REPUBLIC OF SOUTH AFRICA

OPERATION PHAKISA

planning | implementation | growth

Operation Phakisa: Unlocking the Economic Potential of South Africa's Oceans

Aquaculture

Lab Report

19th September 2014

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Quick Glance

The Aquaculture lab undertook the task of **unblocking the potential of the Aquaculture sector in South Africa.** The goal is to grow Aquaculture to play a major role in the supply of fish products, and an enhanced role in job creation and contribution to national income.

South Africa's Aquaculture sector **has high growth potential** due to increasing demand for fish in the face of declining fish stocks in the ocean and South Africa's abundance of marine and freshwater resources. The sector also offers significant potential for rural development, especially for the marginalised coastal communities.

The Aquaculture Lab aims to grow sector revenue from R0.67bn to R3bn; production by 20,000 tonnes; jobs from 2,227 to 15,000 and ensure increased participation to support transformation in the sector.

Currently, the **sector in South Africa is at a very small-scale, and faces a number of challenges**. Production is focused on a few high value species such as abalone, oysters, mussels, finfish and trout – driven mainly by the high cost of production. Other challenges include regulatory barriers, difficulty in accessing funding, poor access to markets, limited pool of skills, poor access to quality inputs, fragmented R&D, limited infrastructure in rural areas and inclusivity in the sector.

The lab identified **8 key initiatives, which are expected to spur the growth of the sector**. One initiative will address the selection and implementation of 24 projects, improving both the number and productivity of the new farms. Three initiatives relate to the creation of an enabling regulatory environment, and others focus on funding support, increasing skills pool and awareness and improving access to markets.

To deliver on these initiatives, the Aquaculture lab created **detailed implementation plans and accompanying budgets, a proposed governance system** to take responsibility for initiatives and **key performance indicators** to help monitor delivery.

SOURCE: Lab Discussion

The Aquaculture lab worked for 6 weeks to identify issues, develop solutions and action plans

6 weeks

Gathering of issues	Developing solutions	Prioritising and detailing solutions	Developing detailed action plans	Documentation
• Development of Lab Aspiration • Identification of issues and root causes	Development of solutions	Detailed implementation plans with timelines	Detailed supporting budgets and KPIs to implementation plans	Documentation of lab efforts and outputs
Lab Aspiration and 9 key issues identified	**8 initiatives developed**	**30 Implementation plans (19 projects and 11 initiatives)**	**Budget and KPIs for 30 plans**	**Lab Report**
				

SOURCE: Aquaculture Lab

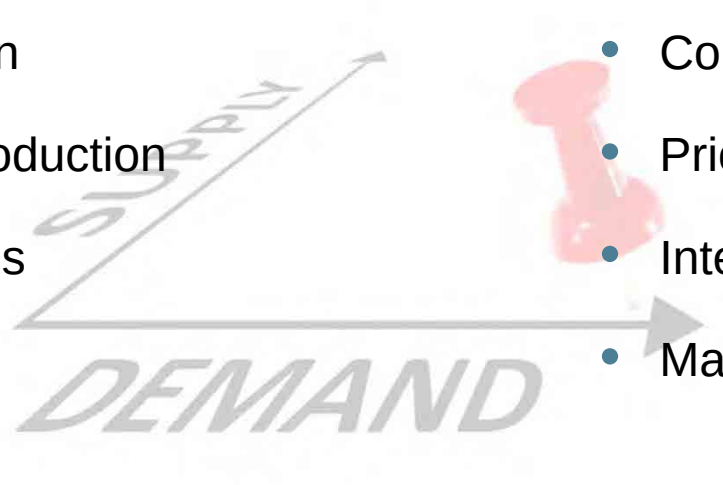
Contents

Overview of the Aquaculture Sector

The Aquaculture sector in SA is nascent and sub-scale. In order to fast-track growth and development, aquaculture will need to rapidly increase scale of production, and stimulate demand in local and international markets.

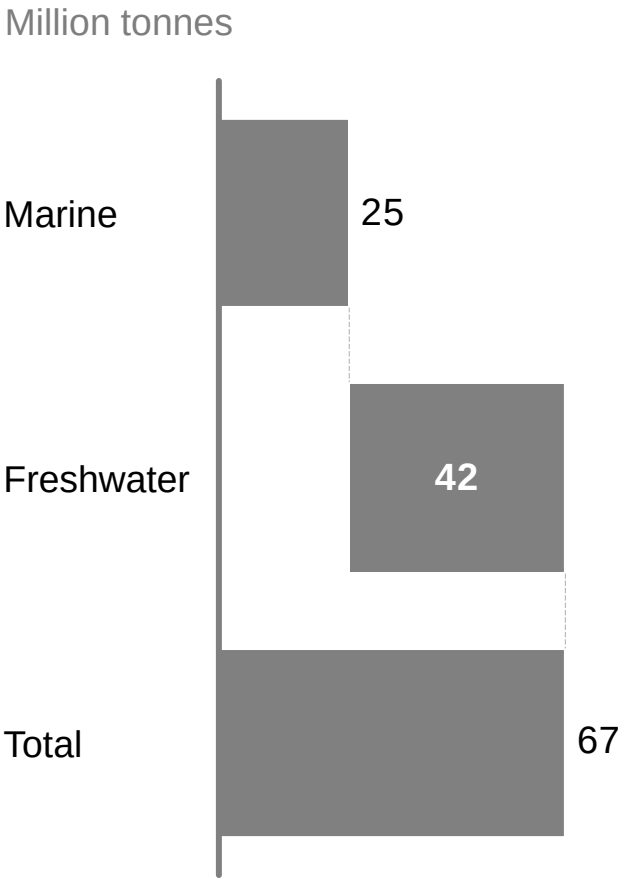
Scale:
Current players (producers, suppliers, processing facilities, etc.) across the value chain

Supply	Demand
• Value chain	• Consumption
• Cost of Production	• Price
• Regulations	• International Trade
• Funding	• Market maturity

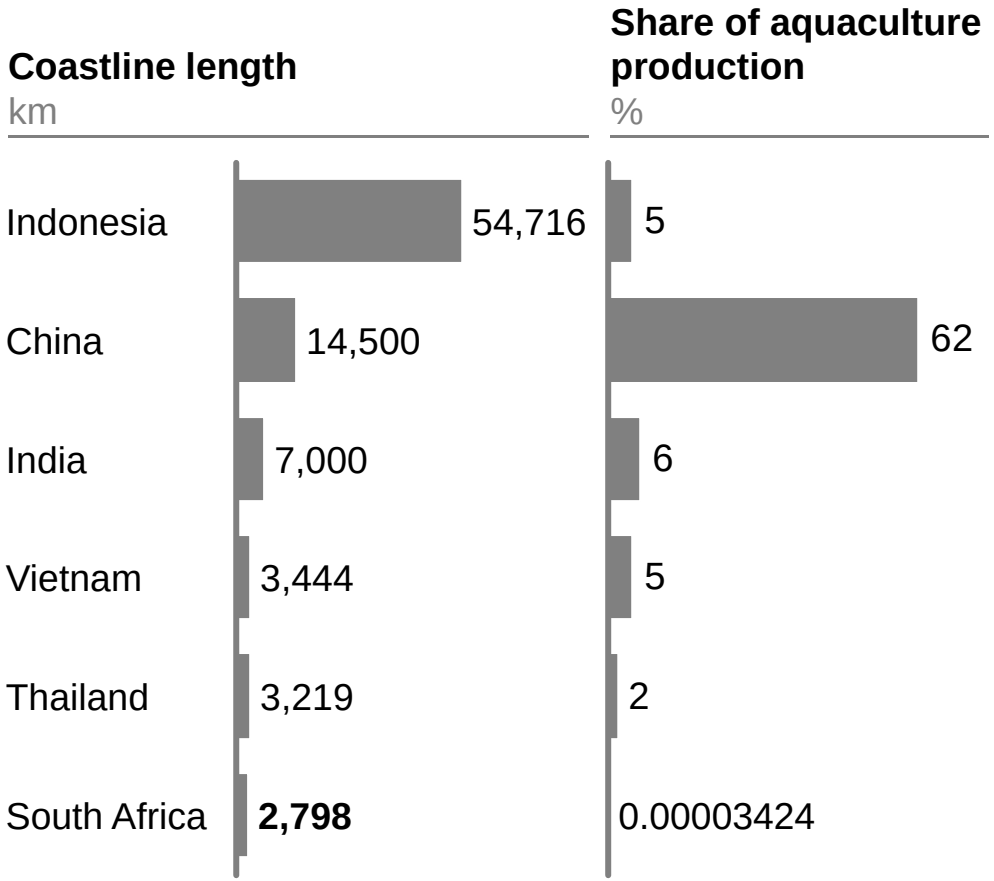


Global aquaculture industry produces ~67 MT, with SA contributing 0.00003% of global production

Globally, the aquaculture industry produces ~67 MT ($ 138 bn) of fish



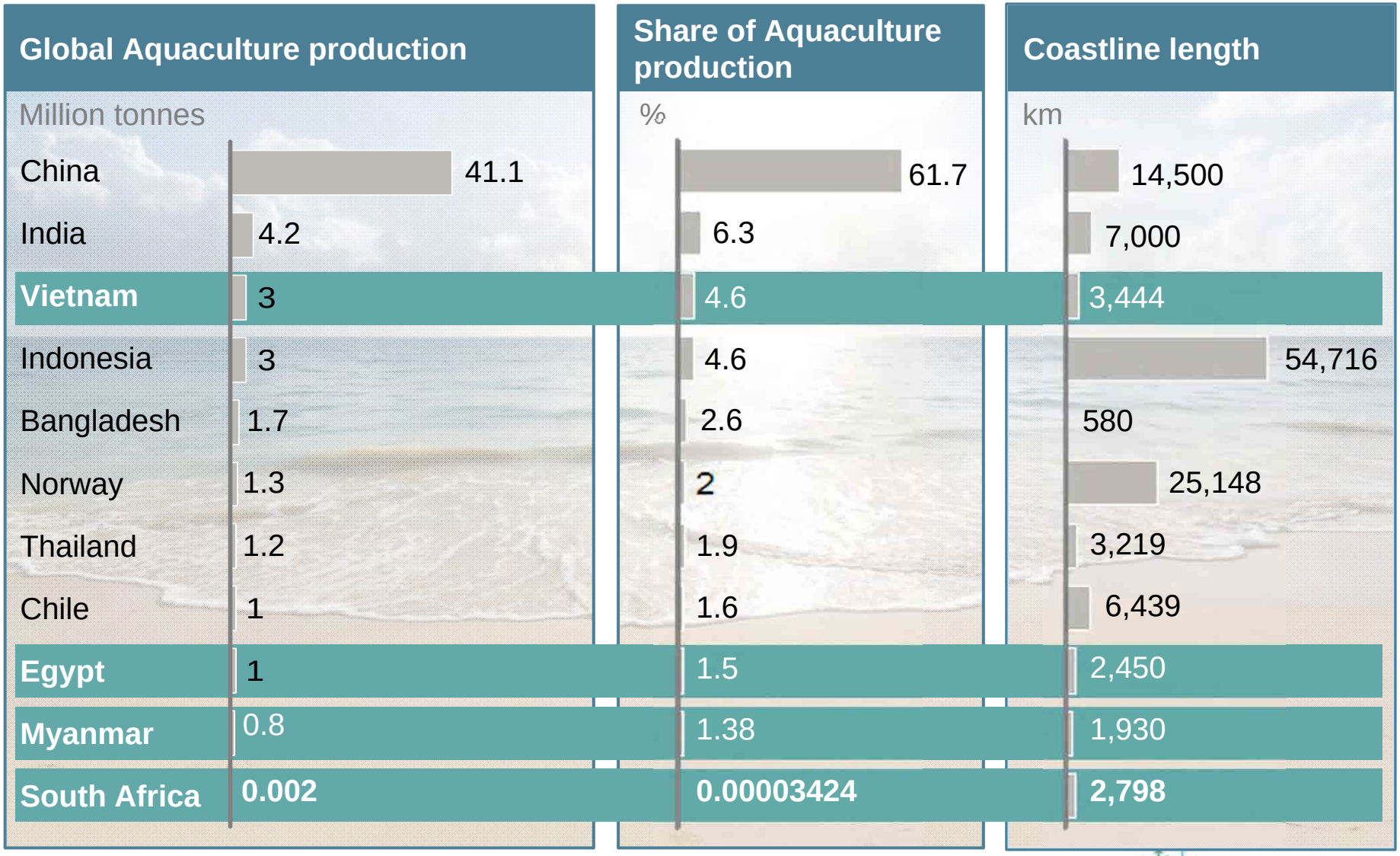
Countries with similar coastline length to South Africa produce >100X SA's aquaculture production



SOURCE: FAO State of World Fisheries and Aquaculture 2014; FishStatJ

Nations with similar length of coastline are producing ~1,000 times SA's Aquaculture production volume

Nations with similar size of length of coastline as South Africa



SOURCE: FAO 2014 State of World Fisheries ; CIA World Factbook

Globally, the aquaculture sector has contributed significantly to important socio-economic priorities

Job Creation

- **Egypt employs 580,000 people in its Aquaculture sector** (more than all other African countries combined
- In many developing countries, **labour intensive processing methods** provide livelihood support for many poor rural economies
- **Over 80% of Aquaculture farmers in Asia are small-scale;** often represents the only source of income
- **small-scale Aquaculture enterprises are major contributors to food production** in many developing countries
- **Contributions of small-scale Aquaculture enterprises** to poverty alleviation and food security **has received significant global attention** (e.g., Rio+20 UN conference)

Human Capital Development

- **Several countries** (e.g., US, Norway, Philippines) **provide training, bachelors', and advanced degrees** in Aquaculture studies
- In countries where there is considerable competition for positions in the industry, **advanced degrees are frequently required for positions in research or management**

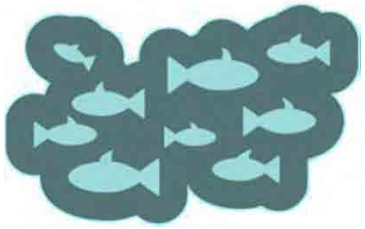
Gender Equality

- **Aquaculture is a new industry in developing countries** and women are making valuable contributions
- Division of labour between men and women vary by scale of operation:
  - **Small-scale Aquaculture: Women provide 46% of total labour** (marine: 36% women, inland: 54% women)
  - **Examples:** Sri Lanka – 90% women, Uruguay – 52% women, Brazil – 57% women

SOURCE: FAO, World Review of Fisheries and Aquaculture

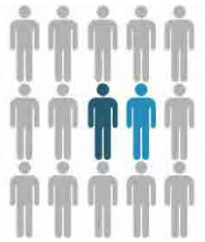
In SA however, Aquaculture is a young industry with low scale of production

~4,000 tonnes (excluding seaweed) of Aquaculture production in 2013 (28% freshwater, 72% marine)

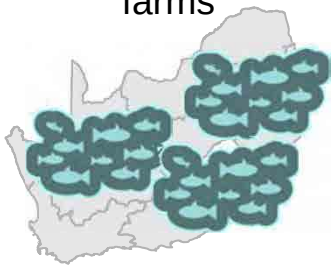


~50% of Aquaculture farms in SA are located in the Western Cape

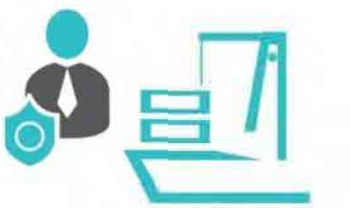
Untransformed sector with 10% PDI participation at management level in the sector



In 2012, >600,000 tonnes of fish and fish products was produced in South Africa; only 0.8% of it was from Aquaculture farms



2,227 jobs in the sector



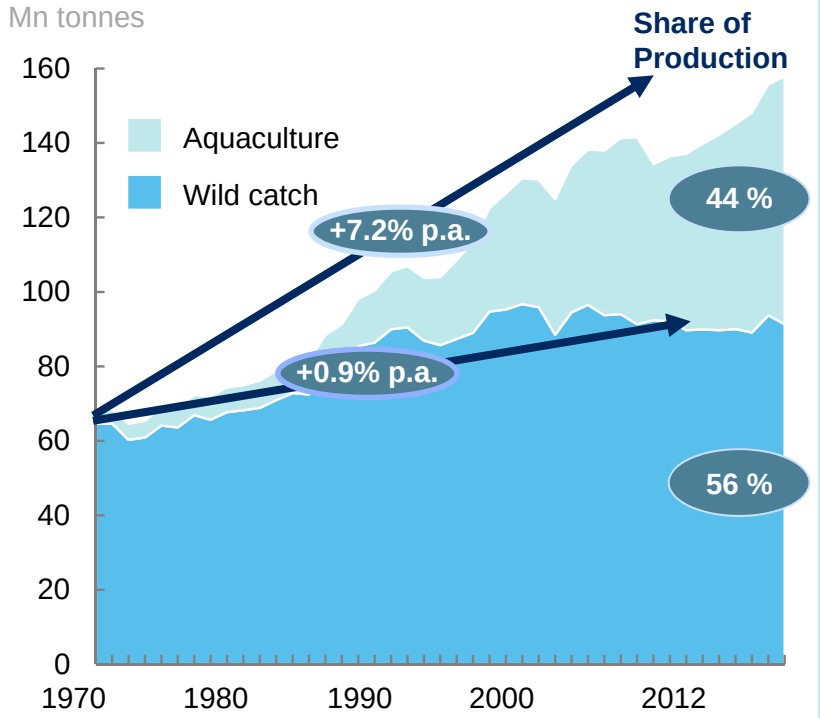
Aquaculture contributes ~R 0.7 bn (0.2%) to South Africa's GDP

SOURCE: FAO, FishStatJ, DAFF

Globally, Aquaculture contributes to almost half of total supply

Aquaculture is playing an increasingly important role in fish production[1] as projections indicate wild capture production has plateaued

Global total fish production – wild catch and farmed (reported)



- Aquaculture production has shown strong growth of 7.2% p.a. from 1970 to 2012.
- Currently, Aquaculture accounts for almost half of total fish production[1]
- Asia accounts for 88% of global Aquaculture production:

Factors influencing supply

Supplementing wild capture within maximum sustainable yields

- The need to employ sustainable fishing methods has become more important due to dwindling stocks of certain species
- FAO has classified most wild fisheries as either fully exploited or over exploited
- Increasing demand for fish products

Better technologies and production methods

- New technologies and breeds e.g. RAS system and GIFT strain for tilapia has enabled better yields and lower long term input costs
- Higher stocking capacity for shrimps which allows for higher yield
- Investment in research and development

Food Security

- Governments have a responsibility to ensure that everyone has enough to eat.
- Food needs to be available, accessible and affordable through a resilient and reliable supply system
- Fish is regarded as an essential part of a healthy and nutritious diet

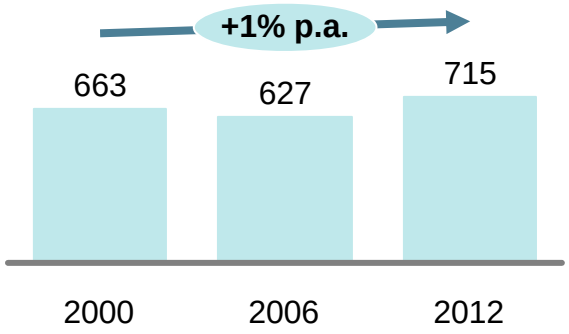
[1] Fish production refers to fish and shellfish production

SOURCE: FAO State of World Fisheries and Aquaculture 2014; FishStatJ

Fish stocks in South Africa are declining, however the Aquaculture sector contributes little to the total supply of fish products

SA Marine catch production

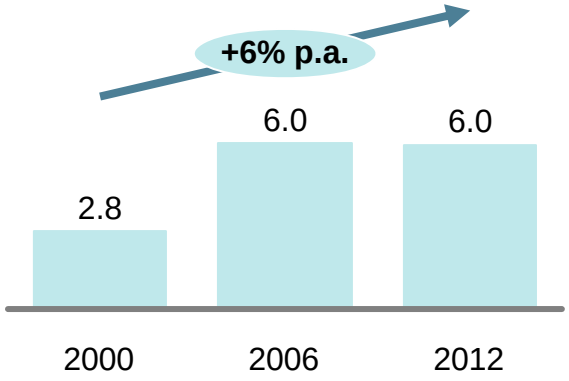
Tonnes, '000



Marine catch is plateauing

SA Aquaculture production [1]

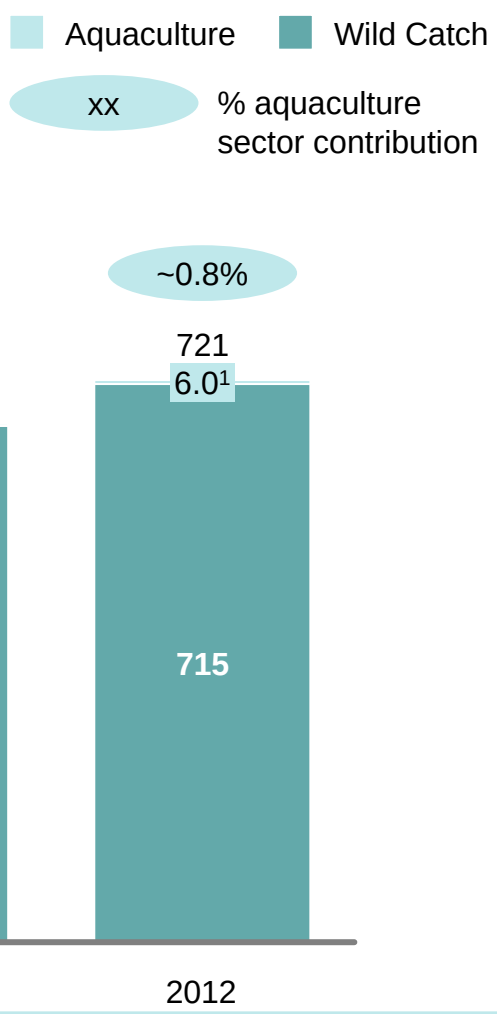
Tonnes, '000



Steady growth of 6% p.a.

Aquaculture only contributes ~0.8% of SA fish production

Tonnes, '000



1 The total production includes 2,000 tonnes of seaweed

SOURCE: FAO State of World Fisheries and Aquaculture 2014; FishStatJ, DAFF

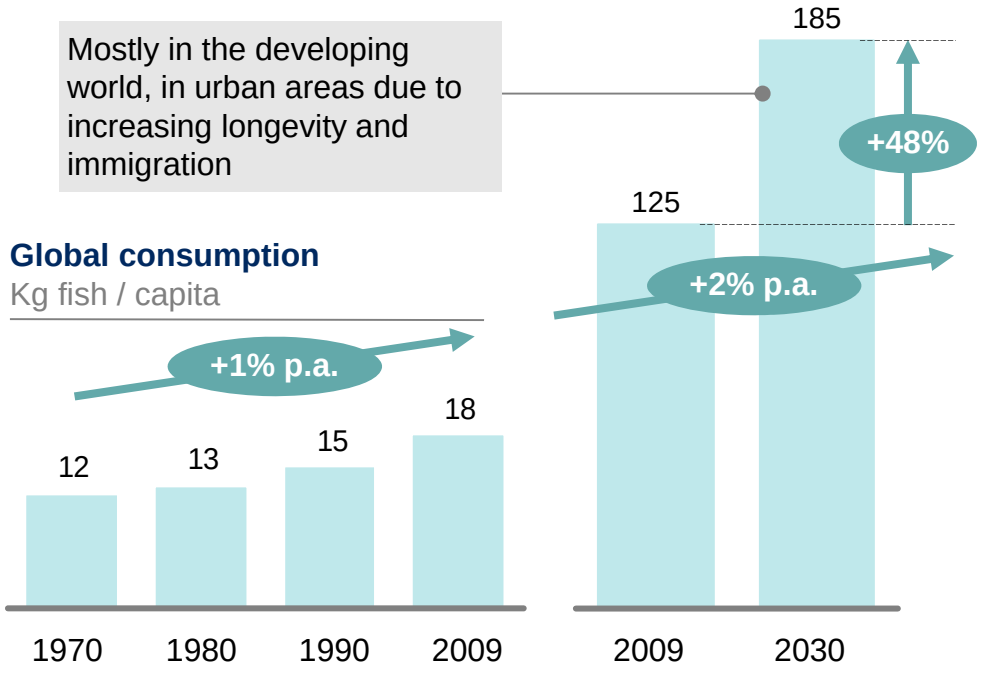
Global demand for fish products is projected to grow by 48% in 20 years, with Aquaculture expected to meet more than half

Fish consumption to increase with growing world population and increasing diet concerns

Fish consumption forecast

Million tons

Mostly in the developing world, in urban areas due to increasing longevity and immigration

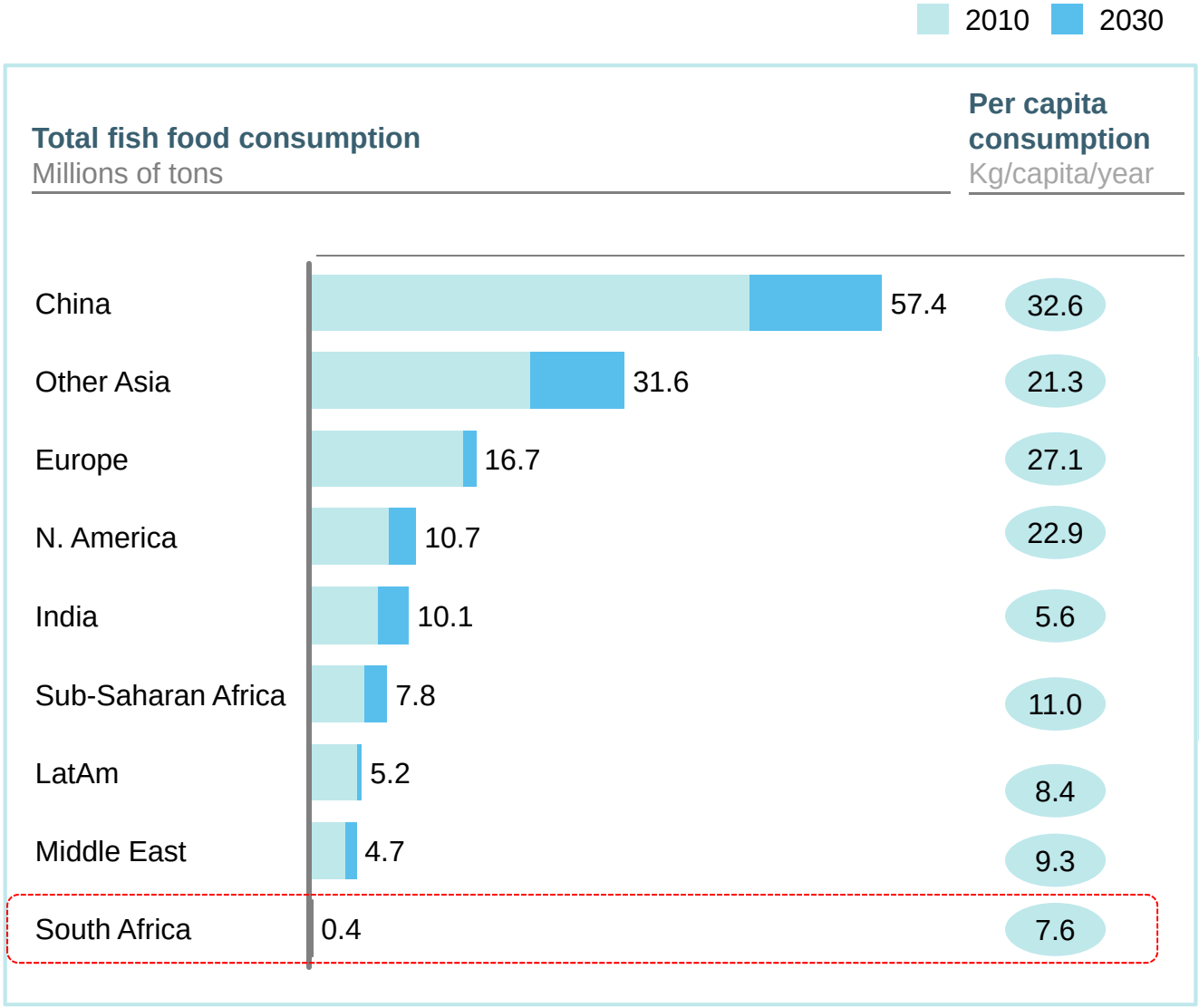


Influencing Factors of Demand

Rising global population	▪ Global population growing at 1.1% pa, projected to reach 8.6 billion in 2033 ▪ Static capture fisheries production unable to meet rising global demand
Movement towards healthier diets in wealthier countries	▪ Fish provides not only high-value protein, but also a wide range of essential micronutrients, including various vitamins (D, A and B), minerals (including calcium, iodine, zinc, iron & selenium) and polyunsaturated omega-3 fatty acids ▪ FSA recommends at least 2 portions of fish per week
Greater product use	▪ Seaweed is used as gelling agent for various processed food and pharmaceutical products e.g. toothpaste and chocolate
Increasing Demand for premium products	▪ Growing affluence especially in Middle East and Asia has led to growth in premium products e.g. grouper - US FDA has classified carrageenan (seaweed) as an organic product

SOURCE: FAO, Fish to 2030

SA fish consumption is projected to grow at a significantly lower rate than the rest of the world



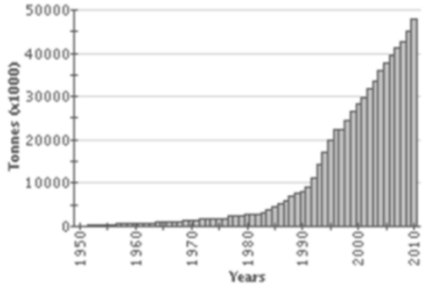
Fish consumption in SA is projected to grow at a much slower pace than in other countries, **despite DoH's guidelines[1]** to promote eating of fish as a healthy source of protein

1 DoH: Food based dietary guidelines of South Africa

SOURCE: Fish to 2030, DoH, World Bank Fish to 2030 Prospects for Fisheries and Aquaculture

China used R&D to increase supply, and facilitated market expansion locally and internationally

Production	Value	Jobs
tonnes	US$Bn	
41mn (2012)	US$ 66,212 bn (2012)	>5mn



Supply

- Accelerated scientific and technical **developments into mass production**
- Improved **food safety and disease prevention** by developing new feeds and vaccines
- **High level of government support** from 1950s. Aquaculture extension is funded jointly by central and local government
  - Almost **2,000 Research Centers** for further scientific R&D and training
  - Technology Extensions Centers
  - National Fisheries Technology Extension Centre – set up Aquaculture extension stations, which form a network of services across the country
  - At least **One state-owned hatchery per province**
  - Chinese Academy of Fishery Science dedicated to providing extension and research support

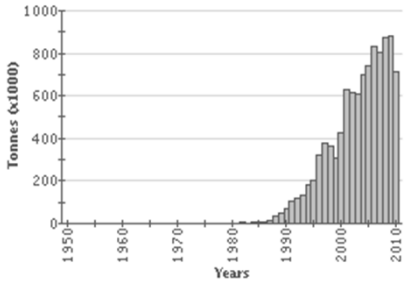
Demand

- **Large domestic market**: Per capita apparent fish consumption increased an average annual rate of 6% from 1990 to 2010 to about 35.1kg
- By breaking market monopoly and trade barriers, China created an enabling environmental for the market development of the Aquaculture industry
- Demand for fish feed as Aquaculture expands, High prices of fish meal
- Government planned supply labs for test, traceability system and farming methods to be improved, when shellfish export was forbidden to EU
- **Chinese government is making a lot of efforts to improve the food safety and quality**

SOURCE: FAO; Fishstat; DAFF interviews

Chile focused largely on supply factors to stimulate aquaculture sector growth

Production	Value	Jobs
tonnes	US$Bn	
1mn (2012)	5.9 (2012)	30,000

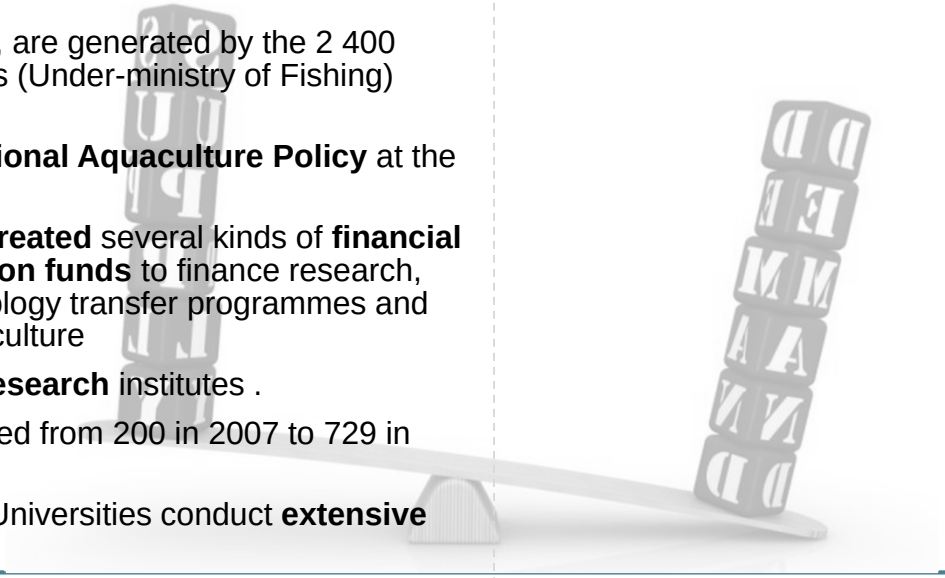


Supply

- **Wide geographic range** of farming locations. Low input and operational costs
- Adequate **availability of specialised skills** (researchers, professionals and labour) to meet demand by industry and research programmes
- Many of the jobs created, are generated by the 2 400 current cultivation centres (Under-ministry of Fishing) (2004)
- Establishment of the **National Aquaculture Policy** at the end of 2003
- In the 1990s, the **State created** several kinds of **financial instruments and common funds** to finance research, development, and technology transfer programmes and projects, related to Aquaculture
- State or **State-derived research** institutes .
- Aquaculture staff increased from 200 in 2007 to 729 in 2009 within government
- Research institutes and Universities conduct **extensive research**

Demand

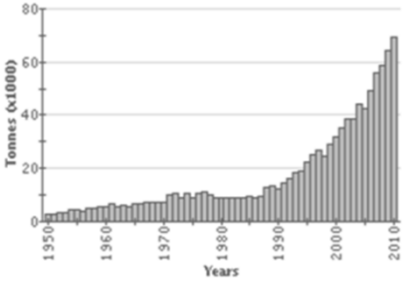
- Implementation of **regulations to ensure sustainable growth**, especially w.r.t. biosecurity & production
- Better **co-operation between government & industry** in regulating & monitoring



SOURCE: FAO; Fishstat; DAFF interviews

Australia focused on financial and R&D programs to grow supply, while using targeted marketing strategies to grow demand

Production	Value	Jobs
tonnes	US$Bn	
75,000 T	948mn (2010)	7,000 (2008)



Supply

- **Major government research institutions** are the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the Fisheries Research & Development Corporation (FRDC) supported by various minor research institutes
- **Funding** has been provided to establish an **Aquaculture zone** for marine finfish in certain regions. The funds will be used to undertake technical studies to secure environmental approval for the zone's development. This will provide an 'investment ready' opportunity for organisations to establish Aquaculture operations. This zone is expected to be declared in 2014
- Access to **financial and social assistance** is also a driving factor in successful Aquaculture production

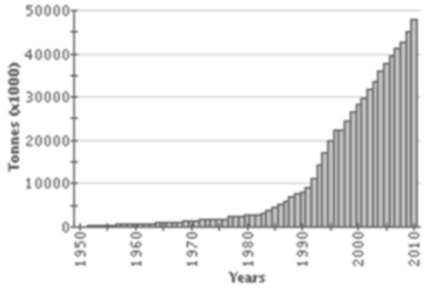
Demand

- Industry development program focuses on:
  - 'Meet **long-term demand** for fish and fish products
  - Increase the value and socio-economic return of fish and fish products
  - Increase the efficiency of businesses and other entities in the fishing industry'.
- Highest priority: **Industry coordination** and organisation, **promoting the industry** and ensuring it had access to resources, environmental issues, markets and marketing, research and development.

SOURCE: FAO; Fishstat; DAFF interviews

Vietnam launched comprehensive government-led programs to rapidly stimulate aquaculture production

Production	Value	Jobs
tonnes	US$Bn	
3mn (2012)	5.8 (2012)	670,000

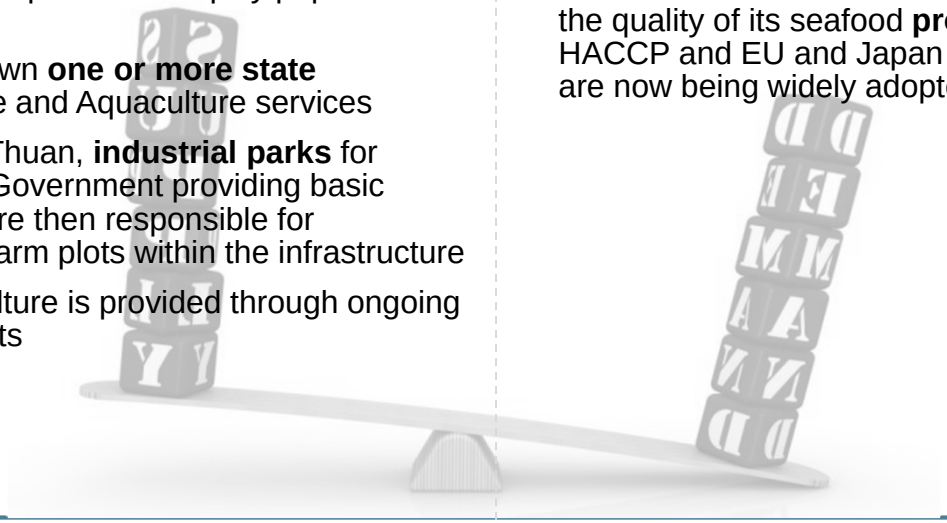


Supply

- There are **3 state Aquaculture institutes**
- There is a National Fisheries Extension Center and Information Center. **Government Research institute**s and Universities publish papers and simplify popular articles
- Most coastal provinces own **one or more state enterprises** Aquaculture and Aquaculture services
- In Khanh Hoa and Binh Thuan, **industrial parks** for Aquaculture set up with Government providing basic infrastructure. Farmers are then responsible for investment in individual farm plots within the infrastructure
- Some support to Aquaculture is provided through ongoing rural development projects

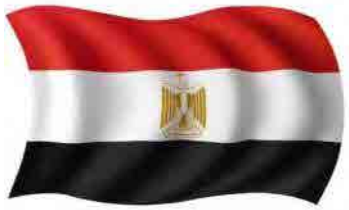
Demand

- The **demand from export markets** for high quality, safe and clean aquatic products. Aquaculture is likely to be the main supply for higher value exported aquatic products
- Vietnam has made **substantial investment** in upgrading the quality of its seafood **processing factories**, and HACCP and EU and Japan health and hygiene standards are now being widely adopted

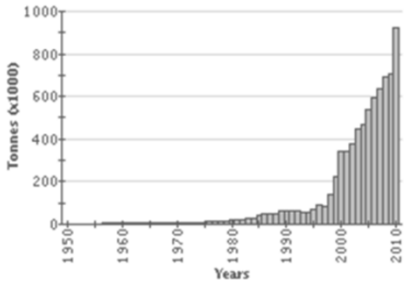


SOURCE: FAO; Fishstat; DAFF interviews

Egypt trained subsistence farmers and new entrants to succeed , while creating an enabling environment for aquaculture sector growth



Production	Value	Jobs
tonnes	US$Bn	
1mn (2012)	2 (2012)	580,000



Supply

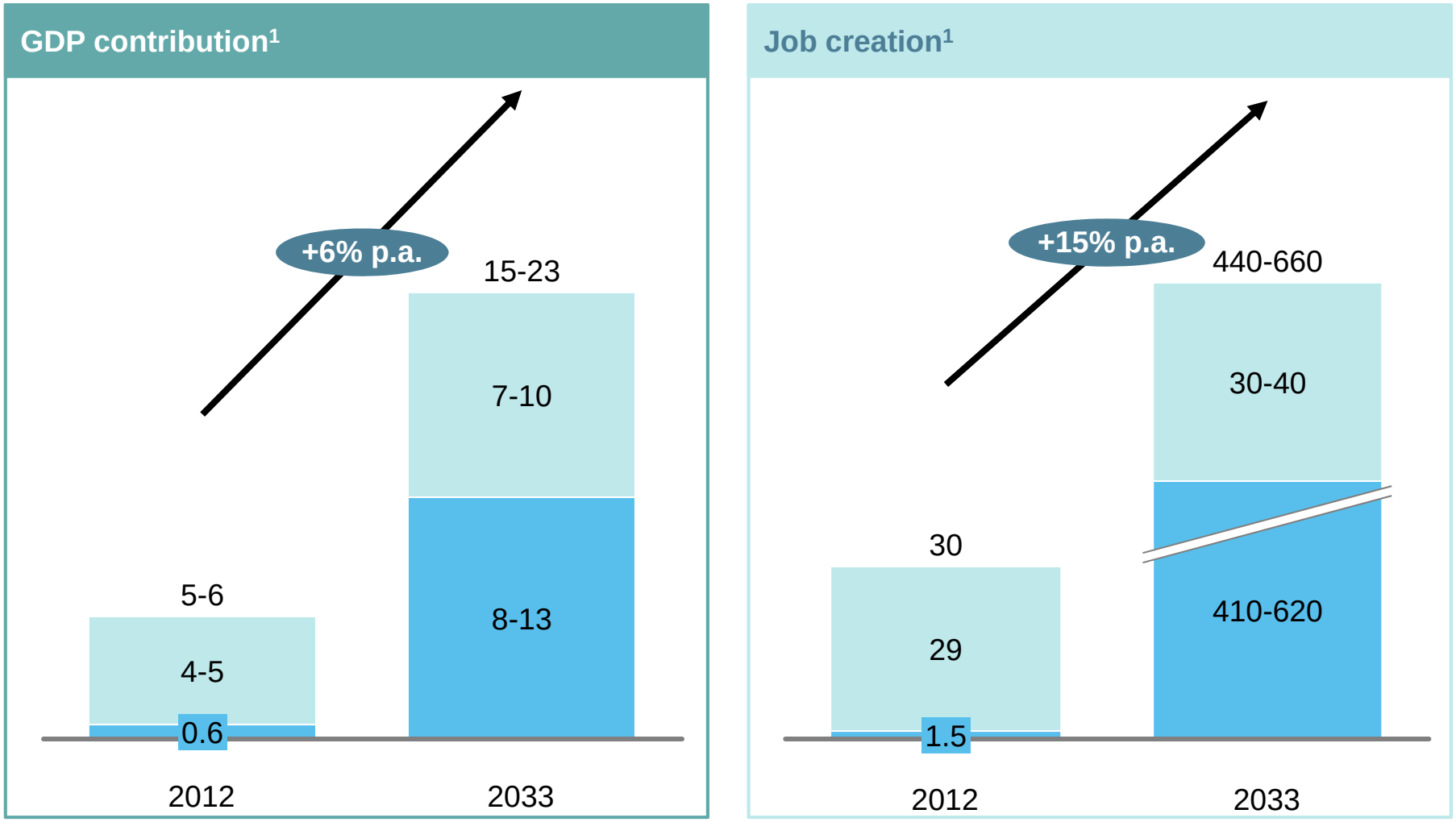
- **Government issued land lease** to traditional farmers. It encouraged Aquaculture by providing about 140,000 feddans of land close to lakes for development of Aquaculture (US$3 per feddan)
- **1000 government officials employed** for Aquaculture. Employment of new graduates by government to help traditional farmers. Free Aquaculture training courses (extension officers and training directorates). Government projects to increase Aquaculture productivity, including hatchery development, genetics research and breeding programmes
- **Government is licensing hatcheries** for several marine species, which along with expanded fish feed manufacture is expected to reduce production costs
- Traditional farmers have grown from extensive to semi-intensive systems with help from **government technicians**

Demand

- Fish is a traditional and important **component of the Egyptian diet**. It is the main source for cheap animal protein for the growing population
- By 2008, the rapid increase in Aquaculture production has made it possible for Egyptians to eat about double the amount of seafood compared to 20 years earlier
- Per capita **demand per year approximately doubled** from 1988 to 2008. Domestic fish production is a key contributor to the national food supply

SOURCE: FAO; Fishstat; DAFF interviews

In 2013, Aquaculture was identified as a priority sector in the development of South Africa's oceans economy



1 Only direct potential (excl. multiplier effect) from the EEZ considered; 2 Growth rate per annum (p.a.) is based on the projected base 2033 value
2 Based on 2033 catch / jobs ratios: Abalone – 1 MT / job, Mussel – 11 MT / job, Oyster – 2 MT / job, Marine finfish – 0.3 MT / job, All freshwater species – 0.3 MT / job (obtained from expert interviews)

SOURCE: StatsSA; IHS Global Insight; Expert interviews; TNPA Port Development Plan 2011/2012; Transnet Corporate plan 2013/2014; NMMU estimates, AME; McCloskey; Platts; Press search

Potential for the Aquaculture Sector in South Africa

DAFF has identified aquaculture as a sector that presents a good opportunity to diversify fish production


Satisfy local demand,


Contribute to food and nutritional security,


Create sustainable job opportunities


Foster economic development


Capitalise on export opportunities


Stimulate rural development and livelihoods

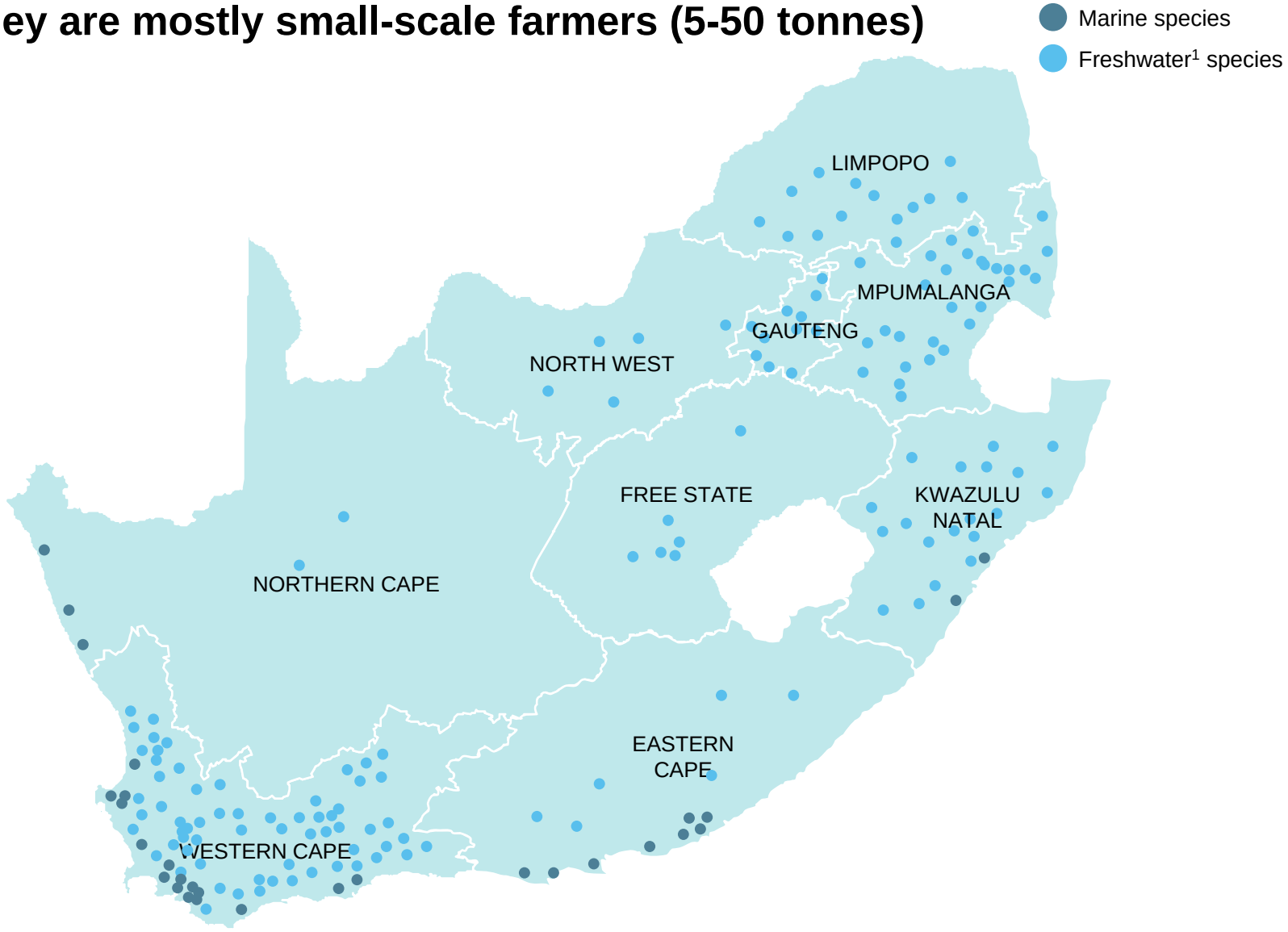

Attract foreign direct investment


Safeguard sustainable environmental integrity


Create SMMEs and wealth generating opportunities through Aquaculture

SOURCE: DAFF National Aquaculture Strategic Framework

Although, there are over 195 operating marine and freshwater Aquaculture farms, they are mostly small-scale farmers (5-50 tonnes)



1 Freshwater data is from 2010

SOURCE: DAFF

Although there is a great deal of diversity, South African marine and freshwater Aquaculture are dominated by six species

Marine Aquaculture is dominated by molluscs

Species	Overview	Production Tonnes[1]
Abalone 	▪ Farmed exclusively in WC ▪ Mostly exported ▪ Market price: R280-360/kg ▪ 0.9-1 job is created per ton of production ▪ Maturity: 36-48 months	1,111
Oysters 	▪ Farmed exclusively in WC ▪ Prices: R45-60/ kg ▪ Imports are cheaper; not required to meet same sanitation standards ▪ Maturity: 6 - 12 months	241
Mussels 	▪ Mediterranean & Black mussel ▪ Direct price: R5.50/kg possessing +R18/kg fresh ▪ Processed price: R25/kg ▪ Maturity: 7 months	860
Marine finfish 	▪ Dusky kob, Silver kob, Yellowtail, White margined sole ▪ Production prices: R35-45/kg ▪ Maturity: 8-12 months	280

Freshwater Aquaculture is focused on finfish

Species	Overview	Production Tonnes
Trout 	Maturity: ▪ Table Trout : 12 months ▪ Large Salmon Trout: 18months	1 428
Catfish 	▪ Forms: Live, whole on ice, smoked fillet, pâté ▪ Prices: R30/ kg ▪ Maturity: 6-9 months	160 (2011) 0 (2012)
Tilapia 	▪ Is referred to aquatic chickens ▪ Market size: 9 months ▪ Mozambique Tilapia is endemic in SA	234

1 Approved figures from the 2012 Aquaculture Yearbook. 2013 draft awaiting approval

SOURCE: DAFF: 2012 South Africa Agriculture Yearbook 2012, WCADI: Draft Western Cape Aquaculture Market Analysis and Development Programme/ Strategy

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Four main Marine Aquaculture species are cultivated in South Africa (1/2)

Abalone: Key characteristics

- Perlemoen *Abalone (Haliotis midae)*
- Premium species
- Optimal temp: 12 to 20^{0}C
- Maturity: 36-48 months
- Mkt price: R280-360/kg
- 0.9-1 job is created per ton of production
- Export forms: Live, canned, frozen, dried

Current Abalone production (2012): 1,111 tons

Key production challenges

- High start-up cost
- High cost of electricity
- Suitable coastal sites are limited:
  - Competing residential use
  - High sensitivity to water temperature
  - Land-based facilities should not be too high above water level; constant flow of water required

Other issues

- Competition with international sales from lower-cost countries with higher yields and lower costs
- High energy and veterinary health costs (e.g., 26 farm closure notices sent to shellfish farms in 2011)
- No quality standard defined for dried abalone- could affect SA brand

Oysters: Key characteristics

- Pacific oyster
- Can be grown in 10%-35% salinity water (optimal: 20-25%)
- Temperature: 18-24^{0}C
- Maturity: 6 - 12 months
- Prices: R45-60/ kg
- Forms
  - Live, half-shelled, shucked
  - Could also be smoked/canned, but not done in SA currently

Oyster production for the years (2012): 241 tons

Key production challenges

- Regular environmental/ toxicity testing is required; estimated to be ~15% of total production cost
- Water quality issues from municipal sewage spills
- Water lease areas not advertised
- Land based factory space not being made available.

