Trend of Fishery Industry in Myanmar

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I. Introduction

- Fish - the key protein source for people
- Fishery sector - a vital source of employment opportunities in Myanmar.
- Livestock and fishery sector - the fifth place in the share of GDP in Myanmar (2018/19 to 2020/21 statistics)
- Myanmar - Favorable factors for fishery production.

I. Introduction

- Myanmar - the largest country in Southeast Asia,
- Area - 261,228 sq.miles (676,577 sq. km)
- 4 main rivers in Myanmar - Ayeyarwady (2150 km), Chindwin (844 km), Than Lwin River (2400 km) and Sittaung River (563 km).
- Long coastline which is 2832 km.
- Many rivers, creeks, inn, lakes and natural ponds

I. Introduction

- (3) fishing ground - Rakhine coastal fishing ground, Ayeyarwady delta fishing ground and Andaman sea fishing ground.
- Myanmar - rich in marine resources both in freshwater and marine fisheries - favorable factors for fishery production
- Fishery production and fishery export -considerable factors for the nation's economy.
- Intends to analyze production and export of fishery sector in Myanmar.

Objectives of the Study

- To explore the fishery sector;
- To seek a suitable fitted trend of fishery production and export, and
- To estimate the production and export volume of fishery sector for the coming three years

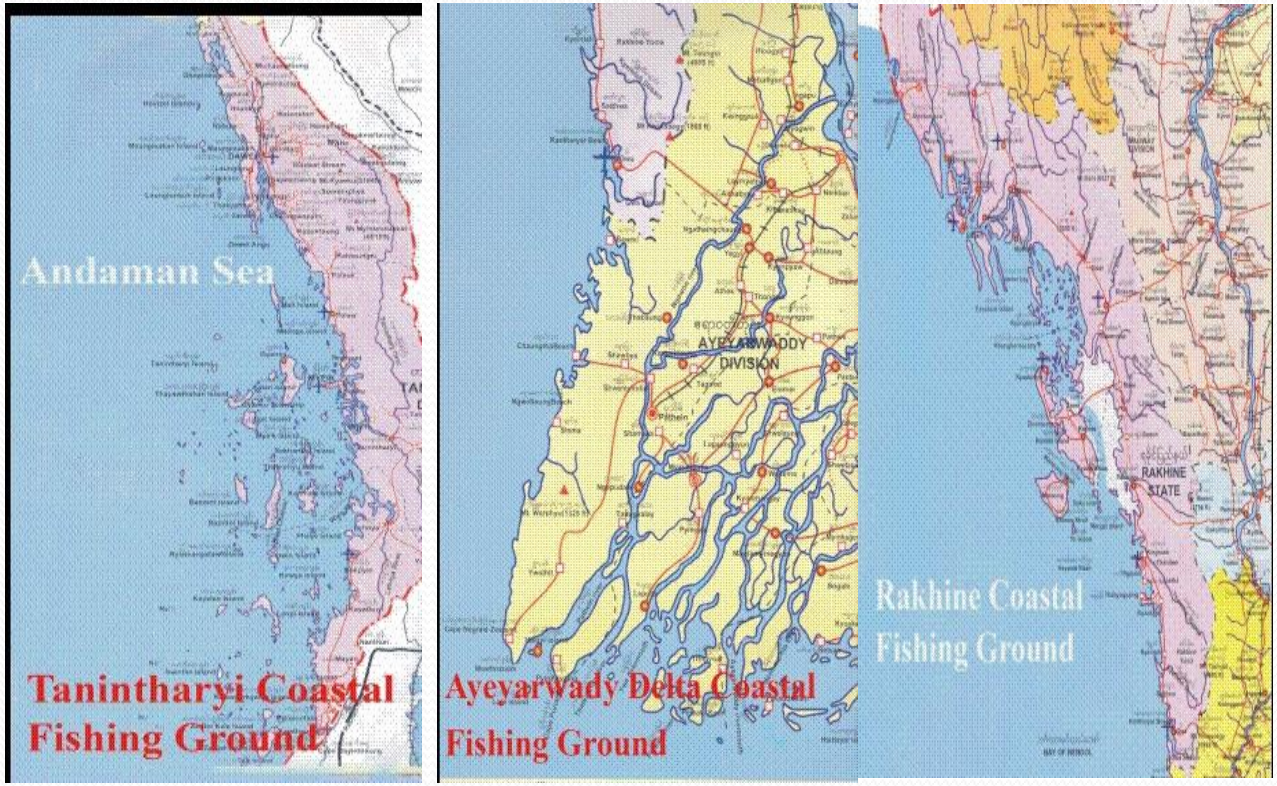
Methods of Study

- Descriptive analysis
- Secondary data - Department of Fisheries, Ministry of Agriculture, Livestock and Irrigation.
- Curve estimation regression model - based on time series data of the volume of production and export with the assumption of unchanged time trend.
- Simple linear regression analysis

The Situation of Fishery Sector

- Fishery sector - an important sector after agriculture.
- Provides not only food security but also employment opportunities to the people of the country.
- Livestock and fishery sector - 8.6 percent of GDP in 2020/21.
- Two types of fisheries - freshwater fisheries (Aquaculture, leasable and open fisheries)and marine fisheries (inshore and off-shore fisheries)

Map of Fishing Ground



The Situation of Fishery Sector

- Department of Fisheries - undertaking the development of fishery sector with the following tasks:
- Conservation and rehabilitation of fishery resources;
- Promotion of fisheries researches and surveys;
