



# Global Conference on Aquaculture 2010

Farming the waters for People and Food

22-25 September 2010, Phuket, Thailand

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**Global Conference  
on  
Aquaculture 2010**

**Session 2: Regional and Global  
Reviews on Aquaculture**  
**Aquaculture Development in Africa:  
Current Status and Future  
Prospects**

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22–25 September 2010, Phuket, Thailand



## Main Highlights

- A region with the least production globally
- Has registered 5-fold increase in production between 1998 and 2008 (From 42 587 to 238 877 tonnes)
- Emergence and intensification of private sector led small-scale and medium size enterprises
- Expansion of large commercial ventures, stimulated in some cases by growing public support and inflow of foreign capital
- Importance of private-public sector linkages
- Management practices in most undertakings adhere to standard sanitary processes and strategies are adopted to safeguard producers and consumers

## The Region: Sub-Saharan Africa



### 1. Social and Economic Background

## Social and Economic Background

- Covers 55 countries divided into 5 Sub regions
- Total population about 800 million in mid-2009
- High fertility with growth rate > 2 percent/yr.
- Preponderance of young under 15 years (29 percent)
- High incidence of HIV/AIDS (> 2 %), and other preventable diseases (tuberculosis, malaria, etc)
- Agriculture plays dominant role in livelihoods

## Social and Economic Background (2)

- Significant differences in GDP per capita (from US\$290 in Congo, D.R to US\$21 700 in E. Guinea)
- Stagnation in marine capture fisheries with limited increase from inland fisheries production over last decade
- Share of fisheries in national economies < 2 percent
- Share of aquaculture in national economies insignificant
- Per capita fish consumption very variable about 7.8 kg/yr; Lowest worldwide and declining
- High demand for fish, several countries are net importers

## 2. General Characteristics of the Sector

### General Characteristics of the Sector

- Practiced in all three aquatic environments; high concentration and greatest production (about 95 percent) from freshwater
- The changing profile of aquaculture producers
- New production systems (cages, tanks) have been introduced, refined or improved
- Integrated farming systems are contributing in sustainable livelihoods to small scale producers
- Management of SMEs are vertically integrated, environmentally responsible and socially acceptable

## Small versus Large-Scale Production Systems

Small-Scale Low Inputs



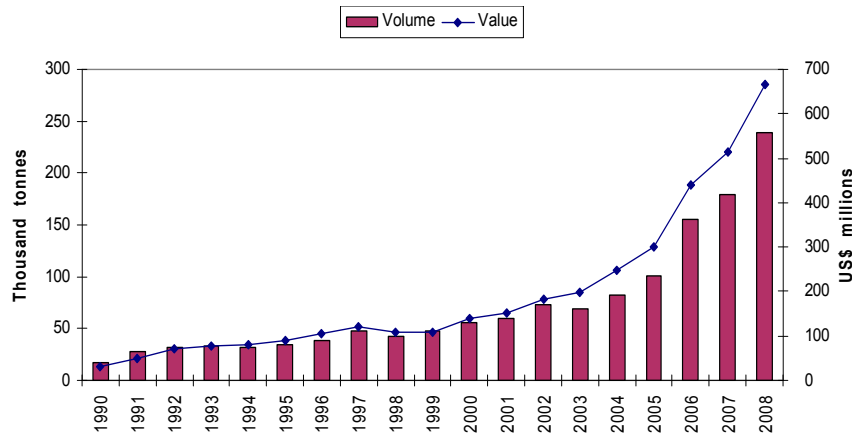
## Small-scale Versus Large-scale Production Systems

Large-scale Production System



## Food Fish Production and Growth

Aquaculture production quantity and value in Sub-Saharan Africa (excluding aquatic plants)



Source: FAO 2009a. FAO Fisheries and Aquaculture Department, Fishery Information, Data and Statistics Unit. FishStat Plus Version 2.32. Universal software for fishery statistics time series. Rome ( )

