



SADC Regional Aquaculture Strategy and Action Plan (2016-2026)

29 February 2016

Table of Contents

Executive Summary	4
Acknowledgements	6
Abbreviations	8
Definitions	9
CHAPTER 1. INTRODUCTION	10
1.1 Background.....	10
1.2 Policy Framework for the Regional Aquaculture Strategy and Action Plan.....	10
1.2.1 SADC Treaty.....	10
1.2.2 SADC Regional Indicative Strategic Development Plan	11
1.2.3 The Food, Agriculture and Natural Resources (FANR) Business Plan	11
1.2.4 The Dar-es-Salaam Declaration and Regional Agriculture Policy (RAP).....	12
1.2.5 Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa.....	13
1.2.6 SADC Protocol on Fisheries	13
1.2. Scope and purpose of the SADC Regional Aquaculture Strategy and Action Plan.....	14
1.3. Conceptual Framework of Aquaculture	14
CHAPTER 2. SITUATIONAL ANALYSIS AND OPPORTUNITIES FOR AQUACULTURE IN THE SADC REGION	16
2.1. Overview.....	16
2.2. Aquaculture production and trends.....	17
CHAPTER 3. ANALYSIS OF STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS TO AQUACULTURE IN THE SADC REGION.....	19
3.1. Strengths.....	19
3.2. Weaknesses.....	19
3.3. Opportunities	20
3.4. Threats.....	20
CHAPTER 4. THE STRATEGY (STRATEGIC OBJECTIVES, EXPECTED OUTPUTS AND PRIORITY ACTIONS)	21
4.1. The Vision.....	21
4.2. The Mission	21
4.3. The Overall Goal	21
4.4. Strategic Objectives.....	21
4.4.1. Strategic Objective 1	21
4.4.2. Strategic Objective 2	21
4.4.3. Strategic Objective 3	21
4.4.4. Strategic Objective 4	21
4.4.5. Strategic Objective 5	21

4.4.6. Strategic Objective 6	21
4.4.7. Strategic objective 7.....	21
4.4.8. Strategic Objective 8	21
4.5. Expected outputs.....	22
4.6. Priority Actions.....	22
CHAPTER 5. IMPLEMENTATION MECHANISMS, ROLES AND RESPONSIBILITIES.....	26
5.1. Guiding principles	26
5.2. Stakeholders, roles and responsibilities.....	26
CHAPTER 6. RESOURCE REQUIREMENTS	28
CHAPTER 7. MONITORING AND EVALUATION	29
7.1. The objectives	29
7.2. Monitoring	29
7.3. Evaluation	30
ANNEXES: RASAP ACTION PLAN AND RESULTS FRAMEWORK.....	31
Annex 1. Impact indicators, baselines and targets for the goal.....	31
Annex 2. Impact indicators, baselines and targets for strategic objectives.....	32
Annex 3. Output indicators, priority actions, timeframes, responsibilities and indicators	35
Annex 4. Proposed high-level indicative budget per targetedoutput	40
References	42

Executive Summary

This document presents the SADC Regional Aquaculture Strategy and Action Plan (RASAP).

In 2011 the SADC Ministers responsible for marine fisheries called for the formulation of a regional aquaculture strategy, resulting in the formation of the SADC Aquaculture Working Group in 2011. The Aquaculture Working Group was formed as a Sub-Committee of the SADC Technical Committee on Fisheries to facilitate the development of the Aquaculture Strategy. The Working Group met four times, in February 2013 in Swakopmund, Namibia; in June 2013 in Luanda, Angola; in February 2015 in Johannesburg, South Africa. At the fourth meeting of the Group in March 2016 in Maputo, Mozambique the Regional Aquaculture Strategy and Action Plan was finalized.

The purpose of the SADC Regional Aquaculture Strategy and Action Plan is to provide strategic direction for the rapid, environmentally responsible, development of aquaculture in SADC Member States, while simultaneously safe guarding the ecological integrity of aquatic ecosystems, conserving common genetic resources and supporting the maintenance of regional aquatic biosecurity (as outlined in the SADC Regional Aquatic Animal Health and Biosecurity Strategy) and to advance the development of cross border value chains that better enable the utilization of aquatic and human resources within the region.

The framework for the draft strategy as developed and agreed upon during the final Workshop in Maputo includes the following sections: Executive Summary; Introductory background; Situational analysis and opportunities for aquaculture in the SADC region; Analysis of strengths, weaknesses, opportunities and threats to aquaculture development in the Region; Strategic objectives, expected outputs and priority actions; Implementation mechanisms, roles and responsibilities; Resource requirements; Monitoring and evaluation and culminating in an action plan and results framework that would include; (i) Impact indicators, baselines and targets for the goal, (ii) Impact indicators, baselines and targets for strategic objectives and (iii) Output indicators, priority actions, timeframes, responsibilities and indicators.

The vision, mission, overall goal and the eight strategic objectives of the RASAP are:

Vision: By 2025 SADC will become a leader of sustainably produced aquaculture products in Africa that contribute significantly towards economic growth, food security, poverty alleviation and job creation throughout the region.

Mission: To create a sustainable, competitive and diversified aquaculture sector in the region.

Goal: To increase the contribution by aquaculture to local, national and regional economic growth and trade.

Strategic Objective 1: To increase aquaculture production and investment in the production of edible and non-edible products by the commercial and small-holder aquaculture subsectors in the SADC region, while ensuring environmental sustainability.

Strategic Objective 2: To transform small holder/community based aquaculture into successful SMMEs in the SADC region.

Strategic Objective 3: To promote the responsible, equitable and sustainable development of aquaculture to improve food, income and nutrition security in the SADC region.

Strategic Objective 4: To improve market access, supply chains and aquaculture product diversification in the SADC region.

Strategic Objective 5: To define the resilience of aquaculture to climate change in the SADC region and develop mitigating measures.

Strategic Objective 6: To establish cooperative institutional frameworks for effective governance and implementation of best management practices for aquaculture in the SADC region.

Strategic objective 7: To mainstream aquaculture into the economic development agendas of SADC Member States.

Strategic Objective 8: To mainstream cross-cutting issues in the aquaculture value chain throughout the SADC region.

Acknowledgements

Since its establishment in December 2001, the Food, Agriculture and Natural Resources (FANR) Directorate has positioned itself to serve the SADC Member States with excellence and work in collaboration with various stakeholders. The overall goal of the FANR Directorate is to promote agricultural productivity and food security at household, national and regional level; and to promote efficient utilization and conservation of natural resources. The mandate of the FANR Directorate is derived from the Regional Indicative Strategic Development Plan (RISDP) and the Dar-es-Salaam Declaration and Action Plan (2004).

In line with the Report on the review of SADC operations of March 2001, the FANR Directorate has the following specific key functions:

- Development, promotion and harmonisation of agricultural policies and the promotion of gender sensitive development strategies and programmes;
- Ensuring sustainable food security policies and programmes;
- Development, promotion and harmonisation in bio-diversity, phytosanitary, sanitary, crop, and livestock policies;
- Development of measures to increase agricultural output and the development of agro-based industries;
- Development, promotion and harmonisation of policies and programmes aimed at effective and sustainable utilisation of natural resources such as Water, Wildlife, Fisheries and Forestry;
- Development and harmonisation of sound environmental management policies; and
- Promotion of trade in agricultural products.

In preparing the Aquaculture Strategy for the SADC region, the Ministers responsible for marine fisheries identified a need for enhancing aquaculture production due to looming depletion of natural sources of fish. Natural sources of fish or capture fisheries are threatened mainly by illegal, unreported and unregulated (IUU) fishing, overexploitation and climate change. It is against this background that SADC developed a programme on Aquaculture development approved by Ministers in 2010. Following that programme, the development of an aquaculture Strategy, was initiated in 2013. The SADC Aquaculture Working Group comprising of Aquaculture Focal Points from Member States was established by Ministers in 2011 as a Sub-Committee of the SADC Technical Committee on Fisheries to facilitate the development of the Aquaculture Strategy. To date, the Working Group has met four times, February 2013 in Swakopmund, Namibia; June 2013 in Luanda, Angola; February 2015 in Johannesburg, South Africa and February 2016 in Maputo, Mozambique.

Following the third meeting of the SADC Aquaculture Working Group, the 3rd draft was discussed at the 34th SADC Technical Committee on Fisheries in April 2015, Johannesburg, South Africa, where several inputs were made and some necessitated the Secretariat to appoint a consultant to update the document and finalise it. It was at the fourth meeting of the SADC Aquaculture Working Group that the fourth draft of the strategy was reviewed and validated.

The SADC Secretariat wish to thank the members of the Aquaculture Working Group for the work they performed and Prof Thomas Hecht of Advance Africa for technical support to this work. Technical and financial support is also acknowledged from the African Union Inter-African Bureau for Animal Resources (AU-IBAR), Aquaculture Association of Southern Africa (AASA), European Union (EU), the Food and Agriculture Organization of the United Nations (FAO),

NEPAD Planning and Coordinating Agency (NPCA), World Bank (WB), and World Fish Centre (WFC).

Abbreviations

AASA	Aquaculture Association of Southern Africa
AIDS	Acquired Immune Deficiency Syndrome
AU-IBAR	African Union Inter-African Bureau for Animal Resources
BMP	Best Management Practices
CAADP	Comprehensive Africa Agriculture Development Programme
CAMFA	Conference of African Ministers of Fisheries and Aquaculture
EAA	Ecosystem Approaches to Aquaculture
ESIA	Environmental and Social Impact Assessment
EU	European Union
FANR	Food, Agriculture and Natural Resources Directorate
FAO	Food and Agriculture Organization of the United Nations
HR	Human Resources
ICPs	International Cooperation Partners
IUU	Illegal, unreported and unregulated (fishing)
LIFDC	Low Income Food Deficient Countries
NEPAD	New Partnership for Africa's Development
NPCA	NEPAD Planning and Coordinating Agency
RAP	Regional Agricultural Policy
RASAP	Regional Aquaculture Strategy and Action Plan
RISDP	Regional Indicative Strategic Development Plan
R&D	Research and Development
SADC	Southern African Development Community
SEA	Strategic Environmental Assessment
SPME	SADC Policy on Strategy Development, Planning, Monitoring and Evaluation
SWOT	Strengths, weaknesses, opportunities and threats
TPA	Tonnage per annum
WB	World Bank
WFC	World Fish Centre

Definitions

Aquaculture – according to the FAO definition, means the farming of aquatic organisms including fish, mollusks, crustaceans and aquatic plants with some sort of intervention in the rearing process to enhance production, such as regular stocking, feeding and protection from predators.

