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Moving Forward with Urban Coastal Food Security in the Philippines Part 2

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Abstract: 1) Shocks to the food security environment of urban coastal communities, and the fisheries sector persists. 2) Continuing from a 2018 paper on the potential of urban coastal communities to contribute to the improvement of the food security situation in the country. This study follows up on the developments made by fisheries sector with respect to the impacts of shocks to the volume catches and value of productivity as highlighted by the original study. 3) Bureau of Fisheries and Aquatic Resource data on Fisheries Statistics from 2016-2019 are the primary resource materials. 4) Two years after the initial study, it can be argued that the fisheries industry has seen general improvements in fish and aquaculture production and profit. 5) Lessons from the fish industry from recent years could help the development of a sustainable food security program for urban coastal cities to adopt and implement.

Key Words: sustainability; food security; urban coastal communities

1. INTRODUCTION

The development of food secure urban coastal environments is important as communities remain vulnerable to shocks in the system (climate change and environmental degradation, pollution, over fishing, etc.) which impact communities on an economic level (Agardy, 2000; Hauge, Cleeland, & Wilson, 2009; Khan & Khan, 2011).

What is promising is that local communities are now more aware of their important part in the food security environment (Carandang et.al., 2014; Carandang et.al., 2015a; Carandang et.al., 2015b). We know that food secure environments take into consideration the technical aspects of food production, this includes the economic situation of food producers, and consumers. The market, climate/seasons and ecosystems within which they operate must also factor in the overall evaluation of their food security situation (Tamiru et al., 2011).

Charles (2001), summarizes this concept best when he presents sustainable fisheries as a holistic concept. "A sustainable fishery is one which simultaneously maintains and enhances health and resilience of the marine ecosystem, the socio-economic welfare and viability, socio-cultural well-being of local human systems, and the functioning of relevant fishery institutions in time and space."

Pomeroy (2012) further supports this statement he encourages these sustainable fishing practices to be more people-related and focused on

communities, thus requiring a broader understanding of the fisheries system. Especially considering that highly diverse and a sustainable fishery depends on contextual and geographical factors (Hilborn et al., 2015; McConney & Charles, 2008).

Thus, we must look beyond traditional commercial fishing activities to help supplement our appetite for fish. Alternatives such as municipal fishing and aquaculture hold significant promise in the Philippines.

2. MATERIAL AND METHODOLOGY

Bureau of Fisheries and Aquatic Resource (BFAR) data on Fisheries Statistics from 2016-2019 were utilized as primary sources. Review of current legal and fiscal policies pertaining to the fisheries and their relation to the food security situation of urban coastal cities were also conducted. Findings from these surveys were compared to data and interviews from KII and FGDs from the original study to determine/verify the development of the Philippine Fisheries sector and its contribution to Urban Coastal Food Security.

3. RESULTS AND DISCUSSION

1. Positive Developments in Philippine Fisheries.

Fisheries data from 2016-2018 (Table 1 & 2) show continues increase in the value of fish products even with some noted decreases in production. This positive development in the valuation and volume of fisheries products has actually continued in 2019 (Table 3). With preliminary estimates indicating increase of volume of overall production in the sector.

Table 1 Volume of Fisheries Production by Sector, Philippines: 2016-2018 (Metric Tons)

Sector	2016	2017	2018
All Sectors	**4,355,792.42**	**4,312,089.51**	**4,356,874.77**
Commercial Fisheries	**1,016,948.05**	**948,281.45**	**946,437.62**
Municipal Fisheries	**1,137,931.03**	**1,126,017.30**	**1,106,071.84**
Marine	976,941.19	962,146.84	941,870.86
Inland	160,989.84	163,870.46	164,200.98
Aquaculture	**2,200,913.34**	**2,237,790.76**	**2,304,365.31**
Brackishw ater Fishpond	337,582.24	343,793.25	325,503.98
Brackishw ater Fish cage	978.88	927.79	1,248.65
Brackishw ater Fish pen	2,086.18	2,765.27	2,882.17
Freshw ater Fishpond	145,655.32	156,465.15	161,519.66
Freshw ater Fish cage	97,568.86	95,699.48	103,348.98
Freshw ater Fish pen	56,610.84	62,805.43	57,644.07
Marine Fish cage	106,257.36	106,770.58	108,951.71
Marine Fish pen	11,307.24	11,019.69	9,867.59
Oyster	19,512.36	22,944.37	28,708.15
Mussel	18,774.55	19,208.62	26,302.77
Seaw eed	1,404,519.23	1,415,320.79	1,478,300.85
Small Farm Reservoir	56.68	66.86	83.25
Rice Fish	3.59	3.49	3.47

