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Farming the waters for People and Food

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Regional Review:

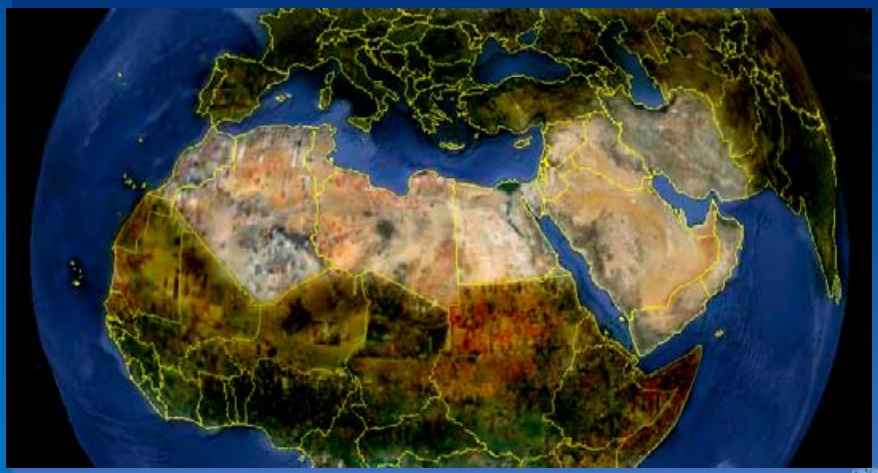
Near East and North Africa

by

Mr Issam Krouma

22–25 September 2010, Phuket, Thailand

The Near East and North Africa



NENA sub-regions

North Africa (Maghreb, North Central Africa) • **Near East** (Middle East, Arab Peninsula, Iran IR)

NENA countries

North Africa	Near East		
	Middle East	Arab Peninsula	Iran IR
Algeria	Iraq	Bahrain	
Egypt	Jordan	Kuwait	
Libya	Lebanon	Oman	
Morocco	O P T	Qatar	
Tunisia	Syria	Saudi Arabia	
		U A E	
		Yemen	

NENA Geography & Demography

16 Longitudes	&	6 Latitudes
Area	11 225 588	sq km
Desert area	8 097 412	sq km
Water area	134 310	sq km
Coastlines	20 362	km

Population, 2007	(million)	**355**
Average growth rate (range)	%	1.834 (1–3.1)
Projected population (2050)	(million)	**602**
Population density range	inhab. / sq km	3.5–1 013
Urban population range	%	28–98
Urban growth (range)	%	1.2–3.3
Total fertility (range)		1.87–5.7

NENA Socio-economy

- Unemployment is notably high, particularly among young people aged 15–29, a demographic representing 30% of the region's total population. The total regional unemployment rate in 2007, according to the ILO, was 13.2%, and among youth is as high as 25%.
- The participation rate of women labour force is particularly low. The employment to population ratio for men was 67%, but on 22% for women in 2007. Many women, particularly in the agricultural sector in rural societies, are self-employed or family workers. However, recent income generating programmes have focused on supporting opportunities for rural females and their families.
- Rough calculations and estimations of fisheries contribution (capture fishery + aquaculture) to GDP in the NENA region shows that the fisheries share is generally low – ranging from <0.1% up to 3%.

NENA Different Economies

GDP at current prices (2007)

Resource Poor Labor abundant	Resource Rich Labor abundant	Resource Rich Labor importing
Egypt, Jordan, Lebanon, Morocco, OPT, Tunisia	Algeria, Iran IR, Iraq, Syria, Yemen	Bahrain, Kuwait, Libya, Oman, Qatar, S. Arabia, UAE
RPLA Population (million) 133	RRLA Population (million) 178	RRLI Population (million) 44
RPLA GDP (US$ billion) 295	RRLA GDP (US$ billion) 510	RRLI GDP (US$ billion) 888
P. Cap. GDP US$ 2 215	P. Cap. GDP US$ 2 873	P. Cap. GDP US$ 20 267