Aquatic plant – means any kind of plant, algae or other plant organism farmed in fresh water or the sea or on the seashore;

Fish – for the purposes of this document fish means any aquatic plant or animal whether piscine or not, and any mollusk, crustacean, coral, sponge, holothurian or other echinoderm, and reptiles and includes their eggs, larvae and all juvenile stages.

Ranching – means the release of cultured juveniles into unenclosed marine, estuarine or freshwater environments for harvest at a larger size in “put, grow, and take” operations.

Stock enhancement – means the release of cultured juveniles into wild population(s) to augment the natural supply of juveniles and optimize harvests by overcoming recruitment limitation.

CHAPTER 1. INTRODUCTION

1.1 Background

The Southern African Development Community (SADC) is currently composed of 15 Member States, namely: Angola, Botswana, Democratic Republic of Congo, Lesotho, Malawi, Madagascar, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, United Republic of Tanzania, Zambia and Zimbabwe. The SADC Vision is *'one of a common future, a future in a Regional Community that will ensure economic wellbeing, improvement of the standards of living and quality of life, freedom and social justice and peace and security for the peoples of Southern Africa'*.

The fish sector in SADC countries, comprising marine and inland capture fisheries and aquaculture, generates a variety of benefits, including nutrition and food security, livelihoods, employment, exports and foreign currency and conservation and biodiversity values that are of global significance.

Fisheries production in Southern Africa has been growing since the 1950s, albeit with some fairly significant fluctuations. Broadly speaking, the region's marine resources which are crucial to coastal nations, Angola, Madagascar, Mauritius, Mozambique, Namibia, Seychelles, South Africa and United Republic of Tanzania, are characterised by cold water fisheries with main stocks of hake and mackerel on the West coast of Atlantic ocean; and warmer water fisheries with main stocks of tuna and prawns on the East coast of Indian Ocean. Due to the upwelling system of the Benguela current, the productivity on the West coast is richer, with strong inter-annual variations. The fishery is predominantly industrial. In contrast, the environmental conditions on the East coast are more stable, characterised by greater species diversity and higher social importance with greater artisanal fisheries. Inland fisheries from both natural and artificial rivers, lakes, streams and ponds, swamps, etc., are important resources, notably in Lake Malawi, Lake Tanganyika, Lake Kariba, Zambezi river basin and Okavango Delta. These are characterized by the presence of tilapia, utaka and chambo fish species.

Aquaculture has great socio-economic value and potential in the region but remain largely under-developed. Diminishing supply of fish and fish products from wild capture and global increase in demand for fish and fish products provides an incentive to increase the supply through development and promotion of sustainable aquaculture in region. Throughout the world, aquaculture has proven to be a success, evidenced by the global increase in the contribution of fish and fish products from aquaculture in recent years. It is against this background that the region has prioritized the development of aquaculture

1.2 Policy Framework for the Regional Aquaculture Strategy and Action Plan

1.2.1 SADC Treaty

The Declaration and Treaty of SADC (1992) recognizes the dependence of SADC communities on agriculture and natural resources for their livelihoods. It identifies food security, sustainable utilisation of natural resources and effective protection of the environment as some of the key objectives of SADC in sustaining its development process. It emphasizes that the exploitation and utilisation of natural resources requires good management and conservation to ensure that development does not reduce or impair the diversity and richness of the region's natural resources base and the environment. The Treaty therefore recognizes fish as a key natural

resource, a major component of the environment and a key commodity for food security and trade, which should be managed and developed for the benefit of SADC communities.

1.2.2 SADC Regional Indicative Strategic Development Plan

The Regional Indicative Strategic Development Plan (RISDP) was developed and approved by Summit in 2003 for a 15-year period, but was effectively implemented from 2005, thus giving an implementation time-frame of 2005-2020. As the main blueprint for the SADC programme of action, the RISDP was to complement the restructuring of SADC institutions that took place in 2001 and to provide a clear direction for SADC policies and programmes over the long term. The RISDP is built on the premise that good political, economic and corporate governance are prerequisites for sustainable socio-economic development, and that SADC's objectives for poverty eradication and deeper levels of integration will not be realised if these are not in place.

Since its approval in 2003, the RISDP has guided SADC and its partners in planning the implementation of the cooperation and integration agenda. Two assessments of the RISDP were carried out in 2011 and 2012/13; based on their findings and the recommendation of Council in 2013, a Revised RISDP has been produced for the remaining duration of the Plan.

The Revised RISDP provides a guiding framework for the last phase of the RISDP, i.e. 2015-2020. The scope and purpose of the Revised RISDP remain unchanged from those of the original document, except that emphasis has been placed on re-aligning existing priorities with resources allocation in terms of their relative importance and greater impact on regional integration. It defines specific results and timeframes in the various areas of cooperation and integration in order to facilitate monitoring and evaluation. The purpose of the Revised RISDP is to deepen regional integration in SADC and it provides SADC Member States with a consistent and comprehensive programme of medium-term economic and social policies. It also provides the Secretariat and other SADC institutions with a clear view of SADC's approved economic and social policies and priorities.

Fisheries and aquaculture in the revised RISDP are covered under the intervention area on Agriculture, Food Security and Natural Resources, which has the overall goal to develop, promote, coordinate and facilitate harmonisation of policies and programmes aimed at increasing agricultural and natural resources production and productivity, in order to ensure food security and sustainable economic development in the region. The areas of focus comprise production, productivity and competitiveness of agricultural products (crops, livestock, fisheries, forestry, and wildlife) on a sustainable basis, food and nutrition security, sustainable management of natural resources, and conservation and utilisation of plant and animal genetic resources. The main strategies include Developing and implementing the Regional Agriculture Policy (RAP) Investment Plan, domesticating the Protocols on Forestry, Fisheries and Wildlife and Law enforcement, and strengthening regional and national capacities on the conservation and utilization of plant genetic resources.

1.2.3 The Food, Agriculture and Natural Resources (FANR) Business Plan

To operationalize the RISDP, the SADC Secretariat developed 15-year business plans, for which one component, the Food, Agriculture and Natural Resources (FANR) Directorate has articulated short term (1 year), medium term (5 years) and long term (15 years) perspectives. Emerging activities are identified and incorporated in the FANR Business Plan during annual reviews. The FANR Business Plan focuses on six intervention areas aimed at achieving sustainable food security in the region. The business plan recognises contributions from the

fisheries and aquaculture sector as regards to food provision, tradable natural resource commodities and ecosystem services in the business plan.

1.2.4 The Dar-es-Salaam Declaration and Regional Agriculture Policy (RAP)

SADC Heads of State and Government held an Extra-Ordinary Summit in May 2004 in Dar-es-Salaam, United Republic of Tanzania, to discuss issues pertaining to food and food security in the region. The Summit was held under the theme: *Enhancing Agriculture and Food Security for Poverty Reduction in the SADC Region*. The main objective of the Summit was to explore strategies that would reverse the situation. In his official opening statement, the then Chairperson of SADC, His Excellency President Benjamin Mkapa of the United Republic of Tanzania said, "SADC should avoid to always be in the news for the wrong - hunger". At the Summit, the Heads of State and Government committed themselves, through the signing of the Declaration and Plan of Action, to mobilize a regional response to the food security challenge. The Declaration adopted short-term and medium/long-term strategies aimed at revamping agriculture in the region.

In the short term, the Declaration called for action on (i) provision of key agricultural inputs; (ii) agro-industrial development and processing; (iii) crop and livestock pests and diseases; (iv) crop, livestock and fisheries production; and (v) water management and irrigation. In the medium to long-term, the Declaration defined a set of actions around (i) sustainable use and management of natural resources; (ii) disaster preparedness; (iii) research, technology development and dissemination; (iv) private sector involvement in agriculture and rural development; (v) market access; (vi) agricultural financing and investment; (vii) training and human resource development; (viii) gender equality; and (ix) enhancing human health and mitigation of HIV/AIDS and other chronic diseases.

Concomitant with the above, the SADC Council of Ministers, in 2007, confirmed the principle of regional economic policy harmonisation, of which agriculture is an integral part in an effort to facilitate implementation of the resolutions of the Dar-es-Salaam Declaration. In direct response to this, the SADC Food, Agriculture and Natural Resources (FANR) Directorate initiated, among other activities, the development of the SADC Regional Agricultural Policy (RAP) which would provide a holistic and programmatic approach for activities under FANR to stimulate agricultural productivity, production and competitiveness in the region. The RAP was approved in principle by Ministers responsible for Agriculture and Food Security at their meeting held in Maputo, Mozambique on 7th June 2013. The RAP embraces the entire medium to long term frameworks for the Dar-es-Salaam Declaration and is therefore now providing an overarching policy framework for the implementation of the Declaration.

In 2013, SADC Heads of State and Government further observed with concern the levels of food and nutrition security in the region. They reiterated the need to (a) scale up the production of cereals and non-cereal crops, livestock and livestock products and fisheries; (b) scale up measures to improve management of post-harvest losses; and (c) improve the overall food and nutritional security.

One of the objectives of the RAP is to enhance sustainable agricultural production, productivity and competitiveness. In achieving this within the fisheries and aquaculture sector, the RAP seeks to reduce overfishing, illegal, unreported and unregulated (IUU) fishing and degradation of aquatic environments; and to improve the development of aquaculture, intra-regional trade and investment in fisheries, whilst ensuring that stakeholders commit to the implementation of the SADC Protocol on Fisheries. It is against this background that the SADC Secretariat has

been engaging in the process of drafting the SADC Regional Aquaculture Strategy and Action Plan together with the complimentary SADC Aquatic Animal Health Strategy.