Other issues

- Large number of farm closures (26 in 2011) due to sanitation requirements
- Imports are cheaper; not required to meet same sanitation standards
- High dependency on Chile/ France for seed imports
- Low capitalisation on value-add product market

SOURCE: DAFF: 2012 South Africa Agriculture Yearbook 2012, WCADI: Draft Western Cape Aquaculture Market Analysis and Development Programme/ Strategy

Four main Marine Aquaculture species are cultivated in South Africa (2/2)

Mussels: Key characteristics

- Spanish and Black mussels
- Direct price: R5.50/kg possessing + R18/kg fresh
- Processed price: R25/kg
- Maturity: 7 months
- Optimal temp: 10-20^{0}C
- Forms: Live, half-shelled, shelled, canned/bottled (not produced in SA), crumbed/sauced (not produced in SA)

Current Mussels production (2012): 860 tons

Key production challenges

- Spanish mussel (non-indigenous, introduced through ship hull fouling)
- Regular environmental/ toxicity testing is required; estimated to be ~15% of total production cost

Other issues

- A number of farm closures due to sanitation requirements (red tide events)
- Low capitalisation of profit margin gains from vertically integrating processing

Marine Finfish: Key characteristics

- Dusky kob, Silver kob, Yellowtail, White margined sole
- Maturity: 8-12 months
- Production prices: R35-45/kg
- Optimal temp: 20-25^{0}C
- Forms: whole, filleted, cold / hot smoked, added herbs/ sauce, breaded

Marine Finfish production for the years (2012): 280 tons

Key production challenges

- Dusky Kobs are migratory species
- High mortality rate for kob (e.g., only 3 out of 10,000 juvenile kob reach 1kg in size)
- Expensive land-based water recirculation systems are required for some species
- Highly technology-driven sector with high start-up costs as a result

Key issues

- Complex environmental legislation
- No processing capacity has been planned for any projects / farms under development
- No certification programmes are in progress / planned to be developed
- Complex hatchery requirements; might lead to dependency on imports
- Many substitutes exist in the market

SOURCE: DAFF: 2012 South Africa Agriculture Yearbook 2012, WCADI: Draft Western Cape Aquaculture Market Analysis and Development Programme/ Strategy

Two main Freshwater Aquaculture species are cultivated in South Africa

Trout: Key characteristics

- Temp: Optimal 16°C Range 06°-16°C

Production Cycle:

- Table Trout (300g ave @ 12 months – 450MT @ R65/kg)
- Large Salmon Trout (1.5kg ave @ 18months - 1500MT @ R75/kg)

Market:

- Current National Production 2000MT
- Further 3500MT imported

Current Trout production (2012): 1,428 tons

Key production challenges

- Active role by lead agency for Interdepartmental enabling environment provision required
- Current restrictive legislation
- Access to public water bodies
- Applied research
- Extension facilities

Other issues

- Access to risk Capital for financing new ventures involving BBEEE
- Facilitation for formation of PPP
- One-stop regulatory approval
- Western Cape Aquaculture Development Initiative – Extended to include other provinces

Catfish: Key characteristics

- Prices: R30/ kg
- Forms: Live, whole on ice, smoked fillet, pâté
- Produced at extreme high densities of up to 500kg/m3 in recirculating systems
- Temp: 26-28^{0}C in recirculating systems, 18-24^{0}C in open ponds
- Maturity: 6-9 months

Catfish production for the years (2012): 160 tons

Key production challenges

- Local fish grow slow and Feed Conversion Ratio is poor
- Recirculating technology is costly
- Expensive feed makes COP too high to be competitive
- Negative perceptions about catfish makes marketing difficult
- Inland processing not available for fish

Key issues

- No quality standard defined for products
- Recirculating systems require constant electricity supply
- Veterinary services not available
- Poor track record of catfish farming makes access to finance difficult
- Only one commercial system that can assist with practical training

**Please note that details of tilapia have not been added into the report*

SOURCE: DAFF: 2012 South Africa Agriculture Yearbook 2012, WCADI: Draft Western Cape Aquaculture Market Analysis and Development Programme/ Strategy

Operation Phakisa: Aquaculture Lab Aspiration

HEADLINES 2019: SA economy reaps the rewards of Operation Phakisa

"…to Aquaculture in South African has shown strong growth in 5 years, with **production from 2014 up 5 fold to 20,000 tonnes**..."

"…The Aquaculture sector in South Africa now **employs 15,000 people in direct and full time jobs**….. "

"Jobs in Aquaculture sector seen as **quality jobs, improving livelihoods in rural communities**…."

"…experts estimate the **revenue contributed by Aquaculture** to South Africa's economy **to be as much as R 3 Bn**…"

""…exciting momentum built in Operation Phakisa evidenced by **Aquaculture's inclusive growth**…"

SOURCE: Aquaculture Lab

Contents

Scenario: Current challenges in setting up an aquaculture farm

Mrs Nkosi and Mrs Sibiya grew up fishing in the Tugela River. Due to the depleted fish stocks, they can't access affordable fish and would like to start a kob farm in the Kwa Zulu Natal:

a Gather information

1. They can't find good data! What production systems are kob farmers using in SA? Do they have to own R&D?
2. Local consumption in South Africa is very low.
3. There is no one they can go to for information on export markets? They are sent from one Government to the other without success.
4. Aquaculture doesn't even have its own Act!

b Source government funds

1. DFIs are not interested indicating that Aquaculture is risky
2. Confused with government funding sources, they apply to a loan institution for a grant.
3. Other Government Departments indicate incentives can only be provided after hey have first spent their own funds.

c Secure private funding

1. Local private Investors don't seem to understand the business
2. Large scale investors are not interested indicating that the business is high risk, high capital investment and slow returns.
3. Venture capitalist are willing to fund, but only if they see fast returns

d Apply for land and sea space

1. The land belongs to Government, they approach the Tribal leaders, Municipality, DPW and DRDLR to access the land. No one seems to have records
2. They submit an application for zonation and wait for three months prior to obtaining approval.

e Formalise intent to operate

1. They apply for 28 permits and licenses which cost over R9000.
2. They have to approach nine Government Departments.
3. The entire application process takes them 1100 days to get all permits and licenses.

f Start operation…

1. None of the current farmers are willing to share experience and knowledge.
2. They have to buy most of the technology from abroad.
3. Mrs Nkosi and Mrs Sibiya apply for electricity upgrade and wait for 270 days before installation.

Scenario: Current challenges to operating an aquaculture farm

Mrs Nkosi and Mrs Sibiya met all their infrastructure and legal requirements. Mrs Nkosi and Mrs Sibiya managed to grow their fins and are trying to access the market

g Operate facility

1. He can't find good quality feed! (import?) – the sector too small. Local Feed producers don't produce to specifications
2. He's can't find staff! Very few people are aware of jobs in Aquaculture. He has to advertise extensively
3. He hires untrained / unskilled as they aren't enough trained kob farmers out there – especially PDIs, women and youth (requirement by Govt especially for grants)
4. He has to pay high salaries for trained and skilled management employees
5. The trains his employees over 2-3 years before they are able to execute without supervision but some of them leave to bigger farms as they pay more
6. Mr Semoli does not get assistance or information on good farming practices. He tries his best

h Harvest product

1. Poor quality fry and seed – smaller and less quality fish
2. Disease has wiped out 50% - he could not access assistance for disease management and control. There was no vet in KZN, the vet could only come 1 week later, by which time half his fishes died
3. With high cost of operations (Electricity costs, Training and Staff turnover), his farm-gate is higher than market price

i Sell or market produce

1. Local restaurants are not interested as the fish does not meet the required standards.
2. They do not know who else to approach. Other farmers sell on their own.
3. Retailers are not interested due to the small-scale
4. They try to sell to the community who are not interested as they are not fish consumers
5. Mrs Nkosi and Mrs Sibiya sell their fish 100km from their farm in a small town on the side of the street. They get a fine from the government officers as they assume it is wild caught fish.

j Grow the business

1. The Venture Capitalist cuts his losses and pulls out
2. Mrs Sibiya decides to quit fish farming due to her bad experience.
3. Mrs Nkosi can't pay the loans and goes bankrupt

Approach taken by the Lab to identify and address key challenges

Issues can be categorised based on the approach required for resolution:

1 Scale and Project specific issues:

- Issues that are linked to the size of the sector due to low production volumes leading to high costs of production and challenges in value chain development (quantity).
- Issues that relate specifically to an operation i.e. issues that unique by farm, business and / or species. These issues require a specific project-based approach for resolution (quality)

2 Enabler issues:

- Issues that relate to the ability of businesses to operate within the sector. These are cross-cutting issues, which impact the sector as a whole and require a common approach

SOURCE: Aquaculture Lab

The Aquaculture sector in South Africa has incredible potential and yet remains at a small-scale leading to many challenges for producers

1 **Four project-related issues that contribute to or result from the sub-scale nature of the sector in SA**

Insufficient primary infrastructure in rural areas Aquaculture in rural areas are challenged by infrastructure limitations

Research & Development is fragmented
The R&D activities are not coordinated and do not align with industries' needs.

Lack of access to quality inputs
Quality seed, fingerlings and feed are critical to the health and quality of the products. Due to the limited scale, there are a limited number of input suppliers to the sector, which also increases the cost of production.

Lack of inclusivity
Limited participation by youth, women and black people in the sector . Currently, the sector averages less than 10% PDI participation at management levels

SOURCE: Aquaculture Lab

In addition, there are four supply-side and demand-side issues that hinder the growth of the sector

2 **Four enabler issues** that relate to the ability of the projects to operate. These are cross-cutting issues which impact the sector as a whole

Unsupportive legislative and regulatory environment
The current **regulation and governance systems** do not cater for the Aquaculture sector specifically. In addition, delivery systems are slow and costly. Compliance burden serves as a barrier to the sector

Limited access to land and sea space as the Aquaculture sector is often excluded from spatial planning. In a user conflict situation, Aquaculture does not often get priority

Access to finance
The Aquaculture faces **difficulty in accessing finance** as it is not well understood by financial institutions and deemed to be a high risk sector. The sector requires high capital investment and a long payback period

Small pool of skills and knowledge in the sector. Due to the emerging nature of the sector there is limited extension support (specialised state extension officers, veterinarians and researchers). There is also little awareness of Aquaculture farming as a career and education option.

Limited accessibility of markets due to undeveloped value chains. In addition, limited market intelligence has led to fragmented marketing efforts. Hence, production and projects planning are not based on demand

SOURCE: Aquaculture Lab

Contents

Approach taken by the lab to develop solutions to identified issues

Solutions to the issues were developed that supported the following key objectives:

1 Four project-related issues that contribute to or result from the sub-scale nature of the sector in SA

Solution: Select and fast-track implementation of projects that will increase the scale of the sector. In addition, establish mechanisms to address project-specific issues as part of the project implementation.

2 Four key enablers were identified as blockages to the sector's growth

Solution: Beyond the project specific mechanisms established, there are cross-cutting issues that will be addressed by sector wide initiatives. The enablers are critical to the success and sustainability of projects implemented

Economies of Scale

Project quantity and quality:

1

Enablers

2

- **Regula-tions**
- **Funding**
- **Market access**
- **Skills and knowledge**

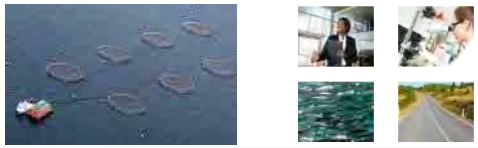
SOURCE: Aquaculture Lab

Solutions developed focuses on priority initiatives that support the implementation of the of projects

★ Quick wins

1 ★ Selection and Implementation of 24 Projects

- Phased implementation of projects selected
- Resolution of Project specific Issues within project implementation plans



Regulations

2 Legislative reform to promote Aquaculture development

3 ★ Establishment of an Inter-Departmental Authorisations Committee

4 Establishment of a globally recognised monitoring and certification system

Funding

5 ★ Establishment of an Aquaculture Development Fund

Skills

6 Capacity building for support services

Market

7 ★ Coordination of industry-wide marketing efforts

8 Preferential Procurement of Aquaculture products

SOURCE: Aquaculture Lab

Scenario: With implementation of Operation Phakisa initiatives, Mrs. Nkosi and Mrs. Sibiya will be able to expand their farm

(#) Related initiatives

They tried to gather information on current production and market status *(volume, production systems, markets, etc.)* 6 7

1. They approach DAFF and AquaSA and obtain a published ***Aquaculture Yearbook*** and the ***Profile of the Aquaculture Industry in South Africa*** with all the information on production, markets and suitable systems to be used in SA
2. The publications also contain information on relevant Departments to be contacted when starting a fish farm .
3. They develop a Business Plan and obtain technical advice from government

They approach financial institutions for funding 5

1. The access a grant funding from ADF to ensure all pre-operations requirements are met and a loan funding for operations.

They approach government for authorisations relevant to fish farming 2 3 6

1. They are guided by the Aquaculture Act on compliance to legal requirements.
2. They obtain letter of consent to utilise the state land, EIA's, Water Use license and permit to operate a fish farm from the IAC. After 180 days they obtained permissions to start the construction.
3. Government extension officers provide them with technical support

Starts operations! Mrs Nkosi and Mrs Sibiya believe that their dream came true.

.

Mrs Nkosi and Mrs Sibiya harvest their first batch of fish. 4 7

1. Government extension officers advice on compliance with existing farming standards enabling access to markets
2. Government fish vets are available to provide support in the event of disease.
3. The growth rate was high and fish was healthy. Farm gate price is R25 per kilogram and profit margins are acceptable .

Mrs Nkosi and Mrs Sibiya sells their fish 7 7

1. They work with the AquaSA to access markets.
2. They sell to a retailer and Government procure a portion within the Preferential Procurement scheme

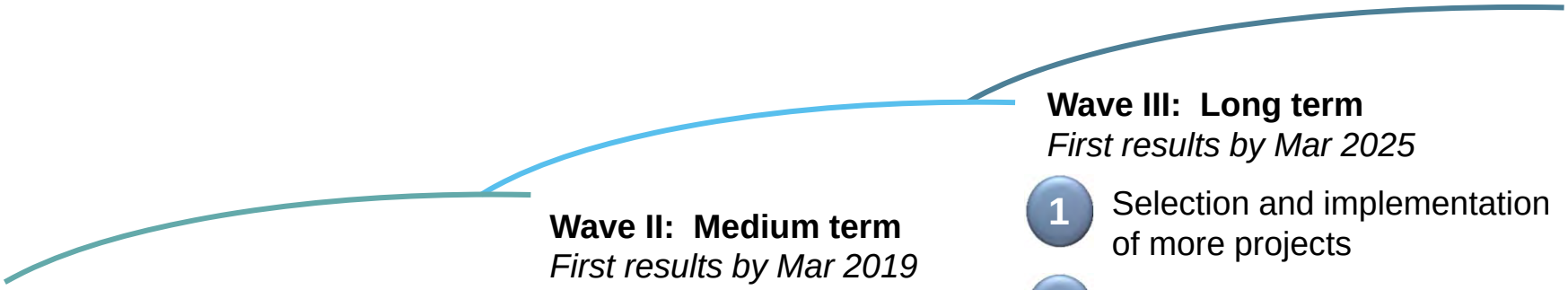
Mrs Nkosi and Mrs Sibiya pay off their loan and they expand their farm. 1 5

6

1. Mrs Nkosi and Mrs Sibiya ensures their new recruits obtain Aquaculture vocational training in order to be capacitated in Aquaculture operations .

Specific initiatives have been identified as quick wins

★ Quick wins



Wave I: Quick win
First results by Mar 2016

- 1a ★ Selection and implementation of initial 9 projects
- 3 ★ Establishment of an Inter-Departmental Authorisations Committee
- 5 ★ Establishment of an Aquaculture Development Fund
- 7 ★ Coordination of industry-wide marketing efforts

Wave II: Medium term
First results by Mar 2019

- 1b Selection and implementation of 15 additional projects
- 2 Legislative reform to promote Aquaculture development
- 4 Establishment of a globally recognised monitoring and certification system
- 6 Capacity building for support services
- 8 Preferential Procurement of Aquaculture products

Wave III: Long term
First results by Mar 2025

- 1 Selection and implementation of more projects
- 6 Capacity building for entire sector

SOURCE: Aquaculture Lab

Initiatives have been ranked in priority and budget requirements have been specified

Detailed in following pages

★ Quick wins

Highest priority

		Budget required R(mn)
1 ★	Selection and implementation of 24 Projects	2,867 (Govt=1,165)
3 ★	Establishment of an Inter-Departmental Authorisations Committee	2
5 ★	Establishment of an Aquaculture Development Fund	6
7 ★	Coordination of industry-wide marketing efforts	55
2	Legislative reform to promote Aquaculture development	11,7
4	Establishment of a globally recognised monitoring and certification system	27
6	Capacity building for support services	208
8	Preferential Procurement of Aquaculture products	7

SOURCE: Aquaculture Lab

1 Implementation of Phase 1 Projects

★ Quick wins

The challenges presented by the production scale of the sector will be addressed by the expedited implementation of Aquaculture projects, which will serve as a catalyst to the growth of the sector.

24 Aquaculture projects were selected based on criteria developed in the lab. These projects were categorised into 3 phases based on their readiness to start implementation and operate, as follows:

Year 1 → Year 2 → Year 3

★ ***Phase 1:*** *Implementation of **9** "Ready-To-Operate" projects **in 6 to 12 months***

Phase 2: *Implementation of **6** "Ready-To-Operate" projects **in 12 to 24 months***

Phase 3: *Implementation of **12** projects in 2 to 4 years (more planning required)*

Achievement by 2019:
Production: 17, 644 tonnes
Revenue: R1,641 mn
New Jobs: 2,584

New Jobs	337		513		585		603		546	
	2015		2016		2017		2018		2019	
	Tonnes	R(mn)	Tonnes	R(mn)	Tonnes	R(mn)	Tonnes	R(mn)	Tonnes	R(mn)
Phase 1	1,198	333	1,640	405	2,187	458	3669	599	**4,541**	**700**
Phase 2	300	62	365	72	1,325	146	3,931	348	**6,478**	**594**
Phase 3	923	56	1,393	70	2605	107	3,795	176	**6625**	**345**

1 The approach to project selection was guided by 3 principles, and 4 evaluation criteria

Evaluation Criteria

1. Market attractiveness of species
2. Production readiness of project (time to stock fish for commercial production)
3. Planned scale of project
4. Availability of funding for project

Principles

- Geographical diversity of Aquaculture activity
  - Participation by all coastal provinces
  - Freshwater species evaluated to include inland provinces
- Transformation
  - All considered projects should agree to strive towards the targets set forward in the Agri-BEE Charter
- Sustainable growth through balancing new projects and expansion projects

Market attractiveness of species	Projects deemed more commercially viable if they focused on a species with high demand in the market (local / international)
Production readiness	Projects that are closer to production would allow the sector to meet its 5-year growth aspiration
Planned scale	Projects that maximise economies of scale would contribute significantly to lab aspiration of 20,000 tonnes by 2019
Availability of funding	Projects deemed more commercially viable if they can show evidence of committed investors

22 production facilities[1]

2 dedicated commercial hatcheries

1 Some production facilities include hatchery, processing plants as well Abalone Ranching operations at different locations

SOURCE: Aquaculture Lab

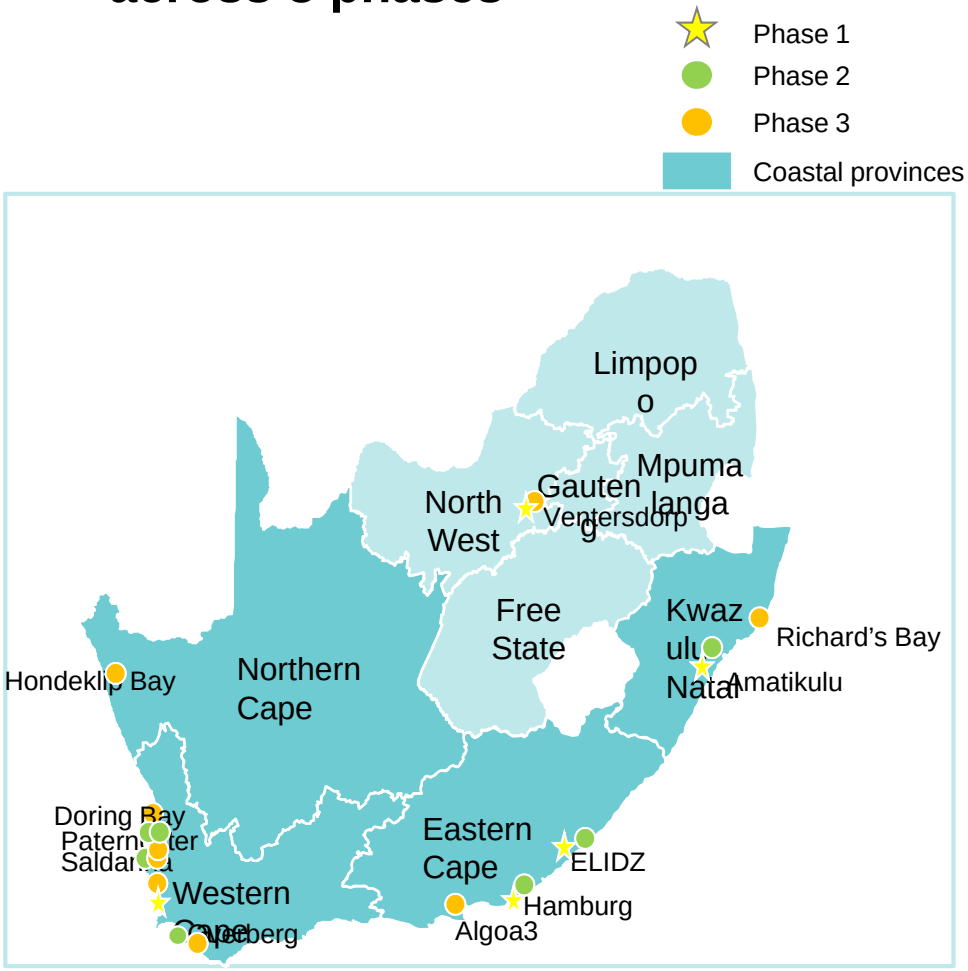
The lab devised an objective, fact-based approach to identify high impact projects

	Identified potential projects	Developed sequencing criteria	Collected data	Evaluated and scored projects	Sequenced projects
Activities	▪ Conducted discussions with industry stakeholders (private sector, public sector, academia) to identify potential projects Operation Phakisa could accelerate	▪ Developed guiding principles and detailed fact-based sequencing criteria	▪ Collected in-depth data from project owners to evaluate commercial viability of projects ▪ Conducted on-site visits (led by DAFF) to validate data collected	▪ Scored projects on a scale of 1-5 for each evaluation criteria ▪ Verified that each project met all guiding principles ▪ Projects which did not provide data were categorized as “future business opportunities”	▪ Sequenced all scored projects into 3 phases based on score and time taken to start operation
Outputs	▪ List of >60 potential Aquaculture projects across the value chain (marine and freshwater)	▪ List of guiding principles ▪ List of evaluation criteria	▪ Project data ▪ Site data ▪ Species-specific market data	▪ List of ~30 scored projects ▪ List of ~30 future business opportunities	▪ 8 Phase 1 projects ▪ 4 Phase 2 projects ▪ 12 Phase 3 projects

Evaluation criteria: collaboratively developed considering key success factors for high-impact projects

	Rationale	Measurement proxy	Weighting
Market attractiveness of species	▪ Projects deemed more commercially viable if they focused on a species with high demand in the market (local / international)	▪ A composite score that considered: – Presence of existing local, regional, and international clients – Level of demand in market – Product diversity and potential value add – Level of private sector investment	30%
Production readiness	▪ Projects that are closer to production would allow the sector to meet its 5-year growth aspiration	▪ Time to stock for maximum commercial capacity	30%
Planned scale	▪ Projects that maximize economies of scale would contribute significantly to lab aspiration of 20,000 tonnes by 2019	▪ Scale multiple (planned additional tonnage divided by minimum tonnage for commercially viable production)	20%
Availability of funding	▪ Projects deemed more commercially viable if they can show evidence of committed investors	▪ Committed financing as a percentage of total investment required for project execution	20%

1 24 projects have been selected and sequenced for implementation across 3 phases



Project/enterprise	
Hatchery expansion- Paternoster- Oyster	★
Expansion- East London IDZ- Kob	★
Expansion- Hamburg cluster- Oyster	★
Expansion - Ventersdorp- Catfish	★
Expansion - Roman Bay – Abalone	★
Expansion - Abagold	★
Expansion - HIK Abalone	★
Expansion - Amatikulu - Ornamentals	★
Expansion - Wild Coast Abalone - Abalone	★
New- Wild coast abalone ranching cluster - abalone	●
New- Hamburg cluster - Kob	●
New- Saldanha Viking Cages - Trout and Salmon	●
New - Amatikulu - Kob	●
Expansion - Marine Growers - Abalone	●
Expansion - Doring Bay Abalone - Abalone	●
Expansion- Saldanha Blue Ocean Mussels - Mussel	●
Expansion- Saldanha Bay Oyster Company - Oyster	●
New- Saldanha Southern Atlantic Sea Cages - Salmon	●
New- Algoa Bay Sea Cage Farming - Yellowtail	●
New- Richards Bay Sea Cage Farming - Dusky Kob	●
New- Diamond Coast Abalone Ranching - Abalone	●
ADZ-Ventersdorp - Catfish	●
Expansion - DST Abalone Hatchery	●
Expansion - Jacobsbaai Sea Products - Abalone	●

SOURCE: Aquaculture Lab

1 By establishing R&D Centre of Excellence's in collaboration with species-specific industry associations benefits the sector as a whole

Key stake-holders

- Co-ordinating body between industry and academia prioritising research
- Access funding from various sourced
- Pilot infrastructure and resources

Outcome

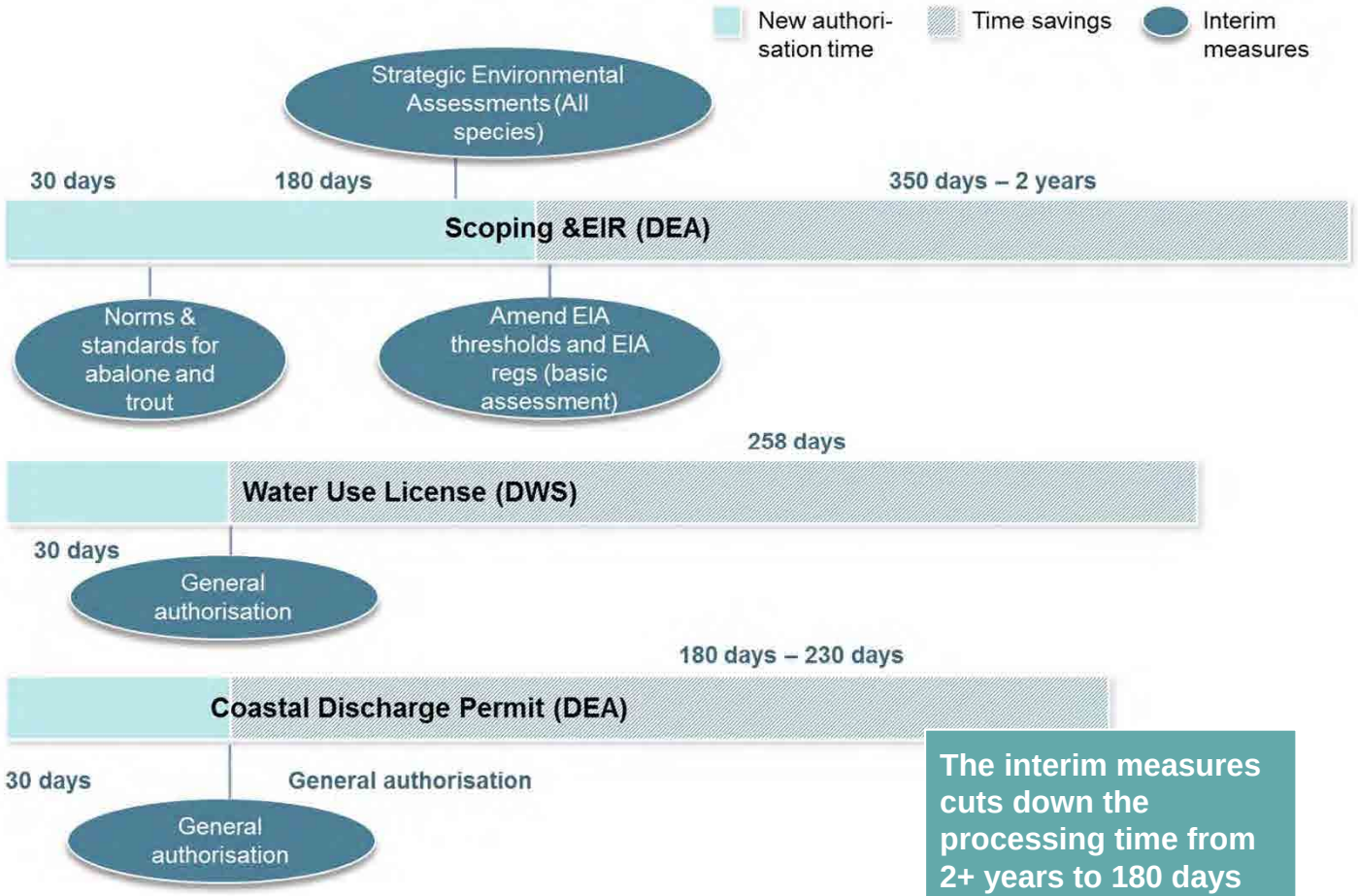
- Ensures that the research is locally relevant resulting in a globally competitive industry
- Potential areas of improvement include:
  - Specific diets
  - Traceability – food safety
  - Marketing – export programme

2 Legislative reform to promote Aquaculture development

The Aquaculture sector requires a specific Aquaculture Act to govern the sector's activities effectively. This Act will require several years to implement and as such, interim measures have been developed in order to address some of the issues currently faced.

Requirements:

- Include freshwater and marine Aquaculture under one Act
- Define Aquaculture as agriculture and not fisheries
- Have a development focus
- Zone areas specifically for Aquaculture
- Promote PDIs and new entrants into the sector
- Reduce fragmented authorisations, promote synchronised authorisations and enable a "One-stop shop"



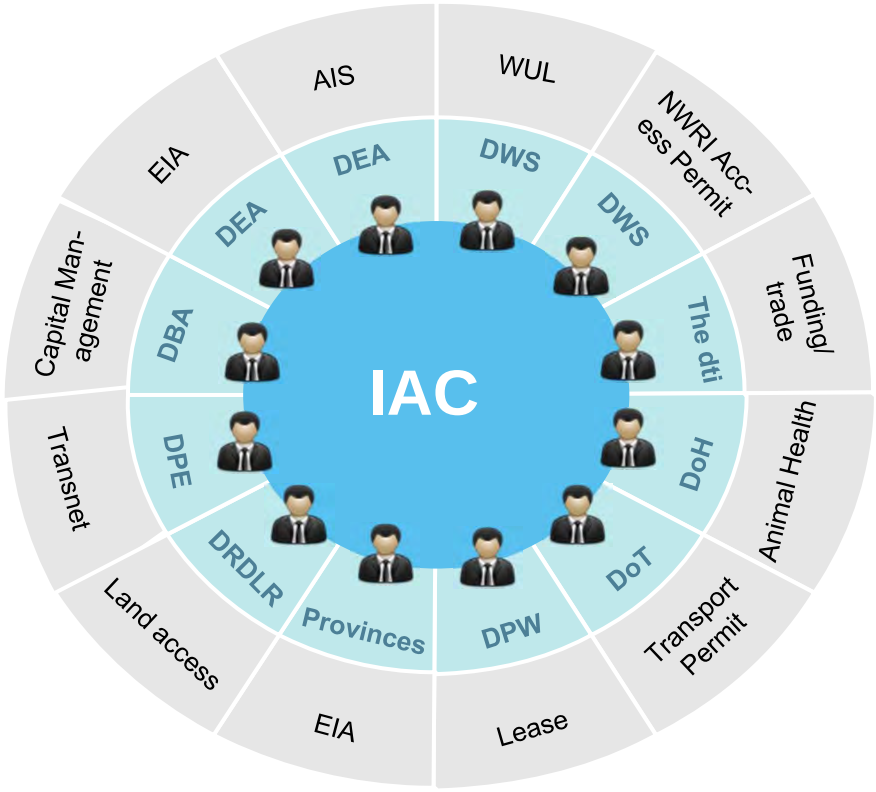
SOURCE: Aquaculture Lab

2 The following legislative amendment requirements were identified

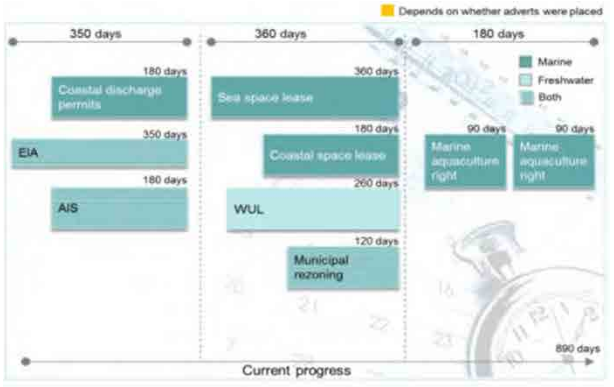
Amendment	Impact
Increase minimum and maximum EIA thresholds for Aquaculture (NEMA 107 of 1998)	Small farms would fall under the EIA threshold and other farms would be restricted to a Basic Assessment which is simpler and shorter than a full Scoping &EIR.
Resolve concerns around additional permitting layer under the Alien and Invasive Species Regulations (NEMBA 10 2004)	Avoid additional permit layer and specialist study requirements on existing and new farmers
Finalize Trout and Abalone norms and standards (NEMA 107 of 1998)	Farms that fall within the scope and adhere to norms and standards would not trigger an EIA and could start in 30 days from notification
Undertake and adopt a Strategic Environmental Assessment for Land-based Aquaculture	Zone environmental less sensitive and suitable areas for Aquaculture that require minimal or no additional permits and assessments prior to authorisation
Develop a General Authorisation for freshwater water use (Water Act 36 of1998)	In line with the Norms and Standards, avoid the need to apply for the Water Use Licence which can take 6 months to a couple of years by adhering to General Authorisation which covers the requirements of Aquaculture farms (flow rate, water quality, etc..)
Develop a General Authorisation for coastal discharge permits (ICM Act 24 of 2008)	In line with the Norms and Standards, avoid the need to apply for the Discharge Permit e which can take 4 to 8 months by developing General Authorisation which covers the requirements of low risk Aquaculture effluent (flow rate, water quality, etc..)
Increase tenure of MLRA rights (18 of 1998), for marine Aquaculture rights holders, from 1 to 2 years and combine permits where possible	Reduce the administration cost to the sector to apply for various different permits annually.
Dti Industrial procurement policy framework	Ensure that local farmed fish is included in the policy.
Develop an Aquaculture Act	Foster a One-Stop-Shop approach, include freshwater Aquaculture, promote PDI entrants, have development focus, zone areas for Aquaculture……

3 Establishment of an Inter-Departmental Authorisations Committee

Currently, there is an uncoordinated approach to processing of applications for Aquaculture, approvals of which can take up to **830 days**. The establishment of the Inter-Departmental Authorisations Committee ("IAC") aims to co-ordinate applications and approvals, with the expectation of reducing processing time to **240 -360 days**.



Representation at the IAC by all relevant departments



890 days to 240/360 days!

SOURCE: Aquaculture Lab

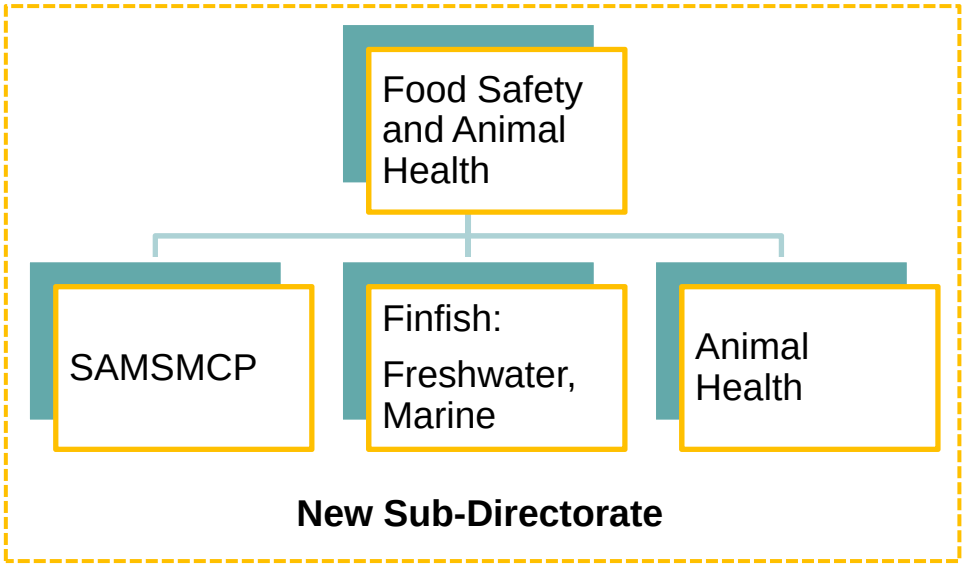
4 Establishment of a globally recognised monitoring and certification system

Importing nations require health assurances that the products they receive are safe for consumption. SA needs an internationally recognised health assurance system to grow the markets that can be accessed

Some programmes are already operating, but are under-resourced

At present there is no co-ordinated health assurance system in place. This impacts on exports, as producers cannot expand out of existing markets. A dedicated sub-directorate would:

- Open new markets
- Ensure safe products for export/sale
- Reduce bureaucracy
- Provide a quick response to new regulations
- Help develop Aquaculture



Effective programmes would unlock at least 9 NEW markets for South African Aquaculture products!

SOURCE: Aquaculture Lab

5 Establishment of an Aquaculture Development Fund

The Aquaculture sector faces difficulty in accessing finance as the sector is small and not well understood by financing institutions.

Funding only required for new projects

Where ADF will operate

ADF aims to fast-track growth, while meeting transformation objectives

- Funding pool to assist end-to-end Aquaculture projects
- Coordinates funding from various government departments and DFIs through an MoC
- Initial proposal for ADF to be managed by Land Bank/DFI
- Key focus of ADF to drive transformation / inclusivity by providing new entrants with access to funding in pre-production phase

ADF will receive financing requests from projects and disburse funds to projects via Land Bank

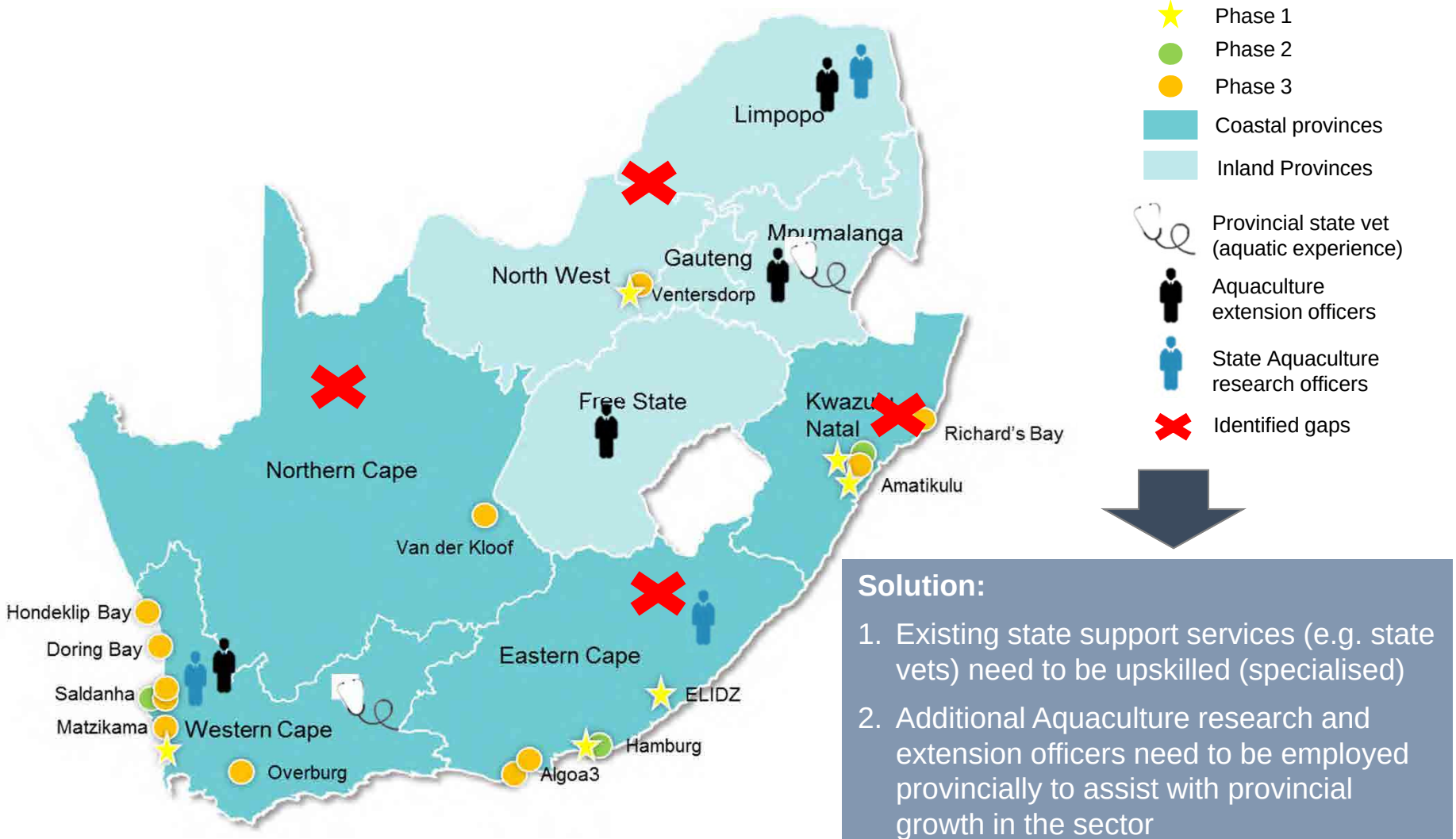
ADF involvement and leadership

Project lifecycle	Phase 1	Phase 2	Phase 3	Phase 4
Description of support provided	▪ Develop concept, consult technical advisors	▪ Apply for permits, approvals etc.. ▪ Business plans	▪ Acquire and set-up primary and supporting infrastructure	▪ Begin production
The "Business as usual" support/ funders	▪ DAFF ▪ the dti	▪ DST/the dti ▪ NAMC ▪ SMME department ▪ Seda	▪ The dti ▪ NEF ▪ IDC/ ▪ NYDA ▪ Private investors ▪ other	→

SOURCE: Aquaculture Lab

6 Capacity building for support services

Aquaculture as an emerging sector has almost no dedicated and specialised extension officers, state vets specialised in Aquaculture and research officers at a provincial level



Solution:

1. Existing state support services (e.g. state vets) need to be upskilled (specialised)
2. Additional Aquaculture research and extension officers need to be employed provincially to assist with provincial growth in the sector

SOURCE: Aquaculture Lab

1 By establishing R&D Centre of Excellence's in collaboration with species-specific industry associations benefits the sector as a whole

Key stake-holders

- Co-ordinating body between industry and academia prioritising research
- Access funding from various sourced
- Pilot infrastructure and resources

Outcome

- Ensures that the research is locally relevant resulting in a globally competitive industry
- Potential areas of improvement include:
  - Specific diets
  - Traceability – food safety
  - Marketing – export programme

7 Coordination of industry-wide marketing efforts

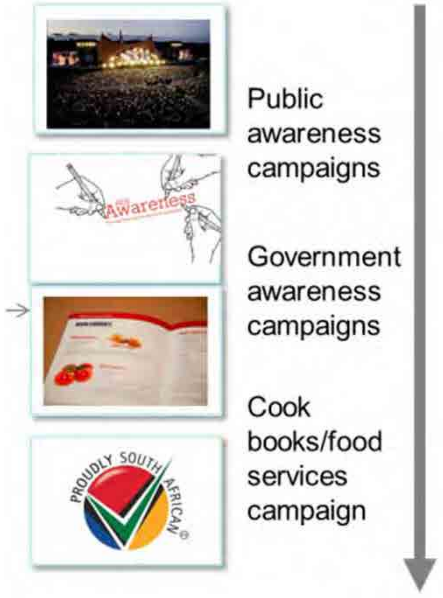
The players in the Aquaculture sector have limited access and awareness of markets for Aquaculture products due to the silo based approach towards marketing. In addition, there is little awareness and hence local consumption of Aquaculture products in South Africa.

