

**THE AFRICAN UNION TEN YEARS
AQUACULTURE ACTION PLAN FOR
AFRICA
2016 – 2025**

*Stakeholders' perspectives for implementing the Policy Framework and
Reform Strategy for Fisheries and
Aquaculture in Africa*

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Forward

Africa's total fish production does not meet the Continent's food fish requirements. Africa has an estimated population of 1.6 billion people. The continent's current food fish supply is estimated at about 9 kg per capita per annum while the global average has risen to approximately 20 kg per capita per annum (FAO, 2016). The prospects of significantly increasing Africa's capture fishery production over the next 20 years to meet its rapidly increasing demand are limited by virtue of the fact that most of Africa's commercially important fish stocks are reportedly fully exploited or overexploited (FAO 2009). It is not surprising therefore that over the past five years Africa has since become a net importer of fish.

Aquaculture now provides the most sustainable option for increasing the continent's fish production. This recognition stems from Africa's natural resource potential for aquaculture and the rapidly increasing demand for fish amid declining fishery yields. Global aquaculture production now exceeds that of the capture fisheries. However, despite the potential and recognisable expansion of aquaculture in Africa, African aquaculture contributes only 2% of global aquaculture production. This performance has raised the concern of the Conference of African Ministers of Fisheries and Aquaculture (CAMFA) in 2014 in view of the potential of Africa's aquaculture to generate wealth, social benefits and contribute to the Comprehensive Africa Agriculture Development Program (CAADP), Africa's Agenda 2063 and the global Sustainable Development Goals (SDGs).

In recognising the challenges affecting aquaculture development in Africa, the CAMFA endorsed the Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa (PFRS) as Africa's blue print to support the transformation of Africa's fisheries and aquaculture towards the CAADP. For aquaculture, the PFRS aims to create an enabling environment that shall lead to the transformation of Africa's aquaculture into a sustainable market-oriented private-sector led commercial agricultural activity that can meet the CAADP objectives.

Notwithstanding, actions are required to bring into reality the market-oriented sustainable aquaculture envisaged in this blue-print for the benefit of the peoples of Africa. A continental consultative process to internalise the PFRS with the view to actualising its policy and strategic objectives for aquaculture was subsequently undertaken within the scope of the African Fisheries Reform Mechanism (AFRM). The outcome of this process was the '**The African Union Ten years Aquaculture Action Plan for Africa 2016 – 2025**', a companion document to support the implementation of the PFRS within Regional Economic Communities and Member States by both the public and private sectors.

Executive Summary

Concern about the continued poor performance of fisheries and aquaculture despite their potential to contribute to the Comprehensive Africa Agriculture Development Programme (CAADP) compelled to the Joint Conference of African Ministers of Agriculture, Rural Development and Conference of African Ministers of Fisheries and Aquaculture to seek political solutions. This subsequently resulted into the development and endorsement of the Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa (PFRS) by the Heads of State and Government at Malabo in 2014. The PFRS serves as Africa's blue print for the transformation of Africa's fisheries and aquaculture sectors into avenues for economic growth, wealth creation and food and nutrition security and hence is tuned towards achieving the Malabo Goals.

The strategic objective for sustainable aquaculture development in the PFRS is to 'jumpstart market-led sustainable commercial aquaculture' through the following key strategies and actions (i) creating an enabling environment, (ii) Mainstreaming aquaculture strategies and plans into national development plans and CAADP (iii) creating an African Centre of Excellence for Aquaculture and (iv) increasing research and dissemination of better practices.

The envisaged aquaculture sectoral outcomes accruing to the implementation of the PFRS strategy are (i) market-led aquaculture investments operating in many countries, (ii) accelerated growth rates, (iii) enabling environment for investment and governance significantly improved, (iv) Public-Private Sector Partnerships (PPPs) in aquaculture development significantly strengthened, (v) strategic regional cooperation in many areas of aquaculture and (vi) the existence of harmonised and coherent policies, institutional and legal frameworks for aquaculture in shared ecosystems.

With this in mind, **The Continental Aquaculture Development Action Plan 2016 – 2025** was developed through a multi-stakeholder consultative process to actualise the PFRS. The action plan subsequently serves as a companion document that sets out a realistic roadmap for the implementation of priority activities to support the realisation of the PFRS' sustainable aquaculture development policy objective in line with the Malabo goals.

In view of the complexity of the commercial aquaculture value-chains that are closely intertwined with environmental and socio-economic facets, stakeholders recommended the integration of relevant additional supporting Policy Arenas of the PFRS to ensure sustainable

aquaculture development. These supporting policy arena's are Conservation and Sustainable Resource Use, Responsible and Equitable Fish Trade and Marketing, Strengthened Regional and sub-Regional cooperation, Awareness Enhancing and Human-Capacity Development as well as cross-cutting issues. Consequently, for ease in applicability, the Action Plan has been summarised following are the logical aquaculture production-market chain. Thus, within the context of the PFRS, the following are the Action Plans priority activity areas (i) Establish an enabling environment for sustainable aquaculture development, (ii) Improved Service Delivery to the Sector, (iii) Capacity Building, (iv) Trans-Boundary Ecosystem Management for Aquaculture and (v) Innovation (Research and Development).

The implementation of the Continental Aquaculture Development Action Plan will significantly strengthen capacity among Member States and the private sector to harmonise their development and investment plans in coherence with the PFRS. The ultimate result would be the harmonisation and coherence of aquaculture development activities between the different and often independent actors across the sectoral value-chain, enhancing their ability to cooperate and trade regionally. Such a concerted and well-coordinated among all stakeholders, right from the farmer to the consumer founded upon common and sound principles between all stakeholders, is necessary for the transformation of Africa's aquaculture and attainment of the CAADP.

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Acronyms

CAADP	Comprehensive Africa Agriculture Development Programme
CAMFA	Conference of African Ministers of Fisheries and Aquaculture
COFI	Committee on Fisheries
EAA	Ecosystem Approach to Aquaculture
FAO	Food and Agriculture Organisation
PFRS	Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa
PPPs	Public-Private Sector Partnerships
SDGs	Sustainable Development Goals

1.0. Background

1.1. Trends and Status of Aquaculture Development on the Continent

There are historical records of aquaculture in Africa showing the farming of tilapia in ponds in the Pharaoh's tombs. The Acadja, a traditional system that is classified as an aquaculture practice, was practiced in West Africa for hundreds of years. However, modern-day aquaculture as it is practiced today, was introduced to much of Africa during the 1950's. It was then promoted as a smallholder subsistence activity to improve household nutrition and supplement household incomes. The production systems adopted, were therefore based on the species that could utilize the household kitchen waste and on-farm agricultural by-products. Hence herbivorous fish species raised in earthen ponds fertilized and fed with farm and kitchen by-products respectively, dominated the aquaculture scene.

From the mid-1980's, there has been a gradual but progressive shift in both farmers and national goals for aquaculture. Increasingly rural farming households are having to pay for essential commodities and services notably food, education, health and transport. They can no longer subsist solely from their farms. In addition, food security and livelihood uncertainties associated with semi-subsistence rural agriculture have increased due to the relative decline in prices of primary agricultural products, increasing soil infertility levels, impact of global markets and climatic change. This situation has caused rural communities skew their livelihood choices towards the potential financial benefits that would accrue from the utilization of the resources and opportunities they have access to. The prevailing circumstances, offer a promising opportunity for the diversification of rural enterprise through aquaculture that would enable rural communities improve their incomes, food and nutritional status.

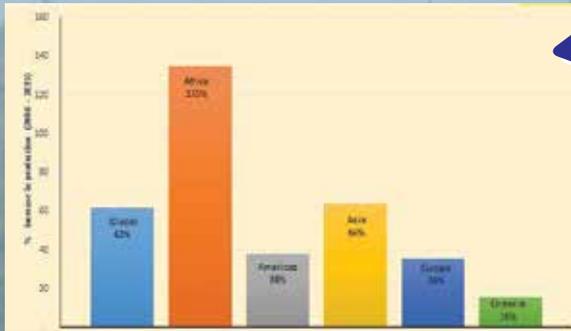
At the macro-economic level, there is increased pressure on Member States to address national food and nutritional security challenges, provide employment and livelihoods, and develop rural communities. Demographic changes and declining capture fisheries yields are among the major drivers for this shift. Africa's population is estimated at 1.2 billion and is growing at approximately 3% per annum (UN-DESA, 2015). About 40% of Africa's population comprises young adults of working age who need employment. The level of urbanization is currently estimated at 40% of the population and it is also rapidly increasing (ADB, 2012). Fishery yields are unlikely to significantly change in accordance with the expanding demand for fish because most of the continent's commercially important fish stocks being reported to be fully exploited or overexploited. This has led to a steady fall in food fish supply and per capita fish consumption rates on the continent to an average of 9 kg per capita per annum

compared to the global average of 20 kg per capita per annum. Africa is now a net importer of food fish (FAO, 2014).

Africa is endowed with vast natural resources and a young population that could be harnessed and benefit from aquaculture respectively. Asia's experience and success in aquaculture development points to this. Indications are that aquaculture is Africa's most sustainable option to increase fish supply in tandem with the food and nutritional demands of its local and regional markets. The prospects for establishing a vibrant sustainable commercial aquaculture sector have never been better. This apparent opportunity is witnessed by the steady increase of both public and private sector investment into commercial aquaculture that has resulted into record growth over the last ten years. Despite this positive trend, in 2015 Africa produced only 3% of global aquaculture production which is way below its full potential. (FAO, 2015).

