Individual Tenure and Commercial Management of Myanmar's Inland Fish Resources

Xavier Tezzo[1], Yumiko Kura[2], Eric Baran[2] & Zizawah[3]

[1]WorldFish, Yangon, Myanmar, x.tezzo@cgiar.org
[2]WorldFish, Greater Mekong Regional Office, Phnom Penh, Cambodia
[3]Department of Fisheries, Yangon, Myanmar

Abstract

This chapter presents the current state of knowledge on "Inn" fisheries, an important fisheries management regime in Myanmar. The presentation made is based on a comprehensive review of literature, some original research data and the authors' extended combined experiences working in Myanmar. The chapter starts by revisiting the origin of the "Inn" system, shedding light on the chain of events that led to its generalization under the British occupation. It further explores how fisheries statistics are derived in Myanmar and warn about the possible underestimation of the importance of "Inn" fisheries. Recent history is then used to consider how the liberalization of the economy might pose some fundamental problems of equity and sustainability. The authors further present how these fisheries relate to wider inter-sectoral considerations in the context of rural development before finally offering some suggestions to guide future research efforts in Myanmar.

1. Introduction

Myanmar possesses an extraordinary abundance and diversity of natural resources, but it is often acknowledged that the benefits of their exploitation are in the hands of few individuals. As highlighted in this chapter, fish are no exception to this rule. Fish hold a central place in the national economy and the life of Myanmar people, accounting for half of their animal source food consumed and being only second to rice in terms of households' expenditure on food items. Traditionally, the extensive networks of rivers and floodplains have provided the bulk of fish for domestic consumption. Freshwater fish species are culturally preferred and cater to rural and poor consumers looking for diverse and affordable fresh fish and fishery products. Inland fisheries and their value chains also represent a substantial source of livelihoods, providing job opportunities for an estimated 1.6 million Burmese people (ILO 2015).

Despite an increasing recognition of their importance, freshwater fisheries suffer from a substantial knowledge gap: statistics are rudimentary and unreliable, very little is known about fish production and consumption patterns countrywide. These limitations prevent the establishment of sound fisheries management. There are two prevailing regimes governing freshwater fisheries in Myanmar: *open* fisheries corresponding to "open access" areas where licenses are issued for specific fishing gears; and *leasable* fisheries where exclusive exploitation rights for delimited water bodies are auctioned by the Department of Fisheries

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(DOF). We hereby intend to partly address the information gap by studying in more detail the *leasable* fisheries. Commonly referred to as "*Inn*" fisheries in Myanmar, it is reported to govern 22% of the national freshwater fisheries production volume (DOF 2015).

The present chapter proposes to successively review the origin of the system, identify its main limitations and prospects, and further provide recommendations towards a more sustainable and equitable management of the sector. Statistics and insights presented in this section are based on a comprehensive review of available literature, primary data and the authors' experience working with government institutions, local universities and civil society organizations in Myanmar.

2. Background

In Myanmar, there has been a long history of leasing inland water bodies to private individuals. The origin of the *Inn* fisheries can be traced back to the 19th century, where there is written evidence of wealthy and influential individuals who had full control over large and productive water bodies. A comprehensive and fascinating review of reports from the British colonial administration (Reeves et al. 1999) suggests that both public and private exploitation arrangements of wetlands coexisted before the arrival of the British. Private lessees of the *Inn* (so-called *"Innthugyis"*) were privileged and well-established people in Burmese society who could transfer lease rights to their descendants. *Inn* were reported by Khin (1948) as the "most important [production system] of the inland fisheries". His book provides further details on the fishing practices prevailing at that time: the water bodies were enclosed with wooden fences (see Photo 1) and, at the time of the year when water was receding, the fish were driven towards traps and caught. His description suggests that the *Innthugyis* were commonly reliant on local communities for capture operations and that there were two fishing seasons, with a closed season usually enforced in between to allow fish to breed.[1] In the 19th century, this individual tenure system was extended to the whole territory following the recommendations of Dr. Francis Day, a renowned ichthyologist who had been commissioned to investigate Burmese fisheries in 1869. Opposing the ostensibly unfair control of hereditary lessees over the important fish resources, Dr. Francis Day[2] expeditiously recommended to the British Administration to instore a system of auction leases through which the management of inland water bodies would be sold for 5 years to the local fisherman making the highest offer (sealed bid).[3] These recommendations were received with mixed enthusiasm. Some officers praised its effectiveness in generating revenue and others questioned the ability and legitimacy of the colonial administration to deal with "a matter so seriously affecting the welfare of the people at large". Eventually most of the recommendations were conceded through the enactment of the *Burma Fisheries Act* in 1875. However the Act included a proviso which made "any company with at least two-thirds of its members being local fishermen" qualified to bid, de facto allowing outsiders to take part in the control of inland fish resources. In 1896, Captain F.D. Maxwell was commissioned to investigate how the sector had evolved under the new *Act*. His conclusions were alarming: he depicted an overall situation where local fishermen, incapable of competing, were subject to powerful moneylending and trading interests. Despite his warnings, the *Reformed Fisheries Act* from 1905 took a step further towards the economic liberalization of the sector and the auction became open to "any person".

