



INTERNATIONAL YEAR OF
ARTISANAL FISHERIES
AND AQUACULTURE
2022



SADC Blue Transformation - a case for regional aquaculture value chains

Dr Motseki Hlatshwayo¹ & Dr Friday Njaya²

¹ SADC Secretariat, Botswana

² Department of Fisheries, Malawi

Side Event: Aquaculture Policy Research Dissemination Seminar

SADC-BCC Regional Dialogue Towards Building Resilience & Adaptation in Artisanal Fisheries & Aquaculture in Southern Africa

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Why Aquaculture?

- Many SADC Member States have abundant natural resources for inland & marine aquaculture.
- All Member States have identified & somehow prioritised aquaculture, but not necessarily in major national planning, policy, priority-setting documents.
- There is a need to include aquaculture in national plans & policies with general aim to contribute to national food & nutrition security, reduce poverty, enhance rural development.



Why Aquaculture?...

- In 2011, SADC Member State Ministers responsible for fisheries & aquaculture approved the development of a framework to guide aquaculture development in the SADC Region at their meeting in Windhoek, Namibia.
- With the purpose to provide strategic direction for rapid & responsible development of aquaculture in SADC Member States, while simultaneously safeguarding the ecological integrity of ecosystems, conserving common genetic resources & supporting the maintenance of regional aquatic biosecurity.
- A Working Group on Aquaculture was established to guide this process.



SADC frameworks supporting aquaculture development

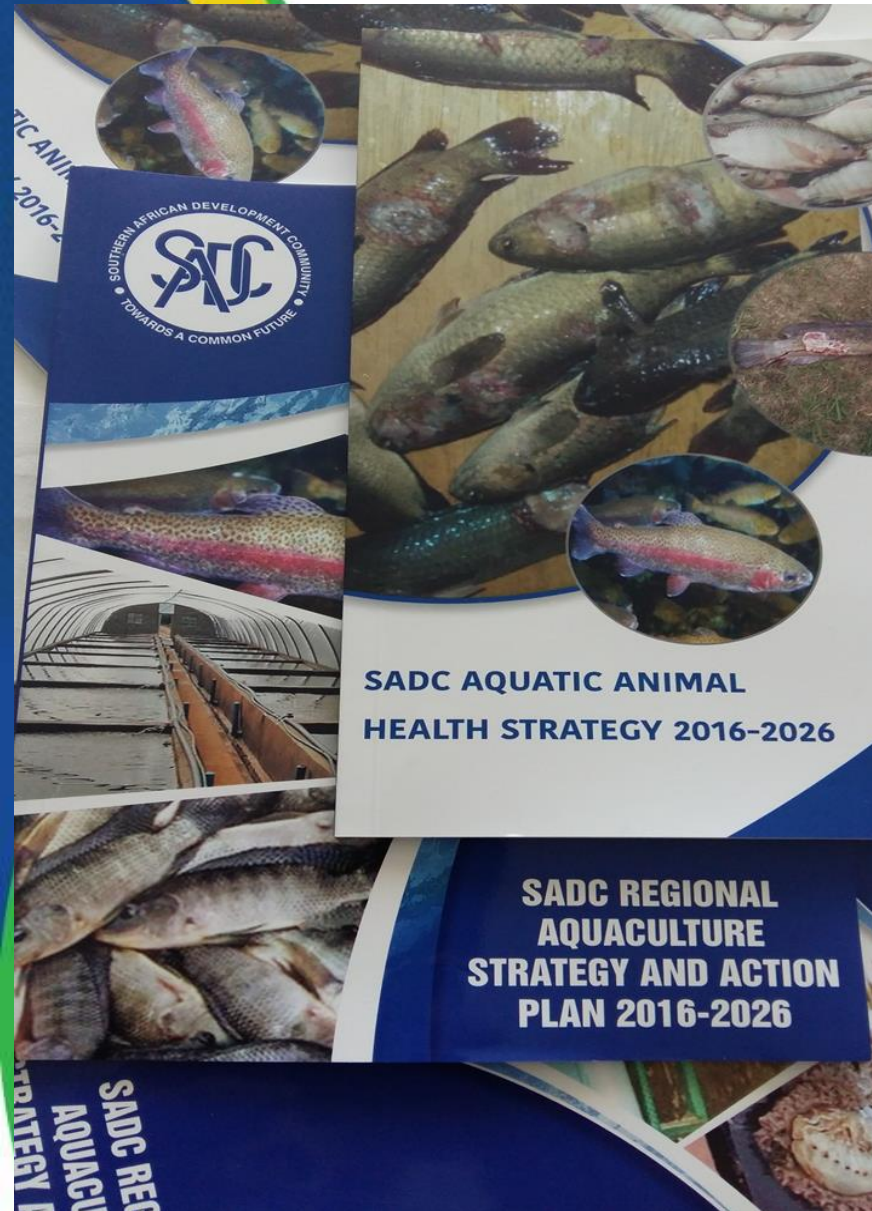


- Protocol on Fisheries (2001), SADC Industrialisation Strategy (2015-2063) & RISDP (2020-2030), aims to:
- increase fish production in the region
- safeguard sustainable fish production from aquaculture
- Facilitate development of national strategies aligned with regional strategies (RASAP & AAH)
- Facilitate implementation of strategies (RASAP & AAH)
- Facilitate implementation of Regional Framework on Environmental Management for Sustainable Aquaculture, including Best Management Practices & Harmonized Regional Standards
- Coordinate capacity building & mentorship
- Develop & implement regional aquaculture value chains priority action plans
- Promote responsible genetic improvement & sustainable biodiversity management in aquaculture