STATUS AND PROSPECTS FOR AFRICAN AQUACULTURE AT A GLANCE

2015 global aquaculture production exceeds that of fishery production



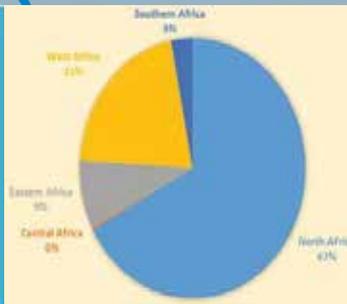
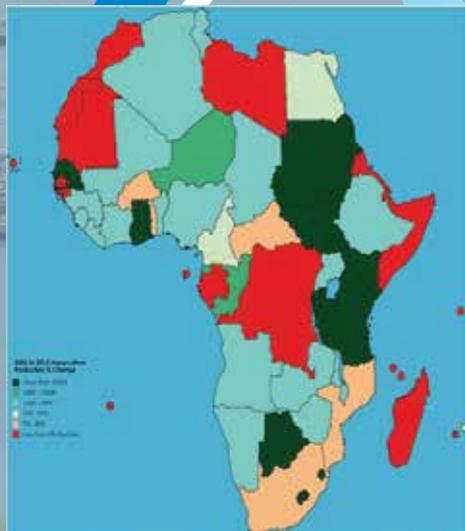
Africa registered tremendous expansion in aquaculture between 2006 - 2015



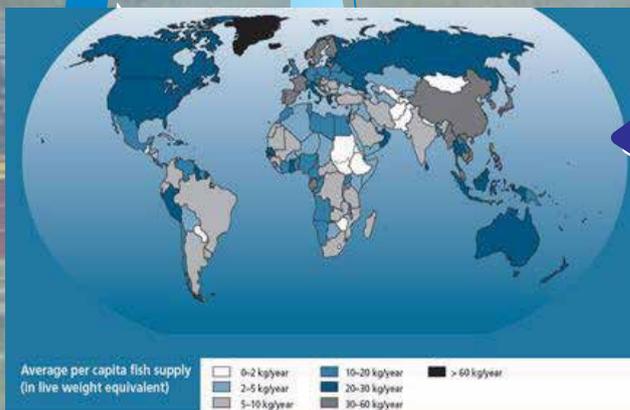
Despite tremendous expansion, Africa's actual aquaculture production is small. In 2015 Africa produced 1,772,000 tons of global 76,600,000 tons freshwater aquaculture production.



Increasingly, because of the status of the fisheries and rapid population growth Africa is failing meet its fish food needs. Increasingly more fish is now imported to meet food needs.



However there are great disparities in the level of aquaculture and development rates between regions and countries



Furthermore trends in regional growth of aquaculture do not match regional fish demand and supply gaps. This has created an opportunity for sub-regional cooperation and trade in aquaculture goods and services

1.2. Prospects for Aquaculture Development on the Continent

The prospects for Africa's aquaculture are enormous. They are defined by the continent's vast aquatic resources, land mass and climate that are suitable for the production of an array of fish species and essential inputs such as ingredients for feed. Of added advantage, is the fact that most of the world's important tropical and sub-tropical aquaculture species are native to Africa. Of particular importance are the Tilapias (especially *Oreochromis niloticus*), African catfish (*Clarias gariepinus*), seabass (*Dicentrarchus labrax*), shrimp and prawns, and abalone (*Haliotis* sp). Africa's youth that form the prospective work force improves prospects for sustainability.

The feasibility of harnessing of these resources for aquaculture to meet the gap in fish supply, is therefore not that far-fetched but for a few bottlenecks. The major challenges hindering the expansion and realization of Africa's full aquaculture potential arise from:

1. The sub-optimal utilisation and management of the available natural resources for aquaculture.
2. Challenges in the supply and access to key inputs notably, feed, seed, human resources, appropriate technology and finance.
3. Challenges producers face to access markets.
4. Inadequate physical and sectoral infrastructure such as weak policies within both the public and private sector.

1.3. The Theory of Change

Despite rapid growth, the above challenges have crippled the performance of the sector causing (except in a few countries) sub-optimal returns. On the whole, at continental level, the sectoral performance and contribution of aquaculture to the Comprehensive Africa Agriculture Development Programme (CAADP) goals has been found wanting (NEPAD, 2015). The CAADP, Africa's policy framework for agricultural transformation, wealth creation, food security & nutrition, economic growth & prosperity for all, aims at increasing agricultural production by 6% in the medium term. It was endorsed in 2005. The continued decline of fisherfolk incomes and increase in import bills to meet national food and nutrition requirements amidst the unfulfilled potential of aquaculture to meet the deficit has raised the concern of AU-MS. Likewise, so have the disparities between regions and among AU-MS in per capita fish supply *vis-à-vis* fishery yields and the status of aquaculture development.

The unsatisfactory performance within the fisheries and aquaculture especially with regards to meeting targets of the CAADP prompted the Joint Conference of African Ministers

of Fisheries and Aquaculture (CAMFA) in 2014 to seek political solutions through famous ‘Call for Actions’ for transformation of the Agriculture, including fisheries and aquaculture. The 2014 Malabo Declaration placed additional emphasis on the need to reducing hunger and poverty by half in 2025 for ensuring the achievement of food and nutrition security goals. The CAMFA reiterated the immediate and inevitable need for a shift in fisheries and aquaculture development approaches if the sector was to contribute to the CAADP. Several stakeholder consultations subsequently ensued that resulted into ‘*The Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa* (PFRS) (AU-IBAR/NEPAD, 2014). The PFRS was endorsed by the African Heads of State and Government at Malabo in 2014 as Africa’s blue-print to guide and hasten the transformation of its fisheries and aquaculture towards the CAADP. The PFRS is cognizant of the Abuja Declaration on Sustainable Fisheries and Aquaculture in Africa adopted by the Heads of States meeting of the ‘Fish for All summit’ in 2005, 2006 Food Security Summit, Africa’s Agenda 2063 and Blue Economy Initiatives.

The overall aim of the PFRS is to create a conducive and enabling environment for the fish sector to create equitable, social and economic development in Africa. It has seven policy arena’s, the third of which is Sustainable Aquaculture Development (see table I below). The strategic objective for sustainable aquaculture development in the PFRS is to ‘*jumpstart market-led sustainable commercial aquaculture through the implementation of strategic interventions and plans*’ to overcome the prevailing challenges while at the same time building upon the opportunities aquaculture presents in a manner that equitably contributes food security, livelihoods and wealth creation across the continent. Figure I. summarises what the Continent’s proposed strategies and expected outcomes are for aquaculture.

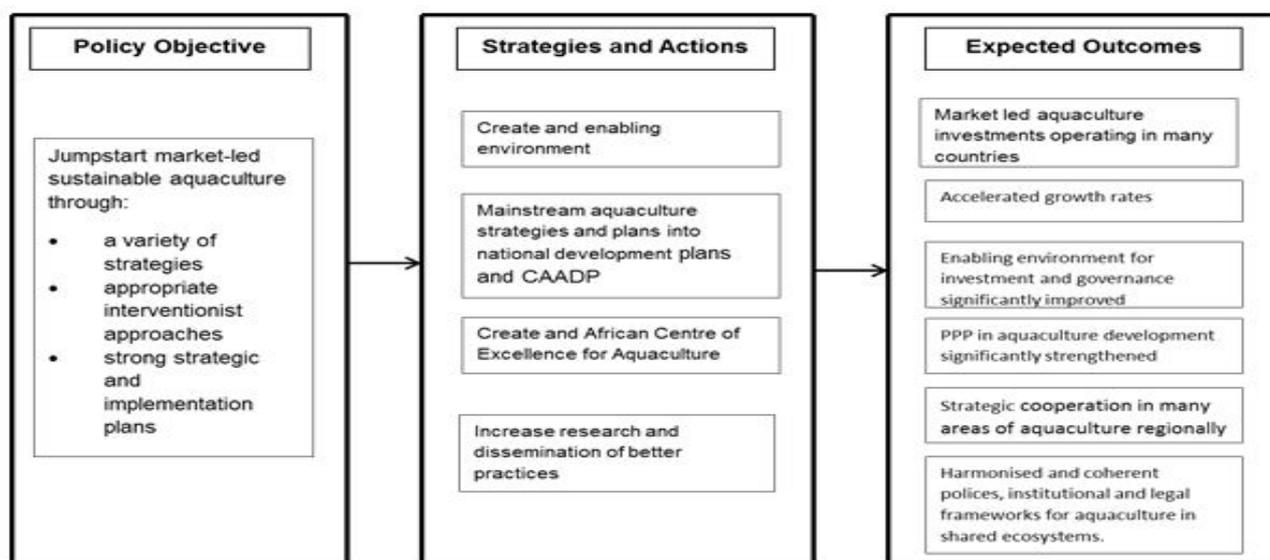


Figure I: The PFRS Sustainable Aquaculture Development Policy Arena. Proposed strategies and expected outcomes for sustainable market-led commercial aquaculture development (adapted from AU-IBAR/NEPAD, 2014).

