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AQUACULTURE, FINANCIALIZATION, AND IMPACTS ON SMALL- SCALE FISHING COMMUNITIES

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“The growth in production, increased political backing and substantial capital investments in aquaculture [...] give rise to some serious problems [...].”

This article first describes how aquaculture has rapidly become the fastest growing food industry and most attractive investment opportunity for capital markets today. It then sheds light on the human, social and environmental cost of aquaculture’s ten-fold increase in production over the last four decades. Lastly, selected case studies demonstrate the negative impacts on the livelihood of small-scale fishers in India, Thailand, and Ecuador.

HISTORY OF AQUACULTURE: A LONG TRADITION

The history of aquaculture dates back several thousand years.¹ Hundreds of different species of finfish, seaweed and mussels have been cultivated worldwide by both fishers and non-fishers. In Asia, the rearing of fish in rice fields is an ancient practice of peasants that continues until the present day, providing an essential source of nutritious food for local populations. Fish ponds made with large stones have been used for centuries by coastal communities in Africa to trap fish in rivers as well as at low tide, a method still common in South Africa. Ponds have also been used to breed carp fish in China for over 2000 years. Meanwhile, in coastal waters of Europe, oyster farming can be traced back to the Roman Empire when oysters were once a staple food of the working class, long before it became a delicacy for wealthy elites.² These examples illustrate that aquaculture is not new.

GROWTH OF AQUACULTURE UNDER CONTEMPORARY CAPITALISM

From the late 1960s onwards, following the invention of granulated fish feed and technological development of solid and less expensive materials for nets and cages,

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¹ History of Aquaculture (ND). Available at: www.chesapeakestem.org/assets/History_of_Aquaculture.pdf

² *Ibid*

aquaculture production slowly started to expand. By the mid-1980s, aquaculture production was captured in the statistics of the UN Food and Agricultural Organization (FAO). Recognizing the sector's socio-economic importance, in 1998 the FAO produced its first report on aquaculture as part of its fisheries statistics yearbook series. According to this report,³ the total aquaculture production from inland and marine waters amounted to 16.5 million tons in 1989. With a relatively constant growth rate of 6–7% per year, the global production reached a reported 114.5 million tons in 2018 – including fish, crustaceans, mollusks and aquatic plants.⁴ Most aquaculture produce is consumed in China, followed by the European Union, Japan, Indonesia, and the United States.⁵ As explained by the FAO: “a milestone was reached in 2014 when the aquaculture sector’s contribution to the supply of fish for human consumption overtook that of wild-caught fish for the first time”.⁶

This significant and continued growth in production is made possible through technological development, capital investment, and aquaculture-friendly policy reforms. Recent policies illustrate the increasing support by governments and inter-governmental institutions in the name of feeding a growing population, creating jobs, combating overfishing, and addressing climate change.

The UN Committee on Fisheries and Aquaculture (COFI) clearly positioned aquaculture as the ‘future of food’ at its 34th session in February 2021. Attended by over 100 governments and inter-governmental bodies, COFI called for enhanced financing, research, data collection and technology development, policy development and greater international coordination to promote aquaculture.⁷ One FAO initiative in pursuit of this agenda is the development of the Guidelines for Sustainable Aquaculture. The overall euphoria for more aquaculture is also reflected in the opening speech of the FAO Director-General, Qu Dongyu, who acclaimed that “[t]he potential of a modern aquaculture to grow and feed the world is extraordinary”.⁸ FAO’s State of World Fisheries and Aquaculture report (SOFIA, 2020) points out: “Growth in demand for fish and fish products needs to be met primarily from expansion of aquaculture production”.⁹