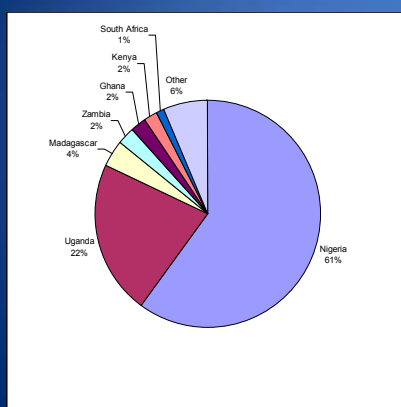
## Top Ten Producers

Country	2005	2006	2007	2008	APR 1998-2008
Nigeria	56 355	84 578	85 087	143 207	21.48
Uganda	10 817	32 392	51 110	52 250	66.45
Madagascar	9 396	11 233	11 288	9 581	7.84
Zambia	5 125	5 210	5 876	5 640	3.09
Ghana	1 154	2 270	3 820	5 594	12.01
Kenya	1 047	1 012	4 240	4 452	40.08
South Africa	2 895	3 037	2 669	3 215	-4.46
Congo, Dem. Rep. of the	2 965	2 970	2 970	2 970	4.94
Zimbabwe	2 452	2 450	2 450	2 450	30.58
Sudan	1 600	1 600	1 950	2 000	7.18
Others	8 226	8 253	7 670	7 818	
<b>TOTAL</b>	<b>101 244</b>	<b>154 905</b>	<b>178 680</b>	<b>238 877</b>	<b>15.8</b>

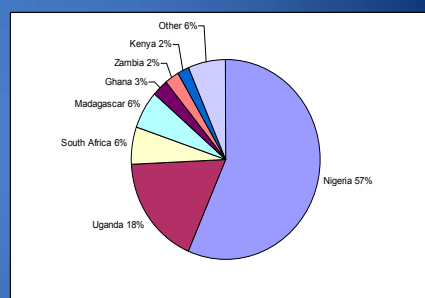
Source: FAO 2009a. FAO Fisheries and Aquaculture Department, Fishery Information, Data and Statistics Unit. FishStat Plus Version 2.32. Universal software for fishery statistics time series. Rome ( )

## Major producers 2008

Major producers in terms of quantity



Major producers in terms of value



Source: FAO 2009a. FAO Fisheries and Aquaculture Department, Fishery Information, Data and Statistics Unit. FishStat Plus Version 2.32. Universal software for fishery statistics time series. Rome ( )

## Production by Geographical Sub-Regions (Quantity)

Country	Quantity in tonnes						
	2003	2004	2005	2006	2007	2008	APR 2003-2008
Central Africa	3 506	3 539	3 586	3 613	3 649	3 689	4.94
Eastern Africa	26 835	27 037	32 966	56 906	78 574	77 991	21.87
Northern Africa	1600	1600	1600	1600	1950	2000	7.18
Southern Africa	3 832	3 161	2 946	3 091	2 828	3 334	-4.36
Western Africa	33 773	47 155	60 146	89 695	91 679	151 863	20.61
<b>Total</b>	<b>69 546</b>	<b>82 492</b>	<b>101 244</b>	<b>154 905</b>	<b>178 680</b>	<b>238 877</b>	<b>18.82</b>

Country	Value in US Dollars						
	2003	2004	2005	2006	2007	2008	APR 2003-2008
Central Africa	8 558	8 733	8 861	9 013	9 234	9 396	5.46
Eastern Africa	75 376	76 693	88 816	143 312	210 080	205 285	19.7
Northern Africa	2280	2280	2280	2280	3840	3940	10.14
Southern Africa	27 600	31 235	34 218	34 516	32 916	41 812	12.65
Western Africa	83 076	129 850	166 643	249 803	257 112	403 955	22.47
<b>Total</b>	<b>196 889</b>	<b>248 791</b>	<b>300 818</b>	<b>438 924</b>	<b>513 182</b>	<b>665 389</b>	<b>20.4</b>

Source: FAO 2009a. FAO Fisheries and Aquaculture Department, Fishery Information, Data and Statistics Unit. FishStat Plus Version 2.32. Universal software for fishery statistics time series. Rome ( )



