



REGIONAL ASSESSMENT OF FISHERIES ISSUES, CHALLENGES AND OPPORTUNITIES FOR NORTH AFRICA REGION

*Towards the formulation of the
Policy Framework and
Reform Strategy for
Fisheries and Aquaculture
in Africa*

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TOWARDS THE FORMULATION OF THE POLICY FRAMEWORK AND REFORM STRATEGY FOR FISHERIES AND AQUACULTURE IN AFRICA

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1.0 INTRODUCTION AND BACKGROUND

While the world is facing multiple and interlinked challenges ranging from the impacts of the latest financial and economic crisis to greater climate change vulnerabilities, still, there is one biggest challenge that it must meet the food and nutrition needs of an expanding population. The fisheries and aquaculture sector offers opportunities for facing that challenge to increase food and nutrition security, alleviate poverty, generate economic growth and ensure improved use of valuable and limited resources. Fisheries and aquaculture directly employ over 36 million people worldwide, 98% of them in developing countries. They also indirectly support nearly half a billion people as dependents or in ancillary occupations (Richardson et al. 2011). Furthermore, fish and other aquatic products provide at least 20% of protein intake for a third of the world's population, and the dependence is highest in developing countries (Béné et al. 2007). In 2010, people consumed about 128 million tons of fish and 2010 estimates point to fish consumption reaching another new high of 18.6 kg per person.

Stimulated by higher demand for fish, world fisheries and aquaculture production is projected to reach about 172 million tons in 2021, with most of the growth coming from aquaculture. Aquaculture will remain one of the fastest-growing animal food-producing sectors. On the other hand, Small-scale fisheries are by far the most important for food security especially in the countries that depend most on fish for food; people rely primarily on catches from the wild. They supply more than half of the protein and minerals for over 400 million people in the poorest countries of Africa and South Asia. Therefore, the importance of sustaining wild capture fisheries to secure ongoing supplies of fish to poor consumers cannot be over emphasized. Although aquaculture continues to grow, there is no immediate prospect that it can replace these supplies, but as Garcia and Rosenberg (2010) stated: "The potential for sustaining catches, food output and value at or near current levels, and supporting the nutrition and livelihoods of many hundreds of millions of dependent people, will rest critically on managing fisheries more responsibly."

Fish and fishery products continue to be among the most-traded food commodities worldwide. Following a drop in 2009, world trade in fish and fishery products has resumed its upward trend driven by sustained demand, trade liberalization policies, globalization of food systems and technological innovations. Estimates for 2011 indicate that exports of fish and fishery products exceeded US\$125 billion, with average prices increasing by more than 12 percent. However, the vital contributions from fisheries and aquaculture to the world's well-being and prosperity remain constrained by poor governance, management and practices.

There are many challenges that are currently facing and are expected to emerge in the near future for the fish production sector worldwide, the coming decades are likely to see major changes in economies, markets, resources and social conduct. Climate change impacts will increase uncertainty in many food sectors, including fisheries. The African continent has not spared of some of these challenges and perturbations.

In this report we will try to look at the current status of fish production in North Africa region in the continental and global context, touch on the issues and challenges facing the sector and look at the sector potentials and opportunities for growth and sustainability. This report is in response to one of the major recommendations of the first Conference of African Ministers for fisheries and aquaculture in 2010 which charged the African Union "to put in place a mechanism for broad-based participatory policy dialogue and fisheries management..." in a bid to support Member States to strengthen policy coherence in national fisheries and aquaculture sector. This study is therefore intended to contribute to the formulation of a comprehensive evidence-based policy framework and reform strategy for fisheries and aquaculture in Africa. The study has been commissioned by AU-IBAR.

2.0 STATUS OF NORTH AFRICAN FISH PRODUCTION IN THE CONTINENTAL AND GLOBAL CONTEXT

Africa harbors a rich biological diversity of native fish resources. Recognition of the potential to use these resources to make significant contributions towards improving African food security through aquaculture has existed for some time. A key challenge, however, is achieving compatibility between the two urgent, but sometimes conflicting, goals of reducing poverty and food insecurity in Africa through aquaculture development while paying due attention to the conservation of natural biodiversity and fish genetic resources.

North Africa or Northern Africa is the northernmost region of the African continent. Geopolitically, the United Nations definition of Northern Africa includes seven countries or territories; Algeria, Egypt, Libya, Morocco, Sudan, and Tunisia.

Following centuries of active fishing, a constant increase in fishing capacity and efficiency and consequently, fishery output, signs of slower growth, stagnation or even a decline in landings have become evident in many fisheries at a global level.

In the Mediterranean basin which is the main fishing basin for most of the North African region, the main fished stocks have reached or appear to be reaching their maximum production; some stocks have even been overfished and have drastically declined in numbers. Avoiding over-exploitation of fully exploited resources and rebuilding stocks of endangered species has become a priority, while the remaining potential for further growth in capture fisheries is only seen in the exploitation of non-traditional species.

To meet the increasing global market demand for fish and fishery products, aquaculture has been foreseen as a parallel and supporting sector for increased aquatic production. However, as aquaculture has grown a number of environmental, technical, marketing and economic issues have arisen that have started to impede its development. Thus, the sector has begun to face many obstacles that threaten not only its further development, but its overall performance and sustainability.

Looking at the total fish production in Africa during the period from 2000 to 2012 we notice that there has been an overall increasing trend with a serious drop of captured fisheries from 2006 to 2010. This drop in captured fisheries production was gradually compensated for by the increasing aquaculture production which went up by about 800,000 tons during the period from 2006 up to 2012 representing about 100% increase from the 2006 production levels and maintaining an overall increasing total fish production (Figure 1).