2.0. The Development of the Continental Aquaculture Development Action Plan

The continental action plan was commissioned and developed within the framework of AFRM. It comprised a bottom-up fully participatory multi-stakeholder consultative process of involving individual stakeholder consultations, regional stakeholder consultations during the consultative Regional Aquaculture Environment Management Workshops and the Continental Aquaculture Think Tank meeting that was held in Cairo Egypt in February 2016. The regional consultations deliberated upon the opportunities and challenges affecting sustainable commercial aquaculture development within regions. These were tabled for more comprehensive discussion at the Continental Aquaculture Think Tank meeting.

The Continental think tank meeting was attended by over 100 participants from across the continent and other parts of the world. Participants were drawn from the different facets of sectoral value-chain, notably producers, input suppliers, service providers, processors, policy makers, Non-State Actors and development partners. The think tank meeting agreed that the transformation of Africa's aquaculture from a farm activity into an industrial activity as envisaged in the PFRS, weighed heavily upon the establishment of appropriate production systems to produce the critical volumes of fish necessary to stimulate the establishment of viable market chains. Actions to improve productivity, profitability, market access, provision of services, minimise enterprise risks, biosecurity and environmental management were raised as being inevitable for the transformation the sector. Actions to facilitate compliance of the sector to global standards for aquatic biosecurity (aquatic animal health), food safety and ecosystem health were additionally considered prerogatives for sustainable commercial aquaculture development. Likewise, so were participants views on the need for actions to facilitate the effective engagement of and equitable distribution of the accruing socio-economic benefits to rural smallholder communities and disadvantaged groups such as youth, women and the disabled. The AFRM Aquaculture Working Group compiled the outputs of the think tank meeting into the continental aquaculture action plan.

As part of the consultative process, the draft Continental Aquaculture Development Action Plan, 2016 was tabled before the global community at a side event hosted by AU-IBAR/NEPAD on African Fisheries and Aquaculture during the 32nd Session of the FAO Committee on Fisheries (COFI) held in Rome in July 2016. This side-event was facilitated by NEPAD. In attendance were over 50 participants from all over the world among whom were the African Ambassadors based in Rome. FAO personnel were among the panellists. The draft was acclaimed by participants. Elements from the draft were also incorporated into the global Aquaculture Development Agenda under the 'African Voice'.

3.0. The Action Plan

The sequencing of activities in the action plan arise from the overall goals and the aquaculture policy arena of the PFRS with the view to comprehensively accomplish the expected outputs and outcomes within the time frame of the CAADP.

3.1. Policy Arenas of the PFRS

The policy arenas within the PFRS comprise sectoral elements within Africa’s Fisheries and Aquaculture that the Malabo Declaration identified as key gaps (AU-IBAR/NEPAD, 2014).

They are:

	Policy Arena	Objectives
1.	Conservation and sustainable resource use	To establish national and sub-national governance and institutional arrangements that ensure that the societal contribution generated by Africa’s sectors have the greatest impacts at the most appropriate level.
2.	Small-scale fisheries development	To improve and strengthen the contribution of small-scale fisheries to poverty alleviation, food and nutrition security and socio-economic benefits of fishing communities.
3.	Sustainable Aquaculture Development	To jumpstart market-led sustainable aquaculture through a variety of strategies and where appropriate, support interventionist development approaches in aquaculture by strong strategic and implementation plans.
4.	Responsible and equitable fish trade and marketing	To harness significantly the benefits of Africa’s fisheries and aquaculture endowments through accelerated trade and marketing.
5.	Strengthened regional and sub-regional cooperation	To strengthen South-South (bilateral and regional) cooperation, and develop coordinated mechanisms among RECs and RFBs to ensure coherence of fisheries and aquaculture development and their adoption and adaptation.

Policy Arena		Objectives
6.	Awareness enhancing and human capacity development.	To increase awareness of the potential and importance of the sector and enhance the capacity of people and institutions in the African fishery sector to ensure the sustainable development of capture fisheries and aquaculture, based on current and emerging trends, challenges and needs.
7.	High Seas Fisheries	To increase and consolidate the African Voice in the governance and management of high seas fisheries.
8.	Cross-cutting issues in African fisheries and aquaculture	
8.1.	Strengthening resilience and reducing vulnerabilities to climate change in African fisheries and aquaculture	To reduce vulnerabilities and mitigate against the economic, social and environmental impacts attributable to climate change and disasters particularly for the marginalised groups.
8.2.	Gender and youth	To reduce inequalities and lost development opportunities in the sector by empowering and enabling women, youth and disadvantaged groups play their critical roles in the sector so as to ensure equitable development, sustainable resource utilisation and benefits attributable to the sector.
8.3.	Private sector investments and financing mechanisms for fisheries and aquaculture in Africa	To harness private-sector resources for sustainable development and support the development of SME's across the value-chains in the sector .

Prior to the development of the Aquaculture Action Plan, a 'Guide for the Implementation of the Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa' that provides criteria for the alignment and indicators for assessing the implementation status of the PFRS was developed (see appendix I). This guide was used as a supporting document during the think tank deliberations to help identify priority activities. Furthermore, stakeholders considered it crucial that aspects of monitoring and accountability be captured in the action plan. Hence activities are linked to responsible persons/institutions and timelines to facilitate monitoring and evaluation.

The peculiarity of aquaculture versus fisheries value chains was also taken into account. Sectoral value-chains for commercial aquaculture are typically more elaborate and intricate in comparison to fisheries sectoral-chains. For example, at the primary level a producer is dependent upon the supply of several inputs from various independent sources each of which has an impact not just on the levels of production, but also on product quality and costs of products further up the value-chain. For this reason, several of the other PFRS policy arenas were found direct influence on the attainment of the sustainable aquaculture development strategic objective. Cognizant of this, the PFRS policy arenas encompassing environmental and socio-economic dimensions (notably natural resource management, cross-cutting issues, equitable trade, regional cooperation, and awareness and human capacity development) were integrated into the action plan.

3.2. Purpose of the Action Plan

The purpose of the Continental Aquaculture Development Action Plan is to provide a harmonised and coherent continental approach for implementing the PFRS' sustainable aquaculture development goal.

3.3. Objectives of the Action Plan

The objective of the action plan is to provide a continental roadmap for the implementation of priority activities necessary to bring about the change needed to jumpstart sustainable market-led commercial aquaculture in Africa. It does so in an integrated manner that links national and regional stakeholders so as to ensure a harmonised and coherent continental approach in aquaculture development.

3.4. Components of the Action Plan

Given the above intricacies, the layout of the action plan has been summarised based on the logical operational flow of a sustainable commercial aquaculture industry. The AFRM aquaculture working group opted for a simple user-friendly layout that could guide implementation for the multiplicity of stakeholders within both the public and private-sector. The plan subsequently identifies five major activity areas, notably:

i. Establish an enabling environment for sustainable aquaculture development.

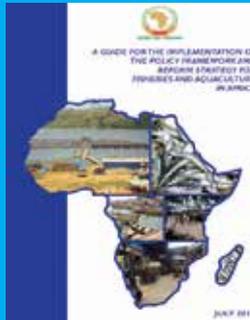
This theme addresses Policy Arena 5 of the PFRS. It seeks to put in place the framework to support the rational and sustainable utilisation and management of aquatic and other resources for aquaculture production and the trade of aquaculture produce and products.

- ii. Improved Service Delivery to the Sector.** This theme encompasses Policy Arenas 3, 4 and 8 of the PFRS in relation to the inputs and services necessary to establish a sustainable private-sector led commercial aquaculture. The actions seeks to address the current challenges associated with adequate supply and access to inputs and services of the correct quality necessary to ensure optimal levels of production, productivity and profitability in compliance with regional and international standards.
- iii. Capacity Building.** The actions under this theme address Policy Arenas 6 and 8 of the PFRS to ensure that there is an adequate human resource base with the appropriate skills, information and resources to effectively implement the Continental Action Plan along all levels of the value-chain with an emphasis on empowering the youth, women and other disadvantaged groups and to ensure the equitable distribution of benefits from aquaculture.
- iv. Trans-Boundary Ecosystem Management for Aquaculture.** The actions under this theme address Policy Arenas 1, 5 and 8 of the PFRS. It seeks to ensure ecosystem health and biosecurity particularly considering that Africa’s aquatic ecosystems and consequently resources are shared between Member States. Ensuring the availability of aquatic resources in the right quantity and quality for aquaculture production requires collective management. It also takes into account mitigation against impacts of climate change on aquatic resources for aquaculture production and other uses. The quality of aquatic products produced also depends a lot on the sustainable management of aquatic resources as a whole.
- v. Innovation (Research and Development).** Sustainable aquaculture development dictates that the utilisation and management of resources for the aquaculture sector should fit within the context of local environmental, socio-economic and technological constraints otherwise viability and sustainability at all levels becomes compromised. This activity area therefore seeks to ensure that the technological, infrastructural and human capacity is strengthened appropriately to support sustainable aquaculture development in line with the expected outcomes of the PFRS.

