Egyptian Fishery

with a special emphasis on aquaculture development and outlook

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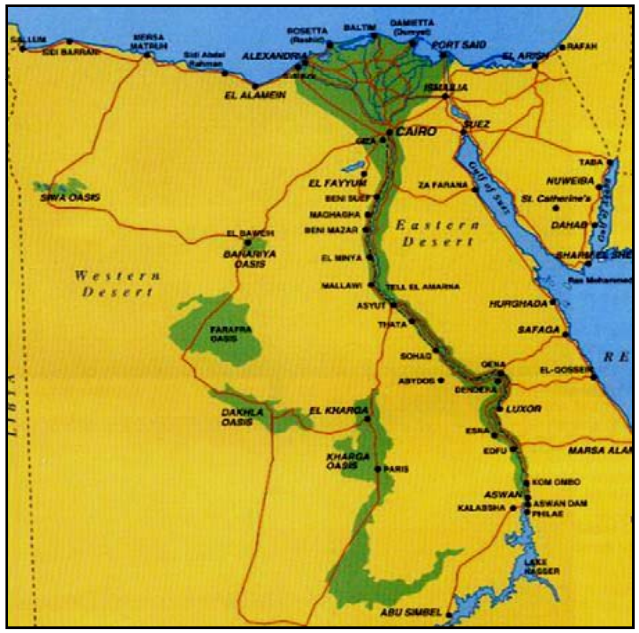
Fishery resources in Egypt



Mediterranean, Red Sea, River Nile & lakes are the main sources for capture fisheries.

Total fish production has increased from 347,000 t (1992) to 1,067,000 t (2008).

Contribution of fish farming (aquaculture) increased from 17% in 1992 to 65% in 2008.

Egypt is the 11th globally in aquaculture

Facts – Total fish production (GAFRD)

Year	2002	2003	2004	2005	2006	2007	2008
Fishery	425400	431123	393494	349553	375894	372491	373815
Aquaculture	376066	444867	471535	539747	595029	635517	693815
Total	801466	875990	865029	889300	970923	1008008	1067630

GAFRD = General Authority for Fish Resources Development

Mode of capture fishery

Fluctuating/declining:

General fishery

Specific harvest decline (groups/species)

Sea cucumber - (serious decline) - Red Sea

Octopus – could reach overfishing level Mediterranean

Aquaculture is the immediate source for fish production

Egyptian Aquaculture
(historic background)

- World Bank mission in 1978 highlighted a good opportunity for aquaculture in Egypt
- The development of aquaculture started in the early 1980s under the following conditions:
  - No first use Nile water should be allowed to fish farms
  - Only non-agricultural land could be used in aquaculture
- Law 124/1983 that governs fishery sector has incorporated above conditions
- The law is still in force, although there are some change suggestions are currently under discussion especially in regard to water use

Contribution of aquaculture (Rising) (2002-2008) – 1000s tons (GAFRD)

Source	2002	2004	2006	2008
Sea (s)	132.4	111.4	119.6	136.2
Lakes	167.9	177.1	151.2	158.9
Nile	120.8	105.0	105.0	79.7
Aquaculture	376.2	471.5	595.2	693.8
Total	810.5	865.0	971.0	1067.6
Aquaculture (%)	44	54	61	65

Features of Egyptian aquaculture

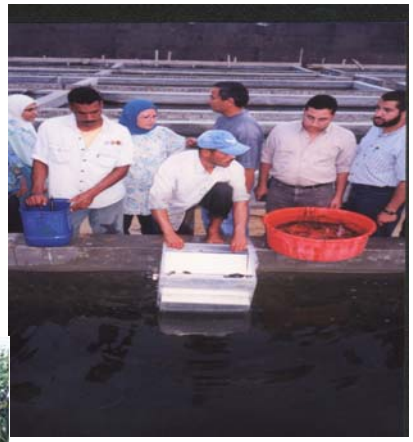
(narrow production basket)