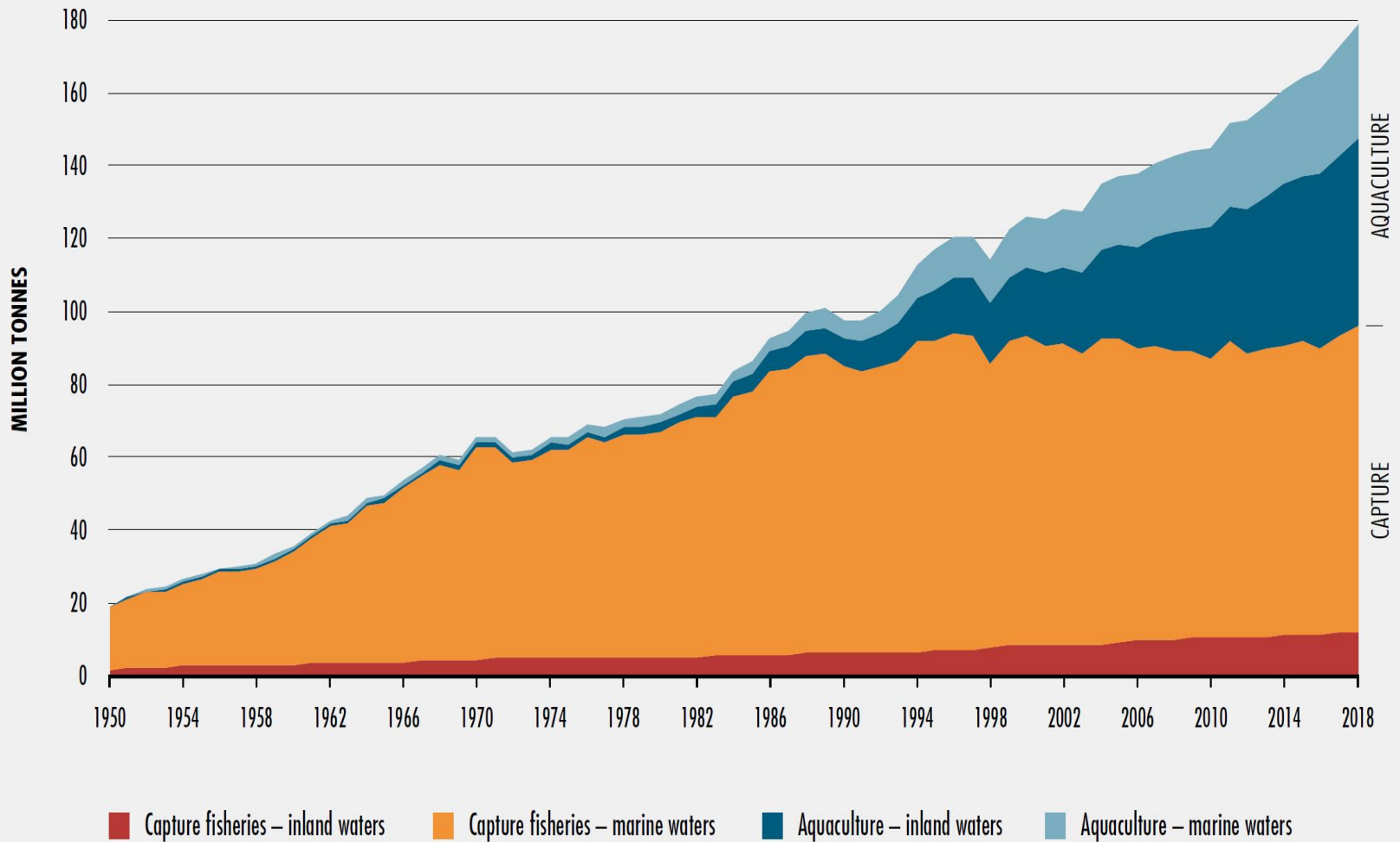
Sustainable aquaculture development...

- SADC Regional Aquaculture Strategy & Action Plan (2016):
 - Facilitate development of national strategies aligned with regional strategies (RASAP & AAH)
 - Facilitate implementation of strategies (RASAP & AAH)
 - Facilitate implementation of Regional Framework on Environmental Management for Sustainable Aquaculture, including Best Management Practices & Harmonized Regional Standards
 - Coordinate capacity building & mentorship
 - Development of regional aquaculture value chains
 - Genetics & Biodiversity Management in Aquaculture



State of Play

GLOBAL CAPTURE FISHERIES & AQUACULTURE PRODUCTION, 1950-2018



Data source: FAO FishStat (2020); FAO (2020); Country Aquaculture Questionnaires, 2020



State of Play...

