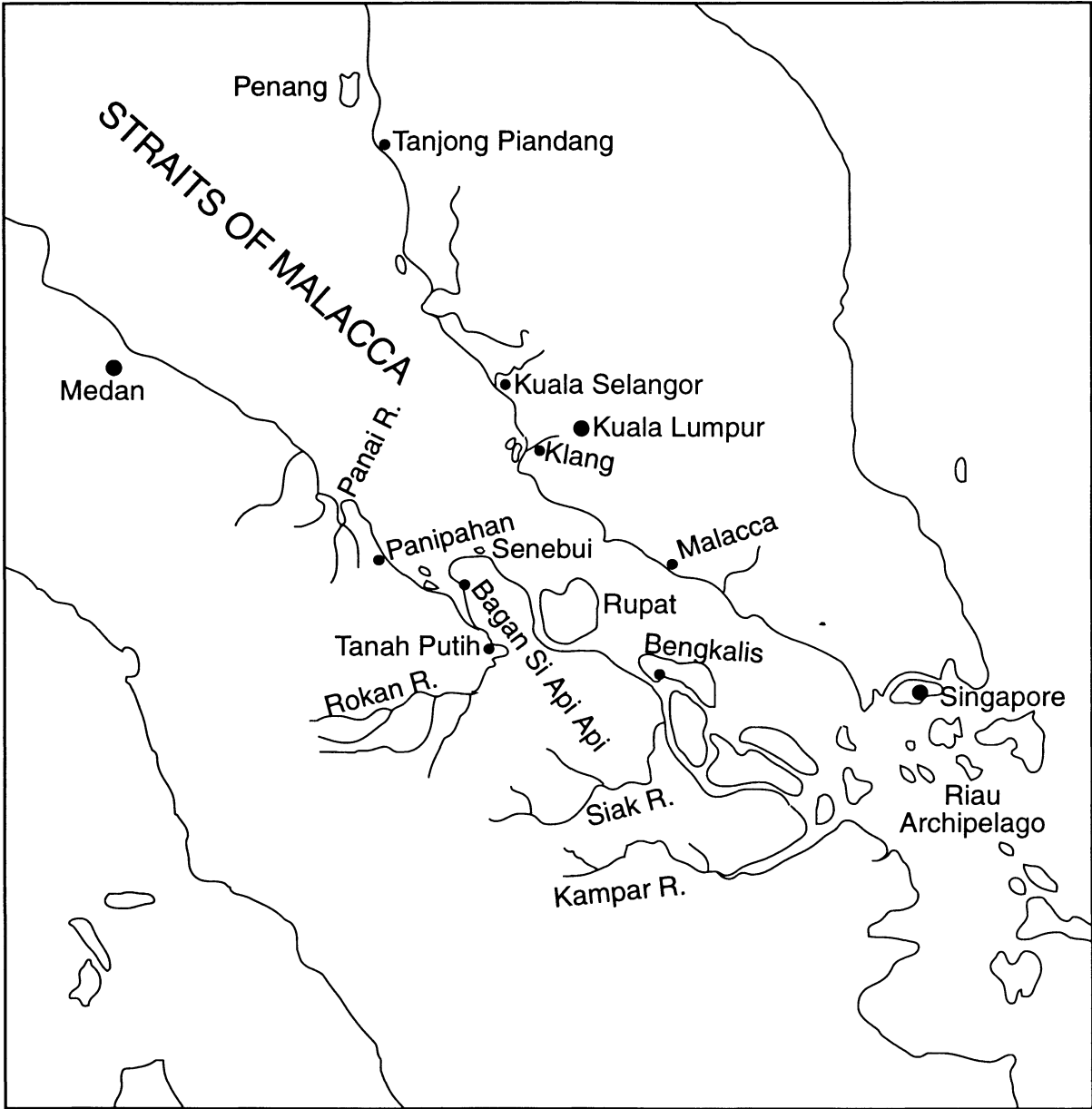


# Map 1

## Straits of Malacca



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# THE SALT FARM AND THE FISHING INDUSTRY OF BAGAN SI API API

John G. Butcher<sup>1</sup>

During the early years of the twentieth century, the town of Bagan Si Api Api at the mouth of the Rokan River on the east coast of Sumatra was one of the most important fishing ports in the world. The Chinese inhabitants of Bagan Si Api Api exported massive amounts of dried fish, dried prawns, and the shrimp paste known as *terasi* to the Malay Peninsula and Java. Since fish, prawns, and shrimps spoil rapidly once caught and exposed to the warm tropical air, virtually all of what the fishers of the area caught had to undergo some process of curing before it could be shipped to distant markets. Fish and prawns were cured by means of salting and drying, while the shrimps used to make *terasi* were fermented after being mixed with salt. Thus the whole industry depended for its existence on vast quantities of salt.