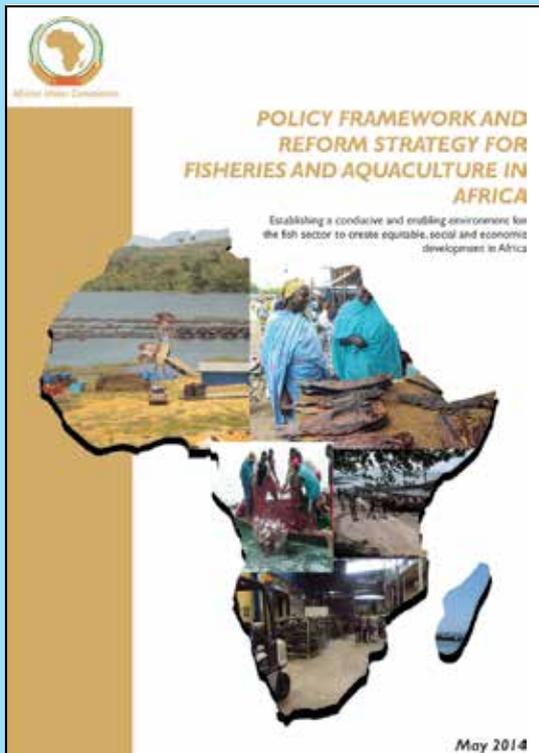
3.5. The Continental Aquaculture Development Action Plan 2016 – 2025

ACTIVITY AREA I: ACTIONS FOR ESTABLISHING AN ENABLING ENVIRONMENT FOR SUSTAINABLE COMMERCIAL AQUACULTURE

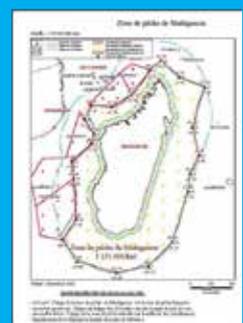
Harmonized and coherent development policies and frameworks



Policies and Frameworks that Facilitate Trans-boundary Trade and Access to Markets for Aquaculture Inputs, Goods and Services



Zonation for Sustainable Commercial Aquaculture Development



No	Priority Activities	Milestones	Mid-Term Success Indicators	2025 Targets	Entity Responsible	Budget Estimate	Time Frame (2016-2025)
I.	ESTABLISHING AN ENABLING ENVIRONMENT						
I.1.	Formulation of Development Policies and Frameworks						
	(i) Member states, RECs and RFBs fast-track the harmonisation of their aquaculture development policies and strategic plans to the PFRS.	<ul style="list-style-type: none"> Regional and national policies and strategic aquaculture development plans aligned and adopted to PFRS. 	<ul style="list-style-type: none"> 50% of RECs and RFBs aligned to PFRS by 2017 50% of MS aligned to PFRS by 2017 	<ul style="list-style-type: none"> 100 % of RECs and RFBs aligned to PFRS 95% of MS aligned to PFRS 	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
	(ii) Development of comprehensive continental, regional and national aquaculture investment plans and budgets	<ul style="list-style-type: none"> Comprehensive continental budgeted investment plan developed. Comprehensive regional budgeted investment plan developed. Comprehensive MS budgeted national investment plans for aquaculture development. 	<ul style="list-style-type: none"> AUC/DREA mainstream aquaculture with a separate budget line by 2017 50% of RECs and RFBs mainstream aquaculture with a separate budget line by 2018. Allocations to aquaculture development programs by 2018 	<ul style="list-style-type: none"> AUC/DREA with a separate budget line for aquaculture 100 % of RECs and RFBs with a separate budget line for aquaculture 	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
I.2.	Formulation of Policies and Frameworks that Facilitate Trans-boundary Trade and Access to Markets for Aquaculture Inputs, Goods and Services						
	Regional Activities						
	(i) Develop regional trade agreements for aquaculture products, inputs and services as well as mainstream these into national frameworks	<ul style="list-style-type: none"> Develop and endorse regional trade agreements for aquaculture goods and services by 2019 	<ul style="list-style-type: none"> All RECS endorse regional environment management frameworks for aquaculture by 2017 	All RECS implementing regional environment management frameworks for aquaculture	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		
	National Activities						
	(i) Adopt and mainstream regional trade agreements for aquaculture products, inputs and services into national frameworks	<ul style="list-style-type: none"> Adopt and mainstream regional aquaculture trade agreements for aquaculture goods and services into national policy by 2020 	<ul style="list-style-type: none"> All MS endorse regional environment management frameworks for aquaculture and align their national aquaculture development policies and plans accordingly by 2021 	All MS implementing national aquaculture and development plans that are aligned to regional environmental management frameworks for aquaculture	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		
I.3.	Zonation for Sustainable Commercial Aquaculture Development						
	Regional Activities						
	(i) Spatial site selection, scoping and zoning for aquaculture development area (regional).	<ul style="list-style-type: none"> Embark upon regional assessments for aquaculture development. Technical reports on regional spatial assessments for aquaculture development available. Identification of hot spots & species on climate change 	<ul style="list-style-type: none"> 40% of RECs embarked upon regional spatial assessments for aquaculture development by 2017 Regional spatial assessments for aquaculture undertaken in 30% of the RECs of the continent by 2020 that include identification of hotspots and species on climate change 	<ul style="list-style-type: none"> 40% of RECs with designated regional zones and implementing appropriate management tools for commercial aquaculture in shared aquatic ecosystems. All RECs with and/or implementing climate change mitigation strategies for specific hotspots and species of economic significance 	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST

No	Priority Activities	Milestones	Mid-Term Success Indicators	2025 Targets	Entity Responsible	Budget Estimate	Time Frame (2016-2025)
				<ul style="list-style-type: none"> Regional suitability maps showing recommended areas for commercial aquaculture 			
	(ii) Development of regional frameworks and guidelines for sustainable aquaculture development in the region based upon technical report above (notably in light of carrying capacity of identified zones, water availability and IWRM, acreage, environmental footprint, land-use patterns and climate change.	<ul style="list-style-type: none"> Regional Framework and Guidelines for aquaculture development and zonation with mainstreamed information from regional spatial assessments prepared. 	<ul style="list-style-type: none"> Evidence based regional frameworks and guidelines based upon spatial assessments for aquaculture development developed and endorsed by 30% of RECS by 2021 	Implementation and monitoring of aquaculture in zoned trans-boundary ecosystems in 40% of RECs	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
	National activities						
	(i) Identification and selection of suitable areas for zonation based on the regional spatial assessments.	<ul style="list-style-type: none"> Embark upon the identification and selection of zones for aquaculture development. National technical reports of selected zones for aquaculture available. 	<ul style="list-style-type: none"> 30% MS embarked upon the identification and selection of potential zones for aquaculture development by 2018. 20% of MS identified and documented zones for aquaculture development by 2020 	Mapped aquaculture zones in 50% of MS	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		
	(ii) Development of guidelines for land and water-based aquaculture development based upon the carrying capacity of identified zones in light of water availability and IWRM, acreage, environmental footprint, land-use patterns and climate change.	<ul style="list-style-type: none"> Guidelines developed for sustainable aquaculture in identified zones. 	<ul style="list-style-type: none"> 20% of MS with guidelines for aquaculture development in zones by 2020. 	Guidelines for land-water-based aquaculture development zones adopted in 60% MS	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		
	(iii) Development of master plans, PPP investment plans, PPP business and management plans for zoned aquaculture.	<ul style="list-style-type: none"> Preparation of master, business and management plans for development and operation of aquaculture zones embarked upon. Aquaculture zone development master, business and management plans available. 	<ul style="list-style-type: none"> 20% MS embarked upon the development of master, business and management plans aquaculture zones by 2019 10% of MS with endorsed implementable master, business and management plans for aquaculture zones by 2021. 	30% of MS with investment and business plans to operationalise aquaculture zones. Operational aquaculture zones.	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST LT
	(iv) Development of aquaculture zones.	<ul style="list-style-type: none"> Embark upon structural development of pilot aquaculture zones. Operational aquaculture zones 	<ul style="list-style-type: none"> 5% MS embarked upon structural development of aquaculture zones by 2021 5% of MS with operational aquaculture zones by 2024 	<p>Aquaculture zones operational in 20% of MS.</p> <p>Environmental monitoring in operational aquaculture zones in 20% of MS</p>	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		LT

ACTIVITY AREA 2: ACTIONS TO IMPROVE THE DELIVERY OF INPUTS, SUPPORT SERVICES AND ACCESS TO MARKET



Resolving challenges associated with supply, availability and access to quality inputs, technical and financial services as well as access to markets

