Value chain analysis of Lake Nasser fisheries in Aswan, Upper Egypt

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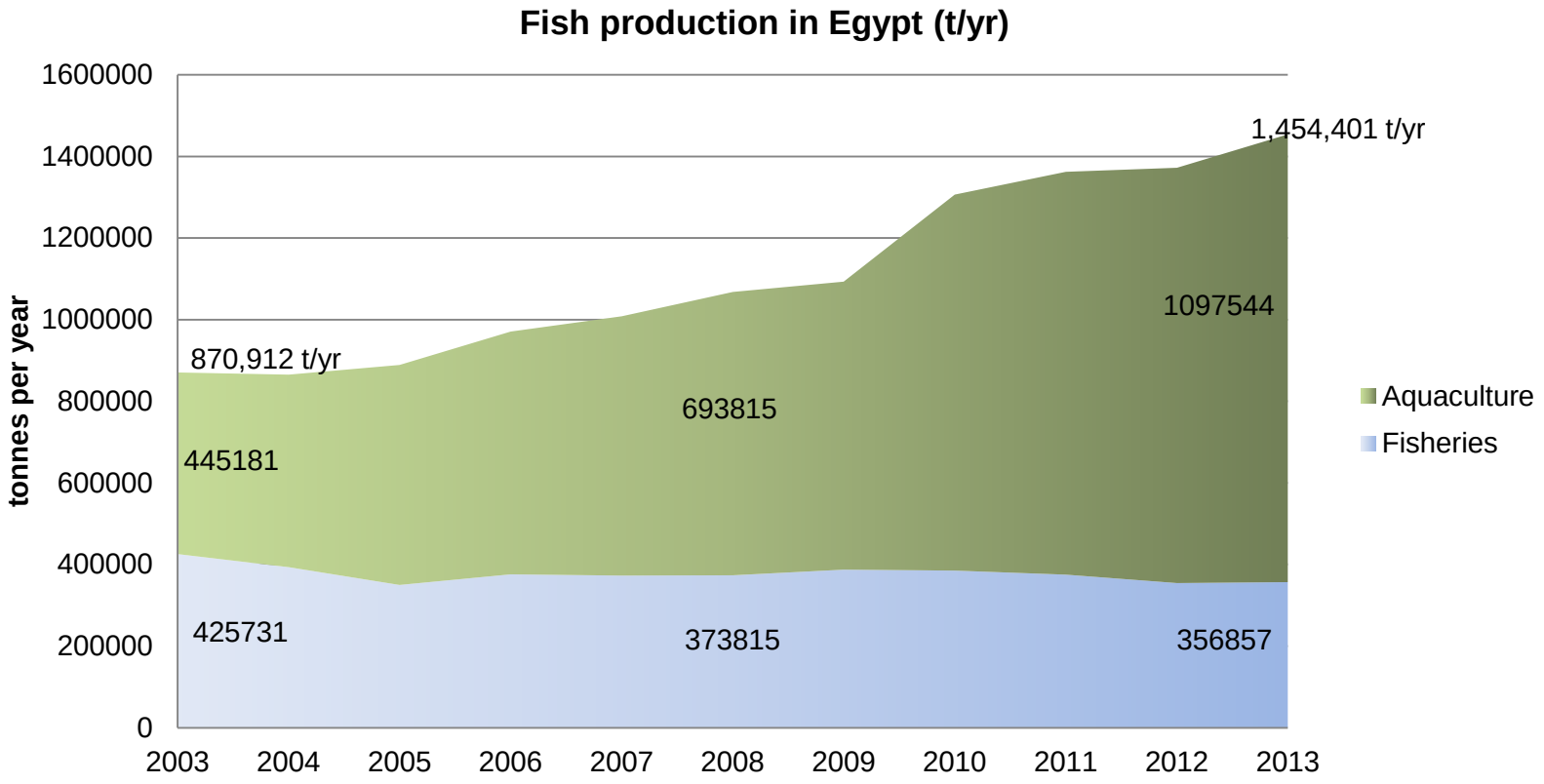
Egyptian aquaculture vs. fisheries



