the University of Cape Town, but the Universities of the Western Cape, Stellenbosch, UPE, Fort Hare, Natal, UDW all have specialises areas where they focus ranging from natural sciences to humanities.
- Technical Colleges have emerged as important tertiary training institutions and make significant contributions in terms of food sciences (value addition) and management sciences.
- Dedicated non-profit organisations like SAMSA continue to play a critical role in skills training.
- Research and Development is also afforded attention at Universities and R & D institutions like the CSIR (FIRI).
- Private research institutions also make valuable contributions directly at firm level especially with product development.

Scientific and private research and development capacity in South Africa is considered world class and well linked into global research networks. South Africans are well trained in this respect. However, much of this capacity was created in the previous era and is leaking from the country through emigration. One concern is that this capacity is not sufficiently transferred to emerging local talent.

Gender remains a much neglected aspect from a training, economic advancement, and social development perspective. The role of women in fishing, whether in the context of fishers, home-makers, bread-winners, health, social security, political leadership or entrepreneurs must be acknowledged and nurtured.

R & D and value addition

Market pressures, strains on margins, consumer preferences and value chain dynamics all favour increased value addition to local products. This is certainly occurring, but needs to be supported with greater emphasis and incentives for research and development, exports, product development, promotions and the like. Developments in this domain remain exciting, dynamic and its contributions to economic development cannot be underestimated. Work undertaken at universities, research institutions and private entities may be supported with positive effects in the longer term.

There is much opportunity in value addition of fish and fish products in global and domestic markets. This can be further encouraged initiatives entailing: technology, technology transfer, applied research, industrial development incentives, branding, protection of intellectual property, etc. Specific opportunities in the utilisation and processing of bycatch and several under-exploited species (e.g. bycatch species, indigenous species harvested by coastal foraging, urchins, etc.) can provide greater value.

Livelihoods

Rural fishing towns and villages are of the most impoverished. The livelihoods of rural fishers are subjected to seasonality with annual as well as long term shifts in resource access and resource productivity. These induce volatility in coastal livelihoods that is hard to buffer in fishing. Alternative livelihoods that are based on a more diversified local economy are required. Recreational fishers are less affected in this case. Fishing villages have also remains largely consumption economies where monetary outflows far exceed capital inflows. This structural imbalance is hard to reverse, but must be afforded attention in terms of inward capitalisation and diversification strategies alike.

Economic opportunities that would improve coastal livelihoods may come from tourism, local value addition, incentives to landing and local handling of fish, improved local infrastructure (e.g. roads, energy, community amenities, etc.), aquaculture and local smme development.

Technology

Technological advancement in fishing gear and equipment outpaces the allowable effort in fishing considerably. This is a global phenomenon and inevitably leads to over-fishing. The general response is to introduce gear limits in an attempt to restrict fishing effort. South Africa is not as stringent on this aspect as other countries.

On the other hand, technology used by emerging, small and subsistence fishers lag considerably behind the commercial and recreational sectors i.e. under-capitalisation. This leads to inefficiencies in fishing effort to their detriment. More effort is required on introducing appropriate technology from an economic efficiency and environmental point of view. This matter calls for assistance with capitalisation and technology development in the small and emerging sector.

Markets and Trade

Markets for fish and fish products are becoming increasingly lucrative at a global level as dietary shifts in middle to high income market segments progressively favour seafoods. It is therefore increasingly a sellers market. Over-fishing on a global scale also brings increased scarcity. These occurrences shift fish into the more sophisticated and higher income markets. Subsequently, many species and classes of fish that were traditionally associated with middle to low income markets are shifting to the higher categories. Also, fish that formed an important part of subsistence diets are subjected to greater opportunity costs.