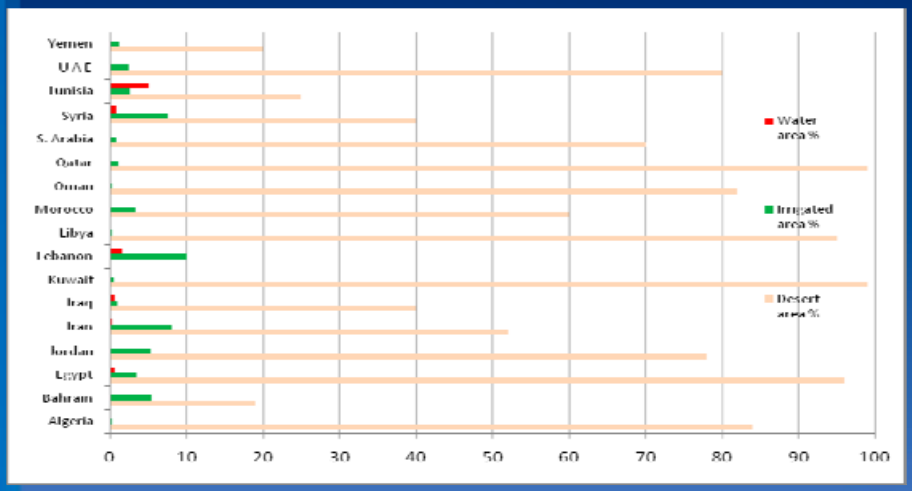
NENA Total GDP	GDP Growth 2007	NENA P. Cap. GDP
US$ billion 1 693	5.7%	US$ 4 774

NENA, Land & Water Resources

The NENA region is characterized by vast arid areas that occupy over 75% of the total land mass, while arable and permanent crops-land make up for less than 6%.

Water in the region is a scarce and valuable resource restricted to two major river systems: the Nile in the African sub-region and the Euphrates-Tigris system in the Asian sub-region.

NENA land & water resources



Areas of desert, irrigated land and fresh and brackish water surface as % of the total area in the NENA region

NENA aquaculture analysis

- Fish farming has been known in the NENA since the beginning of written history, however, modern aquaculture started in late 1920s.

- Despite the modest production output from the region, aquaculture increased six fold in the last decade in term of volume and value from 135 000 tonnes valued at US$ 326 million in the baseline year 1997 to just under 850 000 tonnes valued at US$ 1 927 million in 2007.

- The main driving forces responsible for expansion of the sector:

a) increased public health awareness and interest in fish products,
b) policies driven by need for consolidating domestic fish supply,
c) compensating for declining capture fishery landings,
d) strengthening the livelihood of rural communities, and
e) supporting food security programmes.

Aquaculture production analysis

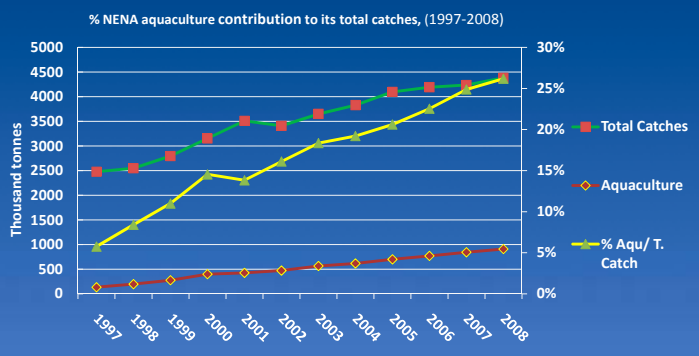
With its average annual growth rate in aquaculture production in the period 1997-2007 of over 20%, NENA ranked first amongst other regions in the globe.

Regions	1997 (in '000 mt)	2007 (in '000 mt)	Average annual rate of growth %
NENA	135	845	20.13
Sub-Saharan Africa	47	179	14.17
Lat. America & Caribbean	671	1 668	9.53
Asia & Pacific (excl. China)	6 113	12 599	7.5
Global	27 322	49 904	6.21
Asia & Pacific (incl. China)	24 144	44 020	6.19
Europe	1 805	2 515	3.37
North America	320	678	2.69

Average annual growth rate in aquaculture production volume in the regions of the Globe in descending order as to AARG in 1997-2007.