- Aquaculture production growing at 9.7% per year whereas fisheries production is static or declining

Egypt, Aswan and Lake Nasser

High Aswan Dam

- Built in the late 1960s to generate electricity and control the flow of water into the Egyptian Nile and its extensive irrigation system
- Maximum water depth at the dam 110-130 m

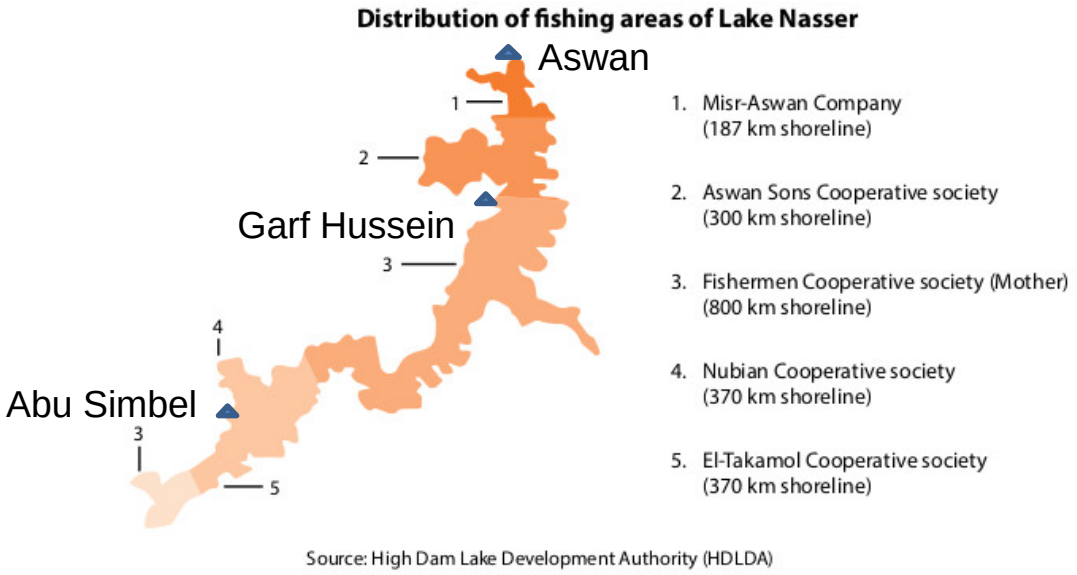
Lake Nasser

- Over 300 km long, mean depth 20-25 m, volume 53-131 km^3, shoreline 5,400-7,900 km.
- Rocky eastern shoreline, sandy western shore with extensive inlets (khors).