4 sub-initiatives were developed to address these issues, which will be executed through an industry organisation, Aquaculture South Africa mandated to coordinate industry-wide marketing initiatives

(a) Improve and coordinate market intelligence initiatives through a centralised system

Inclusive Market Intelligence Information System

(b) Improve domestic access to markets. Coordinated SSAS marketing will open new markets



(c) Strengthen emerging producers through increasing value chain ownership and product development through co-owned processing facilities

Evaluate a set of standards the retailers suggest as a minimum for their common interests

Negotiate with both retailers & producers to adopt the standards

The availability of good quality value-for-money products increases to consumers

(d) Promote responsible, fair regulation and environmental certification

SOURCE: Aquaculture Lab

8 Preferential Procurement of Aquaculture products

Preferential procurement can create local markets, while contributing towards transformation and food security in South Africa

This initiative aims to sell Aquaculture products to government institutions to:

(a) increase sales and stimulate local demand

(b) create market awareness for Aquaculture products

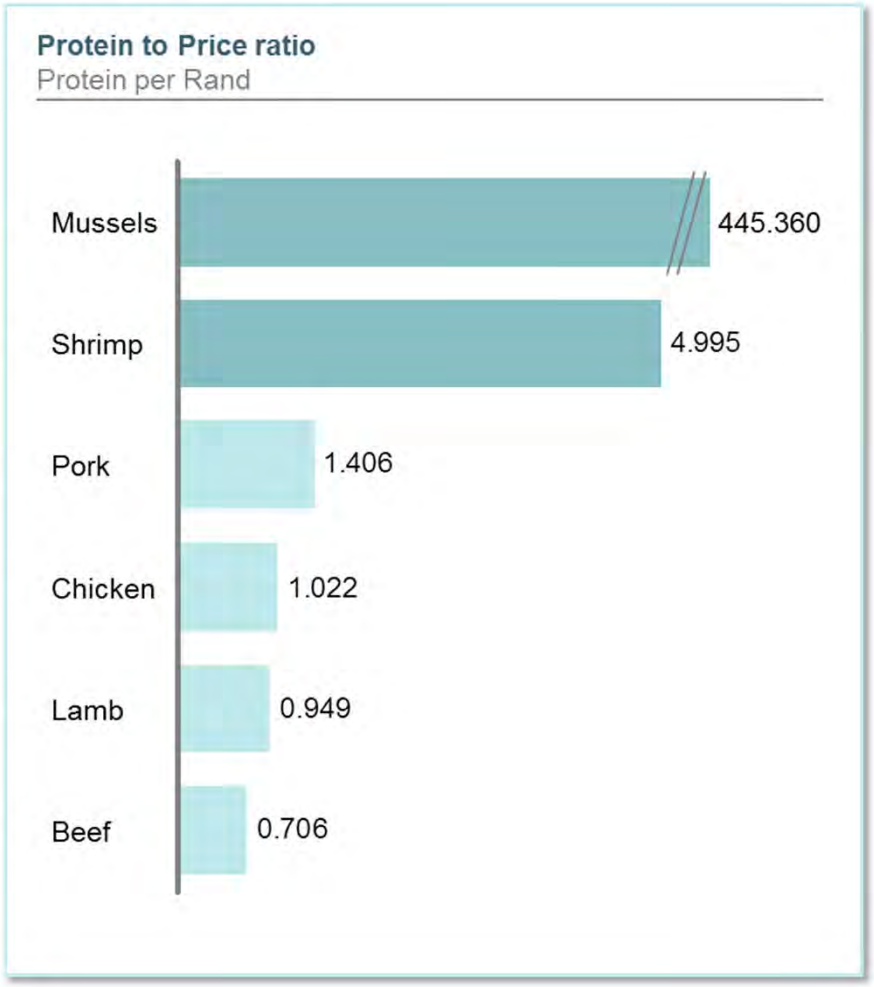
Fish is a cheap way for me to eat healthily (29% agree)

I support the adding of Omega 3 to fish to make it more healthy (49%)

Consumers know the nutritional value, and price, of seafood

Fish is healthier than meat or chicken (71% agree)

When fish is too expensive, 28% buy something else instead e.g. meat or poultry. and 32% buy a cheaper type of fish



SOURCE: Aquaculture Lab

Budget Required

Total budget

All figures in R mn

#	Initiative	2014/15		2015/16		2016/17- 2018/19		Total	
1	Selection and implementation of 24 projects	458	Govt: 127 Non Govt: 332	633	Govt: 288 Non Govt: 334	1,901	Govt: 750 Non Govt: 1,151	2,868	Govt: 1,165 Non Govt: 1,702
2	Legislative reform to promote Aquaculture development	5.6	Govt: 5.6 Non Govt: 0	5.5	Govt: 4 Non Govt: 0	2.4	Govt: 2 Non Govt: 0	11.7	Govt: 11.7 Non Govt: 0
3	Establishment of an Inter-Departmental Authorisations Committee	2	Govt: 2 Non Govt: 0	0	Govt: 0 Non Govt: 0	0	Govt: 0 Non Govt: 0	2	Govt: 2 Non Govt: 0
4	Establishment of a globally recognised monitoring and certification system	3	Govt: 3 Non Govt: 0	6	Govt: 6 Non Govt: 0	18	Govt: 18 Non Govt: 0	27	Govt: 27 Non Govt: 0
5	Establishment of an Aquaculture Development Fund	0.2	Govt: 0.2 Non Govt: 0	1	Govt: 1 Non Govt: 0	4	Govt: 4 Non Govt: 0	6	Govt: 6 Non Govt: 0
6	Capacity building for support services	19	Govt: 19 NA	39	Govt: 39 NA	161	Govt: 161 NA	208	Govt: 208 NA
7	Coordination of industry-wide marketing efforts	17	Govt: 17 Non Govt: 0	6	Govt: 6 Non Govt: 0	32	Govt: 30 Non Govt: 2	55	Govt: 53 Non Govt: 2
8	Preferential Procurement of Aquaculture products	2	Govt: 2 Non Govt: 0	4	Govt: 4 Non Govt: 0	1	Govt: 1 Non Govt: 0	7	Govt: 7 Non Govt: 0
TOTAL		**512**	Govt: 179 Non Govt: 333	**696**	Govt: 209 Non Govt: 275	**2,119**	Govt: 966 Non Govt: 1,153	**3,183**	Govt: 1,479 Non Govt: 1,704

SOURCE: Aquaculture Lab – Budget template

Aquaculture Lab Outcomes – Headline KPIs and Targets

#	KPI description	Baseline	Target				
			2014/15	2015/16	2016/17	2017/18	2018/19
Overall Key Performance Indicator of the aquaculture sector							
1	Production tonnage	4,000 tonnes	6,421	7,398	10,117	15,595	21,644
2	Jobs	2,227 jobs	2,564	3,077	3,662	4,265	4,811
3	Additional contribution to GDP	R 0.67 bn	R 0.4 bn	R 0.5 bn	R 0.7 bn	R 1.1 bn	R 1.6 bn
Initiative 1: Selection and implementation of 24 projects							
1	Production tonnage	1,923 tonnes	2,421	3,398	6,117	11,315	17, 644
2	Jobs	762	1099	1612	2,197	2800	3346
3	Revenue	R 0.3 bn	R 0.4 bn	R 0.5 bn	R 0.7 bn	R 1.1 bn	R 1.6 bn
Initiative 2: Legislative Reform							
1	Number of amendments	3	4	5	3		
Initiative 3: Inter-Departmental Authorisations Committee							
1	Number of applications processed within 12 months	NA		100%	100%	100%	100%
Initiative 4: Globally recognised monitoring and certification system							
1	Farms included in monitoring programme	NA			50%	75%	100%
2	Increase in safe products (tonnage)				20%	40%	60%

Aquaculture Lab Outcomes – Headline KPIs and Targets

#	KPI description	Baseline	Target				
			2014/15	2015/16	2016/17	2017/18	2018/19
Initiative 5: Aquaculture Development Fund							
1	Number of projects funded	ADEP funded projects			5	10	20
2	% projects funded with PDI ownership					25%	25%
Initiative 6: Capacity building for support services *(Refer to DHET)*							
Initiative 7: Industry-wide marketing efforts							
1	% increase in share of shelf space	*Current level unknown*	2%	4%	4%	8%	10%
Initiative 8: Preferential Procurement							
1	% of Aquaculture products procured by Government	NA				5%	10%

Results Schedule

The lab has identified opportunities to achieve tangible results within the next 12 months

	Initiative	Impact	Timing of impact
1 Projects	Implement 9 projects in EC, NW, KZN, and WC provinces	▪ Produce 950 tonnes and 1.9 M spat, contribute R 247M to aquaculture sector revenue, create 227 jobs	Dec 2015
2 Enablers	Raise EIA thresholds	▪ Reduce time for EIA completion from 2 years to 8 months, which is a 66% reduction in time	Dec 2015
	Establish inter-governmental authorisation committee and implement norms & standards	▪ Reduction of overall authorization time from up to 2 years to between 1-8 months *(with new regulations)*	Dec 2015
	Increase tenure of MLRA from 1 to 2 years	▪ Stabilize the Aquaculture sector and improve investor confidence	Dec 2015
	Establish an Aquaculture Development Fund	▪ "One pot" (>R500 M) for government funding, currently distributed across >5 departments[1]	Dec 2015
	Establish Aquaculture SA industry body	▪ 70-80 buyer relationships created with local processing facilities, retailers, and food service companies ▪ Comprehensive market database covering 100% of SA Aquaculture production	Dec 2015

Even during the lab process, several issues faced by the industry were resolved

✓ Done
~ In Progress

Key Outcomes from the Aquaculture Lab:		Impact on sector:
✓ Proposal to reconsider increasing the EIA thresholds legislation / regulation	DEA	Time and cost savings since the majority of farms would trigger a Basic Assessment (8-10months), instead of a full Scoping EIR (14-24 months)
✓ Exemption from listing of trout as an Alien and Invasive Species legislation / regulation where it is already established	DEA	Growth of the trout faming section through expansions and establishment of new farms in areas they already occur, since the would not need to undertake an additional risk assessment and apply for an additional permit
~ Access to state land for projects and zones in Phakisa	DPW DLDLR	The security of tenure will increase investor confidence through improved turnaround times for lease approvals and duration of leases
~ Access to sea space and duration of leases	TNPA	Investor confidence through improved turnaround times for lease approvals and duration of leases

Contents

The Aquaculture sector in South Africa has incredible potential and yet remains at a small-scale leading to many challenges for producers

1 Four project-related issues that contribute to or result from the sub-scale nature of the sector in SA

Insufficient primary infrastructure in rural areas Aquaculture in rural areas are challenged by infrastructure limitations

Research & Development is fragmented
The R&D activities are not coordinated and do not align with industries' needs.

Lack of access to quality inputs
Quality seed, fingerlings and feed are critical to the health and quality of the products. Due to the limited scale, there are a limited number of input suppliers to the sector, which also increases the cost of production.

Lack of inclusivity
Limited participation by youth, women and black people in the sector . Currently, the sector averages less than 10% PDI participation at management levels

SOURCE: Aquaculture Lab

In addition, there are four supply-side and demand-side issues that hinder the growth of the sector

2 **Four enabler issues** that relate to the ability of the projects to operate. These are cross-cutting issues which impact the sector as a whole

Unsupportive legislative and regulatory environment
The current **regulation and governance systems** do not cater for the Aquaculture sector specifically. In addition, delivery systems are slow and costly. Compliance burden serves as a barrier to the sector

Limited access to land and sea space as the Aquaculture sector is often excluded from spatial planning. In a user conflict situation, Aquaculture does not often get priority

Access to finance
The Aquaculture faces **difficulty in accessing finance** as it is not well understood by financial institutions and deemed to be a high risk sector. The sector requires high capital investment and a long payback period

Small pool of skills and knowledge in the sector. Due to the emerging nature of the sector there is limited extension support (specialised state extension officers, veterinarians and researchers). There is also little awareness of Aquaculture farming as a career and education option.

Limited accessibility of markets due to undeveloped value chains. In addition, limited market intelligence has led to fragmented marketing efforts. Hence, production and projects planning are not based on demand

SOURCE: Aquaculture Lab

The Aquaculture sector in South Africa has incredible potential and yet remains at a small-scale leading to many challenges for producers

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Research & Development is fragmented. The R&D activities are not coordinated and do not align with industries' needs.

Insufficient primary infrastructure in rural areas. Aquaculture in rural areas are challenged by infrastructure limitations

The Aquaculture business requires funding and skilled personnel. Most PDIs and youth don't have access to finance, the funding requirements are favourable towards PDIs. The PDI youths are not aware of Aquaculture as a career and business opportunity. As with most economic sectors PDIs done have access to the required natural resources such as land and water.

SOURCE: Aquaculture Lab

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Access to seed: Current abalone and trout farms have onsite hatcheries that produce seed for their own operations. However, small-scale farmers cannot afford to have their own hatcheries. They largely rely on seed imports which are typically high cost, of inconsistent quality, and not always available.
Access to feed: Feed available in SA is typically of low quality, as specialised equipment required is unavailable. The aquaculture sector is currently too small to warrant dedicated aquaculture feed facilities, and relies on facilities that mainly produce animal feed.

SOURCE: Aquaculture Lab

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Currently, aquaculture research is undertaken and/or funded by various government departments (e.g., DAFF, DST, the dti, DWS, Provincial Departments of Agriculture), universities, and industry associations. These efforts are not well-coordinated, with outputs not well-utilised. Further, this leads to duplicative efforts and funding. Another challenge, is a lack of experienced / skilled personnel to conduct research across the value chain. R&D infrastructure / facilities are also inadequate, with only 2 marine research facilities in SA.

SOURCE: Aquaculture Lab

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Insufficient primary infrastructure in rural areas. Aquaculture in rural areas are challenged by infrastructure limitations

Aquaculture has potential to contribute towards rural livelihoods and economy, however the challenge is that in some of the rural areas there basic infrastructure in sufficient e.g. roads, electricity, airports, harbours or slip ways. Some the secondary infrastructure needed in rural areas is hatcheries, water extraction systems, reservoirs, ponds

SOURCE: Aquaculture Lab

In addition, there are various supply-side and demand-side enablers that influence the growth of the sector

2 **Four enabler issues were identified.** These issues relates to the ability of the projects to operate. It is cross-cutting Issue, which impacts the sector as a whole

Unsupportive legislative and regulatory environment
The current **regulation and governance systems** do not cater for the Aquaculture sector specifically. In addition, delivery systems are slow and costly. Compliance burden serves as a barrier to the sector

Limited access to land and sea space as the Aquaculture sector is often excluded from spatial planning. In a user conflict situation, Aquaculture does not often get priority

Regulation and governance systems: Currently there is no standalone legislation that governs the Aquaculture sector. Aquaculture is regulated through other pieces of legislation (>30) that are for other activities (e.g., MLRA for fishing, Animal Disease Act for animals, NEMA for EIA / AIS). The legislations are administered by different government departments and there is no co-ordination. The process often take several years and is very expensive. In the process investors become discouraged and invest in other enterprises.

Access to land and sea space: To undertake Aquaculture one requires access to sea water/space, freshwater resources or land. Currently there are limited suitable sea based areas for Aquaculture and these leads to competition other users e.g. recreation , tourism, mining real estate development

SOURCE: Aquaculture Lab

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Small pool of skills and knowledge in the sector. Due to the emerging nature of the sector there is limited extension support (specialised state extension officers, veterinarians and researchers). There is also little awareness of Aquaculture farming as a career and education option.

Aquaculture is a knowledge and technology driven sector that requires a diversity of skills. Some of the skills required include fish veterinarians, fish biologists, oceanographers, chemists, economists, engineers, artisans, environmentalists, researchers. Since the sector is still fairly new, only three universities in SA offer courses on Aquaculture. Further, there are no diploma courses that include Aquaculture in the curriculum

SOURCE: Aquaculture Lab

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Access to finance
The Aquaculture faces difficulty in accessing finance as it is not well understood by financial institutions and deemed to be a high risk sector. The sector requires high capital investment and a long payback period

The sector is capital intensive and takes time to recover investments. The sector is also new which means that there is no proven track record; only abalone and trout farming have been established as commercially viable sub-sectors. However, even abalone farms face this issue; it takes at least 3 years to grow abalone to market-size and generate profits, while most financial institutions require loan repayment to begin as soon as funds are released. Financial institutions also require collateral or guarantee which most new entrants do not have access to.

SOURCE: Aquaculture Lab

In addition, there are various supply-side and demand-side enablers that influence the growth of the sector

2 **Four enabler issues were identified.** These issues relates to the ability of the projects to operate. It is cross-cutting Issue, which impacts the sector as a whole

Limited accessibility of markets due to undeveloped value chains. In addition, limited market intelligence has led to fragmented marketing efforts. Hence, production and projects planning are not based on demand

Current production levels in aquaculture are insufficient to meet local and international market demand. SA imports thousands of tons from other countries to close the gap. Fish consumption in SA is about 8 kg per person per year, well below the global average of 18 kg per person per year. Although demand exists, supply chain infrastructure to bring products to market is of poor quality, and not widely accessible. Another challenge is the heavy reliance of the South African aquaculture sector (i.e., mainly abalone exports) on the risky Chinese market.

SOURCE: Aquaculture Lab

Contents

Approach taken by the lab to develop solutions to identified issues

Solutions to the issues were developed that supported the following key objectives:

1 **Four project-related issues that contribute to or result from the sub-scale nature of the sector in SA**

Solution: Select and fast-track implementation of projects that will increase the scale of the sector. In addition, establish mechanisms to address project-specific issues as part of the project implementation.

2 **Four key enablers were identified as blockages to the sector's growth**

Solution: Beyond the project specific mechanisms established, there are cross-cutting issues that will be addressed by sector wide initiatives. The enablers are critical to the success and sustainability of projects implemented

Economies of Scale

Project quantity and quality:

1

Enablers

2

- **Regula-tions**
- **Funding**
- **Market access**
- **Skills and knowledge**

SOURCE: Aquaculture Lab

Solutions developed focused on prioritised projects' needs

★ Quick wins

Solutions developed focuses on priority initiatives that support the implementation of the of projects

1 Selection and Implementation of 24 Projects

- Phased implementation of projects selected
- Resolution of Project specific Issues within project implementation plans

Regulations:

2 Legislative reform to promote Aquaculture development

3 ★ Establishment of an Inter-Departmental Authorisations Committee

4 Establishment of a globally recognised monitoring and certification system

Funding:

5 ★ Establishment of an Aquaculture Development Fund

Skills:

6 Capacity building for support services

Market:

7 ★ Coordination of industry-wide marketing efforts

8 Preferential Procurement of Aquaculture products

SOURCE: Aquaculture Lab

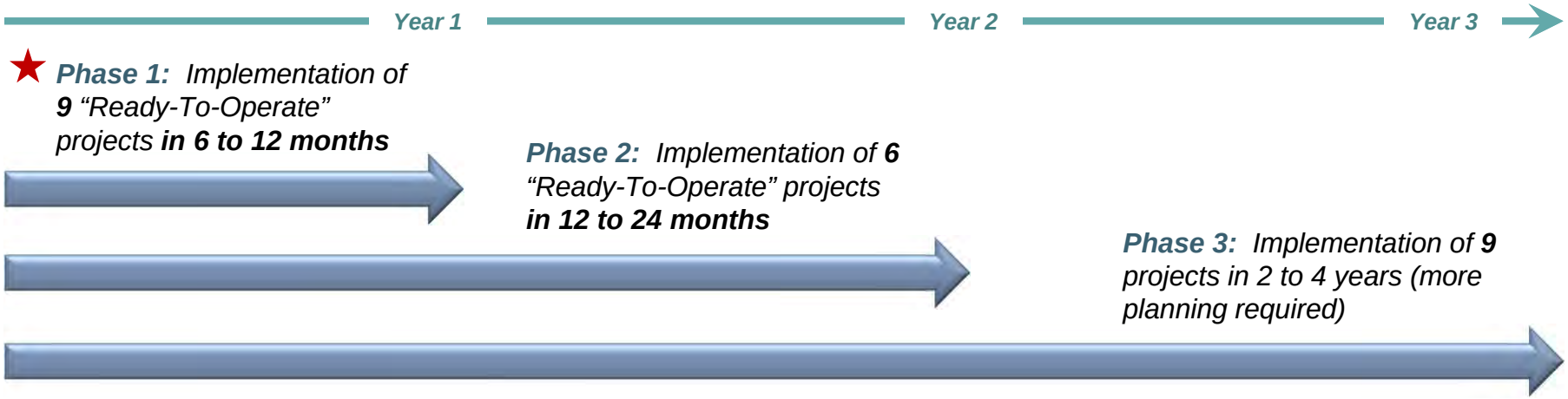
Contents

24 projects were selected to be implemented as part of Operation Phakisa

The challenges presented by the production scale of the sector is addressed by expediting the implementation of Aquaculture projects, which will serve as catalyst for the growth of the sector.

★ Quick wins

24 Aquaculture projects were selected based on criteria developed in the lab. These projects were categorised into 3 phases based on their readiness to start implementation and operate, as follows:



Achieving economies of scale will facilitate the development of value chains by species. This will enable existing and new farmers to:

- Access improved technology and production systems at a lower cost (sourced locally). Growing demand will lead to presence of locally produced systems and technology
- Access good quality feed and seed at affordable prices. As the sector achieves a minimum scale (species specific), local producers will view input production as a viable business proposition
- Access to trained human resource as growth in the sector will facilitate increased interest in the acquisition of skills in the area
- Improve ability to negotiate price with buyers as an increased scale will provide producers improved bargaining power

SOURCE: Aquaculture Lab

The approach to project selection was guided by 3 principles, and 4 evaluation criteria

Evaluation Criteria

1. Market attractiveness of species
2. Production readiness of project (time to stock fish for commercial production)
3. Planned scale of project
4. Availability of funding for project

Principles

- Geographical diversity of Aquaculture activity
  - Participation by all coastal provinces
  - Freshwater species evaluated to include inland provinces
- Transformation
  - All considered projects should agree to strive towards the targets set forward in the Agri-BEE Charter
- Sustainable growth through balancing new projects and expansion projects

Market attractiveness of species	▪ Projects deemed more commercially viable if they focused on a species with high demand in the market (local / international)
Production readiness	▪ Projects that are closer to production would allow the sector to meet its 5-year growth aspiration
Planned scale	▪ Projects that maximise economies of scale would contribute significantly to lab aspiration of 20,000 tonnes by 2019
Availability of funding	▪ Projects deemed more commercially viable if they can show evidence of committed investors

22 production facilities[1]

2 dedicated commercial hatcheries

1 1 Some production facilities include hatchery, processing plants as well Abalone Ranching operations at different locations

SOURCE: Aquaculture Lab

The lab devised an objective, fact-based approach to identify high impact projects

	Identified potential projects	Developed sequencing criteria	Collected data	Evaluated and scored projects	Sequenced projects
Activities	▪ Conducted discussions with industry stakeholders (private sector, public sector, academia) to identify potential projects Operation Phakisa could accelerate	▪ Developed guiding principles and detailed fact-based sequencing criteria	▪ Collected in-depth data from project owners to evaluate commercial viability of projects ▪ Conducted on-site visits (led by DAFF) to validate data collected	▪ Scored projects on a scale of 1-5 for each evaluation criteria ▪ Verified that each project met all guiding principles ▪ Projects which did not provide data were categorized as “future business opportunities”	▪ Sequenced all scored projects into 3 phases based on score and time taken to start operation
Outputs	▪ List of >60 potential Aquaculture projects across the value chain (marine and freshwater)	▪ List of guiding principles ▪ List of evaluation criteria	▪ Project data ▪ Site data ▪ Species-specific market data	▪ List of ~30 scored projects ▪ List of ~30 future business opportunities	▪ 8 Phase 1 projects ▪ 4 Phase 2 projects ▪ 12 Phase 3 projects

SOURCE: Aquaculture Lab

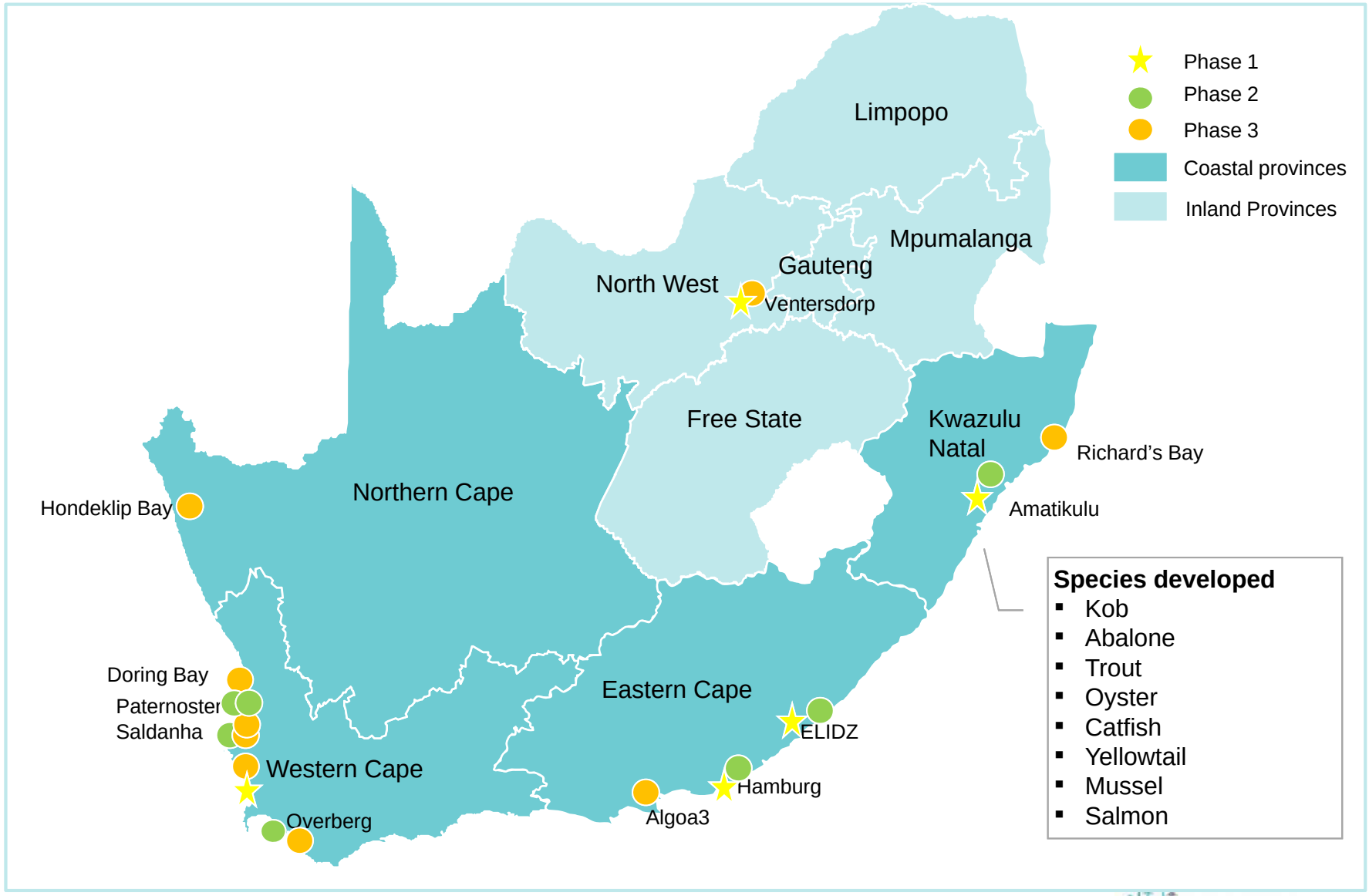
Evaluation criteria were collaboratively developed considering key success factors for high-impact projects

	Rationale	Measurement proxy	Weighting
Market attractive-ness of species	▪ Projects deemed more commercially viable if they focused on a species with high demand in the market (local / international)	▪ A composite score that considered: – Presence of existing local, regional, and international clients – Level of demand in market – Product diversity and potential value add – Level of private sector investment	30%
Production readiness	▪ Projects that are closer to production would allow the sector to meet its 5-year growth aspiration	▪ Time to stock for maximum commercial capacity	30%
Planned scale	▪ Projects that maximize economies of scale would contribute significantly to lab aspiration of 20,000 tonnes by 2019	▪ Scale multiple (planned additional tonnage divided by minimum tonnage for commercially viable production)	20%
Availability of funding	▪ Projects deemed more commercially viable if they can show evidence of committed investors	▪ Committed financing as a percentage of total investment required for project execution	20%

SOURCE: Aquaculture Lab

Phakisa will focus on:
ansion, and 11 new projects
ating projects in **5 provinces**

projects driving sustainable growth across South Africa



SOURCE: Aquaculture Lab

Project list (1/3)

PROJECTED

	Project name	Province	Species	Tonnage	Value Rm	Jobs
Phase 1	Hatchery expansion- Paternoster- Oyster	WC	Oysters	15 mn	7	17
	Expansion – Oceanwise – Kob	EC	Kob	2 500	163	500
	Expansion – Hamburg cluster – Oyster	EC	Oysters	98	5	11
	Expansion – Ventersdorp – Catfish	NW	Catfish	500	21	21
	Expansion – Roman Bay Abalone Farm – Abalone	WC	Abalone	349	122	62
	Expansion – Abagold-Abalone	WC	Abalone	499	175	95
	Expansion – HIK Abalone	WC	Abalone	295	103	171
	Expansion – Wild Coast Abalone – Abalone	WC	Abalone	300	105	140
	Expansion – Amatikulu – Ornamentals	KZN	Ornamentals	1.4 m	1.4	65

Total Achievement by 2019:
Production: 17,644 tonnes; 17mn spat; 1.4mn Ornamentals
Revenue: R1,641 mn
New Jobs: 2,584

SOURCE: Aquaculture Lab

Project list (2/3)

PROJECTED

	Project name	Province	Species	Tonnage	Value Rm	Jobs
Phase 2	New-Amatikulu – Kob	KZN	Kob	1 322	79	160
	New – Hamburg Cluster – Kob	EC	Kob	600	41	280
	New – Saldanha Viking Cages – Trout	WC	Trout	2 000	109	15
	New – Saldanha Viking Cages – Salmon	WC	Salmon	2 000	171	15
	New – Marine Growers – Abalone	WC	Abalone	184	64	150
	New – Doring Bay Abalone – Abalone	WC	Abalone	100	35	120
	New – Wild Coast Abalone Ranching – Abalone	WC	Abalone	272	95	194
Phase 3	Expansion – Saldanha Blue Ocean Mussels – Mussel	WC	Mussels	600	7	223
	New hatchery- Hondeklip Bay- Abalone	NC	Abalone	2.4 mn	3.6	16

Total Achievement by 2019:
Production: 17,644 tonnes; 17mn spat; 1.4mn Ornamentals
Revenue: R1,641 mn
New Jobs: 2,584

SOURCE: Aquaculture Lab

Project list (3/3)

PROJECTED

	Project name	Province	Species	Tonnage	Value Rm	Jobs
Phase 3	Expansion – Saldanha Bay Oyster Company – Oyster	WC	Oysters	800	40	80
	New – Saldanha Southern Atlantic Sea Cages – Salmon	WC	Salmon	1 200	103	12
	New – Algoa Bay Sea Cage Farming – Yellowtail	EC	Yellowtail	850	43	36
	New – Richards Bay Sea Cage Farming – Dusky Kob	KZN	Kob	550	30	36
	New – Diamond Coast Abalone Ranching – Abalone	NC	Abalone	0	0	18
	Expansion – Jacobsbaai Sea Products – Trout	NC	Trout	125	44	35
	New – ADZ Ventersdorp – Catfish	NW	Catfish	2 500	75	112

Total Achievement by 2019:
Production: 17,644 tonnes; 17mn spat; 1.4mn Ornamentals
Revenue: R1,641 mn
New Jobs: 2,584

SOURCE: Aquaculture Lab

Phase 1: implementation of 9 “ready-to-operate” projects in 6-12 months

The contribution to the Aquaculture lab aspirational targets from the projects in phase 1 is **R702 mn**, **4,541 tonnes** and **1082 jobs** by 2019

★ Quick wins

★

Jobs	232		234		241		245		130	
	2015		**2016**		**2017**		**2018**		**2019**	
	Tonnes	R(mn)	Tonnes	R(mn)	Tonnes	R(mn)	Tonnes	R(mn)	Tonnes	R(mn)
Abalone	898	314	1018	356	1116	391	1278	447	1443	505
Kob	250	16	480	31	800	52	2,000	130	2,500	163
Catfish	50	2	100	4	180	8	300	13	500	21
Oyster[1]	-	0	42	5	91	8	91	10	98	12
Orna-mentals[2]	-	-	-	1	-	1	-	1	-	1

1 Tonnage does not include 15 mn spat (Paternoster Hatchery); value included (Paternoster Hatchery)
2 Ornamental tonnage not represented in table as ornamentals are recorded as units
SOURCE: Aquaculture Lab

Phase 2: implementation of 6 “ready-to-operate” projects in 12-24 months

The contribution to the Aquaculture lab aspirational targets from the projects in phase 2 is **R 594 mn**, **6,478 tonnes** (excluding hatchery and ornamentals) and **934 jobs** by 2019

Jobs	65		138		212		222		297	
	2015		**2016**		**2017**		**2018**		**2019**	
	Tonnes	R(mn)	Tonnes	R(mn)	Tonnes	R(mn)	Tonnes	R(mn)	Tonnes	R(mn)
Trout	100	5	1 100	5	2 000	27	1000	54	2 000	109
Salmon	50	4	100	8	500	43	1000	86	2000	171
Kob	-	-	-	-	130	8	1,622	100	1,922	120
Abalone	150	62	165	72	195	153	309	447	556	714

SOURCE: Aquaculture Lab

Phase 3: Implementation of 9 projects in 2 to 4 years[1]

The contribution to the Aquaculture lab aspirational targets from the projects in phase 3 is **R345 mn**, **6, 625 tonnes** and **568 jobs** by 2019

Jobs	40		141		132		136		119	
	2015		**2016**		**2017**		**2018**		**2019**	
	Tonnes	R(mn)	Tonnes	R(mn)	Tonnes	R(mn)	Tonnes	R(mn)	Tonnes	R(mn)
Salmon	0	0	0	0	0	0	240	21	1200	103
Abalone	63	22	63	22	85	30	105	39	125	47
Catfish	450	14	900	27	1,320	40	1,700	51	2,500	75
Yellowtail	-	-	10	1	50	3	300	15	850	43
Oyster	400	20	400	20	500	25	600	30	800	40
Kob	-	-	10	1	50	3	250	14	550	30
Mussels	10	1	10	0	600	7	600	7	600	7

1 Requires ongoing detailed planning

SOURCE: Aquaculture Lab

Future Business Opportunities

1. Qholora Abalone and Kob ADZ (EC)
2. Hamburg Abalone Stock Enhance (EC)
3. Algoa Bay ADZ (EC)
4. Marron Crayfish Farms (EC)
5. Sterkfontein Dam Trout (FS)
6. Gariep Dam Catfish and Tilapia(FS)
7. University of Limpopo Tilapia (LP)
8. Richards Bay (ADZ) (KZN)
9. Dube Trade Port (ADZ) (KZN)
10. Jozini Dam Tilapia (KZN)
11. Pongolo river ponds for Tilapia (KZN)
12. Mtunzini Fish Farm (KZN)
13. Really Useful Investments (RUI) Kleinzee (NC)
14. Port Nolloth Abalone Farm (NC)
15. Buffeljachts Abalone Farm (WC)
16. Aquafarm Development (WC)
17. West Coast Abalone (WC)
18. I&J (WC)
19. Oyster Catcher (Pty) Ltd, Saldanha (WC)
20. Oyster Catcher (Pty) Ltd, Doring Bay, Matzikama Municipality (WC)
21. Oyster Catcher (Pty) Ltd, Buffeljachts New (WC)
22. Blue Sapphire Pearls, Saldanha, WC
23. Tuna Marine Abalone (WC)
24. Aquafoods SA, Saldanha, WC
25. West Coast Aquaculture, Saldanha (WC)
26. West Coast Oyster Growers, Saldanha (WC)
27. Oesterzee Oysters, Saldanha (WC)
28. Saldanha Salmon (WC)
29. Saldanha Mussel (WC)
30. Matzikama ADZ (WC)
31. Paternoster Kob Recirculation (WC)
32. Uthando Lolwandle, Abalone cage farming cluster (WC)

These opportunities will undergo the process outlined in Section 2.3: Next Steps for selection and implementation as part of future phases

Note the above business opportunities are not limited to the list and farms associated with association will be considered i.e. Tilapia Farms (Tilapia Association of South Africa - Nationwide); Catfish Farms (Catfish Farmers Association – Nationwide) ; Trout Farms (Trout Farmers Association – Nationwide); Finfish Farms (Marine Finfish Farmers Association of South Africa– Nationwide); Oyster and Mussel farms (Shellfish Forum - Nationwide); Abalone Farms (Abalone Farmers Association of South Africa – Nationwide)

SOURCE: Aquaculture Lab

Each Operation Phakisa project has demonstrated that it plans to resolve some / all of the 4 project-specific issues in innovative ways

	Project Name	Transformation	Research & Development	Access to Primary Rural Infrastructure	Lack of Access to Quality Inputs
1	Phase 1: Expansion-Oceanwise-kob	X	X		
2	Phase 2: Expansion-Doringbaai-Abalone	X	X	X	X
3	Phase 1: Expansion-Hamburg cluster-Oyster	X	X	X	X
4	Phase 1: Expansion-Ventersdorp-Catfish	X	X	X	X
5	Phase 3: New-ADZ Ventersdorp-Catfish	X	X	X	X
6	Phase 2: New-Hamburg cluster-Kob	X	X	X	X
7	Phase 1: Expansion-Amatikulu-Ornamentals	X	X	X	X
8	Phase 2: New-Amatikulu-Kob	X	X	X	X
9	Phase 3: Expansion-Jacobsbaai Sea Products -Abalone	X			X
10	Phase 2: Expansion-Marine Growers-Abalone	X			X
11	Phase 2: New-Wild Coast Abalone Ranching-Abalone	X	X		X
12	Phase 3: New-Richards Bay Sea Cage Farming-Dusky Kob		X		
13	Phase 3: New- Diamond Coast Abalone Ranching- Abalone	X		X	
14	Phase 3: Expansion- Saldanha Bay Oyster Company- Oyster	X	X		X
15	Phase 3: Expansion- Saldanha Blue Ocean Mussels- Mussel	X			X
16	Phase 1: New –Roman Bay Abalone-Abalone	X			X
17	Phase 3: New- Algoa Bay Sea Cage Farming- Yellowtail		X		
18	Phase 2: New - Saldanha Viking Cages -Trout and Salmon	X			
19	Phase 1: Expansion-Hatchery Paternoster- Oyster			X	X
20	Phase 3: New hatchery- Hondeklip Bay- Abalone	X		X	
21	Phase 1: Expansion-Overberg HIK-Abalone	X			X
22	Phase 1: Expansion-Overberg Abagold-Abalone	X			
23	Phase 1: Expansion-Wild Coast Abalone-Abalone	X			X
24	Phase 3: New-Saldanha Southern Atlantic Sea Cages-Salmon	X			X

4 best-in-class project examples have been identified

Four project-related issues that contribute to or result from the sub-scale nature of the sector in SA

1. 

   Research & Development is fragmented. The R&D activities are not coordinated and do not align with industries' needs.

2. 

   Insufficient primary infrastructure in rural areas. Aquaculture in rural areas are challenged by infrastructure limitations

3. 

   Lack of access to quality inputs. High quality seed, fingerlings, and feed are critical to product quality. There are a limited number of local input suppliers to the sector, which also increases the cost of production.

4. 

   Limited participation by youth, women and blacks in the sector . Currently, the sector averages less than **10% PDI** participation at management levels

Examples of issue resolution within project implementation plans

- Coordinated research effort led by species-specific industry association
- Pooling together regional Aquaculture farm produce into centralized processing facilities decreases reliance on wide network of high quality primary infrastructure
- Dedicated commercial-scale local hatcheries to provide seed to regional farmers
- Restructuring to achieve management control / ownership targets
- Dedicated up-skilling programs to meet skills development target

SOURCE: Aquaculture Lab

1 Even though the sector is very small, multiple stakeholders conduct uncoordinated research

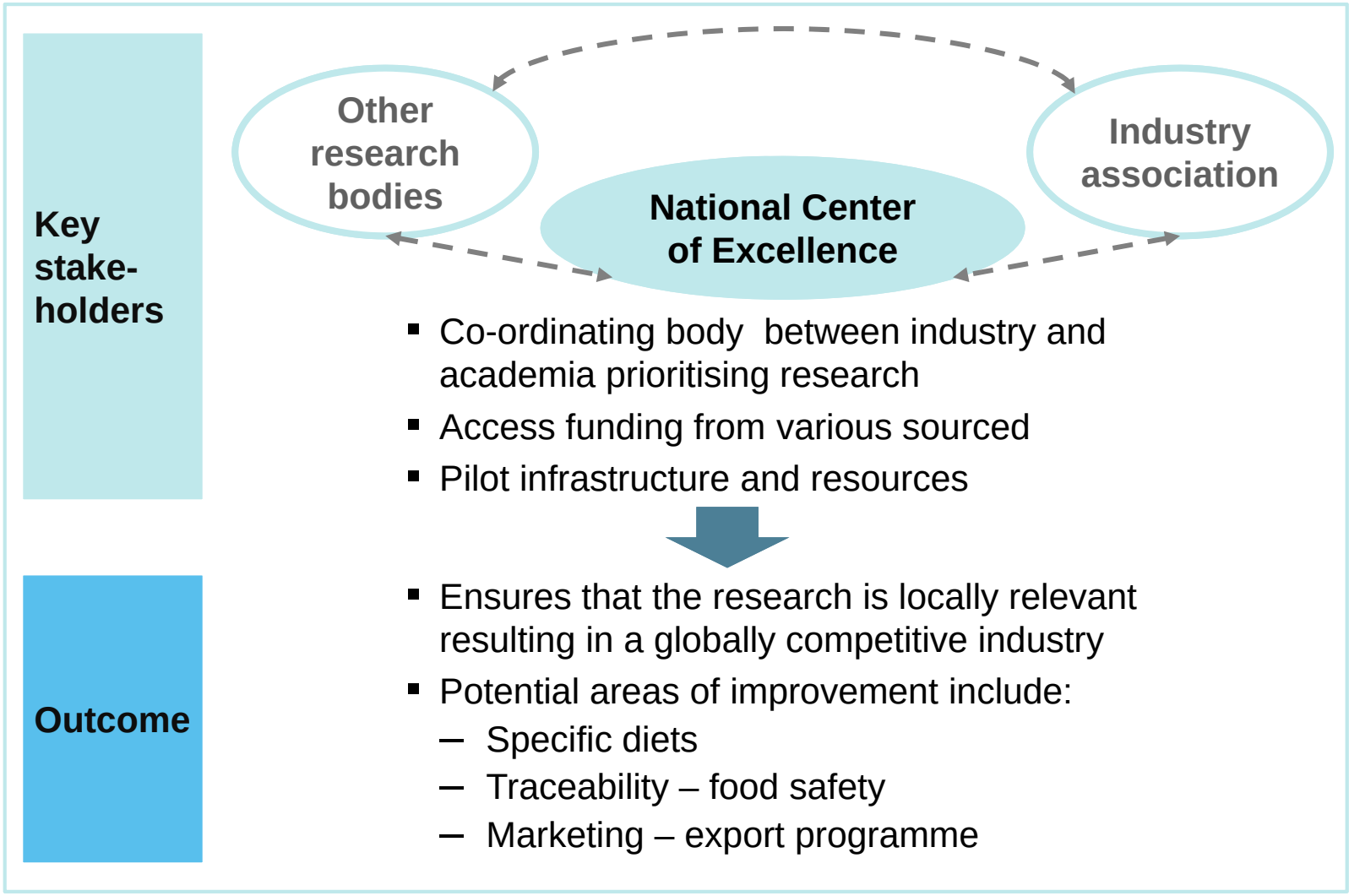
Who | Where | What

Facility	Province	Research topics
Makhathini Research Centre, Jozii	**KZN**	**Breeding of Tilapia and Catfish**
Rhodes University (Department of Fisheries & Ichthyology	EC	Specialise with training in fisheries and Aquaculture. Also conduct research in all fields of Aquaculture
University of Zululand (Empangeni)	**KZN**	**Breeding of Oreochromis mossambicus, Catfish and Tilapia rendalli.**
Rhodes University (Department of Fisheries & Ichthyology	EC	Specialise with training in fisheries and Aquaculture. Also conduct research in all fields of Aquaculture
University of Limpopo Aquaculture Research unit	**LP**	**Breeding and nutrition of catfish, tilapia, ornamentals**
University of Stellenbosch	WC	Genetics, nutrition and has Laboratory facilities.
Institute of Animal production (Elsenburg)	**WC**	**Breeding of tilapia, carp, catfish, goldfish**

Same province, same research

Potential for synergies untapped

1 By establishing R&D Centre of Excellence's in collaboration with species-specific industry associations benefits the sector as a whole



1 Centralised R&D efforts by species can drive sector growth

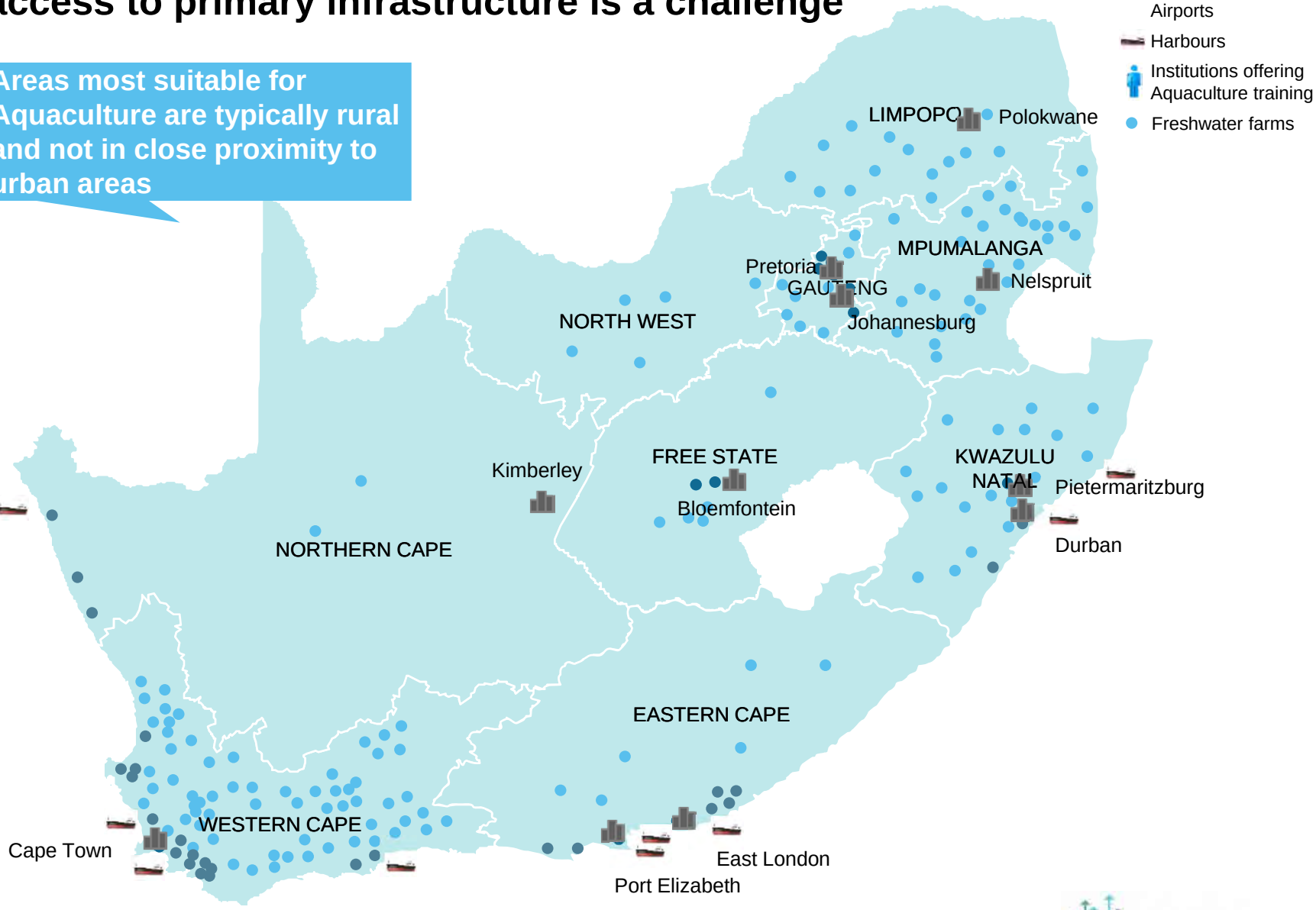
Centralised commercially focused R&D efforts

Areas of research	Description
 **Product diversification**	▪ The **development of new, high value commercial marine fish species** with low cost of production ▪ Develop sustainable import substitute species
 **Production system technology**	▪ Baseline environmental information for high value marine fin fish species
 **Identify alternative sources of inputs**	▪ Alternate electricity supply ▪ Efficient feed resources (food conversation ratios/ ultimate)
Other…	▪ Fish **health programmes** ▪ Develop a similar **model to SWIM (salmon welfare indicator model)** for SA finfish organisation ▪ Investigation into Biosecurity systems

SOURCE: Aquaculture Lab

2 Aquaculture activity primarily occurs in rural areas where access to primary infrastructure is a challenge

Areas most suitable for Aquaculture are typically rural and not in close proximity to urban areas