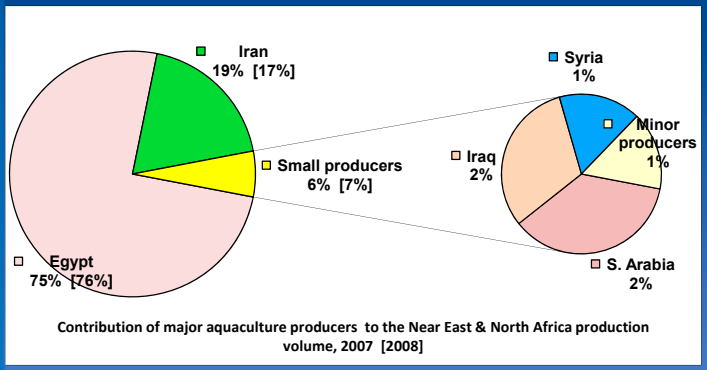
Aquaculture share in total fishery

Aquaculture production volume increased its contribution almost exponentially to the total regional fishery production from 5.76% in 1997 to round 25% in 2007 (26%). This exhibits a rising tendency of aquaculture to compensate declining capture fishery outputs and help satisfy increasing demand of domestic and international markets.



Share of major producers in NENA aquaculture production, 2007 [2008]

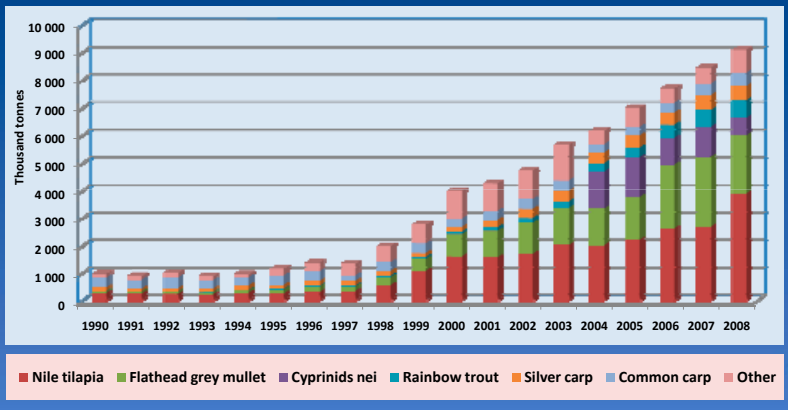
The top five producers in the region: Egypt, the Islamic Republic of Iran, the Kingdom of Saudi Arabia, Iraq and the Syrian Arab Republic have contributed 99 % of the total regional production in 2007.



Contribution of major aquaculture producers to the Near East & North Africa production volume, 2007 [2008]

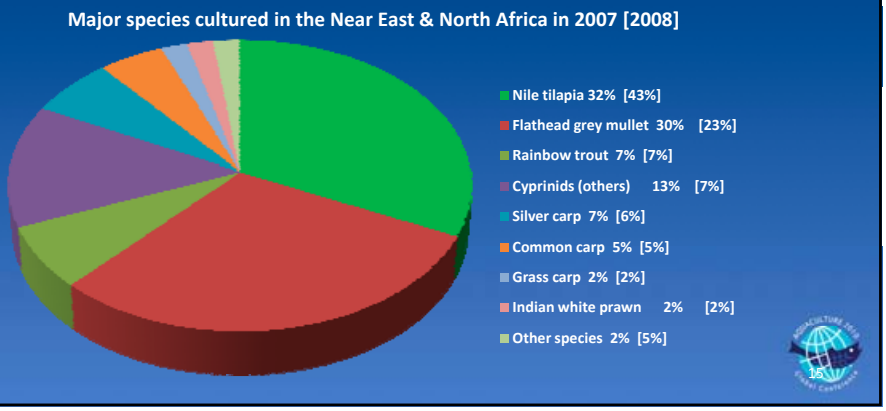
Major fish species cultured

The very threshold of the past ten year period (1998-2007) witnessed a remarkable increase in production volume of both Nile tilapia and flathead grey mullet that placed them as first and second, respectively, in the list of species being cultured. Cyprinids and rainbow trout ranked third and forth, respectively.