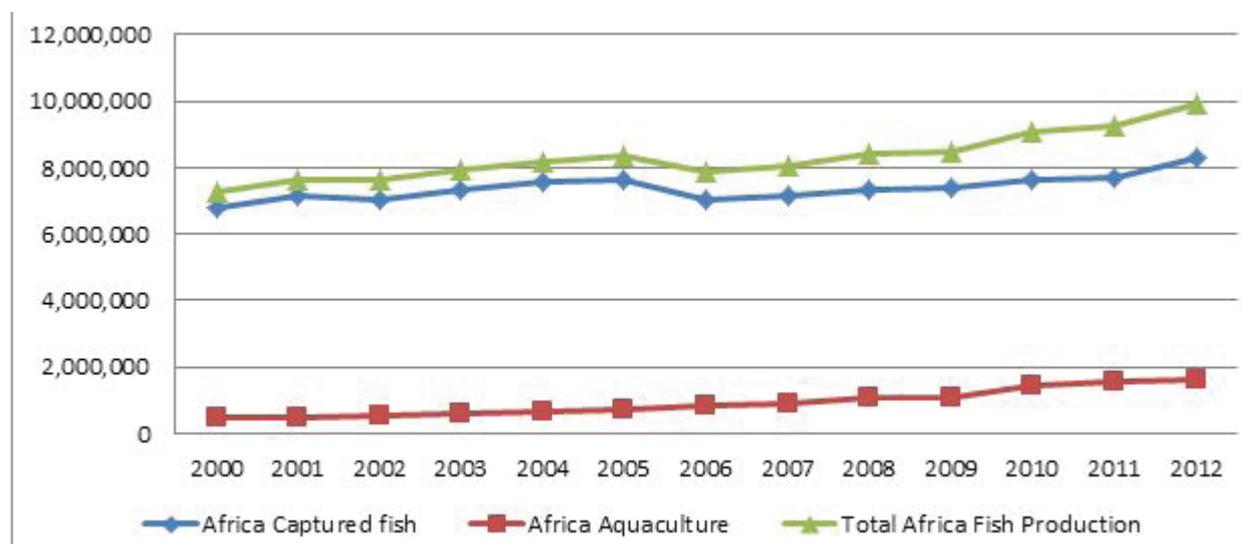


Figure 1: Total African fish production from different sources from 2000-2012

In 2012 capture fisheries production represented 83% of total fish production in Africa compared to about 94% in 2000 which means that contribution from aquaculture production went up from 6% to 17% of the total fish production in the continent (Figure 2) demonstrating the growing aquaculture production in the continent.

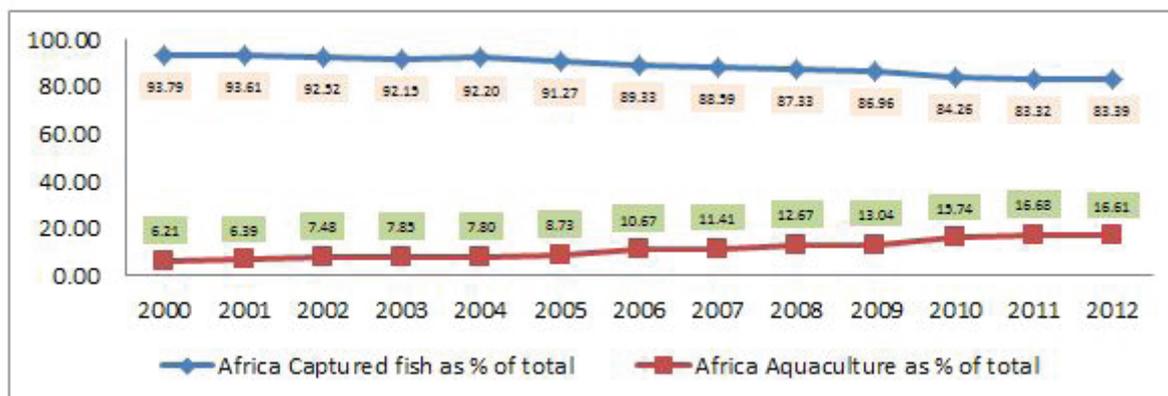


Figure 2: African fish production from different sources as a percentage of total fish production from 2000-2012

Fish production from the different African regions expressed as a percentage of Total African production is shown in Table I. Both Northern Africa and western Africa regions are the biggest fish producing regions in Africa with a combined production of almost 60% of total African fish production in 2012 compared to 54% for both regions in 2000 (Table I).

Table I: Regional fish production as a % of total African production

Region \ Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Eastern Africa	17.63	16.86	17.16	17.77	19.09	19.69	20.36	20.68	20.11	20.67	21.06	21.48	20.84
Central Africa	11.01	10.48	10.74	9.58	9.83	9.26	9.99	10.77	10.28	9.80	9.09	9.62	9.10
Northern Africa	26.93	28.99	27.69	26.94	26.04	27.19	28.07	28.07	29.05	30.99	30.58	28.68	28.73
Southern Africa	17.32	17.43	18.70	18.67	18.20	16.61	14.49	13.83	12.35	10.62	11.18	10.48	12.04
Western Africa	27.11	26.23	25.71	27.03	26.85	27.25	27.08	26.65	28.21	27.93	28.07	29.75	29.29

3.0 FISH PRODUCTION IN NORTHERN AFRICA

Total fish production from Northern Africa region in 2012 reached 2,847,795 tons representing over 29% of total Fish production in Africa (Table 2 and Figure 4).

Table 2: Categorized Fish production in Northern Africa Region

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Aquaculture	344,986	347,689	382,022	450,822	477,988	546,817	601,174	643,328	703,795	716,477
Captured	1,610,854	1,872,182	1,726,779	1,692,965	1,652,708	1,720,580	1,616,464	1,612,964	1,733,030	1,912,038
Northern Africa total	1,955,840	2,219,871	2,108,801	2,143,787	2,130,696	2,267,397	2,217,638	2,256,292	2,436,825	2,628,515

	2010	2011	2012
Aquaculture	930,530	1,000,827	1,032,655
Captured	1,841,946	1,645,681	1,815,139
Northern Africa total	2,772,476	2,646,509	2,847,795