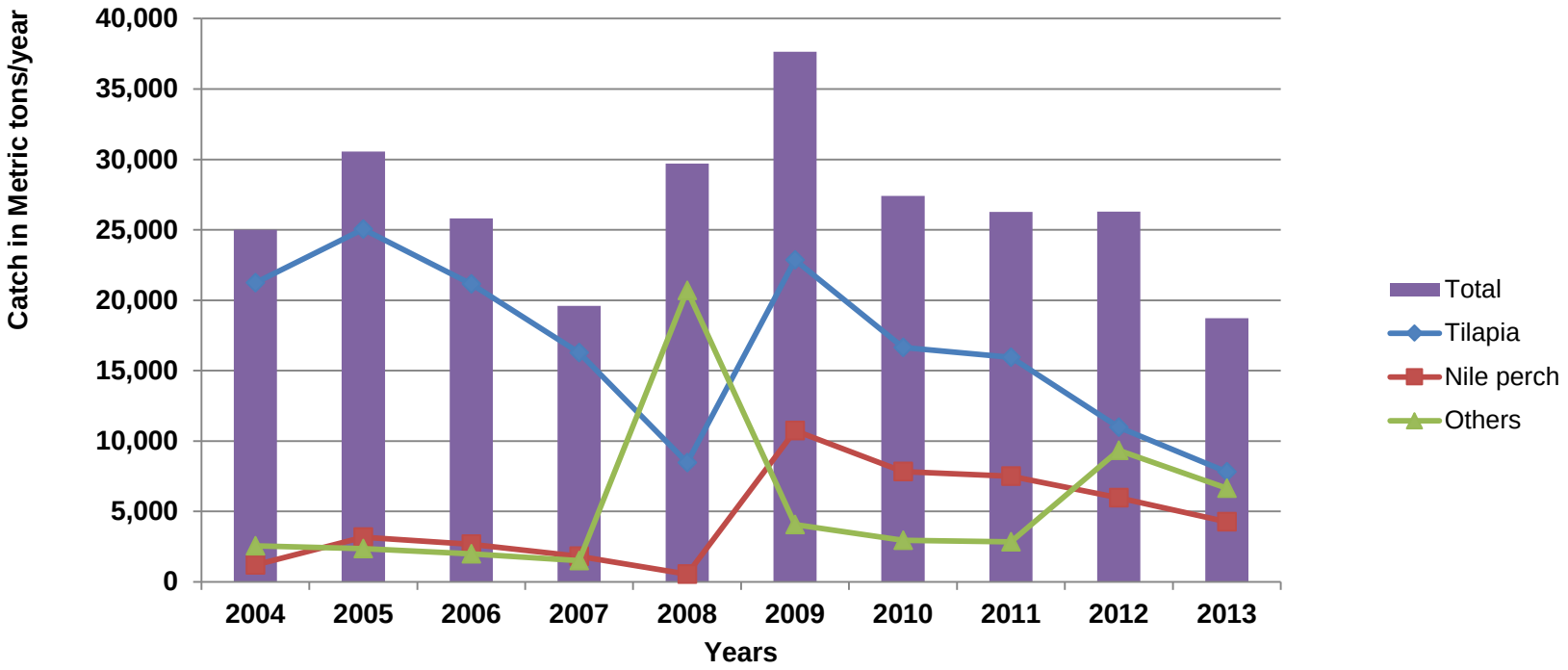
Fishing zones and fisheries organizations

Cooperative society or company	# of fishing boats	# of fishers	# of carrier boats*	# of transport cars**	Landing site
1. Misr Aswan Company	218	780	3 (3)	-	Aswan
2. Aswan Sons Cooperative society	615	2,300	25 (20)	35	Aswan
3. Fishermen Cooperative society	1,632	7,880	84 (20)	20	Garf Hussein
4. Nubian Cooperative society	520	2,230	33 (18)	8	Abu Simbel
5. El-Takamol Cooperative society	61	260	4 (4)	-	Abu Simbel
Total	3,046	13,450	149 (65)	63	

* Numbers in parentheses refer to the estimated number of carrier boats actually operating and landing fish in the harbors.
** The number of fish transport cars operated by wholesalers and traders (harbor manager's estimate).



Fish catches from Lake Nasser



Annual trend of catch by fish group from Lake Nasser, 2004–2013.

Source: GAFRD (2015).

Note: “Other” includes tigerfish, raya, labeos and unidentified species

Aswan fisheries value chains

- 13,000 artisanal fishermen operating from semi-permanent fishing camps
- Carrier boats operated by 5 official co-ops/organizations transport materials to and fish away from the camps
- Fish landed at 3 official landing centers; Aswan, Garf Hussein & Abu Simbel for onward distribution through fishing organizations/co-ops
- Tilapia and Nile perch transported and sold as fresh whole fish by co-ops
- In reality, fresh fish is also sold directly by fishermen to unregistered traders who pay higher prices and sell more directly than the co-ops
- Some fresh fish also processed in Aswan into frozen fish or fillets
- Fishermen process other species (mainly Alestes & tigerfish) in their camps into salted fish product, *muluha*
- *Muluha* sold to processors in Aswan who distribute and sell all over Egypt