	Global (MT)	Sub-Saharan Africa (MT)	SADC (MT)
Capture fisheries 2018	96.4 m	8 m	3.1 m
Aquaculture growth rate p.a. 2001-2018	5.3%	14.7%	8.7%
Aquaculture (food fish) 2018	82.1 m MT	596 400	92 455
Percent of global		0.73%	0.11%
Inland aquaculture 2018 (% of total)	51 m (62%)	586 601	80 122 (87%)
Finfish (% of inland)	47 m (91%)	586 597 (>99%)	79 761 (>99%)
Marine aquaculture 2018 (% total)	31 m (38%)	13 798 (2%)	12 333 (13%)
Molluscs (% of marine)	17.3 m (56%)	5 037 (37%)	4 469 (36%)
Finfish (% of marine)	7.3 m (24%)	3 278 (24%)	2 071 (17%)
Crustaceans (% of marine)	5.7 m (19%)	5 421 (39%)	5 730 (46%)
Seaweed aquaculture 2018	32.4 m	112 615	111 053
Percent of global		0.35%	0.34%

Data source: FAO FishStat (2020); FAO (2020); Country Aquaculture Questionnaires, 2020



Aquaculture Production in SADC

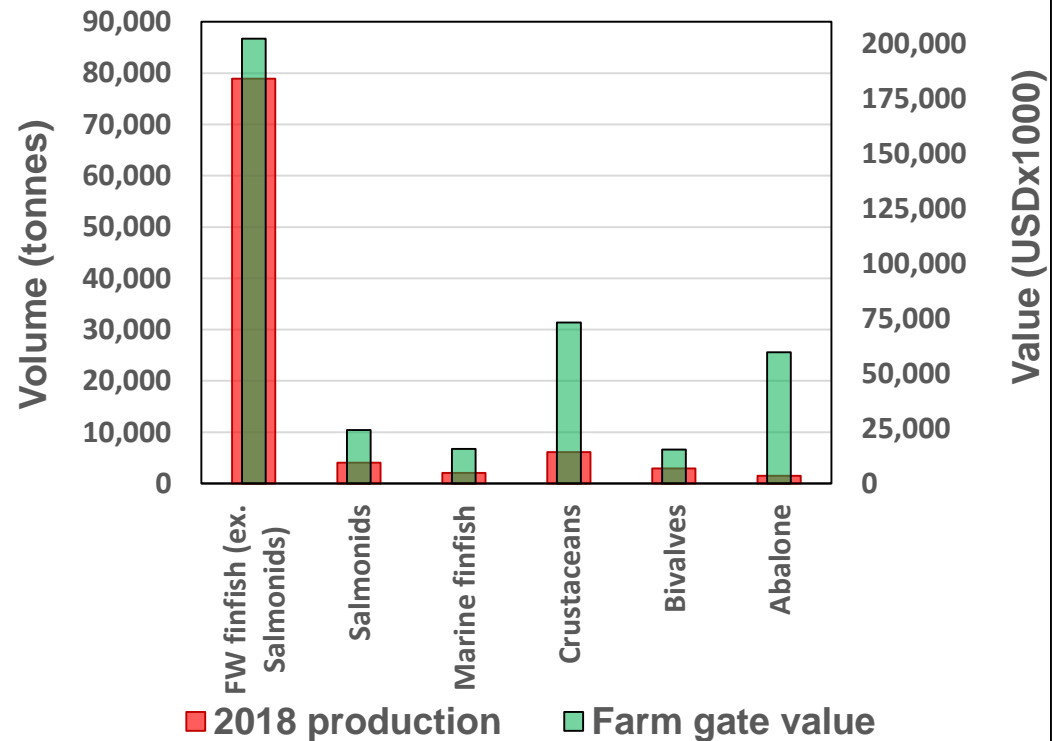
Fish

- Aquaculture growth = 8.7% pa from **21 466 MT** in 2001 to **92 455 MT** in 2018
- ~77% of fish production from commercial aquaculture operations
- 87% of total fish production (2018) was freshwater finfish: tilapia (around 96%), salmonids, catfish and others
- Smaller volumes of high-value crustaceans, bivalves, abalone and marine finfish
- 2020- **99,427**; 2021- **101K**

Seaweed

- Growth in production = 4% pa from 21 466 MT in 2001 to 138 695 MT in 2017 (declined to 111 704 MT in 2018)