1.2.5 Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa

The Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa, which elaborates and makes explicit essential guiding principles for good governance of Africa's fisheries for increased coherence and coordination of the sector aims at:

- Facilitating African Union (AU) Member States, Regional Economic Communities (RECs) and Regional Fisheries Bodies (RFBs) to develop realistic fisheries and aquaculture policies by suggesting standards and best practices to the sector's benefits to AU member states, in terms of food security, employment and income; and
- Facilitating regional collaboration and integration in shared fisheries and aquaculture resources management.

The African fisheries policy framework and reform strategy was conceived out of the need to address the numerous challenges that continue to deny Africans the benefits that could be derived from the exploitation of fisheries and aquaculture resources. These challenges are limiting the extent of the full contribution of the fisheries and aquaculture sector to food security, livelihoods and economic growth. Some of the reasons for the poor performance of the sector in African countries have been attributed to lack of policy coherence and coordination, increasing levels of IUU fishing, weak intra-regional and international trade, and poor capacity for aquaculture development and poorly developed artisanal fisheries sector.

1.2.6 SADC Protocol on Fisheries

Fisheries in the SADC region provides a myriad of benefits, including food and nutrition security, livelihoods, employment, sports tourism, biodiversity and foreign currency. It is against this background that the SADC Protocol on Fisheries was developed (2001). Guided by the SADC Treaty of 1992, the SADC Protocol on Fisheries have been developed to guide, support and promote appropriate actions at regional and national levels towards the attainment of the SADC Common Agenda which promotes sustainable and equitable economic growth and socio-economic development in order to ensure poverty alleviation with the ultimate objective of its eradication, enhance the standard and quality of life of the peoples of Southern Africa and support the socially disadvantaged through regional integration.

The SADC Fisheries Protocol provides a regional framework for the promotion of responsible and sustainable use and management of the living aquatic resources and aquatic ecosystems. This facilitates a regional Ecosystems Approach to Aquaculture (Soto *et al.*, 2008). Moreover, the Fisheries Protocol serves to promote and enhance food security and human health, safeguard the livelihoods of fishing communities, generate economic opportunities to eradicate poverty in the Region and to ensure that future generations benefit from these renewable resources. Article 13 of the Protocol focusses on the need to optimise the economic contribution of aquaculture to the region, to review policies and legal frameworks, to facilitate the sustainable development of the sub-sector and to promote private sector participation. Article 18 highlights the need for effective data collection to enhance decision making at management level and the need for capacity building at all levels of the aquaculture value chain.

1.2. Scope and purpose of the SADC Regional Aquaculture Strategy and Action Plan

The scope and purpose of the SADC Aquaculture Strategy and Action Plan is to provide strategic direction for the rapid, environmentally responsible, development of aquaculture in SADC Member States, while simultaneously safe guarding the ecological integrity of aquatic ecosystems, conserving common genetic resources and supporting the maintenance of regional aquatic biosecurity (as outlined in the SADC Regional Aquatic Biosecurity Strategy). The SADC Regional Aquaculture Strategy and Action Plan (RASAP) also considers the aquaculture strategies of Member States to advance the development of cross border value chains that better enable the utilization of aquatic and human resources within the region.

1.3. Conceptual Framework of Aquaculture

In the last decade small, medium and large scale commercial aquaculture production has surged ahead globally, through diversification, intensification, technological innovation, multi-trophic integration, industrialization and advances in genetics, nutrition, husbandry and fish health management. While there have been several setbacks such as the impact of infectious salmon anemia on the Chilean salmon industry, which began in 2007 and from which the industry is only now recovering (Asche *et al.*, 2009), the past decade has seen major progressive strides and in general the industry has become more conscious of the impacts of aquaculture on aquatic ecosystems and the need for regulatory frameworks that promote environmental responsibility.

In 2012 global aquaculture production (excluding seaweeds) stood at 49% of the total world fish supply (FAO, 2014) and is expected to exceed 50% in 2015. In sub Saharan Africa the contribution by aquaculture to total fish supply in 2013 was 13.2% and in SADC it was a mere 2.1%.

While the global demand for fish is increasing, the supply from capture fisheries has stagnated over the last decade (FAO, 2014). Even with improved management practices and benign climate change no major increases can be expected from the worlds capture fisheries in future and it is internationally accepted that the global and regional demands for fish will have to be fulfilled through aquaculture (World Bank, 2007). Similar to the global picture, capture fisheries in SADC Member States also shows stagnating trends (Table 1).

During the 12-year period from 2001 to 2013 total fisheries landings in SADC have fluctuated around 2.6 million tonnes per annum and have declined in several countries and for the Region as a whole. Despite the importance of capture fisheries in SADC the resources are threatened in many instances by overfishing, degradation of aquatic environments, illegal, unreported and unregulated (IUU) fishing, climate change and inadequate scientific and management decision support. However, these challenges are, to a greater or lesser degree, ubiquitous and not unique to SADC.

Table 1: Total fish landings of SADC Member States 2001-2013.

Country	2001	2003	2005	2007	2009	2011	2013	% annual increase / decrease
Angola	254 553	212 033	202 616	306 436	272 042	273 000	275 000	0.7
Botswana	118	122	132	122	73	234	431	22.1
Congo, Dem. Rep. of the	231 378	234 375	234 814	234 252	228 363	221 250	227 414	-0.1
Lesotho	24	42	45	48	45	45	50	9.0
Madagascar	123 615	129 670	132 648	147 778	131 303	126 254	103 797	-1.3
Malawi	40 619	53 543	59 595	66 500	69 325	82 415	112 248	14.7
Mauritius	10 986	10 968	9 855	8 295	7 740	7 266	7 309	-2.8
Mozambique	36 416	96 904	93 996	92 623	150 780	193 556	222 101	42.5
Namibia	547 977	637 799	553 995	413 333	378 847	413 925	485 738	-0.9
Seychelles	53 591	86 020	108 680	65 514	81 112	75 483	74 128	3.2
South Africa	750 502	822 935	817 666	678 878	512 284	533 432	412 510	-3.8
Swaziland	50	60	60	50		10	0	-8.3
Tanzania	357 529	373 049	400 210	449 964	360 584	374 172	412 701	1.3
Zambia	63 000	66 332	65 927	73 542	84 716	69 364	86 527	3.1
Zimbabwe	12 300	10 600	10 420	10 500	10 500	10 500	10 500	-1.2
Totals - Quantity (tonnes)	2 647 069	2 854 768	2 838 170	2 680 099	2 421 927	2 562 608	2 593 848	-0.2

Annual per capita fish consumption in developing regions in the world has increased from 5.2 kg in 1961 to 17.8 kg in 2010 and in the Low Income Food Deficient Countries (LIFDCs) from 4.9 to 10.9 kg per annum. In SADC Member States the average per capita fish consumption in 2011 was 10.8 kg per annum, but with a very wide range from 0.5 kg in Lesotho to 57 kg per annum in the Seychelles. The SADC average is still well below the world average, which by 2012 had increased to 19.2 kg/ annum from 9.9 kg's in the 1960s (FAO, 2014).

Because of increasing demand, declining domestic fishery production and insufficient production from aquaculture, a growing share of fish consumed in SADC countries consists of imports. It is for this reason mainly that SADC Member States recognize aquaculture as an important food production sector and the need to advance commercial aquaculture and to transform small-scale, community based aquaculture rapidly throughout the region. Although not yet comprehensively quantified, the SADC region has immense potential to increase aquaculture production in inland waters, along the coast and in the oceans of maritime states. The RASAP is the tool to facilitate the development and transformation of the sub-sector in the region.

CHAPTER 2. SITUATIONAL ANALYSIS AND OPPORTUNITIES FOR AQUACULTURE IN THE SADC REGION

2.1. Overview

Despite a history of over 50 years the understanding of the manner in which aquaculture works, including the technologies and methods, the business principles and the impacts (financial, social and environmental) is still not fully understood in SADC. This emphasizes the need for capacity building in aquaculture science and technology, administration, implementation, financing, management and the need to assertively develop the associated value chains.

Aquaculture in the SADC region is divided broadly into two distinct forms:

1. Commercial aquaculture, which is market led and private sector driven for profit and in many instances is export oriented.
2. Small-holder aquaculture, which has been promoted by development partners and governments for over 50 years in sub-Saharan Africa to reduce poverty, create livelihoods and improve the rural food and nutritional supply situation. Small holder aquaculture is practised mainly in rural areas as a livelihoods diversification strategy and plays an important role in providing high quality protein at the family level (Hecht, 2006). In the SADC region this sub-sector is generally not part of the value chain and does not contribute significantly towards poverty eradication and does not create wealth.

Commercial aquaculture undertakings, at various scales, are operational in Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa, Tanzania, Zambia and Zimbabwe. The principle species that are farmed on a commercial scale are tilapia, rainbow trout, abalone, prawns, mussels, oysters, and ornamental fish species. As elsewhere, commercial farms are financed mainly by equity, debt and soft loans or a combination of these. Extension services in the commercial aquaculture sector throughout the Region are private.

Small-holder and community based aquaculture projects have been supported by donors since the 1960s in almost all SADC countries, except Namibia (until recently), Seychelles and South Africa. Despite the concerted efforts of donors and national aquaculture extension services, small-holder and community based aquaculture in sub-Saharan Africa has, to a large degree, been left behind. Production levels are still relatively low (<350 to 1 800kg/ha). Overall, this sub-sector has neither delivered the expectations of donors, the farmers and of governments nor has it contributed in any significant manner to economic development or to any significant level of trade in fish, although it is generally recognized that it has contributed towards improved food and nutrition security at the family / community level. On its present trajectory small-holder and community-based aquaculture will and cannot enter the value chain and cannot contribute towards poverty alleviation. This must change and calls for a paradigm shift in approaching the development of this sub-sector. Historical approaches have failed and these must now be reviewed. Many basic lessons have been learnt with respect to location, national commitment / investment into value chain development, supply chain management, capital and operating requirements and clustering to attain economies of scale. The challenge is to learn from these lessons to transform small holder and community based aquaculture into small and medium scale enterprises, such that the sub sector makes a more meaningful contribution to food security and the creation of wealth.