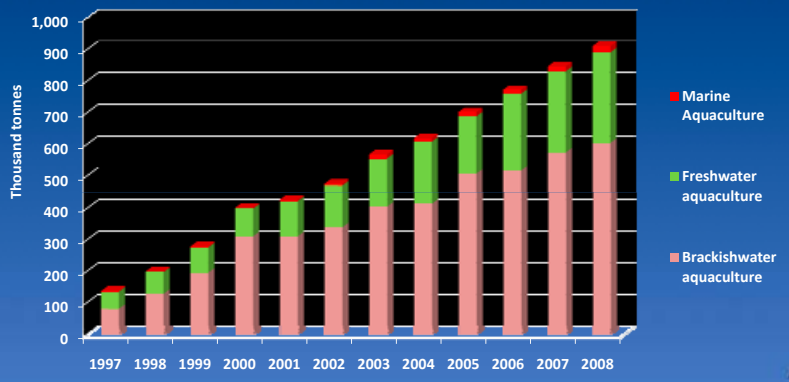
Proportion of major species 2007 [2008]

Aquaculture production was dominated by finfish (98%) with Nile tilapia at the top (32%), followed by mullets (30%), cyprinids (24%), rainbow trout (7%) and other species (7%).



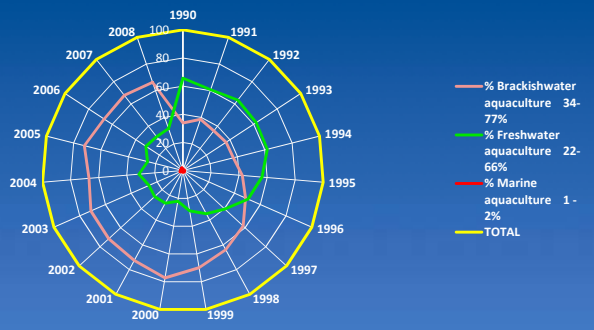
Culture environment, NENA (1997-2008)

Brackishwater aquaculture production, in the past decade, increased its contribution to total aquaculture production, ranking first in NENA production. Freshwater was second. Marine environment, despite achieving an absolute increase of over eight fold, kept its minor role in overall regional production.



Trends of culture environments' share in NENA aquaculture (1990-2008)

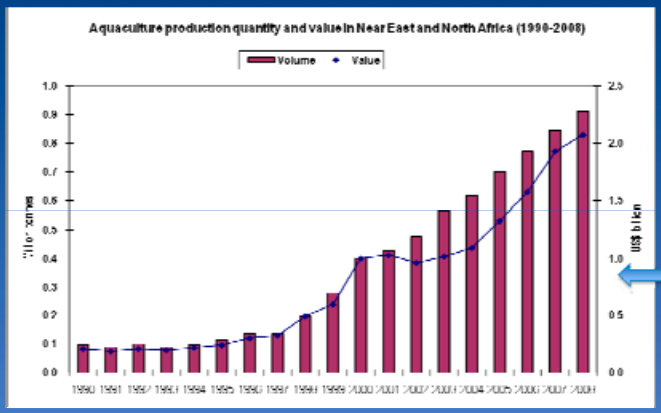
Freshwater has always been the lead fish producing environment in the NENA region. Only in 1996 outputs from brackishwater almost matched that from freshwater. In 1997 the yield of the former significantly exceeded that of the later. Thereafter, from 1998-2007 brackishwater maintained a progressive growth leaving freshwater behind.



Marine environment continued to be a minority as culturing environment yielding only 1 to 2%.

NENA aquaculture production value

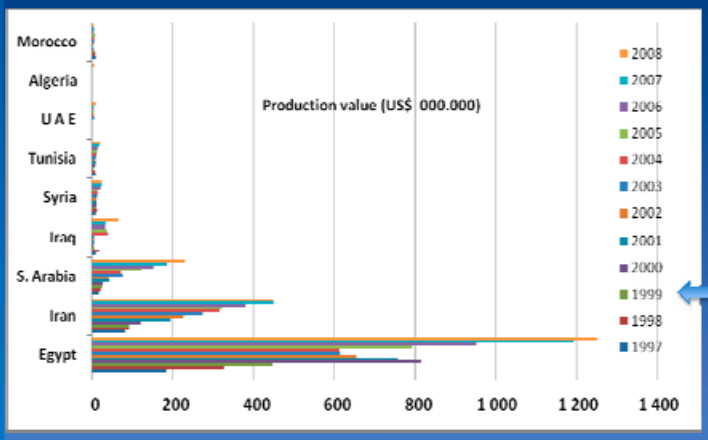
Idem to the over six fold increase (6.26) in production volume in the past decade, the value of production output increased almost similarly (5.92) [6.35]; from US$ 326 million in 1997 to US$ 1 928 million in 2007 [2 070 million].