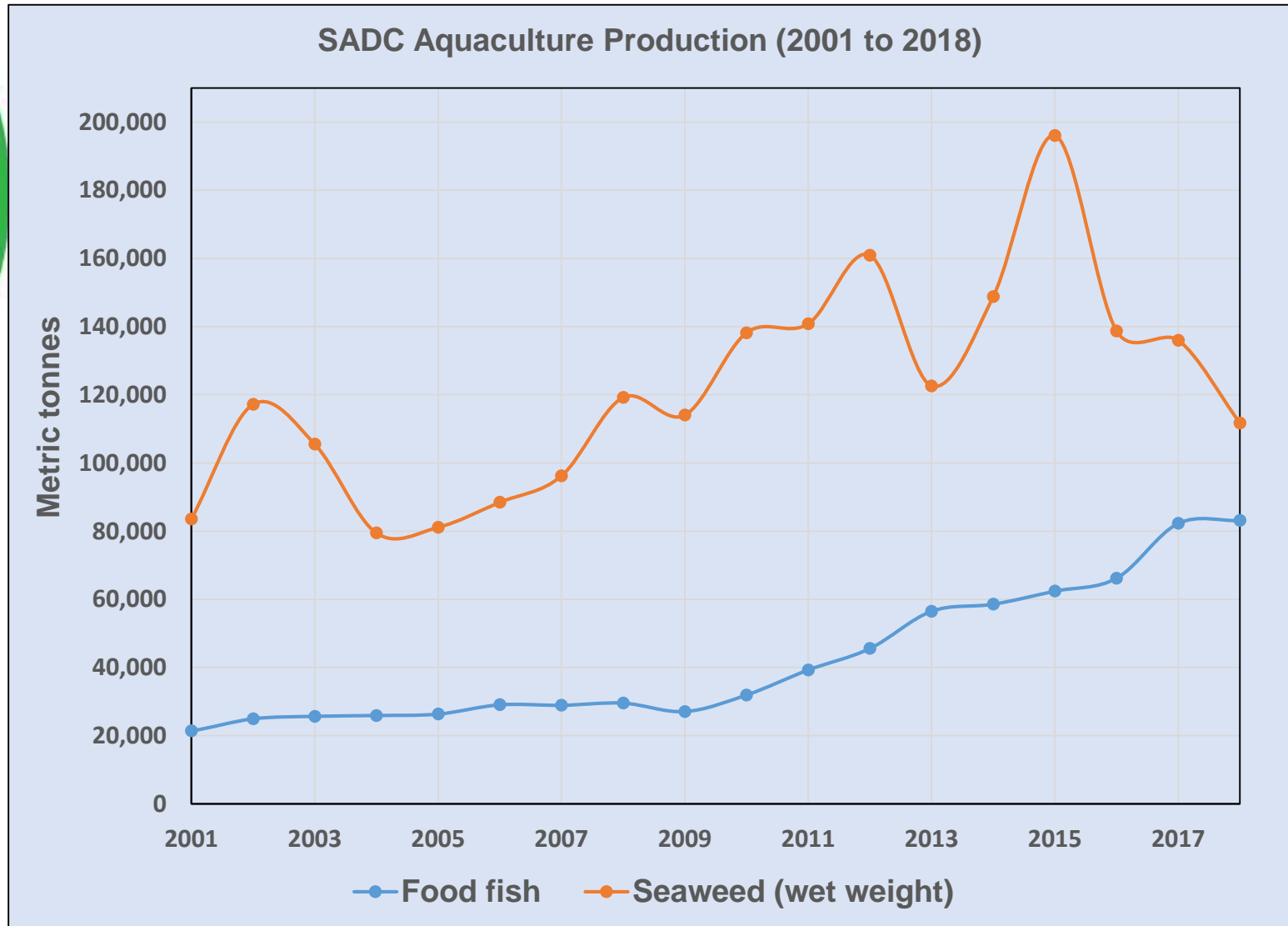
SADC food fish value and volume



(Data source: SADC Aquaculture Questionnaires; FAO FishStat, 2020)



Aquaculture Production in SADC...



(Data source: SADC Aquaculture Questionnaires; FAO FishStat, 2020)



Aquaculture production in SADC...

Country	SADC Aquaculture Production (MT) Per Species Group							
	Finfish FW	Finfish Marine	Crustaceans	Bivalves (food)	Bivalves (pearls)	Abalone	Echinoids	Seaweeds (wet weight)
Angola	1 752							
Botswana	3							
DRC	3 200							
eSwatini	100							
Lesotho	2 501							
Madagascar	1 160		5 337				50	4 947
Malawi	9 014							
Mauritius		2 047						
Mozambique	3 223		21					
Namibia	46			294		5		130
Seychelles					<1			
South Africa	1 974			2 648		1 522		1 687
UR Tanzania	14 778	25	372		<1		12.5	104 289
Zambia	35 381		361					
Zimbabwe	6 629							
Total	79 761	2 071	6 091	2 942	<1	1 527	62.5	111 053
% Composition	39.19%	1.02%	2.99%	1.45%	-	0.75%	0.03%	54.57%

NOTE: highlighted cells indicate FAO (2020) data used – data not provided by CFP

(Data source: FAO FishStat (2020); Country Aquaculture Questionnaires, 2020)



Dichotomy of SADC Aquaculture

Dichotomous & comprises (1) smallholder & (2) commercial aquaculture

1. Small-holder aquaculture

- Long history > 60 years
- Championed by donors, development partners to reduce poverty, improve food/nutrition security, provide alternative livelihoods
- Simple production technologies, low yields, challenges with access to inputs, human capital, funding, infrastructure
- Generally not part of value chain, does not contribute towards poverty eradication, does not create wealth; but where successful contributes to food security at household level



Dichotomy of SADC Aquaculture...

2. Commercial aquaculture

- Major successes in African aquaculture achieved through private-sector driven, market-led, investment-oriented developments
- Operates at scale; advanced technologies and expert managerial resources; many are vertically-integrated along value chain
- Has grown rapidly in several SADC Member States; benefits include enhanced food security, job creation, income generation
- Increasingly recognised that aquaculture expansion in SADC requires:
 - ✓ Careful investment in targeted value chains
 - ✓ Enabling policies & frameworks



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Aquaculture production in SADC...

- **Tilapia** - dominated by Zambia, Zimbabwe, URT & Malawi
- **Rainbow trout** - dominated by Lesotho & RSA
- **Production systems:** Mainly cages (round & square), LVHD cages, commercial-scale pond culture, small volumes from smallholder ponds



Aquaculture production in SADC...

- **Marine finfish (red drum, milkfish, rabbitfish, yellowtail & dusky kob) - only noteworthy in Mauritius**



- **Production systems:** Red drum in cages, milkfish & rabbitfish in smallholder ponds, yellowtail & dusky kob in RAS

- **Prawns (black tiger prawns, mud crab - dominated by Madagascar followed by URT; recovering in Mozambique**



- **Production systems:** Hatcheries & grow-out ponds for prawns; single-cell cages for crab fattening



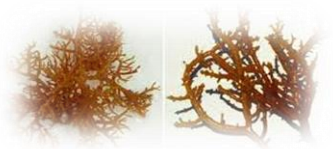
Aquaculture production in SADC...