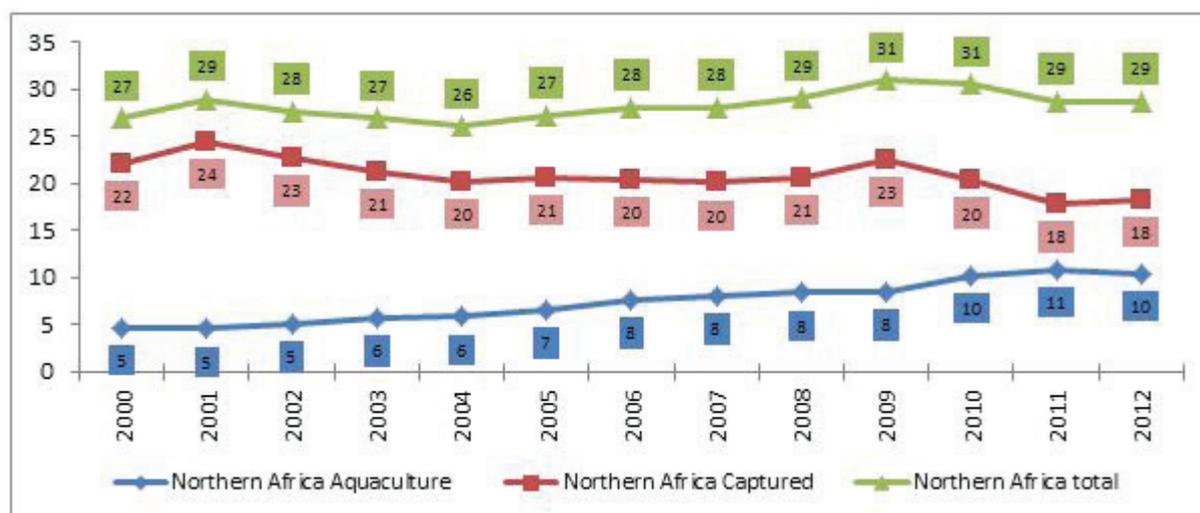


Figure 3: Total Fish production from Capture fisheries and Aquaculture in Northern Africa as a percentage of Total African Fish production from 2000-2012.

Most of fish production in the Northern Africa region is contributed by fish production from Egypt and Morocco. The two countries together produce about 90% of the Region total fish production leaving only less than 11% for the other four countries in the region (table 3).

Table 3: Total fish production from different countries as a % of Total Northern African production

Country \ Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Algeria	5.80	6.04	6.39	6.59	5.35	5.58	6.59	6.55	5.81	4.93	3.44	3.93	3.80
Egypt	37.04	34.75	38.01	40.88	40.60	39.22	43.78	44.68	43.82	41.58	47.07	51.47	48.18
Libya	2.56	2.14	2.09	1.95	1.88	1.66	1.57	1.43	1.97	1.99	1.81	1.14	1.24
Morocco	46.87	49.89	46.06	43.44	43.79	45.93	40.26	39.60	41.35	44.78	41.31	36.51	41.37
Sudan	2.76	2.66	2.78	2.83	3.03	2.67	2.64	2.99	2.89	2.80	2.65	2.76	1.26
Tunisia	4.97	4.52	4.68	4.31	5.34	4.93	5.15	4.76	4.17	3.91	3.72	4.19	4.15
Egypt + Morocco	83.91	84.64	84.06	84.32	84.39	85.15	84.05	84.27	85.17	86.36	88.38	87.98	89.55

3.1 Captured fisheries production in Northern Africa

The contribution of captured fishes from the Northern Africa Region in 2012 amounted to 22% of the total continental captured fish production and the Region came out as the second highest region after Western Africa region which contributed 31.6 % of the total continental production (Figure 4).

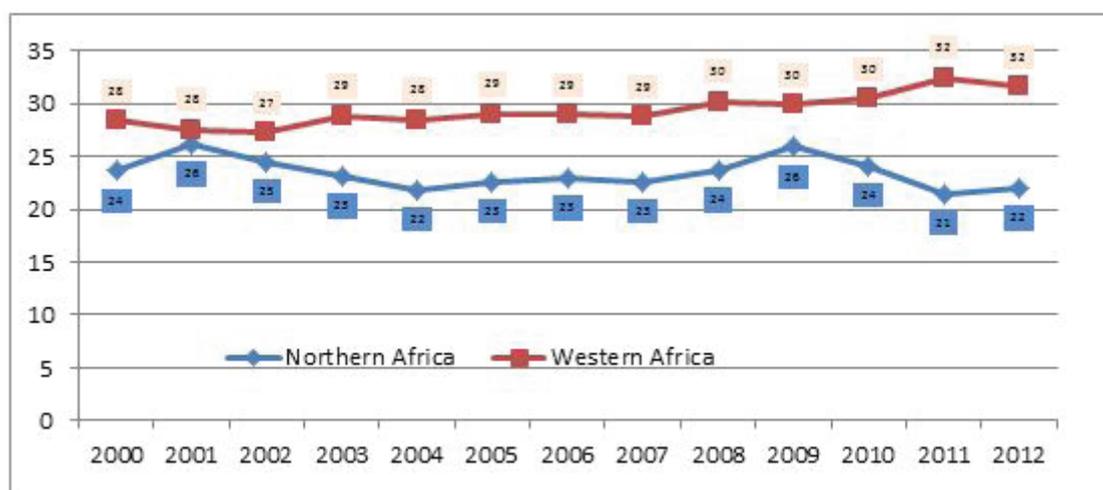


Figure 4: Captured fish production from Northern and Western Africa Regions as a percentage of Total African production during the period from 2000-2012

Captured fish in northern African region has always been a major contributor to the total fish production despite the continuously increasing aquaculture production. Despite the fact that, in terms of absolute numbers, captured fish production increased from 1,610,854 tons in 2000 to 1,815,139 tons in 2012 (Table 2), the percentage of captured fish in the total region's production, nevertheless, dropped from 82.36% in year 2000 to 63.74 % in 2012 (figure 5). This drop in the share percentage of captured fish production is resulting from the growing share of the aquaculture production which went up from 17.64% in 2000 to 36.26% in 2012 meaning doubling of its share in the total northern Africa fish production and tripling its quantity in terms of absolute numbers from 344,986 tons in 2000 to 1,032,655 tons in 2012 (table 2).

