

Voluntary Report – Voluntary - Public Distribution

Date: June 07, 2022

Report Number: BM2022-0010

Report Name: Significant Growth in Burmese Aquaculture over Last Decade but Future Uncertain

Country: Burma - Union of

Post: Rangoon

Report Category: Grain and Feed

Prepared By: FAS Rangoon

Approved By: Eric Mullis

Report Highlights:

Burma's aquaculture production and export in MY 2021/22 will remain flat as COVID-19 restrictions and the military coup continue to dampen the economy. Post anticipates lower U.S. soybean meal (SBM) and distiller's dried grain with solubles (DDGS) exports to Burma in MY 2021/22 in line with slower aquaculture development and changes in foreign currency controls.

General Information:

The Burmese aquaculture marketing year (MY) begins in October and aligns with the Burmese government's fiscal year (October – September). Burma's fiscal year was April to March until 2018 at which time the Burmese government had a “mini” budget (April-September 2018) to bridge the time until the new fiscal year started in October 2018. Historical data aligns with the previous fiscal year.

Aquaculture Overview:

Aquaculture is an important sector for Burma's economy, providing jobs and encouraging foreign investment. Aquacultural exports became Burma's fourth largest export in MY 2019/20 and remains the fourth largest in MY 2020/21. Aquaculture production has increased steadily since 2000. The land dedicated to aquaculture increased from 72,588 hectare (Ha) (174,293 acres) in 2000 to 200,142 Ha (494,353 acres) in 2018. The majority of Burmese aquaculture area is fish farming (100,347 Ha) and shrimp farming (981,967 Ha). There are more than 49 thousand fish and prawn farms in Burma with a total of 59 thousand workers. More than 90 percent of shrimp and prawn farms are located in Ayeyarwady Region and Rakhine State.

The total production of freshwater prawn and marine shrimp was 38,223.88 MT in MY 2018/19. There are more than 550 companies doing business in the fishery sector and nearly 300 exporters. The Department of Fisheries (DOF) reports that there are more than 124 cold storage facilities and more than 300 ice plants in Burma. Burma's aquaculture sector's top products are frozen whole fish, frozen back shrimp, frozen cooked, peeled prawn, frozen crumbed prawn cutlet, frozen marinated filler pastry, frozen marinated prawn, frozen raw prawn twister, breaded squid rings, breaded fish filler finger, and fish square. Aquaculture accounts for 19 percent of total fish production, while marine and inland fisheries account for more than 80 percent of total production.

The Burmese fisheries sector consists of the following three categories: fresh water inland fisheries, marine fisheries, and aquaculture (Figure 1). There are leasable fisheries and open fisheries within the inland fisheries category. Leasable fisheries are prominent and mainly produce freshwater fish. Farmers use leasable fisheries to manage indigenous fish, conserve fisheries habitat, and establish a sustainable capture-based fish production system. The DOF only authorizes open fisheries for small scale fish production and subsistence fishing. Marine fisheries include in-shore fisheries and off-shore fisheries. Fishing boats operating between the shoreline and 10 nautical miles from the shoreline are in-shore, while any fishing more than 10 nautical miles from the shoreline is off-shore.

There are two major aquaculture systems practiced in Myanmar: freshwater pond and brackish water pond cultures. Most aquaculture farmers, especially in freshwater fish farming, use a pond-based culture system. Farmers also operate pond-based aquaculture in coastal areas in soft-shelled crab and seaweed farming. The largest aquaculture producing areas are Rakhine State and Yangon, Bago, Ayeyarwady, Tanintharyi, and Sagaing regions. Ponds sizes typically range from one ha to 10 Ha (2.5-25 acres).