Aquaculture output in term of production volume (million tonnes) and value (US$ billion) (1990-2008)

NENA aquaculture production value

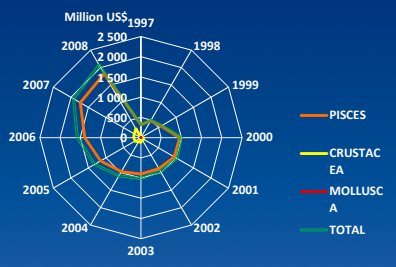
With no much differentiation among producing countries, in term of culturing higher or lower price species, the order of countries according to the rank of production value matches the order according to production volume.

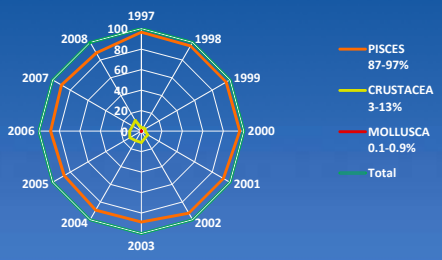


Aquaculture output value in top 9 NENA producers (US$ million) (1997–2008)

NENA aquaculture production value by main groups (1997-2008)

In the course of 1998-2007, the relative value of cultured finfish has kept a minimum of 84% of the total production value. The share of crustaceans increased from 3% in 1997 and reached a peak 13% and an average of 8.3%. The value of mollusks has never reached 1% of total production value.





Absolute value in US$ million

Relative value of major cultured groups (%)

Production systems & technologies 1

- **Extensive systems**
  - Culture-based fishery (Egypt, Iran IR, Syria, Tunisia)
  - Capture-based aquaculture (Egypt, Syria, Tunisia)
- **Semi-intensive systems**
  - Earth pond culture (Algeria, Egypt, Iran IR, Iraq, Syria)
- **Intensive systems**
  - Cage culture (Egypt, Iran IR, Morocco, Syria, Tunisia)
  - Raceway (Algeria, Egypt, Iran IR, Morocco, Syria, Tunisia)
  - Tank culture system (Egypt …)
- **Closed systems (re-circulated)** (Saudi Arabia)

Production systems & technologies 2

- **Integrated production systems**
  - **Fish-duck culture system**
    - Peking and Muscovy ducks on ponds. Avian flu risk!!
  - **Mariculture – polyculture system**
    - Marine fish is exclusively fed followed by a polyculture tank (mullet & shrimp) and finally seaweed culturing tank.
  - **Aquaculture – agriculture integration**
    - Rice-fish Culture system (tilapia in rice fields), Egypt.
    - Herbivorous fish maintains irrigation canals, Egypt + Syria
    - Family fish ponds to be discharged for irrigation, Syria.
  - **Aquaculture – agriculture rotation**
    - Fish-crop rotation as a remedy for desalination of salinated lands for eventual land cropping. Syria.
    - Tilapia – wheat rotation, Egypt.

Resources and services 1

- **Fish seeds**

• There is no indicator whether or not the hatchery produced fingerlings are sufficient to fulfill the development requirement or will represent a technical bottleneck.

• Except for experimental farming trials, fish and shrimp seeds are locally produced, mainly from small- and medium-sized hatcheries, or from self-supplied fish farms.

• Seed captured from the wild, practiced in Egypt and Syria and possibly other countries, compensate in most cases for shortages in seed self supply of native or well established exotic spices as regards actual production levels.

- **Fish feeds**

With the exception of specialised marine fish feeds, freshwater fish feeds are generally manufactured locally, often with some imported components, but always void of antibiotics.

Resources and services 2

- **Fish health services**

Despite the availability of several governmental laboratories and specialized veterinary faculties, services and clinics in the region, private services and clinics for fish health are still rare.

- **Financial capital**

Loans are mostly available for aquaculture producers.

- **Insurance services**

There is no particular insurance for aquaculture projects. However, commercial and development banks and farmer associations have recommended a specific system for aquaculture insurance.