(PSA, 2019a)

Table 2 Value of Fisheries Production by Sector, Philippines: 2016-2018 ('000 Pesos)

Sector	2016	2017	2018
All Sectors	**228,934,096.52**	**243,901,886.76**	**265,348,684.33**
Commercial Fisheries	**58,866,556.69**	**59,716,355.53**	**61,044,889.18**
Municipal Fisheries	**78,925,620.10**	**83,478,711.83**	**93,974,457.31**
Marine	71,131,590.39	75,346,716.15	84,871,810.66
Inland	7,794,029.71	8,131,995.68	9,102,646.65
Aquaculture	**91,141,919.73**	**100,706,819.40**	**110,329,337.84**
Brackishw ater Fishpond	51,787,201.75	55,282,467.46	58,978,727.39
Brackishw ater Fish cage	106,726.60	111,939.58	167,744.15
Brackishw ater Fish pen	216,205.43	292,013.50	348,943.28
Freshw ater Fishpond	10,179,933.47	11,667,307.00	12,458,201.82
Freshw ater Fish cage	7,559,895.76	8,359,145.67	8,900,278.52
Freshw ater Fish pen	2,815,492.38	3,479,345.71	3,679,446.83
Marine Fish cage	10,776,760.70	11,478,206.96	12,978,066.80
Marine Fish pen	1,113,250.84	1,158,252.43	1,065,103.87
Oyster	203,357.76	259,820.87	310,701.55
Mussel	273,755.44	311,642.86	515,226.08
Seaw eed	6,104,737.53	8,301,351.18	10,919,695.79
Small Farm Reservoir	4,334.42	5,066.73	6,904.89
Rice Fish	267.65	259.45	296.87

(PSA, 2019a)

Table 3 Preliminary Estimates of Volume of Production by Subsector: 2017-2019

Subsector	Volume of Production (metric tons)			Percent Change	
	2017	2018	2019*	2018/2017	2019/2018
Fisheries	**4,312,089.51**	**4,356,874.77**	**4,421,217.45**	**1.0**	**1.5**
Commercial Fisheries	948,281.45	946,437.62	939,999.93	(0.2)	(0.7)
Municipal Fisheries	1,126,017.30	1,106,071.84	1,122,884.36	(1.8)	1.5
Marine	962,146.84	941,870.86	966,425.49	(2.1)	2.6
Inland	163,870.46	164,200.98	156,458.87	0.2	(4.7)
Aquaculture	2,237,790.76	2,304,365.31	2,358,333.16	3.0	2.3

(PSA, 2019b)

Recent reports compiled by the Philippine Statistics Agency (PSA) from the Bureau of Fisheries and Aquatic Resource (BFAR)from the Fisheries statistics report that 2019 was largely a good year for the fisheries industry. Overall production improved by 1.5 percent. The recorded total volume of production was estimated at 4,421.22 thousand metric tons, higher than the 4,356.87 thousand metric tons reported in 2018. Of the three subsectors, outputs from municipal fisheries and aquaculture went up by 1.5 percent and 2.3 percent, respectively. Sadly, commercial fisheries production registered a decline of 0.7 percent. Major contributors to the increase of production come from municipal fishing and aquaculture activities. These products/food items included seaweed (1.5%), milkfish (3.7%), tilapia (0.03%), skipjack (5.2%), roundscad (11.8%), yellowfin tuna (3.9%) and tiger prawn (2.5%). The percentage highlighted the production increments from their 2018 level of production.