Unfortunately there is still very little evidence and research available on how the management of inland fisheries resources evolved post-independence (1948) in Myanmar. However, consultations with officials and experts indicate that there was a brief tentative shift towards group ownership of the *Inn* under the socialist government (1962-88) and a return to individual ownership together with the introduction of the *open* fisheries system under the first part of the military regime (1988-2001). The second period of the military regime (2002-2010) saw a move towards a more centralized management of the fisheries: the auction system was momentarily dropped and leasable licenses were reportedly handed directly by the Minister to influential patrons close to the Regime. More recently in 2011, the government shifted back to a more decentralized system and regional administration of fishing licenses. In line with democratization, it also re-introduced the auction system, but notably it did so without defining any restriction on the eligibility of the bidders.

Despite the very limited information on how this more recent tumultuous political history affected inland fisheries management, a review of the Laws in effect and testimonies accessible indicate that the successive political regimes paid little attention to the sustainability and equity of inland fisheries management, and that the alienating foundations generalized during the British occupation still prevail. The following section capitalizes on present-day knowledge as well as on a comprehensive survey[4] of 180 leaseholders randomly sampled across 12 townships of the Ayeyarwaddy Delta and Yangon Regions (see Figure 1) to offer a critical assessment of present challenges and future prospects of Myanmar's leasable fisheries management.

3. Challenges and Prospects

3.1. The hidden importance of leasable fisheries

Like many other developing countries, Myanmar is characterized by a poor fisheries data collection system. Since 1994, the responsibility of all fisheries data collection fell under the Planning Division of the DOF. There is nowadays a growing questioning by the international fora about the substantial volume and the growth of the overall Burmese fisheries production which went from 0.83 mt in 1994 to 5.05 mt in 2013. These numbers are largely believed to reflect the government's targets rather than actual production levels (BOBLME 2014). The accuracy of these figures is being challenged by emerging evidences from stock assessments and consumption surveys (Belton et al. 2015; Needham and Funge-Smith 2014; Krakstad et al. 2015) which point toward an overestimation of the overall Myanmar fisheries production. Looking more specifically at the way freshwater fisheries statistics are computed helps understand their limits and better apprehend how they could be misleading. *Leasable* fisheries catches are theoretically compiled based on yearly recall data which are supplied by the leaseholders to the DOF. However a FAO study (BOBLME 2014) found that reported figures conform surprisingly well with targets set by the government. As for *Open* fisheries, catches are supposedly based on monthly catches compiled by DOF officers, but limited human capacity together with the scattered nature of fishing operations mean reported figures are also questionable.