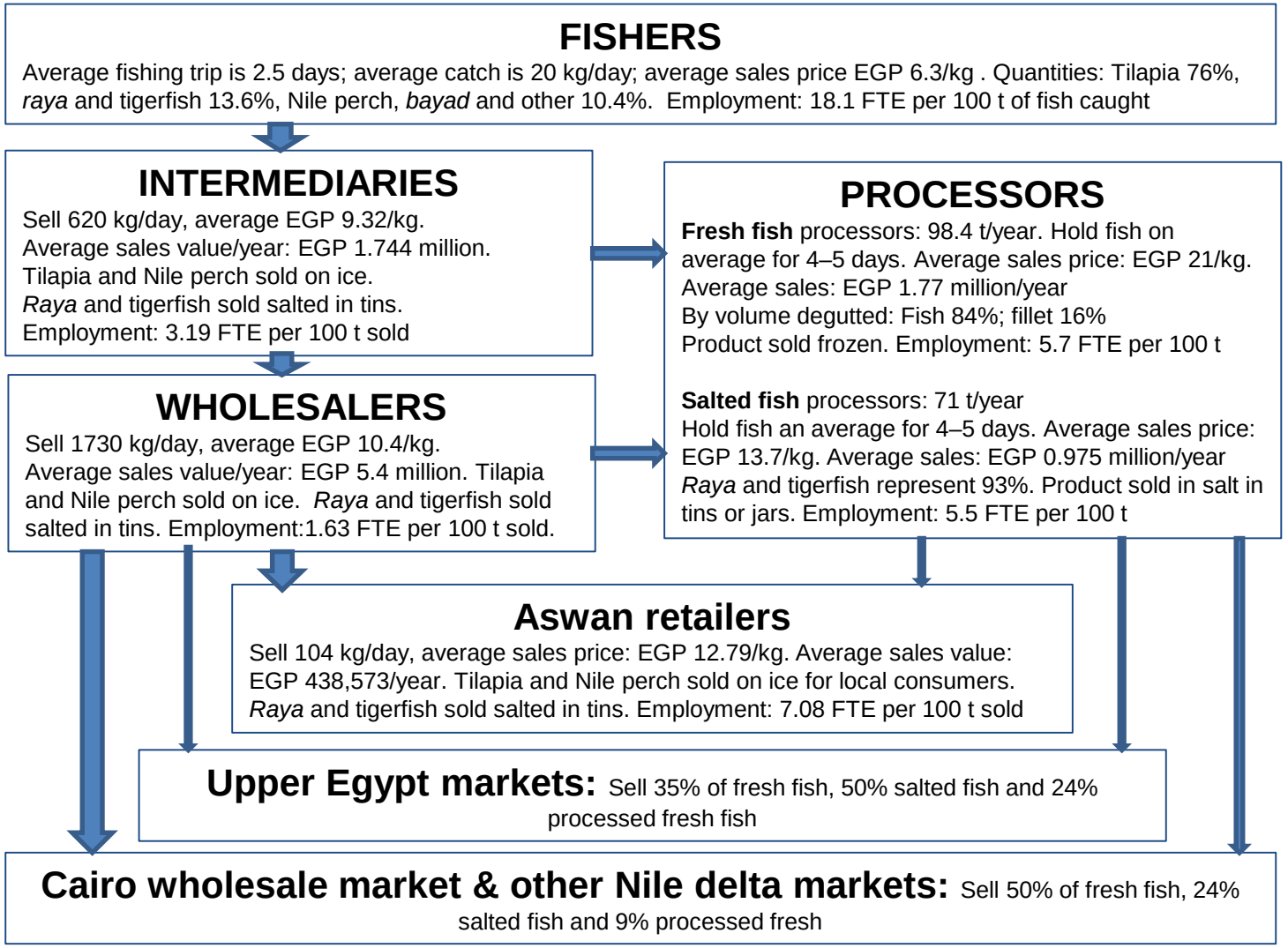
Salted fish processing

Step	Capture	Initial curing	Final curing	Retailing
By whom	Fishers	Fishers	Processors	Retailers or wholesalers
Inputs	Fishing boats, nets, fuel, food, labor, fish (*raya*, tigerfish, *labeos*)	Salt, tins or containers for packing fish, food, fuel, labor, fish	Salted fish, salt, tins or containers for repacking fish, weighing balance, storeroom, transport, labor	Whole salted fish, fillets of salted fish
Details	Average *muluha* fish catch/boat is 1,688 kg/year: 963 kg *raya*, 150 kg large tigerfish, 250 kg medium tigerfish and 325 kg small tigerfish	Activities carried out in fishing camps: Sort and grade Open gut and clean Use 40 kg salt per 100 kg fish Initial curing for 5–7 days Later packed into tins for transfer to fish processor 100 kg fresh fish produces 75–80 kg salted fish	Activities in the fish processing store: Re-sort and grade Add more salt (3–5 kg/tin) Final curing for 15–30 days Average production per processor per year: 25 t *raya* , 8.4 t large tigerfish, 12.6 t medium tigerfish, 20 t small tigerfish, 2.5 t salted fish fillet	26% sold by retailers in Aswan 50% sold to wholesalers from Upper Egypt 24% sold to wholesalers in Cairo and Delta

Value chain analysis

- Carried out as part of the Youth Employment in Aswan Governorate project managed by CARE with fisheries activities implemented by WorldFish
- Map the value chain; identify actors, functions and linkages
- Analyze input-output structures, distribution of margins, returns on investment
- Consider opportunities for job creation in the value chain
- Identify constraints and opportunities for growth
- Field-based interviews with 170 fishers, 23 processors (both fresh and salted) and 24 traders (intermediaries, wholesalers, retailers)

Lake Nasser fisheries value chain mapping



VCA results – fishing subsector

Operational data	Aswan	Garf Hussein	Abu Simbel	Overall
Number interviewed	55	51	56	162
Average yearly catch (kg/boat/year)	10,651 ±342	12,995 ±410	13,907 ±345	12,506