The 2019 Fisheries Situation Report, which covers from January to December of 2019 recorded that the annual volume of commercial fisheries production was registered at 940.00 thousand metric tons, lower by 0.7 percent than the 946.44 thousand metric tons output in 2018. The same report also stated that production from municipal fisheries during the year was recorded at 1,122.88 thousand metric tons, which was 1.5 percent higher than the previous year's output of 1,106.07 thousand metric tons. Of its total volume of production, 86.1 percent was credited to marine municipal fisheries while the rest were catch from inland bodies of water. For its part, the same Report found that in 2019, the total aquaculture produce was 2,358.33 thousand metric tons. Aquaculture posted an increase of 2.3 percent from its previous year's level of 2,304.37 thousand metric tons.

In relation to their overall contribution to the fisheries sector, Commercial fisheries comprised 21.3 percent of the total fisheries output. While Municipal fisheries contributed 25.4 percent and Aquaculture bringing up the largest share of 53.3 percent to the total fisheries production.

2. A change for the better.

Legislation such as the Philippine Fisheries Code of 1998 (RA 10654) has changed the way the fisheries industry has operated. (White, Courtney & Salamanca, 2002). The creation of Marine Protected Areas (MPAs), has also restricted traditional invasive and environmentally disruptive practices motivating stakeholders to develop and pioneer alternative industries. Stricter enforcement and implementation of closed seasons in Philippine waters to protect fishes during their spawning season has allowed endangered stocks to rebound (Towers, 2015).

International partner agencies such as the Food and Agriculture Organization (FAO) have also spearheaded the rehabilitation of the fisheries sector through sustainable fishing practices post 2013 Typhoon Haiyan (FAO, 2020). Among their initiatives were the development of a new hybrid boat design and training for boat builders as well as introducing innovative approaches to post-harvest and processing activities which add to the value and long-term self-life of fish products.

For its part, BFAR is guided by Comprehensive National Fisheries Industry Development Plan (CNFIDP). The CNFIDP provides strategic directions for the Philippine fisheries until 2025. One of the components of the CNFIDP that the BFAR has continuously pushed since 2006 is the development/improvement of aquaculture in the country (BFAR, 2006). Aquaculture after all is the business of producing aquatic animals and plants in

managed, unnatural aquatic ecosystems for profit (Boyd and Schmittou, 1999). By this very definition alone, it has become enticing for communities to adapt and specialize aquaculture activities as not only is it in compliance with regulations, there is also financing available for this type of enterprise.

3. Moving Forward with Urban Coastal Food Security.

Communities, especially those in coastal areas which are largely dependent on the fisheries sector for their food security need to me encouraged to realigning their activities to sustainable municipal fishing and aquaculture practices, as they not only meet legal requirements, these also address environmental / ecological considerations as well as provide alternative livelihood opportunities which are profitable and legitimate. The inherent vulnerability of coastal municipal fishermen and the fisheries sector in general to food security shocks will likely be there for the foreseeable future. That being said, the way forward to urban coastal food security is to not only focus on commercial interests, but more importantly to holistic and participatory approaches to fisheries management in coastal areas (NRC, 1999).

4. CONCLUSIONS

. This paper presented an update to the current fisheries situation in the Philippines. The study showed that two years after the original study, the Philippine fisheries sector was able to increase in value despite food security threats such as climate change and environmental degradation. The study likewise found that the fisheries sector has benefited from coastal communities and municipalities that have embraced sustainable municipal fishing and aquaculture as alternatives to commercial fishing practices, as evidenced by the over-all increase in volume productivity and value. Developments in the local governance of communities with the aid of international; partnerships and the further strengthening of environmental protection laws are also seen as likely reasons for this shift of attitude in fishing practices. Further studies on community approaches and industry innovations is proposed as these findings could lead to further improvements in fish catch productivity and value.