Figure 1: Types of Fishery Production in Burma

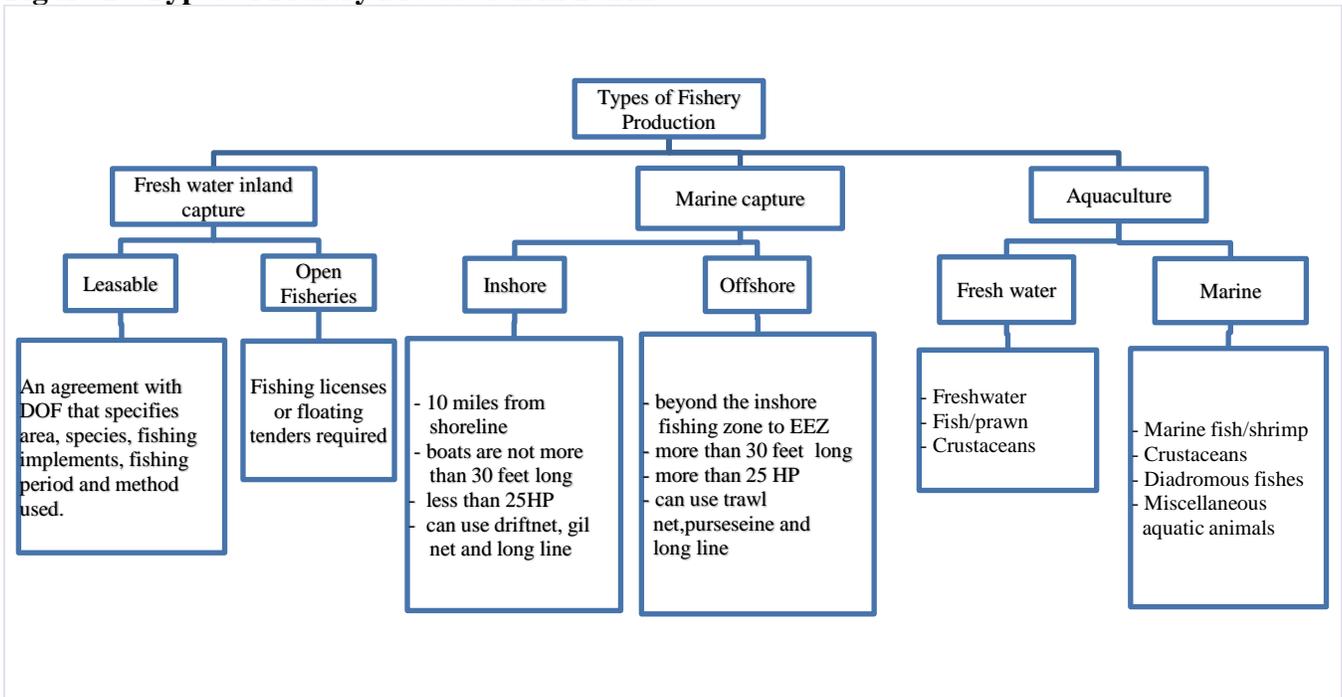
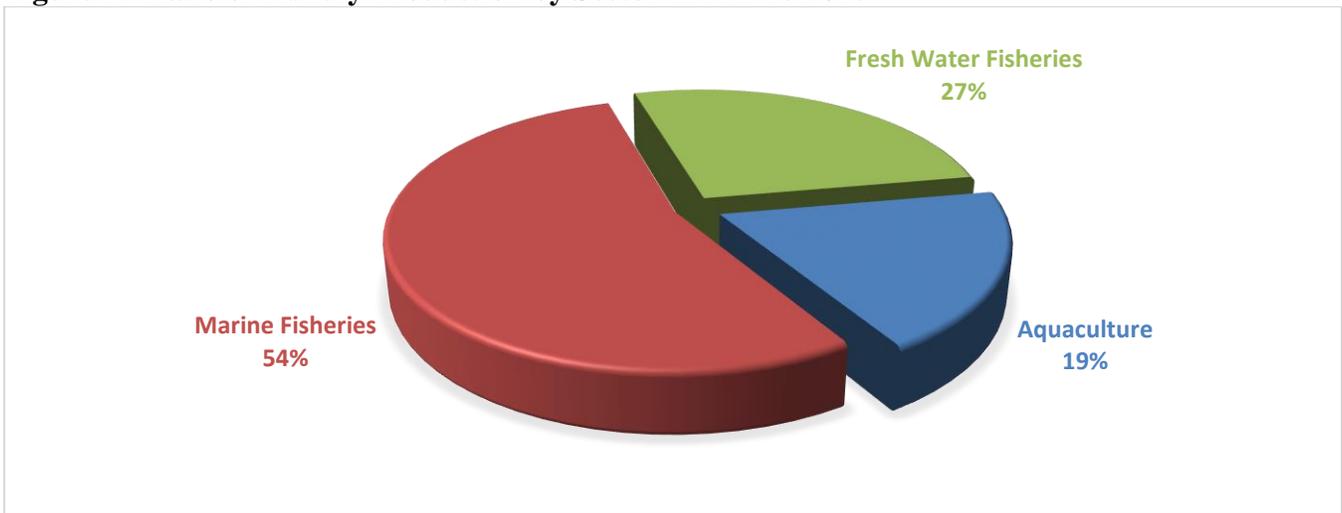


Figure 2: Ratio of Fishery Production by Sector in MY 2019/20



Source: Department of Fisheries

Fishery Production

The fishery sector includes wild caught fish from either inland freshwater fisheries or marine fisheries and farmed fish from aquaculture (Figure 1). Inland and marine fisheries account for more than 80 percent of total fishery production. However, the aquaculture industry has developed significantly over the past decade. Aquaculture accounted for 19 percent of total fish production in MY 2019/20 reaching 1.15 MMT of production (Figure 2). There is an estimated 200,936 Ha (496,311 acres) of aquaculture in Burma with the majority of fishponds in Yangon, Ayeyarwady, Bago, Sagaing, and Mandalay regions.