This complex process has started in several SADC Member States, through more effective extension services and investment. Some progress has been made but more still needs to be done.

2.2. Aquaculture production and trends

Global aquaculture production (excluding seaweeds) grew at an average annual rate of 6.2 percent during the period 2000–2012, from 32.4 million to 66.6 million tonnes. During the same period, growth in African aquaculture production was relatively faster at 11.7 percent per annum, while in SADC the average annual increase in fish production between 2001 and 2013 was 13.5 percent.

Between 2001 and 2013 aquaculture production of food fish in SADC Member States increased from 22 466 in 2001 to 56 132 tonnes (Table 2). It should be noted that the production statistics for small scale, community based aquaculture in many instances are based on extrapolations using average production figures and the number or total area of small holder ponds in the country. The doubling of production volumes from 27 451 tonnes in 2009 to 56 132 tonnes in 2013 is a consequence largely of growth in commercial cage culture of Tilapia in Malawi, Zambia and Zimbabwe and trout in Lesotho. Gross revenues from aquaculture (excluding seaweeds) in the SADC region in 2013 exceeded US \$ 247 million and over the 12-year period from 2001 to 2013 gross revenues grew at an average of 20 percent per annum. It should be noted however that commercial production by weight and value far exceeds production and revenue of the small holder sub sector. Approximately 77 percent of volume and 75 percent of revenues is attributable to commercial aquaculture.

Table 2: Aquaculture production statistics of SADC Member States (2001–2013)

FISH, CRUSTACEANS, MOLLUSCS	2001	2003	2005	2007	2009	2011	2013	% annual increase
COUNTRY								
Angola	11	72	126	190	260	410	450	332.6
Congo, Dem. Rep. of the	2 744	2 965	2 965	2 970	2 970	2 970	2 869	0.4
Lesotho	8	4	1	131	108	300	500	512.9
Madagascar	7 749	9 467	9 396	11 292	6 115	8 844	8 973	1.3
Malawi	568	666	812	1 500	1 620	2 833	3 705	46.0
Mauritius	59	33	400	175	437	537	485	60.2
Mozambique		409	1 222	838	490	796	721	6.4
Namibia	50	75	125	334	536	434	470	70.0
Seychelles	282	1 084	772	368				-8.3
South Africa	2 818	3 778	2 895	2 669	3 433	3 572	4 010	3.5
Swaziland	72				73	100	100	3.2
Tanzania	300	2	12	45	202	648	3 487	88.5
Zambia	4 520	4 501	5 125	5 876	8 505	10 530	20 271	29.0
Zimbabwe	2 285	2 650	2 502	2 550	2 702	7 682	10 090	28.5
Totals	21 466	25 706	26 353	28 938	27 451	39 657	56 132	13.5

SEAWEED	2001	2003	2005	2007	2009	2011	2013	% annual increase
Madagascar	700	800	900	3 650	3 600	1 699	2 775	11.9
Namibia	20	67	67	27	130	130	130	45.8
South Africa	12	2 824	3 000	3 000	1 900	2 885	2 000	1995.1
Tanzania	82 860	96 640	76 620	88 850	108 202	137 001	117 127	5.4
Totals	31 004	38 551	39 952	46 048	46 297	64 594	93 411	9.0

The production of seaweed in the SADC region has also increased significantly by 9 percent per annum over the period 2001 to 2013, driven in particular by the demand for seaweed by the abalone farming industry as feed in South Africa. Tanzania, especially in Zanzibar, remains the largest contributor of farmed seaweed in the region, producing in excess of 116 000 tonnes per annum. Gross revenues in 2013 added a further US \$ 2.3 million to the gross aquaculture revenue of the Region and over the 12 year period grew by 16 percent per annum (Table 2). Overall these data show that aquaculture output in the SADC region is on an upward trajectory, brought about mainly by several scale investments into aquaculture, and the growth of the sector exceeds the CAADP aim of a 6 percent annual growth rate in food production. The small holder (non-commercial) sector has for all intent and purposes not shown much growth, the reasons for which, amongst others, include the lack or in some instances the complete absence of access to capital, high quality fingerlings and appropriate feeds. Inland freshwater aquaculture is focused largely on finfish, while marine aquaculture currently includes mainly shellfish, crustaceans, seaweed and some fish.

The development of scale commercial aquaculture has accelerated rapidly in several SADC Member States. Having seen the benefits of commercial aquaculture in terms of food security, job creation, income generation and other associated benefits most SADC Members States have now made it a top developmental priority. Indeed, Jamu *et al.* (2012) show that the major successes of aquaculture development in Africa have been achieved through the critical role of the private sector in mobilizing investments to produce for the market and developing innovative approaches such as importation of technologies and managerial capacities required to profitably produce large quantities of fish from commercial aquaculture. The Nigerian commercial catfish model is a very good example of the importance of this approach. Other examples include the tilapia sector in Zambia and Zimbabwe and the trout sector in Lesotho and abalone farming in South Africa.

Increasing regional food prices, the increasing demand for fish and fish products regionally and globally and declining capture fisheries provide significant prospects for growth of the sector in the SADC region. The Strategy identifies constraints and proposes measures and actions to rapidly advance aquaculture in the SADC states in a responsible manner. While some SADC Member States have put in place legislation for the management and regulation of the aquaculture sector there is a need to better harmonize the various legal instruments within the SADC Member States to ensure that there is consistency with the SADC Protocol on Fisheries and to provide for cross border expansion of the aquaculture value chain.

As referred to earlier, aquaculture development now has priority development status in most SADC Member States. This is reflected in the National Aquaculture Development Strategies of most members States. Member States are committing to create appropriate platforms for access to and optimal utilization of available resources and infrastructure to expand a sustainable and competitive aquaculture sector that will meaningfully contribute to job creation, economic development, sustainable livelihoods, food security, rural development and equity, through increased production, and a diversity of production systems that produce safe and nutritious food while safeguarding the environment. Member States should however be mindful that sustainable commercial aquaculture is predicated largely on natural strategic advantage and that developmental and investment enthusiasm should be tempered with realism and careful due diligence. Moreover, key to the environmentally responsible development of the sector in the Region is research cooperation and collaboration, sharing of technological advances, cooperation with respect to translocation of species, establishment of regional best management practices and standardizing strategic environmental assessment (SEA) and environmental and social impact assessment (ESIA) policy and procedures.

CHAPTER 3. ANALYSIS OF STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS TO AQUACULTURE IN THE SADC REGION

Given the developmental and economic diversity of SADC Member States it is challenging to undertake an analysis of strengths, weaknesses, opportunities and threats (SWOT) of aquaculture for the region. It should be noted that some of the strengths, weaknesses, opportunities and threats do not necessarily prevail in each Member State. Nevertheless, the overall conclusion drawn from the SWOT analysis is that the strengths and opportunities for aquaculture in SADC outweigh the weaknesses and the threats. Most of the weaknesses are seen as challenges that must be overcome by developing and implementing good action plans. Many of the threats can also be moderated through regional cooperation and planning.

3.1. Strengths

- Strong market for fish throughout most of the Region.
- Water availability in most Member States provides prospects for cage culture and land based aquaculture.
- Conducive climatic and bio-physical conditions for farming a variety of species (various tilapia species, African catfish, vundu, rainbow trout, salmon, dusky kob, yellowtail and other marine fish species, abalone, mussels, oysters, scallops, prawns, crabs, sea urchins and seaweed).
- A rich biodiversity of potential aquaculture candidate species.
- A long history of aquaculture in most Member States.
- An upswing in private sector investment in aquaculture and associated enterprises.
- Strong political support for aquaculture development in most Member States.
- Strong support from regional, continental and global partners like the African Union Inter-African Bureau for Animal Resources (AU-IBAR, EU, FAO, NEPAD, WFC).
- Strong regional cooperative regulatory frameworks.
- Strong fiscal incentives and financial support in some Member States.
- Aquaculture development environment improving in all Member States (14 Member States have aquaculture development strategies).
- Strong research support for commercial aquaculture.
- An emergent technical skills base.
- Existence of public fish hatcheries in all Member States.

3.2. Weaknesses

- Absence of Regional aquaculture value chain.
- Shortage of certain core skills, e.g. veterinary services.
- Lack of understanding of aquaculture sector by financial institutions.
- Inadequate support for the transformation of small scale, community based aquaculture into SMMEs.
- Weak research support structures for small scale and community-based aquaculture in most Member States.
- Very poor financial support for research on small scale, community based aquaculture in most Member States.
- Inadequate scientific and technical cooperation among Member States.
- Inefficient information dissemination mechanisms.

- Regulatory frameworks that restrain commercial aquaculture development in some Member States.
- Weak extension services for small scale, community based aquaculture.
- Poorly resourced state hatcheries.
- No clear guidelines for use of lacustrine and ocean resources (Zoning).
- Inadequate development strategies for commercial aquaculture in some Member States.
- Limited number of adequately trained research and development staff.
- Staff of Fisheries and Aquaculture Departments not “commercial” thinkers.
- Poorly conceived government research & development projects.
- Poor broodstock genetics.
- Insufficient and inefficient hatcheries for development and transformation of small scale, community based aquaculture.
- Poor feed and seed supply for small scale, community based aquaculture.
- Lack of state investment into small holder and commercial scale aquaculture development.
- Scarcity of appropriate aquaculture insurance schemes.
- Lack of trans-boundary catchment management plans.
- Lack of Regional training course in aquaculture at tertiary institutions.
- Lack of or weak cooperation and collaboration between public and private sectors.
- Lack of appropriate financing mechanisms.

3.3. Opportunities

- Growing demand for fish and fish products regionally and globally.
- Regional and international markets.
- Escalating regional and global food prices.
- Decline in capture fisheries regionally and globally.
- Ongoing development of innovative production technologies.
- Access to international funding sources.
- Technology and knowledge transfer.
- Low per capita fish consumption.
- Upsurge in investor interest in aquaculture.
- Commercialization of small scale, community based aquaculture.
- Donor support for aquaculture small, medium and micro enterprises (SMMEs).
- Climate change.
- Linkages with capture fisheries (ranching, stock enhancement, culture based fisheries).