The trends that favour fish consumption have encouraged an outward drive towards more lucrative export markets especially in Europe and the Far East. This occurred under favourable exchange rate conditions, but the recent strengthening of the Rand made this activity less lucrative, as for most other export industries. It is however envisaged that the focus on export markets will continue but greater efforts will be made at improving the efficiency of supply chains and greater value addition. Much of this is attended to by private companies in the strides to be more competitive given the recent exchange rate pressures. When necessary though government may facilitate multi-stakeholder supply chain processes to improve cooperation and collective efficiency.

The Regulatory environment

The regulatory environment in fishing is well managed and policed, despite the lawless elements that sporadically gain the upperhand. Recent policing efforts especially in abalone are bearing fruit as illegal activities have been curtailed.

Regulations of fishing efforts, rights allocations and subsequent procedures are sophisticated and well developed, though they cause dissatisfaction among fishers and fishing companies. There is no need to change the legal aspects of these procedures. What is required is making these more user friendly and transparent/understandable.

Labour

Organised labour is well unionised and fishers are also organised by interest groups. These formations of labour and interest groups can be dynamic, vocal, political and well sensitised to current day issues. This is caused largely by the short term nature of rights allocations and the economic value of resources. Developments in the area of policy, strategy, tactics or operational aspects require adequate consultations and transparency to ensure constructive relations with these important formations of civil society. The contention that they are myopic and short term oriented is hardly true, as the longer term sustainability of marine resources is equally important to them.

Transformation

The fishing industry faces transformation on various fronts including:

- (a) corporate level
- (b) rights allocations
- (c) smme's
- (d) gender
- (e) physically challenged
- (f) professional levels

At corporate level transformation is governed by employment equity and Black Economic Empowerment (BEE) (e.g. BEE scorecards). This is not afforded further attention here as it is matter that industry has to attend to.

Transformation in rights allocations is handled by MCM and the results achieved to date are rather remarkable. More than 60% of current commercial fishing rights are with pdi's or companies owned and managed by pdi's. Pdi's also dominate the smme and subsistence part of the industry. Claims of pseudo-empowerment are often heard and may be true. However, the industry seems on a clear path of establishing legitimate transformation as the adjudications *ex ante* and *ex post* the allocation of rights become more transparent and better monitored.

The empowerment of women in the fishing industry has not been afforded sufficient attention. Fisher women remain among the most marginalised groups. Organisations like the South African Fisher Womens Association (SAFWA) could play an important role in this regard. Introducing hard targets to effect

participation of women could be considered. The same holds for the physically challenged.

Black representation at all professional levels including corporate, government, academic, services, etc., remain lacking. Concerted efforts to train and mentor black professionals is required.

ISSUES IN AQUACULTURE:

Resource Management

Two resources are relevant for aquaculture purposes. First, are marine resources which include the sheltered bays like:

- Saldanha bay (inner and outer bay)
- Langebaan lagoon (world heritage site)
- Knysna lagoon
- St Helena bay
- smaller shelters in harboured areas
- the open seas where cage systems are possible
- Pump ashore systems on the coast line

Second, are inland fresh water resources including large public dams, smaller irrigation dams, estuaries as well as water sources used in recirculating systems.

Of the marine resources mentioned above, only Saldanha bay and Knysna lagoon are being productively utilised for the cultivation of mussels and oysters respectively. Knysna lagoon is allegedly experiencing deteriorating resource conditions (water quality) as well as recent property development pressures and the future of mariculture in the lagoon appears limited. Saldanha bay remains a productive resource with expansion potential in the outer bay but more resilient technology is required. Langebaan lagoon is well acknowledged as a prime mariculture site and was farmed productively in the past until it was declared a conservancy and world heritage site. The challenge remains to reopen this area for ecologically sustainable farming systems which is possible. St Helena bay has established potential for seaweed mariculture and an experimental community based initiative is ongoing. Smaller and harboured sheltered areas like Mosselbay have some mariculture potential and history but little success was achieved and the prospects appear limited. Cage systems in the open seas are always a possibility and initiatives are afoot off the Gansbay coast and in St Helena bay. The prospects are promising, but are capital intensive and involve imported technology and expertise that are unproven in the local high energy waters. Pump-ashore systems for abalone farming are currently the biggest and best proven contributor to mariculture by far. A critical aspect however is locating suitable sites along the south and west coast for farming purposes.