Species	2007		2008	
	ton	%	ton	%
Tilapia	265862	41.84	386186	55.67
Mullet	252506	39.73	209313	30.17
Carps	109656	17.25	73206	10.55
Others	7492	1.18	25110	3.61
Total	635516	100	693815	100

Egypt is the world second in regard to tilapia production, first in mullet production (China has the lead for tilapia)

Earthen ponds: Will remain the main production system (for economic reasons)

Various types of aquaculture



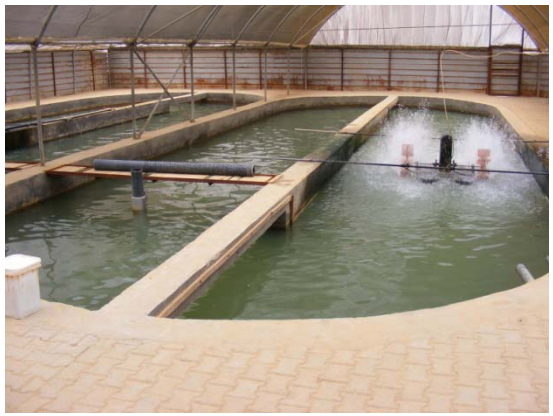
Nile cage aquaculture

Banning/Piloting

Damietta/Rosetta Branches (banned – lifted)

Rayaan cages (in practice)

Emerging systems (desert aquaculture)



Fresh or Marine

Advantages:

All-year production

Good candidate for export

Usually integrated with other plant or livestock

Limitation:

Sustainability of underground water

Fish seed collection

- The only source for mullet farming (no commercial mullet hatchery)
- Same is true for European seabass and gilthead seabream (few millions are hatchery produced
- Total collected fry fluctuates & on the decline (76 million in 2008)
- About **97%** of collected fry in 2008 are mullets