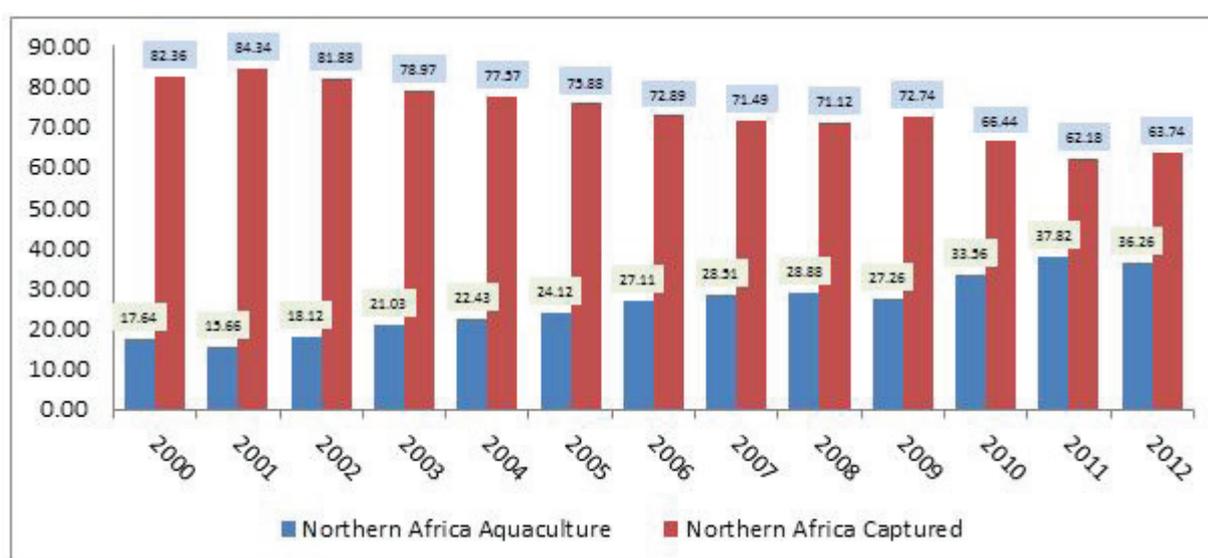


Figure 5: Captured fish and Aquaculture production expressed as a percentage of total Northern African region fish production

Most of the Captured fish production in the Northern Africa region is contributed by fish production from Egypt and Morocco. The two countries together produced about 80% of the Region total captured fish leaving only less than 20 % for the other four countries in the region (table 4). Morocco alone produced always more than 55% of the total region's captured fish during the period from 2000-2012 (Table 4)

Table 4: Captured fish production from different countries as a % of Total Northern African captured fish production

Country \ Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Algeria	7.02	7.14	7.78	8.33	6.87	7.34	9.02	9.14	8.01	7.02	7.14	7.78	8.33
Egypt	23.86	22.89	24.62	25.47	23.81	20.32	23.25	23.09	21.57	23.86	22.89	24.62	25.47
Libya	3.10	2.53	2.55	2.47	2.41	2.17	2.14	1.98	2.75	3.10	2.53	2.55	2.47
Morocco	56.79	59.08	56.15	54.92	56.35	60.40	55.17	55.29	58.06	56.79	59.08	56.15	54.92
Sudan	3.29	3.10	3.30	3.49	3.81	3.43	3.53	4.06	3.96	3.29	3.10	3.30	3.49
Tunisia	5.93	5.26	5.60	5.33	6.75	6.34	6.89	6.44	5.65	5.93	5.26	5.60	5.33
Egypt + Morocco	80.65	81.98	80.77	80.39	80.16	80.71	78.42	78.39	79.63	80.65	81.98	80.77	80.39

3.2 Aquaculture production in Northern Africa

Aquaculture production in The Northern Africa region reached 1,0320,655 tons in 2012 from 344,986 in 2000 equivalent to about 300% increase (Table 2) and representing over 63% of the total African aquaculture production (Figure 6).

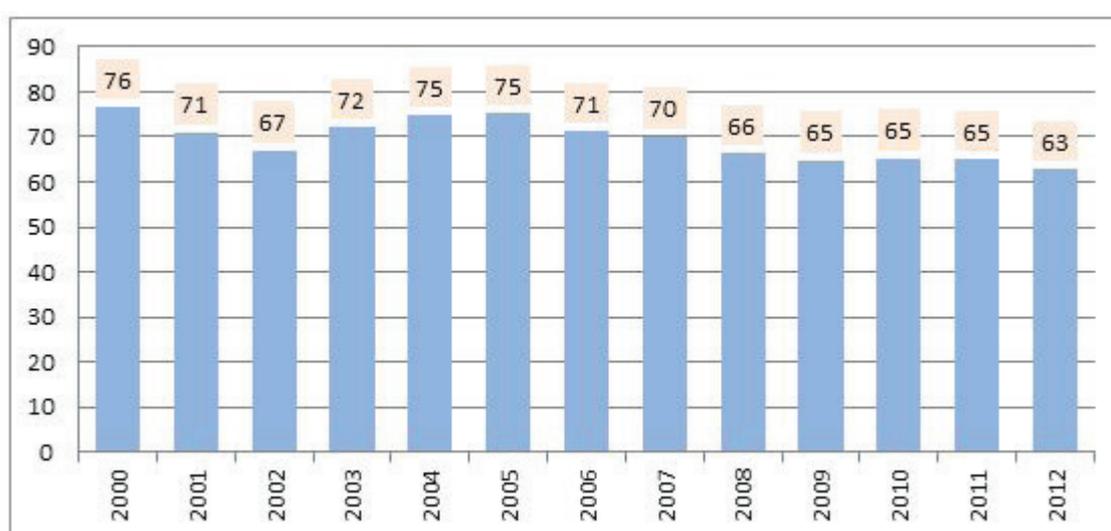


Figure 6: Northern Africa Aquaculture production as a % of total African Aquaculture Production

Over 98% of the total aquaculture production in the Northern Africa region is contributed by fish production from Egypt (Table 5). These production figures make us think about the aquaculture potential of the region especially in the marine aquaculture sector as we can see that Tunisian and Algerian production has increased more than four folds and five folds respectively during the last decade (Table 6). In other words there is big opportunity to use the unutilized high potential for increasing aquaculture production in the region keeping in mind the Egyptian aquaculture success story and the lessons to be learned from that.

Table 5: Aquaculture production from different countries as a % of Total Northern African aquaculture production

Country \ Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Algeria	0.10	0.13	0.12	0.09	0.12	0.07	0.05	0.06	0.40	0.30	0.19	0.22	0.26
Egypt	98.58	98.61	98.50	98.75	98.65	98.71	98.98	98.79	98.61	98.49	98.82	98.60	98.56
Libya	0.03	0.03	0.00	0.00	0.05	0.04	0.04	0.04	0.03	0.03	0.03	0.02	0.02
Morocco	0.55	0.40	0.44	0.34	0.36	0.41	0.19	0.25	0.20	0.21	0.16	0.14	0.14
Sudan	0.29	0.29	0.42	0.35	0.33	0.29	0.27	0.30	0.26	0.28	0.21	0.20	0.19
Tunisia	0.45	0.54	0.52	0.46	0.48	0.48	0.47	0.56	0.51	0.69	0.58	0.81	0.83

Table 6: Aquaculture production from different countries of the Northern African Countries from 2000-2012