There is great potential for the Burmese aquaculture sector. While the COVID-19 pandemic negatively affected 40 percent of small and medium farms due to low demand, limited transportation, and insufficient cold storage, the Burmese government reported that the COVID-19 pandemic had a smaller impact on the fishery sector than other agricultural sectors. The Burmese government provided COVID-19 loans to the aquaculture sector and distributed 300 million fingerlings for 60,728 Ha (150,000 acres).

Post forecasts that Burma's fishery production will decline in MY 2020/21, especially in freshwater fish cultures due to limited financing from banks, high feed costs, high fuel cost, and limited transportation. Domestic consumption declined during the COVID-19 pandemic as many restaurants were closed and the Burmese government restricted public gatherings, such as wedding ceremonies, donations ceremonies, and seasonal and traditional festivals.

Freshwater Aquaculture

Fish Ponds

Ayeyarwady region accounts for 50 percent of total aquaculture fishpond area followed by Yangon regions (27 percent) and Bago region (13 percent) (Table 1). The main species Burmese fish farmers raise in aquaculture fishponds are rohu (*Labeo rohita*), catla (*Catla catla*), mrigal (*Cirrhinus mrigala*), and butter fish (*Silondia spp*). The most common commercial cultured specie is rohu, which is from Burma. Burmese farmers raise more than 20 species of freshwater fish, including catla, rohu, common carp, Indian major carps, grass carp, mrigal carp, silver carp, Chinese carps, Tilapia, Pangasius, striped catfish, walking catfish, and Pacu.

The Aquaculture Law of 1990 prohibited the collection of fry and fingerlings in order to conserve and enhance natural fish stocks. However, hatchery operators are able to get a permit from the DOF to collect fry and fingerlings to develop aquaculture production and productivity of quality fish seeds. The DOF has 27 freshwater fisheries stations but is only operating 25 of them to produce seed and provide technical assistance to farmers to help strengthen the quality of brood stocks. The DOF produced more than 718 million freshwater fish fry through its hatcheries in MY 2019/20; however, 36 private hatcheries produced an impressive amount of 1,654 million fry and fingerlings to satisfy demand. Larger farmers have their own hatcheries and processing plants. Some even have their own feed mills. The larger farmers tend to focus more on the export market, while smaller farmers generally sell to local wet markets.

Table 1: Aquaculture Fish and Shrimp Ponds by States and Regions in MY 2018/19

States/Regions	Fish Pond (Ha)	Prawn Pond (Ha)
Ayeyarwady	50,021	25,804
Rakhine	36,202	63,355
Yangon	27,258	7,604
Bago	12,604	16
Mandalay	3,177	0
Sagaing	3,054	0
Tanintharyi	453	1,675
Shan	1,370	0
Kachin	953	0
Mon	405	455
Kayah	362	0
Kayin	300	53
Magway	172	0
Chin	139	0
Naypyitaw	70	0
Total	100,347	98,962

Source: Department of Fisheries

Prawn Ponds

The DOF reported that the total shrimp farm area was roughly 98,962 Ha (244,437 acres) in MY 2018/19 with about 64 percent of shrimp and prawn farms located in Rakhine State (western coastal), 26 percent in Ayeyarwady region, and in 7.6 percent in Yangon region.

Giant freshwater prawn (*Macrobrachium rosenbergii*) is the most commercially raised prawn in Burma. Only a few farmers use a monoculture system for semi-intensive and intensive production even though productivity is better than polyculture system. Most farmers use a polyculture system that includes freshwater prawns and other freshwater fish in order to reduce production costs. In addition, there is a lack of technical expertise in properly maintaining a monoculture system. Farmers remain profitable using a polyculture system from favorable prices. Demand for freshwater prawn seed continues to increase. There were 33,407 Ha (82,517 acres) of shrimp farms in Ayeyarwady and Yangon regions in 2018/19.

Black tiger shrimp (*Penaeus monodon*) prawn is the main commercially raised species in Rakhine State, while mud crab and sea bass are also popular. The DOF introduced Mangrove Friendly Shrimp Culture in 2002 and 2005 with limited success. Most farmers did not adopt it due to market and price constraints. The DOF, however, continues to promote freshwater prawn farming in Rakhine State due to its success.

Burmese farmers practice the following three different types of shrimp farming: semi-intensive shrimp ponds on 2,602 Ha (6,429.85 acres), extensive plus shrimp ponds on 26,641 Ha (65,805.77 acres), and extensive or traditional shrimp ponds on 69,717 Ha (172,202.44 acres). There were seven shrimp hatcheries that provided 12 million fingerlings in MY 2018/19. Burma also imports shrimp lava from

Thailand and Bangladesh to meet domestic demand. Burma imported 138.78 million of giant freshwater prawn, tiger shrimp, and white shrimp larvae from Thailand in MY 2018/19.