## Production by Aquatic Environments (2003 - 2008)

	2003			2004			2005		
Environment	Quantity	Value	% value	Quantity	Value	% value	Quantity	Value	% value
Freshwater	58 785	123 706	63.20%	71 957	172 785	69.80%	89 841	217 776	72.70%
Brackishwater	446	1 262	0.60%	440	1 285	0.50%	561	1 523.5	0.50%
Marine	10 315	70 725	36.10%	10 095	73 291	29.60%	10 842	80 201	26.70%
<b>Total</b>	<b>69 546</b>	<b>196 889</b>	<b>100%</b>	<b>82 492</b>	<b>248 791</b>	<b>100%</b>	<b>101 244</b>	<b>300 818</b>	<b>100%</b>

	2006			2007			2008		
Environment	Quantity	Value	% value	Quantity	Value	% value	Quantity	Value	% value
Freshwater	141 935	348 364.6	79.50%	167 272	430 010	84.20%	228 753	582 198	88.02
Brackishwater	454	1 239.1	0.20%	143	464	0.09%	154	633.1	0.1
Marine	12 516	88 107.6	20.10%	11 265	79 784	15.60%	9 970	78 618	11.89
<b>Total</b>	<b>154 905</b>	<b>438 924</b>	<b>100%</b>	<b>178 680</b>	<b>513 182</b>	<b>100%</b>	<b>238 877</b>	<b>665 389</b>	<b>100%</b>

Quantity in tonnes  
Value in US \$

Source: FAO 2009a. FAO Fisheries and Aquaculture Department, Fishery Information, Data and Statistics Unit. FishStat Plus Version 2.32. Universal software for fishery statistics time series. Rome (<http://www.fishstat.org>)

## Major Aquaculture Species

Species	Scientific name	2003	2004	2005	2006	2007	2008
North African catfish	<i>Clarias gariepinus</i>	4 982	16 776	21 321	38 573	39 444	76 601
Torpedo-shaped catfishes nei	<i>Clarias spp</i>	8 998	14 826	20 708	35 492	48 750	46 687
Nile tilapia	<i>Oreochromis niloticus</i>	8 913	9 506	12 598	21 094	31 074	33 170
Cyprinids nei	<i>Cyprinidae</i>	28	44	56	84	85	15,669
Tilapias nei	<i>Oreochromis spp</i>	10 314	10 835	12 499	16 178	16 284	10 352
Nile perch	<i>Lates niloticus</i>	2 213	2 735	3 475	5 117	5 181	8 584
Giant tiger prawn	<i>Penaeus monodon</i>	8 257	7 633	8 051	9 665	9 171	7 340
Reticulate knifefish	<i>Papyrocranus afer</i>	417	526	678	1 017	1 023	6 375
Characins nei	<i>Characidae</i>	685	863	1 112	1 668	1 678	3 906
Common carp	<i>Cyprinus carpio</i>	2 908	2 757	2 852	2 954	3 297	3 400
Snakeheads(=Murrels) nei	<i>Channa spp</i>	1 196	1 230	1 333	2 000	2 012	3 400
Grass-eaters nei	<i>Distichodus spp</i>	772	972	1 253	1 880	1 891	3 206
Citharinus nei	<i>Citharinus spp</i>	1 301	1 344	1 532	2 298	2 312	3 196
Aba	<i>Gymnarchus niloticus</i>	2 314	2 332	2 500	3 750	3 773	2 835
Upsidedown catfishes	<i>Synodontis spp</i>	669	843	1 087	1 631	1 641	2 772
Three spotted tilapia	<i>Oreochromis andersonii</i>	2 250	2 000	2 000	1 900	2 080	1 996
Kafue pike	<i>Hepsetus odoe</i>	774	975	1 257	1 886	1 897	1 874
Bonytongues nei	<i>Heterotis spp</i>	1 068	1 139	1 268	1 902	1 913	1 555
Rainbow trout	<i>Oncorhynchus mykiss</i>	1 829	1 078	1 044	1 094	1 203	1 156
Perlemoen abalone	<i>Haliotis midae</i>	515	760	830	835	786	1 040
<b>Other</b>		9 143	3 318	3 790	3 887	3 185	3 763
<b>TOTAL</b>		<b>69 546</b>	<b>82 492</b>	<b>101 244</b>	<b>154 905</b>	<b>178 680</b>	<b>238 877</b>