Another clear indication of the growing political support for aquaculture is the position that the sector has attained at other international gatherings. For instance, at the World Economic Forum (WEF), aquaculture has been on the agenda since 2017. Similarly, the Norwegian Prime Minister launched the High Level Panel for a Sustainable Ocean Economy,¹⁰ while the former Swedish Deputy Prime Minister launched the Friends of the Ocean Action Coalition, a multi-stakeholder initiative.¹¹ The high-level panel – a self-appointed ‘club’ of fourteen heads of states and the UN Secretary-General’s Special Envoy for the Ocean – pushes for policy reforms and other means to advance aquaculture.¹² The WEF-hosted Friends of the Ocean – another self-proclaimed group of leaders from governments and inter-governmental bodies, NGOs, academia and business including financial institutions (e.g. Coca Cola, Yara International) – promotes aquaculture as part of its broader ocean agendas.¹³ Although they operate outside of the government realm, these clubs add political weight to an ever-increasing drive for aquaculture through the participation of and support by heads of states and other senior government officials.

This political support coupled with aquaculture-friendly reforms are necessary to legally ensure private property in aquaculture (e.g. concessions of coastal land and the sea), as well as economic feasibility (e.g. environmental deregulation). Such reforms are evolving fast in many countries. One example is India’s Blue Economy

3 FAO. (1998). Fishery statistics: Aquaculture production. *FAO Yearbook of Fishery Statistics 86(2)* Available at: www.fao.org/3/a-x7461t.pdf

4 *Ibid.*

5 EU Science Hub. (2018, September 27). *How much fish do we consume? First global seafood consumption footprint published.* Available at: ec.europa.eu/jrc/en/news/how-much-fish-do-we-consume-first-global-sea-food-consumption-footprint-published.

6 FAO. (2016). *The State of World Fisheries and Aquaculture (SOFIA) - Contributing to food security and nutrition for all.* FAO. p.2.

7 Personal observations at 34th session of COFI, 1-5 February 2021; COFI. (2021). *Draft report of the thirty-fourth session of the Committee on Fisheries – for adoption.* FAO.

8 FAO. (2021, February 21). *Fisheries and aquaculture are a critical part of global agri-food systems transformation, says FAO Director-General.* Available at: www.fao.org/news/story/en/item/1371547/icode/

9 FAO. (2020). *The State of World Fisheries and Aquaculture - Sustainability in action.* FAO. p. 105. Available at: doi.org/10.4060/ca9229en

10 High Level Panel for a Sustainable Ocean Economy. Available at: oceanpanel.org

11 Friends of Ocean Action. Available at: www.weforum.org/friends-of-ocean-action

12 See: Costello, C., Cao L., Gelcich S. et al. (2019). *The Future of Food from the Sea.* World Resources Institute. Available at: www.oceanpanel.org/blue-papers/future-food-sea

13 Between 1–5 June 2020, the Friends of the Ocean together with WEF hosted the Virtual Ocean Dialogues. This dialogue replaced the UN Oceans Conference on Sustainable Development Goal 14 (SDG14), which was postponed due to COVID-19. It was endorsed by many heads of states from around the world as well as Director-Generals and other seniors from various UN bodies. For more information, please visit: www.weforum.org/events/virtual-ocean-dialogues-2020/

Program (Sagarmala) and its 2020 Fishery Policy, which promote coastal and marine aquaculture. A vast number of countries are also developing Marine Spatial Plans, which include aquaculture as a central pillar for economic growth.¹⁴ Thanks to the trade and investment policies already in place – such as the Asia-Pacific Regional Comprehensive Economic Partnership Free Trade Agreement – the aquaculture sector has become mature enough for investment. Recent data on mergers and acquisitions show that the sector is now attracting finance capital in the same way that agriculture and farm-land were an investment asset for finance capital, especially following the Great Recession.