- **Bivalves (Mediterranean mussels & Pacific oysters)(food)** - only in South Africa & Namibia
- **Bivalves (black-lipped pearl & penguin's wing oysters (jewellery)** – Seychelles, URT
- **Abalone** - only in South Africa & Namibia
- **Production systems:** Rafts & rope culture for mussels, longlines & lantern nets for oysters, submerged rafts for pearl oysters & floating rafts & substrate pens for half pearls. Land based flow-to-waste systems & ranching for abalone.



Aquaculture production in SADC...

- **Seaweed (Eucheumatoid species (*Eucheuma denticulatum* & *Kappaphycus alvarezii*))** - URT mainly Zanzibar, followed by Madagascar



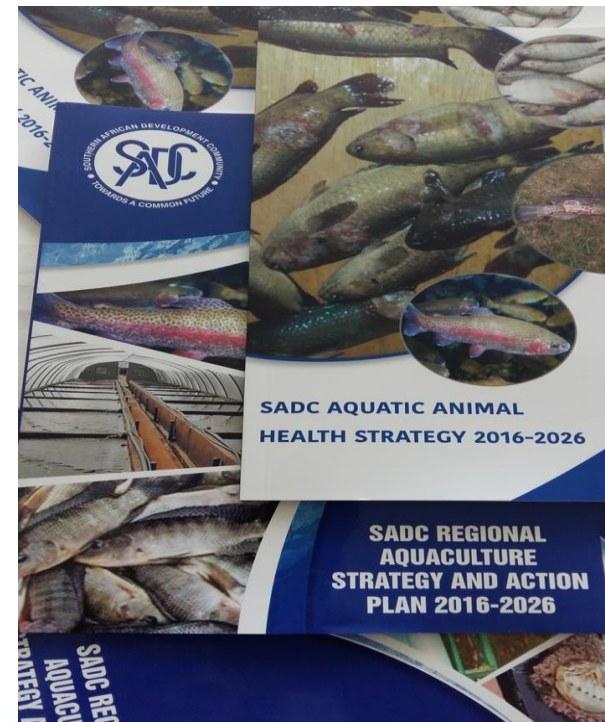
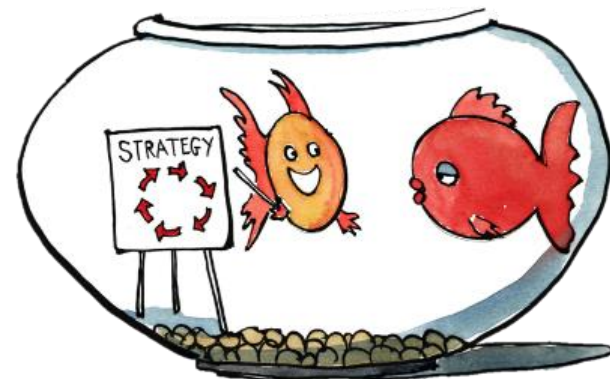
- **Production systems:** Farmed in intertidal areas using off-bottom method. Recently, move to submerged raft method in deeper waters to counter impacts of warmer water temperatures (climate change)



SADC Regional Aquaculture Strategy & Action Plan (RASAP 2016-2026)

PRIORITY ACTIONS:

1. Understand & develop the aquaculture value chain
 2. Create a user-friendly platform for private sector investment in the commercial aquaculture value chain in Member States
 3. Public sector support for rapid development of aquaculture value chains
 4. Build capacity of all actors in the value chain, particularly women
- To provide a broad-scale & holistic perspective on the issues that either support or constrain aquaculture development & existing & future aquaculture value chains in the SADC region



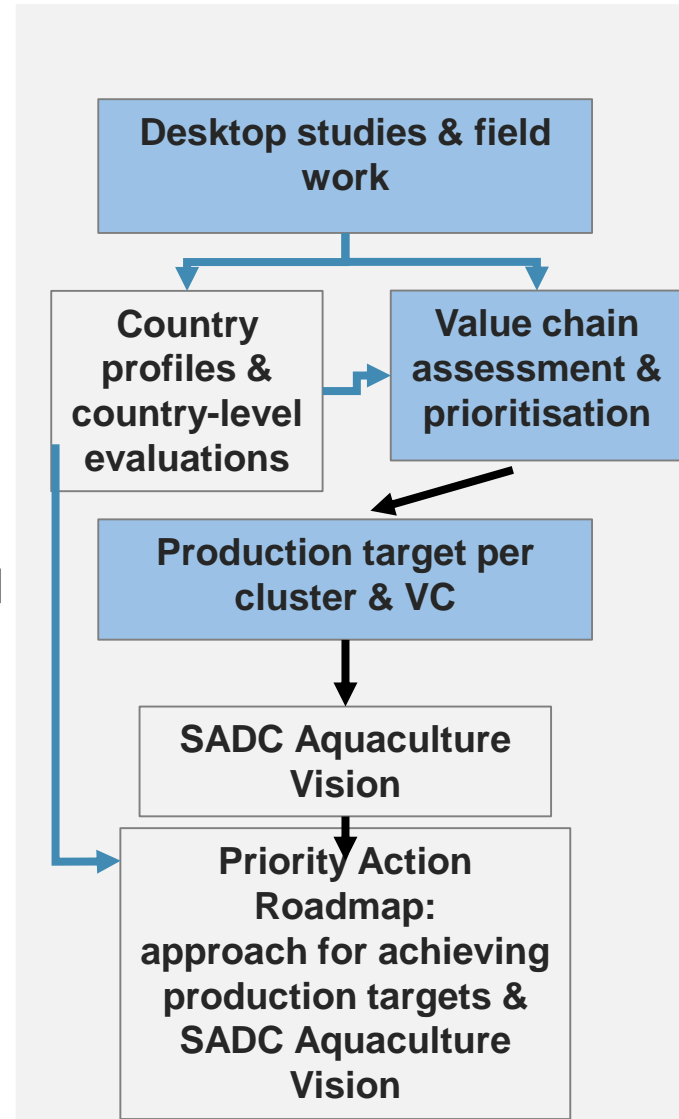
Business Case for SADC Regional Aquaculture Value Chains