Year Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Algeria	351	454	476	417	586	368	288	405	2780	2163	1759	2244	2648
Egypt	340093	342864	376296	445181	471535	539748	595030	635516	693815	705490	919585	986820	1017738
Libya	100	100	0	0	241	241	240	240	240	240	240	240	240
Morocco	1889	1403	1670	1538	1718	2257	1161	1636	1399	1477	1522	1397	1473
Sudan	1000	1000	1600	1600	1600	1600	1600	1950	1800	2000	2000	2000	1980
Tunisia	1553	1868	1980	2086	2308	2603	2855	3581	3561	4907	5424	8126	8577

4.0 CLOSER LOOK AT FISH PRODUCTION IN DIFFERENT COUNTRIES

4.1 Algeria:

Fish production in Algeria has not been doing that well specially the captured fish sector where its production reached its lowest level ever in a decade in the year 2000 and continued to be below expected production levels until 2012 where it recorded 105558 tons compared to 113160 tons in 2000 (Figure 7). Algerian aquaculture could play a major role in bringing fish production levels in the country to much higher levels that what is currently reported keeping in mind that the country possesses the required financial and natural resources to boost the aquaculture industry in the country. Technical support and backstopping could be easily obtained from Egypt in regards to inland water farming which has been the major component of the aquaculture sector so far. Also the unutilized potential for marine aquaculture in Algeria can tremendously increase aquaculture production specially that there would be a good market for their production to the EU markets and of course to the local markets. Again technical backstopping could be obtained from neighboring Tunisia or they can acquire technical knowhow from across the Mediterranean.

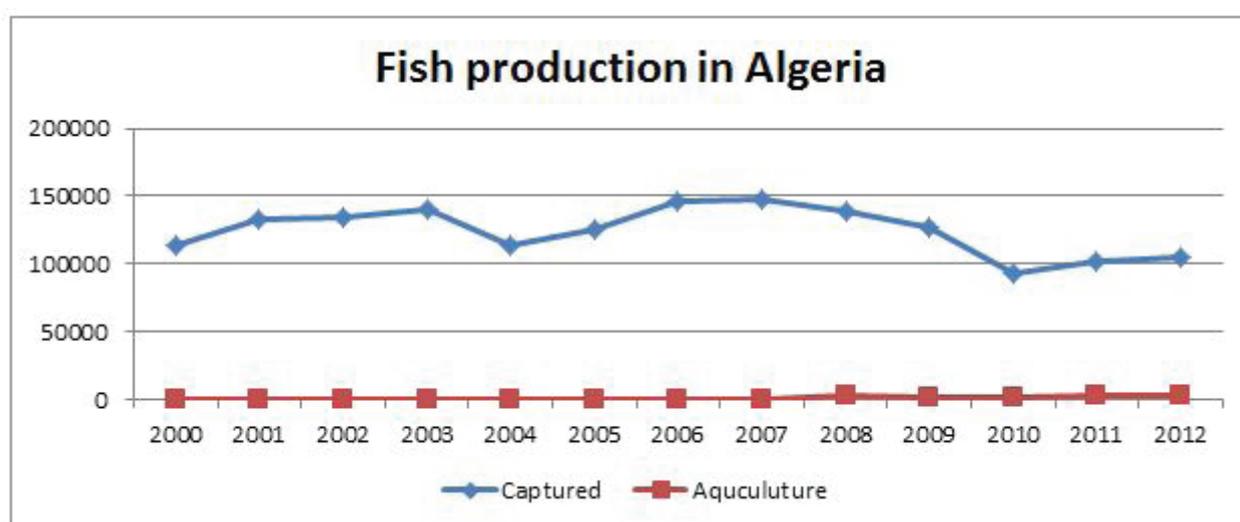


Figure 7: Categorized Aquaculture production in Algeria from 2000-2012

4.2 Egypt:

Egyptian fish production sector is quite unique and remarkable; its share of the total continental fish production currently in 2012 represents about 14% which is even higher than some of the regions in the continent (namely central and southern Africa regions) (Table 7).

Region \ Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Eastern Africa	17.63	16.86	17.16	17.77	19.09	19.69	20.36	20.68	20.11	20.67	21.06	21.48	20.84
Central Africa	11.01	10.48	10.74	9.58	9.83	9.26	9.99	10.77	10.28	9.80	9.09	9.62	9.10
Northern Africa	26.93	28.99	27.69	26.94	26.04	27.19	28.07	28.07	29.05	30.99	30.58	28.68	28.73
Southern Africa	17.32	17.43	18.70	18.67	18.20	16.61	14.49	13.83	12.35	10.62	11.18	10.48	12.04
Western Africa	27.11	26.23	25.71	27.03	26.85	27.25	27.08	26.65	28.21	27.93	28.07	29.75	29.29
Egypt as a % of Africa	9.97	10.08	10.52	11.01	10.57	10.67	12.29	12.54	12.73	12.88	14.39	14.76	13.84

As is the case for most of the countries in the region and globally Egyptian captured fisheries production either remained at the same production levels since 2000 or even declined which means that captured fish did not contribute any to the remarkable fish production increase in Egypt. This substantial increase came mainly from the growing aquaculture production in Egypt which reached over one million tons in 2012 from 340,000 tons in 2000 (Figure 8).