3.4. Threats

- Conflict with other sectors regarding use of land and water.
- Competition with cheap, subsidized fish and fish products imports.
- Disease threats from wild and high intensity aquaculture systems..
- Possibility of environmental pollution by high intensity aquaculture systems.
- Introduction of exotic species.
- Brain drain of aquaculture research and development (R&D) human resources (HR).
- Climate change.
- Socio-political instabilities in the region.
- Global economic crisis.
- Illegal and unregulated fishing / poaching.
- Pollution.
- High and variable input costs.

CHAPTER 4. THE STRATEGY (STRATEGIC OBJECTIVES, EXPECTED OUTPUTS AND PRIORITY ACTIONS)

The strategy recognizes the dichotomous nature of aquaculture in the SADC region and acknowledges the importance of both small-holder and commercial aquaculture for future regional economic development.

4.1. The Vision: By 2025 SADC will become a leader of sustainably produced aquaculture products in Africa that contribute significantly towards economic growth, food security, poverty alleviation and job creation throughout the region.

4.2. The Mission: To create a sustainable, competitive and diversified aquaculture sector in the region.

4.3. The Overall Goal: To increase the contribution by aquaculture to local, national and regional economic growth and trade.

4.4. Strategic Objectives

4.4.1. Strategic Objective 1: To increase aquaculture production and investment in the production of edible and non-edible products by the commercial and small-holder aquaculture subsectors in the SADC region, while ensuring environmental sustainability.

4.4.2. Strategic Objective 2: To transform small holder / community based aquaculture into successful SMMEs in the SADC region.

4.4.3. Strategic Objective 3: To promote the responsible, equitable and sustainable development of aquaculture to improve food, income and nutrition security in the SADC region.

4.4.4. Strategic Objective 4: To improve market access, supply chains and aquaculture product diversification in the SADC region.

4.4.5. Strategic Objective 5: To define the resilience of aquaculture to climate change in the SADC region and develop mitigating measures.

4.4.6. Strategic Objective 6: To establish cooperative institutional frameworks for effective governance, to create consolidated R&D centres of excellence for coordinated research and implement best management practices for aquaculture in the SADC region.

4.4.7. Strategic objective 7: To mainstream aquaculture into the economic development agendas of SADC Member States.

4.4.8. Strategic Objective 8: To mainstream cross-cutting issues in the aquaculture value chain throughout the SADC region.

4.5. Expected outputs

The overall goal of the strategy is to increase the contribution by aquaculture to local, national and regional economic growth and trade. Collectively the priority actions will result in the following expected outputs that in turn will lead towards achieving the overall goal of the Strategy.

Strategic Objective	Expected outputs
1	1.1 Growth in aquaculture production and investment in medium and large scale commercial aquaculture operations in Member States responsibly accelerated.
2	2.1. Small holder / community based aquaculture transformed into successful and productive SMMEs.
3	3.1. Environmentally sustainable and BMP for aquaculture developed, adopted and practiced.
4	4.1. Value chains across the Region understood or established 4.2. Regional aquaculture production input, product development and trade support enhanced.
5	5.1. Climate change adaptation and mitigation measures developed.
6	6.1. Institutional frameworks for aquaculture governance in Member States harmonized. 6.2. Improved and consolidated cooperation in aquaculture research and development initiatives among and between Member States established. 6.3. Sound regional policies and legal frameworks for species introductions and aquaculture in shared catchments developed and harmonized. 6.4. Responsible commercial and small-scale aquaculture development facilitated and not hindered by Regulatory Frameworks.
7	7.1. Enabling mechanisms for affordable access to finance for small holder and commercial aquaculture development and established. 7.2. National resources for improved support for aquaculture development leveraged.
8	8.1. Gender, youth and vulnerable groups and equity considerations in national aquaculture development plans integrated.

4.6. Priority Actions

The following table lists the priority actions that must be undertaken to achieve the strategic objectives.

Strategic objectives	Priority actions
Strategic objective 1: To increase aquaculture production and investment in the production of edible and non-edible products by the commercial and small-holder aquaculture subsectors in the SADC region, while ensuring environmental sustainability.	<ul style="list-style-type: none"> 1.1. Understand and develop the aquaculture value chain. 1.2. Promote collaboration between private and public sectors. 1.3. Incentivise private sector investment in aquaculture sub-sector. 1.4. Create an enabling regulatory and business environment. 1.5. Assess all opportunities and potential for aquaculture production in Member States realistically and disseminate the information to the private sector.

	<ul style="list-style-type: none"> 1.6. Collate and disseminate information on best available technologies for small holder aquaculture in the SADC Region with an emphasis on feed, seed and fertilization. 1.7. Collate and disseminate information on the aquaculture supply chain in the region. 1.8. Sensitize financial institutions on the commercial opportunities offered by aquaculture. 1.9. Develop policies that facilitate access to finance and other productive resources including secured land, tenure systems and property rights. 1.10. Develop and publish commercial aquaculture investment guides for Member States. 1.11. Develop regionally competitive fiscal incentives to promote investment. 1.12. Facilitate the establishment of aquaculture financing mechanisms. 1.13. Facilitate and promote aquaculture research in the region. 1.14. Identify suitable sites and establish aquaculture development zones for accelerated growth. 1.15. Promote best management practices to improve post-harvest processes, value addition and quality assurance. 1.16. Establish capacity building opportunities throughout the aquaculture value chain. 1.17. Promote fish consumption in SADC.
<p>Strategic objective 2: To transform small-holder / community based aquaculture into successful SMMEs in the SADC region</p>	<ul style="list-style-type: none"> 2.1. Governments to request donors to support aquaculture SMMEs. 2.2. Promote and establish National Aquaculture Transformation Funds. 2.3. Aggressive interventionist investment by Member States to transform small holder / community based aquaculture into SMMEs. 2.4. Develop and operate pilot farms to demonstrate business case. 2.5. Develop and implement SMART aquaculture extension services including market orientation. 2.6. Promote the adoption of integrated, commercial, small-scale aquaculture as a means of increasing rural productivity and food security. 2.7. Harness the opportunities for SMME development provided by expanding domestic markets for fish, including the growing urban demand. 2.8. Establish market locations and infrastructure.
<p>Strategic objective 3: To promote the responsible, equitable and sustainable development of aquaculture to improve food, income and nutrition security in the SADC region.</p>	<ul style="list-style-type: none"> 3.1. Create a user-friendly platform for private sector investment in the commercial aquaculture value chain in Member States. 3.2. Harmonize policies, laws and regulations such that they promote sustainable aquaculture development.

	<ul style="list-style-type: none"> 3.3. All Member States to assess Aquaculture HR requirements and accordingly to promote aquaculture research, training and capacity building. 3.4. Establish functional linkages between farmers, extension service and research. 3.5. Train small holder fish farmers in food safety standards and associated BMPs. 3.6. Member States to endorse and apply standards and norms on aquatic animal health as recommended in the SADC Biosecurity Strategy 3.7. Strengthen information systems and disseminate bio-security, disease prevention and control measures in the region. 3.8. Harmonize policies, laws and regulations conducive for sustainable aquaculture development. 3.9. Training of women and vulnerable groups in aquaculture technologies and fish processing.
<p>Strategic objective 4: To improve market access, supply chains and aquaculture product diversification in the SADC region.</p>	<ul style="list-style-type: none"> 4.1. Public sector support for rapid development of aquaculture value chains. 4.2. Commission a Market Study on potential commercialisation of aquaculture products within and outside the SADC region. 4.3. Collate and disseminate information on the aquaculture supply chains in the region 4.4. Improve and align trade systems between Member States. 4.5. Comply with international sanitary requirements and safety of fish products. 4.6. Build capacity of all actors in the value chain, particularly women. 4.7. Member States to promote eco-labelling of aquaculture products as a trade-enhancing mechanism. 4.8. Establish regional reference laboratories to meet CODEX norms. 4.9. Develop branding for SADC aquaculture products. 4.10. Harmonise regulations for import and export of aquaculture products within the SADC region. 4.11. Establish Aquaculture Value Chain Forums. 4.12. Develop and implement traceability guidelines and promote certification schemes. 4.13. Develop a regional aquaculture products certification mechanisms for trade within the SADC. 4.14. Promote adoption of aquatic food safety standards by small holder fish farmers
<p>Strategic objective 5: To define the resilience of aquaculture to climate change in the SADC region and develop mitigating measures.</p>	<ul style="list-style-type: none"> 5.1. Establish a regional Aquaculture Climate Change Working Group. 5.2. Assess international climate change adaptation and mitigation measures for aquaculture and adapt for SADC region. 5.3. Disseminate the information and

<p>Strategic objective 6: To establish cooperative institutional frameworks for effective governance, to create consolidated R&D centres of excellence for coordinated research and implement best management practices for aquaculture in the SADC region.</p>	<p>recommendations.</p> <ol style="list-style-type: none"> 6.1. Marine aquaculture R&D coordination consolidated in most appropriate maritime Member State. 6.2. Inland aquaculture R&D coordination consolidated in most appropriate inland Member State 6.3. Enhance effective bilateral and regional cooperation in the use of shared catchments 6.4. Member States to incorporate EAA into regulatory frameworks. 6.5. Develop regional BMPs, including water quality management, for different forms of aquaculture 6.6. Develop and start a SADC disease outbreak notification system. 6.7. Harmonize regional regulations for species introductions, promotion and translocation. 6.8. Strengthen regional cooperation in best governance practices through farmer internship, study tours and exchange programmes with universities and other tertiary institutions. 6.9. Strengthen capacity in SEA and ESIA. 6.10. Improve regional collaboration between institutions in Member States through workshop and seminars.
<p>Strategic objective 7: To mainstream aquaculture into the economic development agendas of SADC Member States.</p>	<ol style="list-style-type: none"> 7.1. Assess the potential of aquaculture in SADC Member States realistically with respect to production, revenue generation and job creation. 7.2. Lobby governments on the economic opportunities provided by aquaculture. 7.3. Develop and present aquaculture investment strategies to responsible Ministries
<p>Strategic objective 8: To mainstream cross cutting issues in the SADC region.</p>	<ol style="list-style-type: none"> 8.1. Integrate gender, youth and vulnerable groups and equity considerations in all regional aquaculture development projects and programmes. 8.2. Develop training opportunities for women and vulnerable groups in aquaculture and processing technologies. 8.3. Develop training opportunities for women and vulnerable groups in small business management and trading of fish and fish products. 8.4. Promote employment of women and vulnerable groups. 8.5. Support aquaculture study tours for women and vulnerable groups.