Source: FAO 2009a. FAO Fisheries and Aquaculture Department, Fishery Information, Data and Statistics Unit. FishStat Plus Version 2.32. Universal software for fishery statistics time series. Rome (<http://www.fishstat.org>)

**Symbols:**  
Nei: Not elsewhere included (Example: Tilapias nei)

### 3. Resources, Services and Technologies

#### Resources, Services and Technologies

- Salient Issues
  - For land and water: Three main issues (Access, competition and degradation)
  - Seeds and Feeds: Inadequate in quantity and quality; increased production by private sector in recent years
  - Genetic resources: Emphasis on characterization, selective breeding, impacts of alien species
  - Lack of skilled extension services in many countries
  - Aquatic health support services: Limited and provided by veterinary and public health departments
  - Financial capital: No collateral, high interest rates; soft credit lines in some countries, self-financing and associations
  - Aquaculture insurance: virtually non-existent

## Improvements in Breeding and Seed Production

One of the Major Innovations



## 4. Aquaculture and Environment

## Aquaculture and the Environment

- Salient Issues
  - Loss and degradation of habitats
  - Impacts of exotic or alien species
  - Impacts of collection of seeds from the wild
  - Conflicts with other users
  - Spread of human diseases through vectors (Snails for Bilharzias, and Mosquitoes for Malaria)
  - Emergence of self-regulatory instruments
  - Environmental Impact Assessment in some countries
  - Public perception of the sector

## Conflicts with Other Users

Land and Fresh Water are in High Demand



## 5. Markets and Trade

### Markets and Trade

- Main Issues and trends
  - Varies (product types, intermediaries or non)
  - Overall improvements in the value chain
  - Poor infrastructure and insufficient facilitation are two main constraints to distribution
  - Emergence of artisanal fish dressing industries at farm gates, markets, etc
  - Emergence of intra-regional trade esp. East region
  - Increase in exportation of high value products

## Efforts to Place High Quality Products in the Markets

### Respect of Sanitation and Hygiene



## Markets and Trade (2)

- Main issues and trends
  - Product labeling (Madagascar, Mozambique, South Africa, Uganda)
  - Existence of Standard Sanitary Operation Process (SSOP) and HACCP shared with capture fisheries
  - Greater emphasis on risk analysis and management
  - Important and catalytic role of producer associations (agenda and priority setting, information exchange, seed and feed privatization, service providers, etc)

## 6. Contribution of Aquaculture to Food Security, Social and Economic Development

### Contribution of Aquaculture to Food Security, etc

- Contributes to food security and MDGs
- Plays major roles in Nigeria, Uganda, Madagascar, Mozambique, Kenya (income, food, employment, etc)
- 18 000 – 30 000 jobs per country, many temporary
- Prawn farms in Madagascar 4000 direct and thousands indirect; women about 30% of direct
- Empowerment of women but also family breakdowns
- Environmental sustainability and stewardship

## 7. External Pressures on the Sector

### External Pressures on the Sector

- Salient issues
  - **Climate change: Effect on overall performance of aquaculture and on small-scale aquaculture communities and their livelihood assets**
  - **Continuous poor global economic situation: reduction in support of aquaculture in favour of other sectors, reduction in ODA, assistance to aquaculture through use of debt of reduction program**
  - **Civil Unrest: Declining local and foreign investments, capital flight, loss of man-power**



## 8. The Role of Shared Information: Research, Training, Extension and Networking

### The Role of Shared Information

- Growth in aquaculture closely linked to research in a few countries Nigeria, Uganda, Ghana, South Africa
- Low importance to and inadequate funding for research
- Training (national institutions, universities and on private farms –SPADA, FISH Project Uganda, etc)
- Use of FAO TCDC Programme, South-South Cooperation (NACA/SSA) and Asian experience
- Contribution of WorldFish Center to research
- Networking (SARNISSA, ANAF, SPADA, catalytic effect of clustering in some countries
- Private skilled extension/outreach services in some countries
- Reversing stagnation of investment in research and extension and mainstreaming research outcomes to development agenda