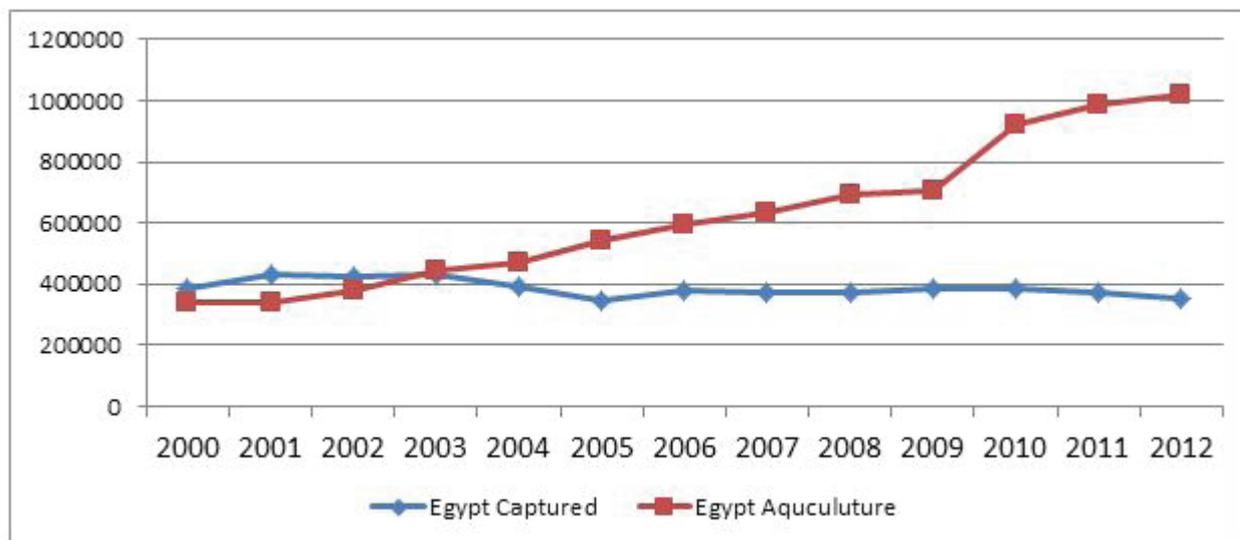


Figure 8: Fish production in Egypt from different sources

Currently Egypt is the second largest producer of farmed tilapia in the world and the largest global producer of farmed mullet and one of the top 10 aquaculture producers in the world.

In 2012, over 98% of the total aquaculture production in the Northern Africa region is contributed by fish production from Egypt and 62% of the African continent aquaculture production comes from Egypt (Figure 9).

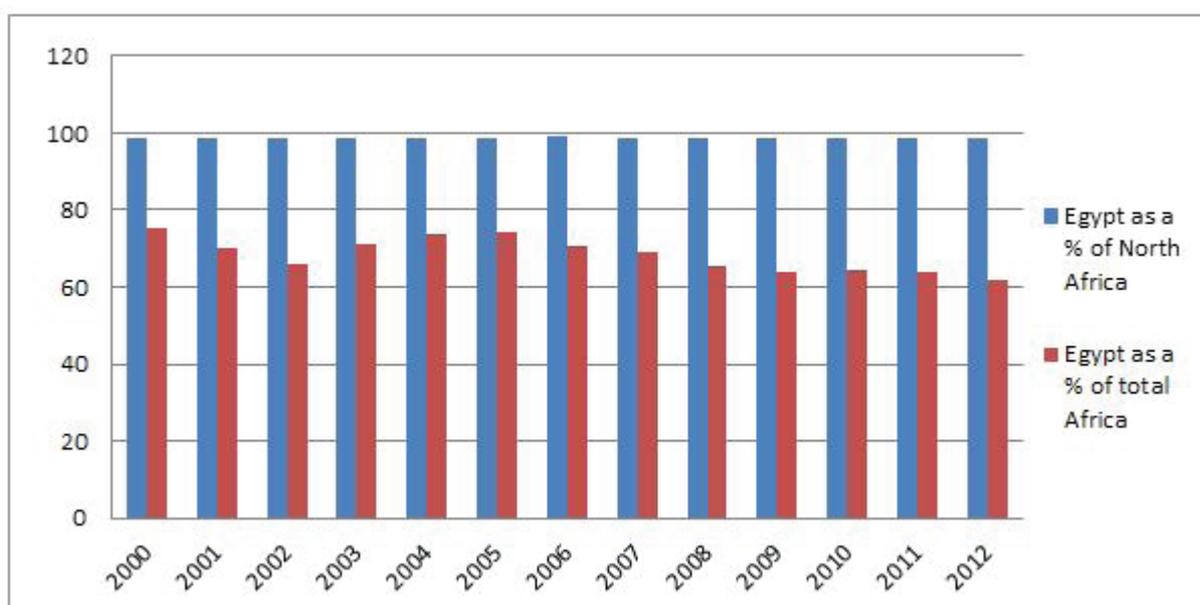


Figure 9: Egyptian Aquaculture production in the context of Northern Africa and continental Africa

There are many lessons to be learnt from the Egyptian aquaculture sector and building on the Egyptian experience could lead to a major progress and development in the fish production sector not just in the Northern African region but in the whole African continent if we could build a strong regional cooperation platform between the different countries in the region.

4.3 Libya:

Again fish production in Libya is not different from the other countries in the region like Algeria, Sudan and Tunisia. The main fish production source is from the captured fisheries which have not experienced any increase since 2000 despite the long coastal line of Libya and also relatively more productive fisheries than

say Egyptian Mediterranean fisheries. Aquaculture production in Libya has been of negligible value where it is reported to be 240 tons only in 2012 from marine fishes in marine farming. Libya is another case where there is good potential for increasing their fish production both from captured fisheries and hugely from marine cage farming along their coast line and by acquiring the technical knowhow from either north or south of the Mediterranean and they can afford to get the required help and pay for it.