Natural stocks of seaweed are harvested for processing into fertilizers, agar, alginate, cosmetics, emulsifiers as well as abalone feed. The natural stocks are increasingly under pressure and abalone farmers are for instance shifting to incrementally to formulated feed. Little processing takes place with seaweed despite the potential for an alginate plant.

Several other marine species exhibit potential for mariculture including: clams, scallops, limpets, various finfish, etc. These would require further experimentation before commercialisation becomes a stronger prospect.

A key frustration with aquaculture development is accessing sites and following due procedure with permit applications (e.g. mariculture permits, mariculture rights, EIA's, water extraction permits, etc.). The bureaucratic procedures are mainly handled by MCM but other department like Water Affairs, Public Works, etc. can be equally relevant. There have been consistent calls from industry to formalise a more efficient bureaucratic procedure.

Fresh water aquaculture has shown considerable growth in the Western Cape and includes farmed species like: trout, tilapia, marron, eels, and ornamentals. Trout has been the most prominent species. The province has sufficient water resources to justify a larger industry, but care has to be exercised on the environmental effects which require controls. The utilisation of estuaries, larger inland water bodies and rivers for freshwater aquaculture remains an underutilised area of aquaculture development.

Technology

The technology for aquaculture is largely available in South Africa as well as the requisite scientific expertise to operate such. The sector is dualist long the line of capital and technological intensity as is the case the world over. The developed world favour large scale technology intensive systems while the developing world hosts smaller scale and less intensive systems. South Africa has achieved more success with the large scale models especially in mariculture where high energy waters require capital intensive systems. There are however notable exceptions to this such as the Spanish and French family based smaller operations in mussels. Experimentation with small scale systems have hardly led to commercialisation except in the case of trout and ornamentals. Globally, however it appears that that growth in aquaculture are increasingly brought by Eastern countries such as China where family farming and smaller operators reign. The case can be made for technological adaptations that favour smaller scale for reasons related to technical efficiency, risk management and poverty. More research and incentives are required to bring this about.

Three specific cases are known where technologies for high energy waters have been tested. First, are long line systems for mussel and oysters, which is currently used in oyster farming in Algoa Bay. Second, are cages systems which will be used for farming finfish farming off the Gansbay coast. Third, are superior designed mussel rafts designed for Saldanha bay, which are available but still not fully operational

The large scale technology that is disseminated from mainly Europe and the US will retain a prominent place based on its performance merits. Existing

technology networks are adequate in supporting this development. What could be considered are incentives to foreign firms and technology institutions to facilitate technology transfer and foreign direct investment.

Trade

Trade in aquaculture products are mainly destined for the Far Eastern markets and European markets as far as exports are concerned (abalone, seaweed). Most other species are aimed at the domestic market (oysters, mussels, ornamentals, kelp, trout).

Trade in shellfish with Europe is prohibited until an EU accredited sanitation and monitoring programme is introduced. This can be expensive and must be endorsed by the EU and target trading countries. Export growth of shellfish sectors is contingent on this development. Lucrative market opportunities are lost due to the absence of such a programme.

Trade in marine products have been affected by the exchange rate, as with most other export industries. This has not reached levels where trade have been deterred or diverted. Instead it encouraged chain efficiencies and firms have had to learn to live with a stronger Rand. Developments below purchasing power parity would have greater adverse effects.

Most trade and promotion initiatives in the sector are driven by the private sector with increased private spending on exports.

Markets

Markets for aquacultural products are growing in the light of the reduced productivity of marine resources, globally. The market for aquacultural products is however less preferred to wild harvested products whilst aquaculture is better able to provide consistency in supply and standardised quality. Many fish companies have begun to supplement the product offer with aquaculture and consider this an industry that will supplement future supplies. Hence, the significant investments made into aquaculture by large fishing companies.