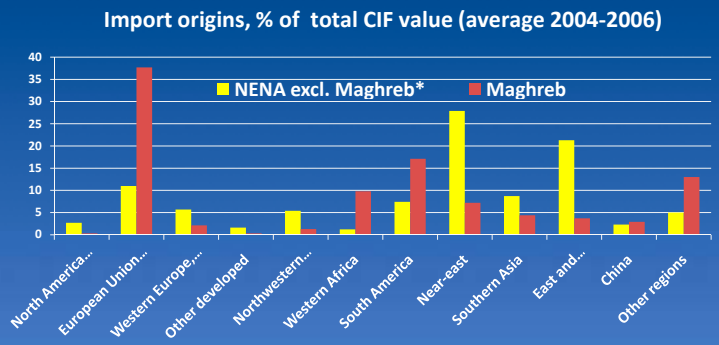
Aquaculture and environment

- Commercial aquaculture operations in the region have increasingly focused on environmentally responsible practices to warrant the proper use and conservation of existing natural resources.
- The introduction of exotics is primarily banned or subjected to strict official regulations. In all cases, such introduction is restricted to governmental competent sponsoring authorities.
- The use of drugs, chemicals and hormones is strictly forbidden and is restricted to the minimums up to the insisting needs and prescription of official veterinary bodies.
- In these regards, governments across the region have been enacting regulations and guidelines to ensure a sustainable and rational growth of the sector.

Markets and trades 1

Origins of NENA import of fish and fishery products

The majority of the Maghreb countries (Algeria, Morocco and Tunisia) imports come from the EU followed by South America and Western Africa, whereas imports of the other NENA countries come from within the region, East and Southern Asia and EU. Frozen fish and fishery products represented the main imported fishery product.

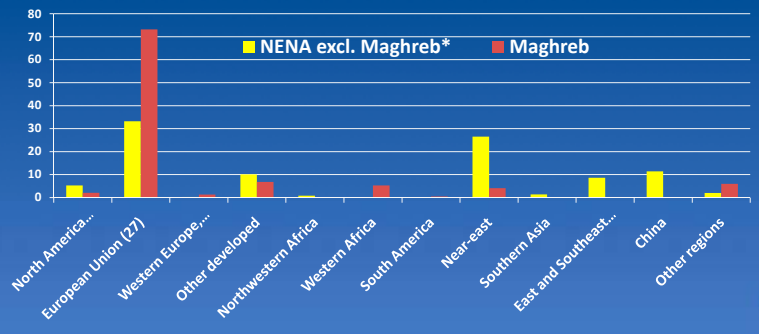


Markets and trades 2

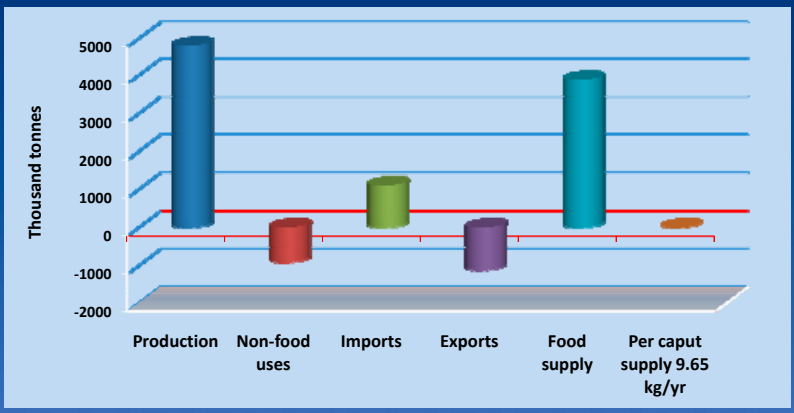
NENA fish & fishery products' export destinations

The Maghreb countries (Algeria, Morocco & Tunisia) were the major NENA fish exporters contributing round 70% of NENA fish export fob value. Their exports were mainly destined for EU. The exports of the other countries of the region were destined for EU, Near East, China and East and South Asia. The majority of exports are in the shape of cooled products; mainly whole and partially processed.

Export destinations, % of total FOB value (average 2004-2006)



NENA, apparent consumption of fish & fishery products



Apparent consumption of fish and fishery products in the NENA region (average 2003-2005)

External pressures

- **Drought**

The probability of more serious drought waves implied further precautions to be taken for potential natural or man made disasters. Such precautions have more or less been envisaged in the plans of most governments in the region.