At fishing villages throughout the archipelago as well as in many other parts of the world at this time, salt was used in the preservation of marine fauna. The distinctive

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feature about the fishing industry of Bagan Si Api Api was that this salt was provided by a revenue farm. Under this arrangement, the Netherlands East Indies government periodically called for tenders for the exclusive right to import and sell salt at or below a stipulated maximum price as well as to levy export duties on a number of marine products. This monopoly, or farm, covered the entire district of Bengkalis, but by far the most important and lucrative area within the domain of the farm was the subdistrict of Bagan Si Api Api. All other things being equal, the government granted the farm to the businessman willing to pay the highest monthly rent for the duration of the contract, usually three years. Since he supplied the substance that made it possible to prepare the products exported from Bagan Si Api Api, and since he also had a virtual monopoly on the supply of credit, the salt farmer was in an immensely powerful position in relation to the fishing industry.

The purpose of this article is to examine the relationship between the salt farm and the fishing industry of Bagan Si Api Api and how this changed from the 1890s until the government abolished the farm in 1920. In brief, I will be arguing that in the early years the farm promoted the growth of the fishing industry, but that by about 1910 it ceased to do so largely because the fishery was close to being exploited to its limit.

### The Farm and the Expansion of the Fishing Industry to 1905

It is not clear when the Chinese first settled at Bagan Si Api Api. One source reports that this took place in about 1860,<sup>2</sup> but another claims that Bagan Si Api Api was established in 1875 ("by a number of Chinese pirates who, thanks to the great wealth of fish, gave up their dangerous occupation and became free fishers"), while a third source puts the date as late as about 1880.<sup>3</sup> In 1875, as part of its process of taking over and consolidating the farms held by the various Malay rulers along the east coast of Sumatra, the Indies government established a salt farm, but this apparently did not encompass the mouth of the Rokan River until 1885. In the following year, the government asserted its authority over Bagan Si Api Api when, according to the standard Dutch history of East Sumatra, the controleur based some distance up the river at Tanah Putih blockaded the town after the fishers "refused to pay tax or follow the controleur's orders"; but when they relented the controleur returned to Tanah Putih.<sup>4</sup> Except for the fact that they became more successful in extracting revenue from Bagan Si Api Api, the whole conduct of the fishing business had almost nothing to do with the Dutch. Moreover, officials had little detailed knowledge of the fishing industry of Bagan Si Api Api during the 1880s and 1890s. In 1900 the controleur shifted his headquarters to Bagan Si Api Api, but apparently no official reported on the fishing industry until 1905, when Captain H. Colijn visited the area and prepared a lengthy report<sup>5</sup> as part of his investigations of the "Outer Possessions," over which the

<sup>2</sup> P. N. van Kampen, "Aanteekeningen omtrent de Visscherij van Sumatra en Riouw," *Mededeelingen van het Visscherij-Station te Batavia* 3 (1909): 6.

<sup>3</sup> J. L. Vleming Jr., *Het Chineesche Zakenleven in Nederlandsch-Indië* (Weltevreden: Landsdrukkerij, 1926), p.234; G. Masset, "Bagan Si Api-Api," *Volkscredietwezen* 27 (1939): 856.

<sup>4</sup> W. H. M. Schadee, *Geschiedenis van Sumatra's Oostkust*, 2 vols. (Amsterdam: Oostkust van Sumatra Instituut, 1918-19), 2: 82-83.

<sup>5</sup> Colijn, "Advies Betreffende de Zoutpacht in het Gewest Oostkust van Sumatra," August 5, 1905, in Verbaal 15/6/1907/25.

government in Batavia was by now rapidly tightening its grip, on behalf of the Governor-General, J. B. van Heutsz, whose adjutant he had been in the Aceh War. What is certain is that during these years the fishing industry expanded very rapidly. Already in 1896, the first year for which a figure is available, Bagan Si Api Api exported 8.7 million kilograms of dried fish.<sup>6</sup>