## The Role of Shared Information (2)

Number of SSA Countries	Number of Cooperating Countries	# of Experts Hosted	# of experts to be assigned	Number of experts completed Other Fields
26	11	130	278	1096
<u>Main Countries</u> Nigeria (588) Senegal (278) Madagascar (43) Malawi (32) Ghana (16)	<u>Main Providers</u> China, Peoples' Republic (5) Vietnam (4) Cuba (3) China (2) Egypt (2)			<u>Main Areas</u> Water Control Crop Production Livestock Management Animal Husbandry Integrated Farming Irrigation Technology Transfer

Source: FAO FPMIS 2010

## The Role of Shared Information (3)

South-South - NACA/SSA Collaboration - (2002-2007)

Country	Number of Participants	Country	Number of Participants
Congo	2	Nigeria	13
Comoros	2	Rwanda	2
Cote d'Ivoire	12	Seychelles	3
Ghana	16	South Africa	3
Kenya	8	Sudan	6
Madagascar	8	Uganda	15
Mauritius	6	Tanzania	5
Namibia	1		
TOTAL	55		47

## 9. Governance and Management of the Sector

### Governance and Management of the Sector

- Aquaculture strategies and regulations developed in several countries
- Environmental Impact legislation available in almost all countries (EIA mandatory for all shrimp projects in Madagascar; for other countries depending on scale)
- Financial incentives
- Governments divesting expensive public services
- Sector self-regulatory governance (Uganda, Madagascar)
- Role of professional and producer organizations and Service providers

## 10. Implementation of Bangkok Declaration and Strategy

### Implementation of Bangkok Declaration and Strategy

- SSA countries have directly and indirectly implemented the Declaration and used the Strategy
- SSA countries have also adopted the NEPAD Plan of Action for the Development of African Fisheries and Aquaculture ; and the Special Programme for Aquaculture Development in Africa (SPADA)
- These three programmes complement each other and are not contradictory

## 11. Conditions that have Contributed to Success in Lead Aquaculture Countries

### Conditions for Success in Lead Countries

- Promoting private sector led aquaculture development (Investing in sound management, establishment of efficient commercial hatcheries, choice and limitation of species, development of aqua-feeds, development and use of new/refined production systems and role of producer associations)
- Adoption of good governance (zoning, specific legislation and favourable fiscal policies)
- Private-public sector linkages
- Capacity building and creation of critical mass
- Provision of financial incentives and credits
- Emphasis on research and outreach

# Private Sector Involvement

## New Technologies



## 12. The Way Forward

## The Way Forward

- Main Challenges
  - Increasing aquaculture's contribution to food security, employment and economic development
  - Meeting growing demand for inputs of production
  - Strengthening the base for aquaculture management (research, capacity building, good governance, etc)
  - Increasingly severe competition with other users
  - Limitation of freshwater supplies
  - Improvements in environmental management plus fish health management, risk management, food safety and product quality issues, (related to trade)

## The Way Forward (2)

- Opportunities
  - Leveling off capture fisheries and increasing demand for fish
  - Greater international awareness owing to Fish for All Summit (Abuja 2005), designation of fish a strategic commodity
  - Awareness of aquaculture as viable commercial venture
  - Adoption of NEPAD Plan of Action and SPADA;
  - Governments inclined to “better” policy and economic reforms
  - Emergence of dynamic producer organizations and service providers

## The Way Forward (3)

- What Can Be Done
  - Greater emphasis on private sector led initiatives (good governance, policies and limited regulations)
  - Government divest from expensive services
  - Strengthen base for aquaculture management (research, capacity building, good governance)
  - Promote more self-regulatory governance (dynamic producer organizations, service providers COPs/BMPs)
  - Improvement/refinement of technologies
  - Emphasis on better seeds and aqua-feeds
  - Greater importance on better communication (SARNISSA, ANAF) and inter-regional cooperation
  - Implement outcome of GCA 2010

## We Hope this is only the Beginning

As technologies are refined and Improved





And That These positive  
Developments will Encourage the  
Expansion of Small and Medium Size  
Ventures



And That  
Production will continue to Increase



THANK YOU VERY MUCH