Yet, aquaculture is historically dominated by relatively small or medium-scale players, with tens of thousands of producers (including producers of fish feed) scattered across the globe. Now, however, the aquaculture sector has undergone a rapid change in ownership and production concentration. In India, for example, the feed sector for shrimp aquaculture has become extremely concentrated: Avanti Feeds has increased its share of the total Indian shrimp feed market to 47% in 2019.¹⁵ Since the 2008 financial crisis, a few transnational corporations including MOWI ASA, Thai Union Group, Nippon Suisan Kaisha, Austevoll Seafood, Maruha Nichiro and Cargill, have positioned themselves as top players through mergers and acquisitions. Together they control the majority of global aquaculture production, including fish feed.¹⁶ More recently, the Walton family and Bill Gates have invested in aquaculture, and according to Undercurrent News,¹⁷ 28 deals were made by financial players (e.g. pensions and private equity funds) in 2018, up from 21 the year before. Antarctica Advisors is also speculating that private equity heavy weights such as the world's largest buy-out giant, Blackstone, are eyeing up deals in aquaculture.¹⁸

IMPACT OF AQUACULTURE ON SMALL-SCALE FISHING COMMUNITIES: CASE STUDIES

The growth in production, increased political backing and substantial capital investments in aquaculture do, however, give rise to some serious problems. On the one hand, aquaculture is causing damage to both nature and climate. On the other hand, it leads to dispossession of masses of people, including fishing communities who contribute to half of global landings in wild capture fisheries and employ over 90% of people in fisheries.¹⁹ The following three case studies from India, Thailand, and Ecuador illustrate what is at stake.

The worldwide shrimp industry boom in the late 1980s incentivized India to introduce aquaculture to earn foreign earnings. A series of policy reforms has since paved the way for extensive shrimp cultivation, and today over 20,000 farms cover an area of 143,000 hectares. This expansion of aquaculture has led to land degradation, denial of fisherfolk's access to fishing grounds, and dispossession of land, as echoed by local fishers at the Blue Economy Tribunal.²⁰

One example is Chilika Lake in Odisha. The lake is India's largest brackish water lagoon and biodiversity hotspot. It has also been the source of livelihood for some 40,000 local fishers for decades.²¹ In the late 1980s, the state government encouraged non-fishers and corporations to invest in shrimp farming, thereby introducing aquaculture-friendly policies (e.g. leasing of land) and subsidies to promote the sector. This has created an occupation category of new land owners (local and non-local elites) who gradually 'decommonize'²² the lagoon that was previously accessed, shared and used as commons. What's more, these new actors do not shy away from illegal practices. State authorities have failed to control and combat illegal shrimp farming, thereby exacerbating negative impacts. For example, tradition-

14 MSP Roadmap. *MSP Around the World*. Available at: www.msp-global2030.org/msp-roadmap/msp-around-the-world/

15 ICICI Securities. (2019, August 20). *Avanti Feeds: Maintain 'Buy' with a target price of Rs 400*. Financial Express. Available at: www.financial-express.com/market/avanti-feeds-maintain-buy-with-a-target-price-of-rs-400/1680141/

16 MSP Roadmap. *Supra* note 14.

17 Undercurrent News. (2020, March 10). *Gates Foundation invest in Greece's Philosofish*. Available at: www.undercurrentnews.com/2020/03/10/gates-foundation-invests-in-greeces-philosofish

18 Antarctica Advisors. (2019, April 18). *Could Blackstone go fishing for deals with new \$22bn-plus fund?* Available at: antarcticallc.com/could-blackstone-go-fishing-for-deals-with-new-22bn-plus-fund/

19 FAO. *Supra* note 6. p. 133.

20 Blue Economy Tribunal is an independent people's tribunal. Six tribunal series were held between August and December 2020, based on studies exploring the social, economic, ecological and political implications of the 'Blue Economy' across the Indian Ocean region. For more information on the verdicts, please visit: blueeconomytribunal.org/

21 Gandimathi A., Jones S., and Jesurethinam. (2021). *Socio-Economic Environmental and Political Implications of Industrial Aquaculture on Small Scale Coastal Fishers and Fisher Women in India – Odisha*. Legal Aid to Women (LAW) Trust. p. 18.