Estuaries are commonly characterized by a great richness of plant and animal life, but the abundance of life in the estuary of the Rokan River—the basis of the fishing industry of Bagan Si Api Api—was truly extraordinary. Reaching far from its sources deep in the interior of Sumatra, the Rokan River deposited great quantities of silt containing organic matter and minerals into the estuary. The discharge of nutrient-rich silt was particularly great during the monsoon rains, when the swollen river picked up silt that had accumulated during the dry season and carried it to the estuary. During the monsoon, according to Hardenberg, who in 1929 conducted the first thorough investigation of the estuary, “the whole land [may] be inundated” at high tide.<sup>7</sup> Also important were the powerful currents generated by the great variation between the high and low tides, estimated to be six meters during a spring tide according to the first hydrographic map prepared in 1893.<sup>8</sup> As the tide rose, water rushed into the estuary from the Straits of Malacca, itself “a large marine estuary,”<sup>9</sup> and then, funneled by the shoreline, formed a tidal bore, sometimes as high as two meters, just before the entrance to the river. “The extremely turbulent water following the tidal bore,” wrote a contemporary observer, “works like a whirlpool,” which, along with currents set up by the many bends in the shallow Rokan, nibbled away at the banks of the river and enabled the greatest possible amount of silt to be suspended in the water.<sup>10</sup> In this way, the river swept vast quantities of nutrients into the estuary. Along the shore of the estuary were mangrove forests which continually shed leaves that were broken down by bacteria and tiny crustaceans, thereby providing a wealth of organic matter that made the mangroves excellent nurseries for many species of fish and prawns.<sup>11</sup> It seems likely too that the oxygen content of the water in the estuary was high because of the strong currents and particularly because of the turbulence created by the tidal

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<sup>6</sup> L. Tip, “Het Chineesche Visscherijbedrijf te Bagansiapiapi,” *Indië* 8 (1924-25): 266-71, 300-308, see especially p. 308. Writing in 1929, C. J. Bottemanne, a leading authority on fisheries, expressed considerable skepticism about the accuracy of the available figures for exports of marine products and imports of salt, but concluded that they could be used for comparative purposes, which is the way I shall treat them in this article. C. J. Bottemanne, *Verslag over de Visscherij en Vischhandel van Bagan Si Api-Api* (Batavia: Instituut voor de Zeevisscherij, 1929 [reprinted 1941]), p. 11.

<sup>7</sup> J. D. F. Hardenberg, “The Fishfauna of the Rokan Mouth,” *Treubia* 13, 1 (Juliet 1931): 83.

<sup>8</sup> “Mond der Rokan-Rivier 1893,” Hydro/OIA-161-10/110, Maps and Drawings Division, Algemeen Rijksarchief.

<sup>9</sup> William MacNae, *Mangrove Forests and Fisheries* (Rome: Indian Ocean Fishery Commission, FAO, 1974), p. 15.

<sup>10</sup> K. J. Boeijinga, “De Visscherij van Bagan Api Api,” *Koloniaal Tijdschrift* (September 1926): 452.

<sup>11</sup> For a survey of the ecology of mangroves along the east coast of Sumatra see Anthony J. Whitten, et al., *The Ecology of Sumatra* (Yogyakarta: Gadjadara University Press, 1984), chapter 2.

bore. Many writers of the time remarked on the profusion of plankton in the estuary, including some varieties (notably *Noctiluca*) that were phosphorescent.<sup>12</sup>

In 1929 Hardenberg reported that about fifty to sixty species of fish were common in the estuary. Members of the Clupeidae, Polynemidae, and Sciaenidae families were the most important of these.<sup>13</sup> Hardenberg questioned the view held by the fishers of Bagan Si Api Api that fish stocks in the estuary were continually being replenished by fish from the Straits of Malacca. Hardenberg found by examining the contents of the stomachs of fish caught in the estuary that sergestid shrimps were "a very important fish-food."<sup>14</sup> Relying on such evidence, he concluded that "the fishes which form the bulk of the catches, and which are therefore the most important for the fisheries, pass their whole life-cycle inside the fished area."<sup>15</sup> Thus, the fish were part of an intricate estuarine food web.

It is, however, essential to note that the ecosystem of the Rokan estuary was by no means a static one. In particular, it is quite probable that by 1929 the distribution and composition of species had changed both because of intensive fishing in the estuary and because of shifts in currents and the location of mudbanks. Hardenberg discovered that different species of fish tended to be found in different parts of the estuary depending on the level of salinity and turbidity, the depth of the water, and the type and quantity of nutrients. The greatest abundance of commercially important species appears to have been in areas where the bottom was very muddy (rather than sandy, as it was near Panipahan in 1929) and the water very turbid, the water was between two and six meters deep at low tide, and there was the greatest mixing of sea and river water. But because so much silt was continually being deposited into the estuary and because the estuary was subjected to such powerful currents, the location of these areas changed from time to time.