A more recent study (Khin et al. 2016) suggests that *leasable* fisheries annual yields are in reality estimated at the local level based on the surface of each lease multiplied by constant biomass per unit area.[5] The same principle would be used to infer on *open* fisheries statistics

where the count of licensed gears is allegedly multiplied by a constant assumed biomass harvested. These target-led approximations are misleading our understanding of both the *open* and *leasable* sub-sectors. There is another larger bias in the case of *open* fisheries where yield statistics are amplified by the fact that the DOF is issuing a growing number of licenses every year. An analysis of the reported fisheries production sub-sectors from 2003 to 2015 reflects this: yearly annual production growth rate across all sub-sectors is 9%, except for *open* fisheries where annual production growth rate is 12% over the same period.[6]

This trend has important consequences on the perceived reduced importance of leasable fisheries. They accounted for 45% of the inland fisheries production in 1994 and are now assumed to account for only close to 22%. To our knowledge, there is no biological foundation to explain such relative variation of productivity. In reality, multiple evidences indicate that *leasable* fisheries are the most productive fishing grounds across the country. Our recent surveys across the Delta show that both *leasable* and *open* regimes apply to similar water ecosystems.[7] Most of the leased areas correspond to productive segments of river channels assumed to be located on the migration paths of commercial species and often encompass known breeding areas.[8] In addition, a recent study by FAO (BOBLME 2014) and discussions with DOF officers inform that it is common practice for unproductive (and therefore unprofitable) leased water bodies to be "decommissioned" and then converted into agricultural land or open water bodies.[9] These observations and the recognition of the ecological importance of leasable fisheries would attach central importance to the *Inn* and place their sustainable exploitation as a priority for improving the management of Myanmar's inland fisheries resources.

Photo 1. Bamboo trap from a leasable fishery in the Ayeyarwaddy Region (Photo credit: Eric Baran)

3.2. The exclusive system and the capitalist race to exhaustion

Our study indicates that the size of leased water bodies in the surveyed area ranged from 50 to 420 hectares[10], and that their annual price in 2014 ranged from US$ 97 to US$ 5,726. In spite of the important variance observed between the surveyed leases, only 16% of them had an annual price below US$ 500, 17% between US$ 500 and US$ 1,000, and the remaining 67% were above US$ 1,000. This is particularly costly in the local context as the average annual

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Fisheries Survey Site Location on Ayeyarwady Region

income in Myanmar is estimated at US$ 1,105 per capita, with a great disparity and incidence of poverty in rural areas (World Bank 2014). A comprehensive household survey implemented in 2013[11] found that 60% of households in coastal and delta areas earn less than US$ 900 per year (LIFT 2013) and several livelihoods studies conducted in the delta indicate that fisheries communities are often among the most disadvantaged. There is clearly a need for more research to better apprehend the profile of people currently holding leasable fishing licenses as well as the distribution of benefits to local communities overall. Our exploratory survey provided some strong indications that the system is exclusive with 86% of the surveyed leases being owned by individuals of whom 61% resided in a different village than the fishery. All the leaseholders surveyed were employing at least one non-family laborer to operate the lease, with some leaseholders reportedly employing over 500 employees. In some cases (13%), leaseholders practiced sub-leasing and allegedly provided local communities with fishing access in return for a daily fixed fee. 72% of the leaseholders reported incidences of poaching from surrounding communities.

In addition to the problem of accessibility for smallholders, the current management regime also carries significant threats for the sustainable use of inland fish resources. First, exploitation rights are always initially obtained for one year and, despite efforts under the recent reformist government to allow for longer management periods[12], there is still a substantial turnover in leases ownership: 46% of the leasable fisheries surveyed had been issued for less than a year. This understandably limits the interest of leaseholders to guarantee the sustainability of their operations. A closer look at recent history helps to shed light on an additional negative effect of the capitalist administration of the lease in terms of sustainability. After dropping the system of auction lease over several years under the military regime, the reformist government ordered its re-introduction in 2011. An analysis of surveyed lease prices evolution over the past 8 years shows that although only 6% of the leases prices increased from 2009 to 2011, this proportion increased to 21% in 2012 and 72% in 2013. These observations clearly suggest that economic liberalization is resulting in an overall increase of the leasable licenses fees. This not only makes it more difficult for smallholders to afford but also induces an increased pressure on the resources. The more money one spends on acquiring a fishery, the more resources this person will need to harvest in order to make profit. This is further enhanced if there is no guarantee that tenure will be extended after the first year. Indeed preservation measures are generally ignored: less than half of the leases reported to include a known breeding area were subject to some protection measures.