22 According to Nayak and Berkes, 'commonisation' is a process "through which a resource gets con-

al fisherfolks, a majority of whom are from marginalized castes and tribal groups (Adivasi) have lost their customary rights. As custodians of the lake, the traditional Chilika fishers can no longer rely on fishing to sustain their livelihood. Moreover, they lament the changes in the lake's ecosystems (loss of fish catch, increase in salinity of coastal freshwater aquifers and ground water, change of currents, etc.), and increased waterborne diseases due to worsened water quality. Collectively owned farmland and grazing lands are being turned into shrimp farms, impacting the local food systems.

In addition, women are compelled to engage in construction-related income-generating activities outside of their communities. They often face verbal abuse and physical assaults, as they are caught in conflicts between fishers and non-fishers. As fish stocks decrease, so does household consumption of fish, and women are among the most affected because they experience malnutrition the most.²³

While shrimp farms are still owned by a large number of small corporations, the development trajectory under contemporary capitalism could soon result in centralization of farms in the hands of fewer and larger units. The feed industry is already heavily centralized (as mentioned above) and could allow industry owners to invest in farms, thereby securing ownership of the entire value chain. In sum, unrestrained shrimp aquaculture has caused a rise in economic and social inequality between traditional fisher communities and non-fishers, changing the entire social fabric around the Chilika lake.²⁴

In Thailand, in the face of declining fishing resources caused by industrial overfishing, aquaculture has emerged as a viable economic activity. Situated in the Gulf of Thailand, Ban Don Bay is the largest breeding site for marine shellfish. The expansion of shell farms (mainly mussels) that started in the 1990s, has led to a phenomenon known as 'narrow sea', which entails encroachment of the sea by private persons and corporation. Small-scale fishers are seeing their access to coastal marine resources denied, and, as they now have to travel further out to fish, their income has dropped. To make matters worse, they are criminalized by private owners of shell fish aquaculture, while corporations gain more control over the local sea food market. Indeed, an income survey conducted by Walailak University (2011) shows that the local fishers' income has not only reduced, many have actually lost their livelihood and suffer from indebtedness.²⁵ They are thus forced to take up construction work and other irregular jobs.²⁶

Under these circumstances, the women's burden of maintaining the household economy and ensuring food for family members has increased. As of today, 59% of Thai coastal fishing areas have been lost to aquaculture (both legal and illegal).²⁷ Yet, due to the farming methods used, increased shellfish farming in common waters not only affects the catch of local fishers, it also destroys the underwater environment.

In Ecuador, shrimp aquaculture started in the 1970s and continued to expand until the 2000s. In 2008, the government 'legalized' shrimp aquaculture through Executive Decree 1391, thereby giving concessions for aquaculture. The sector accounts for 17% of Ecuador's foreign exchange earnings (2019 figures) and enjoys state-backed investment and incentives, such as an exemption from paying the water tax. Spanish and Chinese investments have recently flourished as a result of more investor-friendly legislation.

verted into a jointly used resource under commons institutions that deal with excludability and subtractability". 'Decommonization' refers therefore to a process "through which a jointly used resource under commons institutions loses these essential characteristics". See: Kumar, Nayaka P.K, and Berkesa F. (2011). Commonisation and Decommonisation: Understanding the Processes of Change in the Chilika Lagoon, India. *Conservation and Society* 9(2), 132-145. p. 133.

23 Gandimathi et al. Supra note 21.

24 Costello et al. Supra note 12.

25 Sawusdee, A. (2011). *Fishing Status and Management Proposal in Bandon Bay, Suratthani Province, Thailand*. Walailak Journal of Science and Technology, 7(2), 89-101.

26 Thipyan, C. *Study information on the development of joint fishery management model of fishery communities in Ban Don Bay area*. Faculty of Humanities and Social Sciences, Suratthani Rajabhat University.

27 Sustainable Development Foundation. (2020). *Strengthening Evidence-based Advocacy for Gender Mainstreaming and Gender Justice in Small-scale Fisheries and Coastal Aquaculture in Thailand*. Swedbio. p.12

One problematic issue is that the exemption of water tax does not consider the quality of water which is returned to the estuary. Given that no water purification treatment is required, water pollution and contamination of mangrove ecosystems is on the rise. The expansion of shrimp aquaculture has led to the dispossession of estuarine harvesters and fishers of their territories, which are rich in mangrove forests (part of the commons they relied on). They are thus denied their ancestral fishing access and territorial rights.