No	Priority Activities	Milestones	Mid-Term Success Indicators	2025 Targets	Entity Responsible	Budget Estimate	Time Frame (2016-2025)
2.	ESTABLISHING AN ENABLING ENVIRONMENT						
2.1.	Improved Access To Inputs						
2.1.1.	Improve access to seed of good quality						
	(i) Establish standard demonstration hatcheries for the major commercial species (PPP)	<ul style="list-style-type: none"> Technical support to selected private-sector hatcheries to establish them as demonstration hatcheries under PPP arrangements. Develop and apply hatchery techniques (BMPs). Practical training of hatchery producers at demonstration hatcheries. Hatchery operation manuals available. 	<ul style="list-style-type: none"> 50% of MS with operational PPP-demonstration hatchery(ies) providing training by 2018 70% of MS with BMPs on hatchery production by 2019 50% of MS using hatchery operation manuals as routine practice by 2019 Hatchery operation manuals publicly available online by 2018 in 50% of MS 	<p>80% of registered commercial fish hatcheries on the continent operating following BMPs.</p> <p>Validated BMPs for commercial fish hatchery production available to hatchery operators both physically and online for regionally important farmed commercial in 80% of MS.</p> <p>Certified fish seed accessible to fish farmers in 50% of MS.</p>	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
	(ii) Brood-stock development and management	<ul style="list-style-type: none"> Selection for better performing species and strains 	<ul style="list-style-type: none"> 20% of MS implementing brood-stock improvement programs in place by 2018 	Brood-stock improvement programs in 40% of MS	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
		<ul style="list-style-type: none"> Identify and develop selected centre(s) as regional gene bank for maintaining improved germ-plasm for selected species 	<ul style="list-style-type: none"> Continental and regional agreement and framework on list of species and agreed location of gene-bank(s) by 2019. Physical facilities for gene-banks designed and established and operational at selected reference centre by 2022. Capacity building for personnel of gene-banks embarked upon by 2020 	<p>One operational continental gene bank (reference centre) for selected important commercial aquaculture species.</p> <p>Protocols for establishing and operating of accredited regional reference centres and/or networks for maintaining germ plasm</p> <p>Trained and competent personnel manning aquatic animal gene-banks and accredited reference centres.</p>	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		LT
		<ul style="list-style-type: none"> Develop brood-stock management manuals for operators 	<ul style="list-style-type: none"> 70% of MS with BMPs on brood-stock management manuals 2018 50% of MS with operational PPP-brood-stock demonstration centres by 2018 50% of MS using brood-stock management manuals as routine practice by 2018 	<p>Validated BMPs for brood-stock management for regionally important farmed commercial species accessible to operators in 90% of MS both physically and online.</p> <p>50% of MS with accredited brood-stock production centre's.</p> <p>Validated manuals adopted in 60% of MS.</p>	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST

No	Priority Activities	Milestones	Mid-Term Success Indicators	2025 Targets	Entity Responsible	Budget Estimate	Time Frame (2016-2025)
			<ul style="list-style-type: none"> Brood-stock management operation manuals available online by 2018 				
		<ul style="list-style-type: none"> Develop national and regional standard operating procedures for the production of notifiable disease free brood-stock Develop and harmonise national and regional certification protocols for seed. 	<ul style="list-style-type: none"> SOPs and manuals available and in use by 2019 Certification procedures endorsed and applied by 2020. 	<p>Certified notifiable disease free brood-stock in 30% of MS</p> <p>Validated and endorsed continental and regional protocols for the certification of brood-stock</p>	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
2.1.2.	Feed						
	Regional Activities						
	(i) Facilitate regional trade	<ul style="list-style-type: none"> Establish and implement mechanisms to facilitate regional and international trade in feed and specific ingredients. 	<ul style="list-style-type: none"> Regional framework and cooperation on trade of fish feed and live fish food in place by 2018 within all RECs 	Operational regional trade agreements and institutional frameworks to facilitate trade in aquatic animal feed ingredients and aquatic animal feeds	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
	(ii) Standards and Certification of Fish Feeds and Live Fish Food	<ul style="list-style-type: none"> Develop Regional harmonised with international standards on feed inputs and feed quality for the different species Develop/Adopt standards for packaging and labelling of feeds. 	<ul style="list-style-type: none"> Regional standards for specified feed products in adopted by all regions by 2019. 	Harmonised continental and/or regional standards and certification procedures for aquatic animal feeds for regionally important farmed commercial species.	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
		<ul style="list-style-type: none"> Certification of fish feed manufacturing and live food production and their products. 	<ul style="list-style-type: none"> Regional standards for the packaging and labelling of fish feeds adopted by 50% of MS by 2019. 	Regional standards providing minimum specifications for the packaging and labelling of fish feeds.			
	National Activities						
	(i) Increase the availability and accessibility of feed	<ul style="list-style-type: none"> Tax incentives for feed manufacture and importation of finished products. Adopt and implement mechanisms to facilitate regional and international trade in feed and specific ingredients. 	<ul style="list-style-type: none"> Tax incentives in place and adopted by 30% of MS for feed manufacture and importation of specified finished feeds by 2019. 40% of MS mainstream and implementing regional frameworks and cooperation on trade of fish feed and live fish food by 2020 	<p>Taxation mechanisms and other financial incentives that promote investment into the commercial manufacture and distribution of high quality feeds in place in 40% of MS.</p> <p>Adoption of regional and bilateral aquatic animal feed agreements to facilitate trade of aquatic animal feeds and feed ingredients in 60% of MS</p>	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
	(ii) Standards and Certification of Fish Feeds and Live Fish Food	<ul style="list-style-type: none"> Develop/Adopt standards for feed inputs and feed quality for the different species Develop/Adopt standards for packaging and labelling of feeds. Certification of fish feed manufacturing and live food production and their products. 	<ul style="list-style-type: none"> Regional standards for specified feed products in adopted by 50% of MS by 2020. Regional standards for the packaging and labelling of fish feeds adopted by 50% of MS by 2020. 	Adoption of regional and bilateral aquatic animal feed ingredients, feeds and feed packaging and labelling standards in 70% of MS	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST

No	Priority Activities	Milestones	Mid-Term Success Indicators	2025 Targets	Entity Responsible	Budget Estimate	Time Frame (2016-2025)
	(iii) Improve feed management	<ul style="list-style-type: none"> Develop BMPs and user manuals on feeding 	<ul style="list-style-type: none"> 70% of MS with BMPs on feed management manuals 2018 30% of MS routinely undertaking PPP on-farm feed management in collaboration with manufacturers and farmers by 2019 to up-date feeding charts 50% of MS using feed management manuals as routine practice by 2020 Feed management manuals available online by 2020 	<p>Validated BMP feed management manuals accessible to producers in 80% of MS both physically and online</p> <p>In-country PPP validated feeding charts accessible to producers in hard-copy and online in 60% MS.</p> <p>Adoption of validated BMPs in routine practice in 70% MS.</p> <p>Feed management manuals accessible to producers on line in 80% of MS.</p>	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
	(iv) Improve pond fertilisation management	<ul style="list-style-type: none"> Develop BMPs and user manuals on fertiliser management 	<ul style="list-style-type: none"> 70% of MS with BMPs on pond fertilisation manuals 2018 	<p>70% of MS adopted and implementing locally validated BMPs on pond fertilisation</p> <p>Validated BMPs on pond fertilisation accessible to producers both physically and online in 80% of MS.</p>	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
			<ul style="list-style-type: none"> 30% of MS routinely undertaking on-farm training on pond fertilization management in collaboration by 2019 50% of MS using pond manuals as routine practice by 2020 Pond fertilisation manuals available online by 2020 				
2.3	Improve financial service delivery for aquaculture						
	(i) Development of financial arrangements to support small and medium scale investments and the transformation of small-holder operations into commercial enterprises along the aquaculture value-chain.	<ul style="list-style-type: none"> Low-cost tailored loan facilities for aquaculture across the continent Establish revolving fund mechanisms Provide tax and other incentives to support investments in aquaculture Training in business development skills 	<ul style="list-style-type: none"> 40% of MS with financial facilities targeting small and medium aquaculture operations along the value-chain by 2018. 10% of MS establish revolving funds in partnership with NSAs/CBOs by 2019 30% of MS providing tax and other financial or related incentives to support private-sector aquaculture investment by 2019 	<p>Tailored financial services available and accessible to farmers and to all segments along the value-chain is 60% of MS.</p> <p>Accessible financial services through fish farmers/aquaculture cooperative societies to support SMEs in the commercial aquaculture value-chain in 40% of MS.</p> <p>Financial incentives to support investment in commercial aquaculture value-chain in 50% of MS</p> <p>Business development services for the commercial aquaculture value-chain in 50% of MS.</p>	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST