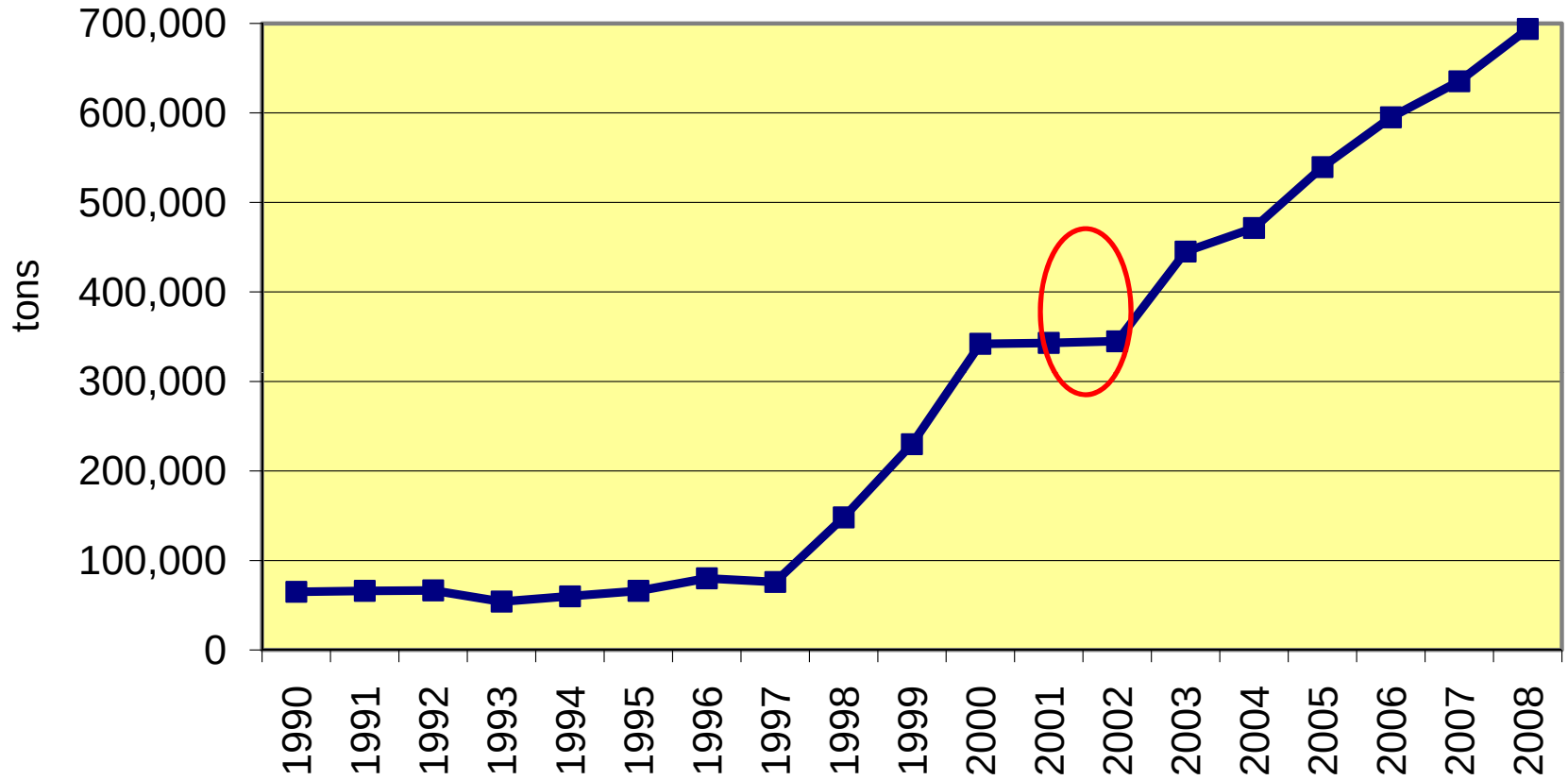
Fish seed production

- Large number of tilapia hatcheries in the present. About 90% belong to private sector
- Fingerlings of carps are produced mainly in governmental hatcheries
- Common carp ⟶ Rice-fish culture
- Grass carp ⟶ Biological control of aquatic plants
- Few marine hatcheries are in limited operation (15 million in 2008)

Fish feed industry

- A growing industry (about 300,000 tons at present)
- Most of feed ingredients are imported
- Cost of feed is a major issue in the present
- Some feed mills have got or approaching – “Good Manufacturing Practices” standards
- Some feed is exported to Arab and African countries
- A room for development still there. About a million tons will be needed by 2017

Aquaculture Development (1990-2008)



Development is fluctuating/slowing down/picking up

Production technology is not the problem while farming economics is the real challenge

Consumption and trade

- Per capita fish consumption in Egypt = close to world average (16 kg/year)
- Fish import fills the gap between national production and consumption
- National strategy targets 1.5 million tons by 2017 in order to maintain the per capita consumption at 16 kg/year from local production
- Only a modest quantity of marine capture fishery is exported

Fish trade (import & export) - GAFRD

Fishery resources	2007		2008	
	ton	LE,000	ton	LE,000
Local production	1008008	10827152	1067630	10814352
Imports	258931	1221895	136807	2034893
Exports	**4417**	**25352**	**6727**	**59510**
Total for consumption	1262522		1197710	

Fish farming and land resources

•By law, fish farming should never develop on agricultural lands

•Salty lands are temporarily allowed to aquaculture for a specific period. Lands switch to agriculture once salt is leached and land suits agricultural production

• Desert lands are allowed for aquaculture conditioned to the sustainability of underground water

Fish farming and water management

Because tilapia is less tolerant to winter cold, it turns to a limiting species. This affects pond management:

- Growing season starts when temperature warms up (April)
- Peak of harvesting (October – December/January)
- Farms that rely on ground water (warm) enjoy flexible management systems – Similarly marine farms
- Greenhouses (hatcheries): Starting activities during winter months in order to produce as outside temperature warms up