As the area earmarked for harvesting and fishing diminishes in size, so does the income of local harvesters and fishers. With an average monthly income of USD \$80 per family, poverty is widespread among these populations. They also lack basic needs such as health care, education, and water. The jobs they were offered in the shrimp sector are often informal and poorly paid.²⁸ According to official data, 150,000 to 250,000 persons were employed in the entire shrimp aquaculture value chain in 2015 and 2019, respectively.²⁹ Taking into consideration that 250,000 hectares of coastal area is now designated for this purpose, a simple calculation reveals that this sector generates one job per hectare, far below the amount that the mangrove ecosystem could provide fisher families with. Another alarming development is the increase of violence and killings since the government permitted shrimp sector personnel to carry guns. Between 2008 and 2018, more than ten harvesters fell prey to shrimp pond security guards in the province of El Oro.³⁰

In conclusion, coastal and marine aquaculture are now among the most attractive food industries. During the past few years, this sector has become a priority investment asset for corporate and finance capital, and through mergers and acquisitions the production is becoming extremely centralized in the hands of fewer and bigger owners. In the words of human rights activist Khushi Kabir from the Bangladeshi organization Nijera Kori:

*The promotion of culture fisheries [has] created a huge displacement. [In] areas where shrimp aquaculture was more practiced, poverty increased to the highest levels in the country as those who practiced aquaculture were making money by exploiting the local people whose traditional income sources were destroyed [by] grabbing their land.*³¹

But fisher peoples, small-scale fishers and fish workers do not stand by in silence. All over the world, they are denouncing the 'blue economy', which they view as the grabbing of their territories in the name of so-called 'development projects'.³² In the face of mounting evidence that aquaculture and financialization impact their communities, small-scale fisher movements are fighting back to reclaim controls of their territories, restore the natural environment, and advance their food sovereignty agenda.³³

28 According to various testimonies, a temporary shrimp farm worker earns between USD \$15-20 for a 10-hour work day, while, as per another testimony, a shrimp farm worker earns around USD \$400 a month for a 24-hour job. In the packing sector, women are mostly employed casually and are paid 0,10 cents per pound for peeling and cleaning the shrimps. Many women are in search of jobs in shrimp farms as other occupations have disappeared. See: Torres Benavides, M. and Valero, J.P. (2020). *Investigación Proyecto Equitierra Conflictos en el ecosistema manglar de la costa del Ecuador - El desarrollo de la acuicultura industrial del camarón frente a los Derechos de los pueblos de recolectores y pescadores de los estuarios - Periodo: 2008-2018*. p.26.

29 Ecuador National Chamber of Aquaculture. For more information, please visit: www.cna-ecuador.com/

30 Torres Benavides, M. and Valero, J.P. *Supra* note 28. xvii, p. 11.

31 Kabir, K. (2020, November 25). Testimony at the Independent People's Tribunal on the Implications of Blue Economy in East Coast of India. Available at: blueeconomytribunal.org/india-east-coast-tribunal/

32 World Forum of Fisher Peoples (WFFP) (2021, February 23). *International Conference on the Impacts of the Blue Economy Report*. Available at: worldfishers.org/2021/02/24/wffp-international-conference-on-impacts-of-blue-economy-response-of-the-affected-peoples-23rd-february-2021-4pm-to-630pm-indian-time-ist/

33 See: International Planning Committee for Food Sovereignty (IPC). (2021). *Statement in response to Agenda Item 7 - Contribution of fisheries and aquaculture to the implementation of the 2030 Agenda for Sustainable Development*. Available at: www.foodsovereignty.org/wp-content/uploads/2021/01/EN_IPC_Statement_Agenda_Item_7_Contribution_of_fisheries_and_aquaculture_to_the_implementation_of_the_2030_Agenda_for_Sustainable_Development.pdf