Average daily catch (kg/boat/day)	36 ±1.1	43 ±1.4	46 ±1.1	42
Average employment FTE/100 t	20.8 ±0.8	18.4 ±0.6	15.1 ±0.5	18.1
Average sales price (EGP/kg; all species)	5.4 ±0.2	7.2 ±0.3	6.2 ±0.2	6.3

Financial performance data	Aswan	Garf Hussein	Abu Simbel	Overall
Fish sales (EGP/boat/year)	57,767 ±2,506	92,720 ±3,366	86,383 ±3,054	78,621
Operational cost (EGP/boat/year)	40,293 ±1,512	51,517 ±1,699	47,895 ±2,025	46,447
Fixed cost per boat (EGP/year)	12,264 ±970	20,977 ±1,581	18,831 ±929	17,269
Total cost per boat (EGP/year)	52,557 ±2,116	72,493 ±2,678	66,726 ±2,506	63,717
Income above total cost (EGP/boat/year)	5,209 ±1,872	20,468 ±2,859	19,724 ±2,766	15,004
Average net profit (EGP/t)	401 ±168	1,580 ±240	1,374 ±202	1,107
Net profit as % of sales	5% ±3	20% ±2.7	21% ±2.7	15%
Average total value added (EGP/t)	2,588 ±144	3,786 ±242	3,186 ±184	3,172

1 USD = EGP 7.7

VCA results – fish traders

Operational data	**Intermediaries**	**Wholesalers**	**Retailers**	**Overall**
Number interviewed (sample size)	8	5	10	23
Average annual sales volume (t/year)	187 ±22	519 ±121	34 ±7	-
Average daily sales volume (t/day)	0.62 ±0.07	1.73 ±0.4	0.104 ±0.02	-
Average employment (FTE/100 t of sales)	3.19 ±0.5	1.63 ±0.4	7.08 ±0.9	4.5
Average sales price (EGP/kg; all species)	9.32 ±0.4	10.40 ±0.6	12.79 ±0.7	-
Average daily sales value (EGP/day)	5,815 ±812	18,003 ±3,838	1,462 ±398	-
Financial performance				
Average annual sales value (EGP/year)	1,744,425 ±243,647	5,400,780 ±1,151,466	438,573 ±119,393	1,971,523
Average operating costs (EGP/year)	1,481,428 ±189,029	4,319,974 ±1,055,661	341,312 ±97,380	1,602,800
Average fixed costs (EGP/year)	39,256 ±5,966	64,450 ±17,292	10,059 ±1,951	32,038
Average net profit (EGP/year)	223,741 ±74,822	1,016,356 ±136,887	87,203 ±21,711	336,684
Average net profit (EGP/t)	1,009 ±314	2,214 ±363	2,565 ±191	1,948
Average net profit as % of sales	11% ±3.1	21% ±2.8	22% ±2	18%
Average total value added (EGP/t)	1,503 ±254	2,513 ±406	3,187 ±235	2,455