Aqua Feed

Fish farmers mix rice bran and oilcake with a ratio of 5:1, 4:1, and 3:1 for home-made feed formulation at the direction of the DOF. Major fish feed ingredients were rice bran, peanut cake, sunflower cake, cotton seed meal, and cassava flour before 2003. The Department of Fisheries introduced floating fish pallet feed in 2003. The major ingredients in pallet feed are rice bran, peanut cake, soybean cake, fish meal, wheat bran, shrimp bran, sunflower, and sesame cake. Farmers and feed mills use different feed formulations and mostly use agricultural by products that are available locally as aquaculture feed ingredients, such as rice bran, sesame and groundnut cakes, coconut pulp, cotton seed cakes, fish meal, wheat bran, shrimp bran, cassava flour, and beans and pulses powder. Farmers and feed mills import soybean meal, rape seed meal, corn gluten meal, feather meal, meat and bone meal, fish oil, binder, and premixed feed.

FAS Rangoon estimates Burma's commercial aqua feed demand at 0.4 million metric tons (MT) in MY 2021/22, declining 35-40 percent from the previous year. Feed accounts for 75-80 percent of total production cost. Forty percent of aquaculture farms use rice bran, 25 percent use home mixed feed (farm made), 20 percent use conventional feeding system, and only 15 percent use scientifically formulated mesh, sinking pellets, or floating pellets fish feed. Most shrimp farms use imported pellet feed from Thailand and Vietnam.

There are 17 feed producers in the country, excluding small backyard feed mills. The biggest feed producers are Myan Swan Htet, Htoo Thit, CP, De Heus, CJ, New Hope, and Green Feed. Burma imports soybean meal from the United States, Brazil, India, Bolivia, Malaysia, Paraguay, Pakistan, and Canada. Burma also imports U.S. soybean meal and distiller's dried grains with soluble (DDGS) for livestock and aqua feed. The import volume of these two feed ingredients from the United States has increased gradually over the past 10 years in line with the development of Burma's aquaculture sector. Burma imported more than 290 thousand metric tons (TMT) (\$107.7 million) of U.S. soybean meal in MY 2019/20, but only imported 148 TMT (\$68.7 million) in MY 2020/21 due to the negative economic impacts from the COVID-19 pandemic and Burma's military coup (Figure 3).

Please read our past reports on the impact of the coup on Burma's agricultural sector for more background information.

[Impact of Burma Military Coup on Agriculture Sector and Trade](#)
[Military Coup Continues to Hamper Agricultural Trade](#)
[Shipping Line and Banking Disruptions Continue to Impact Trade](#)
[Burmese Corn Export Increased in 2021 Despite COVID-19 and Coup](#)

The outbreak of COVID-19 and the military coup led to banking disruptions, poor cash flow, limited transportation, frequent black outs, reduced incomes, higher unemployment, and no traditional donations ceremonies and festivals due lockdown measures. Only large farmers and feed mills were able to continue operations. Small fish farmers and feed mills had to shut down due to high production costs and lower demand. The Ministry of Commerce and the Central Bank of Myanmar have released several

notifications to reduce Burma’s trade deficit such as controls on foreign currency in the market, fixed exchange rates, and increasing the number of goods that require import and export licenses. These restrictions have increased the burden and processing time for importers and exporters to move product (please see GAIN Report “[Burmese Government Tighten Enforcement of Import License Procedures](#)”).