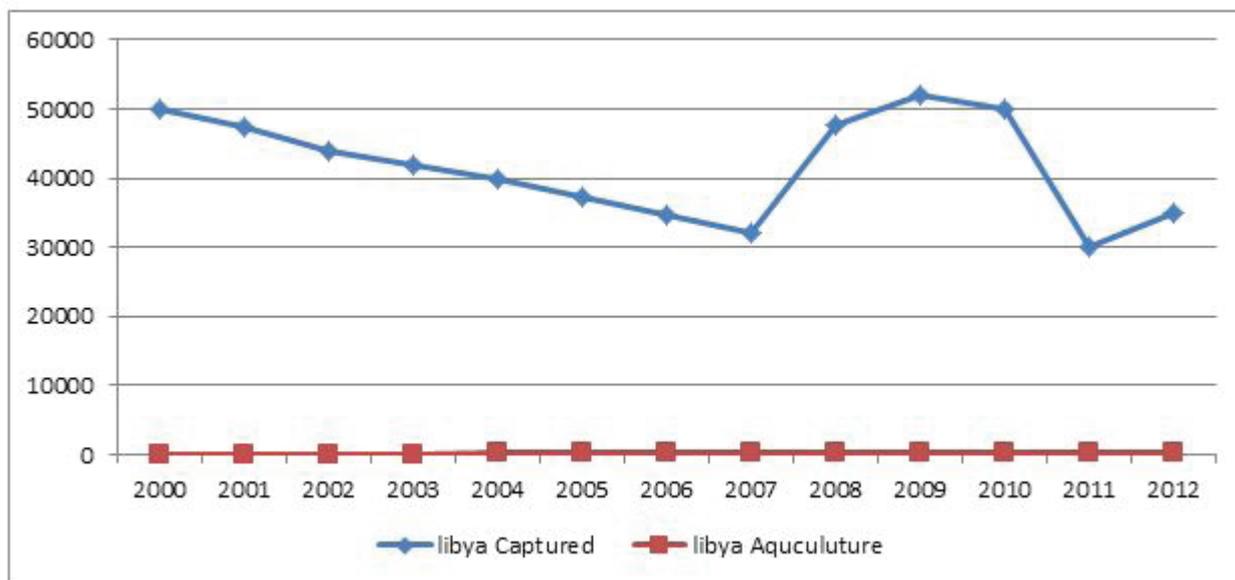


Figure 10: Fish production in Libya

4.4 Morocco:

Morocco is the second largest fish producer in the Northern African region after Egypt (Table 3) and the largest producer of captured fish. Morocco enjoys the treasure of having access to rich and highly productive fisheries on its Atlantic coast line besides its Mediterranean coast and strong cooperation with the European neighbors both for technical fishing and marketing of their products. Morocco alone produced always more than 55% of the total region’s captured fish during the period from 2000-2012 (Table 4) and the Moroccan captured fish production exceeded 1.1 million tons in 2012 (Figure 11). Aquaculture production in Morocco is quite negligible and has not witnessed any increase since 2000.

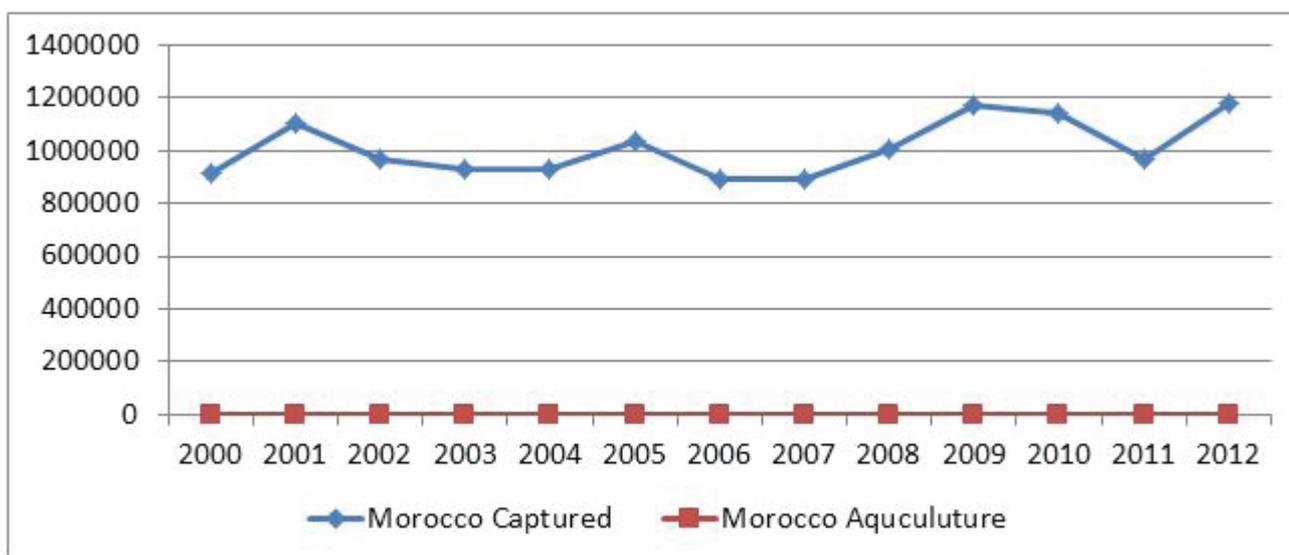


Figure 11: Fish production in Morocco

4.5 Sudan:

Current fish production statistics for Sudan are not at all reflecting the available resources in the country. Aquaculture production did not even reach 2000 tons in 2012 (figure 12). Capture fisheries production has been gradually increasing from 53010 tons in 2000 to 71008 tons in 2011 just before separation of south Sudan which resulted in a major drop of caught fishes to a low production level of 34008 tons in 2012. Sudan is another country in the region with a huge unutilized potential for aquaculture specially that the country enjoys good subtropical climatic conditions that allows for a year round growing season compared to only an eight months maximum growing season in Egypt. Sudan also has good water supply and plenty of land areas suitable for fish farming. Sudan can achieve high production levels from aquaculture through establishing fish farming activities possibly through some forms of joint ventures between Sudanese and other Arab nationals like the Egyptians who are willing to invest in such activities in Sudan.

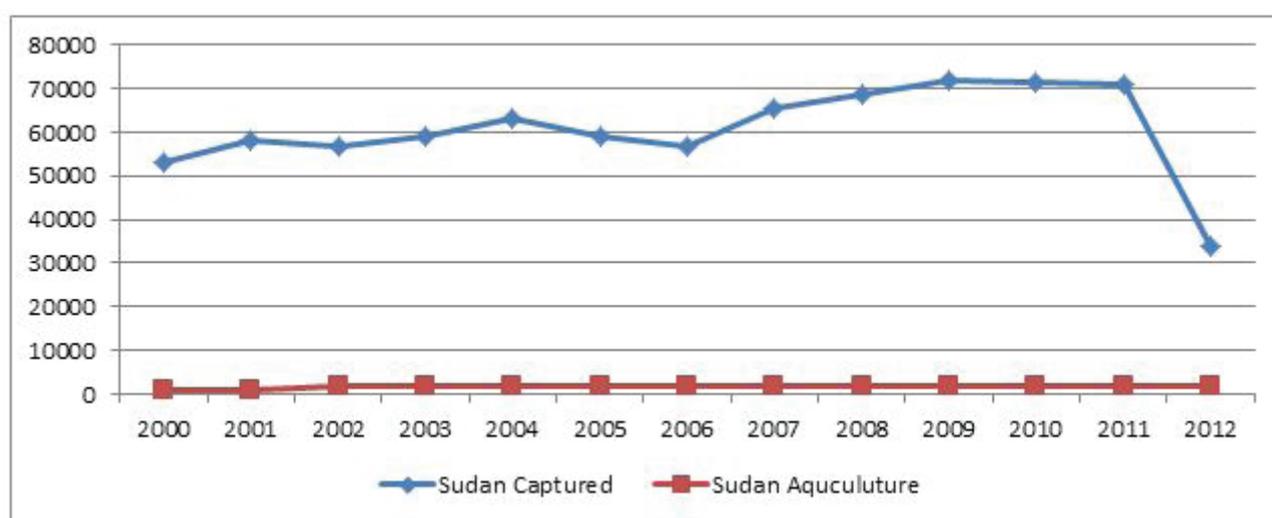
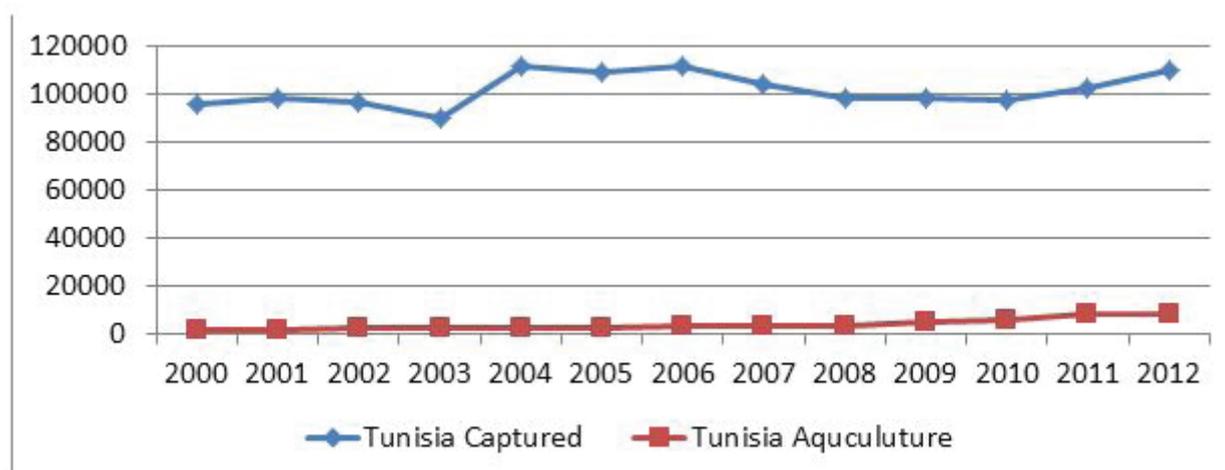