Up to about 1901, the fishing industry of Bagan Si Api Api was almost exclusively concerned with the export of dried fish. Virtually all fish were caught in traps known as *jermals*, the design of which the fishers of Bagan Si Api Api borrowed from the Malay fishers of the area. A *jermal* consisted of a slanting screen made of woven rattan which hung between a framework of poles driven into the bottom of the estuary. This structure was built in water "up to about three fathoms deep at low water"<sup>16</sup> and positioned so that, as the tide went out, fish were driven against the screen by the swift current; the fishers operating the *jermal* periodically lifted the screen and then scooped out the fish. The effectiveness of this trap was greatly enhanced by two very long lines of stakes (*jajar*), placed about half a meter apart, that converged at the entrance of the *jermal*. Fish that came within these wings were, according to Hardenberg, frightened by the stakes wobbling in the current and, as they tried again and again to swim away

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<sup>12</sup> Van Kampen, "Aanteekeningen omtrent de Visscherij," p. 8; Hardenberg, "Fishfauna of the Rokan Mouth," p. 87.

<sup>13</sup> Hardenberg, "Fishfauna of the Rokan Mouth," pp. 149-50.

<sup>14</sup> *Ibid.*, p. 89.

<sup>15</sup> *Ibid.*, pp. 151-152. According to Hardenberg, there was only one commercially important exception, and that was *Eleutheronema tetradactylum* (one of several species known in Malay as *kurau*), which he claimed spawned "outside the fished area."

<sup>16</sup> Van Kampen, "Aanteekeningen omtrent de Visscherij," p. 9.

from the stakes, were eventually swept towards the central part of the trap, where they were caught.<sup>17</sup> Processing of the catches was very simple. The fishers operating a *jermal* cut open, cleaned, and salted whatever valuable large fish they caught. As for small fish, which at least by the early 1900s made up the bulk of the catch, the fishers neither beheaded nor gutted them but instead immediately put them in barrels or compartments with salt. Once on shore all of the fish were placed on platforms along the shore at Bagan Si Api Api and dried in the sun for a few days. The quality of the small fish that were dried without being beheaded or gutted was reflected in the name given to this product: *ikan busuk*, or “rotten fish.”

Beginning in about 1901, an important change in the fishing industry of Bagan Si Api Api took place as the fishers began to diversify into the production of *terasi* and dried prawns. Between 1899 and 1904 exports of *terasi* climbed from 0.1 to 2.7 million kilograms, while those of dried prawns rose from 0.2 to 0.4 million kilograms.<sup>18</sup> The prawns caught by the fishers of Bagan Si Api Api were most probably various species of penaeids. *Terasi* was made from what most sources of the time called *belacan*.<sup>19</sup> A contemporary source refers to *belacan* as “very young prawns,”<sup>20</sup> but it is now clear that it consisted of planktonic shrimp, primarily sergestids (especially *Acetes* spp), as well as juvenile prawns.<sup>21</sup> In order to catch both *belacan* and prawns it was necessary to use traps which did not allow these tiny animals to escape. During a visit in 1908, Van Kampen, who was probably the first Dutch fisheries expert to report on Bagan Si Api Api, observed that “only in recent times” had the fishers begun weaving split rattan into the interstices of the rattan screens used in *jermals* and that they had also begun placing a long sack made of woven fiber under the back end of the *jermal* to catch

<sup>17</sup> Hardenberg, “Fishfauna of the Rokan Mouth,” pp. 90-95. Sometimes big fish would escape, while weak swimmers were swept right through the lines of stakes when the current was at its strongest. J. G. Watson gives a slightly different account of how these stakes guided fish into the main part of the trap. See J. G. Watson, *Mangrove Forests of the Malay Peninsula*, Malayan Forest Records no. 6 (Singapore: Fraser & Neave, 1928), p. 188. According to Van Kampen, who provides the earliest description I have, *jermals* were not used during spring tides because the current was too strong then, but later sources state that *jermals* operated most effectively during spring tides and were usually abandoned during neap tides. It is possible that the practice changed over the years (due, perhaps, to the movement of *jermals* out from the inner part of the estuary, where presumably the current was strongest), but it is also possible that Van Kampen was incorrect on this point. Van Kampen, “Aanteekeningen omtrent de Visscherij,” p. 11; Bottemanne, *Verslag over de Visscherij*, pp. 5-6; B. Markus, *Visscherij-methoden en Vischproducten van Bagan Si Api-Api* (Batavia: Instituut voor de Zeevisscherij, 1929 [reprinted 1941]), pp. 4-5.

<sup>18</sup> B. J. Haga, “De Beteekenis der Visscherij Industrie van Bagan Api Api en Hare Toekomst,” *Economist* (1917): 237-62, p. 240.