SOURCE: Aquaculture Lab

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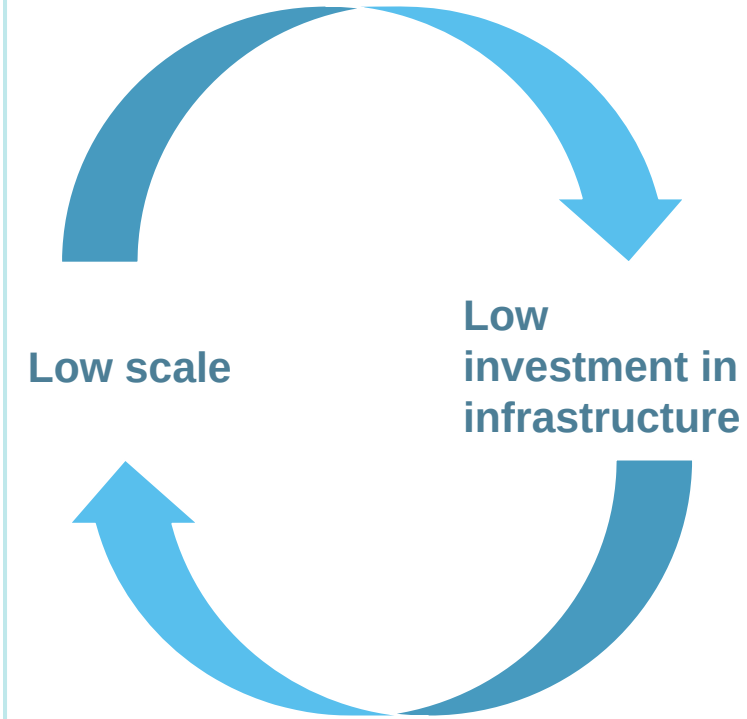
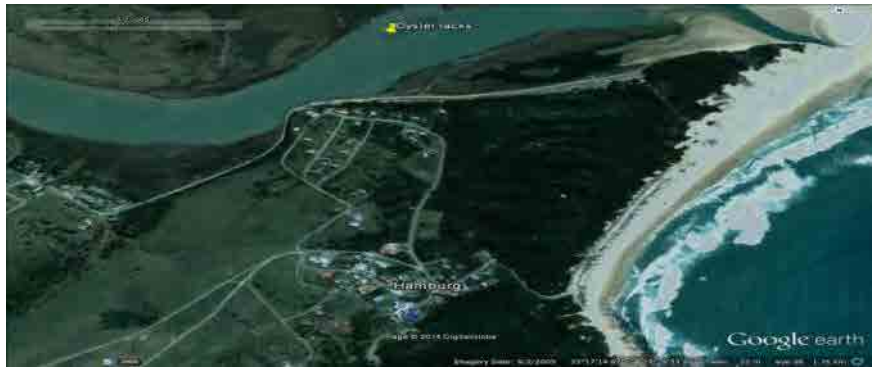
2 Small-scale of Aquaculture sector results in low levels of infrastructure development

Low scale leads to low infrastructure development, which prevents growth



Aquaculture activity in Hamburg has not resulted in significant infrastructure development in the last 10 years

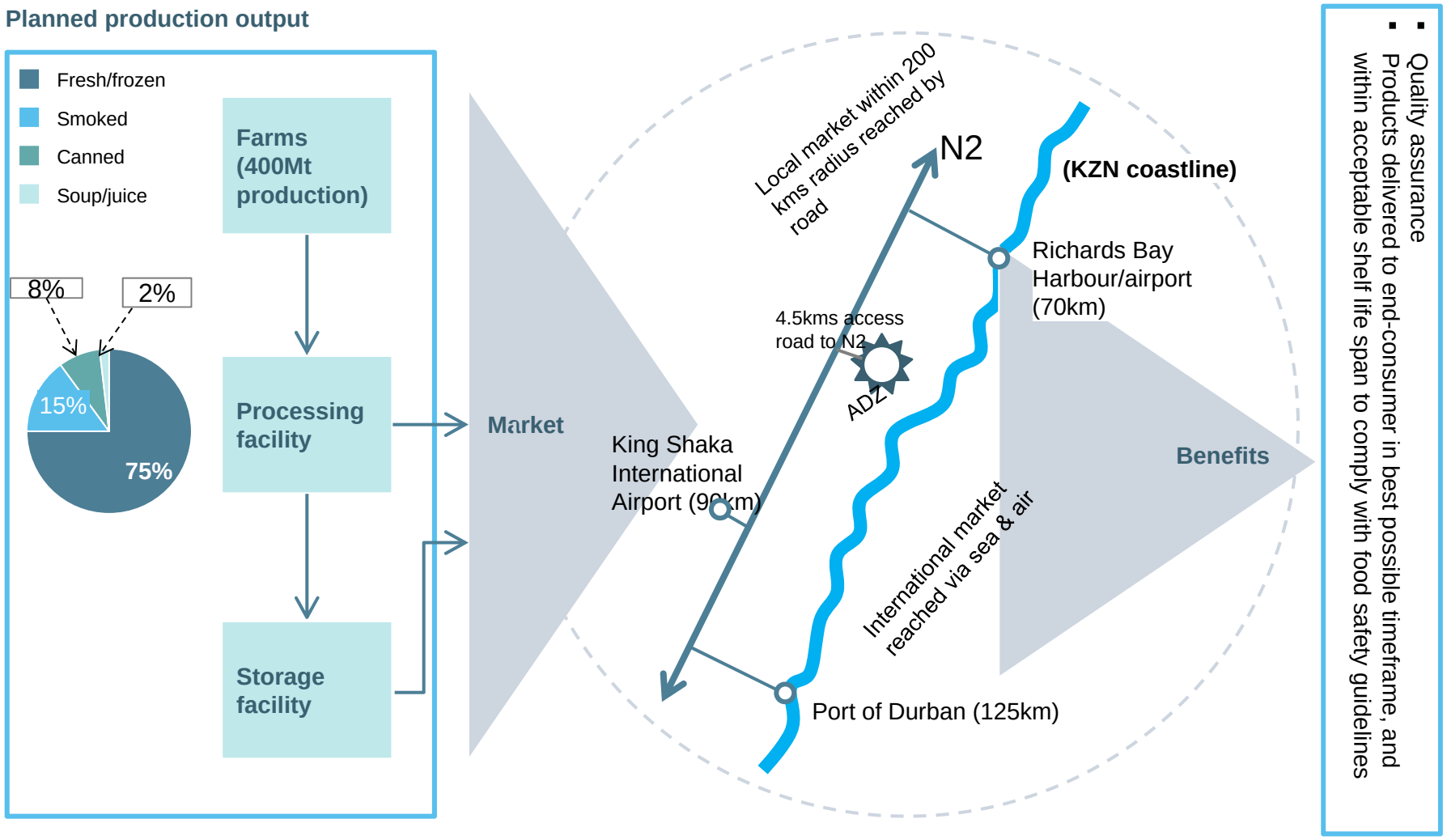
Hamburg in 2004, prior to Aquaculture investment



Hamburg in 2013, after Aquaculture investment (arrows show new infrastructure & other development

SOURCE: Aquaculture Lab

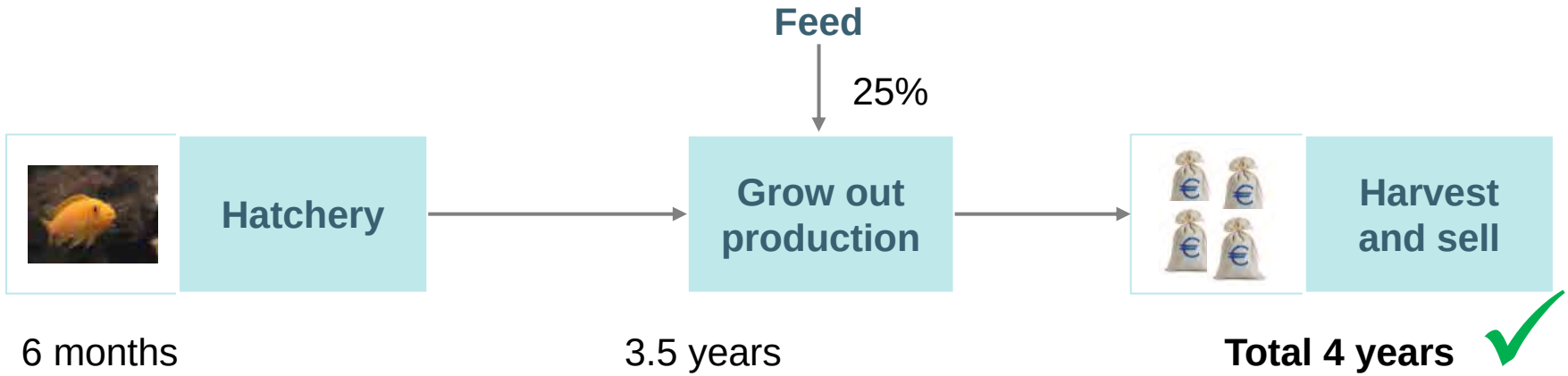
2 A project aims to mitigate primary infrastructure limitations by integrating production, processing, and storage facilities



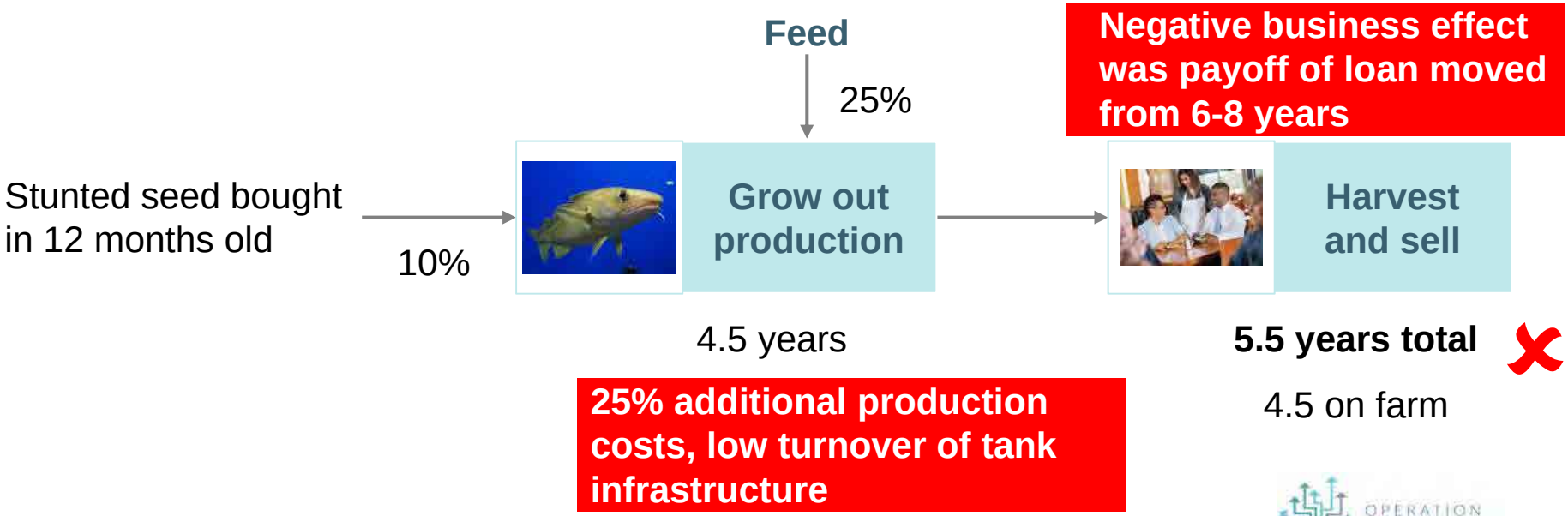
SOURCE: Aquaculture Lab

3 The quality feed and seed have a direct impact on the quality of the final product

Ideal process – Abalone farming



Adverse impact of low quality feed/seed



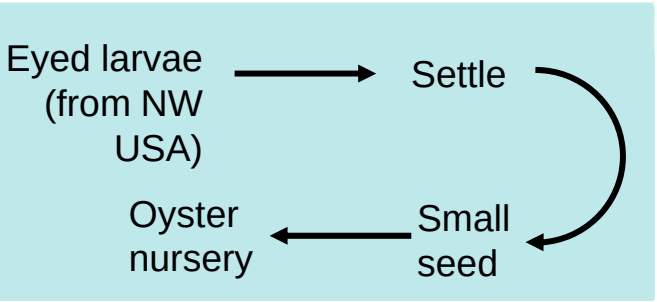
SOURCE: Aquaculture Lab

3 The net impact of local seed sourcing is positive for both sector

Imported oyster seed / spat

- Logistics
  - Namakwa Oyster nursery **750km from grow out**
  - Currently full lifecycle from egg to seed is not done

Partial lifecycle



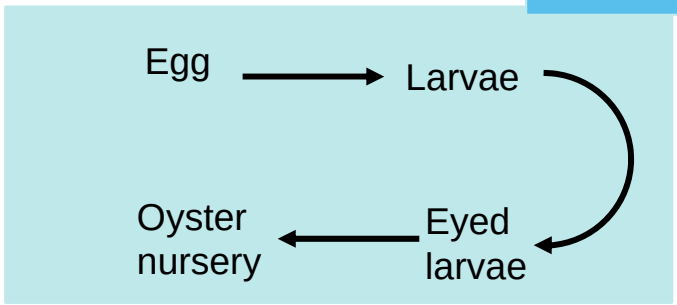
- Increased potential for introduction of exotic disease

VS.

Locally produced oyster seed / spat

- Logistics
  - Paternoster is **60km from grow out**
  - Start full lifecycle

Full lifecycle



- More secure animal health

Local production and a shorter period in transit results in higher quality product

SOURCE: Aquaculture Lab

4 Sector has high potential for socio-economic; however, several issues persist across 4 of the 7 components of Agri-BBE

Agri-BEE components	Issues that apply to the sector	Solutions
 **Ownership**	▪ Financial and skills barriers to entry are high and this limits the investment opportunities for PDI's	▪ **Solution 1:** Shareholder restructuring of the company, including employment equity scheme's, in order fulfill requirements of Agri-BEE ▪ **Solution 2:** Black-owned value chain integrated farmers with enterprise ownership in order to fulfill the requirements of Agri-BEE
 **Management control**	▪ Skills are "rare": skills-development programs are not fully matured and mentoring programs are yet to bear fruit in an industry which has been commercialised for less than 15 years.	▪ **Solution 1:** Implement in-house mentoring programs and DAFF internship programs which focusing on potential black managers with a target of 51%+ participation ▪ **Solution 2:** Management training of black enterprise owners in an "incubator" program managed by the commercial hub with a target of 100% black management participation.
 **Employment equity**	▪ Access to "preferential procurement" markets is limited as companies do not fulfill the BEE minimum criteria and products currently farmed are too expensive for school feeding schemes,	▪ **Solution 1:** Transformation of companies in order to fulfil minimum BEE criteria to supply high value species to e.g.., SAA. ▪ **Solution 2: Production of lower value species, such as tilapia and catfish for school feeding scheme's, etc..**
 **Skills development**	▪ Aquaculture-specific tertiary skills development programs are only run at two institutions ▪ No hands-on practical courses at agricultural colleges.	▪ **Solution 1:** Create interest in black graduates to undertake tertiary and post-graduate studies in Aquaculture through bursaries and graduate-mentorship programs ▪ **Solution 2:** Develop practical Aquaculture courses at agricultural colleges. Expand current training programs and skill-development programs at abalone and finfish farms

4 Targeted interventions at all levels of organisations will drive transformation

Organisation components	From	To: 6 months	To: 12-24 months	Enabled by
Board of directors	▪ 100% white male		▪ 51% BEE, of which 50% is black	▪ Redistribution of shareholder equity – CSI programs
Executive management	1. 75% PDI 2. 60% female 3. 35% black female	1. 30% PDI 2. 30% female →	1. 75% PDI 2. 60% female 3. 35% black female	1. Shareholder restructuring 2. Mentorship program
Rest of organisation				
Middle management	90% while male ← Hire externally		70% black ← Hire 70% Less externally	1. Mentorship program 2. Upskilling program 3. DAFF internship program
	10 years		**5 years**	
Supervisors	70% white male ← Hire externally		80% black ← Upskill internally 40% female black	1. Mentorship program 2. Upskilling program
	5 years		**1 year**	
Line workers	99% black ← Hire externally		99% black ← Hire externally	1. Upskilling program

Implementation risks and mitigation plan

Implementation risks

1. Difficulty in accessing financing
2. Challenges with acquiring access to land and water
3. Human conflict
4. Territorialism
5. Political interference
6. Weather conditions
7. Projects not implemented according to timeframes
8. Information not publicly available
9. Vandalism and theft
10. Fluctuating currencies/market
11. Health and safety

Mitigation plan

1. a) Ensure robust business plans developed
   b) Secure lease agreements / water user rights
2. Ensure buy-in and understanding by communities
3. Ensure that there is understanding of defining roles
4. Develop policies and procedures to deal with processes
5. a) Develop an implementable disaster management plan
   b) Ensure that the project can be insured against disasters
7. Ensure an implementable project plan
8. Develop an robust communication plan
9. A well developed security plan should be devised and implemented
10. A marketing and management plan to mitigate against fluctuations in the market
11. Have a well developed surveillance and monitoring programme

SOURCE: Aquaculture Lab

1.1 Catfish ADZ - Charter

Facilitate the revitalization and expansion of Catfish Supreme to start production that would lead into the development of a Catfish ADZ

Current Issues/Challenges

- Investors do not see catfish farming as a economically viable enterprise.
- There is no processing facility in the area to do value adding.
- Feed manufacturers in the area can't supply extruded feed to specifications.
- Consumers, retailers and wholesalers don't see catfish as a viable option.
- The current scale of production is to small to enter lucrative large markets.
- Revitalize current system and divide into different bio-secure units

Objectives/Targets

- Complete the feasibility study and business plan by Complete the feasibility study and business plan by 30/11/2014 to give to possible investors.
- Establish 1000 ton processing plant by 31/3/2015
- Establish feed supply of 3 tons/day with FCR < 1.2:1 for less than R 11 /kg by 30/11/2014.
- Secure Capex of R 23.3m by 28/2/2015.
- Secure 1st year Opex for every division to the total of R 15.4mn by 30/11/2014
- Increase existing Expatriate markets from 150t to 500t/a by expanding supply country wide.
- Develop niche market for 50t/a by implementing marketing plan.
- Increase production from current 200t/a to 500t/a within 18 months and to 3000t/a in 5 years (ADZ)

Initiative owners

- Catfish Supreme
- CAP

Sponsors

- GJC

Other key stakeholders

- Afgri
- Henwill
- TAU feed mills
- Landbank
- DAFF
- Prov Dept. of Agaric
- Local Municipality
- Food health inspectorate

Key initiatives required

- Establish production of 500t/a with integrated feed factory and processing facility
  - Secure funding.
  - Secure supply of affordable, quality feed .
  - Expand markets.
  - Revitalize current system and expand production to 500t/a.
  - Establish 1000t/a processing facility.
- Develop ADZ to 3000 ton total production with integrated processing facility

Potential Challenges

- Finding investment partners for ADZ development
- Unlocking preferential procurement potential

SOURCE: Aquaculture Lab

1.2 Saldanha Cluster– Charter

Saldanha was chosen due to successful cultivation of said species which lends itself to expansion. in the Aquaculture sector using targeted initiatives for high potential expansion projects and new projects focusing on 5 Clusters/ Saldanha

Current Issues/Challenges

1) Aquaculture not part of the spatial planning development frameworks
2) Land lease – Public works /TNPA red tape not prioritising access to the land
3) Water lease – Transnet – availability (not prioritised) + cost
4) Pollution – management of the pollution issues (multi – users of same area)
5) Portnet + public works managing the processes for different user parties
6) Neighbouring countries outcompeting SA due to subsidies and suitable sites

Objectives/Targets

- Currently 100ha are being utilised for Mussels 75 ha for Oysters; 20 ha for Salmon
- Growth to produce 3 200 tons (105hct) of oyster, 3 000 Mussels (95hct), 2000 tons salmon (60hct) / 2000 tons trout in the bay
- Facilitate water lease access with Transnet for Aquaculture by 2015
- Facilitate land lease sites with public works /portnet for Aquaculture by second quarter 2015
- Transform the industry by 50%

Initiative owners

- Western Cape Department of Agriculture
- Industry (Oysters/ Mussels/ Salmon and Trout

Sponsors

- WCDoA /DEDAT
- Development partners
- DAFF

Other key stakeholders

- Farmers
- Transnet
- TNPA
- DPW
- Private sector (funding)
- the dti
- DoH/ NRCS
- DEA

Key initiatives required

1) Expansion of existing projects
2) Facilitate meeting with senior TNPA officials during the lab w regard to lease agreements + possible pollution issues
3) Revitalisation of rafts on existing lease space
4) Identify capable new entrants
5) Support the new entrants with the development of PPP to assist with unblocking financial constraints

Potential Challenges

1) Private sector participation
2) Infrastructure
3) Competition for the existing space
4) Neighbours outcompeting SA due to subsidies and suitable sites (Market development)
5) Compliance with markets
6) Transference of lease
7) Climate change

SOURCE: Aquaculture Lab

1.3 Hamburg Cluster– Charter

Facilitate expansion projects to expedite start of production, enabling growth of overall cluster

Current Issues/Challenges
- Flow through/RAS infrastructure
- Supportive cluster infrastructure (civils)
- Greenfield nature & remote location
- 100 year floodline
- Poor connective infrastructure
- Positive ROD might not be awarded
- High cost of Recirc Aqua infrastructure
- Access to finance for start-ups and expanding operations
- Availability of fingerlings /broodstock
- High cost of capital (money, human)
- High cost of electricity (ESKOM sourced)
- Juvenile fish supply, water quality management, oxygen dosage, feed procurement & management
- Central fish processing and oxygen
- Top structures
- Technical audit oversight
- Potential conflict in land allocation for kob project

Objectives/Targets
- 280 jobs (finfish)
- 23 Jobs (oysters)
- R350m (finfish) in investment kob and R14m
- Investment) Oysters)
- 1000 ton production of kob
- 70 tons production of oysters
- Value added product R150/kg
- Oyster farm gate price of R50/kg

Initiative owners
- Entrepreneurs/ Siyazama Aquaculture Cooperative

Sponsors
- Government
- Development financiers
- (public & private)
- ECDC/ELIDZ
- Private enterprise
- International donors

Other key stakeholders
- Civil society/communities
- (Local municipality
- Holiday Homeowners
- Traditional leaders

Key initiatives required
- Public Sector Risk Capital/Funding
- Establish essentially kitted new annexes (infrastructure)
- Establish central oxygen plant
- If RoD not granted, then move to alternative site
- Procure electricity directly from ESKOM
- Get the dti SEZ Fund to finance top structures
- Train/Employ technical audit oversight personnel
- Use existing built facility as central hatchery and nursery

Potential Challenges
- Access to funding
- Community coherence
- Delayed issuing of Record of Decision (EIA) By DEDEAT
- Delayed issuing of lease agreement for Hamburg site by DRDLR

SOURCE: Aquaculture Lab

1.4 Cluster Amatikulu (finfish/ornamentals)

Facilitate expansion projects to expedite start of production, enabling growth of overall cluster

Current Issues/Challenges

- Underdeveloped infrastructure (civils & services)
- Existing earth ponds in disrepair
- Remoteness (access to technical supplies & services incl. veterinary)
- Access to (and high cost of) finance for phase 2 (100 ha expansion)
- Availability of fingerlings/broodstock
- Small pool of qualified persons
- Water quality management, oxygen dosage, feed procurement & management
- Central fish processing
- Social incoherence
- Technical audit oversight
- Regulations and governance (EIA, permits, access to beach for broodstock collection)

Objectives/Targets

- Employment created (225): ornamentals: 51 ; Kob: 93; Processing :40 ; Admin ,support & Hatchery: 41
- R20m (ornamentals) & R60m (kob) in investment to breakeven point
- 100 ha fully operated (30ha used for now)
- Cost of production = 70% of farm gate price finfish (R60);
- Min. 51% management, employment, ownership in/of enterprises by women, youth, PDI's
- 2600 tons kob. Ornamentals = 5mill units
- R40m for hatchery/FPE

Initiative owners

- DAFF
- Entrepreneurs

Sponsors

- Government Development
- financiers (public & private)
- Private enterprise/Investors
- International donors

Other key stakeholders

- Govt Depts. National/ Province
- Municipalities /entities
- DAFF/
- The dti/DST
- Rural Dev
- DPW
- Mtunzini Fish Farm
- Traditional Authority/ Community

Key initiatives required

- Public Sector Risk Capital/Funding
- Establish central fish processing plant
- Acquire SEZ /ADZ status
- Capacity building for all levels of operation
- Establish a central hatchery and nursery
- PPP structure and social facilitation
- All prescribed permits and authorisations
- Refurbish 10Ha of ponds and supporting infrastructure/equipment
- Market linkages

Potential Challenges

- Finding investment partners for ADZ development
- Unlocking preferential procurement potential

SOURCE: Aquaculture Lab

1.4 Abalone Industry Value Chain Development

Promote growth in the aquaculture sector using targeted initiatives for high potential expansion and new projects

Current Issues/Challenges

- 1) Access to finance for abalone farm expansion
- 2) Aquaculture not part of the spatial planning development frameworks (Municipal and District)
- 3) Land lease – Public works red tape not prioritising access to the land and buildings
- 4) Abalone not SASSI Green and Aquaculture Stewardship Council certified
- 5) Access to kelp
- 6) High cost of electricity
- 7) Market access not possible for EU, USA, China (difficult).

Objectives/Targets

- Increase abalone production by 2000t
- Increase employment by 2000 jobs.
- Transform the industry to 50% representation

Initiative owners

- Abalone Farmers
- Association of SA - AFASA
- DAFF, DTI

Sponsors

- WCDoA /DEDAT/WCADI
- DFI's
- DAFF/DTI
- Dept. Public Works

Other key stakeholders

- Private sector
- DTI
- DoH/ NRCS
- DEA

Key initiatives required

1. An aquaculture finance fund (ADF)
2. Regulatory rationalisation/ efficiency
3. Energy cost reduction/ alternative energy installation
4. Access to kelp
5. Market access (from Market group)
6. SASSI Green/ASC certified

Potential Challenges

1. Externalities affecting abalone price and demand
2. Competition Act inhibits marketing cooperation
3. Investor risk appetite
4. Diversifying markets to absorb growth in production
5. Maintain profitability with growing volume and increasing input costs.
6. Getting interventions in place in time to meet targets

1.5 Qholorha Cluster– Charter

FUTURE BUSINESS OPPORTUNITY

Facilitate expansion projects to expedite start of production, enabling growth of overall cluster

Current Issues / Challenges
- Flow through/RAS infrastructure
- Supportive cluster infrastructure (civils)
- Greenfield nature & remote location
- Poor connective infrastructure
- EIA RoD will expire in 2017
- High cost of Recirc Aqua infrastructure
- Access to finance for start-ups and expanding operations
- Availability of fingerlings/broodstock
- High cost of capital (money, human)
- High cost of electricity (ESKOM sourced)
- Juvenile fish supply, water quality management, oxygen dosage, feed procurement & management
- Central fish processing and oxygen
- Top structures
- Technical audit oversight

Objectives/Targets
- 15 jobs (abalone) + 24 jobs (finfish)
- R150m (abalone) & R30m (finfish) in investment to breakeven point
- 26 ha fully operated (zero for now)
- Cost of production = 70% of farm gate price finfish (R60); abalone
- Min. 51% management, employment, ownership in/of enterprises by women, youth, PDIs
- Split (shellfish 150tons/finfish 200tons)

Initiative owners
- Entrepreneurs
- Govt depts./ municipalities/ entities (DAFF/ The dti /DST/ Rural Dev/ DPW)
- ECDC/ ELIDZ
- Qholorha Communal Property Association (QCPA)

Sponsors
- Government
- Development financiers (public & private)
- Private enterprise
- International donors

Other key stakeholders
- Civil society/communities
- (Local municipality
- Traditional leaders

Key initiatives required
- Public Sector Risk Capital/Funding
- Establish essentially kitted new annexes (infrastructure)
- Establish central oxygen plant
- Procure electricity directly from ESKOM
- Get The dti SEZ Fund to finance top structures
- Train/Employ technical audit oversight personnel
- Establish a central hatchery and nursery

Potential Challenges
- Access to funding
- Political will
- Community coherence

SOURCE: Aquaculture Lab

Initiative 1a: Phase 1: Expansion- Ventersdorp- Catfish

Get financing approved to revitalize the existing 200t/a production system, separate the hatcheries into bio-secure units, establish a second production system, a feed factory and a processing facility

1) Finalize investment
2) Secure supply of affordable quality feed
3) Expand markets
4) Revitalize existing system and expand production to 500t/a
5) Establish 1000t/a processing facility

Expected benefit:

- 500t/a production
- R 15mn/a value
- 23 new jobs by 31/12/2015

Ease of implementation:

Impact:

Implementing agency:

- Catfish Supreme

Key stakeholders identified:

- Three Streams
- GJC
- North West University

Required resources

Investment: R 23.4mn (to complete the business plan)

Implementation timeframe

- Start date: 1/11/2014
- End Date: 1/7/2015

Key milestones

- Finance secured: 30/11/2014

SOURCE: Aquaculture Lab

Initiative 1b: Phase 1: Hatchery expansion - Paternoster- Oyster

Local sourcing of seed has positive impact on the quality of product along with growing capability in the sector

Brief Description:

Establishment of an fully operational and sustainable oyster hatchery, producing sufficient spat to satisfy the need of the oyster grow out market in and around the Saldanha area

Key milestones: (high-level implementation plan)

- Establish and expand a hatchery facility to deliver 7,2 mn (2016) and 15 mn (2019) of oyster spat
- Improve and expand supporting utility and infrastructure on site by April 2015
- Acquire equipment and begin breeding/production by January 2015
- BEE shareholding by December 2014

Expected benefit(s):

- Production starts at January 2015 and product to market in 2015
- Sufficient space available for expansion – 7,2 mn spat by 2016 and 15 mn by 2019
- Busy with BEE negotiations and exploration of other empowerment options to be completed by November 2014
- Downstream: available spat will lead to the expansion of the oyster industry in the Saldanha/West Coast area
- Value creation: 7,2 mn oysters spat will create a retail value of R 42 mn
- 17 new jobs by 2017

Ease of implementation:

Impact:

Implementing agency:

Management and board of directors

Key stakeholders identified:

- Government agencies: DAFF, MCM, The dti
- Local government
- Local community
- Technology partners: academic and overseas partners

Required resources

Investment (R 6,1m):

Implementation timeframe

- Start date: 01/11/2014
- End Date: 31/12/2018

Key milestones

- 2016: In production and sales of 7.2 mn oyster spat per year
- 2017: Sales of 15 mn oyster spat per year

SOURCE: Aquaculture Lab

Initiative 1c: Phase 2: Hatchery expansion - Doring Bay- Abalone Hatchery

Doringbay Abalone is a abalone grow out facility and hatchery in Doringbay on the West Coast of South Africa. The current target production is 30 tons per annum with a hatchery to be self sufficient in spat supply. The community own a 35% share in the company to secure sustainability and upliftment. With this initiative we aim to secure job creation and a positive transformation of current conditions in the community.

Key milestones: (high-level implementation plan)

To increase the target production of 30 Tons/annum to a total production of100 Tons/annum.

Expected benefit(s):

Sustainable job creation with the effect of less poverty.Initiate future development of schools. Secure education from secondary to tertiary.

Ease of implementation:

Impact:

Implementing agency:

- Doringbay Abalone / CASIDRA

Key stakeholders identified:

- Doringbay Development Trust
- Tronox Mining
- Matzikama Municipality
- Public Works and DAFF

Required resources

Investment (R 66 433 108mn):

Implementation timeframe

- Start date: 1 November 2014
- End Date: 31 December 2019

Key milestones

- 2016: Expand production to 75 Tons
- 2017: Expand with a further 25 Tons

SOURCE: Aquaculture Lab

Initiative 1d: Phase1: Expansion-Hamburg cluster- Oyster

Revitalization of existing operation will increase oyster production and improve socio-economic status of the Hamburg community

Current production = 16 tons, Expansion = 54 tons, Farm gate price = R50/kg

Initiatives:

- Obtain funding from Departmental Funding Institutes (DFI's) for expansion (increase production from 16 t to 70 t), Rehabilitate and maintenance of racks
- Obtain all relevant Aquaculture Authorization from the Department of Agriculture, Forestry and Fisheries (DAFF)
- Appoint a management agent
- Employment and Human Capital Development of the Hamburg oyster farm
- Rehabilitation and maintenance of racks
- Purchase oyster spat
- Determine carrying capacity of estuary and identify potential new sites
- Food safety tests

Ease of implementation:

Impact:

Implementing agency

- Department of Agriculture, Forestry and Fisheries (DAFF)

Key stakeholders identified

- Hamburg Community Cooperative
- Clive Muller (marketing)
- Aquaculture South Africa (Marketing)

Required resources

- Investment (R m): 14

Implementation timeframe

- Start date: 01/11/2014
- End Date: open

Key milestones

- 2016: Production to 35 t, site identification for further expansion study complete
- 2017: Production to 45 t

SOURCE: Aquaculture Lab

Initiative 1e: Phase 1: Expansion Oceanwise ELIDZ - Kob

Case for EXPANSION PROGRAM: ELIDZ, Erf: 882, 880, 878 & 877 from current 500 tons/year of kob to 3500 tons/year of kob, and new finfish species, by December 2019, in order to increase employment from 100 to 600 jobs and increase contribution to GDP from R32 mn to R228 mn.

Brief Description:

- Oceanwise has pioneered the farming of dusky kob in South Africa and is well positioned to expand production
- Oceanwise is in a position to undergo transformation, including a Employment Equity Scheme, resulting in 51% BBBEE ownership in the company
- Expansion increases from 500 to 3500 tons per year by 2019
- Direct jobs increase from 100 to 600 by 2019

Key milestones: (high-level implementation plan)

- To transform the company to include 51% BBBEE equity ownership
- To increase production from 500 to 3500 tons per year by 2019 and to increase jobs from 100 to 600 by 2019

Expected benefit(s):

- Create sustainable jobs and increase contribution to GDP from R32 mn to R 228 mn
- Create a technical support platform for other marine finfish and kob farms

Ease of implementation:

Impact:

Implementing agency:

Oceanwise (Pty) Ltd

Key stakeholders identified:

- Oceanwise (Pty) Ltd
- ELIDZ
- IDC, ECDC and SCI's
- DAFF

Required resources

Investment (R 139 mn):

Implementation timeframe

- Start date: 01 November 2014
- End Date: 31 December 2019

Key milestones

- 2015: Transformation – 51% BBBEE
- 2016: Expand production: 500 – 1000 ton
- 2017: Expand production: 1000 – 2000 ton
- 2019: Expand production: 2000 – 3500 ton

SOURCE: Aquaculture Lab

Initiative 1f: Phase 1: Expansion - HIK Abalone Farm - Abalone

HIK Abalone Farm (Pty) Ltd is an established abalone farm with a production of 165t in 2014. Planned shore based farm expansion will grow production to 294.8t in 2019.

Key milestones: (high-level implementation plan)

Current production = 165t; Expansion of production = additional 135.8t;
FOB price = R300-350

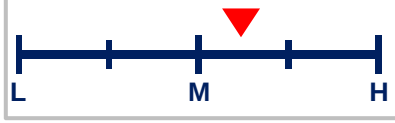
Initiatives:

1) Increase farm production from shore based units

2) Construct and operate own processing and packing facility, thereby ensuring self-reliance and saving on processing costs

3) Increase hatchery output and selection, thereby improving on-farm growth rates

Ease of implementation:



Impact:

Implementing agency:

HIK Abalone Farm

Key stakeholders identified:

- DAFF
- DTI
- Public Works
- DFI's

Required resources

Capital Investment (R56.15 mn)

Opex investment (296.156 mn)

Implementation timeframe

- Start date: 01 November 2014
- End Date: 31 December 2019

Key milestones

- 2014: Expansion of hatchery & construction of processing facility
- 2015: First production tanks on expansion site
- 2019: Full production from expansion site

SOURCE: Aquaculture Lab

Initiative 1g: Phase 1: Expansion - Abagold Ltd - Abalone

Abagold is an established abalone farm with a production of 328t in 2014. Planned shore based farm expansion will grow production to 499t in 2017.

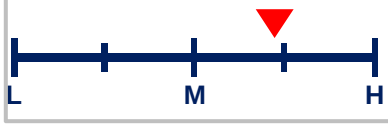
Key milestones: (high-level implementation plan)

Current production = 328t; Expansion of production = 499t; FOB price = R300-350

Initiatives:

1) Increase farm production from shore based units and ranching.

Ease of implementation:



Impact:

Implementing agency:

Abagold Ltd

Key stakeholders identified:

- DAFF
- DTI
- Public Works
- DFI's

Required resources

Investment (R53 mn):

Implementation timeframe

- Start date: 01 November 2014
- End Date: 31 December 2019

Key milestones

- 2015: Complete expansion
- 2017: Harvest to full capacity

SOURCE: Aquaculture Lab

Initiative 1h: Phase 3: Expansion – Jacobsbaai Sea Products - Abalone

Jacobsbaai Sea Products (Pty) Ltd is an established abalone farm with a production of 80t in 2014. Planned shore based farm expansion will grow production to 120t in 2019

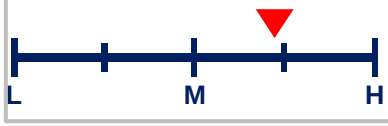
Key milestones: (high-level implementation plan)

Current production = 80t; Expansion of production = 120t; FOB price = R300-350/kg

Initiatives:

1. Increase farm production from shore based units
2. Increase number of employment opportunities on farm
3. Increase revenue of farm

Ease of implementation:



Impact:

Implementing agency:

- Jacobsbaai Sea Products

Key stakeholders identified:

- DAFF
- DTI
- Public Works
- DFI's

Required resources

Investment (R 26 mn):

Implementation timeframe

- Start date: 01 November 2014
- End Date: 31 December 2019

Key milestones

- 2016: 9600 baskets installed
- 2017: 10400baskets installed

SOURCE: Aquaculture Lab

Initiative 1i: Phase 1: Expansion-Amatikulu - Ornamentals

Infrastructure available for relatively quick implementation. Conditions suitable for production at low cost vs other areas in SA

Current production: Plants = 21,600 Fish = 200,000 ; Additional expansion production Plants = 250,000 Fish = 3,500,000; farm-gate price: Plants = R1.75 Fish = R1.00: (Figures based on local market demand and not export)

Initiatives:

1) Community and landlord buy-in – Get sign off from Chief Mtaba and iNgonyama Trust. Also introduce and establish co-operatives
2) Potential funding links – Tronox owned Fairbreeze mine. Funds from other government departments. ADEP
3) Potential links with Dube Trade Port. DTP has already identified Aquaculture in its next phase of development
4) PPP establishment – with on site businesses, Fish Designs, Campcon
5) Infrastructure refurbishment – work on old ponds and water reticulation
6) Broodstock acquisition – negotiate with Campcon to acquire new broodstock
7) Market linking and distribution – Talk to local importers and distributors. Investigate export potential
8) Mentoring/extension – link with local experts

Ease of implementation:

Impact:

Implementing agency:

- DAFF and DAEA

Key stakeholders identified:

- Sofoco Fish Farm
- Amatikulu Aquarium Plants
- Amatikulu Pet Products
- Community
- The dti, NEF, EPWP

Required resources

- Investment (R 30mn):

Implementation timeframe

- Start date: November 2014
- End Date: December 2019

Key milestones

- November 2014 Community buy-in and acceptance
- January 2015 start infrastructure refurbishment
- August 2015 refurbishment complete
- June 2016 reach 50% of production potential
- June 2017 reach full production

SOURCE: Aquaculture Lab

Initiative 1j and : Phase 2: New- Amatikulu - Kob

Old prawn farm infrastructure available. Climate and location suitable for Kob pond culture

Current production: Kob = 0 ; Phase 1 production: Kob = 260t/yr; Phase 2 production = 2600 t/yr. farm-gate price: Kob = R60/Kg

Initiatives:

1) Community buy-in – Get sign off from Chief Mathaba and Ingonyama Trust Board (ITB). Also introduce and establish co-operatives.
2) Potential funding links – Tronox owned Fairbreeze mine. Funds from other government departments. ADEP
3) Potential links with Dube Trade Port. DTP has already identified Aquaculture in its next phase of development
4) PPP establishment - Mtunzini Fish Farm co-operation with IP and fingerling supply.
5) Infrastructure refurbishment and construction – refurbish ponds. Build pump station and water reticulation. FPE construction
6) Market links – OWEL and MFF

Ease of implementation:

Impact:

Implementing agency:

- DAFF and KZNDARD (Agaric & Rural Dev)

Key stakeholders identified:

- Sofoco Fish Farm
- Amatikulu Aquarium Plants
- Amatikulu Pet Products
- Community
- Mtunzini Fish Farm

Required resources

Investment : Phase 1 = R8,5 mil; Phase 2 = R127mil

Implementation timeframe

- Start date: November 2014
- End Date: December 2019

Key milestones

- November 2014 Community Buy-in
- January 2015 Start infrastructure
- August 2015 stock first ponds

SOURCE: Aquaculture Lab

Initiative 1k: Phase 2: New- Hamburg cluster- Kob

Expanding existing pilot scale operation to commercial production will increase fish production and improve socio-economic status of the Hamburg community

Current production = 0 t, Expansion = 1000 t, Farm Gate Price = R60/kg

1) Obtain Record of Decision (RoD) for Environmental Authorisation for Hamburg site
2) Obtain lease agreement of Hamburg site
3) Obtain Public Sector Risk Capital/Funding (DFI's)
4) Appointment of a management agent to manage the Hamburg kob cluster
5) Management agent to develop Business plan for Hamburg Kob cluster project
6) Obtain all relevant Aquaculture Authorization from the Department of Agriculture, Forestry and Fisheries (DAFF) and Department of Environmental Affairs (DEA)
7) Electricity connection
8) Establish all support infrastructure (Civil works, pump house, oxygen plant)
9) Conversion and commissioning of existing pilot facility as central hatchery and nursery
10) Training and employment of 280 permanent employees
11) Establish grow-out facility in stages
12) Establish Processing facility

Ease of implementation:

Impact:

Implementing agency

- Department of Agriculture, Forestry and Fisheries (DAFF)

Key stakeholders identified

- PureOcean
- Oceanwise
- Hamburg Community Cooperative
- Department of Rural Development and Land Reform (DRDLR)
- Eastern Cape Department of Economic Development Environmental Affairs and Tourism (DEDEAT)
- Marine Finfish Farmers Association of South Africa (MFFASA)

Required resources

- Investment (R m): R344

Implementation timeframe

- Start date: November 2014 (dependent on RoD from DEDEAT)
- End Date: December 2019

Key milestones

- 2017: Hatchery development
- 2017: 100 ton grow-out facility

SOURCE: Aquaculture Lab

Initiative 1l: Phase 2: New- Saldanha Molapong aquaculture Trout & Salmon

Molapong Aquaculture is planning to culture Trout and Salmon in cages systems in the Saldana bay area. Processing to be done locally in Saldana.

Key Project aims to undertake the following:

- Undertake cage trail for trout in Saldanha
- Obtain lease from Ports net
- Get EIA approval for 2000 ton operation and to import Coho/King Salmon
- Increase production to 2000 tons trout
- Create an additional 30 jobs

Expected benefit(s):

Local job creation. Less imported product (reduction of trade deficit) Export possibility.

Ease of implementation: Impact:

Implementing agency:

- Molapong Aquaculture

Key stakeholders identified:

- Portsnet
- DAFF
- DEA
- DOA

Required resources

Investment R 40 M over 5 years:

Implementation timeframe

- Start date: November 2014
- End Date: December 2019

Key milestones

- 2016: 100t Trout/100 t Salmon
- 2017: 500t Trout/100 t Salmon

SOURCE: Aquaculture Lab

Initiative 1n: Phase 3: ADZ- Ventersdorp- Catfish

Increase production, by involving other producers situated around Catfish Supreme, with an additional 2500t/a to get a combined production of 3000t/a while adding a processing facility when production reaches 500t/a

Develop ADZ into an integrated initiative capable of producing 3000 ton/pa

i. Prepare business plan inclusive of all budgets, regulatory permits, certificates, up-take agreements, etc..

ii. Unlock preferential procurement market potential

iii. Identify new entrants i.e. Farmers, Communities and Municipalities

iv. Secure finance

v. Appoint management company to oversee the implementation of the business plan

vi. Establish independent production systems and processing facility

vii. Source, appoint and the train staff required

Expected benefit:

- 2500t/a additional production
- R 75m/a value
- 77 new jobs for production facilities and 33 new jobs for processing

Ease of implementation:

Impact:

Implementing agency:

- Catfish Supreme

Key stakeholders identified:

- DAFF
- NW - DoA
- DEA
- FDI

Required resources

Capex R105mn & Opex R24mn for production facilities and R 20m Capex for processing facility

Implementation timeframe

- Start date: 1/11/2014
- End Date: 31/12/2019

Key milestones

- 2015: 500 ton 2016: 1500 ton
- 2017: 2500 ton 2018: 3000 ton

SOURCE: Aquaculture Lab

Initiative 1o: Phase 3: New- Saldanha Blue Ocean Mussels- Mussel

Blue Ocean Mussels will ultimately assist with growing the market of South African produced mussels by 600 Tons.

1) Facilitate the expansion of the projects to expedite production, enabling growth of overall cluster
2) Acquire fifteen new rafts [purchasing of material /build the rafts / time = 3months]
3) Development of Factory infrastructure (approximately R7m needed)

Ease of implementation:

Impact:

Implementing agency
- BOM

Key stakeholders identified
- DAFF
- NRCS
- Municipality (Saldanha)

Required resources
- Investment of R4.7m + ADEP R2m = R300 000 misc = R 7m

Implementation timeframe
- Start date: November 2014
- End Date: Dec 2019

Key milestones
- Access funding 2016:
- factory fully operational 2017

SOURCE: Aquaculture Lab

Initiative 1p: Phase 3: New- South Atlantic sea cages- Salmon

This project will assist with stabilizing the market by assisting to grow the market with 5000tons, job surety of the current and future staff.