No	Priority Activities	Milestones	Mid-Term Success Indicators	2025 Targets	Entity Responsible	Budget Estimate	Time Frame (2016-2025)
			<ul style="list-style-type: none"> 40% of MS offering business development services as PPP and training in business skills for aquaculture along the value chain by 2019 				
	(ii) Establish and operationalise One-Stop Shop to ease licensing procedures	<ul style="list-style-type: none"> National and regional harmonisation for the process to register national and regional business. Develop service business charters for aquaculture. One-stop shop aquaculture enterprise facilities established or incorporated into existing business registration process 	<ul style="list-style-type: none"> 30% of MS with harmonized registration processes at national and regional level by 2020 30% of MS with developed and implemented charters for aquaculture by 2020 30% of MS with one-stop shop facilities in place with aquaculture enterprise incorporated by 2020 	50% MS with operational One-Stop-Shop systems servicing investment, licensing, trade, environmental management and basic information on conducting commercial aquaculture businesses.	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
2.6	Improve access to markets for aquaculture goods						
	(i) Develop and adopt relevant national, regional and international standards, certification and labelling mechanisms	<ul style="list-style-type: none"> Draft concept on standards, certification and labelling mechanisms prepared Adoption of relevant international standards, certification and labelling mechanisms by MS 	<ul style="list-style-type: none"> 30% of MS applying standards for certification and labelling by 2020 	<p>40% of MS with food-safety and environmental standards for aquaculture products.</p> <p>20% of MS implementing regional certification and/or ecolabelling for commercial aquaculture and aquaculture products</p>	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
	(ii) Establishing markets and marketing infrastructure	<ul style="list-style-type: none"> Centralised markets and facilities for holding and marketing of aquaculture products. 	<ul style="list-style-type: none"> 30% of MS with centralised markets with facilities for holding and marketing aquaculture products by 2022. 	50% of MS and 20% of RECs with appropriate infrastructure and operational systems that meet regional standards to service the needs of commercial aquaculture produce and products along marketing value-chains	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		LT
	(iii) Establish regional and national market information systems for aquaculture	<ul style="list-style-type: none"> Establish data collection and management systems Develop and deploy mobile device driven applications (APPs) on aquaculture marketing information and sharing. 	<ul style="list-style-type: none"> 40% of MS establish and mainstream aquaculture data into national statistics databases by 2021 Support given to regions to develop regional APP by 2018 30% MS adopt regional APP into their communications systems by 2021. 	<p>Commercial aquaculture production, marketing and trade statistics captured in national and regional agricultural statistics of 50% of MS and RECs.</p> <p>Official annual statistical reports of the status and performance of the aquaculture sector disseminated to public domains in 40% of MS and 20% of RECs.</p> <p>Mobile APPs for aquaculture marketing information operational in 20% of MS.</p>	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		LT ST LT

No	Priority Activities	Milestones	Mid-Term Success Indicators	2025 Targets	Entity Responsible	Budget Estimate	Time Frame (2016-2025)
	(iv) Harmonise and endorse relevant international trade treaties.	<ul style="list-style-type: none"> Ratification of international trade treaties by member states 	<ul style="list-style-type: none"> 30% MS ratified relevant international trade treaties by 2020. 	50% of MS ratify relevant regional and international trade treaties	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
	(v) Branding and patenting of aquaculture products	<ul style="list-style-type: none"> Mechanisms to support private sector entrepreneurs brand and patent their products. 	<ul style="list-style-type: none"> 30% of MS with functional mechanisms to support private sector entrepreneurs brand and patent their products by 2022 	50% of MS with functional mechanisms to support SME and MSE entrepreneurs brand and patent their products.	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		LT
2.7	Aquaculture Associations and Networks						
	(i) Create awareness, assess and strengthen capacity to establish, run and manage self-sustaining continental and regional aquaculture associations or for a	<ul style="list-style-type: none"> Develop advocacy and awareness programs to support capacity building and strengthen associations to deliver services. Conduct needs assessment. 	<ul style="list-style-type: none"> Commission and complete a continental inventory and assessment on the roles, status and performance of aquaculture 	Regularly updated continental and regional inventory of aquaculture associated NSAs in 60% RECs and at AU-IBAR	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
			<ul style="list-style-type: none"> associations and networks on the continent by 2017. Develop and implement strategies and options to strengthen capacity of continental and regional associations and to deliver their service by 2018. 	Self-sustainable regional aquaculture associations/networks operating and delivering services to the sector in 30% of RECs.			
	(ii) Create awareness, assess and strengthen capacity to establish, run and manage self-sustaining national aquaculture associations	<ul style="list-style-type: none"> Develop advocacy and awareness programs to support capacity building and strengthen associations to deliver services 	<ul style="list-style-type: none"> Commission and complete a continental inventory and assessment on the roles, status and performance of aquaculture associations and networks on the continent by 2017. Develop and implement strategies and options to strengthen capacity of national associations and to deliver their service by 2018. 	<p>Self-sustainable national aquaculture NSAs operating and delivering services in 40% of MS.</p> <p>Continental and regional Best Practice guidelines to support NSA formation and operations that include guidelines for support public institutional supervision of NSAs to all MS.</p>	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
	(iii) Create awareness, assess and strengthen capacity to establish, run and manage self-sustaining national aquaculture cooperatives	<ul style="list-style-type: none"> Develop advocacy and awareness programs to support capacity building and strengthen associations to deliver services 	<ul style="list-style-type: none"> Develop and implement strategies and options to strengthen capacity of national associations and to deliver their service by 2018. 	Implementation of national strategies to strengthen national aquaculture associations and cooperatives in 50% of MS	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST

No	Priority Activities	Milestones	Mid-Term Success Indicators	2025 Targets	Entity Responsible	Budget Estimate	Time Frame (2016-2025)
	(v) Support the development of continental networks of service providers in aquaculture	<ul style="list-style-type: none"> Establish a collated continental database on aquaculture professionals and service providers 	<ul style="list-style-type: none"> Embark upon development of a collated database by 2018 	Continental collated database of aquaculture NSAs, service providers and professionals.	AUC/DREAMS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST

ACTIVITY AREA 3: CAPACITY BUILDING

Need for skills development and improved knowledge sharing



No	Priority Activities	Milestones	Mid-Term Success Indicators	2025 Targets	Entity Responsible	Budget Estimate	Time Frame (2016-2025)
2.	CAPACITY BUILDING						
2.1.	Improve practical knowledge and skills across the aquaculture value chain and technology transfer						
	(i) Human Resource capacity building for production, marketing, aquaculture farm management, engineering, environment management, disease control, post-handling and processing, financial services, organisation and management of farmers associations, policy, aquaculture statistics, etc.	<ul style="list-style-type: none"> Capacity building across the core areas of aquaculture production value chain Support to the private sector for skills development through workshops, internships, etc. along the value chain 	<ul style="list-style-type: none"> 50% of MS supporting practical training programs in collaboration with private-sector by 2020. 50% of MS supporting trainer-of-trainer programs for aquaculture development by 2020 	Credited training programs for practical skills development targeting operators in collaboration with private-sector in 40% of MS. 70% of MS investing in TOT programs for aquaculture	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
	(ii) Select, develop and/or strengthen specialised regional training centers on aquaculture	<ul style="list-style-type: none"> Identify, assess and select of potential regional training facilities for practical skills training programs Conducts stakeholder training needs assessments and develop training curricula Strengthen the capacity of selected centre's to deliver 	<ul style="list-style-type: none"> Two functional continental training centers delivering practical training in different aspects of aquaculture by 2018 Two additional continental training center's established to complement the existing centers by 2022 	Centre's of excellence for practical skills training and commercial aquaculture development operational.	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST LT
	(iii) Study tours, exchange visits and internships	<ul style="list-style-type: none"> Organise and implement short-term exchange programs between regions and across continents. 	<ul style="list-style-type: none"> 3 Pan African cooperation tours organised by per year for private-sector stakeholders. 	Yearly study tours for MSE and MSE entrepreneurs.	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
	(iv) Provide support private-sector value-chain actors to participate in continental symposia/conferences/workshops/retreats/exhibitions	<ul style="list-style-type: none"> Put in place a program to support private-sector value chain players participate and exhibit their products. 	<ul style="list-style-type: none"> Support 10 private-sector entrepreneurs per year attend events at national, regional, continental and global events. 	10 MSE and MSE entrepreneurs per year sponsored to attend events that shall build their knowledge or business capacity.	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
	(v) Ensure all approved manuals and protocols are freely available on the internet.	<ul style="list-style-type: none"> Upload all approved manuals and protocols to increase accessibility for public use. 	<ul style="list-style-type: none"> 50% of continental documents on aquaculture uploaded by 2018. 50% of RECs and MS routinely uploading all approved, guidelines, manuals and protocols onto the internet by 2019 	All validated continental, regional and national aquaculture guidelines, manuals and protocols available to public online.	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST

ACTIVITY AREA 4: TRANS-BOUNDARY ECOSYSTEM MANAGEMENT FOR AQUACULTURE

Questions about changing land-use patterns, climate change and the impacts for water supply and changes in water quality for aquaculture and other uses???



Photographs of Umzingwane River, Zimbabwe taken in the 60's (left) and in May 2014 (right). It was difficult to cross this once permanent river in the 60's. Now note cattle hoof prints across river 2014. Pictures courtesy of Christopher Magadza, University of Zimbabwe, Zimbabwe.



Photographs of mass mortality of wild and cultured fish caused by outbreak of *Aphanomyces invadans* in the Democratic Republic of Congo. Similar outbreaks occurred in the Zambezi River Basin and caused tremendous loss in the fisheries and on farms. Pictures courtesy of Patrick Mpoyo wa Mpoyo, Laboratoire Vétérinaire Central, Kinshasa, DRC.