Figure 3: U.S. Soybean Meal and DDGS Exports to Burma



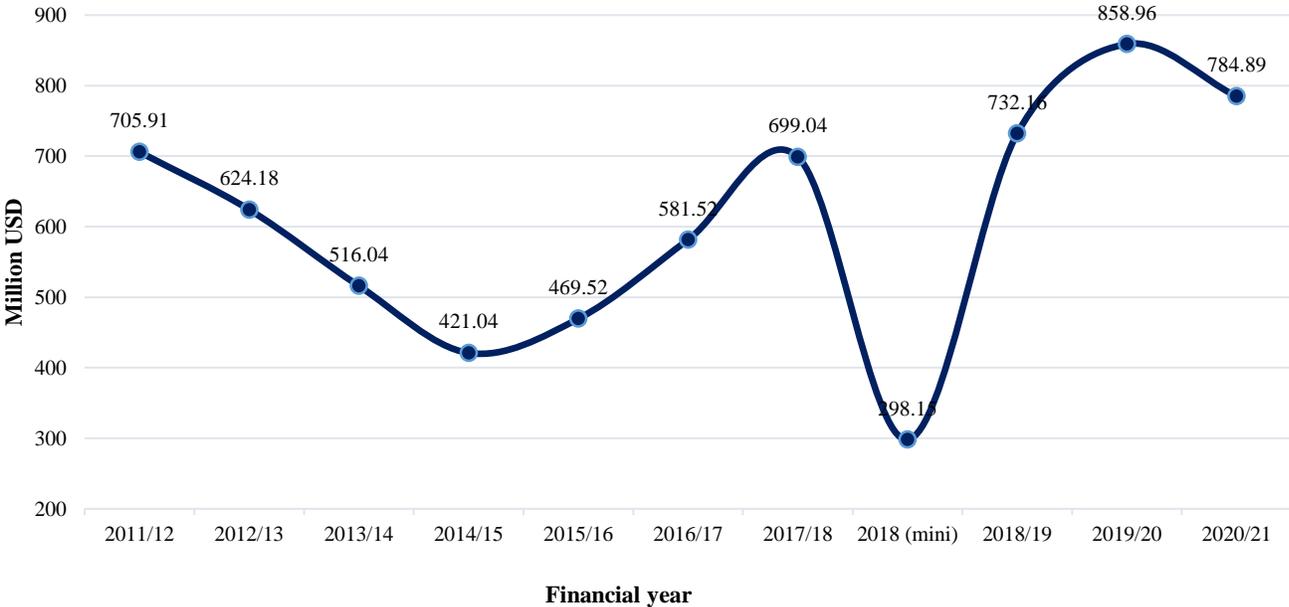
Source: Trade Data Monitor, Inc.

Export

Burma exports fish and crustaceans to more than 40 countries. Roughly 80 percent of Burma’s aquaculture exports come from marine fisheries and 20 percent come from freshwater fisheries. Burma exported 669,685 MT of fish and crustaceans in MY 2019/20 (\$853 million), 15 percent higher than the previous year. Burma mostly exports frozen fish, whole fish, and fish fillets, while live fish and cured or smoked fish account for a minor share of total exports. The top markets for Burma’s aquaculture exports are Thailand, China, Japan, Singapore, the United States, Malaysia, and Saudi Arabia. Saudi Arabia restricted the import of Burmese fish from Roku in 2018 due to food safety concerns. The restriction significantly hurt Burma’s aquaculture exports as more than 40 percent of Roku exported to Saudi Arabia. Saudi Arabia imported 20,000 MT of fishery products from Burma before the restriction went into effect. The Burmese government is currently in negotiation with the Saudi Arabian government to resume exports. The EU approved the importation of Burmese aquaculture products in May 2019. Although the EU has inspected seven factories and 27 fishponds, Burma has yet to export aquaculture products to the EU. The Chinese market accounts for around 60 percent of Burma’s fishery export followed by the EU, which does import wild-caught fish.

Burma’s fishery exports were \$853 million in MY 2019/2020, \$125 million higher than the previous year. However, Burma’s fishery exports to China dropped significantly at the onset of the COVID-19 pandemic when some factories and business were shut down. In addition, China continues to restrict border trade through COVID-19 control measures. Burmese exporters have started exporting through maritime trade as a result. Burmese fishery exports dropped to \$784.89 million in MY 2020/21. Burma’s fishery industry continues facing several challenges such as rising oil price, a surge in container shipping costs, and the devaluation of the Myanmar Kyat.