Initiatives:

1. Up-scaling project to full production /need EIA + Permit / Public works / conditions to do [2 cage /50tons /yr] current permit =15hct [1 Jan 2014 to 31 Dec 2029]
2. 2 cages upgrading to 20 cages Invest + Movable assets [large boat and transport truck /with crane] - (R2,5m to R60m) – jobs 30 /import =2months /build 1month/cage 50:50 ex :in
3. Pilot till 2015 end
4. Planning will start by June 2015
5. Upgrade of hatchery [40tons smelts /yr / Infrastructure dev R5m – jobs 8
6. 4yrs + primary processing unit [20 people /part –time]
7. Feed /environmentally plan / 4X yr

Ease of implementation:

Impact:

Implementing agency:

- S. Atlantic Salmon

Key stakeholders identified:

DAFF / Portnet / Public Works / Shareholders + ADEP/ Investment PPP

Required resources

Funds / equipment/ processing facility

Implementation timeframe

- Start date: November 2014
- End Date: December 2019

Key milestones:

- 2016: First harvest of 600T
- 2017:Harvest of 1200 T

SOURCE: Aquaculture Lab

Initiative 1q: Phase 3: New- Algoa Bay sea cage farming- Yellowtail

Will contribute significantly towards development of a sustainable and competitive marine finfish farming industry in SA with international recognition for its product quality, environmental awareness and technical innovation

Initiatives:

1) Obtain pilot project continuation approval from DST
2) Obtain marine Aquaculture right from DAFF
3) Finalize partnership plan
4) Implement and undertake 60 ton pilot project by 2016
5) Prepare project for commercialisation and secure investment
6) Establish and register commercial venture
7) Obtain approvals for expansion
8) Increase production to 300 tons by 2017
9) Establish hatchery by 2017
10) Increase production to 1 000 tons by 2018
11) Increase production to 3 000 tons by 2019

Ease of implementation:

Impact:

Implementing agency:

- Stellenbosch University

Key stakeholders identified:

- DST
- DAFF
- Transnet
- Private sector, IDC, NEF, Landbank

Required resources (investment):

Pilot projects: R 11.3 mn

Commercialisation: R 130 mn

Implementation timeframe:

- Start date:1 November 2014
- End Date: 31 December 2019

Key milestones:

- 2015: Implement pilot project
- 2017: Commercialise project

SOURCE: Aquaculture Lab

Initiative 1r: Phase 3: New- Richards Bay sea cage farming-Kob

Will contribute significantly towards development of a sustainable and competitive marine finfish farming industry in SA with international recognition for its product quality, environmental awareness and technical innovation

Initiatives:

1) Obtain pilot project continuation approval from DST
2) Obtain marine Aquaculture right from DAFF
3) Finalize partnership plan
4) Implement and undertake 60 ton pilot project by 2016
5) Prepare project for commercialisation and secure investment
6) Establish and register commercial venture
7) Obtain approvals for expansion
8) Increase production to 300 tons by 2017
9) Establish hatchery by 2017
10) Increase production to 1 000 tons by 2018

Ease of implementation:

Impact:

Implementing agency:

Stellenbosch University

Key stakeholders identified:

- DST
- DAFF
- Transnet
- Private sector, IDC, NEF, Landbank

Required resources (investment):

Pilot projects: R 6.4 mn

Commercialisation: R 42.7 mn

Implementation timeframe:

- Start date:1 November 2014
- End Date: 31 December 2019

Key milestones:

- 2015: Implement pilot project
- 2017: Commercialise project

SOURCE: Aquaculture Lab

Initiative 1s: Phase 3: New Hatchery- Hondeklip Bay- Abalone

Will contribute significantly towards development of a sustainable and competitive abalone ranching industry in the NCP with international recognition for its product quality, environmental awareness and technical innovation

Initiatives:

1) Obtain project continuation approval from DST
2) Obtain marine Aquaculture right from DAFF
3) Undertake consultation with DEA regarding NEMA and MLRA aspects
4) Obtain long term site lease from DPW
5) Confirm electricity supply with Kamiesberg Municipality, DBCM, and ESKOM
6) Finalize partnership plan
7) Establish 2.4 mn spat per annum abalone hatchery
8) Prepare project for commercialisation
9) Establish and register commercial venture
10) Increase hatchery output to 4.8mn spat per annum

Ease of implementation:

Impact:

Implementing agency:

- Stellenbosch University

Key stakeholders identified:

- DST
- DPW
- DCA (Pty) Ltd, RUI (Pty) Ltd
- IDC, NEF, Landbank

Required resources (investment):

R 25 mn

Implementation timeframe:

- Start date:1 November 2014
- End Date: 31 December 2019

Key milestones:

- 2016: 2.8 mn spat per annum
- 2019: 4.8 mn spat per annum

SOURCE: Aquaculture Lab

Initiative 1t: Phase 3: New- Diamond Coast abalone ranching- Abalone

Will contribute significantly towards development of a sustainable and competitive abalone ranching industry in SA with international recognition for its product quality, environmental awareness and technical innovation

Initiatives:

1) Secure additional investment financing of R 7.2 mn for the pilot project phase
2) Take up shareholding in the DST abalone hatchery
3) Continue and complete initial pilot project seeding of 700 000 spat per year
4) Secure additional investment funding of R 55 mn to expand production to 150 tons per annum
5) Increase production to 150 tons per annum

Ease of implementation:

Impact:

Implementing agency:

Diamond Coast Abalone (Pty) Ltd

Key stakeholders identified:

- DST
- Stellenbosch University
- IDC, NEF, Landbank

Required resources (investment):

Pilot project: R 14 mn

Expansion: R 55 mn

Implementation timeframe:

- Start date:1 November 2014
- End Date: 31 December 2019

Key milestones:

- 2016: Complete initial pilot project
- 2019: Harvest 70 tons

SOURCE: Aquaculture Lab

Initiative 1u: Phase 3: Expansion- Saldanha Bay Oyster Company- Oyster

To increase annual production to 10 mn Oysters per year

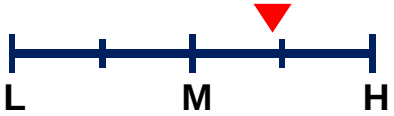
Key milestones: (high-level implementation plan):

- Acquisition of additional Oyster Farming boats
- Increasing holding tank capacity
- Increasing long line farming capacity

Expected benefit(s):

- Significant increase in turnover as result of higher sales
- Job creation

Ease of implementation:



Impact:

Implementing agency:

Saldanha Bay Oyster Company

Key stakeholders identified:

- Company shareholders/Management
- The dti
- DAFF

Required resources

Investment: R11mn

Implementation timeframe

- Start date: November 2014
- End Date: Jan 2019

Key milestones

- 2014: New boat + holding tanks
- 2015: Additional Long lines

SOURCE: Aquaculture Lab

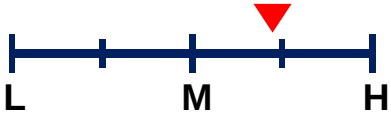
Initiative 1va and vb: Expansion (Phase 1) and new (Phase 2) - Wild Coast Abalone Expansion, Ranching & Stock Enhancement New

Wild Coast Abalone currently produce 160 ton abalone per year, plan to increase production to 300 ton in next 5 years. Ranching and Stock Enhancement in the Eastern Cape to establish a further 480 ton production capacity.

Key milestones: (high-level implementation plan):

1) Expansion of Wild Coast Abalone Farm
   - Upgrade Power
   - Expand Hatchery
   - Install Production Blocks : 5D, 5C, 5B, 6J
2) Ranching & Stock Enhancement
   - Compliance Plan: EC1, EC2, EC3, Hamburg, Transkei
   - Develop PPP's and governance models
   - Seeding Plan
   - Harvesting Plan
   - Full production reached after 2021

Ease of implementation:



Impact:

Implementing agency:

- Roman Bay Sea Farms AFASA

Key stakeholders identified:

- DAFF
- DTI
- DEAT
- Public Works
- PPP's

Required resources

Investment (R334 mn):

Implementation timeframe

- Start date: November 2014
- End Date: December 2019

Key milestones

- 2015: Power Upgrade, Hatchery
- 2016 & 17: 5D, 5C
- 2018 & 19: 5B, 6J

SOURCE: Aquaculture Lab

Initiative 1w: Phase 1: Expansion- Roman bay Sea Farm - Abalone

Romanbay Sea Farm & Aquafarm are established abalone farms with a total production output of 210t in 2014.

Planned shore based farm expansion will grow production to 341t in 2019, reaching full 350t capacity in 2020

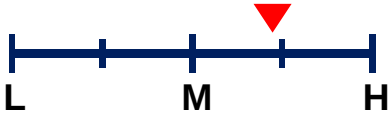
Key milestones: (high-level implementation plan):

Current production = 210t; Expansion of production = 131t;
FOB price = R300-350

Initiatives:

1) Increase farm production from shore based units and ranching.
2) Employ renewable energy alternatives

Ease of implementation:



Impact:

Implementing agency:

- AFASA

Key stakeholders identified:

- DAFF
- DTI
- Public Works
- DFI's

Required resources

Investment (R75 million):

Implementation timeframe

- Start date: November 2014
- End Date: December 2019

Key milestones

- 2016: Basic construction done
- 2020: Full production of 350t

SOURCE: Aquaculture Lab

Initiative 1w: Phase 3: Expansion- Marine Growers - Abalone

Atlantic Abalone (Pty) Ltd (Marine Growers) is an established abalone farm with a production of 100t in 2014. Planned shore based farm expansion will grow production to 250t in 2019.

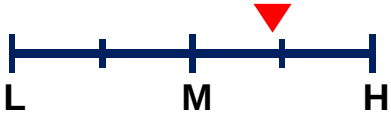
Key milestones: (high-level implementation plan):

Current production = 100t; Expansion of production = 250t;
FOB price = R300-350/kg

Initiatives:

1. Increase farm production from shore based units
2. Increase number of employment opportunities on farm
3. Increase revenue of farm

Ease of implementation:



Impact:

Implementing agency:

- Marine Growers

Key stakeholders identified:

- DAFF
- DTI
- Public Works
- DFI's

Required resources

Investment (R87 million):

Implementation timeframe

- Start date: November 2014
- End Date: December 2019

Key milestones

- 2016: 16000 baskets installed
- 2017: 19000baskets installed

SOURCE: Aquaculture Lab

Qholorha cluster: New project (finfish/shellfish)

FUTURE BUSINESS OPPORTUNITY

Case for change

Initiatives

1) Secure long term lease from the DLARD
2) Apply for SEZ recognition from the dti in terms of the SEZ Act
3) Obtain funding from the dti SEZ programme
4) Identify human capital source for continuous relationship (PPP)
5) Partner with ELIDZ to manage the Qholorha cluster
6) Market cluster to attract investors and allocate zones to interested farmers
7) Infrastructure development (Civil excavations of site including leveling of land, zones allocated and partitioned; Road development to site and within cluster (N2 to site); Security fencing developed (electric fencing); electricity established within cluster (three phase power, engage ESKOM); Telecommunication line developed within cluster; Administration building developed (For management of cluster); Implementation of supportive infrastructure (pump house, water extraction pipe, water discharge pipeline, reservoir, back up generators, freshwater supply pipelines, sanitation, establish central oxygen plant); Seed, extension services and R&D facility developed on site
8) Investor farmers develop farms on allocated plots of Qholorha cluster

Ease of implementation:

Impact:

Implementing agency

- Department of Agriculture, Forestry and Fisheries (DAFF)

Key stakeholders identified

- Qholorha by sea community trust
- Department of Rural Development and Land Reform (DRDLR)

Required resources

- Investment (R 100mn):

Implementation timeframe

- Start date: November 2014
- End Date: December 2019

Key milestones

- 2016: Human capital source identified, civil excavation, zoning, roads developed, security fencing complete
- 2017:Administration building and supportive infrastructure complete

SOURCE: Aquaculture Lab

Initiative 1a budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0	0	0	0	0	0	0
	OPEX	0	0	0	0	0	0	0
	Compensation of employees	0	0	0	0	0	0	0
	Total Govt funding	0	0	0	0	0	0	0
Non Govt	CAPEX	0	21	0	0	0	0	21
	OPEX	0	8	14	15	15	15	66
	Compensation of employees	0	3	3	3	3	3	14
	Total Non Govt funding	0	31	17	18	18	18	101
TOTAL Funding required		0	31	17	18	18	18	101

SOURCE: Aquaculture Lab - Budget template

Initiative 1b budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0	0	0	0	0	0	0
	OPEX	0	0	0	0	0	0	0
	Compensation of employees	0	0	0	0	0	0	0
	Total Govt funding	0	0	0	0	0	0	0
Non Govt	CAPEX	0	0	5	6	5	5	20
	OPEX	0	3	3	5	6	8	25
	Compensation of employees	0	2	4	6	8	9	29
	Total Non Govt funding	0	5	11	17	19	21	74
TOTAL Funding required		0	5	11	17	19	21	74

SOURCE: Aquaculture Lab - Budget template

Initiative 1c budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0	0	0	0	0	0	0
	OPEX	0	0	0	0	0	0	0
	Compensation of employees	0	0	0	0	0	0	0
	Total Govt funding	0	0	0	0	0	0	0
Non Govt	CAPEX	4	0	0	0	0	0	0
	OPEX	1	0	0	0	0	0	0
	Compensation of employees	0	0	0	0	0	0	0
	Total Non Govt funding	6	0	0	0	0	0	0
TOTAL Funding required		6	0	0	0	0	0	0

SOURCE: Aquaculture Lab - Budget template

Initiative 1d budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	3,50	0,00	0,20	0,00	0,00	0,00	0,20
	OPEX	4,50	0,52	3,87	3,77	4,51	5,86	18,53
	Compensation of employees	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	Total Govt funding	8,00	0,52	4,07	3,77	4,51	5,86	18,73
Non Govt	CAPEX	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	OPEX	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	Compensation of employees	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	Total Non Govt funding	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL Funding required		8,00	0,52	4,07	3,77	4,51	5,86	18,73

SOURCE: Aquaculture Lab - Budget template

Initiative 1e budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0	1	50	10	10	10	81
	OPEX	2	3	5	5	6	8	27
	Compensation of employees	0	2	5	6	6	6	23
	Total Govt funding	2	6	59	21	22	24	130
Non Govt	CAPEX	7	0	3	84	35	19	141
	OPEX	3	0	2	1	1	1	5
	Compensation of employees	4	0	0	0	0	0	0
	Total Non Govt funding	14	0	4	85	36	20	145
TOTAL Funding required		15	6	63	106	58	44	276

SOURCE: Aquaculture Lab - Budget template

Initiative f budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0	1	1	3	3	3	12
	OPEX	0	0	0	0	0	0	0
	Compensation of employees	0	0	0	0	0	0	0
	Total Govt funding	0	1	1	3	3	3	12
Non Govt	CAPEX	7	3	23	2	3	7	45
	OPEX	0	3	7	10	20	23	63
	Compensation of employees	0	1	3	4	7	8	23
	Total Non Govt funding	7	7	33	16	30	38	131
TOTAL Funding required		7		34	19	33	41	135

SOURCE: Aquaculture Lab - Budget template

Initiative g budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	3	0	9	2	0	0	11
	OPEX	0	0	0	0	0	0	0
	Compensation of employees	0	0	0	0	0	0	0
	Total Govt funding	3	0	9	2	0	0	11
Non Govt	CAPEX	46	0	9	0	0	0	9
	OPEX	7	0	20	33	0	0	52
	Compensation of employees	1	0	3	4	0	0	7
	Total Non Govt funding	54	0	31	37	0	0	68
TOTAL Funding required		57	0	40	39	0	0	79

SOURCE: Aquaculture Lab - Budget template

Initiative h budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0	0	0	4	4	2	11
	OPEX	0	0	0	0	0	0	0
	Compensation of employees	0	0	0	0	0	0	0
	Total Govt funding	0	0	0	4	4	2	11
Non Govt	CAPEX	0	0	0	6	6	4	16
	OPEX	0	0	0	15	20	23	58
	Compensation of employees	0	0	0	0	0	0	0
	Total Non Govt funding	0	0	0	21	26	27	74
TOTAL Funding required		0		0	25	30	29	85

SOURCE: Aquaculture Lab - Budget template

Initiative 1i and j budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0	1	0	0	0	0	1
	OPEX	0	2	11	40	1	0	54
	Compensation of employees	0	0	0	0	0	0	0
	Total Govt funding	0	3	11	40	1	0	55
Non Govt	CAPEX	0	17	55	55	0	0	128
	OPEX	0	0	0	0	0	0	0
	Compensation of employees	0	0	0	0	0	0	0
	Total Non Govt funding	0	17	55	55	0	0	128
TOTAL Funding required		0	21	67	95	1	0	183

SOURCE: Aquaculture Lab - Budget template

Initiative 1k budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	9,00	0,32	65,09	35,33	47,63	48,00	196,36
	OPEX	0,00	3,37	27,45	25,03	41,95	59,04	156,83
	Compensation of employees	0,00	0,02	0,00	0,01	0,00	0,00	0,03
	Total Govt funding	9,00	3,71	92,54	60,36	77,95	107,04	341,60
Non Govt	CAPEX	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	OPEX	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	Compensation of employees	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	Total Non Govt funding	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL Funding required		9,00	3,71	92,54	60,36	77,95	107,04	341,60

SOURCE: Aquaculture Lab - Budget template

Initiative 1n budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0	0	21	41	21	42	125
	OPEX	0	0	5	15	24	38	83
	Compensation of employees	0	0	0	0	0	0	0
	Total Govt funding	0	0	26	56	45	80	208
Non Govt	CAPEX	0	0	0	0	0	0	0
	OPEX	0	0	0	0	0	0	0
	Compensation of employees	0	0	0	0	0	0	0
	Total Non Govt funding	0	0	0	0	0	0	0
TOTAL Funding required		0	0	26	56	45	80	208

SOURCE: Aquaculture Lab - Budget template

Initiative 1o budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0	10	3	0	0	0	13
	OPEX	0	0	0	0	0	0	0
	Compensation of employees	0	0	0	0	0	0	0
	Total Govt funding	0	10	3	0	0	0	13
Non Govt	CAPEX	10	11	16	13	14	15	69
	OPEX	0	0	0	0	0	0	0
	Compensation of employees	1	0	2	2	2	2	8
	Total Non Govt funding	11	12	18	15	16	17	77
TOTAL Funding required		11	22	21	15	16	17	90

SOURCE: Aquaculture Lab - Budget template

Initiative 1p budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0	0	0	0	0	0	0
	OPEX	0	39	2	1	1	1	44
	Compensation of employees	0	8	1	0	0	0	10
	Total Govt funding	0	47	3	1	1	1	54
Non Govt	CAPEX	0	3	5	6	6	7	27
	OPEX	0	39	6	6	6	7	64
	Compensation of employees	0	78	7	7	7	8	107
	Total Non Govt funding	0	120	19	18	20	22	198
TOTAL Funding required		0	167	22	19	21	23	252

SOURCE: Aquaculture Lab - Budget template

Initiative 1q budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0,41	0,00	0,05	0,00	0,00	0,00	0,05
	OPEX	1,02	0,00	3,30	1,12	0,00	0,00	4,42
	Compensation of employees	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	Total Govt funding	1,43	0,00	3,35	1,12	0,00	0,00	4,47
Non Govt	CAPEX	0,00	0,00	26,50	18,00	1,90	19,72	66,12
	OPEX	0,00	0,00	7,61	13,20	8,50	20,70	50,01
	Compensation of employees	0,00	0,00	2,80	1,50	2,25	6,62	13,17
	Total Non Govt funding	0,00	0,00	36,91	32,70	12,65	47,04	129,30
TOTAL Funding required		1,43		40,26	33,82	12,65	47,04	133,77

SOURCE: Aquaculture Lab - Budget template

Initiative 1r budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0,853	0,000	0,000	0,000	0,000	0,000	0,000
	OPEX	1,980	0,000	0,797	0,699	0,000	0,000	1,496
	Compensation of employees	0,000	0,000	0,000	0,000	0,000	0,000	0,000
	Total Govt funding	2,833	0,000	0,797	0,699	0,000	0,000	1,496
Non Govt	CAPEX	0,000	0,000	0,000	12,944	10,284	0,000	23,228
	OPEX	0,100	0,000	0,300	1,766	20,954	30,111	53,131
	Compensation of employees	0,000	0,000	0,000	2,088	4,421	5,401	11,910
	Total Non Govt funding	0,100	0,000	0,300	16,798	35,659	35,513	88,269
TOTAL Funding required		2,933	0,000	1,097	17,497	35,659	35,513	89,765

SOURCE: Aquaculture Lab - Budget template

Initiative 1s budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0,00	0,00	14,87	0,00	0,00	0,00	14,87
	OPEX	0,42	0,10	6,38	0,00	0,00	0,00	6,48
	Compensation of employees	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	Total Govt funding	0,42	0,10	21,25	0,00	0,00	0,00	21,35
Non Govt	CAPEX	0,00	0,00	0,00	0,00	0,00	4,26	4,26
	OPEX	0,00	0,00	0,00	2,12	2,12	3,18	7,43
	Compensation of employees	0,00	0,00	0,00	1,07	1,07	1,70	3,83
	Total Non Govt funding	0,00	0,00	0,00	3,19	3,19	9,14	15,52
TOTAL Funding required		0,42	0,10	21,25	3,19	3,19	9,14	36,87

SOURCE: Aquaculture Lab - Budget template

Initiative t budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	OPEX	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	Compensation of employees	0,00	0,00	0,00	0,00	0,00	0,00	0,00
	Total Govt funding	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Non Govt	CAPEX	0,01	0,00	0,01	6,65	0,30	0,30	7,26
	OPEX	6,52	0,00	2,30	8,57	7,94	8,09	26,90
	Compensation of employees	1,61	0,00	1,26	2,44	2,61	2,79	9,09
	Total Non Govt funding	8,15	0,00	3,57	17,66	10,84	11,18	43,25
TOTAL Funding required		8,15	0,00	3,57	17,66	10,84	11,18	43,25

SOURCE: Aquaculture Lab - Budget template

Initiative u budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	2	0	1	0	0	1	3
	OPEX	0	0	0	0	0	0	0
	Compensation of employees	0	0	0	0	0	0	0
	Total Govt funding	2	0	1	0	0	1	3
Non Govt	CAPEX	3	0	1	1	1	1	4
	OPEX	10	0	11	11	15	15	52
	Compensation of employees	0	0	0	0	0	0	0
	Total Non Govt funding	13	0	12	12	15	16	56
TOTAL Funding required		15	0	13	12	16	17	58

SOURCE: Aquaculture Lab - Budget template

Initiative v a budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0	4	7	6	4	0	21
	OPEX	0	3	4	7	5	0	18
	Compensation of employees	0	2	3	3	3	0	11
	Total Govt funding	0	9	14	16	12	0	51
Non Govt	CAPEX	0	12	20	19	12	0	63
	OPEX	0	3	4	7	5	0	19
	Compensation of employees	0	2	3	5	3	0	13
	Total Non Govt funding	0	17	27	31	20	0	95
TOTAL Funding required		0	26	41	46	33	0	146

SOURCE: Aquaculture Lab - Budget template

Initiative 1v b budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0	1	1	3	3	5	14
	OPEX	0	3	6	11	12	13	44
	Compensation of employees	0	4	5	9	15	24	56
	Total Govt funding	0	8	12	22	30	41	114
Non Govt	CAPEX	0	1	1	3	3	5	14
	OPEX	0	3	6	12	14	15	50
	Compensation of employees	0	1	1	2	3	5	11
	Total Non Govt funding	0	5	9	16	20	24	74
TOTAL Funding required		0	13	21	39	50	66	188

SOURCE: Aquaculture Lab - Budget template

Initiative 1w budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	9	0	9	8	1	0	27
	OPEX	0	0	0	0	0	0	0
	Compensation of employees	0	0	0	0	0	0	0
	Total Govt funding	9	0	9	8	1	0	27
Non Govt	CAPEX	11	0	36	28	5	1	80
	OPEX	1	0	13	17	20	31	82
	Compensation of employees	1	0	5	6	7	11	30
	Total Non Govt funding	13	0	54	50	32	42	191
TOTAL Funding required		22		63	58	33	42	218

SOURCE: Aquaculture Lab - Budget template

Initiative 1x budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0	0	17	15	2	2	36
	OPEX	0	0	0	0	0	0	0
	Compensation of employees	0	0	0	0	0	0	0
	Total Govt funding	0	0	17	15	2	2	36
Non Govt	CAPEX	0	0	26	22	3	2	54
	OPEX	0	0	0	0	0	0	0
	Compensation of employees	0	0	0	0	0	0	0
	Total Non Govt funding	0	0	26	22	3	2	54
TOTAL Funding required		0		43	37	5	4	90

SOURCE: Aquaculture Lab - Budget template

Contents

The legislative framework governing Aquaculture activities is fragmented and regulated by various departments as Aquaculture occurs across sea, land, and fresh water

Fish Farm – Departments and mandates

- DEA (impact)
- Transnet NPA (lease)
- Parliament (lease)
- DEA (Tourism)
- DAFF (MLRA)
- DEA (MPA's)

- Sea-shore Act

- DEA (EIA regulations)
- Municipality (zoning)
- Public works (public property)
- DEA (biodiversity)
- Province (ordinances)
- DAFF (sub-division of agricultural land)

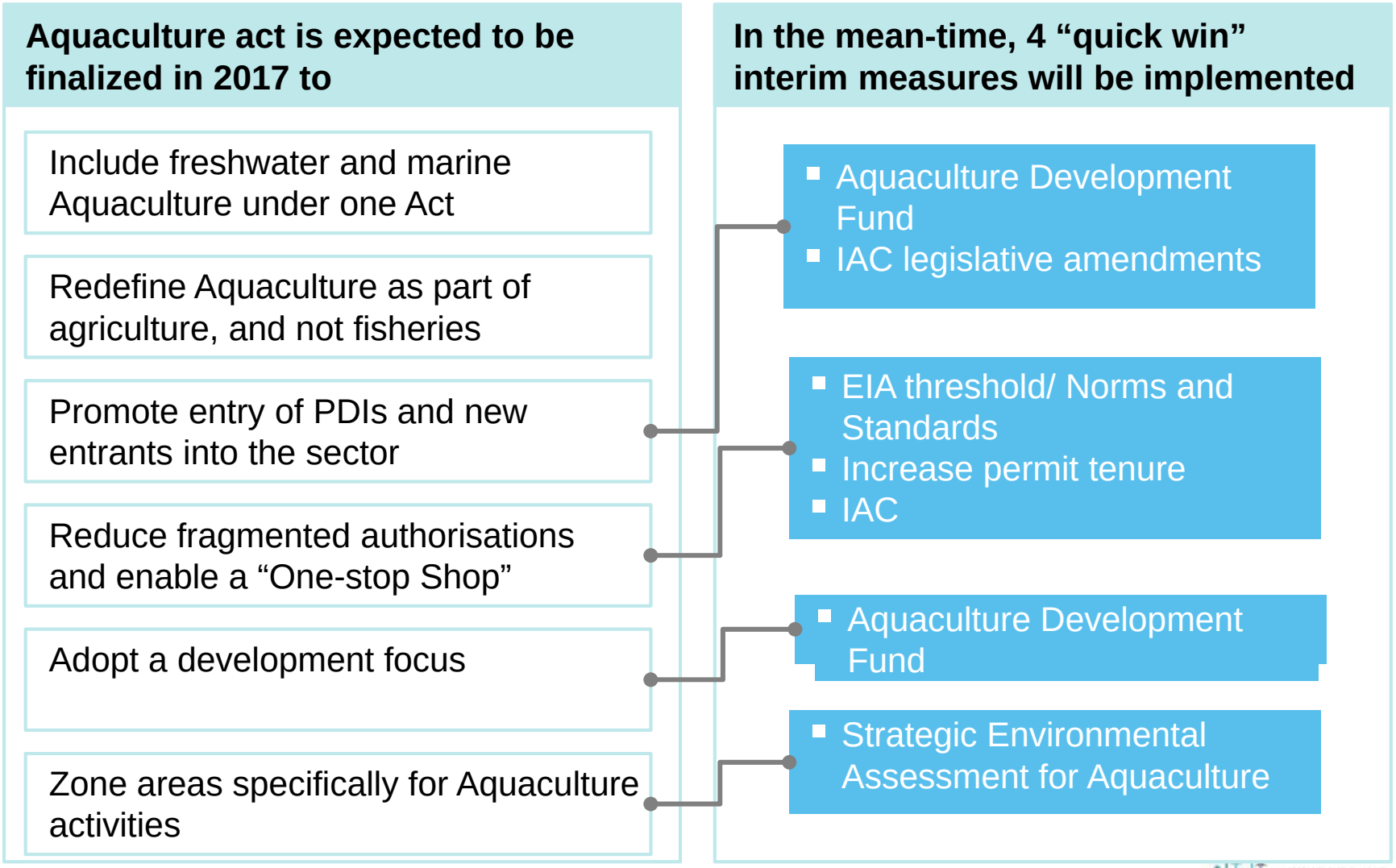
- Water affairs (water use license, access permit)
- DEA (biodiversity)
- Local authority (municipal discharge permit)`

Key applicable legislation include: Marine Living Resources Act, National Environmental Management Act and EIA Regulations, National Water Act, Integrated Coastal Management Act, Seashore Act, Spatial Land-used Management Act, TOPS and AIS regulations, provincial ordinances and municipal by-laws.

- Multiple overlaps result in requirements that make it difficult for new and existing operators to grow.
- The current legislation is constraining rather than enabling to sector growth.
- A medium to long-term solution would be the promulgation of a dedicated Act to manage and grow the sector.

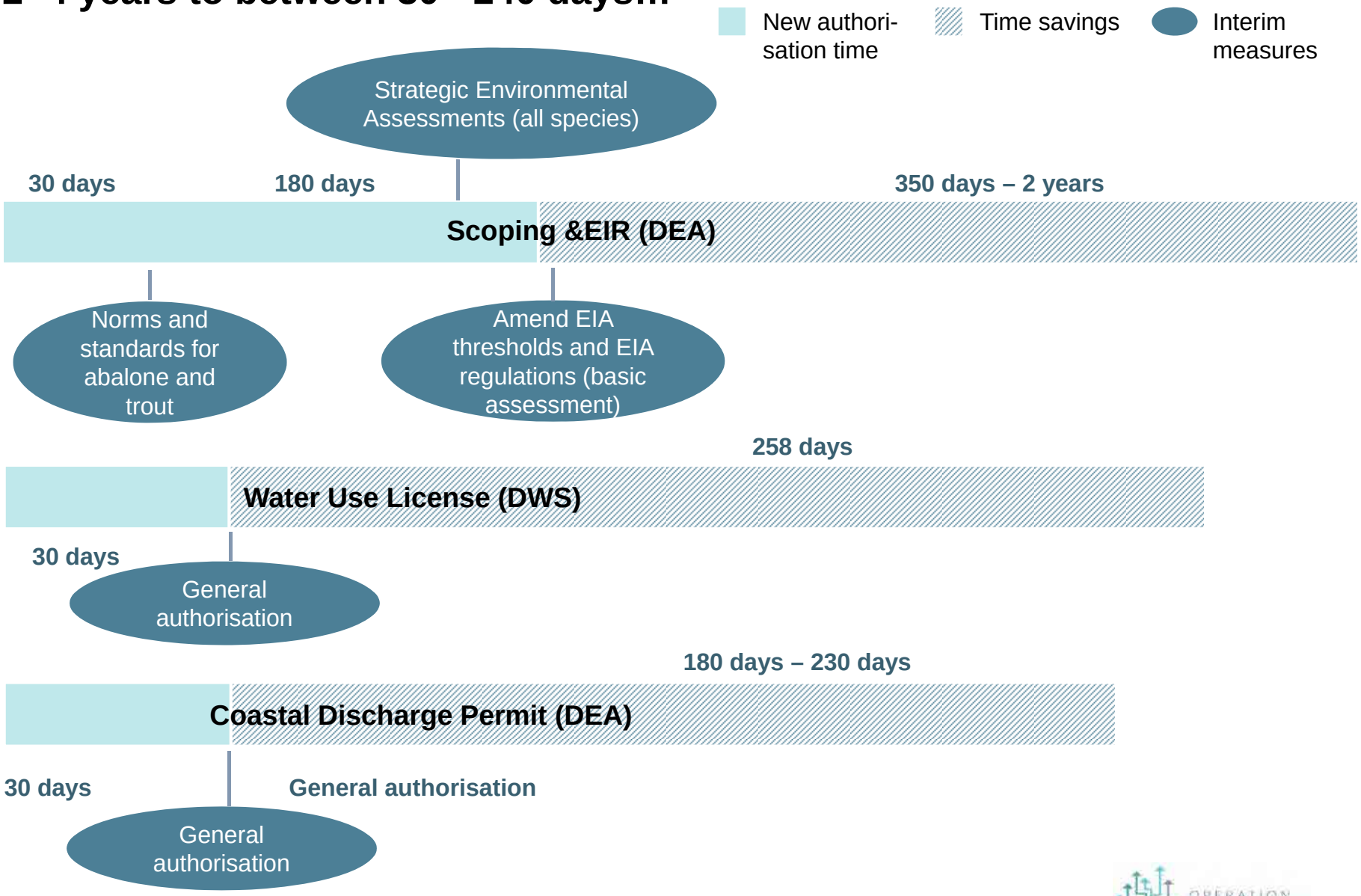
SOURCE: Aquaculture Lab

A legal legislation audit concluded that an Aquaculture Act should be developed to address key gaps. However, while the Act is being drafted interim measures were identified and prioritised (quick wins)



SOURCE: Aquaculture Lab

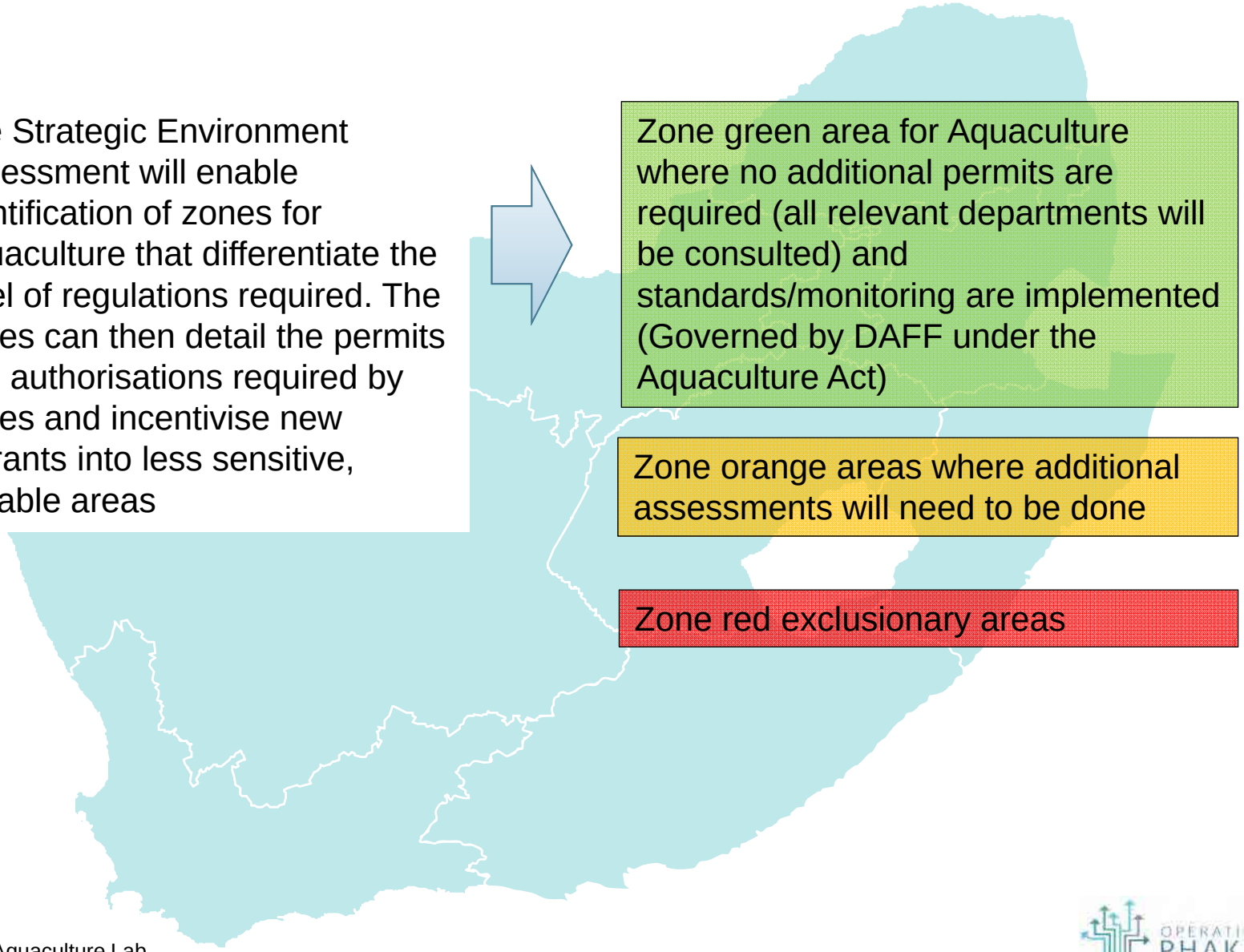
The interim solutions will reduce initial authorisation time from between 2- 4 years to between 30 - 240 days…



SOURCE: DAFF, DEA, DWS, Aquaculture Lab

…A national strategic environment assessment for land-based Aquaculture will take approximately 1.5 years and achieve ADZs

The Strategic Environment Assessment will enable identification of zones for Aquaculture that differentiate the level of regulations required. The zones can then detail the permits and authorisations required by zones and incentivise new entrants into less sensitive, suitable areas



Zone green area for Aquaculture where no additional permits are required (all relevant departments will be consulted) and standards/monitoring are implemented (Governed by DAFF under the Aquaculture Act)

Zone orange areas where additional assessments will need to be done

Zone red exclusionary areas

SOURCE: Aquaculture Lab

A total of nine (9) potential legislative amendment requirements were identified

Amendment	Impact
Increase minimum and maximum EIA thresholds for Aquaculture (NEMA 107 of 1998)	Small farms would fall under the EIA threshold and other farms would be restricted to a Basic Assessment which is simpler and shorter than a full Scoping &EIR
Resolve concerns around additional permitting layer under the Alien and Invasive Species Regulations (NEMBA 10 2004)	Avoid additional permit layer and specialist study requirements on existing and new farmers
Finalize Trout and Abalone norms and standards (NEMA 107 of 1998)	Farms that fall within the scope and adhere to norms and standards would not trigger an EIA and could start in 30 days from notification
Undertake and adopt a Strategic Environmental Assessment for Land-based Aquaculture	Zone environmental less sensitive and suitable areas for Aquaculture that require minimal or no additional permits and assessments prior to authorisation
Develop a General Authorisation for freshwater water use (Water Act 36 of1998)	In line with the Norms and Standards, avoid the need to apply for the Water Use Licence which can take 6 months to a couple of years by adhering to General Authorisation which covers the requirements of Aquaculture farms (flow rate, water quality, etc..)
Develop a General Authorisation for coastal discharge permits (ICM Act 24 of 2008)	In line with the Norms and Standards, avoid the need to apply for the Discharge Permit e which can take 4 to 8 months by developing General Authorisation which covers the requirements of low risk Aquaculture effluent (flow rate, water quality, etc..)
Increase tenure of MLRA rights (18 of 1998), for marine Aquaculture rights holders, from 1 to 2 years and combine permits where possible	Reduce the administration cost to the sector to apply for various different permits annually
The dti Industrial procurement policy framework	Ensure that local farmed fish is included in the policy
Develop an Aquaculture Act	Foster a One-Stop-Shop approach, include freshwater Aquaculture, promote PDI entrants, have development focus, zone areas for Aquaculture

SOURCE: Aquaculture Lab

Implementation risks and mitigation plan

Implementation risks

1. Potential slow buy-in from regulatory authorities to making the required amendments
2. Slow buy-in from regulatory authorities to the norms and standards approach to regulation
3. Appeals by Interested and Affected Parties (I&APs)
4. Insufficient capacity within DAFF (Aquaculture) to implement

Mitigation plan

1. Ensure a strong case is made to demonstrate the need for amendments
2. Ensure thorough consultation and participation from affected authorities, and demonstrate reduced administrative burden
3. Ensure broad scale consultation and participation with I&Aps

SOURCE: Aquaculture Lab

3 Regulations and governance charter

To facilitate co-operative governance and unlock regulatory constraints to achieve Operation Phakisa Aquaculture deliverables and general aquaculture growth.

Current Issues/Challenges

- Tenure and synchronisation of permits
- Gaps in the current legal framework
- Legislative barrier to new entrants
- Permit constraints of existing operational industries
- Inefficiency of granting authorisations
- Onerous and fragmented regulatory compliance burden
- Legislative conflicts
- Import and export inefficient, onerous and costly (cheap imports)
- Insufficient inclusion of Aquaculture in spatial planning
- Shortage of skills and funding to meet export monitoring requirements
- Authorisation constraints with regards to Water Use Licence, AIS regulations, EIA regulations, Coastal discharge, Treasury 16, MLRA, Leases and Governmental Water Works.
- Transformation incentives and financing of new projects

Objectives/Targets

- Develop an Aquaculture Act to address gaps and overlaps.
- Implement Integrated Authorisation Committee to fast track and streamline permitting
- Amend quick win regulations such as EIA thresholds and develop General Authorisations
- Prioritise finalization of Norms and Standards for Abalone and Trout farming
- Ensure an operational and functioning food safety monitoring programmes to meet export requirements
- Promote self-regulation and certification of the industry to support sustainable development and improve market access

Key initiatives required

1. Amend regulations and permits
2. Intergovernmental Authorisation Committee
3. Food safety certification
4. Development of Aquaculture Act

Potential Challenges

1. Buy in from key departments
2. Legislative constraints
3. Conflicting provisions in various legislation
4. Accountability
5. Human Resource
6. Finance

Initiative owners:

- DAFF, The dti, DST
- DEA
- DWAS
- Industry Associations

Sponsors:

- Treasury
- Development partners
- DPSA

Other key stakeholders:

- Public works, DRDLR
- Municipalities
- Treasury
- COGTA
- DoH
- DFIs
- The dti
- DED
- Transnet (DPE)
- Provincial conservation entities
- DEA entities (SANBI, SAIAB)
- Provincial Departments of Agriculture and Environment
- NGOs

SOURCE: Aquaculture Lab

Initiative 2: Legislative reform to promote Aquaculture development

Revising existing permits and regulations and implementing alternative regulatory tools to enable the sustainable growth of the sector

Initiative concept/details/highlights:

Investigate short term interventions to revisit regulations currently under review, apply alternative environmental legislation tools to fast track development and develop an Aquaculture Act.

Key short term interventions include:

- Reviewing and revise the EIA thresholds for Aquaculture
- Review and revisit the AIS regulations and their impact on Aquaculture
- Revise Water Use Licences/Discharge permits and investigate General Authorisations
- Revise MLRA permits requirements/ Revise MLRA foreign ownership clause

Alternative environmental management tools to explore include Strategic Environmental Assessment, Environmental Management Framework and Norms and Standards. Integrate these steps and tools into the Aquaculture Act to fast-track the implementation of the policy until the Act is gazetted.

Highlight: Support transformation by decreasing the barrier to new entrants, increasing the number of new farms and unlock economic potential and growth of existing farms.

Benefit: reduction in regulatory burden on existing and new farms.

Ease of implementation:

Impact:

Implementing agency:

- DEA/DAFF

Key stakeholders identified:

- DAFF
- DEA
- DWA
- Provincial competent authorities
- Aquaculture Association of SA

Required resources

Investment : R 9 million (consulting fees, authorities travel, venue)

Implementation timeframe

- Start date: August 2014
- End Date: December 2016

Key milestones

- 2014: Review EIA , DWA , ICM and AIS regulations
- 2015: Complete SEA & Standards
- 2016: Aquaculture Act

SOURCE: Aquaculture Lab

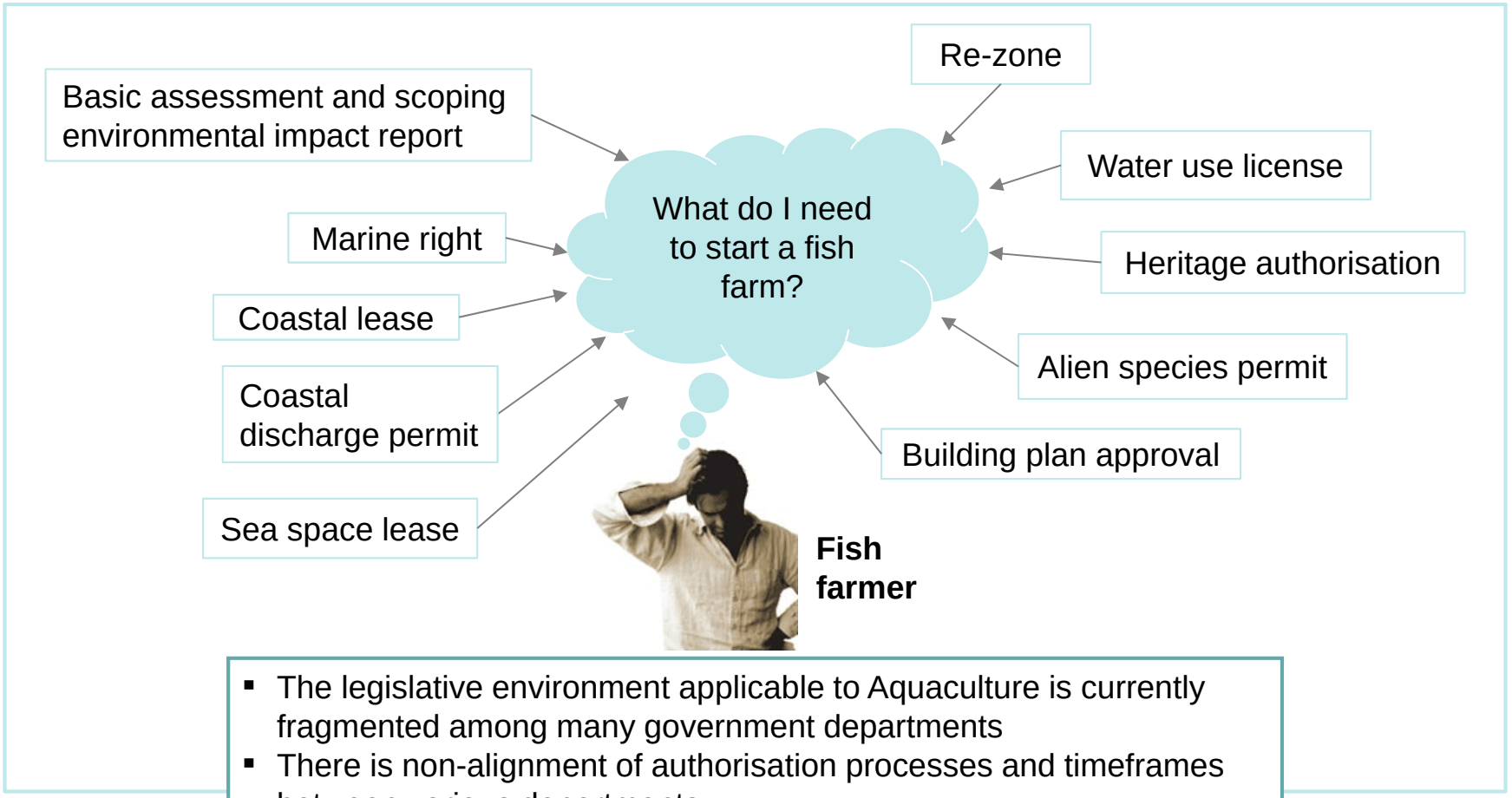
Initiative 2 budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	OPEX	1,8	3,9	5,5	2,4	0,0	0,0	11,7
	Compensation of employees	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Total Govt funding	1,8	3,9	5,5	2,4	0,0	0,0	11,7
Non Govt	CAPEX	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	OPEX	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Compensation of employees	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Total Non Govt funding	0,0	0,0	0,0	0,0	0,0	0,0	0,0
TOTAL Funding required		1,8	3,9	5,5	2,4	0,0	0,0	11,7

SOURCE: Aquaculture Lab - Budget template

Contents

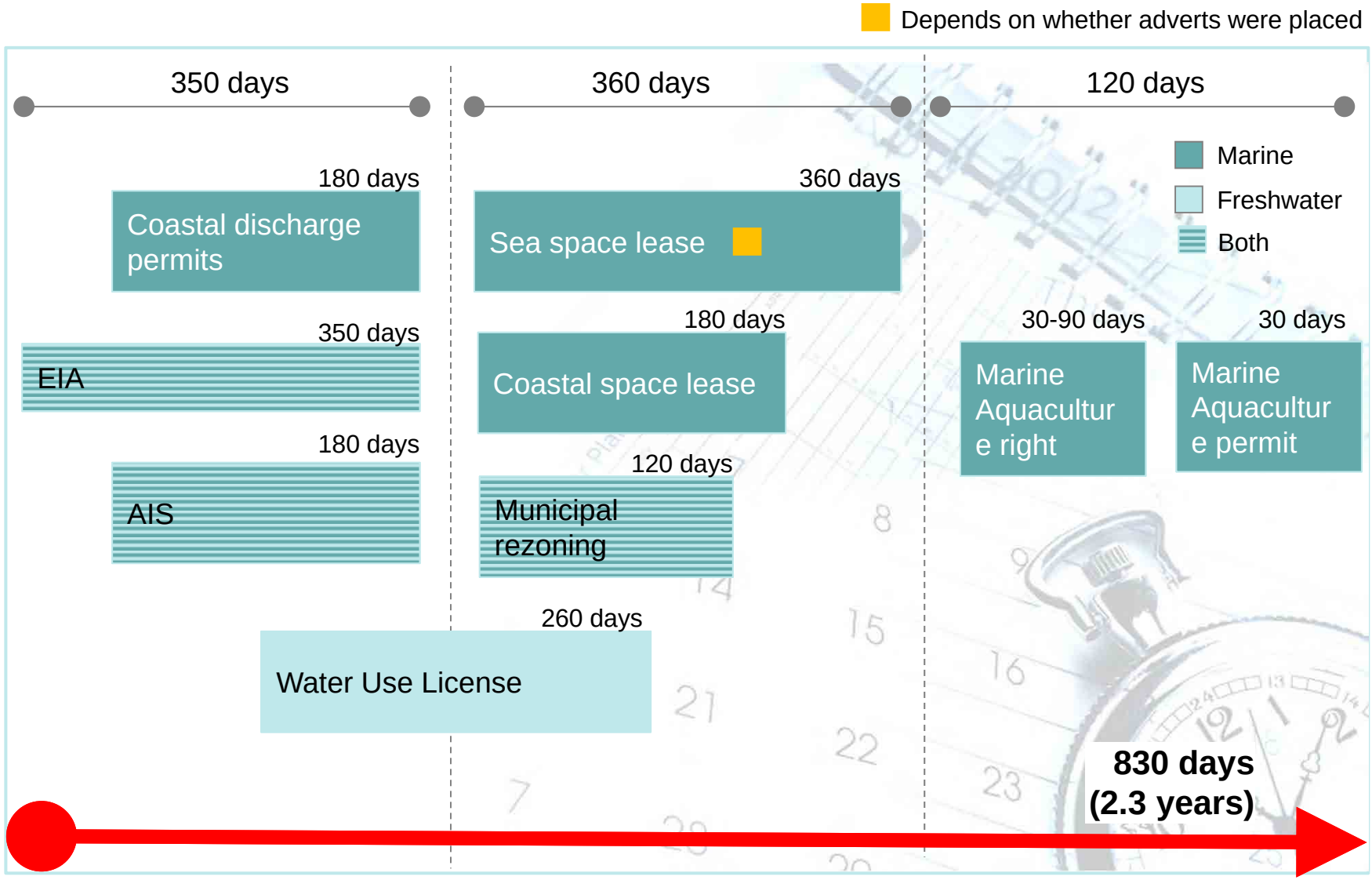
Aquaculture in South Africa is currently regulated by various departments with several types of authorisations required