Figure 12: Fish production in Sudan

4.6 Tunisia:

Fish production in Tunisia is mainly from captured fisheries in the Mediterranean with a reasonable production levels around the 100,000 tons annually throughout the period from 2000 to 2012. Marine fish farming has become the main source of Tunisian aquaculture production special in the last five years when production moved from 3561 tons in 2008 to 8577 tons in 2012 (figure 13).



It is worth elaborating on some of the issues and challenges, opportunities and priority areas, and the key messages to keep in mind for future sector development.

Table 8. Status of exploitation of some commercially exploited fish and shellfish stocks in Northern CECAF region: FAO CECAF Report (2009), quoted from Mauritanian National Assessment report (2012)

Country	Species	Assessment result: Exploitation status	Management recommendations
Morocco	Merluccius merluccius	Overexploited	<ul style="list-style-type: none"> i. Reduce the current fishing effort (2008) ii. Close fishing during the months of June and July to protect the juveniles iii. Increase the mesh size of trawlers iv. Control and apply the existing regulations
Morocco	Pagellus acarne	Overexploited	<ul style="list-style-type: none"> i. Reduce the current (2008) fishing effort ii. Monitor existing management measures
Morocco	Parapeneus longirostris	Overexploited	Reduce significantly the current fishing effort (2006) to achieve a sustainable catch level permitting recovery of the stock
Dakhla de Cap Boujdor à Lagouira (26°N-20°50'N)	Octopus vulgaris	Overexploited	<ul style="list-style-type: none"> i. Reduce the current fishing effort of all fleets targeting Octopus ii. Strengthen control of management measures
Mauritania	Pagellus bellottii	Overexploited	Fishing effort should not exceed the current level
Mauritania	Pagrus caeruleostictus	Overexploited	Reduce the current fishing effort
Mauritania	Epinephelus aeneus	In danger of extinction	Close the fisheries targeting this species
Mauritania	Parapeneus longirostris	underexploited	Fishing effort should not exceed the current level
Mauritania	Penaeus notialis	Overexploited in terms of Biomass	Fishing effort should not exceed the current level (2008), to achieve a sustainable catch level permitting recovery the biomass of the stock
Cap Blanc (20°N-16°N)	Octopus vulgaris	Overexploited	<ul style="list-style-type: none"> i. Reduce the current fishing effort of all fleets targeting Octopus ii. Strengthen control of management measures

5.0 ISSUES AND CHALLENGES:

- Insufficient pan African cooperation and exchange of knowledge and technical expertise
- Lack of effective partnerships and stakeholders representative bodies and assemblies.
- Lack or absence of supportive policies
- Resource limitations (Human, financial and Natural)
- Enforcement of rules and regulations
- Insufficient information sharing within and between countries (databases and resources)
- Lack of a coherent continental and sub-regional policies

6.0 OPPORTUNITIES:

- fish is a high proportion of total animal protein intake in many African countries
- national food and nutrition security assessments indicate current situation as 'low' or 'at risk'
- baseline production indicates potential for effective intervention
- exploitation of Off-shore fisheries Resources
- best practices in African countries (Egyptian aquaculture)
- ready markets (national, regional and global Level)

7.0 PRIORITY AREAS

1. Encourage and establish means for pan African cooperation and exchange of knowledge and technical expertise
2. Promote and strengthen effective partnerships and stakeholders representative bodies and assemblies and gender awareness.
3. Development and implementation of sector supportive policies
4. Enhancement of available Resources (Human, financial and Natural) and implementing capacity building.
5. Promote and encourage fish trade between the countries of the region and across Africa (Infopeche, Infosamak)
6. Enforcement of rules and regulations pertaining to fisheries management

8.0 KEY MESSAGES

- Fish is an important contributor of affordable animal source food.
- The aquaculture sector has the greatest need of support to develop at scale
- Number of African countries has meaningful potential to produce fish at scale.
- Traditional livestock focus will make more sense in many settings.
- Only Egypt currently produces significant quantities of fish.
- High potential to contribute further to national and regional food security.
- Meeting this growth potential can also lead to employment growth.

CONCLUSION:

In conclusion it is obvious that there is good potential to push the fish production sector in the northern Africa region towards being an efficient and effective sector in supporting food security for the people of the region and towards providing reliable income sources for the people in the sector. This could be achieved through cross boundary cooperation between the countries of the region, exchange of knowledge, experience and good management of the commonly shared resources through formation of regional governing bodies for the joined natural resources such as the Mediterranean and the Nile River.

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