- Collection and compilation of fishery statistics and information;
- Extension services;
- Supervision of fishery sectors;
- Sustainability of fishery resources.

The Situation of Fishery Sector

- Allowed the private sector to participate, aiming at increasing fish production and export
- Total area of fish ponds and shrimp ponds - significantly increases year after year.
- About 5 lakhs acres - aquaculture ponds in 2021/2022.

Total Area of Aquaculture Ponds

Year	Fish Ponds	Shrimp Ponds	Total
2001-2002	90733	119784	210517
2002-2003	124112	199961	324073
2003-3004	155509	205091	360600
2004-2005	182452	208591	391043
2005-2006	197150	209942	407092
2006-2007	212234	224591	436825
2007-2008	215373	225725	441098
2008-2009	215930	224655	440585
2009-2010	217835	224867	442702
2010-2011	218746	224949	443095
2011-2012	220171	228297	448468
2012-2013	221395	228297	449692
2013-2014	222028	228296	450324
2014-2015	232515	236638	469153
2015-2016	239671	238331	478002
2016-2017	245807	241718	487525
2017-2018	247007	244338	491345
*2018 Apr- Sept	247818	244388	492206
2018-2019	247858	244437	492295
2019-2020	252220	244292	496512
2020-2021	252415	244286	496701
*2021Oct-2022March	253532	245085	498617

The Situation of Fishery Sector

- Since 1984/85, more scientific shrimp culture - introduced with the loan of the Asian Development Bank (ADB).
- The Ministry - encourages the private sector to participate in shrimp farming.
- To encourage shrimp firming - a three-year plan was started with the establishment of a state level committee in 2000.

The Situation of Fishery Sector

- Ayeyarwady Region - the biggest numbers of fish ponds, and
- Rakhine State - the biggest numbers of shrimp ponds although each and every states and regions have both fish ponds and shrimp ponds.

Fishery Production and Export

Year	Production	Export
2001-2002	1473.55	112.30
2002-2003	1594.89	103.13
2003-2004	1985.80	78.65
2004-2005	2216.10	255.78
2005-2006	2580.20	268.28
2006-2007	2859.96	343.43
2007-2008	3201.41	351.65
2008-2009	3516.04	324.71
2009-2010	3919.56	375.09
2010-2011	4160.90	373.89
2011-2012	4478.35	386.98
2012-2013	4716.37	376.85
2013-2014	5047.69	345.27
2014-2015	5317.12	338.29
2015-2016	5592.01	368.97
2016-2017	5675.64	438.71
2017-2018	5877.46	568.23
*2018(Apr-Sept)	2581.45	221.07
2018-2019	5971.10	583.68
2019-2020	6017.92	669.69
2020-2021	6074.82	558.23
*2021Oct -2022March	3652.61	336.07