Markets for fish and related products are becoming increasingly sophisticated and with greater emphasis on issues such as food safety, traceability, services and reliability. In addition these markets are shifting towards to higher income groups residing in the worlds main metropolises. Marketing efforts have to target these segments which are mainly served by restaurants, large retail chain stores and food boutiques. Marketing requirements are generally becoming more stringent despite the relative scarcity of the product.

Research and Development

Research and development commenced in the past with much assistance from government through dedicated structures like corporations and dedicated research programmes and scientist employed by government. These R&D structures have made scientific and industrial advances including the development of human capital that remain valuable and in effect today. These dedicated structures do not exist today, despite the fact that research of this nature has long cycles before results are tenable.

Most government supported R&D occur through universities and research institutions with a scientific research focus. Most experimentation and articulation of systems and procedures occur within private firms. In fact, private firms have largely taken R&D upon themselves with the implication that research outputs are in the private domain and thus less accessible. The complementarity's between private and public research endeavours has to be addressed as in the case of research incubators operating in other countries. Similarly, collaborative public private research programmes should be fostered.

South Africa presently has a good cadre of quality aquaculture researchers almost disproportionate to the size of the aquaculture industry. This is likely due to the fact that many researchers and professional are spawned from the fishing and agricultural sectors. This had led to the establishment of respected research programmes as well as credible industry bodies, fraternities and research forums.

The Regulatory Environment

The regulatory environment is not considered conducive to aquacultural development as many operators and firm in the industry perpetually complain about his aspect. The key constraints are related to:

- accessing suitable sites in a more efficient way
- many permits and application required
- bureaucratic procedures to attain requisite sanctions
- elaborate and costly EIA requirements
- cumbersome stakeholder consultation processes
- etc

It appears that the regulations are adequate in protecting societal interests but a disincentive to private investment. Moreover, procedures are too bureaucratic. Hence, the emphasis is less on reducing the regulatory requirements for aquacultural activities, and more in making the bureaucratic procedures more efficient and effective. Improved coordination through a single desk approach is frequently offered.

Human Resources

Human resources for aquaculture are developed at various universities in the natural and applied sciences. The majority of managers on aquaculture operations are well qualified and have considerable scientific background. The economics prospects of the industry also attract entrepreneurial talent, with the result that many successful professionals and business people from other industries have committed their careers and capital in some instances to this industry.

The training and subsequent participation of black professionals remains a under-represented, though an increasing number of black students are beginning to study in the fields of marine biology, ecology, aquaculture and other applied scientific areas.

Mentorship arrangement and learnerships are not observed as yet and much scope exists for this.

Exposure of South African professionals, scientists, entrepreneurs and young professionals to the aquaculture industry globally remains an important aspect of human resource development that required more attention. Academic and professional exchange programmes with other countries must be maintained in this regard. Programmes have been developed with Scandinavia, a leader global in aquaculture technology and research, which yielded valuable human capital. Similarly, exchanges with Europe, Australasia and the United states have existed for years. However, aquaculture has shown the greatest growth and advancement in the East (China, Taiwan, Philippines, Malaysia, etc) and greater contact and exposure should be developed here.

Labour

The aquaculture sector is a small industry and despite its economic prospects has limited job creation potential. The industry is knowledge and technology intensive and not known for being labour intensive. Abalone is the only industry with real job creation merits through farm labour and job creation in the value chain. Labour on aquaculture farms is less susceptible to seasonality as is the case with intensive agriculture.

There are clear opportunities however to empower labour to become entrepreneurs as in the case of mussels, oysters and ornamental currently, given the vocational expertise that labour has acquired. This provides the scope for assessing the reorganisation of production and labour relations on existing and new ventures. Examples for labour empowerment and entrepreneurial development can be found in mussels, oysters, ornamentals and seaweed.