- The legislative environment applicable to Aquaculture is currently fragmented among many government departments
- There is non-alignment of authorisation processes and timeframes between various departments
- There is a need for authorisation and administrative processes to be co-ordinated and streamlined, thereby reducing the amount of time that it takes for authorisations to be issued

SOURCE: Aquaculture Lab

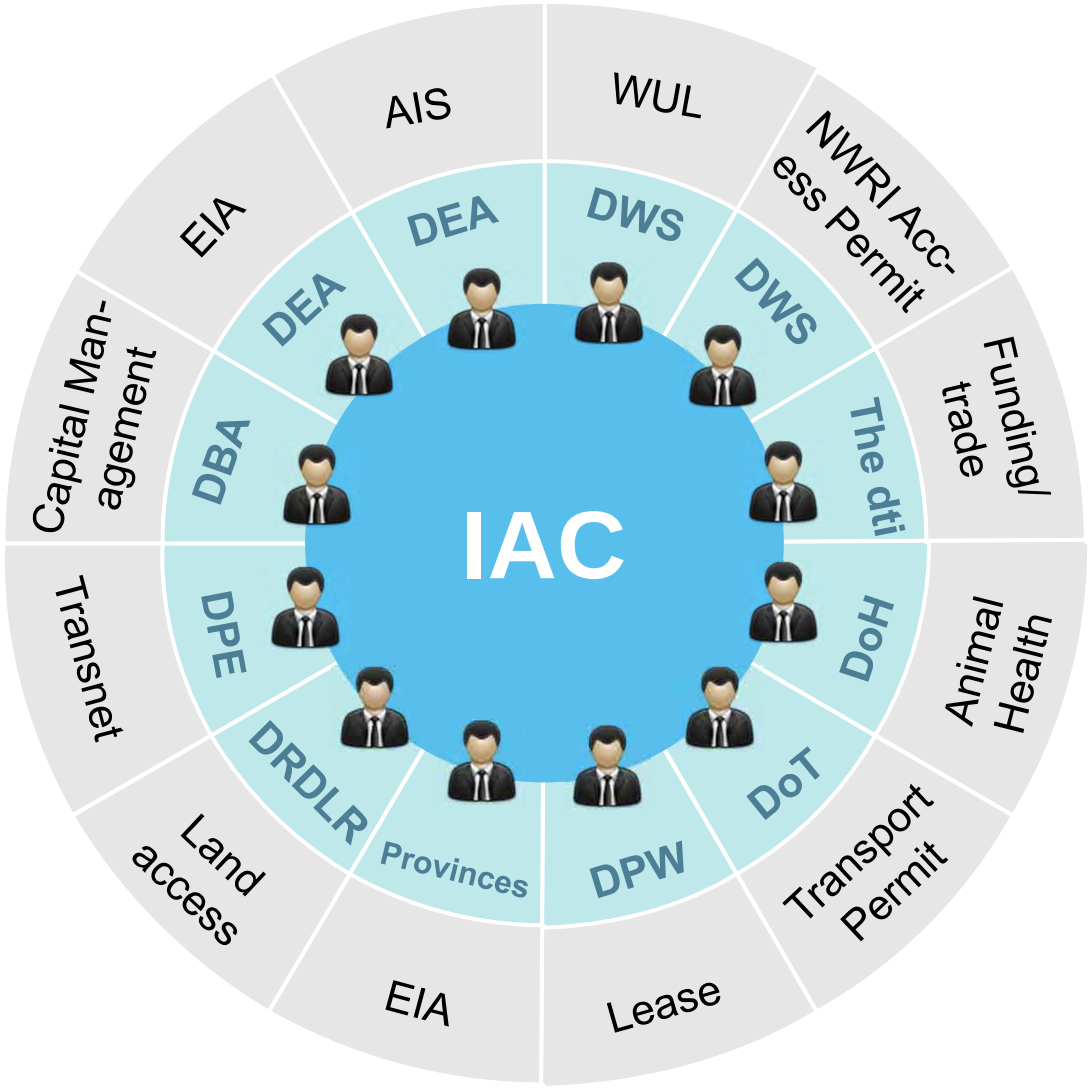
Currently authorisations can take up to three (3) years to be issued because of sequential administrative processes



SOURCE: Aquaculture Lab

A one-stop-shop approach…

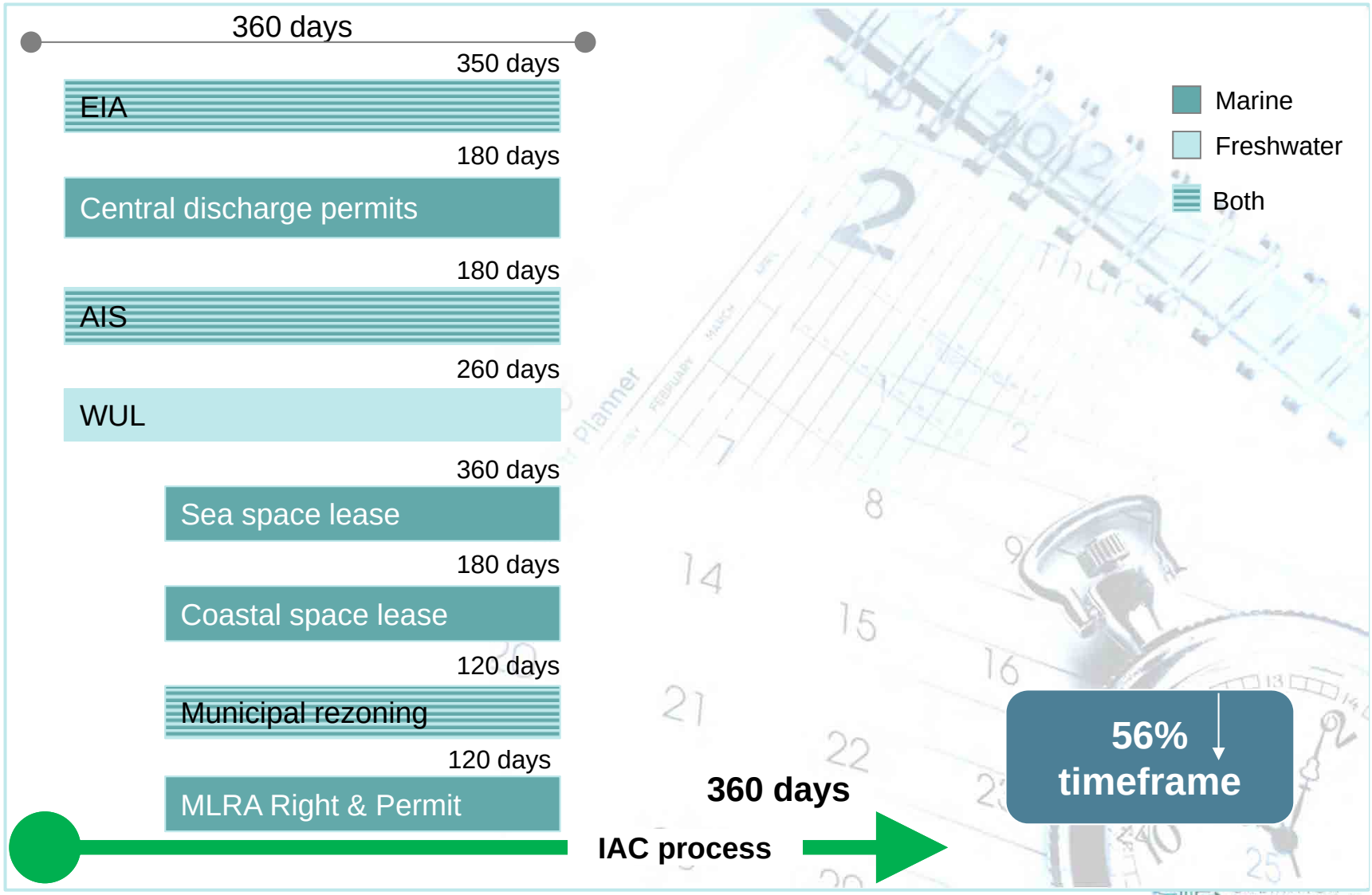
- Currently, there is an uncoordinated approach to the processing of applications for Aquaculture
- The IAC approach aims to get all Departments to co-ordinate the way in which Aquaculture applications are dealt with
- Further, the IAC aims to streamline information requirements for submission to the various departments
- The IAC is an organic structure and can be changed depending on the applications submitted for authorisation and can be convened between national and the 9 provinces, as necessary



SOURCE: Aquaculture Lab

The proposed IAC approach will result in a 56% reduction in timeframe in processing of applications

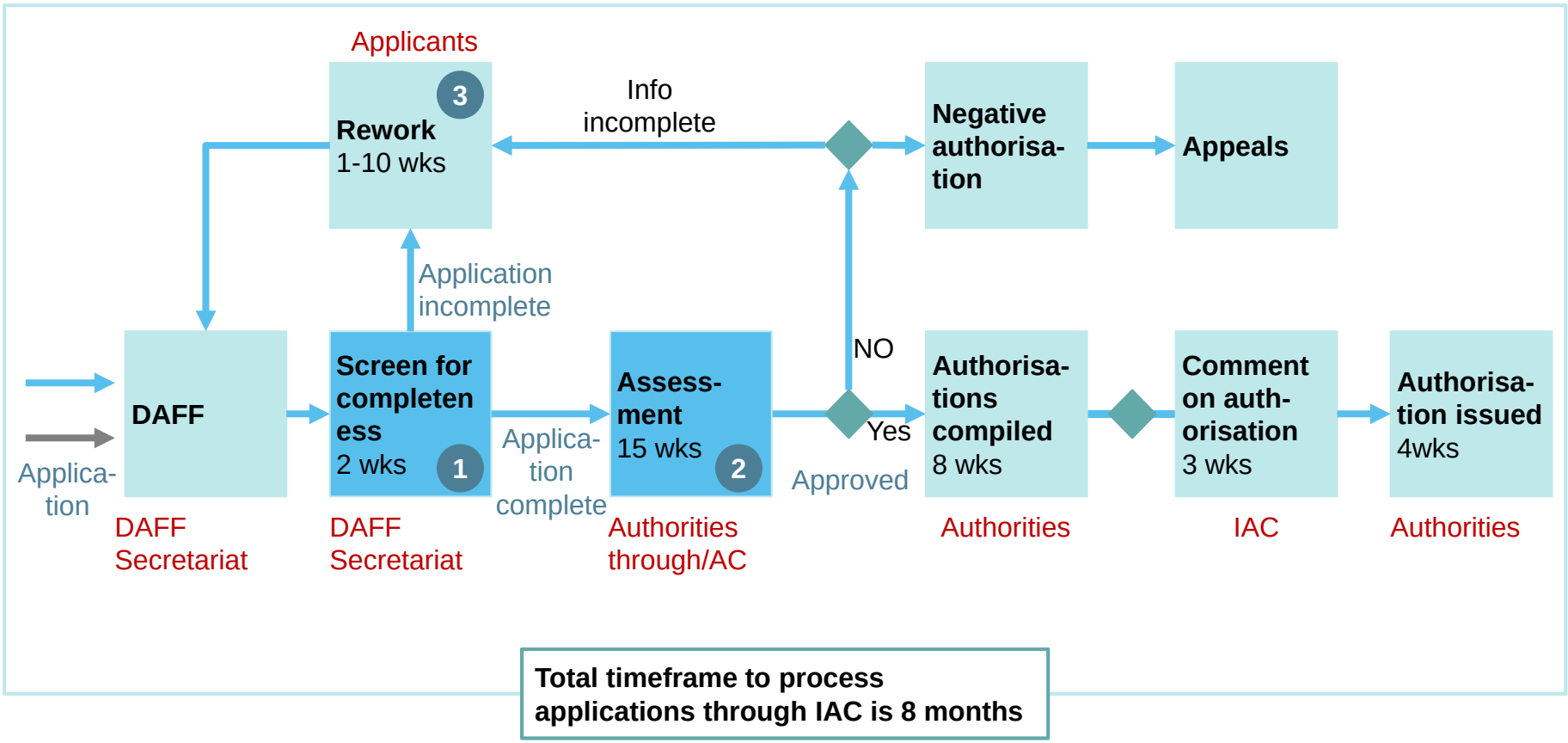
However, after the various legislative amendments, this timeframe will be further reduced by at least **50%**



SOURCE: Aquaculture Lab

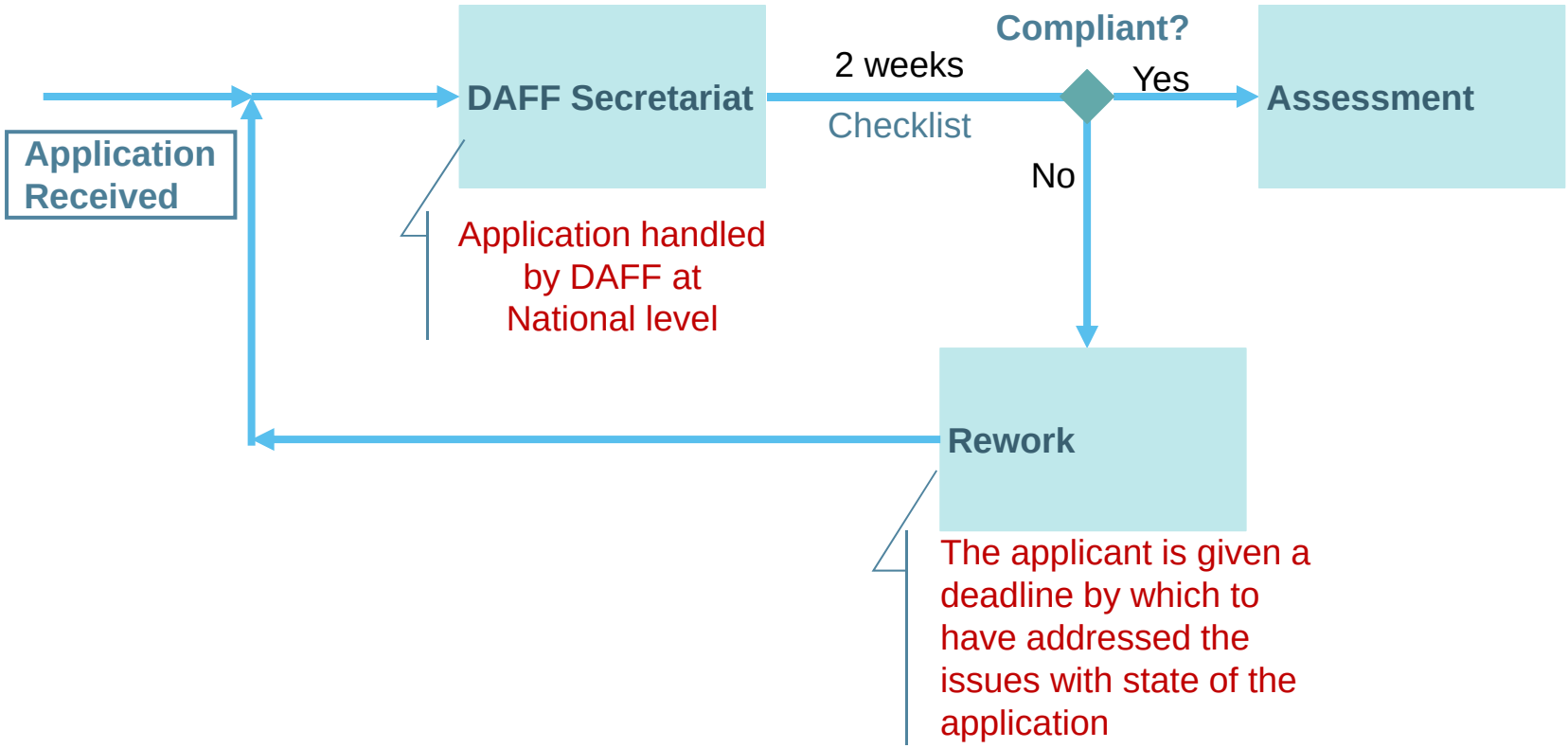
Overall timeframes for authorising projects that meet minimum information requirements

Details to follow



SOURCE: Aquaculture Lab

Applications would be screened for completeness prior to Assessment in order to eliminate delays due to rework requirements

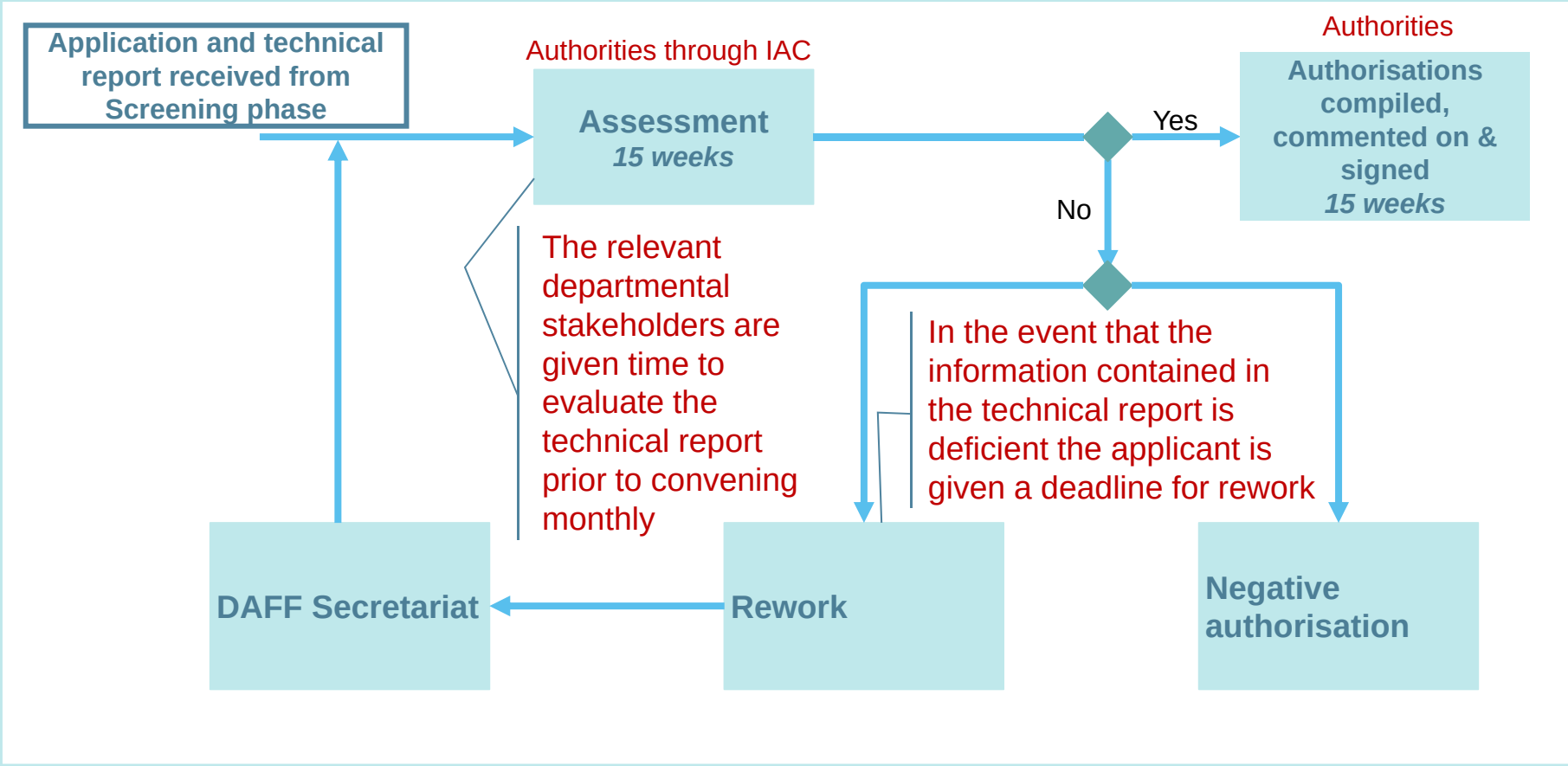


Criteria

- Adequate information for decision-making (public participation, specialist studies completed and included in application).

SOURCE: Aquaculture Lab

The IAC assessment is convened by DAFF, roping in the relevant provincial stakeholders



Criteria

- Adequate information must be included in application to make decision (public participation, specialist studies)

SOURCE: Aquaculture Lab

Implementation risks and mitigation plan

Implementation risks

1. Potential slow buy-in from regulatory authorities in joining the IAC
2. Applicants providing insufficient information to allow for informed decision-making on permits
3. Authorities encountering capacity challenges in trying to fast track the processing of applications

Mitigation plan

1. Nominations to be called for at high level and nominees to sign acceptance letters
2. The IAC will identify critical information requirements which will be communicated to applicants.
3. Authorities to consider reprioritizing human capital in favour of permitting functions (i.e., secondments etc..)

SOURCE: Aquaculture Lab

Initiative 3: Establishment of an Inter-departmental Authorisations Committee

Co-ordinating authorities and process improves administrative efficiency and reduces cost and burden to the sector, new entrants and the state.

Initiative concept/details/highlights:

The "IAC" will be responsible for:

- Co-ordinating and streamlining regulatory approvals required for priority projects identified under Operation Phakisa;
- Co-ordinating and facilitating the issuing of approvals for other Aquaculture projects;
- Facilitate retrospective approval of unlawful operations;

Steps:

✓ Review and revise existing MoUs with competent authorities to streamline permitting; and if necessary, consolidate into a single multi-authority MOU;

✓ Assign representatives and launch the Committee.

The committee is to be constituted by senior officials with decision-making powers from all relevant government departments.

Benefit: significant reduction in turnaround time for multiple approvals (< 8 months).

Ease of implementation:

Impact:

Implementing agency:

- DAFF

Key stakeholders identified:

- DEA and all Provincial Departments of Environment
- DWS
- DPW
- DoH, **dti**
- Transnet NPA (DPE)

Required resources

Investment (R 1.6 mn): for DAFF – Secretariat costs; Authorities time and travel costs.

Implementation timeframe

- Start date: August 2014
- End Date: December 2016

Key milestones

- 2015: all approvals in place for identified priority projects and other projects pending approval.
- 2016: Streamline/integrate authorisations

SOURCE: Aquaculture Lab

Initiative 3 budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0	0	0	0	0	0	0
	OPEX	0	0	0	0	0	0	0
	Compensation of employees	2	0	0	0	0	0	0
	Total Govt funding	2	0	0	0	0	0	0
Non Govt	CAPEX	0	0	0	0	0	0	0
	OPEX	0	0	0	0	0	0	0
	Compensation of employees	0	0	0	0	0	0	0
	Total Non Govt funding	0	0	0	0	0	0	0
TOTAL Funding required		2	0	0	0	0	0	0

SOURCE: Aquaculture Lab - Budget template

Contents

Importing nations require health assurances that the products they receive are safe for consumption

Regions apply International Standards

Asia, USA, EU & Japan

- Codex Alimentus
- Chinese Health Certification
- Food and Drug Administration State-wide Internal Regulations
- EU Regulations and Decision Compliance
- Japanese Import Standards

Some programmes are already operating, but are under-resourced

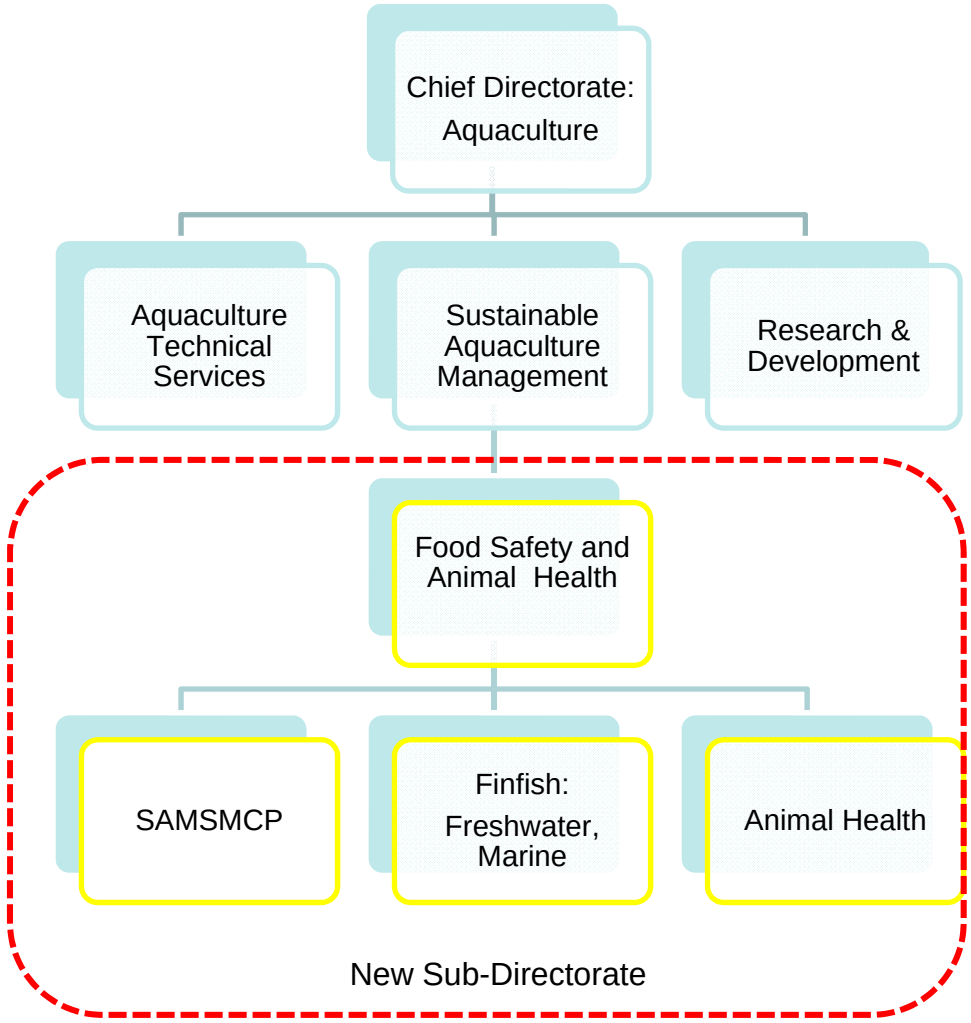
Challenges	Implications
Finance *Little funding allocated to Aquaculture*	▪ Testing can't be/isn't done ▪ Staff cannot be appointed ▪ Cannot keep up with international developments ▪ High equipment & maintenance costs
Human resources *Few trained skills*	▪ No trained specialists – Vets, Phytoplanktologists ▪ Few technicians ▪ No Extension officers
Infrastructure *Testing facilities are few and far in between*	▪ Equipment old ▪ Testing standards constantly changing ▪ Equipment expensive ▪ No dedicated SANAS lab

To overcome these issues:

- Finance is required as little funding has been allocated to Aquaculture in the past
- Human Resources – technicians and specialists (veterinarians, etc..) are needed to fill new posts
- Infrastructure needs to be developed, as testing and monitoring is outsourced at present

SOURCE: Aquaculture Lab

A fully resourced sub-directorate focused on food safety and animal health would unlock potential markets for all species

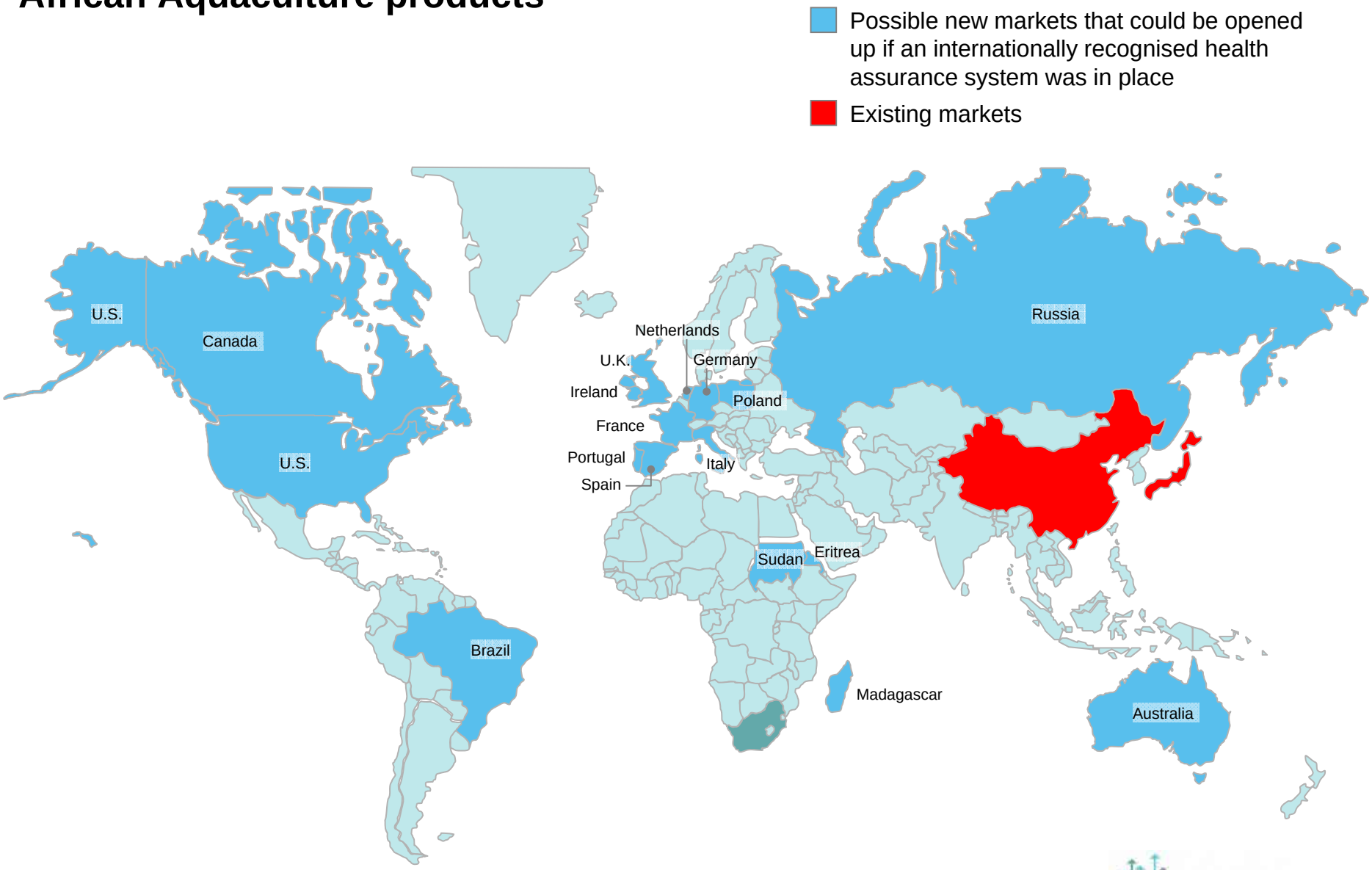


At present there is no co-ordinated health assurance system in place. This impacts on exports, as producers cannot expand out of existing markets. A dedicated sub-directorate would:

- Open new markets
- Ensure safe products for export/sale
- Reduce bureaucracy
- Provide a quick response to new regulations
- Help develop Aquaculture

SOURCE: Aquaculture Lab

Effective programmes would unlock at least 9 NEW markets for South African Aquaculture products



SOURCE: Aquaculture Lab

Implementation risks and mitigation plan

Implementation risks

1. The equipment required for monitoring and certification may be too expensive
2. Staff with required skills unavailable
3. Insufficient funding for testing/monitoring activities
4. MOU's between relevant departments not in place

Mitigation plan

1. Consider opportunities to outsource tests where economical
2. Partner with existing skilled personnel outside Government.
3. Partner with industry to fund activities
4. Escalate through Phakisa delivery unit to gain higher level intervention

SOURCE: Aquaculture Lab

Initiative 4a & b: Establishment of globally recognised monitoring and certification system

In order to facilitate the expansion of exports of Aquaculture products into existing and new markets, the international standards need to be met.

Initiatives concepts/ details/ highlights:

Establish a new Sub-Directorate that will ensure the establishment, implementation and maintenance of food safety monitoring and certification programmes that are in line with international standards, including for Africa.

Key steps:

- Create new positions for the Sub-directorate and appoint staff
- Sign the MOU between DAFF and the NRCS (SABS) with regard to the certification of bi-valves for export
- Ensure funding for the "Residue testing in finfish" that feeds into the Finfish Monitoring Programme
- Resource and enable the food safety and monitoring programmes
- Develop mechanisms to assist industry to resolve technical trade impediments, especially in relation to food safety, hygiene and certification
- Develop capacity to engage with Codex issues and requirements
- Finalize Animal Health Implementation Plan and allocate adequate resources.

Benefits:

- Enable the development of new markets;
- Ensure safe product export to existing and new markets;
- Improve investor confidence;
- Assist in creating awareness of Aquaculture and Aquaculture products.

Ease of implementation:

Impact:

Implementing agency:

DAFF (DOH MOU)

Key stakeholders identified:

- South African Bureau of Standards (SABS)
- National Regulator for Compulsory Specifications (NRCS)
- Industry
- DoH, The dti
- Provincial Agriculture Dept. (State vets)
- Provincial DoA
- Council for Scientific & Industrial Research (CSIR)
- Municipalities

Required resources

Investment: R10.8 mn/ annum

Implementation timeframe

- Start date: November 2014
- End Date: Ongoing

Key milestones

- 2015: Baseline monitoring completed, new staff appointed
- 2016: All Programmes operational – on going

SOURCE: Aquaculture Lab

Initiative 4a budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0.0	0.0	0.3	0.0	0.0	0.0	0.3
	OPEX	0.4	0.0	0.6	0.6	0.6	0.6	2.5
	Compensation of employees	2.0	0.0	3.0	3.0	3.0	3.0	12.1
	Total Govt funding	2.4	0.0	3.9	3.6	3.6	3.6	14.8
Non Govt	CAPEX	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	OPEX	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Compensation of employees	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total Non Govt funding	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL Funding required		**2.4**	**0.0**	**3.9**	**3.6**	**3.6**	**3.6**	**14.8**

SOURCE: Aquaculture Lab - Budget template

Initiative 4b budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	OPEX	0.0	0.3	2.3	2.3	2.3	2.3	9.5
	Compensation of employees	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total Govt funding	0.0	0.3	2.3	2.3	2.3	2.3	9.5
Non Govt	CAPEX	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	OPEX	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Compensation of employees	0.4	0.0	0.0	0.0	0.0	0.0	0.0
	Total Non Govt funding	0.4	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL Funding required		**0.4**	**0.3**	**2.3**	**2.3**	**2.3**	**2.3**	**9.5**

SOURCE: Aquaculture Lab - Budget template

Contents

Accessing financing for Aquaculture is challenging because of 3 key factors

Challenge	Description	Impact on sector
Policy	▪ Underdeveloped policy environment to support growth of Aquaculture sector	▪ Financial incentives to develop Aquaculture sector treated as small subset of agriculture sector
Sector track record	▪ Limited success in the sector results in limited investment ▪ Private and public investment appetite is low	▪ Prohibitive financing costs (e.g., high interest rates)
Funding mechanism	▪ Funding made available is uncoordinated	▪ Financing is spread thin between provinces which compete with each other ▪ Evaluation criteria biased towards established businesses ▪ Funds not ring-fenced for Aquaculture (i.e., pooled with agriculture) ▪ Inadequate capacity to administer funds

Operation Phakisa aims to set up a dedicated Aquaculture Development Fund to provide end-to-end project financing

Aquaculture sector currently faces a general lack of access to finance

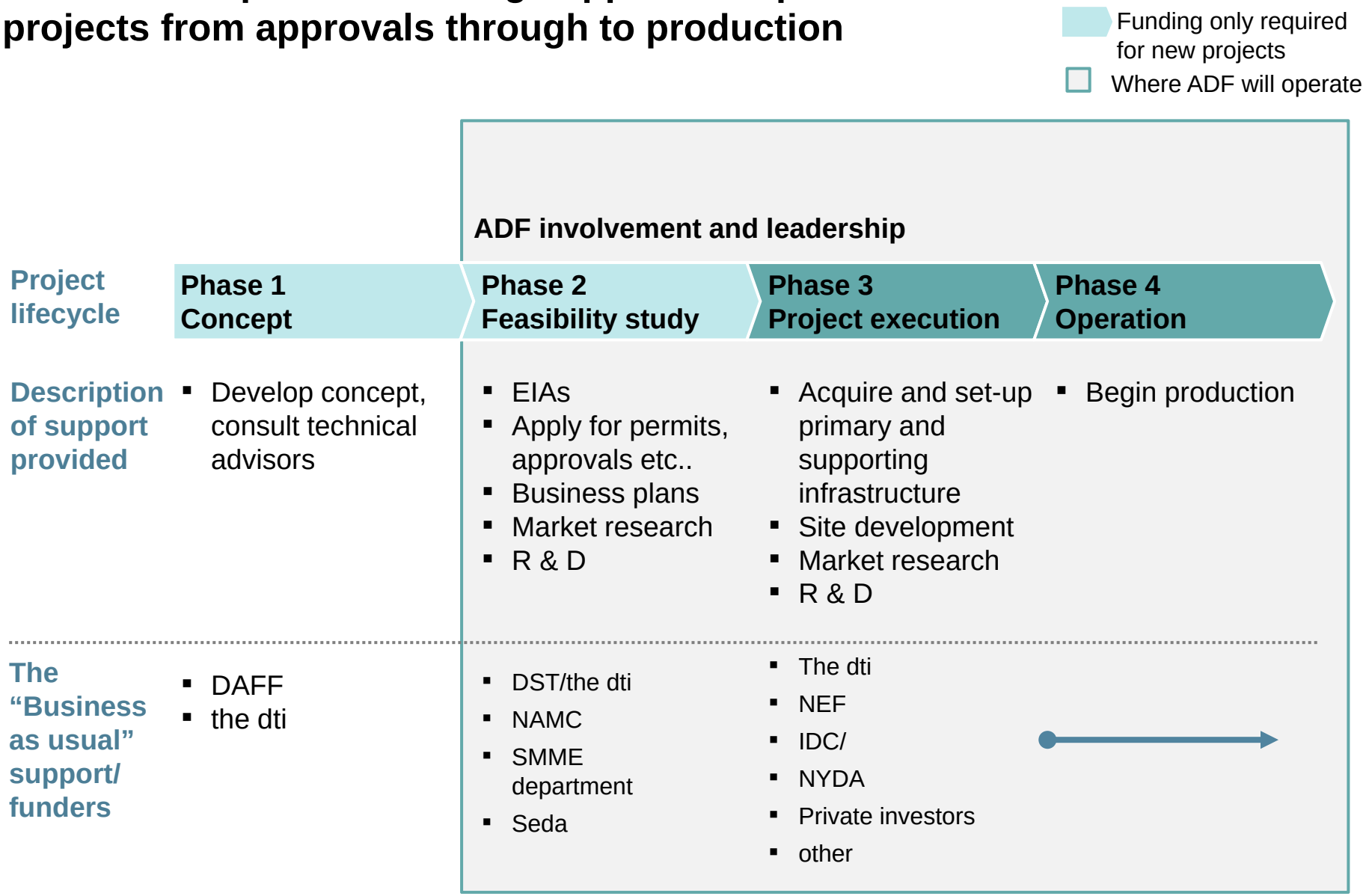
- New sector that is less understood by investors with limited proven track record of success
- No funding to support new entrants / small businesses
- Uncoordinated funds across government departments (e.g., could lead to double-dipping)

ADF aims to fast-track growth, while meeting transformation objectives

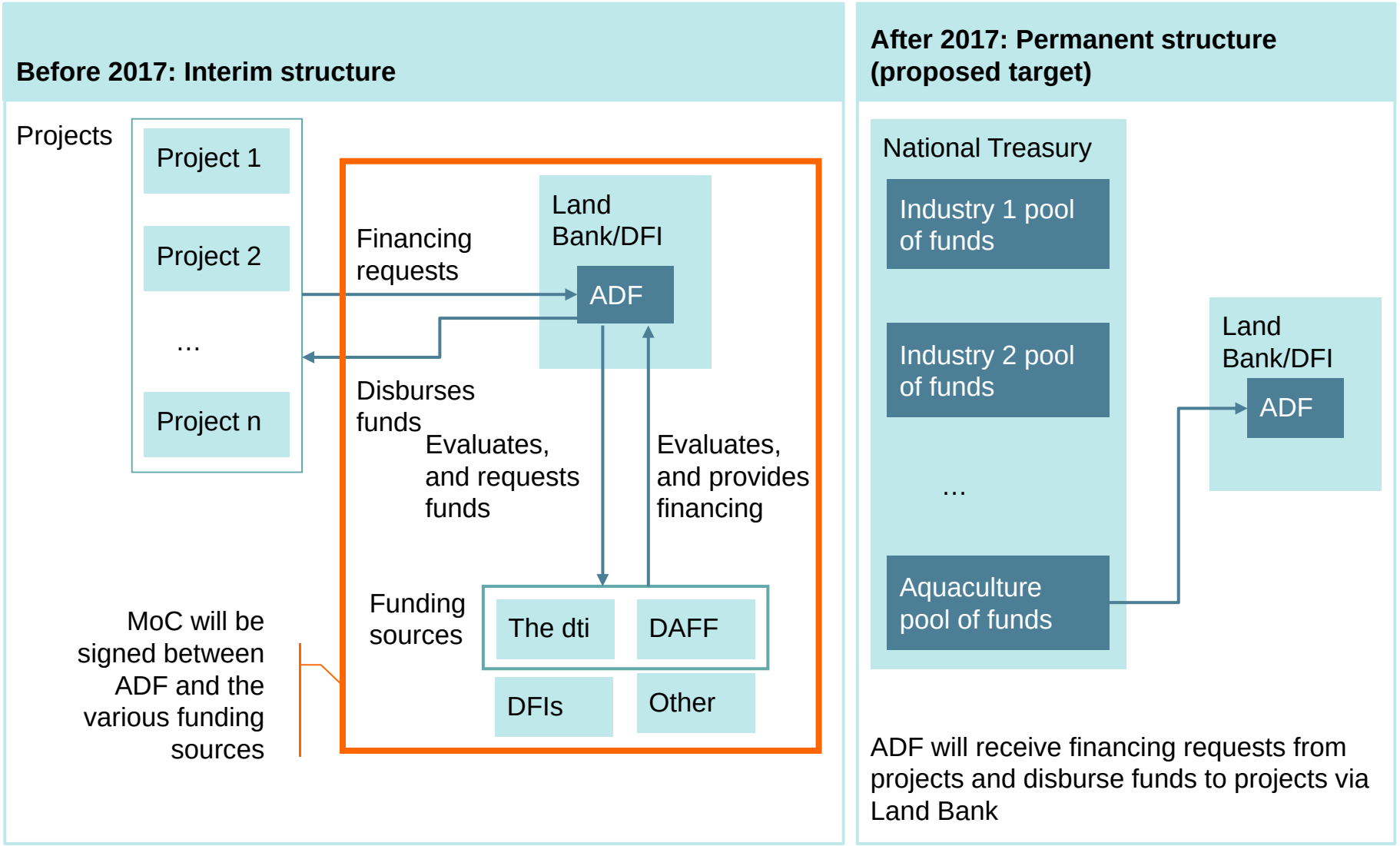
- Funding pool to assist end-to-end Aquaculture projects
- Coordinates funding from various government departments and DFIs through an MoC
- Initial proposal for ADF to be managed by Land Bank or DFI
- Key focus of ADF to drive transformation / inclusivity by providing new entrants with access to funding in pre-production phase

SOURCE: Operation Phakisa Aquaculture lab, July – August 2014

The ADF will provide funding support to Aquaculture projects from approvals through to production



We aim to work with National Treasury to earmark and channel Aquaculture funds directly to the ADF by mid-2017



SOURCE: Team analysis

There are various players in the DFI space that have invested in the sector

	Organisation	Mandate	Agriculture spend to date (ZAR)	Implication/ Observation
DFI	**Industrial Develop-ment Corporation**	To develop industries and grow specific sectors, helping create jobs and develop areas that were previously disadvantaged.	▪ Gro-E Fund: R10 bn (R1 bn earmarked for youth owned businesses)	▪ Limited Aquaculture uptake
	NEF	To promote and facilitate black economic participation through the provision of financial and non financial support	▪ 6% of R3.7 bn in agro-processing (2012 Figures)	▪ Not involved in primary production
	Land Bank	▪ To provide financial services to agribusinesses ▪ To design financial products to facilitate entrance into the sector by new PDI entrants	▪ Administers DAFF and DRDLR funding programmes	▪ Under spending
	DBSA	To pursue economic development through the financing of commercially viable public and private projects/programmes (investments, capacity building and human development)	▪ (Not sector specific)	▪ The focus is bulk infrastructure, not sector specific
	NYDA	Lobby and advocate for integration and mainstreaming of youth deve-lopment in all spheres of govern-ment, private sector and civil society by providing grant funding	▪ (No sector specific allocations) ▪ Grants up to R100,000	▪ Limited funding for meaningful participation

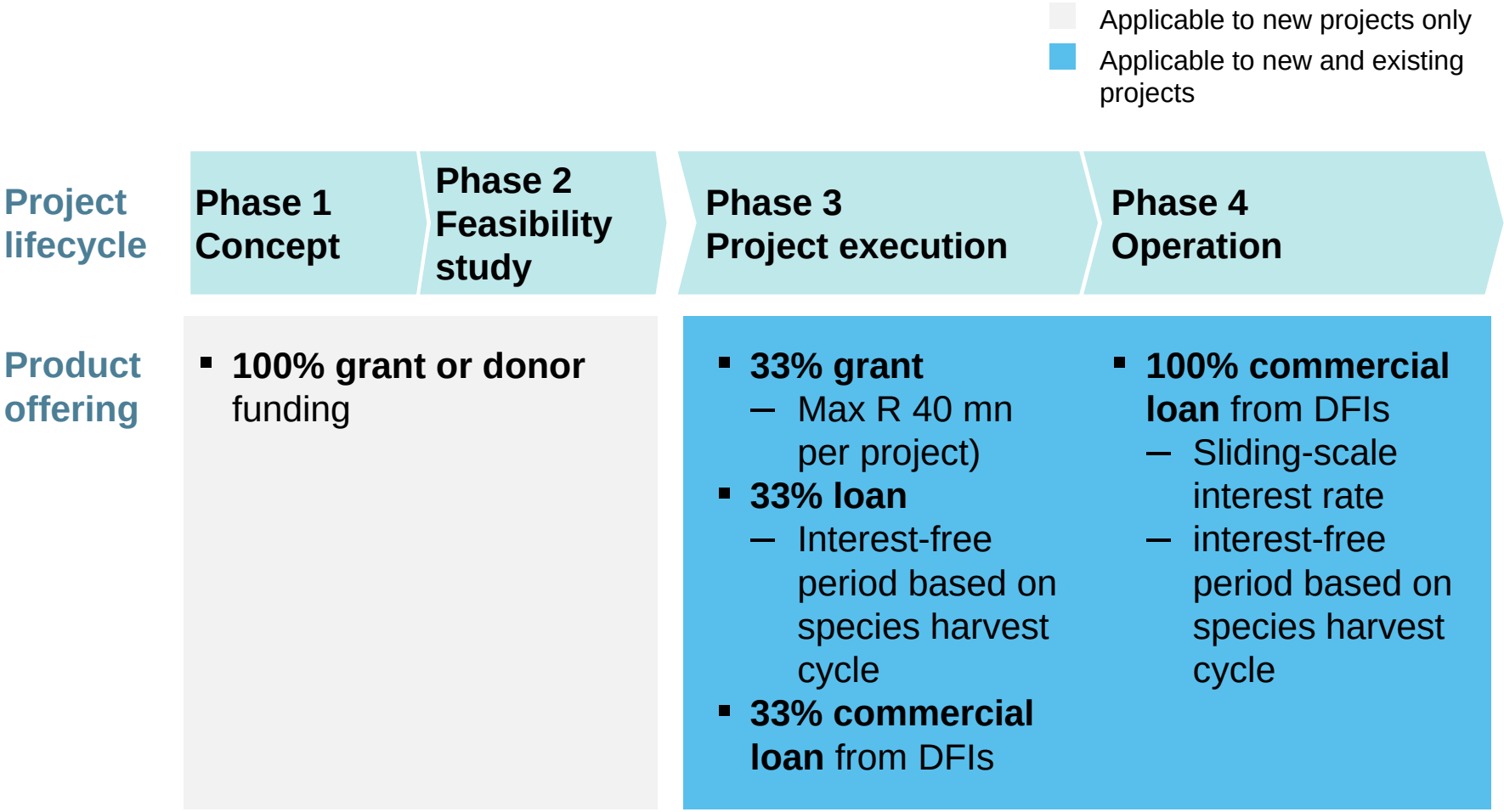
SOURCE: Source

Government departments also have financial resources which can be leveraged

	Organisation	Mandate	Agriculture spend to date (ZAR)	Implication/ Observation
Govern-ment depart-ment partners	**DAFF**	To ensure food security through sustainable production and management of natural resources	▪ CASP (R1 bn) ▪ AgriBee (R200 mn) ▪ MAFISA	▪ Under-spending ▪ Funds not ring-fenced for Aquaculture
	The dti	To stimulate economic growth, job creation through industrialisation and trade policy	▪ ADEP (R400 mn for 5 years)	▪ Available but not ring-fenced for Aquaculture. ▪ Under-spending ▪ Does not support new entrants
	DST	To support science and technology entrepreneurship development	▪ R10 mn between 2011 and 2014 ▪ (R32 mn between 2004 – 2010)	▪ Aquaculture specific expend
	EDD	Among others, the EDD is mandated to engage the private sector in order to facilitate its transformation and diversification	▪ (Sector funding done through the IDC)	▪ Funds not ring-fenced for Aquaculture
	DRDLR	To ensure a co-ordinated and integrated broad based agrarian transformation as well as strategic investment in economic and social infrastructure that will eventually benefit all rural communities	▪ LRAD (R500 mn) ▪ Emerging Farmers Support Facility (R6 bn, R1.8 bn already spent)	▪ Funds not ring-fenced for Aquaculture