Top Ten Fish Exporting Countries from 2018/19 to 2020/21

	2018-2019	2019-2020	2020-2021
Countries	Thousand MT	Thousand MT	Thousand MT
Thailand	305.00	352.92	325.35
China	137.26	173.45	111.08
Japan	6.83	6.45	5.79
Singapore	19.38	16.42	11.65
U.S.A	5.67	6.55	5.46
Malaysia	10.17	8.50	9.98
Saudi	9.91	12.32	23.96
U.A.E	15.95	17.59	11.35
Hong Kong	1.71		
U.K	7.80	8.31	7.93
Bahrain		20.83	
Bangladesh			12.06

Empirical Analysis

- The linear model equation is:

  $Y_t = b_o + b_1 t$ ---------- (1)

- The Cubic model equation is:

  $(Y_t = b_o + b_1 t + b_2 t^2 + b_3 t^3)$ ----------(2)

- The Quadratic model equation is:

  $(Y_t = b_o + b_1 t + b_2 t^2)$ ---------- (3)

- Where - Y_t = Estimated Value, b = Coefficients,

  t = time

Suitable fitted trend for fishery production is Quadratic trend

	b_0	b_1	b_2	R_a^2	F
fish production	858.116 (7.067)***	391.530 (15.401)***	-6.026 (-5.370)***	.989	928.093***

	2022-2023	2023-2024	2024-2025
fishery production ('ooo Metric Ton)	6555.538	6675.417	6783.713

Suitable fitted trend of fishery ponds is cubic trend.

	b_0	b_1	b_2	b_3	Ra^2	F
aquaculture ponds	178947.428 (2.646)**	73332.217 (2.82)**	-6578.594 (-2.425)**	201.131 (2.478)**	.690	15.835***

	2022-2023	2023-2024	2024-2025
aquaculture ponds (Acre)	749860.6696	832674.3007	930086.8361

Suitable fitted trend for fishery export is cubic trend

	b_0	b_1	b_2	b_3	Ra^2	F
fishery export	-16.838 (-.303)	85.589 (4.007)***	-6.837 (-3.067)***	.206 (3.090)***	.889	54.589***

	2022-2023	2023-2024	2024-2025
fish export ('ooo Metric Ton)	751.741	842.751	948.529

Suitable fitted trend for fishery production of the following States and Regions is cubic trend.

	b_0	b_1	b_2	b_3	Ra^2	F
Kachin State	8301.843 (3.594)***	3595.394 (3.151)***	-408.068 (-2.658)**	15.308 (2.753)**	0.713	13.417***
Tanintharyi Region	4448.190 (3.028)**	3838.320 (5.288)***	-206.571 (-2.115)*	7.268 (1.921)*	0.988	415.992***
Magway Region	3083.374 (3.510)***	2492.574 (5.744)***	-257.094 (-4.403)***	8.663 (3.829)***	0.877	36.743***
Mandalay Region	22615.924 (8.691)***	8025.707 (6.243)***	-892.554 (-5.160)***	31.690 (4.728)***	0.871	34.683***
Mon State	7268.683 (1.508)	14876.661 (6.249)***	-1594.040 (-4.976) ***	55.634 (4.482)***	0.891	41.841***
Ayeyarwady Region	307832.666 (14.458)***	75849.927 (7.211)***	-4637.976 (-3.277)***	128.474 (2.343)**	0.987	382.303***
Naypyitaw	2145.983 (7.674)***	446.634 (2.131)*	-96.999 (-2.244)*	6.474 (2.497)**	0.700	7.990**

Suitable fitted trend for fishery production of the following States and Regions is cubic trend.