- Since 2016 to now, progress in domesticating RASAP has been slow, but RASAP managed to raise key imperatives for sustainable aquaculture development in SADC
- More countries in the region are now grappling with aquaculture than before RASAP, & a few have adopted the RASAP (South Africa, Zambia... & results are beginning to show)
- Recently Botswana, **Malawi** & Namibia completed processes to align/develop aligned national strategies with the RASAP
- Following approval of the SADC Industrialisation Strategy & Roadmap to 2063, aquaculture value chains were identified as priority
- Hence it was agreed that a study to profile regional aquaculture value chains (VCs) must be conducted, with the aim of developing a business case
- Country profiles & evaluations provided basis to identify the SADC Aquaculture VCs within the eight aquaculture clusters



Business Case for SADC Regional Aquaculture Value Chains...

- Aquaculture VCs were distinguished based on:
 - Species
 - Production technology
 - Region or water body where farming takes place
 - Contribution to SADC aquaculture production volume or value
- **24 aquaculture VCs were identified**
- These VCs were profiled, evaluated & prioritised to determine future production potential (MT by 2030) & interventions to achieve this
- Findings of SADC Country & VC assessments used to develop a Priority Action Roadmap for development & expansion of SADC aquaculture

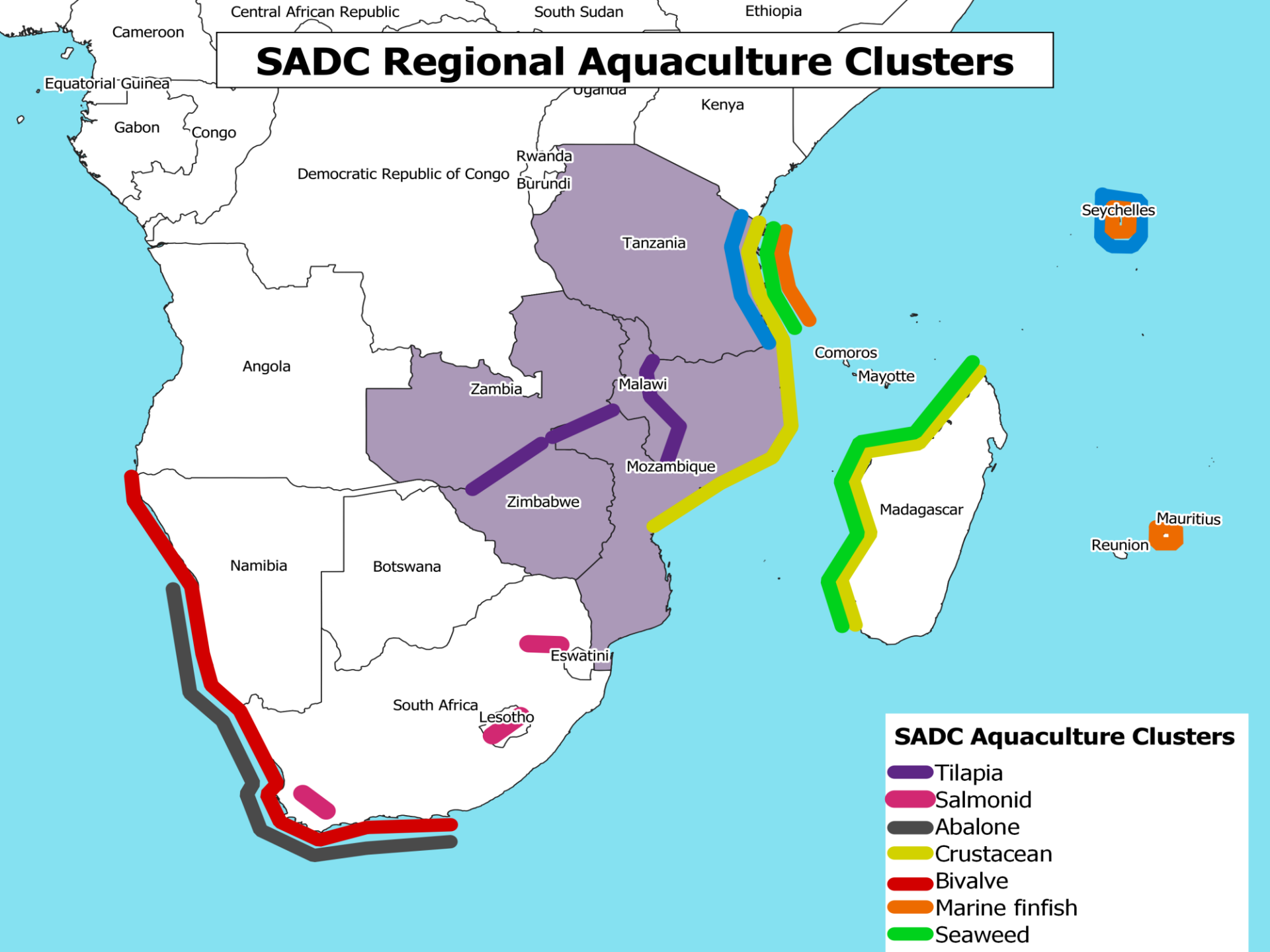


The Cluster Approach

- Aquaculture species group clusters were identified based on current production trends
- Eight aquaculture species group clusters:
 - **Tilapia Cluster:** Zambia, Zimbabwe, Malawi, Mozambique, Mainland Tanzania
 - **Salmonid Cluster:** South Africa, Lesotho
 - **Abalone Cluster:** South Africa, Namibia
 - **Crustacean Cluster:** Madagascar, Mozambique, URT