SOURCE: Departmental websites

ADF will offer a variety of products that cater to the Aquaculture sector, depending on project lifecycle phase



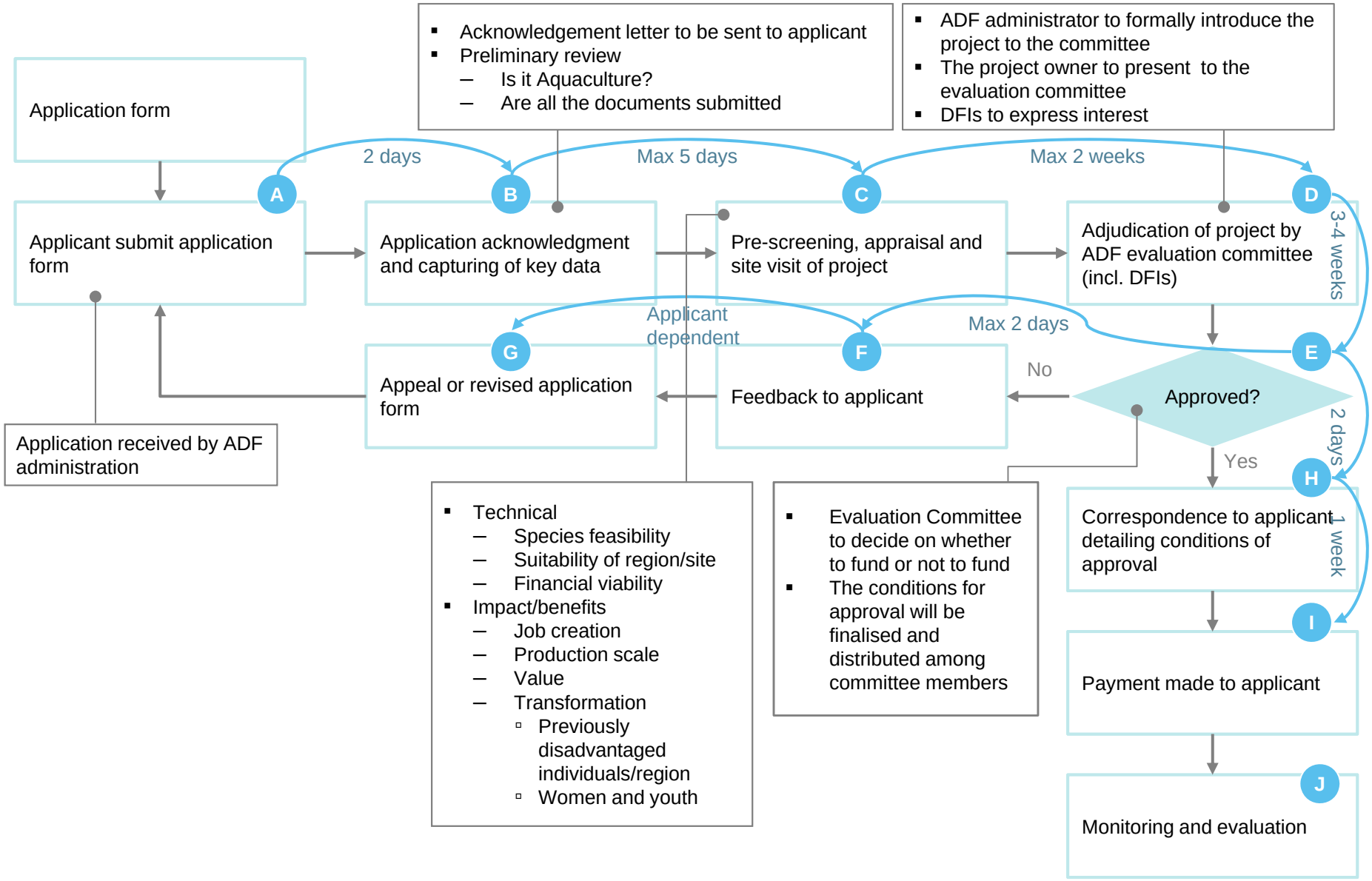
SOURCE: Aquaculture Lab

A robust governance structure is required to enable the ADF

	Objectives	Frequency/ mechanism	Key stakeholders
DG Steering Committee	▪ Discuss progress and challenges ▪ Provide strategic leadership and ensure success ▪ Review impact of ADF	▪ Quarterly meetings	▪ DG: DAFF ▪ DG: The dti ▪ DG: DST ▪ DG: National Treasury
Evaluation committee	▪ Assessment of business plans ▪ Approval of financing requests	▪ Permanent, appointed role with technical expertise	▪ DAFF, The dti, DST ▪ Independent technical consultants/academia ▪ DFI funding partners
Fund administrator	▪ Administration of fund ▪ Monitoring / tracking of funded projects against targets	▪ Permanent, appointed role with finance expertise	▪ Land Bank

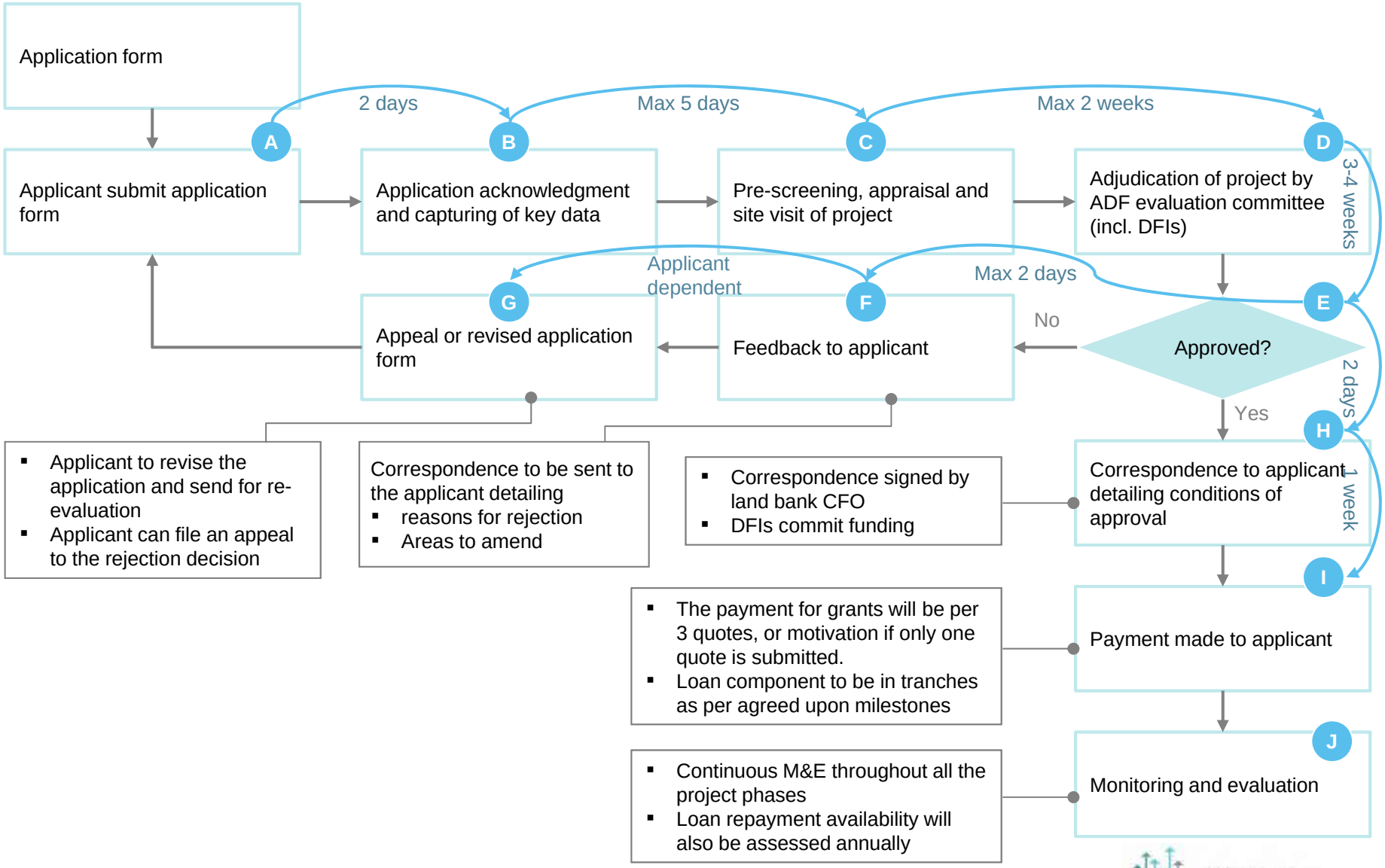
SOURCE: Aquaculture Lab

Application process flow (1/2)



SOURCE: Aquaculture Lab

Application process flow (2/2)



SOURCE: Aquaculture Lab

Aquaculture projects seeking ADF support will be evaluated based on 4 pillars that balance commercial viability and socio-economic objectives

Pillars	Evaluation criteria
Economic	▪ Number of jobs created ▪ Size of investment required
Social development	▪ BBE compliance (L4) or plan to achieve this score in 5 years ▪ Gender equity (proportional % of females in the company) ▪ Human capital investment ▪ Vulnerable/distressed districts (27 districts approved cabinets) ▪ Community involvement
Commercial viability	▪ Viability in post-grant phase ▪ Positive IRR from financial projections
Regulatory	▪ EIA clearance where required ▪ Relevant permits

SOURCE: Aquaculture Lab

Other potential sources of funding exist for the Aquaculture sector

Sources	Description
Government	▪ Provincial development agencies (e.g., ECDC, GEDA, TIKZN) ▪ Government agencies
Non-government organizations (NGO)	▪ Development programs that focus on poverty alleviation (e.g., World Bank)
Local supplier development programs	▪ Programs focusing on developing and promoting local procurement – Offtake agreements with major retailers (e.g., Walmart / Massmart)
Corporate Social Investment Programs (CSI)	▪ Programs assisting in corporate restructuring (to meet transformation objectives), business plan development, and off-take agreements ▪ Potential retailers: Pick n Pay, Checkers, Shoprite, Spar, Woolworths ▪ Potential non-retailers: Anglo Zimele Fund, De Beers

SOURCE: Aquaculture Lab

Implementation risks and mitigation plan

Implementation risks

1. Reluctance by government departments to commit their budgets for the formation of the fund
2. Influx of projects at initial stages may exert pressure on the Fund, i.e., likely to be stretched beyond its capacity
3. Learning-by-doing during implementation in the early stages may translate to expensive mistakes

Mitigation plan

1. Constantly liaise or work with the office of the presidency to maintain pressure on participating government departments
2. Prioritize or limit projects in the initial phase of the fund
3. Best practice training on project evaluation for the evaluation team

SOURCE: Aquaculture Lab

4 Aquaculture Development Fund charter

To set up a dedicated Aquaculture Development Fund (ADF) to provide end-to-end project financing

Current Issues/Challenges
- New sector that is less understood by investors with limited proven track record of success
- No funding to support new entrants / small businesses in particular with regard to the pre-project phase
- Current funding mechanism is biased towards established Aquaculture businesses
- Uncoordinated funds across government departments (e.g., could lead to double-dipping)

Objectives/Targets
- To create a funding pool to assist end-to-end Aquaculture projects
- To coordinate funding from various government departments and collaborations with DFIs through a Memorandum of Cooperation (MoC)
- To get the Land Bank to house and administer the ADF
- To drive transformation / inclusivity by providing new entrants with access to funding in pre-production phase

Initiative owners
- DAFF

Sponsors
- DAFF
- NT
- The dti
- DST
- DFIs
- Land Bank

Other key stakeholders
- DRDLR
- SMMEs Department
- Municipalities
- EDD
- Provincial Departments of Agriculture, NGOs,
- Seda

Key initiatives required
- Establishment of ADF which will be housed and administered by the Land Bank
- Establishment of formal working relations with the DFIs through a signed MoC

Potential Challenges
- Tight fiscus environment
- Buy in from key departments
- Legislative constraints (e.g. DORA)
- Human Resource

SOURCE: Aquaculture Lab

Initiative 5: Establishment of an Aquaculture development fund

To facilitate the entrance of new participants and transform the existing sector, throughout the value chain, by streamlining existing funding mechanisms and improving accessibility

Initiative concept/details/highlights:

- To have a stand-alone Aquaculture Development Fund
  - Initially new funds are sought from Treasury, available funds should first be drawn from the dti, Land Bank, DAFF (CASP), Jobs Fund, SOEs, and *Indirect* NIPP – National Industrial Participation Policy and then topped up in future
  - The fund should support BEE compliant companies
  - The fund should support SMMEs and new entrants
  - The fund must be biased to support projects with high women and youth participation
  - The fund must pay for business plan development, EIAs, technical partners, capital and operational expenses.
  - It would include Grant, Research and Loan funding
  - Single technical assessment and allocation committee
- To review FDI guidelines and to introduce Tax Incentives; Lobby DFIs to increase resources to support Aquaculture – financial and human. DFIs must increase their risk appetite

Ease of implementation:

Impact:

Implementing agency:

- The dti

Key stakeholders identified:

- DAFF, Treasury
- Technical Experts, Private Banks
- SMME, EDD
- DFIs (IDC, PIC, Land Bank)
- Provincial Gov, DST, the Presidency

Required resources

Investment : R 6 mn

Implementation timeframe

- Start date: July 2014
- End Date: Ongoing

Key milestones

- April 2015: Set up Fund mechanism

SOURCE: Aquaculture Lab

Initiative 5 budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0.0	0.1	0.1	0.0	0.0	0.0	0.2
	OPEX	0.1	0.1	0.1	0.1	0.1	0.2	0.6
	Compensation of employees	0.0	0.0	1.1	1.2	1.3	1.4	4.9
	Total Govt funding	0.1	0.2	1.3	1.2	1.4	1.6	5.6
Non Govt	CAPEX	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	OPEX	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Compensation of employees	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total Non Govt funding	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL Funding required		**0.1**	**0.2**	**1.3**	**1.2**	**1.4**	**1.6**	**5.6**

SOURCE: Aquaculture Lab - Budget template

Contents

Skills and capacity development issues were addressed both on a project and cross-cutting level

Details to follow

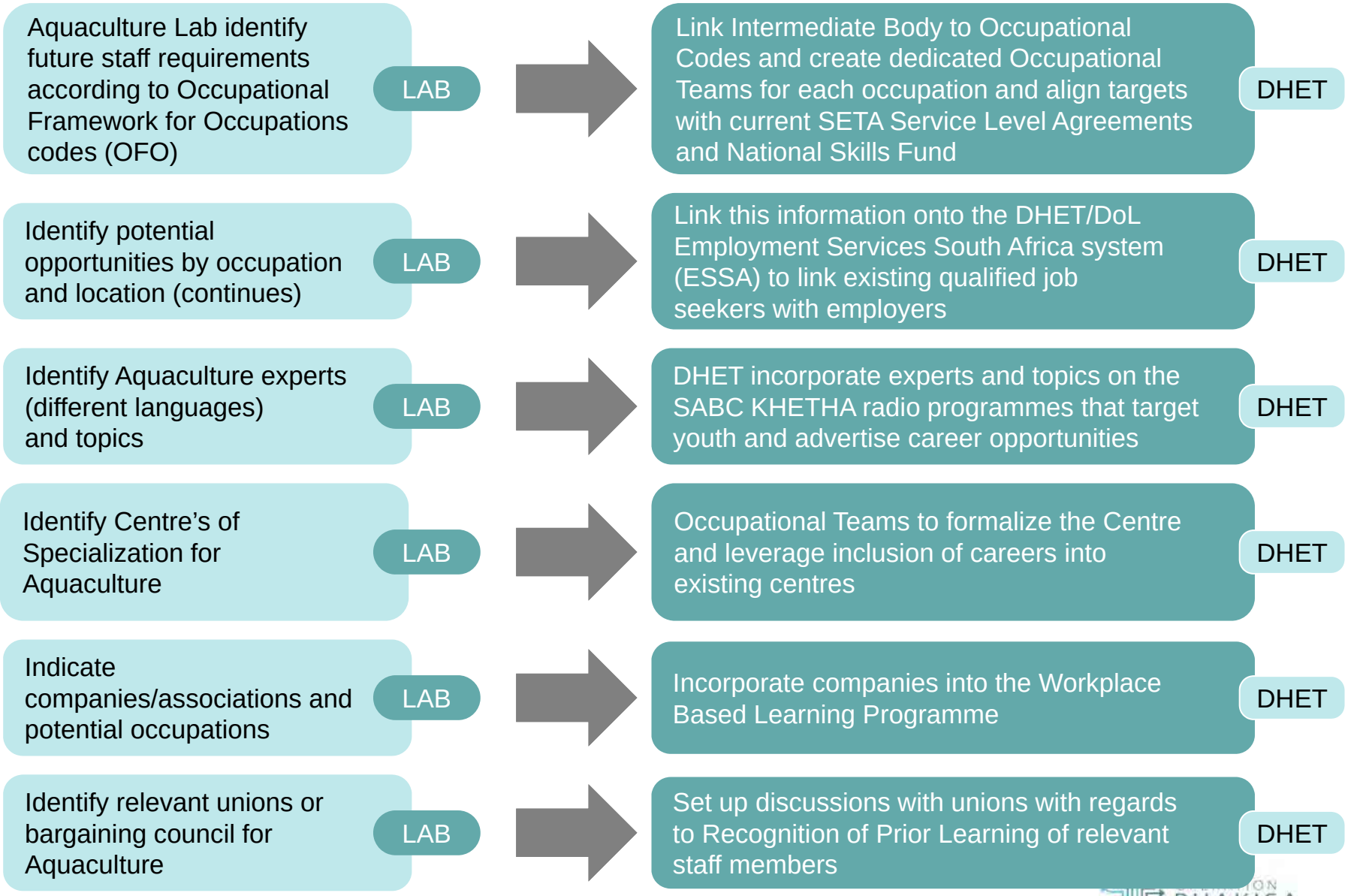
Issues	Solutions
▪ Transformation is under represented in the existing industry, especially in management levels and researchers	▪ Project level skills and training interventions ▪ Aquaculture experts will be interviewed on existing DHET SABC and KHETHA career awareness programmes
▪ There is lack of certified vocational training for basic Aquaculture farming skills (AgriSETA, etc..)	▪ Develop and certify vocational/technical training specifically for Aquaculture and establish Centres of Specialisation (Operation Phakisa Skills Plan)
▪ The vacancies that do exist are not advertised broadly	▪ Companies will shortly be forced to advertise new vacancies on the Employment Services of South Africa database which linked to specific OFO codes for Aquaculture
▪ There is no formal mechanisms of skills and prior learning for farm workings that have the relevant experience (recognition of prior learning)	▪ Work experience on farms will be fostered through formal recognition of prior learning through engagement with relevant unions
▪ **Aquaculture as an emerging sector has almost no dedicated and specialised extension officers, state vets specialised in Aquaculture and research officers at a provincial level and is under capacitated at National DAFF**	▪ **Existing state support services (e.g., state vets) need to be up-skilled (specialised)** ▪ **Additional Aquaculture research and extension officers need to be employed provincially to assist with provincial growth in the sector** ▪ **Additional staff for DAFF and Delivery Unit**

Many of the skills and capacity requirements will be addressed in the cross-cutting Operation Phakisa Skills Plan in partnership with DHET

SOURCE: Aquaculture Lab

The following steps have been identified to address skills requirements in Partnership with DHET

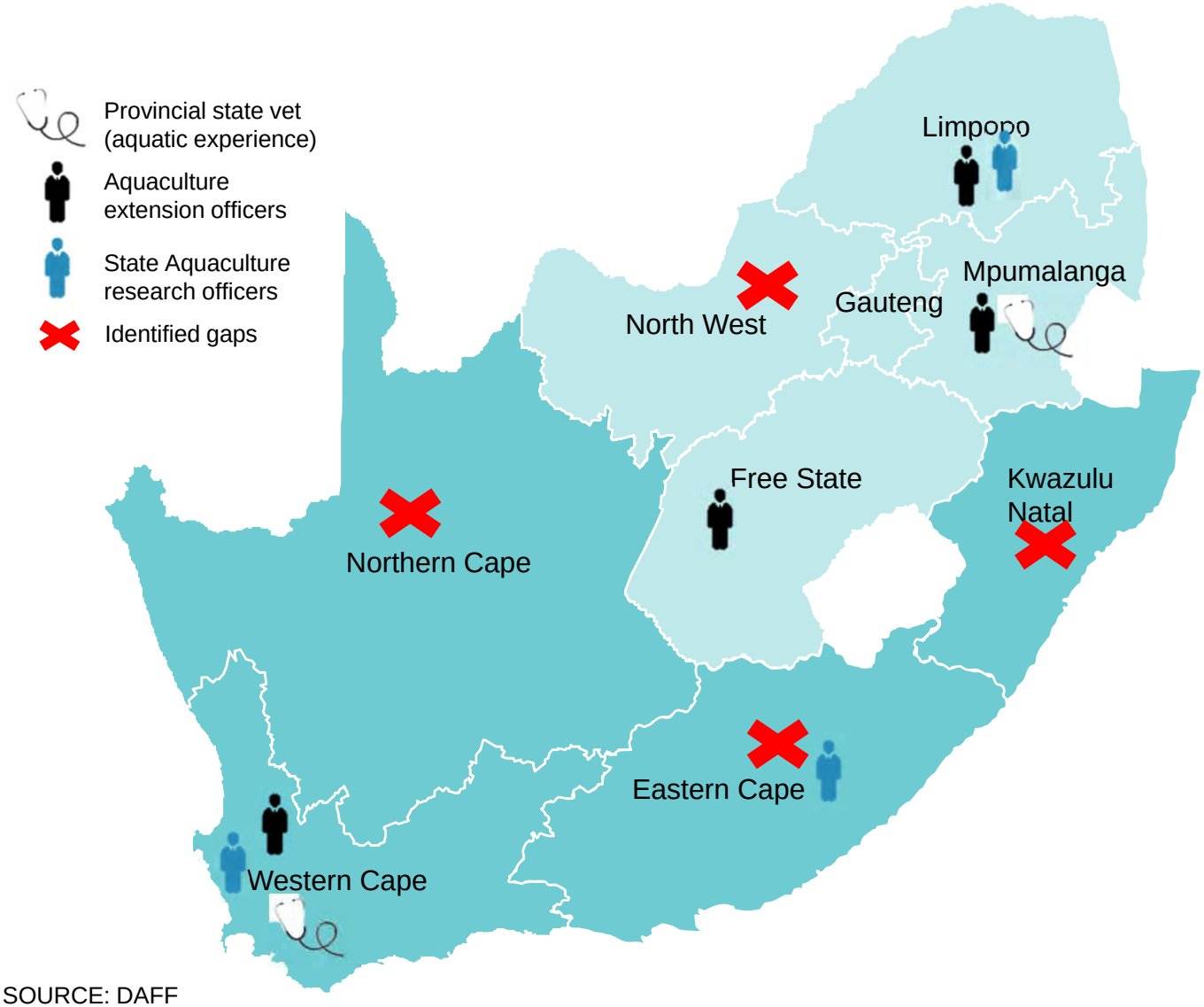
Details to follow



SOURCE: Aquaculture Lab

State support services need to be improved to support growth of the sector

Currently, there are not enough support services to support Operation Phakisa goals (specifically in KZN, Eastern Cape, Gauteng and Northern Cape



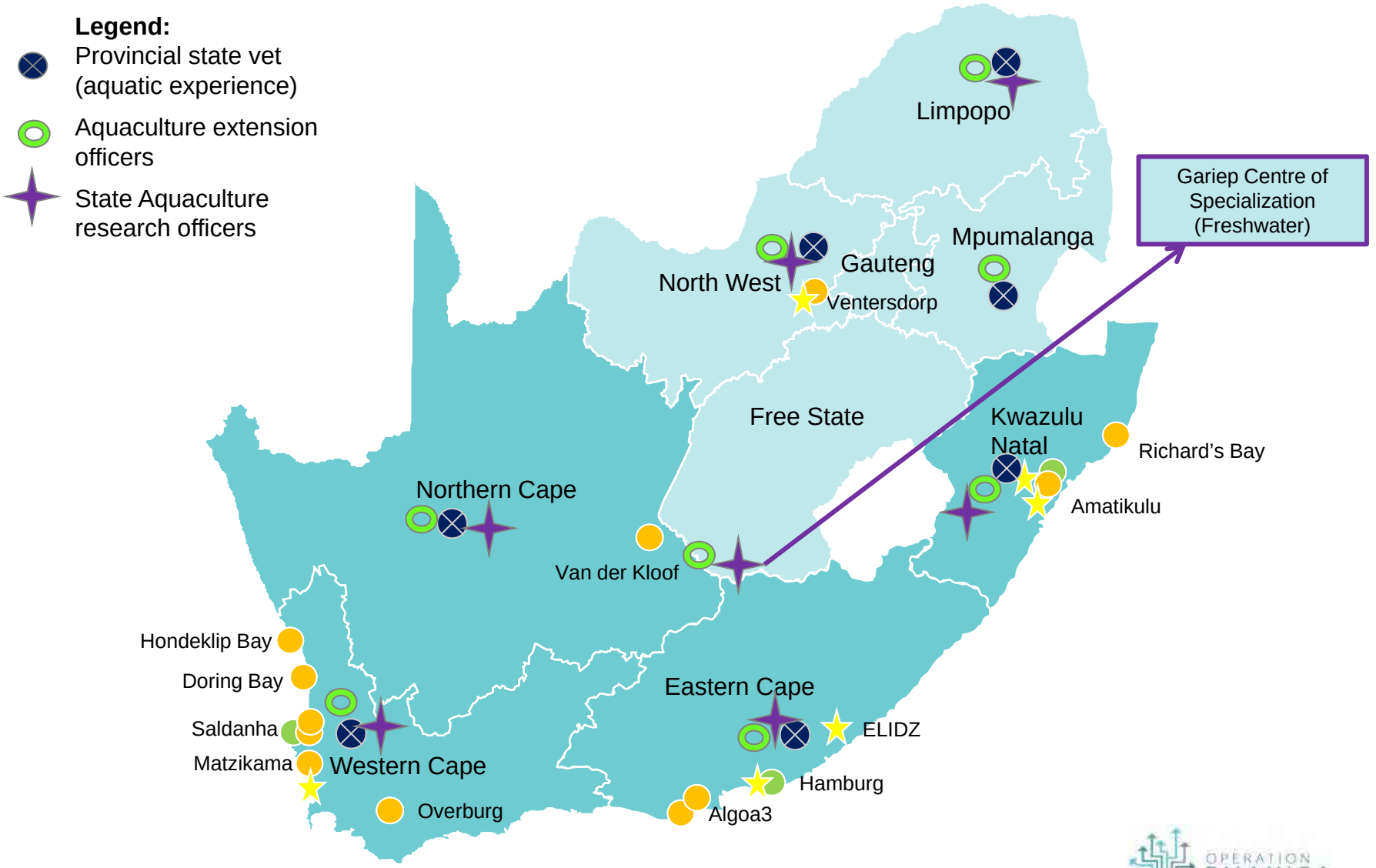
1. Engaging with relevant provincial (Eastern, Northern Cape, KZN and Gauteng) national departments

2. Source local and international funding for skills development and additional posts

3. Send state vets overseas where required, until specialist training programmes are addressed locally…

SOURCE: DAFF

The aspiration is to have the following support services available to the sector in line with the projected projects and growth of the sector……



SOURCE: Source

Maintenance capacity building will involve leveraging existing international training programmes to develop targeted talent

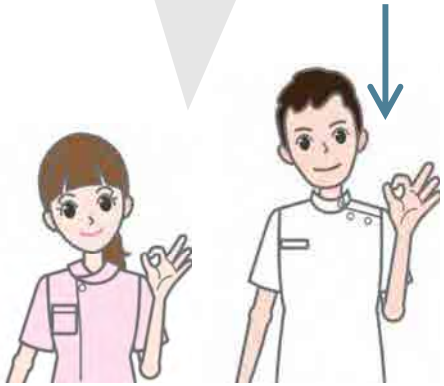
Dear Sir/Madam
I have a sick fish.
What do I do?

So what must I do?

Sorry Sir. At this stage we can't help you

At this stage we are sending vets and extension officers for training overseas

We are going to Scotland or Norway for Specialist straining in disease ID and management



What happens when we return? We will be assisted by DAFF to be of assistance to Aquaculture projects in the country

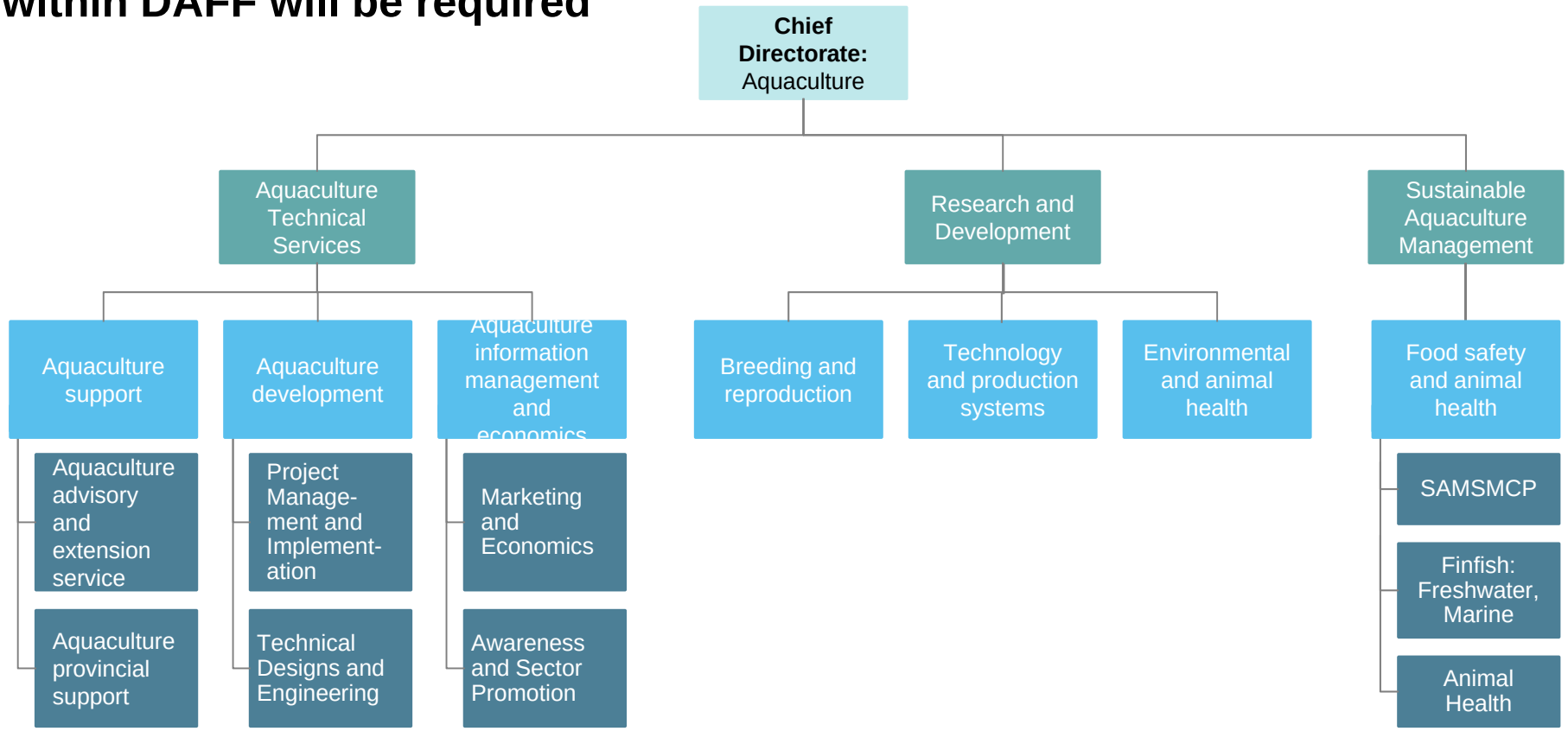
Trained vets & extension officers:

As part of our commitment, we will have training programmes with our colleagues, to share our knowledge

Dear Sir/Madam
Are you able to help me with an Aquaculture vet?

Yes, they have been trained! You can find them at the office in Cape Town

In order to implement the initiative, additional support from existing units within DAFF will be required



	Aquaculture Technical Services	Sustainable Aquaculture Management	Aquaculture Research and Development
Current Capacity	5	16	21
Required Capacity	20	6	10

SOURCE: Aquaculture Lab

5 Skill development charter

To address skills and capacity requirements needed in order to meet Operation Phakisa Lab Aspiration for Aquaculture

Current Issues/Challenges

- Transformation is under represented in the existing industry, especially in management levels and researchers.
- There is lack of certified vocational training for basic Aquaculture farming skills (AgriSETA, etc..)
- Aquaculture is not well understood and therefore not pursued as a career path
- The vacancies that do exist are not advertised broadly
- Aquaculture as an emerging sector has almost no dedicated and specialized extension officers, state vets specialized in Aquaculture and research officers at a provincial level and at the National Level within DAFF.
- There is no formal mechanisms of skills and prior learning for farm workings that have the relevant experience. (recognition of prior learning)

Objectives/Targets

- Market Aquaculture as an attractive career opportunity in youth and communities
- Increase the number of state vets specialized in aquatic disease, extension officers and researchers for Aquaculture and food safety monitoring capacity in DAFF.
- Increase transformation at equity and management levels in Aquaculture
- Develop and certify vocational/technical training specifically for Aquaculture

Initiative owners

- DAFF
- DHET
- DoL
- Provincial Department of Agriculture

Sponsors

- AgriSETA
- DPSA
- Treasury

Other key stakeholders

- SABC
- Universities
- Human Resource Council
- Government Communication and Information Systems
- Aquaculture experts
- FAWU
- Ondersterpoort
- FAO

Key initiatives required

- Cross-cutting Lab targeted skills development, RPL, qualification development and awareness with DHET
- Capacitate and up-skill relevant state and provincial departments (separate initiative)
- Project specific targeted mentorship and training to address transformation (Projects)

Potential Challenges

- Funding for posts and training
- Lack of co-operation from relevant departments

SOURCE: Aquaculture Lab

Initiative 6: Skills and capacity development within the public sector

Emerging sector development requires support services from the state, specifically in regards to veterinary, research and extension services and capacity to implement food safety programmes

Initiative concept/details/highlights:

Engage with relevant departments and source funding to upskill existing state support services (state vets) and employ specialised Aquaculture extension and research officers in various provinces to support sector growth.

- Quantify existing extension support services available in the relevant provinces targeted for Aquaculture development
- Set up meetings with relevant national and provincial departments to address skills and capacity requirements
- Source funding from state and international agencies to employ additional staff and to send existing staff to relevant local and international universities
- Send identified vets overseas for specialized training and capacitate existing training facilities to offer specialized aquatic disease courses
- Capacitate DAFF Aquaculture food safety unit to ensure export standards are met (under Food safety initiative)
- Capacitate DAFF's ATS and ARD's unit to ensure coordinated support for Aquaculture development and conducting research on new species and suitable technology for Aquaculture.
- Revise the existing DAFF Aquaculture structure to support new commitments.

Benefits:

- Improve production by reducing production losses to disease and bad farm management due to lack of expertise support. Ensure safe and sustainable farmed products for local and export market. Facilitate transformation by providing technical support to new entrants.

Implementing agency:

- DAFF, DHET, DoL, DPSA, Provincial DoA

Key stakeholders identified:

- Human Resource Council
- FAO
- Local and international universities, Ondersterpoort
- Treasury
- National School of Governance

Required resources

Investment (R 208 million)

Implementation timeframe

- Start date: October 2014
- End Date: continues

Key Performance Indicators

- Number of state vets specialised in Aquaculture
- Number of dedicated Aquaculture extension officers
- Number of dedicated research officers

SOURCE: Aquaculture Lab

Budget

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	2	2	5	5	6	6	24
	OPEX	9	3	14	17	22	28	84
	Compensation of employees	0	3	21	23	26	28	100
	Total Govt funding	11	8	39	45	54	62	208
Non Govt	CAPEX	0	0	0	0	0	0	0
	OPEX	0	0	0	0	0	0	0
	Compensation of employees	0	0	0	0	0	0	0
	Total Non Govt funding	0	0	0	0	0	0	0
TOTAL Funding required		11	8	39	45	54	62	208

SOURCE: Aquaculture Lab – 3-ft plan template

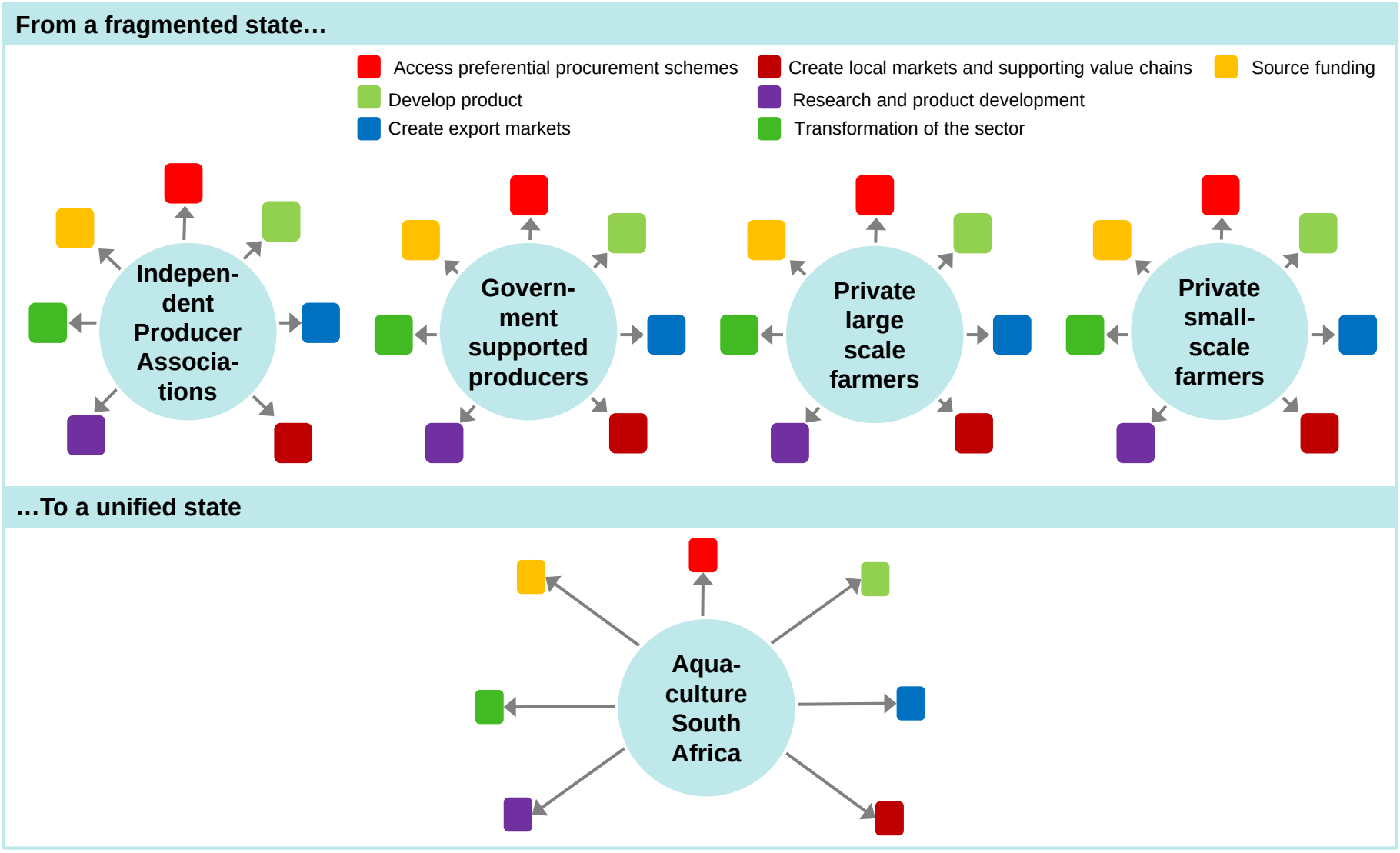
Contents

Coordinated industry-wide marketing, and preferential procurement for Aquaculture products are 2 focus areas to improve access to markets

	Description	Impact by 2019
Initiative 7: Resource Aquaculture South Africa (AquaSA) as the body to coordinate industry-wide marketing efforts	▪ Improve and coordinate market intelligence initiatives ▪ Improve domestic access to markets ▪ Strengthen emerging producers through increasing value chain ownership and product development ▪ Promote responsible, fair regulation and environmental certification	▪ Comprehensive market intelligence information system, covering 100% of SA Aquaculture production ▪ Create 60-80 buyer relationships with local processing facilities, retailers, food service companies ▪ Create 1 regional vertically-integrated processing facility
Initiative 8 Preferential procurement of Aquaculture products	▪ Sell Aquaculture products to government institutions to – Increase sales and stimulate local demand – Create market awareness for Aquaculture products	▪ Create 2 preferential procurement partnerships with government institutions

SOURCE: Aquaculture Lab

Aquaculture South Africa will coordinate industry-wide marketing initiatives, reducing duplicative efforts and resources

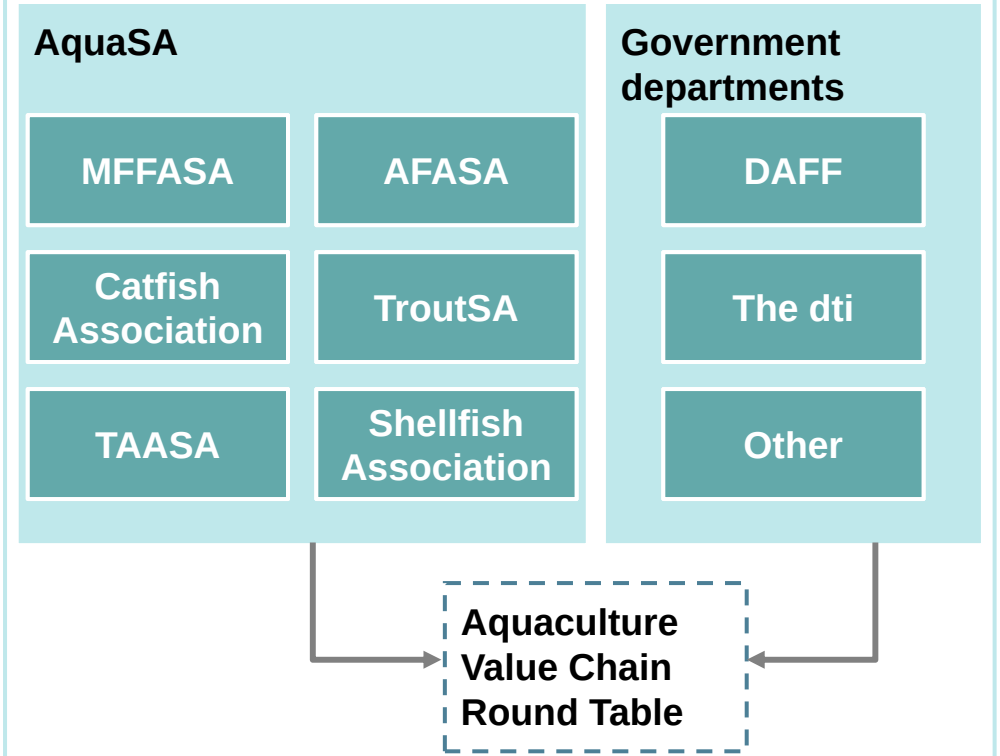


SOURCE: Aquaculture Lab

AquaSA will coordinate industry-wide marketing initiatives, reducing duplicative efforts and resources

Forum

AquaSA will have industry representation from species-specific associations



AquaSA will focus on driving 5 key initiatives in the next 5 years

- Establish a centralised market intelligence information system
- Increase domestic market awareness through marketing
- Strengthen emerging producers by increasing value chain ownership
- Develop and ensure adoption of industry-wide quality standards
- Incorporate Aquaculture products in preferential procurement programs with government institutions

Long-term vision for AquaSA will be to drive overall socio-economic development in the Aquaculture sector

SOURCE: Aquaculture Lab

A centralized market intelligence system will enable producers to give consumers products that they want

Consumers

Market demand data

Inclusive Market Intelligence Information System

Information on what consumers want

Producers

Products that consumers want

Increased profits for producers due to increased consumption

Large-scale production due to higher unmet demand

Increased employment and food security as scale of production increases

Product development to meet demand

Technological innovation to support large-scale production

SOURCE: Aquaculture Lab

Coordinated SSAS marketing efforts will open new markets by raising the profile of Aquaculture at a national level

AquaSA will facilitate a coordinate approach to requesting sector-wide marketing funding

Industry associa-tions

- **MFFASA**
- **CatFish Associa-tion**
- **TAASA**
- **Shellfish Associa-tion**
- **TroutSA**
- **AFASA**

Individual species sub-sector request for funds

AquaSA

NAMC

Coordi-nated request for sector funds

The dti

One Aquaculture sector marketing fund

Catalogue of marketing channels

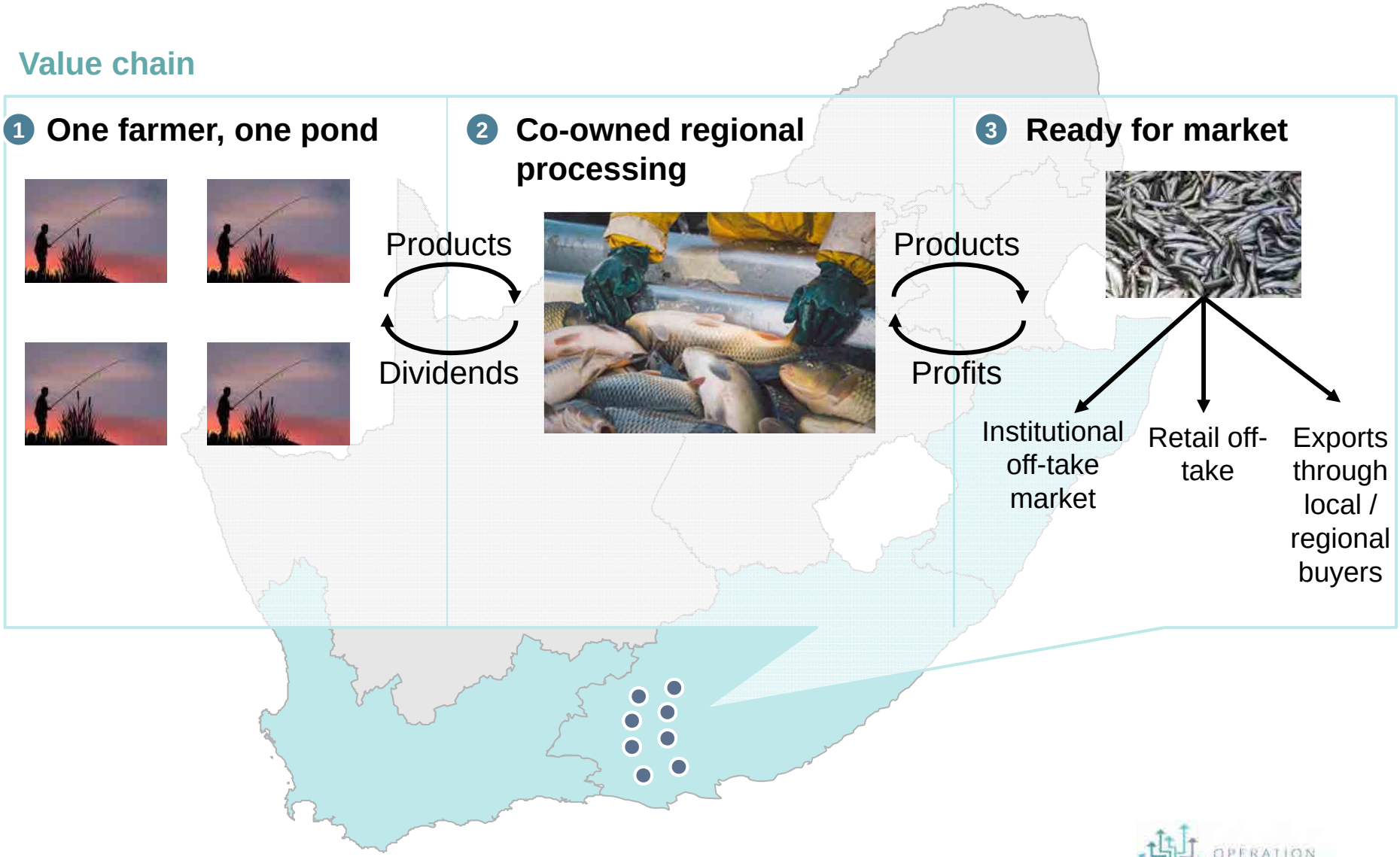
- Local/regional food festivals
- Retailer campaigns
- Media
  - Online
  - TV
  - Print (e.g., cookbooks)
- Other

- AquaSA will allocate budget to each industry association and ensure implemen-tation
- AquaSA will monitor and track outcomes

SOURCE: Aquaculture Lab

Co-owned processing facilities will enable new small-scale farmers to enter the market competitively

Value chain



SOURCE: Aquaculture Lab

Promote responsible, fair regulation and environmental certification

Producers have to abide by varying quality standards to sell to each new buyer

Producers	Buyers
Producer 1	Pick n Pay
	Shoprite
	Woolworths
	Bidvest
Producer 2	Restaurants, Hotels
	Massmart
	Sea Harvest

- Each buyer has different quality standards that producers need to adapt to
- As a result, producers are heavily reliant on wholesalers / distributors, driving down profit margins

Develop and ensure adoption of industry-wide quality standards

Evaluate a set of standards the retailers suggest as a minimum for their common interests

+

Negotiate with both retailers & producers to adopt the standards

=

The availability of good quality value-for-money products increases to consumers

SOURCE: Aquaculture Lab

2 Markets and marketing– Charter

To develop an inclusive implementation plan that unlocks market potential

Current Issues/Challenges

- Local Aquaculture production growth is constrained by poor and uncoordinated marketing strategy
- South African Aquaculture exports are not increasing because of limited market access (tariff barriers and non- tariff barriers) in international markets
- Cheaper Aquaculture imports is also threatening the growth of locally produced products
- Local production is relatively small and faced with high production costs
- Product value and product differentiation is not optimally utilized which constrain the value chain
- Locally product standards and certification is non-existing

Objectives/Targets

- The objectives of establishing AquaSA body is to
- Enhance local market Awareness, thereby increase local consumption from current 7kg/capita towards 17kg/capita in 2019
- Improve market Intelligence to achieve 80% credible and timely price, quantity and consumption data, accessible by 90% of industry stakeholders
- Promote product development to increase value addition of all locally produced species in order to stimulate producer profitability
- Align Aquaculture products to government procurement schemes and supply and participate in at least three government departmental schemes

Initiative owners

- Entrepreneurs/ Siyazama Aquaculture Cooperative

Sponsors

- The dti
- Industry
- DST
- DAFF
- NAMC
- DoH
- Department of Small Business Development

Other key stakeholders

- Civil society/communities
- (Local municipality
- Holiday Homeowners
- Traditional leaders

Key initiatives required

1. Resource AquaSA to implement industry marketing initiatives. AquaSA to represent 90% of industry stakeholders and conduct following marketing activities:
2. Improve and coordinate industry market intelligence (80% credible and timely price, quantity and consumption data and accessible by at least 90% industry stakeholders – head count)
3. Improve domestic market access (consumption towards 17kg/capita)
4. Strengthen producers through increasing value chain ownership and product development
5. Promote self-regulation and environmental certification for all Aquaculture species
6. Government Procurement of Aquaculture Products

Potential Challenges

- Governance of industry representative bodies
- Co-ordination of initiatives (DAFF, NRCS, Health, laboratories, Industry Associations)
- Communication between coordinating bodies
- Initiative prioritization
- Access to finance for initiatives
- Stakeholder buy-in to the proposed AquaSA body

SOURCE: Aquaculture Lab

Initiative 7: Co-ordination of industry-wide marketing efforts

Industry information and actions are currently fragmented which limits their uptake and efficacy. A targeted approach is required

Aim of the initiative

1. Promote industry coordination and reduce defragmentation of industry initiatives
2. Champion industry affairs and stimulate industry growth in a coordinated manner

Key Milestones

1. Establish and register AquaSA and benchmarked it with other agricultural bodies such as GrainSA
2. Industry stakeholder discussion to obtain buy-in and feedback on the business case for AquaSA
3. Staff requirement and succession plans, developed
4. Funding for AquaSA, secured
5. AquaSA to assumed industry activities including initiative A1-A4 and initiative B
6. AquaSA to champion Aquaculture industry growth and transformation outcomes over 5 years

Benefits

- AquaSA will:
  - encourage market driven production and transformation in the sector;
  - increase sales and consumption of Aquaculture product;
  - be independent of seed funding after five years.