	2022-2023	2023-2024	2024-2025
Kachin State ('ooo viss)	26701.60	30082.94	34301.44
Tanintharyi Regin ('ooo viss)	45707.132	48994.536	52653.715
Magway Region ('ooo viss)	13720.037	15175.939	17053.295
Mandalay Region ('ooo viss)	56798.540	62708.111	70255.112
Mon State ('ooo viss)	72822.442	83035.012	96067.933
Ayeyarwady Region ('ooo viss)	888098.137	919686.328	955873.737
Naypyitaw ('ooo viss)	3938.983	4724.817	5782.779

Suitable fitted trend for fishery production of the following States and Regions is quadratic trend

	b_0	b_1	b_2	Ra^2	F
Kayah State	322.341 (10.938)***	97.141 (12.175)***	-4.020 (-8.811)***	.954	157.439***
Kayin State	4793.075 (11.775)***	1067.959 (9.691)***	-24.429 (-3.876)***	.977	326.726***
Chin State	320.037 (5.342)***	109.557 (6.755)***	-2.409 (-2.598)**	.957	166.176***
Sagaing Region	33059.254 (5.580)***	7168.027 (4.469)***	-285.445 (-3.112)***	.753	23.810***
Bago Region	123198.462 (12.603)***	20487.068 (7.741)***	-515.738 (-3.408)***	.961	184.273***
Shan State	3116.018 (12.718)***	667.533 (10.063)***	-24.953 (-6.578)***	.950	144.092***

Suitable fitted trend for fishery production of the following States and Regions is quadratic trend

	2022-2023	2023-2024	2024-2025
Kayah State ('ooo viss)	812.0161	768.4644	716.8731
Kayin State('ooo viss)	15888.425	16101.37206	16265.46127
Chin State ('ooo viss)	1486.2125	1511.44338	1531.85564
Sagaing Region ('ooo viss)	72422.10357	69599.55483	66206.11604
Bago Region ('ooo viss)	322430.4125	324866.6596	326271.4311
Shan State ('ooo viss)	7252.64286	7046.81828	6791.08754

Suitable fitted trend for fishery production of the following States and Regions is linear trend

	b_0	b_1	Ra^2	F
Rakhine State	24382.288 (32.026)***	274.018 (3.480)	.426	12.112***
Yangon Region	116785.888 (13.516)***	13160.726 (14.728)***	.935	216.924***

Suitable fitted trend for fishery production of the following States and Regions is linear trend

	2022-2023	2023-2024	2024-2025
Rakhine State ('ooo viss)	29040.5875	29314.60515	29588.62279
Yangon Region ('ooo viss)	340518.2375	353678.964	366839.6904

Fishery exports & fishery production,

- $Y = b_0 + b_1 P$
- Where- Y = Fish Export , b = Coefficients, P = Fish Production

$$Y = 2.818 + 0.087\ P$$

$$(0.063)\quad (8.833)\ ***$$

$$R^2 = .794,\quad F = 78.017***$$

Conclusion

- Fishery production - increased to some extent
- Fishery export - fluctuated during the 20 years.
- Fishery export - ASEAN, Europe, Asia, America, Africa, and Oceania countries.
- Thailand - first place, followed by China, and
- Singapore - third place in 2018/2019,
- Bahrain - third place in 2019/2020,
- Saudi - third place in 2020/2021.
- Types of fish which are exported - Rohu (Nga Myit Chin), Common carp (Shwe War Nga Gyin), Tilapia and Tarpian (Nga Khone Ma)

Conclusion

- Trend of fishery production - quadratic,
- Fishery production in coming 3 years - gradually increases.
- Trend of aquaculture ponds and fishery export – cubic
- Aquaculture ponds and fishery export in coming 3 years - gradually increases.

Conclusion

- Trend of fishery production in Kachin State, Tanintharyi Region, Magway Region, Mandalay Region, Mon State, Naypyitaw and Ayeyarwady Region - Cubic,
- Trend of fishery production in Kayah State, Kayin State, Chin State, Sagaing Region, Bago Region and Shan State - Quadratic,
- Trend of fishery production in Rakhine State and Yangon Region - linear.
- The estimated volume of fishery production on coming 3 years - increases except Kayah State, Shan State and Sagaing Region.
- Fishery exports depend on fishery production.

Conclusion

- Fishery production - essentially needed to increase for the expansion of fishery export.
- The Department of Fishery - trying to improve Research and Development of inlands and coastal fisheries in Myanmar with the support of ACIAR and KOICA.
- Private sector - imperative for the improvement of fishery production.
- Better if the Department of Fishery as well as the private sector - attempt commercial fish farming

Thank you very much for your kind attention!