Increasing significant socio-economic losses from notifiable transboundary aquatic animal diseases as well as of endemic and managemental conditions in aquaculture

No	Priority Activities	Milestones	Mid-Term Success Indicators	2025 Targets	Entity Responsible	Budget Estimate	Time Frame (2016-2025)
4.	TRANS-BOUNDARY ECOSYSTEM MANAGEMENT FOR AQUACULTURE						
4.1.	Environmental Management						
	Regional Activities						
	(i) Develop and implement regional environment management frameworks for aquaculture	<ul style="list-style-type: none"> Validate and endorse draft regional environment management frameworks for aquaculture by 2017 	<ul style="list-style-type: none"> All RECS endorse regional environment management frameworks for aquaculture by 2017 	All RECs implementing regional environment management frameworks and BMPs for commercial aquaculture in shared ecosystems	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
	National Activities						
	(i) Adopt, mainstream and implement regional environment management frameworks for aquaculture into national policies and plans	<ul style="list-style-type: none"> Adopt, mainstream and implement regional aquaculture environment management frameworks into national policy by 2019 	<ul style="list-style-type: none"> 20% of MS mainstream regional aquaculture environment management frameworks into their national policies by 2020 	60% of MS adapt national policies to regional aquaculture environment frameworks and guidelines Environmental monitoring of commercial aquaculture operation in 50% of MS	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
4.2.	Aquatic Animal Disease Control and Surveillance						
	Regional Activities						
	(i) Develop and implement regional aquatic animal health management, surveillance and biosecurity control frameworks for aquaculture	<ul style="list-style-type: none"> Develop and endorse regional aquatic animal health, surveillance and biosecurity control frameworks for aquaculture by 2017 	<ul style="list-style-type: none"> All RECS endorse regional disease control and surveillance frameworks 2017 	Adoption and implementation of Regional Aquatic animal disease control and surveillance frameworks and guidelines in all RECs.	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
	National Activities						
	(i) Adopt, mainstream and implement regional biosecurity and fish disease control frameworks for aquaculture into national policies and plans	<ul style="list-style-type: none"> Adopt, mainstream and implement regional aquaculture biosecurity frameworks into national policy by 2019 	<ul style="list-style-type: none"> 30% of MS mainstream regional aquatic animal disease control frameworks into their national policies and plans for aquaculture by 2019 	60% of MS implementing aquatic animal disease control and surveillance policies, plans and strategies that are harmonised with the regional aquatic animal disease control and surveillance frameworks	AUC/DREA MS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST

ACTIVITY AREA 5: INNOVATION (RESEARCH AND DEVELOPMENT)

Technologies that are locally appropriate and feasible, socio-economically viable and environmentally sound.

Table: Average Performance of 37 stocker ponds

Sampling period (days)	Cumulative days	No. of fish	Average weight of fish (g)	Fish Biomass (kg)	Feed amount fed (kg)	FCR	SGR (g/day)
0	0	1528	8.2	12.6			
35	35	1518	32.6	49.5			
30	65	1517	56.6	85.9	45.5	1.2	0.05
31	97	1502	84.1	126.4	53.8	1.3	0.03
30	126	1420	113.5	161.1	55.1	1.6	0.03
29	155	1404	138.8	194.8	37.1	1.1	0.02
38	193	1267	153.6	194.5	67.6	1.07	0.01
Survival Rate		82.8%			259.1		

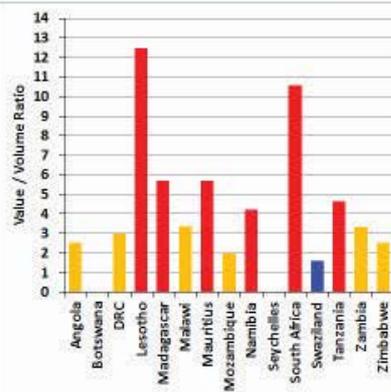
Note: For 500sqm Stocker pond, farmers used 180kg = 6.9bags of feed

92.8% survival rate

8.6 bag



Value / volume ratio

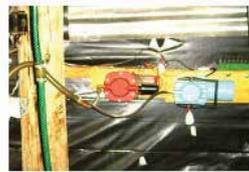


- > 1 < 1.9 = Low fish price (Not favourable for aquaculture)
- > 2 < 3.9 = Medium to high price fish (Tilapia)
- > 4 = High value products (shellfish, prawns, trout)

Aeration Equipment



Blowers from 1hp - powered electricity from grid or generator



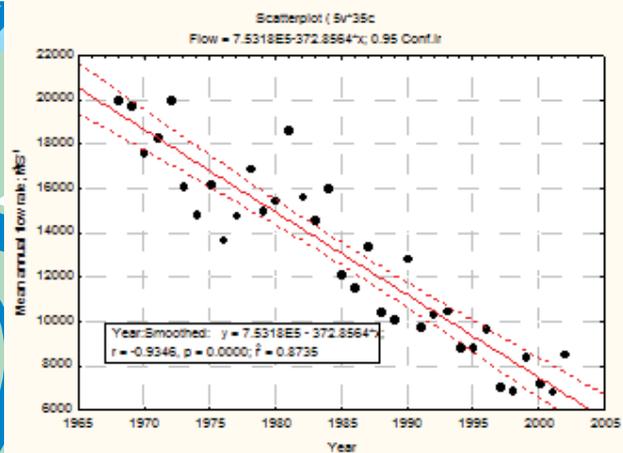
12V DC blowers - can be powered by solar, car battery



D Cell powered air pumps



Local Innovation: Old tyre tube - no power. Farmers at training



No	Priority Activities	Milestones	Mid-Term Success Indicators	2025 Targets	Entity Responsible	Budget Estimate	Time Frame (2016-2025)
5. Innovation (Research and Development)							
	(i) Regional centres of excellence for research and development	<ul style="list-style-type: none"> Identify, assess and provide necessary support to establish centres of excellence 	<ul style="list-style-type: none"> Criteria for identifying and selecting regional centres of excellence and their objectives developed by 2017 4 regional centres of excellence identified and recognised by 2017. 2 centres of excellence identified commissioned by 2018. 	4 regional Centres of excellence in operation.	AUC/DREAMS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
	(ii) Support for infrastructure and operations of selected aquaculture research facilities	<ul style="list-style-type: none"> Identify, assess and provide necessary support to establish specialised reference research facilities 	<ul style="list-style-type: none"> Investment, operations and business plans for 2 commissioned regional aquatic animal disease control approved by 2019. Infrastructural and other support for development and service delivery for 3 regional reference centres embarked upon by 2020 	Two accredited aquatic animal health reference centres on the continent in operation.	AUC/DREAMS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST
	(iii) Grants to support collaborative regional and national research with private-sector (PPPs) for applied and adaptive research to develop/ adapt technologies to address bottlenecks across the value-chain.	<ul style="list-style-type: none"> Establish sustainable PPP grants program to support demand driven applied and adaptive research. 	<ul style="list-style-type: none"> Proposal for establishing granting scheme(s) developed by 2017. Implementation of at least 2 granting schemes by 2018 	Granting schemes to support PPPs along the commercial-aquaculture value chain	AUC/DREAMS RECS/RFBs Development Partners Private Sector CBOs/NSAs		ST

4. Conclusion

The Malabo declaration, through the PFRS seeks to bring about a complete transformation of African's largely smallholder semi-subsistence aquaculture into a vibrant commercial agricultural sector that contributes significantly to national and regional fish food needs, provides employment and socio-economic development goals. While over the last 10 years, Africa's aquaculture production increased by 62%, the current scenario is that over 70% of the continent's production is from Egypt and Nigeria alone. Egypt is among Africa's most freshwater constrained countries, yet it produces 1.7 million tons of freshwater farmed tilapia. This alone indicates the tremendous untapped natural resource potential that Africa has.

It must be acknowledged that AU-MS have independently invested a lot towards increasing the levels of aquaculture production. However, as has been highlighted above, the benefits from these efforts are not evidenced uniformly across the continent. Several challenges associated with the availability, utilisation and management of potential resources for aquaculture prevail as stumbling blocks. Producers and service providers along the value-chain face considerable challenges arising from the supply, availability and access to essential quality inputs and services in a timely fashion that assures access to markets at competitiveness prices.

A case in point is the supply of nutritionally complete diets for fish. Most of the continents out-grower smallholder farmers depend on agricultural by-products to feed their fish in ponds. Typically, production levels from ponds under such management average 5 tons/ha for tilapia. However, because producers cannot control the quality of these inputs due to factors such as (i) seasonal variability in supply and quality, (ii) cash flow constraints that dictate that only inadequate and often sub-standard inputs are affordable, (iii) inadequate knowledge to make best use of what they have access to and (iv) their isolation which increases transaction costs, the majority of farmers fail to attain even these basic yields. Consequently, they cannot secure even local markets.

Nutritionally complete extruded feeds have the potential to increase yields of the present production systems by over 70% (and profit margins by about 30%) because they are more digestible and have lower negative impacts on water quality. Their attributes, also make it possible for farmers to adopt more intensive systems including tank and cage culture. Nigeria and Egypt, have invested in these key elements for aquaculture and have plants producing high quality nutritionally complete diets for their producers. Consequently, intensive urban

aquaculture tailored supplying urban markets with catfish in Nigeria has rapidly expanded. Furthermore, yields per unit area in Egypt and Nigeria more than triple average yields from the other countries.

It may not be possible in the short-term for all countries attract the level of private-sector investment needed to establish key segments of the sector such as commercial fish feed plants because the critical aquaculture production levels necessary to achieve viability have not been attained in most AU-MS. Innovative strategies are therefore sought in this action plan that encompass regional frameworks for harmonised input and service standard and certification processes, biosecurity governance, public-private sector investment partnerships, technology development and the formation of regional aquaculture NSA networks to help create confidence and enable the flow of aquaculture inputs, goods, services and products through existing bilateral and regional trade and development agreements. This approach shall in the interim serve to enable AU-MS trigger their levels of production so that within the short to medium term, they are facilitated to attain the critical production thresholds necessary to attract private investment to expand their sectors. Actions to strengthen aquaculture associations and build human capacity shall leverage the capacity of smallholder operations that play a critical role in African agriculture to access and utilise inputs, technology and services for production and marketing. In so doing, it is envisaged that the transformation of small-holder farming households into Small to Medium Scale Enterprises shall be realised.