<sup>19</sup> The terminology here can be confusing. *Belacan* is the Malay term for shrimp and fish pastes. In fact, *belacan* was, according to Van Kampen (“Aanteekeningen omtrent de Visscherij,” p. 16), used in this sense at Bagan Si Api Api instead of *terasi*, the term used in Java, but for the purpose of this article *belacan* refers to the raw materials from which *terasi* was made. The Indonesian *rebon* would be equivalent to *belacan* as I use it here.

<sup>20</sup> Haga, “Beteekenis der Visscherij,” p. 241.

<sup>21</sup> Hardenberg, “Fishfauna of the Rokan Mouth,” p. 81; Kenneth Ruddle, “The Supply of Marine Fish Species for Fermentation in Southeast Asia,” *Bulletin of the National Museum of Ethnology* 11 (1986): 1017-19. Without pretending to make a sharp distinction between the two terms, I use “shrimps” to refer to small, planktonic species (sergestids, mysids, and so forth) and “prawns” to refer to larger species (especially penaeids).

whatever passed through the screen.<sup>22</sup> Another trap, called the *ambai*, was employed specifically for the catching of *belacan* and prawns. This trap consisted simply of a fine-meshed net shaped like a bag and suspended from two poles driven into the bottom of the estuary. At the end of the net was placed a pocket of coarse sacking which captured whatever was forced into it by the current. Unlike the *jermal*, the *ambai* could be operated on both the incoming and outgoing tides.

The processing of *terasi* and dried prawns was somewhat more complicated than the curing of fish. The fishers put the *belacan* they caught into barrels with salt. Once it was brought to shore, more salt was added to this "rather ill-smelling mass," which was then placed on mats out in the sun where it fermented until it had dried. This mass was then kneaded along with some very fine bran imported from the Malay Peninsula, dried again, kneaded once more (at which point an aniline dye was added to give it the desired color), dried in the form of small lumps, and packed in *nipah* baskets.<sup>23</sup> The large prawns were salted, cooked briefly in boiling water, sieved, dried, and then threshed in order to remove their shells,<sup>24</sup> which along with fish scales and other waste were turned into a product known simply as "prawn shells," which was used as a fertilizer.

Java was the most important market for the products of Bagan Si Api Api. According to Colijn, 14.0 of the 26.0 million kilograms of dried fish exported from Bagan Si Api Api in 1904 went to Java, while the remainder, consisting of the poorer quantity of fish, went to various parts of the Malay Peninsula.<sup>25</sup> Van Kampen's data indicate that 56 percent of the 23.1 million kilograms of dried fish exported from Bagan Si Api Api in 1907 went to Java, 25 percent went to the Malay Peninsula, and 19 percent went to other parts of East Sumatra.<sup>26</sup> In Java, the west coast states of the Malay Peninsula, and the area around Medan in East Sumatra, the population was increasing rapidly, and the demand for fish, the main source of animal protein for most people in the region, including the immigrants who worked in the expanding mining and plantation sectors of Malaya and East Sumatra, was growing. At the same time, fish production in Java declined or, at the very least, did not keep pace with the growth of population, largely because the high price of the salt sold by the government's monopoly stifled the fishing industry there.<sup>27</sup> Thus, there was a ready market for the dried fish of Bagan Si Api Api, but in the case of Java, it had to compete with imports from outside the Netherlands East Indies, especially Siam. In 1903 a total of about 19 million kilograms of dried fish was imported into Java from outside the Netherlands

<sup>22</sup> Van Kampen, "Aanteekeningen omtrent de Visscherij," pp. 10, 12.

<sup>23</sup> A. G. van Veen, "Fermented and Dried Seafood Products in Southeast Asia," in Georg Borgstrom, ed., *Fish as Food*, vol. 3 (New York and London: Academic Press, 1965), p. 237; Van Kampen, "Aanteekeningen omtrent de Visscherij," p. 16.

<sup>24</sup> Van Veen, "Fermented and Dried Seafood Products," p. 242; Boeijinga, "Visscherij van Bagan Api Api," p. 454.

<sup>25</sup> Colijn, "Advies," pp. 41-42.

<sup>26</sup> Van Kampen, "Aanteekeningen omtrent de Visscherij," p. 17.

<sup>27</sup> See Masyhuri, "Usaha Penangkapan Ikan dan Masyarakat Nelayan di Indonesia 1880-1940," *Masyarakat Indonesia* 20, 1 (Juni 1993): 15-17.