CHAPTER 5. IMPLEMENTATION MECHANISMS, ROLES AND RESPONSIBILITIES

The SADC Secretariat, in collaboration with the institutions / structures responsible for aquaculture in Member States as well as regional and international partners, will guide the implementation of the RASAP as appropriate. The success of the implementation of the Strategy is predicated on the various stakeholders playing their roles actively. Equally important and for the sake of continuity is that responsible Ministers, in all Member States, appoint member country aquaculture focal points.

The first phase of implementation will be the drawing up of 5-year business plans with budgeted targeted outputs.

5.1. Guiding principles

Effective implementation will require strong cooperation, collaboration, coordination and investment across a range of entities based on a well-structured and participatory approach. The implementation of the Strategy is aligned to the general principles of the RISDP and the SADC Protocol on Fisheries. More specifically the following guiding principles will apply:

- (i) Value addition – the interventions to be spear headed at the regional level will be limited to those that clearly add value or generate solutions to national initiatives;
- (ii) Prioritization - The focus must be on the realistic attainment of specific objectives in line with national priorities.
- (iii) Broad Participation and Consultation – the implementation of the Strategy must be based on broad participation and consultation to ensure ownership and commitment.
- (iv) Realism, flexibility and pragmatism are the key fundamentals for implementing the strategy.
- (v) Equity and equality - Decision-making processes must be inclusive, fair and transparent, non-discriminatory to women, vulnerable and disadvantaged groups and subject to clear and consistent rules and procedures.
- (vi) Sustainability – Application of EAA and international BMP will guard against undesirable bio-ecological and socio-economic outcomes.
- (vii) Accountability – Member States and non-State actors must be held responsible for their decisions and actions.
- (viii) Strategies are of little value in the absence of supporting political will and financial resources. Governments will provide an enabling environment for stakeholders to successfully implement the strategy.

5.2. Stakeholders, roles and responsibilities

The key stakeholders in the implementation of the Strategy include:

- i. SADC Summit, Council and Committee of Ministers of Environment and Natural Resources Management, and Agriculture and Food Security;
- ii. SADC Technical Committee on Fisheries and the Aquaculture Working Group;
- iii. SADC Secretariat and Directorate of Food, Agriculture and Natural Resources;

- iv. Appropriate agencies and Commissions / Councils;
- v. National and Regional Aquaculture Farmer / Producer Organizations / Associations;
- vi. Regional NGOs, Research Institutions and the private sector; and
- vii. International Cooperating Partners (ICPs).

The roles and responsibilities of the stakeholders are as follows:

The SADC Committee of Ministers of Environment and Natural Resources Management, and of Agriculture and Food Security will review, approve and oversee implementation of the Strategy. These Committees of Ministers will report to SADC Council annually or biennially. All meetings of the Ministers will be preceded and supported by a meeting the SADC Technical Committee on Fisheries.

The SADC Secretariat through Directorate of Food, Agriculture and Natural Resources will coordinate and facilitate the execution, monitor and evaluate the implementation of the strategy; whereas the Member States and development partners will be responsible for the implementation of the Strategy; and in collaboration with the SADC Aquaculture Working Group, FANR Directorate will support Member States to conduct national or regional workshops to formulate and execute projects that address the strategic objectives of the SADC Aquaculture Strategy.

The SADC Aquaculture Working Group will be responsible for coordinating the implementation of the Strategy. In collaboration with the Working Group and development partners, the FANR will coordinate development of joint programmes and projects that advance the implementation of the RASAP. The Working Group will review and streamline on-going implementation actions; and will review opportunities for sharing resources and the exchange of experiences between Member States.

The role and obligation of the Member States will be to provide leadership, establish supportive administrative mechanisms and monitor the in-country implementation of the Strategy. In line with the Protocol on Fisheries, Member States will focus on:

- Harmonising their national strategies with the SADC Regional Strategy.
- Co-operating with one another to ensure that the overall objective of the Strategy is achieved.
- Ensuring the participation of all stakeholders in the promotion of the overall objective of the Strategy.
- Protect and regulate the use of living aquatic resources, whilst creating an enabling environment and building capacity for the sustainable utilisation of the resources.
- Transfer skills and technologies to other Member States to enhance effective regional scientific and technological co-operation.
- Work with relevant cooperation partners including the private sector and civil societies.
- Lobby for development needs to be given prominence in national development agendas.
- Create internal conditions in which the sector is valued and supported at the most senior levels of government.
- In collaboration with the responsible Ministries seek external funding from donors and other development partners to support the implementation of Strategy.
- Report biennially national progress against the strategic objectives.

CHAPTER 6. RESOURCE REQUIREMENTS

Significant human and financial resources will be required for the implementation of the RASAP work plan. Securing adequate resources poses a key challenge upon which the effective implementation and rollout of the RASAP depends. Cooperating Partners will play an important role in providing resources for the implementation of the RASAP and should, therefore, be kept abreast of progress and their strategic advice sought where necessary.

The Strategy will be implemented through the RAP Investment Plan, the SADC Fisheries Programme of FANR Directorate and other strategic frameworks. Five Year Business Plans, with costed targeted outputs, will be developed as part of the investment plan. The SADC Secretariat will facilitate resource mobilisation for implementation of activities coordinated at regional level, taking into account the Windhoek Declaration of April 2006 on a new Partnership between SADC and ICPs for the implementation of the SADC Common Agenda and the SADC Mission of promoting sustainable and equitable economic growth and socio-economic development through efficient productive systems, deeper cooperation and integration, good governance, strengthened capacity and participation of stakeholders, and durable peace and security so that the Region emerges as a competitive and effective player in international relations and the world economy, as outlined in the RISDP. The Declaration outlines the guiding principles of cooperation, partnership, commitments, structure for dialogue and key areas of cooperation based on RISDP priorities.

Pursuant to this, SADC through RISDP has adopted a programme based resource mobilization framework, with 5 year time horizons, that is intended to support SADC's medium and long term integrated strategic priorities.

CHAPTER 7. MONITORING AND EVALUATION

7.1. The objectives

The objectives of the RASAP monitoring and evaluation mechanisms are to ensure that milestones are achieved timeously, to act as an early warning system in cases where targets are not likely to be achieved, to provide regular feedback to the stakeholders on the progress of the RASAP, to provide information for any reports that might have to be produced on the RASAP, to ensure an ongoing focus on the strategic objectives and to mobilise appropriate interventions, if required.

7.2. Monitoring

The Secretariat will ensure that the monitoring system provides for aggregate indicators to monitor the overall development of aquaculture in the Region by tracking developments at the operational and technical level. The Secretariat will also play the role of advisor and facilitator in ensuring that appropriate interventions are implemented, and supplementary programmes are developed, as may be required, to ensure that targets are met or that changing scenarios are addressed.

Once the RASAP is approved by the Committee of Ministers, the Secretariat will produce an annual report on the progress being made with the overall implementation of the Strategy. However, before the report is handed over it will be presented for discussion at an annual or biennial RASAP stakeholders' workshop. The stakeholder engagement will promote transparency in implementing the RASAP, create a platform for adding value and continue to broaden ownership throughout the region.

The monitoring and evaluation of the Strategy will be guided by the systems outlined in the SADC Policy on Strategy Development, Planning, Monitoring and Evaluation (SPME), which was approved by Council in 2012. The SPME monitoring system is results based and for the Aquaculture Strategy the following will be included:

- (i) Impact indicators: The responsible SADC Ministers will exercise continuous oversight of the impact indicators as a measure of the success of the implementation of the Plan to ensure consistency of outputs against the Vision and Mission, and achievement of set targets.
- (ii) Outcome indicators: these will reflect achievement and progress towards implementation of the strategic objectives;
- (iii) Activities and process indicators: reflected at the regional and national levels and at specific coordination structures that will be developed for the implementation of the RASAP; and
- (iv) The Aquaculture Strategy will be subjected to a mid-term review to ensure its suitability and adaptability in meeting the priorities and requirements of Member States.

7.3. Evaluation

Evaluation will provide analytical and objective feedback to the stakeholders on whether aquaculture in the SADC region contributes significantly towards economic growth, food security, poverty alleviation and job creation. The two main types of evaluation will be self-evaluation and independent evaluation.

Self-evaluation will be the main tool for regularly reviewing progress on medium-term programme implementation as well as agreeing on reorientation of activities in alignment with the objectives of the RASAP and the medium-term implementation plan.

Independent evaluation will be the main tool for assessing RASAP performance by comparing achievements against objectives. Independent evaluators, who will not be associated with the implementation of the Plan, will undertake the evaluation. There will be a mid-term and a terminal evaluation, after a certain period of time to observe developmental impact.

ANNEXES: RASAP ACTION PLAN AND RESULTS FRAMEWORK

Annex 1. Impact indicators, baselines and targets for the goal

GOAL	To increase the contribution by aquaculture to local, national and regional economic growth and trade.			
PROXY INDICATOR	BASELINES	TARGETS	VERIFICATION SOURCES	RISKS AND ASSUMPTIONS
Contribution of Aquaculture to GDP	X % contribution to GDP by Member State	Increase in the contribution of aquaculture to GDP at mid- and end of term	Country aquaculture production values and SADC Statistical Year Book	Major risk is market volatility and assuming a conducive investment climate.