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6. REFERENCES

Agardy, T. (2000). Effects of fisheries on marine ecosystems: a conservationist's perspective. *ICES Journal of Marine Science*, *57*(3), 761-765.

Boyd, C.E. and Schmittou, H.R. (1999), "Achievement of sustainable aquaculture through environmental management", Aquaculture Economics and Management, Vol. 3 No. 1, pp. 59-70.

BFAR. 2006. Comprehensive National Fisheries Industry Development Plan (CNFIDP). Accessed at: https://www.bfar.da.gov.ph/files/img/photos/CNFIDP.pdf

Carandang, J. S., Cruz-Flores, M., & Carandang, J. (2014). Developing A Sustainable Food Security Program for an Urban Coastal City, Navotas City, Metro Manila. Accessed at: http://www.dlsu.edu.ph/conferences/dlsu_research_congress/2014/_pdf/proceedings/FNH-II-010-ft.pdf

Carandang, J. S., Cruz-Flores, M., & Carandang, J. (2015a). Developing A Sustainable Food Security Program for an Urban Coastal City, Navotas City, Metro Manila. Part 2. Accessed at: http://www.dlsu.edu.ph/conferences/dlsu_research_congress/2015/proceedings/FNH/013FNH_Carandang_JL.pdf

Carandang JSR VI, Flores MJC and JLC Carandang. (2015b). Developing a Sustainable Food Security Program for an Urban Coastal City. Policy Briefs. AKI Research Grants on Food Studies. Volume VIII No. 4. ISSN# 2094-3342. Angelo King Institute.

Charles, A. T. (2001). Sustainable fishery systems. John Wiley & Sons.

FAO. (2020). Rehabilitating the Philippine fisheries sector through sustainable fishing practices. Accessed at: http://www.fao.org/in-action/rehabilitating-the-philippine-fisheries-sector-through-sustainable-fishing-practices/en/

Hauge, K. H., Cleeland, B., & Wilson, D. C. (2009). Fisheries depletion and collapse. *IRGC report "Risk Governance Deficits: An analysis and illustration of the most common deficits in risk governance". International Risk Governance Council Chemin de Balexert*, *9*(1219), 21.

Khan, S. R., & Khan, S. R. (2011). Fishery degradation in Pakistan: a poverty–environment nexus?. *Canadian Journal of Development Studies/Revue canadienne d'études du développement*, *32*(1), 32-47.

National Research Council. (1999). *Sharing the fish: toward a national policy on individual fishing quotas*. National Academies Press.

Philippine Statistics Authority. (2019a). FISHERIES Statistics of the Philippines, 2016-2018. Accessed at: https://psa.gov.ph/sites/default/files/Fisheries%20Statistics%20of%20the%20Philippines%2C%202016-2018.pdf

Philippine Statistics Authority. (2019b). FISHERIES SITUATION REPORT January to December 2019. Accessed at: https://psa.gov.ph/sites/default/files/attachments/ird/specialrelease/Special%20Release2019_Annual.pdf

Pomeroy, R. S. (2012). Managing overcapacity in small-scale fisheries in Southeast Asia. Marine Policy, 36(2), 520-527.

Tamiru, A., Bruce, T.J., Woodcock, C.M., Caulfield, J.C., Midega, C.A., Ogol, C.K., Mayon, P., Birkeet, M.A., Pickett, J.A. and Khan, Z.R. (2011) Maize landraces recruit egg and larval parasitoids in response to egg deposition by a herbivore. Ecology Letters 14(11): 1075–83.

Towers, L. (2015, October, 30). Philippines Begins Review of Five-Year Fisheries Improvement Plan. Accessed at: https://thefishsite.com/articles/philippines-begins-review-of-fiveyear-fisheries-improvement-plan

White, A. T., Courtney, C. A., & Salamanca, A. (2002). Experience with marine protected area planning and management in the Philippines. Coastal Management, 30(1), 1-26.