Indies,<sup>28</sup> which was considerably more than the quantity being imported from Bagan Si Api Api at this time. The problem from the point of view of the traders of Bagan Si Api Api was that the price of their fish was in large part determined by how much fish from Siam was available on the Java market, since this fish, which was salted but only superficially dried, was more highly valued than fish from Bagan Si Api Api “because of its good keeping qualities and its special flavor”<sup>29</sup>: thus, when Siam exported more fish to Java, the price that could be obtained for fish from Bagan Si Api Api dropped. Colijn’s comments on the destination of the *terasi* produced at Bagan Si Api Api are vague—“the *terasi* goes by way of Singapore, in part to Surabaya; the rest stays in the Straits”<sup>30</sup>—but according to a slightly later source, nearly all of the *terasi* was exported to Java. In Java shrimp and fish pastes were very important from the point of view of nutrition, partly because they contained protein, but perhaps even more because they stimulated the consumption of rice, corn, and soya products, which were the main sources of protein and energy for many people.<sup>31</sup> Virtually all of the supply of dried prawns produced at Bagan Si Api Api was exported to Singapore,<sup>32</sup> where presumably much of it was transhipped to other ports. Finally, the “prawn shells” that constituted a by-product of the industry were exported to the pepper plantations of Bangka, Riau, and Lampung.

At Bagan Si Api Api it was the salt farm that enabled production first of dried fish, and then of *terasi* and dried prawns as well, to take place on such a large and rapidly expanding scale. The fishers themselves were organized into groups, or *kongsies*, each headed by a *towkay bangliau* (“the boss of the place where the nets are dried”). The *towkay bangliau* owned the boats, traps, and drying platforms and provided accommodation for the fishers when they were not at sea. According to Colijn, the fishers would begin fishing with an advance from the farmer, “without whose financial help they would not have been able to supply themselves with the necessary equipment.”<sup>33</sup> Indeed, according to figures given by Van Kampen, in 1908 a *jermal* and accompanying boat cost about f1540, while an *ambai* and boat cost between f91 and f244.<sup>34</sup> The farmer also supplied the *kongsies* salt on credit. The *towkay bangliau* salted and partially dried the fish which the workers in his *kongsi* brought ashore, and then he sold them to one of the local traders, who dried the fish further and prepared it for

<sup>28</sup> *Statistiek van den Handel en de In- en Uitvoerrechten in Nederlandsch-Indië 1903*, deel 2 (Batavia: Landsdrukkerij, 1904), pp. 10-11. Dutch reports invariably refer to these imports as “Siam fish,” but a significant proportion of them had been produced in other places, including Cambodia and Trengganu.

<sup>29</sup> Van Veen, “Fermented and Dried Seafood Products,” p. 238. A further reason was that the salt used to pack this fish was itself highly valued, since the government’s monopoly made salt such an expensive commodity in Java. Masyhuri, “Usaha Penangkapan Ikan,” p. 21.

<sup>30</sup> Colijn, “Advies,” p. 44.

<sup>31</sup> Tadashi Mizutani, Akimitsu Kimizuka, Kenneth Ruddle, and Naomichi Ishige, “A Chemical Analysis of Fermented Fish Products and Discussion of Fermented Flavors in Asian Cuisines,” *Bulletin of the National Museum of Ethnology* 12 (1987): 803. Since most of the rice consumed by the Javanese at this time was hand pounded, it probably contained much more protein than polished rice does.

<sup>32</sup> Van Kampen, “Aanteekeningen omtrent de Visscherij,” p. 17.

<sup>33</sup> Colijn, “Advies,” p. 5.

<sup>34</sup> Van Kampen, “Aanteekeningen omtrent de Visscherij,” pp. 11, 13. Van Kampen gives the prices in Straits dollars, which I have converted into guilders at the rate of f1.40 to \$1.00.



export.<sup>35</sup> According to Van Kampen, the *towkays* were dependent on the traders for credit, but, as he commented, “the salt farmer still has the greatest influence.”<sup>36</sup> In all likelihood the traders themselves relied on the farmer for credit, but neither Colijn nor Van Kampen discuss this aspect of the industry. In any case, once the *towkay bangliau* had received payment from the trader, he settled the advances from the farmer “completely or partly” and then, after deducting other expenses and giving himself a share of the proceeds (10 percent according to Colijn, but 30 percent according to Van Kampen), divided the rest among the fishers.<sup>37</sup>

In order to keep the industry going, the farmer had to import massive amounts of salt. Usually he bought salt from the Red Sea in Singapore,<sup>38</sup> but on a few occasions when he could not obtain supplies there he shipped salt directly from Aden himself.<sup>39</sup> The farmer also used his connections to bring in more workers from China—nearly all of them were Hokkian, as was the farmer himself. Finally, the farmer provided most of the shipping service between Bagan Si Api Api and its principal markets, Singapore and Java. The Dutch shipping line operating in the Indies, the Koninklijke Paketvaart Maatschappij (KPM), had opened a direct service between Bagan Si Api Api and Java, but when the traders had become dissatisfied with this service (for reasons unspecified by Colijn), the farmer had set up a direct steamship connection of his own. Colijn reported that the farmer had given “shippers [in this case referring to the traders] advances on their product,”<sup>40</sup> which would indicate that the traders received credit from the farmer at least in his guise as the provider of transport.