Annex 2. Impact indicators, baselines and targets for strategic objectives

Strategic Objective 1				
To increase aquaculture production and investment in the production of edible and non-edible products by the commercial and small-holder aquaculture subsectors in the SADC region, while ensuring environmental sustainability.				
PROXY INDICATORS	BASELINES	TARGETS	VERIFICATION SOURCES	RISKS AND ASSUMPTIONS
Aquaculture production statistics by value and volume	Food fish value (2013) = US\$ 247.11 million; Seaweed value = US\$ 2.39; Food fish volume (2013) = 57 069 tpa	Aquaculture production by volume and value of edible and non-edible products increased by 100% over baseline values at end of term	Country production figures	Stable markets and bourses; Political stability; No extreme weather conditions.
Strategic Objective 2				
To transform small-holder / community based aquaculture into SMMEs in the SADC region.				
Proportion of small holder fish farms operating as SMMEs	X% Current	20% of all small holder farmers operating as SMMEs at mid-term and 60% at end of term	Member States Annual Aquaculture reports	Successful political lobbying and establishment of Aquaculture Development Funds; SMART extension systems operational
Strategic Objective 3				
To promote the responsible, equitable and sustainable development of aquaculture to improve food, income and nutrition security in the SADC region.				
Successful establishment of new aquaculture operations	X % current success rate	Success rate of new aquaculture operations >75% by end term	Coountry statistics	Farmers are suitably informed to make responsible investment decisions
Enhanced food and income in rural areas brought about by sustainable aquaculture	X Current income and food security status in rural areas where aquaculture is practised.	Income of small holder fish farmers doubled in real terms by end of term.	Country Statistics	Reliable statistical data

Strategic Objective 4 To improve market access, supply chains and aquaculture product diversification in the SADC region.				
PROXY INDICATORS	BASELINES	TARGETS	VERIFICATION SOURCES	RISKS AND ASSUMPTIONS
Value of aquaculture products exports / imports within the region	X USD (2016)	25% Increase from baseline data	Country Statistics	Political stability Market volatility
Value of value added aquaculture products traded in regional markets	X USD (2016)	25% Increase from baseline data	Country Statistics	No extreme weather conditions
Value of value added aquaculture products traded in the international markets	X USD (2016)	25% Increase from baseline data	Country Statistics	
Strategic Objective 5 To define the resilience of aquaculture to climate change in the SADC region and develop mitigating measures.				
Successfully completed study of impacts of climate change on aquaculture in SADC region.	Current	Mitigation measures developed	Vulnerability assessments	Sound climate change predictions
Strategic Objective 6 To establish cooperative institutional frameworks for effective governance, to create consolidated R&D centres of excellence for coordinated research and implement best management practices for aquaculture in the SADC region.				
Farmer satisfaction with regulatory frameworks	X% (2016)	Significant increase in farmer satisfaction with regulatory frameworks	Country reports	Political will and support
Productive research networks	Number (2016)	One freshwater and one marine aquaculture research centre of excellence.	Country reports	Political will and support of Member States
Strategic objective 7 To mainstream aquaculture into the economic development agendas of Member States.				
Governments responsive to national aquaculture opportunities	Current situation	Active aquaculture promotion initiatives implemented by responsible Ministries	Country reports	Macro-economic growth. State of national economy. Political will and support

Strategic Objective 8		To mainstream cross-cutting issues in the aquaculture value chain throughout the SADC region.		
PROXY INDICATOR	BASELINES	TARGETS	VERIFICATION SOURCES	RISKS AND ASSUMPTIONS
Participation of vulnerable groups in aquaculture (women, youth, orphans, disabled)	X Current women and vulnerable groups (2016)	Twofold Increase in the number of women and vulnerable groups involved in aquaculture	Country Statistics	Available vocational training opportunities. Information on opportunities in aquaculture developed and disseminated.

Annex 3. Output indicators, priority actions, timeframes, responsibilities and indicators

Key to "Responsibility" abbreviations:

RM/A MS = Responsible Ministries / Agencies of Member States

Sec = SADC Secretariat

WG= Working group

Strategic Objective 1				
To increase the current levels of annual production of aquaculture in the SADC region while ensuring environmental sustainability.				
Targeted Output	Actions	Timeframe	Responsibility	Indicators
1. Growth of and investment in aquaculture responsibly accelerated.	1.1 Understand and develop the aquaculture value chain.	End year 2	RM/A MS	Number of Member States with increased production levels
	1.2 Promote collaboration between private and public sectors.	End year 5	RM/A MS	
	1.3 Develop and adopt private sector investment incentives.	End year 3	RM/A MS	
	1.4 Create an enabling regulatory and business environment.	End year 2	RM/A MS	
	1.5 Assess opportunities and potential for aquaculture production in Member States realistically and disseminate the information to the private and public sector.	End year 2	RM/A MS	
	1.6 Collate and disseminate information on best available technologies for small holder aquaculture with an emphasis on feed, seed and fertilization, within and between Member States.	End year 3	Sec	
	1.7 Collate and disseminate information on the aquaculture supply chain in the region.	End year 3	Sec	
	1.8 Sensitize financial institutions on the commercial opportunities offered by aquaculture.	End year 3	Sec & RM/A MS	
	1.9 Develop policies that facilitate access to capital and other productive resources including secured land, tenure systems and property rights.	End year 4	RM/A MS	
	1.10 Develop and publish investment guides for commercial aquaculture in Member States and disseminate.	End year 2	RM/A MS	
	1.11 Develop regionally competitive fiscal incentives to promote investment.	End year 2	Sec & RM/A MS	
	1.12 Facilitate the establishment of aquaculture financing			

	<p>mechanisms.</p> <p>1.13 Facilitate and promote aquaculture research in the region.</p> <p>1.14 Understand and develop the aquaculture value chain.</p> <p>1.15 Promote collaboration between private and public sectors.</p> <p>1.16 Identify suitable sites and establish aquaculture development zones in Member States for accelerated growth.</p> <p>1.17 Promote best management practices to improve post-harvest processes, value addition and quality assurance.</p> <p>1.18 Establish capacity building opportunities throughout the aquaculture value chain.</p> <p>1.19 Promote fish consumption in SADC.</p>	<p>End year 3</p> <p>End year 3</p> <p>Full term</p> <p>Full term</p> <p>End year 5</p> <p>Full term</p> <p>End year 3</p> <p>Full term</p>	<p>Sec & RM/A MS</p> <p>RM/A MS (Sec)</p> <p>Sec</p> <p>Sec & RM/A MS</p> <p>RM/A MS</p> <p>Sec & RM/A MS</p> <p>Sec</p> <p>RM/ A MS (Sec)</p>	
Strategic Objective 2	To transform small-holder / community based aquaculture into SMMEs			
2. Significant proportion of small holder / community based aquaculture operations transformed into productive SMMEs	<p>2.1. Governments to request donors to support aquaculture SMMEs.</p> <p>2.2. Promote and establish National Aquaculture Transformation Funds.</p> <p>2.3. Aggressive interventionist investment by Member States to transform small holder / community based aquaculture into SMMEs.</p> <p>2.4. Develop and operate pilot farms to demonstrate business case.</p> <p>2.5. Develop and implement SMART aquaculture extension services including market orientation.</p> <p>2.6. Promote the adoption of integrated, commercial, small-scale aquaculture as a means of increasing rural productivity and food security.</p> <p>2.7. Establish market locations and infrastructure.</p>	<p>Year 2 – end of term</p> <p>Year 2-4</p> <p>Year 2- end of term</p> <p>Year 3-10</p> <p>Year 2 to end term</p> <p>Year 2 to end term</p> <p>Year 2-5</p>	<p>RM/A MS</p> <p>RM/A MS</p> <p>Sec & RM/A MS</p> <p>RM/A MS</p> <p>Sec & RM/A MS</p> <p>RM/A MS</p> <p>RM/A MS</p>	Proportion of transformed small holder aquaculture operations in Member States.
Strategic Objective 3	To promote the responsible, equitable and sustainable development of aquaculture to improve food, income and nutrition security in the SADC region.			
3. Environmentally sustainable and BMP for aquaculture developed, adopted and practiced	<p>3.1. Create a user friendly platform for private sector investment in the commercial aquaculture value chain in Member States.</p> <p>3.2. Harmonize policies, laws and regulations such that they promote sustainable aquaculture development.</p>	<p>End year 2</p> <p>End year 3</p>	<p>RM/A MS</p> <p>Sec & RM/A MS</p>	<p>BMP guidelines developed and disseminated</p> <p>Improved food security</p>

	<p>3.3. All Member States to assess Aquaculture HR requirements and accordingly to promote aquaculture research, training and capacity building.</p> <p>3.4. Establish functional linkages between farmers, extension service and research (Regular meetings / workshops).</p> <p>3.5. Train small holder fish farmers in food safety standards and associated BMPs.</p> <p>3.6. Member States to apply standards and norms on aquatic animal health as recommended in the SADC Biosecurity Strategy</p> <p>3.7. Strengthen information systems and disseminate bio-security, disease prevention and control measures in the region.</p> <p>3.8. Harmonize policies, laws and regulations conducive for sustainable aquaculture development.</p> <p>3.9. Training of women and vulnerable groups in aquaculture technologies and fish processing.</p>	<p>End year 2</p> <p>Mid term</p> <p>End year 2</p> <p>End year 2</p> <p>End year 4</p> <p>End year 5</p> <p>Full term</p>	<p>RM/A MS</p> <p>RM/A MS</p> <p>Sec & RM/A MS</p> <p>RM/A MS</p> <p>Sec</p> <p>Sec</p> <p>Sec & RM/A MS</p>	<p>in aquaculture areas.</p> <p>Higher incomes in aquaculture areas</p>
Strategic Objective 4 To improve market access, supply chains and aquaculture product diversification in the SADC region.				
<p>4.1. Value chains across the Region established</p> <p>4.2. Regional aquaculture production input, product development and trade support enhanced.</p>	<p>4.1. Public sector support for rapid development of aquaculture value chains.</p> <p>4.2. Commission a Market Study on potential commercialisation of aquaculture products within and outside the SADC region.</p> <p>4.3. Collate and disseminate information on the aquaculture supply chains in the region</p> <p>4.4. Improve and align trade systems between Member States.</p> <p>4.5. Comply with international sanitary requirements and safety of fish products.</p> <p>4.6. Build capacity of all actors in the value chain, particularly women.</p> <p>4.7. Member States to promote eco-labelling of aquaculture products as a trade-enhancing mechanism.</p> <p>4.8. Establish regional reference laboratories to meet CODEX norms.</p> <p>4.9. Develop branding for SADC aquaculture products.</p> <p>4.10. Harmonise regulations for import and export of aquaculture products within the SADC region.</p>	<p>End year 2</p> <p>End year 5</p> <p>End year 3</p> <p>End year 7</p> <p>End year 5</p> <p>End year 8</p> <p>End year 5</p> <p>End year 6</p> <p>End year 6</p> <p>End year 4</p>	<p>Sec</p> <p>Sec & RM/A MS</p> <p>Sec</p> <p>Sec</p> <p>RM/A MS</p> <p>Sec & RM/A MS</p> <p>RM/A MS</p> <p>Sec</p> <p>Sec & RM/A MS</p> <p>Sec & RM/A MS</p>	<p>Existence of aquaculture marketing channels in Member States</p> <p>Aquaculture value chains in Member States</p> <p>Number of certified aquaculture products in Member States</p>