The Think Tank reiterated that appropriate policies on their own do not yield fruit. This action plan therefore systematically stipulates identified priority activities for implementation to address the issues affecting the transformation of the aquaculture sector across the value-chain. The plan provides a roadmap with milestones to ensure that by 2025 the necessary conditions and elements for the existence of a vibrant sustainable commercial sector are in place. A concerted effort arising from the harmonised and coherent implementation of this Continental Action Plan by all Regional Economic Communities, Member States and Non-State Actors shall go a long way towards the realisation of Malabo goals.

Appendices

Appendix I: Summary of the implementing guidelines for aquaculture and the related PFRS policy areas.

Outcome	Criteria for Alignment	Performance Indicators
POLICY ARENA I: CONSERVATION AND SUSTAINABLE RESOURCE USE		
1. Policies frameworks and tools in place to sustainably increase national benefits from fisheries and aquaculture	Fisheries and aquaculture mainstreamed into NDPs ensuring adequate finance and conducive regulatory environments for investment; globally accepted best practices integrated into national policy frameworks and tools; policy and management decisions made based on reliable data and information management systems; adoption of participatory fisheries management mechanisms/approaches	<ul style="list-style-type: none"> • Fisheries and aquaculture prioritised in national development plans • Percentage of national budget allocated to fisheries and aquaculture (recurrent and development) • Existence of investment conducive regulatory frameworks for the fisheries and aquaculture sectors • Best fisheries management tools introduced (user rights, RBM, Ecosystems Approach to Fisheries/Aquaculture, Co-management, etc.).
2. Effective and sustainable national and regional monitoring control and surveillance systems in place to ensure that sustainable benefits are realised.	National fisheries agencies have all aspects of MCS in place and functioning; mechanisms in place for efficient and effective regional cooperation on fisheries MCS	<ul style="list-style-type: none"> • Existence of decisions, policies, research, programmes and tools in the fisheries and aquaculture sector informed by scientific evidence
3. Healthy ecosystems to support sustainable fisheries and aquaculture	Scientific research (natural, social, economic and technological) to support fisheries management and aquaculture development.	<ul style="list-style-type: none"> • Readily and publicly available system for allocation of fishing access/rights, vessel license list, etc. • Existence of consultative and co-management mechanisms • Reflection of participatory mechanisms in the policy and legal frameworks • Fisheries management plans informed by science • Annual statistical, economic and social reports on fisheries and aquaculture • Appropriate tools in place e.g. MPA's, EAF, EAA, technical and economic measures (e.g. seasonal closures, zoning, spatial planning, taxes, indigenous knowledge, etc.) • Appropriate programs in place e.g. coastal zone management, pollution control, blue growth initiative, by-catch controls, MCs, etc. • Availability of stock rebuilding and alternative livelihoods plans • National MCS systems • Regional MCS systems

Outcome	Criteria for Alignment	Performance Indicators
POLICY ARENA 3: AQUACULTURE		
1. Improved market-led aquaculture investments	Markets, aquaculture infrastructure, financing/investment, quality assurance standards, skills development plan, research and extension, fish farmers associations or cooperatives, enabling environment, growth in trade of locally produced aquaculture products.	<ul style="list-style-type: none"> • Change in value derived from aquaculture • Proportion of aquaculture contribution to agricultural/national GDP • Change in conflicts occurrence • Change in production levels • Change in disease incidence • Change in environmental integrity
2. Outcome 2. Improved regional cooperation in shared ecosystems	Common strategies on management and research on transboundary resources, consistency with best ecosystems management approaches, conformity with accreditation mechanisms.	
POLICY ARENA 4: RESPONSIBLE AND EQUITABLE FISH TRADE AND MARKETING		
1. Improved intra and inter regional trade	Compliance with agreed regional trade protocols and regulations; coherence of fish trade policies with other policies; compliance with sanitary standards and market requirements.	<ul style="list-style-type: none"> • Intra-regional trade share • Growth in trade of fish products from sustainable and equitable sources • Trade growth • Growth in transition from informal trade to formal trade • Change in FCI ranking
2. Increased competitiveness for African fish and fishery products	Economically efficient fisheries sector; standards and supportive technology; competitiveness through increasing value chain efficiencies, coherence of trade policies (harmonisation); consumer information.	
POLICY ARENA 5: REGIONAL AND SUB-REGIONAL COOPERATION		
1. International fisheries issues at regional levels are coherent and harmonised.	Entrench awareness of important international instruments for sustainable fisheries management and frameworks that identify the need for their domestication in realising sustainable fisheries management; PFRS policy options reflected international policy instruments; PFRS act as reference in international policy influence including existing and upcoming policies; transparency, accountability and effective participation of stakeholders are hallmarks of RECs and RFBs in Africa.	<ul style="list-style-type: none"> • Proposals tabled by African group international processes • African positions recorded in meeting proceedings • Ratifying, adopting and complying with international conventions and instruments • Regional policies adjusted or reviewed in line with the PFRS • RECs and RFBs review national policies in line with regional integration agenda • NSAs involved in regional/national thematic taskforces on issues (e.g. aquaculture, IUU, trade, etc.)
2. RECs and RFBs are positive forces for fisheries management within the framework of regional economic and political integration agenda.	Mechanisms for linkages between RECs and RFBs exist; the role of RECs and RFBs as vehicles to promote fisheries and aquaculture is defined; strategies and mechanisms for preventing and resolving regional conflicts are in place.	<ul style="list-style-type: none"> • Agreements (e.g. MOUs) for technical cooperation between RECs and RFBs • Fish included as a regional trade commodity • Regional arrangement for fisheries access • Existence of regional mechanisms (tribunals) for arbitration which includes fisheries and aquaculture issues • Regional strategies for migration fishermen • Demarcation areas (inshore exclusion zones)

Outcome	Criteria for Alignment	Performance Indicators
POLICY ARENA 6: AWARENESS ENHANCING AND HUMAN CAPACITY DEVELOPMENT		
1. Enhanced sectoral competencies and proficiencies	Continuous professional education, mentorship and training; accreditation of practitioners and institutions; facilitate centres of excellence of fisheries and aquaculture.	<ul style="list-style-type: none"> • Change in level of competency and proficiency • Change in operational costs • Per capita labour productivity • Change in effectiveness of policy outcomes
2. Improved evidence based decision making	Information based policy decision making; information sharing between policy makers and policy consumers; responsive to real community needs	<ul style="list-style-type: none"> • Existence of diversity of source of policy inputs • Existence of scientific and management informed decisions • Existence of Centres of Excellence for fisheries and aquaculture • Change in recruitment and retention of people
POLICY ARENA 8: CROSS-CUTTING ISSUES		
A. Strengthening resilience and reducing vulnerabilities to climate change in African fisheries and aquaculture		
1. Adaptive capacity and resilience at the local level built	Capacity building, communication systems for CC and DR, facilitate the creation of alternative livelihoods, early warning system in place as a focus for disaster.	<ul style="list-style-type: none"> • Initiatives and programs to strengthen community resilience • Strengthening value approaches and diversifying fisheries and other products
2. Policy coherence and coordination at the national and regional levels improved.	Disaster risk management and climate change adaptation policies, fisheries and aquaculture policies include DRM and CCA	<ul style="list-style-type: none"> • A platform for knowledge management and information sharing linked to AU disaster risk management strategy (DRR) • Availability of financial resources for CCA and DRM • No. of NAPAs and national plans that include fisheries and aquaculture • No. of RECs with CCA and DRM strategies and plans that include fisheries and aquaculture • No. of NAIP with climate smart fisheries and aquaculture • No. of FM plans that incorporate CCA and DRM
B. Gender and Youth		
1. Increased access to resources	Access to suitable land, water and capital, security of investment and access rights and ownership	<ul style="list-style-type: none"> • Proportion of women and youth accessing and utilising resources • Change in value (USD) of assets owned by women and youth
2. Improved working conditions	Realistic standards of practice as detailed by international labour organisations, women youth and vulnerable group needs are addressed, consistency with national and international labour laws and fishers rights	<ul style="list-style-type: none"> • Proportion of women and youth owned enterprises • Change in productivity • Change in gender based violence occurrences • Change in worker's health status • Change in school enrolment among fish producing communities • Change in child labour

Outcome	Criteria for Alignment	Performance Indicators
C. Private Sector Investments and Financing Mechanisms for Fisheries and Aquaculture in Africa		
1. Improved enterprise performance within the fisheries and aquaculture sector	World bank ease of doing business index, global competitiveness report of World Economic Forum, World Bank fisheries performance indicators, awareness of diversity of business structures	<ul style="list-style-type: none"> • Change in absolute indices score and relative ranking • Change in business models • Change in number of entrants • Change in return on investments • Change in associated economic activities
2. Improved private sector governance	Consistency with industry best practices.	<ul style="list-style-type: none"> • Change in number from small to medium scale operation

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