Pond management & water

Tilapia (harvesting)

Over-wintering tilapia

All-year round tilapia farming (well water)

Allocation of water resources

Year	Water (billion m^3) - Stakeholders				Total
	Agriculture*	Drinking	Industry	Navigation	
1985	49.7	3.7	2.9	4.0	60.3
1990	49.7	4.8	3.1	4.0	61.6
1995	49.7	5.9	3.6	4.0	63.2
2000	49.7	6.8	4.0	4.0	64.5

Source: Ministry of Water Resources and Irrigation, Water policy for Egypt, (unpublished data); Cited in a study titled "Northen Lakes between plant and fish production", Institute for National Planning", 1985; Planning and development in Egypt.

*** Aquaculture was never specified as an independent stakeholder**

Per capita of water is declining over time (population growth); poverty line in the present: 680 m^3/person/year

Water scarcity and aquaculture

- Aquaculture has no chance of the use of Nile water (with the exception of hatcheries)
- In water reservoirs used for agricultural crops, fish farming seems an acceptable practice
- Whenever water resources are permitted for aquaculture such as underground water, intensification and/or integration is currently in practice
- Piloting of high technology systems has launched (closed system)
- Promoting the utilization of under utilized water especially marine waters and brackish underground waters

Intensification

Concept - Progress

Intensification trend is widely adopted under the limitation of land/water

Water scarcity and aquaculture: Rotation with strategic crops (wheat & alfalfa)

- Promoting the integration or rotation (e.g. wheat and alfalfa)
- Expanding and promising (win-win situation)
- No available figures about the acreage of the rotation practice
- The economics is encouraging

Adopting environmentally-friendly practices

Fish production in agricultural water reservoirs

Banana and Guava (Wadi Natroun)

Banana (Behira)

Filtration of aquaculture water before its use in agriculture

Behira

Expanding production basket

- There is a growing interest in the farming of some native species (e.g. African catfish and Nile perch).
- The availability of Nile perch seed and the low marketability of African catfish represent a major constrain
- Expanding production basket could be partially addressed through fish processing practices and added value products.

Hatchery technology has not developed yet

Seed production is now possible; Catfish is not enjoying enough consumer acceptance

Expanding production basket

Promoting marine aquaculture

- Present production of marine species is far below potential
- The competition over sources among various sectors (e.g. tourism) represents a main obstacle hindering the development of marine aquaculture
- Transferring the know how from Asia and Europe is carried out according to producers through various business protocols

Expanding production basket

Promoting marine aquaculture

Existing marine aquaculture initiatives is sufficient to start with especially hatcheries and feed mills

Adequately trained human resources are available to start with

Land-based farms on brackish & marine water is a promising once technically and economically justified

Off-shore cages is getting more attention in the present

Conclusion (1)

- Egyptian aquaculture has been recognized as the immediate source of fishery and so animal protein
- Even though aquaculture is currently taking the lead in fish production in Egypt, its contribution is expected to increase further
- In order to achieve target production from aquaculture, a tool package should be developed including technical, legislative, trade and others should be developed
- The national strategic plan should be flexible and capable to deal with the dynamics in fishery production regionally and globally especially those that can affect fishery sector in Egypt

Conclusion (2)

- The high rank Egyptian aquaculture is having in the national strategy for animal protein production should be reflected in the allocation of resources especially land and water
- Fish production although focuses more on local demand, fish export should be always attempted bearing in mind the climatic condition as will as the closeness to target markets
- In the light of the high population growth rate, the deficit in red meat production and the consumption preference to fish among Egyptian population, aquaculture is a promising sector for bridging the gap between fish supply and demand

Thanks for your time. I hope you have found in this presentation some of what you were looking for

While welcoming you to use the contents of this presentation, thanks in advance for referring to it

If you have any comment about this presentation and you need clarification or elaboration, I would welcome your contact via my email address

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