 - **Bivalve Cluster:** South Africa, Namibia
 - **Marine Finfish Cluster:** Mauritius, URT, Seychelles
 - **Seaweed Cluster:** URT, Madagascar
 - **Pearl Cluster:** Seychelles & URT
- Distinct value chains were identified within each cluster based on species, species groups & / or distinct locations



SADC Regional Aquaculture Clusters



SADC Aquaculture Clusters

- Tilapia
- Salmonid
- Abalone
- Crustacean
- Bivalve
- Marine finfish
- Seaweed

The 24 Value Chains

Tilapia Cluster

Tilapia Cage Lake Kariba

Tilapia Cage Lake Cahora Bassa

Tilapia Cage Lake Tanganyika

Tilapia Cage Lake Victoria

Chambo Cage Lake Malawi

Tilapia Pond Commercial

Tilapia Pond Smallholder

Tilapia RAS

Crustacean Cluster

Prawns Madagascar

Prawns Tanzania

Mud Crab

Seaweed Cluster

Seaweed URT

Seaweed Madagascar

Bivalve Cluster

Mussels RSA & Namibia

Pacific Oysters RSA & Namibia

Marine Finfish Cluster

Mauritius Red Drum VC

Milkfish URT VC

Seychelles Finfish VC

Salmonid Cluster

Rainbow Trout Lesotho

Rainbow Trout RSA

Abalone Cluster

Abalone (RSA & Namibia)

Pearl Cluster

Black Pearl Seychelles

Half Pearl Zanzibar



Value chain production potential

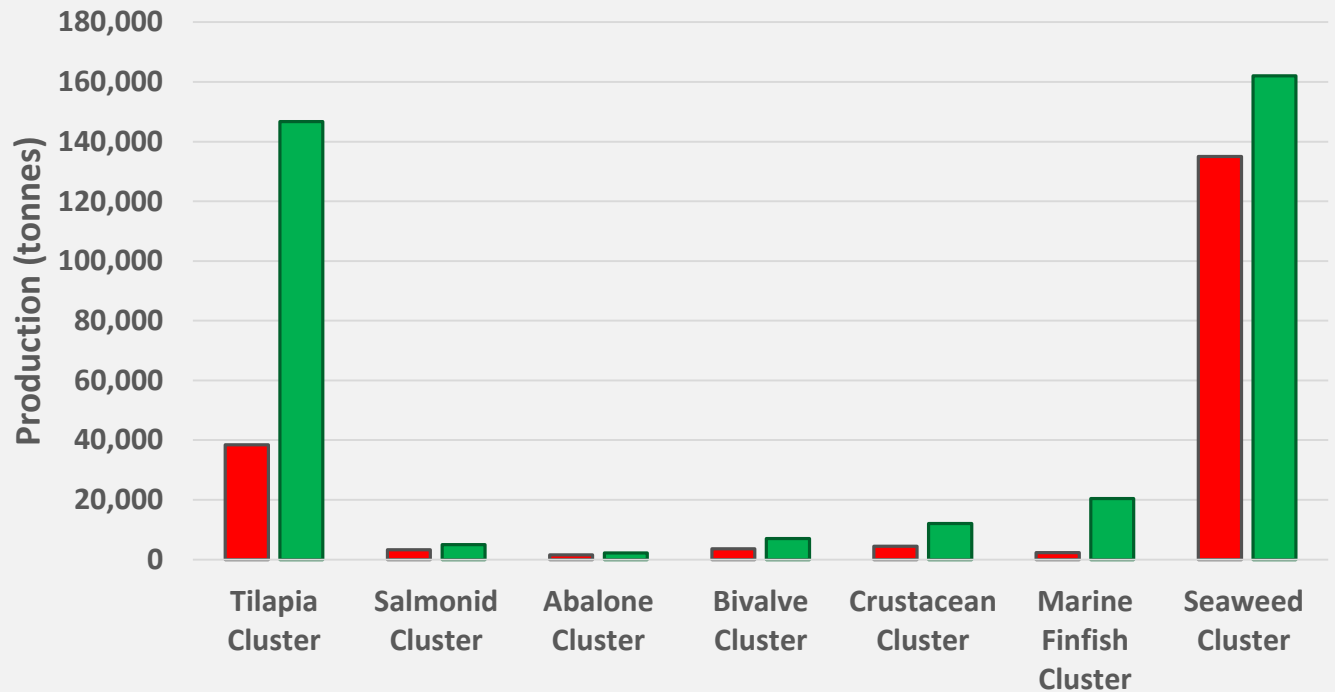
- ❑ **Estimate of future production** volumes (2020-2030) per VC & cluster estimated using VC analysis results
- ❑ **Assumption - appropriate interventions made** over the coming 10-year period
- ❑ **Total SADC projected production** capacity of **355 400 tpa** by 2030
 - ❖ Compounding annual growth rate of 7.6%
 - ❖ Almost **doubling** aquaculture production: aggregate 93% expansion
- ❑ **Total value** of SADC aquaculture :
 - ❖ **Current:** USD 211m in farm-gate sales & USD 353m retail sales
 - ❖ **Future 2030 production:** USD 655m in farm-gate sales & USD 924m retail sales



Value chain production potential...