Although many challenges currently compromise the equity and sustainability of freshwater fisheries in Myanmar, the ongoing decentralization and promulgations of regional fisheries Laws offer unique opportunities. Whether it is the original idea of Dr. Day (1869) to auction the lease "only to *bona fide* fishermen for a period of five years", or the later recommendation from Maxwell (1896) to "divide existing fishing lots in smaller units affordable by smallholders", there are many valuable suggestions which could help fostering a more inclusive and sustainable management system.

3.3. The leasable fisheries in the wider context of rural development

There has been a failure from earlier governments in Myanmar to recognize the importance of the fisheries for the rural economy. In the late 19th century, the British government made rice production a priority and this narrow approach to agricultural development was mostly maintained through the successive post-independence political regimes (Odaka 2016). Thus

there has been a missed opportunity to recognize the integrated nature of resources utilization. This has repeatedly led to some conflicts, particularly for land and water use. Conflicts for land are particularly apparent in leasable fisheries established on seasonally flooded environments where it is common practice to cultivate part of the land emerging during the dry season, at the time of the year when the water has receded. This characteristic was reported in 34% of the leases visited, but surprisingly, only 14% of these lands are actually cultivated by the leaseholders and their relatives, with the remaining 86% being cultivated by communities adjacent to the lease. In other words, the leasable license only provides authority over submerged portion of the land which varies spatially throughout the year. There are currently no provisions for this off-season arrangement under the Law. Despite the limited cases of conflicts formally reported by leaseholders during our survey, further discussions with fisheries officers indicate that this practice prevails throughout the country and local officers are frequently solicited to resolve related conflicts. This land use consideration surely needs further research, but it is very probable that tacit agreements which have developed over long periods of time have been further challenged by the liberalization and the consequent repeated changes of lease ownership.[13] Our survey shows that current demarcations of leasable fisheries still rely largely on outdated and inaccurate maps, sometimes inherited from the British (see Figure 2). Conflicts over water usage were also commonly observed and 80% of the interviewed leaseholders reported being affected by water purposely withdrawn for domestic or agriculture purposes in neighboring areas. The ministerial separation of the agriculture and fisheries sectors initiated under the socialist era, together with the seemingly limited coordination under recent regimes, made it difficult for the government to properly understand and address these important issues. But recent history is encouraging: in 2016 the new government (2016) merged the departments of agriculture, irrigation and fisheries under a single Ministry. This fusion represents a unique opportunity for policy makers to better apprehend such interactions and ensure that resources are managed in a more integrated and equitable fashion.

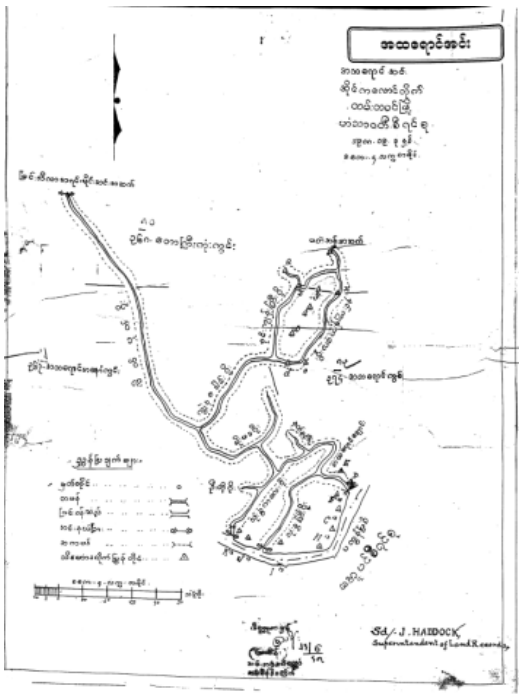

Figure 2. Leasable fisheries map dated from 1908 still being used (Source: Department of Fisheries Yangon Region)