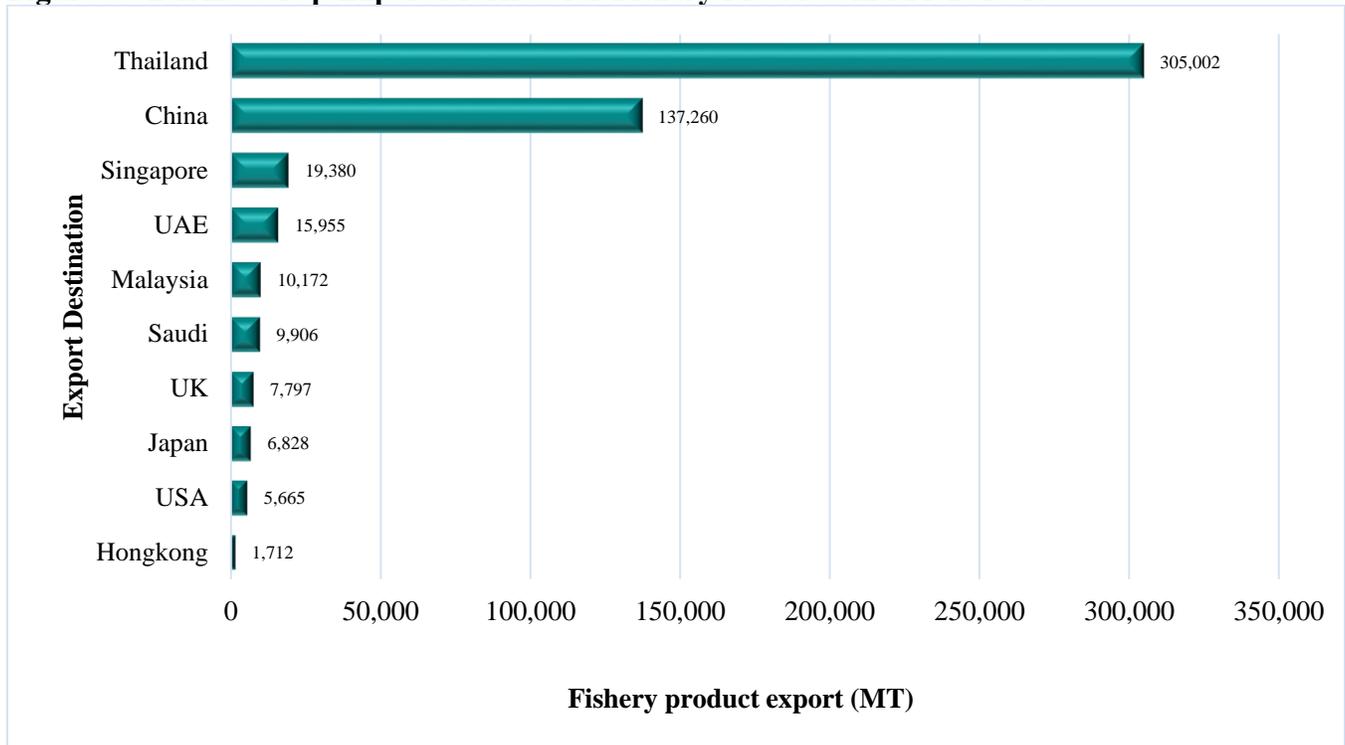
Figure 4: Burma’s Fishery Products Export



Source: Department of Fisheries

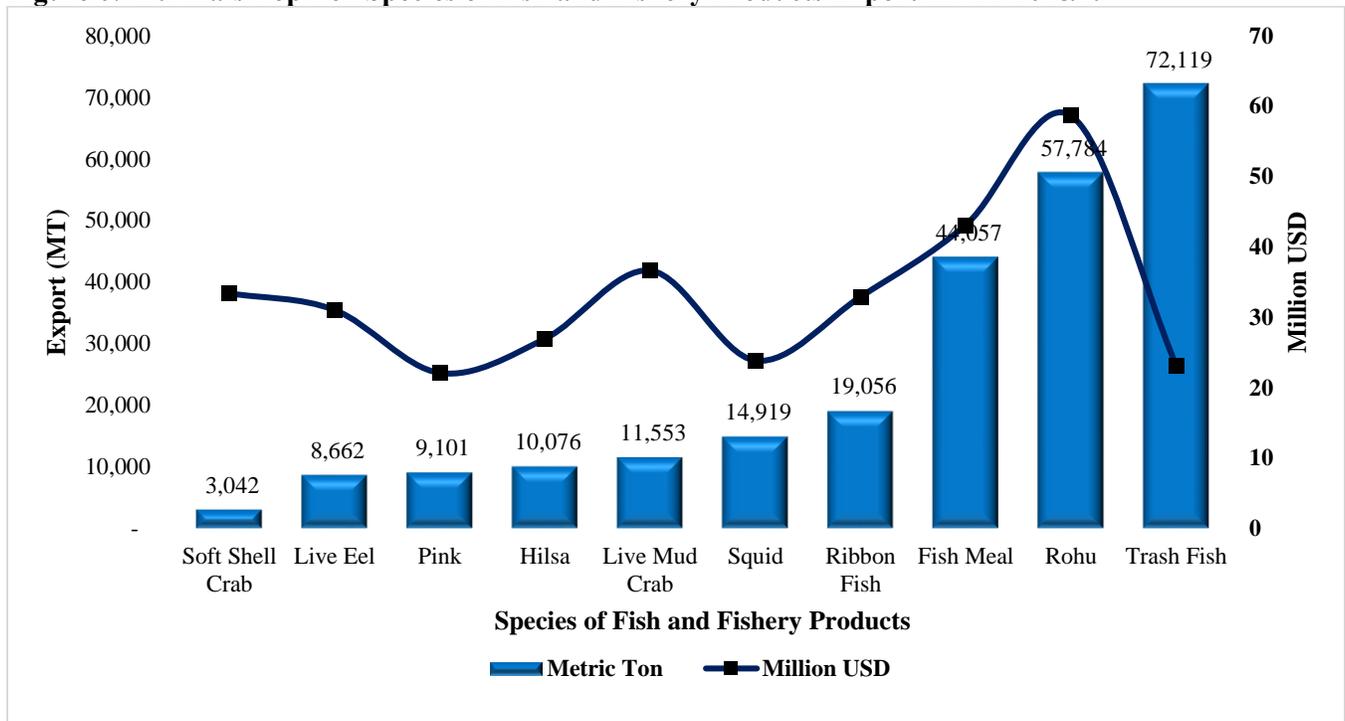
Note: Burma’s fiscal year was April-March until 2018 at which time it was changed to October-September. The Burmese government had a “mini” budget to bridge the time from April to September 2018 until the new fiscal year would start.