CURRENT AND FUTURE (2030) AQUACULTURE PRODUCTION VOLUME PER SPECIES GROUP



Note: Number of pearls and half pearls excluded from totals

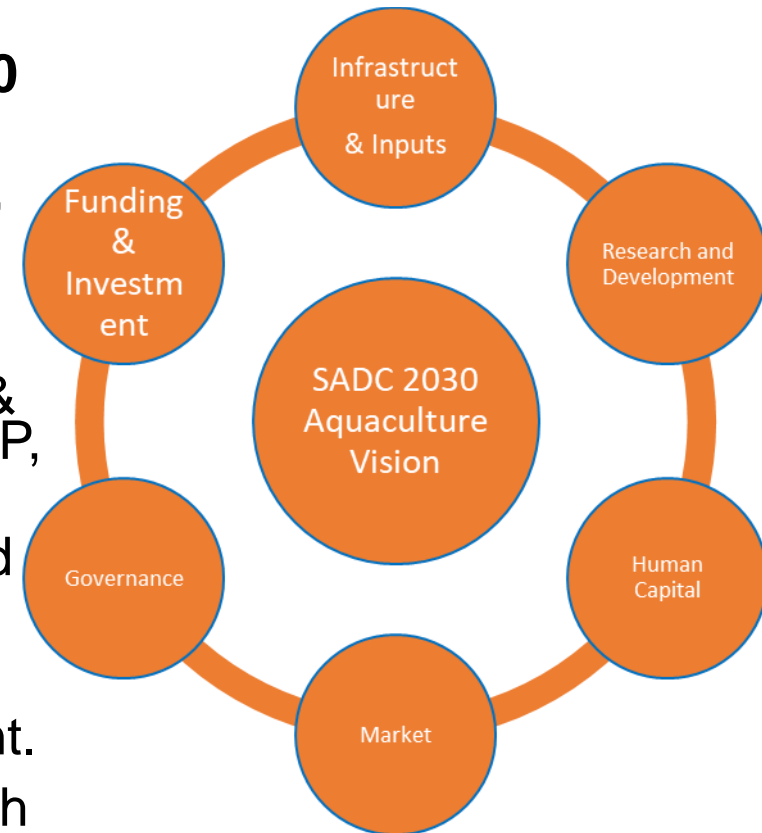
■ Current Production (MT/yr)

■ Future Potential (MT/yr)



Priority Action Roadmap

- ❑ The Priority Project Roadmap outlines a series of strategies, plans, projects, & activities by which to achieve the **SADC Aquaculture Vision of 355 000 MT/yr by 2030**
- ❑ Strategies include Governance, Infrastructure, R&D, Human Capital, Funding & Investment, Market
- ❑ Underpinned by the FAO EAA & fully aligned with RASAP, RISDP, SISR
- ❑ Roadmap emphasises the need to address food security & poverty eradication while promoting private sector investment, wealth, employment.
- ❑ Regional, participatory approach with well-defined targets key to realising aquaculture potential.



Sustainable Aquaculture in Malawi



- **GIZ-AVCP & SFAD&WM (AfDB)** funded projects helping Government of Malawi & industry stakeholders to:
 - **Enhance fish production** of 4,500 farmers by 50% in an environmentally, socially and economically sound manner.
 - **Strengthening 130 economic groups** of small producers to become operational.
 - **Provide policy advice and support** to the Department of Fisheries to strengthen the existing aquaculture legislation.
 - **Establish a multi-stakeholder platform (Aquaculture Round Table)** to promote knowledge exchange.
 - **Roll-out of the aquaculture curriculum** in cooperation with Malawi College of Fisheries and Stephanos Vocational Training Centre.
 - **Promote fish processing** using climate friendly technologies, e.g. Chitofu 3-in-1
 - **Enhancing awareness** of 24,000 primary pupils in 40 schools on the role of fish in nutrition



SADC-AfDB Programme for Improving Fisheries Governance & Blue Economy Trade Corridors (PROFISHBLUE)



- **Objective:**

- To promote sustainable management & use of fisheries resources within the blue growth context in the SADC region in order to improve food security, reduce poverty levels through employment opportunities, facilitate intra-regional trade, & enhanced adaptive capacity of fish value chains communities against climate change & other external shocks.

- **Specific objectives as:**

- Promoting knowledge & technical capacity towards fisheries & **aquaculture value chains** & harmonizing fish trade within the SADC region
- Improving fisheries governance & sustaining aquatic foods through integrated management plans & blue economy program development
- Strengthening institutional capacity for adaptation & mitigation of impacts of climate change & other vulnerabilities to the sector





Thanks to the Partners



*Three countries sharing a productive ecosystem
Três países que compartilham um ecossistema produtivo*



Thank You, Merci, Obrigado, Asante, Zikomo...