1 USD = EGP 7.7

VCA results – fish processors

Operational data	Salted fish processors	Fresh fish processors	Overall
Number interviewed (sample size)	14	8	22
Average annual sales volume (t)	70.94 ±11	98.25 ±27	81
Average employment (FTE/100 t)	5.5 ±0.6	5.7 ±1.6	5.5
Average sales price (EGP/kg; all species)	13.6 ±0.7	20.9 ±3.6	16.3

Financial performance	Salted fish processors	Fresh fish processors	Overall
Average annual sales value (EGP)	975,046 ±164,388	1,766,025 ±305,132	1,262,677
Average operating costs (EGP)	788,288 ±105,105	1,526,789 ±264,343	1,056,834
Average operating costs (EGP/t)	11,112 ±634	15,539 ±2,686	13,820
Average fixed costs (EGP/t)	151 ±24	324 ±110	214
Average net profit (EGP/t)	1,939 ±567	2,703 ±1,058	2,217
Average net profit as % of sales	13.8% ±3.1	11.3% ±2.9	13%
Average total value added (EGP/t)	2,507 ±538	3,652 ±1,036	2,923

1 USD = EGP 7.7

VCA results – summary tables

Prices	Average price EGP/kg	Price as % of retail price
Fishers	6.29	49%
Intermediaries	9.32	73%
Wholesalers	10.40	81%
Retailers	12.79	100%

Net profits	EGP/t	Net profits (% of sales)	% of value chain net profit creation
Fishers	1,107	15.2%	16%
Intermediaries	1,009	10.8%	15%
Wholesalers	2,214	20.5%	32%
Retailers	2,565	22.2%	37%
Total	6,896		100%

Total value added	EGP/t	Proportion of value added (%)
Fishers	3,172	30.6%
Intermediaries	1,503	14.5%
Wholesalers	2,513	24.2%
Retailers	3,187	30.7%
Total	10,375	

Critical issues identified during focus group discussions

	Critical factor or problem	Severity of problem
Input problems	• Fuel availability and prices • Living requirements (bread and food) • Health and social insurance • Access to credit or finance • Availability and quality of fishing gear • Ice and salt • Access to fishing site • Licences • Handling boxes	• High • High • High • Medium • Medium • Medium • Medium • Medium • Low
Capture problems	• Absence of security • Poor living conditions on the lake • Lack of service to fishers on the lake • Overfishing and reduction in fish resources • Predator consumption of fish • Lack of experience with new fishing methods	• High • High • High • High • Medium/High • Medium
Postharvest and marketing problems	• Poor postharvest handling facilities • Absence of a fish auction in Aswan • Fluctuations in selling price • Fish processing technologies • Lack of export opportunities	• High • High • Medium • Medium • Medium

Recommendations

- Establish new service organizations to improve access to inputs
- Provide training for fishers
- Improve access to bread and fuel
- Break up the monopoly on ice production
- Train hatchery owners to improve availability of tilapia seed
- Improve fisheries management
- Improve living standards for fishers
- Provide safety equipment
- Establish fish auctions
- Improve hygiene in fish markets
- Improve post harvest handling, storage & transportation
- Investigate options for value added processing

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Thank you for attention

Tomb of Mekhu and Sabni @ 2200 BC in the Tombs of the Nobles, Aswan

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