Figure 5: Burma's Top Export Markets for Fishery Products in MY 2018/19



Source: Department of Fisheries

Figure 6: Burma's Top Ten Species of Fish and Fishery Products Export in MY 2018/19



Source: Department of Fisheries

Burma's Governmental Programs and Support

The DOF of the Ministry of Agriculture, Livestock, and Irrigation (MOALI) is the regulatory agency over Burma's fishery sector in charge of inspecting both imports and exports for quality and food safety. The DOF is also responsible for the sustainable management of fishery resources. The DOF imposes a closed season and closes certain areas for marine capture annually to protect the spawning season of marine fish species during these periods. The DOF also implements conservation programs for fishery resources, provides extension services, conducts research, provides fry and fingerlings, and drafts laws and regulations that govern the fishery industry. The DOF is also in charge of issuing import/export recommendations, laboratory testing services for food safety certification, and certifying environment-friendly and sustainable aquaculture methods such as Good Aquaculture Practices (GAP). The first laws governing the fishery sector in Burma was the Fisheries Law and the Aquaculture Law in 1989. Burma passed the Myanmar Marine Fisheries Law in 1990 and the Fresh Water Fishery Law in 1991 and amended them in 1993.

The DOF is demonstrating how to raise tilapia in reservoirs commercially in the Naypyitaw (capital city) area and will demonstrate how to raise seabass in reservoirs commercially in the future. MOALI is preparing an action plan to promote the export of frozen meat and aquaculture to help alleviate the challenges that the sectors are facing including limited logistic, difficult cash flow, and a shortage of containers. The State Administration Council (SAC) approved a project to build one of the largest fish auction markets in the Myeik, Tanintharyi Region in September 2021. The Myeik Corporation Public Company received the \$300 million award to build the new fish auction market. The fish auction market will include four parts: a loading and unloading port, refrigerators, raw materials processing factories for finished products, and residential housings. The new fish auction market will cover 2,100 acres and will take 6 years to complete.

International Collaboration

The Japan International Cooperation Agency (JICA) implemented a small-scale aquaculture extension project to develop aquaculture production in rural communities from 2009 to 2012. Other international development partners such as ACIAR, KOICA, EU-GIZ, JIRCAS have also implemented projects to promote research and development of Burma's inland and coastal fisheries in cooperation with the DOF (Table 2).

Table 2: Aquaculture Development Projects with International Partners

Project Title	International Development Partners	Funding Amount	Duration	Location
Ayeyarwady Dolphin Research and Protected Area Management Plan (WCS)	Wildlife Conservation Society (WCS)		2017-22	Ayeyarwady River in Mandalay, Sagaing Regions and Kachin State.
Conservation of Marine and Freshwater Biodiversity in Myanmar	Flora and Fauna International (FFI)		2019-24	Tanintharyi and Ayeyarwady Regions, Kachin and Rakhine State.
Expanding and improving marine Conservation in Myanmar (WCS - Marine)	Wildlife Conservation Society (WCS),		2017-22	Rakhine State and Tanintharyi Region
Myanmar Sustainable Aquaculture Program (MYSAP)	German International Agency (GIZ)	\$24.96 million	2016-22	Ayeyarwady Delta and Central Dry Zone, Rakhine and Shan State
Sustainable Coastal Fisheries (SCF)	Danish International Development Agency	\$6.12 million	2016-20	Tanintharyi Region and Rakhine State.
Development of Sustainable and environmentally friendly aquaculture techniques in coastal waters in Myanmar (JIRCAS)	Japan International Research Center for Agriculture	\$136,000	2017-21	Tanintharyi Region and Myeik Coastal
Strengthening the adaptive capacity and resilience of fisheries and aquaculture-dependent livelihoods in Myanmar (Fish Adapt)	Food and Agriculture Organization (FAO)	\$6 million	2017-21	Yangon and Ayeyarwady Region and Rakhine State
Improving Fishery Management in Support of Better Governance of Myanmar's Inland and Delta Fisheries (MYFish-2)	WorldFish Center	\$2.13 million	2017-20	Ayeyarwady Delta and Central Dry Zone
The Development of Rice-Fish System (RFS)	WorldFish Center	\$2.09 million	2017-21	Ayeyarwady Delta Myanmar (Rice-Fish farming)
Supporting the Application of the Ecosystem Approach to Fisheries Management Considering Climate and Pollution Impacts (EAF- Nansen)	Food and Agriculture Organization collaboration with the Norwegian Institute for Marine Research (IMR)		2018-21	Ayeyarwady and Tanintharyi Region, Rakhine State
Quantifying Biophysical and Community Impacts of Improved Passage in Lao and Myanmar (Fish Passage)	ACIAR	\$123,000	2018-20	Bago Region
Marine Shrimp Aquaculture development	Thailand International Cooperation Agency (TICA)	\$1 million	2018-20	Rakhine State
Improvement of Quality Assurance System for Small and Medium- Sized Traditional Fishery Products Processing (SME)	Mae Khong –Lan Chang	\$498,000	2019-21	Yangon, Bago and Tanintharyi Region Ayeyarwady Delta Region
Cooperation between Myanmar and Norway in the Fisheries and Aquaculture Sector	Marine Institute of Research (MIR)	\$7.8 million	2019-24	Tanintharyi Region and Naypyitaw Council