One aspect of the farmer’s business deserves special attention, and that is the price at which he sold salt to the fishers. Under the terms of his contract the maximum price at which he could sell salt was f5.00 per pikul (about 62 kilograms), the equivalent of \$4.24 in Straits dollars, which was the currency most widely used along the east coast of Sumatra at this time, as well as the currency in which the farmer usually purchased salt. According to Colijn, the price at which the farmer had been selling salt ranged between \$2.00 and \$2.40 per pikul for well over a year. Of course the *real* price of salt to the fishers was higher than these figures suggest, since they paid interest on the salt they received on credit. Nevertheless, the important point here is that the farmer sold salt at well below the allowable maximum. Colijn calculated that when the farmer sold salt at \$2.20 per pikul (the price at which it had been sold for several months) he made a profit of \$1.20 on each pikul,<sup>41</sup> but of course what mattered was the farm’s *overall* profit. By selling salt at well below the maximum price, the farmer did two things. First, he reduced the temptation to rival businessmen who might have attempted to smuggle salt into the farm territory and thereby undermine his monopoly, but I doubt that this was the primary consideration, for, as I will explain, the farmer had his ways of dealing with such threats. Second, and far more importantly, by selling salt cheaply

<sup>35</sup> *Ibid.*, p. 9. According to Colijn (“Advies,” p. 5), these traders were *peranakan* Chinese from Java.

<sup>36</sup> Van Kampen, “Aanteekeningen omtrent de Visscherij,” p. 9.

<sup>37</sup> Colijn, “Advies,” p. 9; Van Kampen, “Aanteekeningen omtrent de Visscherij,” p. 8.

<sup>38</sup> Van Kampen, “Aanteekeningen omtrent de Visscherij,” pp. 14-15.

<sup>39</sup> Colijn, “Advies,” p. 12.

<sup>40</sup> *Ibid.*, p. 7.

<sup>41</sup> *Ibid.*, p. 20.

the farmer promoted more fishing and, in so doing, stimulated greater consumption of salt as well as greater use of the other services from which he profited. In this way his total profit was much greater than it would have been if he had raised the price to a level that discouraged fishing. It was in this manner that the salt farmer not only maximized his profits but also promoted the expansion of the fishing industry at Bagan Si Api Api.

It is important to emphasize that the farmer did not operate the farm on his own, but was in fact part of a large and powerful syndicate of businessmen. According to Colijn, "not all but almost all of the Chinese capitalists of the East Coast of Sumatra and the Straits are involved in the present farm."<sup>42</sup> Colijn never referred to the farmer by name in his reports, but Van Kampen implied that the farmer at the time of his visit in 1908, whom he names as "Oey I Tam," the former Chinese captain (*Kapitein-Chinees*) of Bengkalis, had held the farm for many years. Presumably "Oey I Tam" was the businessman known in the Straits Settlements as Wee Leong Tan, whom Song Ong Siang identifies as a long-time Chinese captain of Bengkalis as well as the founder of the same shipping line which Van Kampen said was operating at Bagan Si Api Api in 1908.<sup>43</sup> Another prominent businessman who was "more or less involved" in the farm was Tjong A Fie, the Chinese captain of Medan, who held the great opium and gambling farms of East Sumatra with his brother, the major (*Majoor*).<sup>44</sup> The only other businessman named in the sources is Thio Thiau Siat (Chang Pi-shih), who, as well as being the patron of the Tjong brothers, had businesses in Java, East Sumatra, the Straits Settlements, and China, had been the Chinese consul-general at Singapore, and was now, in 1905, "Imperial High Commissioner for the study of Commercial Affairs at foreign ports on behalf of the Chinese Board of Commerce."<sup>45</sup> As this description suggests, the syndicate gave the farm access to the great amounts of capital needed to operate the enterprise. Moreover, according to Colijn, it was Thio's influence in China that enabled the farmer to maintain a steady supply of "human material" to work at Bagan Si Api Api.<sup>46</sup> Finally, the syndicate provided the farmer with a means of neutralizing those who tried to smuggle cheaper salt into the farm's territory, either because they hoped to make a profit or because, for some reason, they hoped to undermine the farm:

If the syndicate is troubled by smuggling on a large scale, they find out who the smuggler is and either buy him off or take him into the syndicate. . . . Indeed, in one case peace with a big Singapore smuggler was obtained by having the

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<sup>42</sup> Colijn, "Zoutpacht Panai," January 16, 1907, in Verbaal 15/6/1907/25.