	4.11. Establish Aquaculture Value Chain Forums. 4.12. Develop and implement traceability guidelines and promote certification schemes. 4.13. Develop a regional aquaculture products certification mechanisms for trade within the SADC. 4.14. Promote adoption of aquatic food safety standards by small holder fish farmers	End year 4 End year 5 End year 6 End year 7	RM/A MS Sec Sec & RM/A MS RM/A MS	
Strategic Objective 5 To define the resilience of aquaculture to climate change in the SADC region and develop mitigating measures.				
5. Climate change adaptation and mitigation measures developed	5.1. Establish a regional Aquaculture Climate Change Working Group. 5.2. Assess international climate change adaptation and mitigation measures for aquaculture and adapt for SADC region. 5.3. Disseminate the information and recommendations.	End year 1 End year 2 Year 3-10	Sec Climate Change WG Sec	Number of Member States with developed climate change adaptation and mitigation measures
Strategic Objective 6 To establish cooperative institutional frameworks for effective governance and best practices management for aquaculture in the SADC Region.				
6.1. Institutional frameworks for aquaculture governance in Member States harmonized. 6.2. Improved and consolidated cooperation in aquaculture research and development initiatives among and between Member States established. 6.3. Sound regional policies and legal frameworks for species introductions and aquaculture in shared catchments developed and harmonized. 6.4. Responsible	6.1. Marine aquaculture R&D coordination consolidated in most appropriate maritime Member State. 6.2. Inland aquaculture R&D coordination consolidated in most appropriate inland Member State 6.3. Enhance effective bilateral and regional cooperation in the use of shared catchments 6.4. All Member States to incorporate EAA into regulatory frameworks. 6.5. Develop regional BMPs, including water quality management, for different forms of aquaculture 6.6. Develop and start a SADC disease outbreak notification system. 6.7. Harmonize regional regulations for species introductions, promotion and translocation. 6.8. Strengthen regional cooperation in best governance practices through farmer internship, study tours and exchange programmes with universities and other tertiary institutions. 6.9. Strengthen capacity in SEA and ESIA. 6.10. Improve regional collaboration between institutions in Member States through workshop and seminars.	End year 1 End year 1 End year 3 End year 5 End year 3 End year 4 End year 5 Up to year 10 End year 4 End year 3	Sec & RM/A MS Sec & RM/A MS RM/A MS Sec & RM/A MS Sec Sec & RM/A MS Sec & RM/A MS Sec Sec Sec	Existence of coordination mechanisms in MSs for aquaculture governance; Existence of regional frameworks for aquaculture environmental management; Initiated joint aquaculture projects between MSs; EAA included in MSs regulations.

commercial and small-scale aquaculture development facilitated and not hindered by Regulatory Frameworks.				
Strategic Objective 7	To mainstream aquaculture into the economic development agendas of Member States.			
7.1. National resources for improved support for aquaculture development leveraged. 7.2 Enabling mechanisms for affordable access to finance for small holder and commercial aquaculture development and established.	7.1. Assess the potential of aquaculture in SADC Member States realistically with respect to production, revenue generation and job creation. 7.2. Lobby governments on the economic opportunities provided by aquaculture. 7.3. Develop and present aquaculture investment strategies to responsible Ministries, including one for seaweed processing and value addition in the WIO region.	End year 2 End year 3 End year 4	RM/A MS RM/A MS RM/A MS	Number of Member States that proactively support aquaculture development and have enabling aquaculture financing mechanisms.
Strategic Objective 8	To mainstream cross cutting issues in the SADC region.			
Gender, youth and vulnerable groups and equity considerations in national aquaculture development plans integrated.	8.1. Integrate gender, youth and vulnerable groups and equity considerations in all regional aquaculture development projects and programmes. 8.2. Develop training opportunities for women and vulnerable groups in aquaculture and processing technologies. 8.3. Develop training opportunities for women and vulnerable groups in small business management and trading of fish and fish products. 8.4. Promote employment of women and vulnerable groups. 8.5. Support aquaculture study tours for women and vulnerable groups.	End year 1 End year 2 End year 2 To year 10 To year 10	RM/A MS Sec Sec Sec & RM/A MS Sec & RM/A MS	Increase in numbers of women and vulnerable groups fully integrated in aquaculture value chains

Annex 4. Proposed high-level indicative budget per targeted output

Targeted Output	Budget (USD)	Indicators
Strategic Objective 1: To increase the current levels of annual production of aquaculture in the SADC region while ensuring environmental sustainability.		
1. Growth of and investment in aquaculture responsibly accelerated.	10,000,000	Number of Member States (MSs) with increased production levels.
Strategic Objective 2: To transform small-holder / community based aquaculture into SMMEs.		
2. Significant proportion of small holder / community based aquaculture operations transformed into productive SMMEs	10,000,000	Proportion of transformed small holder aquaculture operations in MSs.
Strategic Objective 3: To promote the responsible, equitable and sustainable development of aquaculture to improve food, income and nutrition security in the SADC region.		
3. Environmentally sustainable and BMP for aquaculture developed, adopted and practiced	5,500,000	BMP guidelines developed and disseminated; Improved food security/safety in aquaculture areas; Higher incomes in aquaculture areas.
Strategic Objective 4: To improve market access, supply chains and aquaculture product diversification in the SADC region.		
4.1. Value chains across the Region established.	6,000,000	Existence of aquaculture marketing channels and value chains in MSs; Number of certified aquaculture products in MSs.
4.2. Regional aquaculture production input, product development and trade support enhanced.		
Strategic Objective 5: To define the resilience of aquaculture to climate change in the SADC region and develop mitigating measures.		
5. Climate change adaptation and mitigation measures developed	1,000,000	Number of MSs with developed climate change adaptation and mitigation measures
Strategic Objective 6: To establish cooperative institutional frameworks for effective governance and best practices management for aquaculture in the SADC Region.		
6.1. Institutional frameworks for aquaculture governance in MSs harmonized.	8,500,000	Existence of coordination mechanisms in MSs for aquaculture governance; Existence of regional frameworks for aquaculture environmental management; Initiated joint aquaculture projects between MSs; EAA included in MSs regulations.
6.2. Improved and consolidated cooperation in aquaculture research and development initiatives among and between MSs established.		
6.3. Sound regional policies and legal frameworks for species introductions and aquaculture in shared catchments developed and harmonized.		
6.4. Responsible commercial and small-scale aquaculture development facilitated and not hindered by Regulatory Frameworks.		

Strategic Objective 7: To mainstream aquaculture into the economic development agendas of Member States.		
7.1. National resources for improved support for aquaculture development leveraged.	1,000,000	Number of Member States that proactively support aquaculture development and have enabling aquaculture financing mechanisms.
7.2 Enabling mechanisms for affordable access to finance for small holder and commercial aquaculture development and established.		
Strategic Objective 8: To mainstream cross cutting issues in the SADC region.		
8. Gender, youth and vulnerable groups and equity considerations in national aquaculture development plans integrated.	2,000,000	Increase in numbers of women and vulnerable groups fully integrated in aquaculture value chains
9. Implementation of regional activities coordinated.	1,000,000	Number of regional projects/activities implemented.
10. Total indicative budget	45,000,000	

References

Asche,F., Hansen, H. and Tveteras, R. 2009. The Salmon disease crisis in Chile. *Marine Resource Economics* 24(4): 405-411.

FAO 2014. The state of the world fisheries and aquaculture. Opportuniites and challenges. Accessed at www.fao.org/3/a-i3720e.pdf on 12 Feb 2016.

Hecht, T. 2006. *Regional review on aquaculture development. 4. Sub-Saharan Africa – 2005*. FAO Fisheries Circular. No. 1017/4. Rome, FAO. 2006. 96 pp.

Jamu, D., Chapotera,M and Chisinga,B. 2012. Synthesis of Aquaculture Policy and Development Approaches in Africa. Consultancy Report submitted to: The NEPAD Aquaculture Working Group, NEPAD Programme on African Fisheries, NEPAD Fish Node, Bunda College, Lilongwe. 45p.

Micha, J-C. 2013. Fish Farming in the Congo Basin: Past, Present and Future. Conference paper: International Conference Nutrition and Food Production in the Congo Basin, Brussels, Belgium, October 2013, Volume: Royal Academy for Overseas Sciences Royal Academies for Science and the Arts of Belgium: National Committee for Biological Sciences Brussels. Accessed at www.researchgate.net/publication/279531267_Fish_Farming_in_the_Congo_Basin_Past_Present_and_Future on 9 Feb 2016.

Soto, D.; Aguilar-Manjarrez, J.; Hishamunda, N. (eds). 2008. Building an ecosystem approach to aquaculture. FAO/Universitat de les Illes Balears Expert Workshop. 7–11 May 2007, Palma de Mallorca, Spain. *FAO Fisheries and Aquaculture Proceedings*. No. 14. Rome, FAO. 2008. 221p.

World Bank, 2007. Changing the face of the waters. The promise and challenge of sustainable aquaculture. Agriculture and Rural Development Series 41694. World Bank, Washington. 188p.