Source: Department of Fisheries

Private Institutions

The are several trade associations within the aquaculture industry including the following:

- Myanmar Fisheries Federation (MFF);
- Union of Myanmar Federation of Chambers of Commerce & Industry (UMFCCI);
- Myanmar Fishery Products Processors and Exporters Association (MPEA);
- Myanmar Fish Farmers Association (MFFA);
- Myanmar Marine Fisheries Association;
- Myanmar Shrimp Association (MSA);
- Myanmar Aqua-Feed Association;
- Myanmar Crab Entrepreneurs Association;
- Eel Entrepreneurs Association; and
- Ornamental Fish Entrepreneurs Association.

The MFF represents the whole fishery sector and is the largest association. The MFF researches potential markets, provides trade recommendations, promotes investments, enhances business facilities and infrastructures, and collaborates with the government and other institutions. UMFCCI is another powerful trade institution that provides exhibitions, information, and coordination. Most MPEA members are processing plants that produce frozen aquaculture products.

Trade Relation with the United States

Fishery and seafood products are Burma's largest agricultural exports to the United States. Burma's main exports to the United States are frozen shrimp and prawn, crabs, fish fillet, carp, fresh or chilled tilapia, and preserved shrimp and prawn. The United States suspended the import of Burmese catfish (*Siluriformes*) in 2017 as Burma has not completed the equivalence certification. Burma has requested technical support from the Food and Safety Inspection Service, USDA to comply with the requirements. Burma's fish and seafood exports to the United States have increased steadily since MY 2015/16, reaching more than \$46 million in MY 2019/20 but declined in MY 2020/21 due to logistical and other challenges brought on by COVID-19 and the military coup. Burma also imports some seafood from the United States such as lobster, king crab, scallops, salmon, shrimps, and prawns. Imports of U.S. seafood also decreased in MY 2020/21 due to logistical and other challenges brought on by COVID-19 and military coup.

The United States imposed sanctions on two Burmese entities connected with the military regime and imposed other sanctions against military leaders, family members, and state-owned enterprises. In addition, bank disruptions, slow cash flow, the devaluation of local currency, high fuels costs limited shipping options, and high feed costs caused a slowdown in trade activities.

Figure 7: U.S. Fishery and Seafood Imports from Burma (in million USD)



Source: United State Department of Agriculture

Figure 8. U.S. Fishery and Seafood Exports to Burma (Million USD)



Source: United State Department of Agriculture

Major Challenges in the Burma’s Aquaculture Sector

Burma’s fishery sector remains less competitive in the region due a lack of technical expertise, infrastructure, and insufficient finance. An irregular supply of energy leads to high production costs and reduced competitiveness. In addition, Burma is unable to provide a steady supply of fishery products, such as fish fillets, due insufficient processing facilities.

Only a small number of farms are certified to international standards such as Hazard Analysis and Critical Control Points (HACCP), Good Aquaculture Practices (GAP) and Best Aquaculture Practices (BAP), which limits Burma's export potential. BAP is a third-party international certification for the whole aquaculture supply chain such as farms, hatcheries, processing plants, and feed mills issued by the Global Aquaculture Alliances. Processing plants are unable to obtain BAP certification due to high costs and instead received EU certification. The cost of certification ranges from \$2,000-\$20,000 for the pre-assessment and \$10,000-\$500,000 for a full assessment and certification depending on the type of fishery.

Post Conclusion

Burma's aquaculture sector has developed greatly during the past decade, but production has flattened due to the COVID-19 pandemic and the coup. Burma will need to focus on gaining more technical expertise, better infrastructure, and more financing to continue the growth of its aquaculture sector.

Attachments:

No Attachments.