4. Discussions

The aim of this chapter was to shed light on *leasable fisheries*, a relatively little known to outside yet very important management regime of Myanmar's inland fisheries. It is important here to emphasize the main limitations of this study. The sample covered only 2 of the 14 regions and states of the country and there was an important variation observed between the leases in terms of their natural environment and management conditions. Therefore some of the observed trends and deductions might only reflect part of the reality. The study revisited the roots of *leasable* fisheries and described how this old practice has been shaped by the unique political history of the country. We suggest that *leasable* fisheries are a more important contributor to freshwater fisheries production than commonly assumed. Building on original data from a survey implemented in the Ayeyarwaddy delta, the chapter highlights the lack of equity and sustainability of the current system. It also stresses the historical inability of the government to appreciate and address freshwater fisheries challenges in the wider context of rural development. Despite its exploratory nature, our study sets some basis for a priority research agenda: we believe there is an urgent need to review the current inventory of *leasable* fisheries in Myanmar in order to better understand the variety of environment and management conditions. In many respects, reported *leasable* fisheries operations were comparable to aquaculture with 86% of the leaseholders being individuals, of whom 59% reported providing feed to the fish and 79% stocking fingerlings.[14] A detailed inventory would help to identify the most productive areas as well as the ones which have potential for resource recovery through conservation and improved management. There is surely a need to better ascertain who are the present leaseholders and apprehend what is the distribution of benefits under the current system. In parallel, more research efforts should be deployed to the *open* fisheries environments and the people who depend on them. Despite the rather challenging circumstances depicted in this chapter, the authors recognize that there are some exceptional prospects ahead: some of the very simple adaptations looking at improving the existing practices instead of supplanting them should be tested. This should be done through a careful and inclusive negotiation process with stakeholders currently depending on the leasable fisheries areas for a wide range of purposes.

Notes

[1] The report explains that fishing seasons were from September to November and January to March with a closed season from April to August.
[2] Through their revision of British colonial reports, Reeves et al. (1999) explain that Dr. Francis Day was a medical officer by formation and that he visited Burma only once from May to November 1869, witnessing only one lease in operation during his stay.
[3] Dr. Francis day recommended for the eligibility to be restricted to bona fide fishermen residing within four miles of the fishery.
[4] As part of an ACIAR-funded project in Myanmar jointly implemented by WorldFish and the Department of Fisheries (MYFish), a collaborative research team selected 12 representative townships of the various agro-ecologies in the Ayeyarwaddy and Yangon Regions and randomly selected 15 leasable fisheries in each township (180 in total), representing 14 % of

the total 1,265 leases recorded in these regions area or 5% of the total number of leases across the country. A comprehensive questionnaire – covering livelihoods, environment characterization, management, production and post-harvest aspects - was administered to each of the lease managers.

[5] This constant is assumed to vary from a place to another depending on the local productivity (Khin et al., 2016).

[6] DOF Statistics are categorized into Aquaculture, Inland (open and leasable reported separately) and Marine productions.

[7] 96% of the surveyed lease corresponded to river channels and combination of river and wetlands, the remaining 4% being artificial lakes.

[8] 32% of the interviewed leaseholders (58) reported knowing that their lease included a fish breeding area.

[9] There were 4,006 leases prior to World War II (FAO-NACA 2003). For the 2012-2013 period, the total number of registered leasable fishery areas was 3,729 of which 3,304 were leased and operated, while 425 leases were not leased (DOF 2014)

[10] The average size of leased water bodies in the surveyed area was found to be around 150 hectares. Some of the lease being situated in seasonal floodplain with their level of water strongly fluctuating throughout the year varying, their size was considered to be an average between maximum and minimum levels.

[11] The survey was implemented by the Livelihood and Food security Trust Fund (LIFT 2013) and covered over 100,000 households across the Ayeyarwaddy delta Region and Rakhine State.

[12] Since 2011, the duration of the lease is for 1 year after the auction but there is the possibility to renew for up to 3 periods of 3 years (depending on the Region) without another auction.

[13] As reported in the historical background, we know that for at least two different periods of Myanmar history, the same individuals have hold the management of the leases over several years: first before the enactment of the Burma Fisheries Act (1875) and later during the second period of the military regime (2002-10).

[14] As part of the conditions set by DOF, it is mandatory for leaseholders to invest between 1% and 3% on stocking fingerlings.

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