Related Initiatives

1. Improve and coordinate market intelligence initiatives
2. Improve domestic market access
3. Strengthen producers through increasing value chain ownership and product development
4. Promote self-regulation and environmental certification

Ease of implementation:

Impact:

Implementing agency

- AquaSA

Key stakeholders identified

- AASA (MFFASA etc..)
- DAFF, The dti, EDD, DRDLR, PPECB

Required resources

- Investment: R18 m over 5 years
- Used for: Initial core staff (managing director, transformation / commercial manager, secretary) and office overheads

Implementation timeframe

- Start date: Aug 2014
- End Date: Ongoing

SOURCE: Aquaculture Lab

Initiative 7a: Improve and coordinate market intelligence initiatives

Accurate and timeous market intelligence is fragmented and impacts negatively on producers and processors meeting demand and maximizing profit

Key Milestones

- Existing market intelligence documents built on, gaps identified and information delivery system installed
- Process implemented to update, maintain and disseminate market information
- Funding secured to enable the provision of market intelligence
- Market Intelligence Hub created for new / existing Aquaculture stakeholders, learner support materials developed and included into a training system

Expected benefit

- New entrants need to have the most up-to-date marketing intelligence available so that they can effectively join the industry, compete with larger / existing players and / or find market niches
- The market information service will enable small, informal entrants to correctly identify where and when opportunities exist
- Training material and courses shall package market information into knowledge products that shall help to educate new / existing stakeholders
- The market information service can characterize product development leads for research and development

Ease of implementation:

Impact:

Implementing agency

- AquaSA

Key stakeholders identified

- Industry Associations
- The dti
- DAFF

Required resources

- Investment: R5.8 m
- Used for: creation of an IT system, production/ printing of industry publications and learner support materials, facilitation of training for new / existing entrants on markets

Implementation timeframe

- Start date: August 2014
- End Date: ongoing

SOURCE: Aquaculture Lab

Initiative 7b: Improve Domestic Market Access

Relevant product available in a timeous fashion is not matching domestic market demand, depressing growth in the Aquaculture sector

Key Milestones

- Prioritize and sequence the marketing channels to participate in
- Engage with the marketing channel / program owner to understand feasibility / requirements
- Secure funding and resources for top priority marketing channels and programs
- Apply to participate in priority marketing channel programs
- Prepare to participate
- Craft a three year festival / media / government awareness / retailer interaction campaign

Expected benefit

- Local advertising and publicity for SA producers (e.g. festivals, road shows, marketing materials, local exhibitions, cookery books)
- Interaction and promotion of Aquaculture product at retailer level:
  - Local retailers selling into regional markets
  - Facilitates compliance with voluntary marketing initiatives e.g. SASSI
- Integration of local Aquaculture producers with appropriate initiatives in other sectors e.g. wine trade shows and festivals

Ease of implementation:

Impact:

Implementing agency

- AquaSA

Key stakeholders identified

- SASSI, DAFF, Govt Services
- Proudly SA , SSAS (The dti)
- Established Retailers
- Food services

Required resources

- Investment: R9.2 m

Implementation timeframe

- Start date: Aug 2014
- End date : Ongoing

Key milestones

- XXX

SOURCE: Aquaculture Lab

Initiative 7c: Strengthen emerging producers through increasing value chain ownership and product development

Low value, small volume and fragmented production of South African Aquaculture product leads to local producers being uncompetitive.

Key Milestones

- AquaSA /DAFF to adopt the Colombian small-scale Aquaculture development model and adjust it to South African conditions:
- DAFF to identify suitable geographically and environment ally sound sites
- AquaSA and DAFF to identify suitable emerging candidates at the sites
- AquaSA to facilitate suitable off-take market agreements signed with emerging producers
- AquaSA to facilitate the supporting systems best suited to meet the market demand through a vertically integrated approach inclusive of the emerging producers

Expected benefit

- Benchmark a transformation initiative against a similar successful initiative in Colombia
- Measurable (e.g. quantity produced or head-count) inclusivity of PDIs in Aquaculture value chain
- Opening up new marketing channels for Aquaculture products from emerging farmers

Ease of implementation:

Impact:

Implementing agency

- AquaSA

Key stakeholders identified

- Industry
- DAFF
- The dti

Required resources

- Investment: R7.2m

Implementation timeframe

- Start date: Aug 2014
- End date : Ongoing

Key milestones

- xxx

SOURCE: Aquaculture Lab

Initiative 7d: Promote responsible, fair regulation and environmental certification

Poor practices degrade environmentally sustainable practices and stringent market certification increases production costs

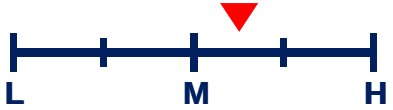
Key Milestones

- Investigate and adapt responsible/fair standards that conforms to international standards
- Obtain buy-in from regulatory authorities and AquaSA for standards
- AquaSA to ensure that producers implement the standards

Expected benefit

- Usage of fair and responsible management practices by specific sectors according to set standards that are audited by competent assessors
- Reduced administration burden for relevant departments
- Improved environmental and ethical management practices and compliance
- Local capacity building in auditing and certification

Ease of implementation:



Impact:

Implementing agency

- AquaSA

Key stakeholders identified

- DAFF
- DEA
- Certification bodies
- Retailers
- NGO
- DWA

Required resources

- Investment: R 1 m

Implementation timeframe

- Start date: August 2014
- End date: December 2015

Key milestones

- xxx

SOURCE: Aquaculture Lab

Initiative 7 budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0	1	0	0	0	0	1,00
	OPEX	0	7	4	4	3	3	20,50
	Compensation of employees	0	0	0	0	0	0	0,00
	Total Govt funding	0	8	4	4	3	3	21,50
Non Govt	CAPEX	0	0	0	0	0	0	0,00
	OPEX	0	0	0	0	0	0	0,00
	Compensation of employees	0	0	0	0	0	0	0,00
	Total Non Govt funding	0	0	0	0	0	0	0,00
TOTAL Funding required		0	8	4	4	3	3	21,50

SOURCE: Aquaculture Lab - Budget template

Initiative 7a budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0.0	2.0	0.0	0.0	0.0	0.0	2.0
	OPEX	0.0	0.6	0.6	0.6	0.6	0.6	3.2
	Compensation of employees	0.0	0.1	0.1	0.1	0.1	0.1	0.6
	Total Govt funding	0.0	2.8	0.8	0.8	0.8	0.8	5.8
Non Govt	CAPEX	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	OPEX	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Compensation of employees	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total Non Govt funding	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL Funding required		**0.0**	**2.8**	**0.8**	**0.8**	**0.8**	**0.8**	**5.8**

SOURCE: Aquaculture Lab - Budget template

Initiative 7b budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	OPEX	0.0	9.1	0.0	0.0	0.0	0.0	9.1
	Compensation of employees	0.0	0.1	0.0	0.0	0.0	0.0	0.1
	Total Govt funding	0.1	9.2	0.0	0.0	0.0	0.0	9.2
Non Govt	CAPEX	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	OPEX	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Compensation of employees	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total Non Govt funding	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL Funding required		**0.1**	**9.2**	**0.0**	**0.0**	**0.0**	**0.0**	**9.2**

SOURCE: Aquaculture Lab - Budget template

Initiative 7c budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0.0	0.0	0.0	9.5	0.0	0.0	9.5
	OPEX	0.0	0.0	0.1	1.1	1.1	1.2	3.6
	Compensation of employees	0.0	0.5	0.9	1.4	1.8	2.5	7.1
	Total Govt funding	0.0	0.5	1.0	11.9	2.9	3.7	20.1
Non Govt	CAPEX	0.0	0.0	0.0	2.0	0.0	0.0	2.0
	OPEX	0.0	0.0	0.0	0.9	0.9	0.9	2.8
	Compensation of employees	0.0	0.0	0.0	0.0	0.0	0.0	0.1
	Total Non Govt funding	0.0	0.0	0.0	3.0	1.0	1.0	5.0
TOTAL Funding required		**0.0**	**0.5**	**1.0**	**14.9**	**3.9**	**4.7**	**25.1**

SOURCE: Aquaculture Lab - Budget template

Initiative 7d budget summary

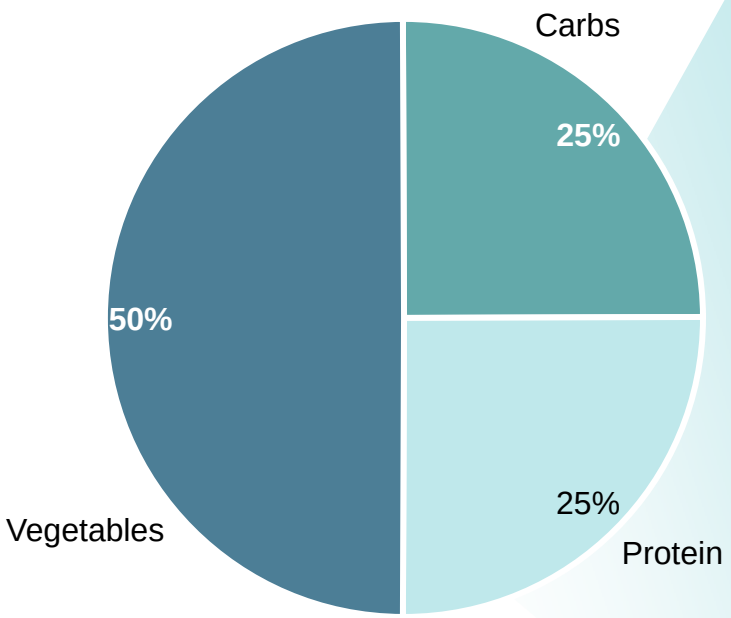
R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0	0,00	0	0	0	0	0,00
	OPEX	0	0,00	1	0	0	0	0,50
	Compensation of employees	0	0,00	0	0	0	0	0,00
	Total Govt funding	0	0,00	1	0	0	0	0,50
Non Govt	CAPEX	0	0,00	0	0	0	0	0,00
	OPEX	0	0,35	0	0	0	0	0,51
	Compensation of employees	0	0,06	1	0	0	0	1,06
	Total Non Govt funding	0	0,41	1	0	0	0	1,57
TOTAL Funding required		0	0,41	2	0	0	0	2,07

SOURCE: Aquaculture Lab - Budget template

Contents

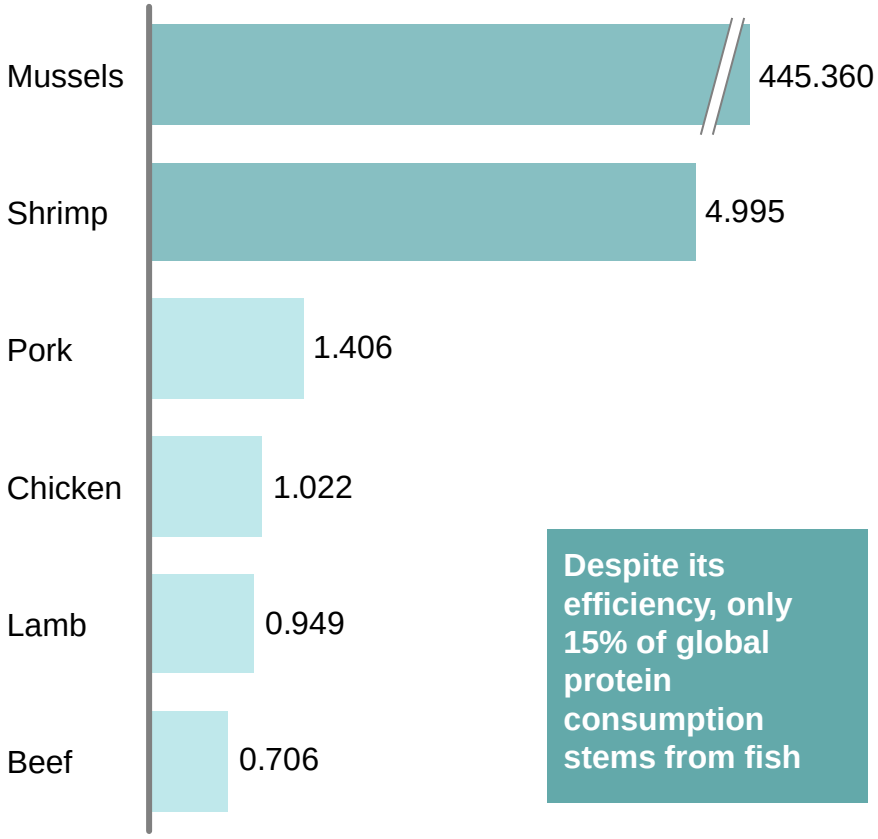
Fish protein provides the best value for money

Food-based dietary guidelines



Protein to Price ratio

Protein per Rand



Despite its efficiency, only 15% of global protein consumption stems from fish

SOURCE: DoH, IndexMundi, web search

Per capita fish product consumption in South Africa is comparatively low

Consumers know the nutritional value, and price, of seafood

South Africans agree that:

- Fish is a cheap way for me to eat healthily (29% agree)
- I support the adding of Omega 3 to fish to make it more healthy (49%)
- Fish is healthier than meat or chicken (71% agree)
- When fish is too expensive, 28% buy something else instead e.g., meat or poultry and 32% buy a cheaper type of fish

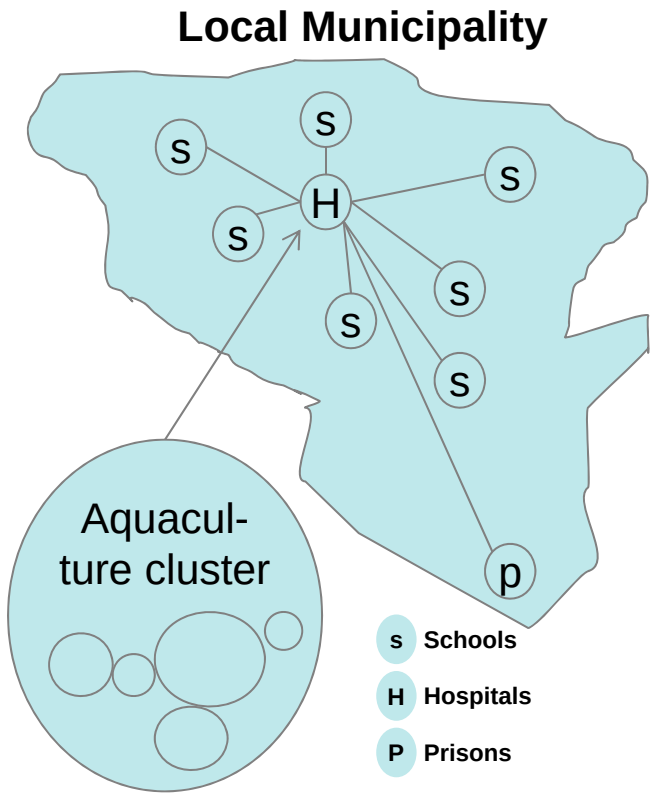
Current eating practice in SA is not geared towards seafood

- 30-40% of people may not eat fish because of personal belief
- Fish is good value for money compared with meat and chicken (35% agree)
- Cooking traditions and cooking best practice can enhance the nutritional value of fish and seafood
- The fatty acids in fish support cognitive development

SOURCE: NAMC

Preferential procurement can create local markets, while contributing towards transformation and food security in South Africa

Government procurement generates demand / creates markets for Aquaculture products



A specific region for a Phase 1 pilot will be selected through evaluation criteria

- Proximity of the municipality (a logistics score)
- Aquaculture supply that provides value for money nutrition
- Adherence with the Preferential Procurement Policy Framework Act

SOURCE: Aquaculture Lab

Implementation risks and mitigation plan

Implementation risks

1. Aquaculture products score comparatively low compared to chicken, red meat and wild capture fisheries due to price differential

2. Clusters of new producers and procurement consumers are not well linked. The effect is that procurement might not support new production and food security issues

Mitigation plan

1. Work with Government to improve nutritional value-for-money index to include essential / rare food components / micro-nutrients therefore overcoming the perception of the relatively “high” cost Aquaculture products
   A system to monitor the impact of increased per capita Aquaculture product consumption on beneficiaries could show overall value for money

2. A pilot project is included to establish the link between new clusters of producers and procurement consumers in a well chosen area

SOURCE: Aquaculture Lab

Initiative 8: Preferential procurement of Aquaculture products

Government does not measure who benefits from existing seafood procurement and many people in need do not have access to value for money, nutritious seafood (or Aquaculture products)

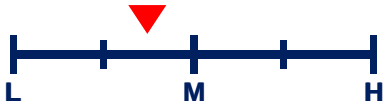
Key Milestones

1) Complete a Review of Public Sector Seafood and Aquaculture Procurement
2) Model the impact of possible changes in supply, demand and distribution on the various beneficiaries of the procurement system
3) Quantify high, middle and low-value Aquaculture procurement opportunities / targets and targeted beneficiary groups and set product delivery timeframes
4) Determine if the forecasted schedules are viable
5) Aquaculture products included into the dti-Industrial Procurement: Preferential procurement policy framework Act
6) Deal with the logistical arrangements to secure the transportation of the Aquaculture products to cold chain centres in regions
7) Install Cold Chain Infrastructure that will ensure support for distribution in areas of greatest need
8) Undertake a pilot project to link Aquaculture with government procurement

Expected benefit

- Preferential Procurement Policy Framework Act does not include Aquaculture products specifically. This initiative will make it mandatory for government procurement to give preference to locally produced Aquaculture products. This will make its way onto plates and through a nationwide awareness/branding campaign will have the effect of addressing awareness amongst most South Africans
- Lever off Aquaculture Associations for competitive tendering to feeding schemes, inclusive of all the above mentioned options
- In this way, tendering could be competitive – even against chicken.
- Informed decision making derived from experience at a well-chosen pilot project

Ease of implementation:



Impact:

Implementing agency

- Aquaculture Value Chain Round Table

Key stakeholders identified

- Industry associations
- DAFF, The dti

Required resources

- Investment: R6.7 m

Implementation timeframe

- Start date: Aug 2014
- End date: Ongoing

Key milestones

- xxx

SOURCE: Aquaculture Lab

Initiative 8 budget summary

R mn		Existing budget (2014/15)	Additional budget for 2014/15	2015/16	2016/17	2017/18	2018/19	TOTAL
Govt	CAPEX	0.0	0.0	4.0	0.0	0.0	0.0	4.0
	OPEX	0.0	0.6	0.0	0.0	0.6	0.0	1.2
	Compensation of employees	0.0	1.5	0.0	0.0	0.0	0.0	1.5
	Total Govt funding	0.0	2.1	4.0	0.0	0.6	0.0	6.7
Non Govt	CAPEX	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	OPEX	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Compensation of employees	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Total Non Govt funding	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL Funding required		**0.0**	**2.1**	**4.0**	**0.0**	**0.6**	**0.0**	**6.7**

SOURCE: Aquaculture Lab

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Achievement of Aquaculture Lab Aspiration

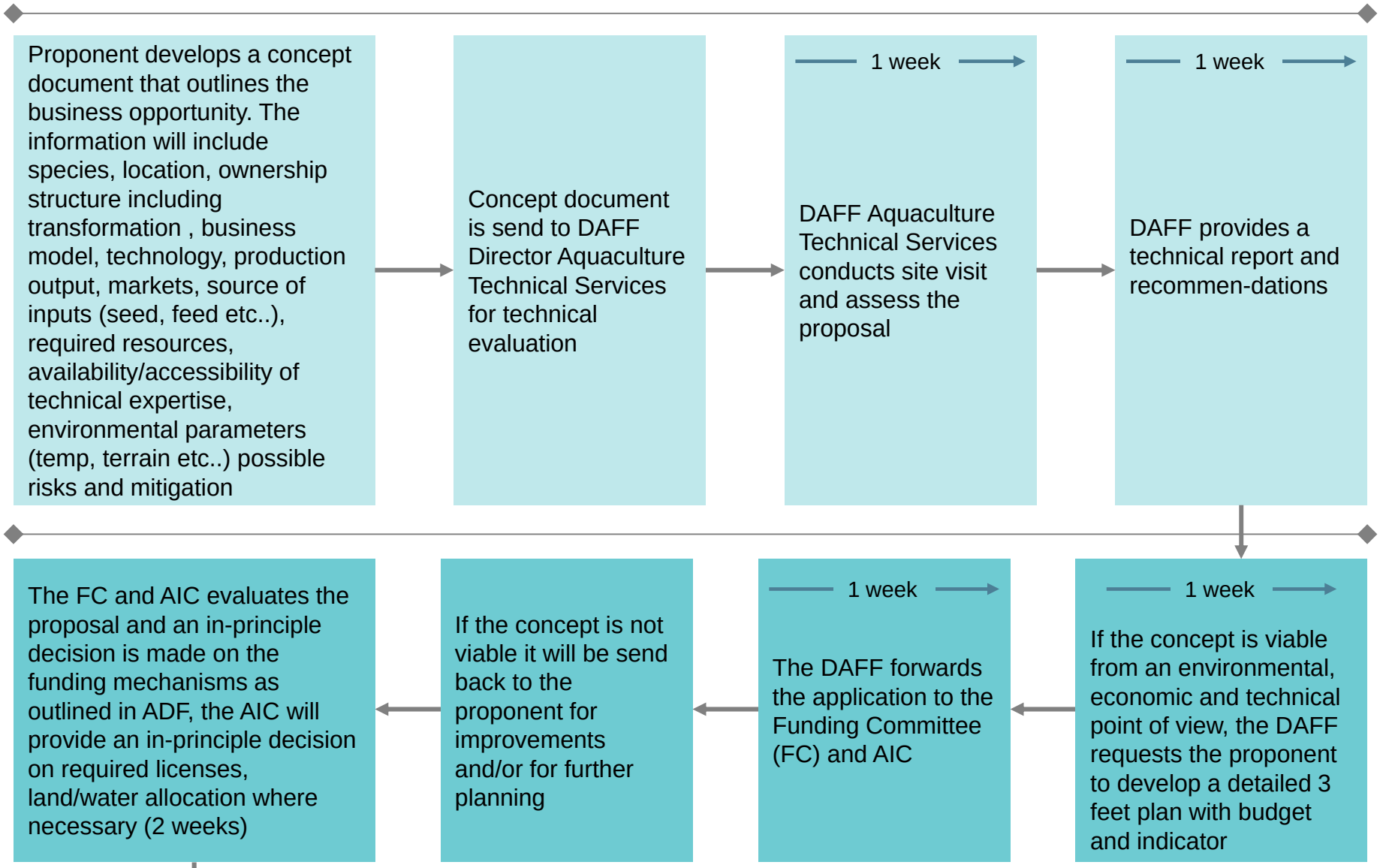
The lab aspiration consists of 4 key measures for success and the lab initiatives will achieve a good portion of it:

Revenue by 2019	**Aspiration: R3 bn**	
	Lab Targets: R1.64 bn	**R3bn refers to revenue across the value chain. Due to lack of data, only production figures were included*
Production by 2019	**Aspiration: 20,000**	
	Lab Targets: 17,644	
Jobs by 2019	**Aspiration: 15,000**	
	Lab Targets: 2227 (previous) 2,584 (new) 4811 (services*). **Total Jobs 9622**	**assumes for every one job on farm created another is created within the value chain based on previous models*
Sector Transformation by 2019	**Aspiration: Inclusive Growth**	
	Lab Targets: Minimum PDI ownership of 20% (expansion projects) and 25%-60% (new projects)	

The gaps between the lab aspiration and targets will be addressed by the on-going process of projects selection and implementation, which is detailed in the next page

SOURCE: Aquaculture Lab

Operation Phakisa Aquaculture projects submission process (1/2)



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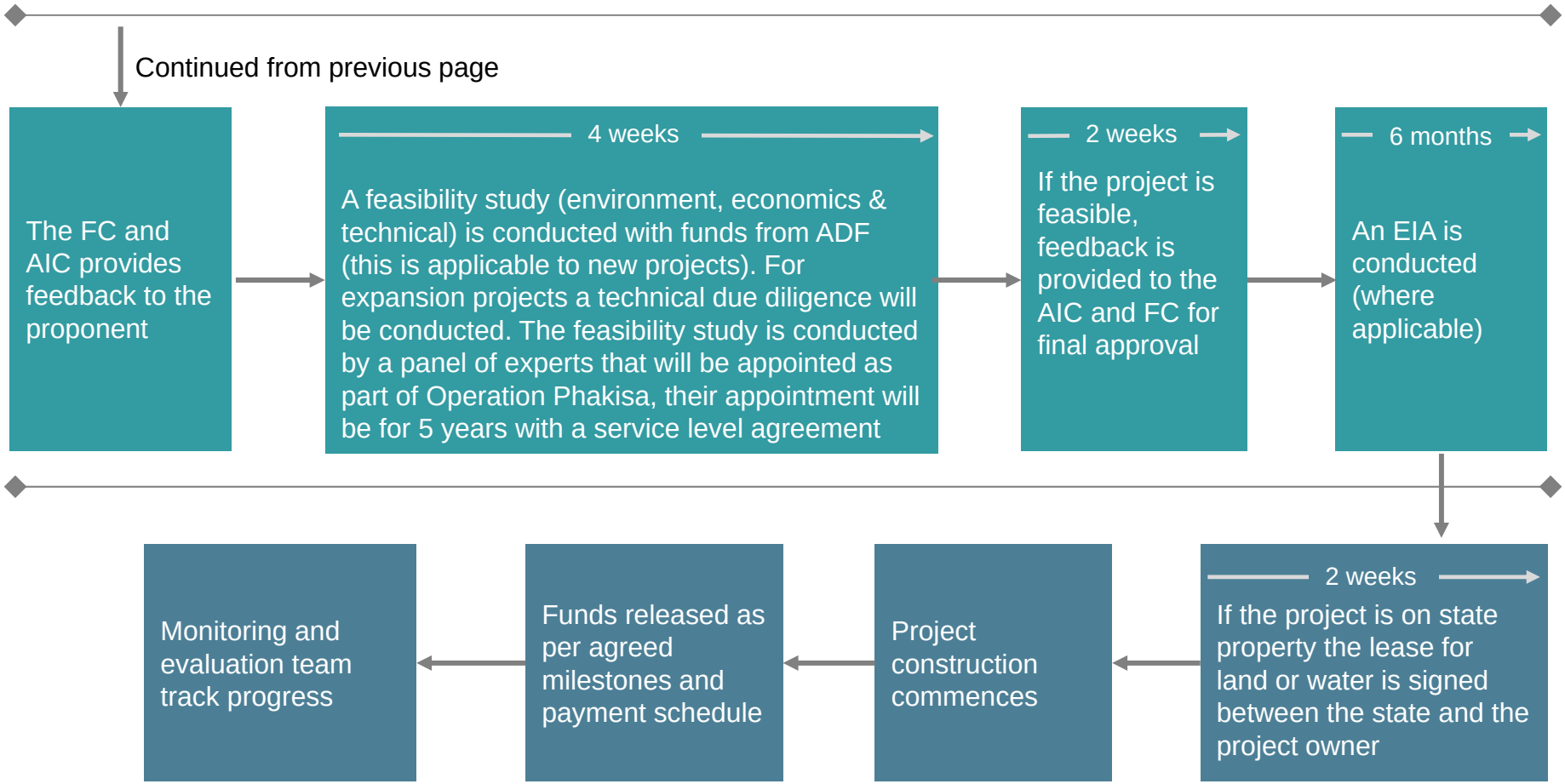
SOURCE: Aquaculture Lab

Operation Phakisa Aquaculture projects submission process (2/2)



SOURCE: Aquaculture Lab

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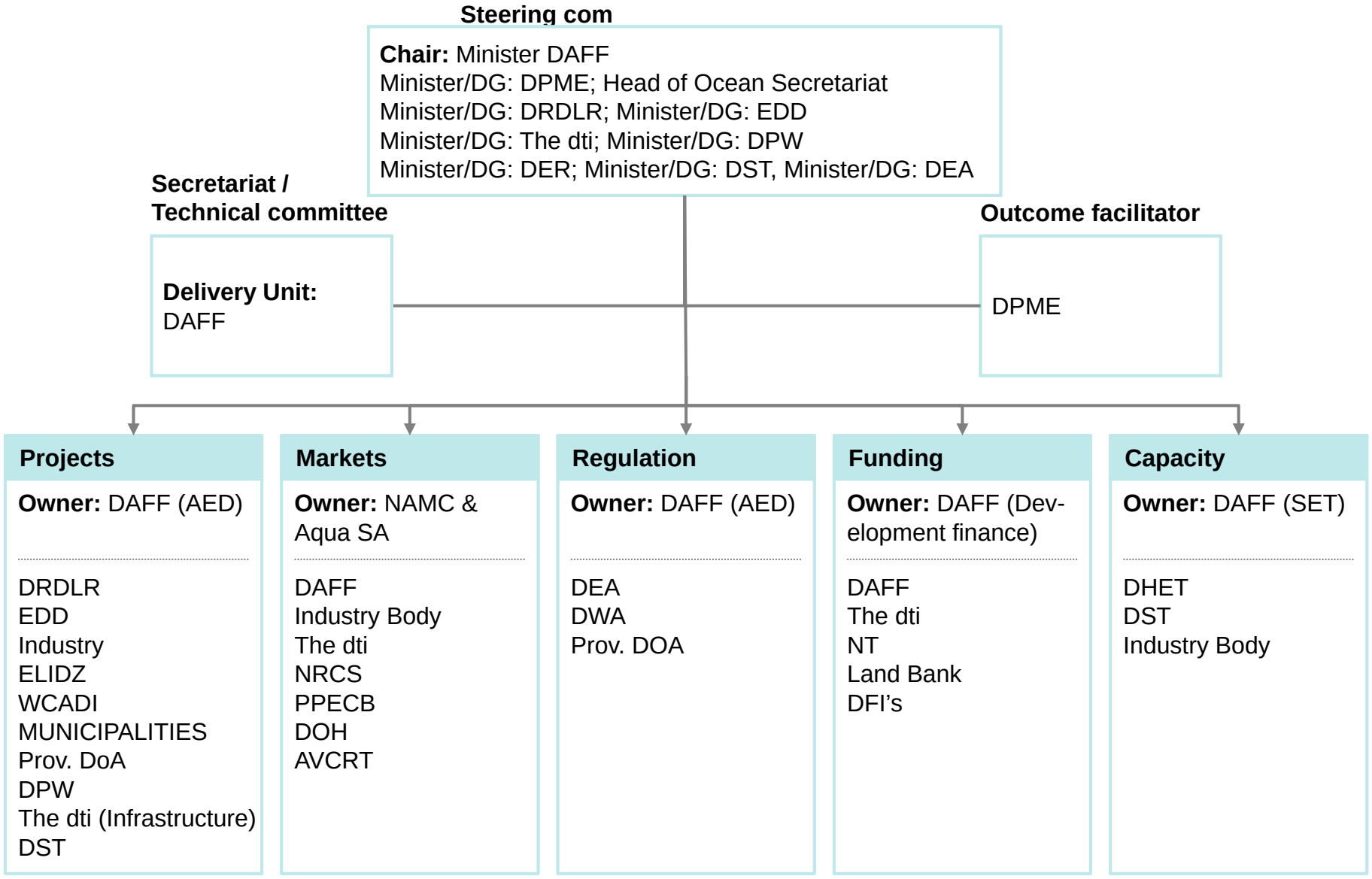
Aquaculture Governance Structure



SOURCE: Aquaculture Lab

Governance Structure: Terms of Reference

	Objectives	Meeting Frequency/ Report	Members
Operation Phakisa Aquaculture Steering Committee	▪ To ensure that all Aquaculture Operation Phakisa activities are coordinated throughout government departments	▪ Bi- annual meeting ▪ Steering Committee provide reports to MinMeC, MinTech, Portfolio Committee and other structures of Parliament	▪ Minister: AFF (Chair) ▪ DG: DAFF ▪ DG: DPME ▪ DG: DRDLR ▪ DG: EDD ▪ DG: The dti ▪ DG: DPW ▪ DG: DEA ▪ DG: DST
Secretariat and Technical Committee	▪ To provide better manage all Aquaculture Operation Phakisa activities through joint planning with all implementing teams (Projects, Markets, Regulations, Funding and Capacity Building) ▪ To ensure alignment of all Aquaculture Operations Phakisa activities with other government policies ▪ To coordinate resource mobilization for all Aquaculture Operation Phakisa activities ▪ To monitor progress of all outcomes ▪ To provide technical support to implementing teams	▪ Quarterly meeting ▪ The Secretariat and Technical Committee reports to the Steering Committee, Delivery Unit and the Outcome facilitator.	▪ DG: DAFF (Chair) ▪ NAMC ▪ Aqua SA ▪ AIF

SOURCE: Aquaculture Lab

Governance Structure: Terms of Reference

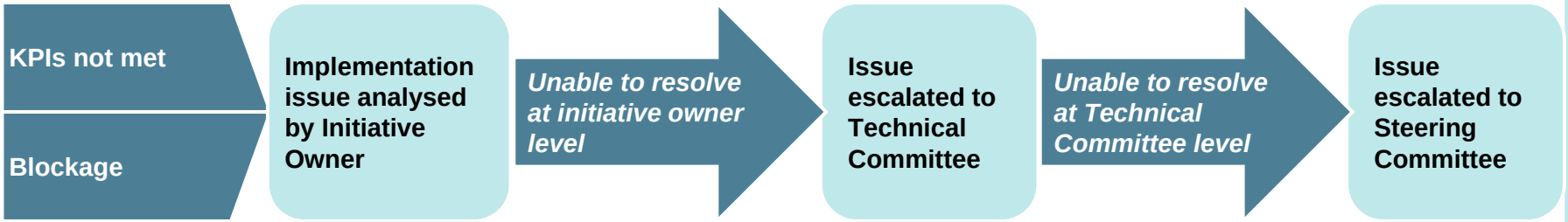
	Objectives	Meeting Frequency/ Report	Members
Aquaculture projects	▪ To implement all projects identified. ▪ To provide technical and advisory services to projects ▪ To identify project resource needs and motivation for resourcing thereof ▪ Ensure that projects are aligned to the Operation Phakisa aspiration ▪ Identify additional projects that require support.	▪ Monthly meeting ▪ Reports to the Secretariat and Technical Committee	▪ DAFF (Chair) ▪ DRDLR ▪ EDD ▪ Industry ▪ ELIDZ ▪ WCADI ▪ MUNICIPALITIES ▪ Prov. DoA ▪ DPW ▪ the dti (Infrastructure) ▪ DST
Aquaculture markets	▪ To implement and monitor market initiatives identified for Operation Phakisa ▪ To mobilize resourcing of marketing initiatives	▪ Monthly meeting ▪ Reports to the Secretariat and Technical Committee	▪ NAMC and AquaSA (Chair) ▪ DAFF ▪ Industry Body ▪ the dti ▪ NRCS ▪ PPECB ▪ DOH ▪ AVCRT
Aquaculture regulations	▪ Oversee the development and monitoring of the Aquaculture Inter-Departmental Authorisation Committee ▪ To implement and monitor regulation initiatives identified for Operation Phakisa ▪ To oversee legislation reform for aquaculture	▪ Monthly meeting ▪ Reports to the Secretariat and Technical Committee	▪ DAFF (Chair) ▪ DEA ▪ DWA ▪ Prov. DOA

SOURCE: Aquaculture Lab

Governance Structure: Problem Solving

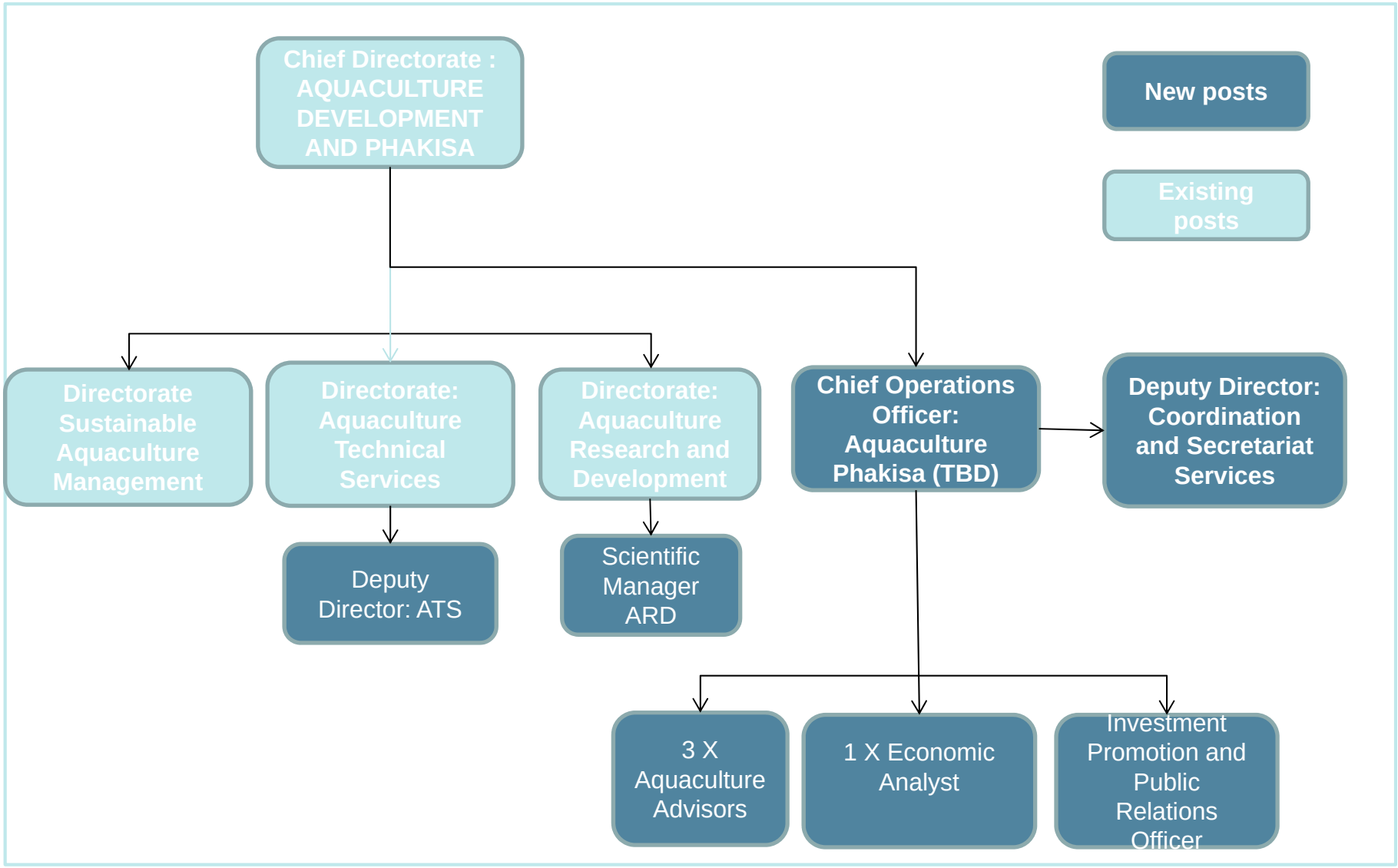
	Objectives	Meeting Frequency/Reporting	Members
Aquaculture funding	▪ To oversee the development of ADF ▪ Provide technical support to all ADF activities ▪ Monitor progress of the ADF and review where necessary	▪ Monthly meeting ▪ Reports to the National Treasury Secretariat and Technical Committee	▪ DAFF (Chair) ▪ the dti ▪ NT ▪ DFIs
Aquaculture capacity building	▪ To implement and monitor Aquaculture capacity building initiatives identified for Operation Phakisa ▪ To mobilise resourcing	▪ Monthly meeting ▪ Reports to the Secretariat and Technical Committee	▪ DAFF (CHAIR) ▪ DHET ▪ DST ▪ Industry Body

Problem Solving Process:



SOURCE: Aquaculture Lab

Governance Structure: Delivery Unit



SOURCE: Aquaculture Lab

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Glossary of Terms – Phakisa Aquaculture Lab (1/5)

AASA	Aquaculture Association of Southern Africa
ADEP	Aquaculture Development Enhancement Programme
ADF	Aquaculture Development Fund
ADZ	Aquaculture Development Zone
AFASA	Abalone Farmers Association of South Africa
AGIS	Agricultural Geo-referenced Information System
Agri-BEE	Agricultural - Black Economic Empowerment
AIF	Aquaculture Inter-Governmental Forum
AIS	Alien and Invasive Species
AME	African Media Entertainment
AquaSA	Aquaculture South Africa
AVCRT	Aquaculture Value Chain Round Table
BEE	Black Economic Empowerment
CASP	Comprehensive Agricultural Support Program
CFO	Chief Financial Officer
CSI	Corporate Social Investment
CSIRO	Commonwealth Scientific and Industrial Research
DAFF	Organisation
DARD	Department of Agriculture Forestry and Fisheries
DBE	Department of Agriculture and Rural Development
DBSA	Department of Basic Education
DEA	Development Bank of Southern Africa
DER	Department of Environmental Affairs
DFI	Development Fund Institute
DG	Director General

Glossary of Terms– Phakisa Aquaculture Lab (2/5)

DHET	Department of Higher Education and Training
DoH	Department of Health
DoL	Department of Labour
DoT	Department of Transport
DPME	Department of Performance Monitoring and Evaluation
DPSA	Department of Public Service and Administration
DPW	Department of Public Works
DRDLR	Department of Rural Development and Land Reform
DST	Department of Science and Technology
dti	Department of Trade and Industry
DWS	Department of Water Affairs and Sanitation
EC	Eastern Cape
ECDC	Eastern Cape Development Corporation
EDD	Economic Development Department
EDTEA	Department of Economic Development, Tourism and Environmental Affairs
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
ELIDZ	East London Industrial Development Zone
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
FRDC	Fisheries Research and Development Corporation
FSA	Food Safety Assessment
GDP	Gross Domestic Product
GEDA	Gauteng Economic Development Agency

Glossary of Terms– Phakisa Aquaculture Lab (3/5)

GIFT	Genetically Improved Farmed Tilapia
Govt.	Government
HA	Hectare
HACCP	Hazard Analysis and Critical Control Points
HDI	Historically Disadvantaged Individuals
IAC	Inter-governmental Authorisations Committee
IDC	Industrial Development Corporation
IDZ	Industrial Development Zone
ITB	Ingonyama Trust Board
kg	Kilograms
KHETA	Higher Education and Training - Careers Awareness Program
KPI	Key Performance Indicator
KZNPPC	KwaZulu-Natal Provincial Planning Commission
M&E	Monitoring and Evaluation
MAIL	Marine Aquaculture Industry Liaison
MAWG	Marine Aquaculture Working Group
MFFASA	Marine Finfish Farmers Association of South Africa
Mkt. Price	Market Price
MLRA	Marine Living Resources Act
Mn. T	Million tonnes
MoA	Memorandum of Agreement
MoU	Memorandum of Understanding
MPA	Marine Protected Area
NAMC	National Agricultural Marketing Council
NASF	National Aquaculture Strategic Framework

Glossary of Terms– Phakisa Aquaculture Lab (4/5)

NEF	National Empowerment Fund
NMMU	Nelson Mandela Metropolitan University
NPA	National Ports Authority
NQF	National Qualifications Framework
NRCS	National Regulator for Compulsory Specifications
NT	National Treasury
NW	North West
NWRI	National Water Research Institute
NYDA	National Youth Development Agency
OFO	Organizing Framework for Occupations
OWEL	Oceanwise - East London
P&P	Pick and Pay
p.a.	per annum
PDI	Previously Disadvantaged Individuals
PPECB	Perishable Products Export Council Board
PPP	Public Private Partnership
R&D	Research and Development
R/Kg	Rands per kilogram
RAS	Recirculating Aquaculture Systems
Rio+20	United Nations Conference on Sustainable Development
SA	South Africa
SABC	South African Broadcasting Corporation
SAMSMCP	South African Molluscan Shellfish. Monitoring & Control Program
SANAS Lab	South African National Accreditation System
SASA	South African Sugar Association

Glossary of Terms– Phakisa Aquaculture Lab (5/5)

SEA	Strategic Environmental Assessment
SEC	Securities and Exchange Commission
SEDA	Small Enterprise Development Agency
SETA	Sector Education and Training Authority
SMME	Small Medium and Micro Enterprises
SSAS	Sector Specific Assistance Scheme
SSIF	Sector Specific Innovation Fund
StatsSA	Statistics South Africa
SWIM	Salmon Welfare Indicator Model
TIKZN	Trade and Industry KwaZulu-Natal
TNPA	Transnet National Port Authority
TSSH	Three Streams Smoke House
UN	United Nations
UNISA	University of South Africa
US	University of Stellenbosch
US FDA	United States Food and Drug Administration
USA	United States of America
VC	Venture Capitalist
WB	World Bank
WCADI	Western Cape Aquaculture Development Initiative
WUL	Water Use License
WW	Woolworths

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