- **Climate changes**

Hot weather represented a real challenge to fish farmers and successful aquaculture. This was more clearly reflected on conventional farming systems, especially when health care is not easily secured when needed.

Cold spells, similarly, harmed sensitive warm water fishes promoting diseases and higher losses. In many cases, fish farmers were forced to stop culturing given species like tilapias.

- **Aggressive exotics**

insufficiently considered introduction of exotic species had bad consequences, example: the sorrow incident of crawfish introduction into Egypt that caused severe damages to canal's dikes.

Research, training & extension

- Aquaculture research programmes have focused mainly on production techniques of ubiquitous and valuable species, on productivity enhancement, on nutrition and production of cost effective feeds and to a lesser extent on genetic improvements.

- Regional and international organizations have, however, contributed to the capacity building programmes in the region.

- These shortcomings have been recognized and innovative research plans across the region are expected to focus on the needs of the sector, engage private farming operations and address aquaculture diversification using indigenous and commercial species

Governance & management

- Policies governing the use of freshwater, across the region, are being revisited to some extent in order to ensure the optimal and rational management of this scarce strategic resource.
- Existing governmental strategies exhibit a general tendency to promote the rational use of natural resources, secure further employment and social wellbeing of rural labour.
- Strategic support is also being given to the development of mariculture through the introduction of technologies, policies and regulations that encourage investment particularly with regards to licensing and sea leases.

Bangkok Declaration

- Policy and regulation reforms that have supported aquaculture development over the past decade well reflect the recommendations and strategy of the Bangkok Declaration adopted in 2000 following the Conference on Aquaculture Development in the Third Millennium (20-25 February 2000, Bangkok, Thailand).
- It appears that the sector will continue to expand, particularly as new technologies are being introduced and institutional capacities are being strengthened.

Salient issues 1

- **Shortage of fish seeds** (species/timings)

There are shortages in tilapia seeds during April / May. There is a clear deficit in marine fingerlings at affordable prices. Similarly, the naturally occurring fingerlings of flathead grey mullet, *Mugil cephalus,* are insufficient to support the growing aquaculture. The same is true for sea bass and sea bream captured in the wild.

- **Feeds–fish price balance**

Besides the insufficiently balanced fish feeds locally produced, another balance is lacking. The period 1995–2009 witnessed an increase in the price of fish feed (25% protein) from US$ 165/mt to US$ 550/mt. This coincided with a drop in tilapia prices for grade II from an average of US$ 1.45/kg in 1999 reaching as low as US$ 1.10/kg in 2009.

Salient issues 2

- **Species Diversification**

According to actual aquaculture production, mainly comprising tilapias, mullets and carps while, it is clear enough that other species cultured represent only 11% while many others have not yet been considered for aquaculture purpose. Crustaceans and molluscs are still represented by very few species.

- **System Diversification**

Along with the presence of numerous efficient production systems, more than 96% of actual production output is obtained from pond and cage culture systems.

Salient issues 3

- **Incorporating domestic species**

Except for Egypt and Iran IR, concentration has been so far made on exotic species for aquaculture purposes, whereas native species seem to qualify for better performance.

- **Research, training and extension**

Despite research activities being significant in some countries, the region as a whole lags behind in terms of applied research in support of the industry with often inadequate and ineffective training and extension services to transfer farming know-how and management practices.

- **Exchange of information**

The level at which information is posted for exchange is still below expectations. The content is as well poor and inconsistent.

The ways forward 1

- More flexible but rational policy in allocation of rights for sustainable utilization of natural resources in an optimal and rational management of scarce strategic resources.
- Concentrating on land and water-saving aquaculture practices (e.g. recirculation system and cage culture).
- Further research activities aiming to promote productivity of water volume unit, spawn and feed native species in captivity.
- Additional improvement of fish feeds produced in the region.

The ways forward 2

- Expanding and strengthening integrated production systems to the utmost possible level in an environmental friendly manners.
- Further promotion of small-scale fish farming that fits limited water and land resources and makes rational use of them.
- Promoting marine fish farming including new molluscans, crustaceans and fish species.

Thanks for your kind attention

See you in 10 years from now!!

Issam KROUMA