<sup>43</sup> Van Kampen "Aanteekeningen omtrent de Visscherij," pp. 7-8; Song Ong Siang, *One Hundred Years' History of the Chinese in Singapore* (London: John Murray, 1923), p. 351; "The Late Wee Leong Tan," *Straits Times* (Singapore), May 19, 1913.

<sup>44</sup> Resident to Director of Finance, August 27, 1904, in Verbaal 15/6/1907/25.

<sup>45</sup> *Malay Mail* (Kuala Lumpur), October 9, 1905. For a discussion of Thio's many activities at this time, see Michael R. Godley, *The Mandarin-capitalists from Nanyang: Overseas Chinese enterprise in the modernization of China 1893-1911* (Cambridge: Cambridge University Press, 1981).

<sup>46</sup> Colijn, "Advies," pp. 22-23; "Zoutpacht Panai," p. 7.

daughter of one of the members of the syndicate marry the smuggler's son, who then became the syndicate's agent in Singapore.<sup>47</sup>

Clearly a lot was at stake, for the salt farm was indeed a highly lucrative business in all sorts of ways. As the preceding discussion suggests, the farmer (and the syndicate of which he was part) made money both directly and indirectly from the monopoly granted to him by the government. His direct profits were derived from selling salt throughout the farm's territory and levying duties on the export of *terasi* and dried prawns at Bagan Si Api Api ("the salt farmer's knife cuts from two sides," commented Gobée, referring to the double imposition on these products<sup>48</sup>) and on the export of dried *trubuk* (two highly marketable species of shad, *Clupea toli* and *Clupea macrura*) and *tenggiri* (Spanish mackerel, *Scomberomorus* spp) and *trubuk* roe from the area near Bengkalis Island. According to Colijn's meticulous calculations, the farm's net annual profit from the sale of salt was f112,000, while the farmer collected a further f14,000 from the duty on *terasi* and f5350 from that on dried prawns, as well as f11,800 from the Bengkalis branch of his monopoly.<sup>49</sup> There is no way of estimating the extent of the farmer's *indirect* profits, but they must have been very substantial. As mentioned, he profited from advancing salt on credit and lending money to the fishers, operating a shipping service, and giving the traders advances on the security of their cargoes. Moreover, Tjong A Fie's involvement in the farm may be taken as evidence that the syndicate also shared in the profits from the opium and gambling farms for this part of Sumatra. Although we cannot calculate the total profit, it is certain that, at least up to 1904, this profit increased enormously. Between 1896 and 1904 the farm rent only increased from f3500 to f6060 per month, but during this period there was a more than three-fold increase in the quantity of salt imported into Bagan Si Api Api, from 4.9 to 15.7 million kilograms, and there was a great increase in exports of dried fish and other products.<sup>50</sup> For the farmer and his syndicate the salt farm was indeed, as Colijn put it, "a little gold mine."<sup>51</sup>

For its part the government of the Netherlands East Indies gained a great deal of revenue from this enterprise. In 1905, by which time the monthly rent had been raised to f13,550, the government collected f162,600 from the farm. Although the farm covered the entire district of Bengkalis, all but about f12,600 of this total came from its business at Bagan Si Api Api. Colijn calculated that the government also received f35,000 from a tax on businesses, f65,000 from import and export duties, and about f100,000 from the opium farm, giving a total of at least f350,000, but he failed to mention the probably quite substantial income it derived from the gambling and pig slaughter farms at Bagan Si Api Api. The government's expenses at Bagan Si Api Api, consisting mainly of the salaries of the controleur and a few customs officers, amounted to f25,000. In summary, in 1905 the Netherlands Indies treasury made a pure profit of at least f325,000 from the fishing industry of Bagan Si Api Api. If data

<sup>47</sup> Colijn, "Advies," pp. 13-14.

<sup>48</sup> E. Gobée, "De Oorzaken van den Achteruitgang van de Vischindustrie te Bagan Si Api Api," *Mededeelingen van het Visscherij-station te Batavia* 7 (1912): 15.

<sup>49</sup> Colijn, "Advies," pp. 20-21.

<sup>50</sup> Haga, "Beteekenis der Visscherij," p. 240.

<sup>51</sup> Colijn, "Advies," p. 9.

provided by Colijn can be taken as a guide, this figure constituted about 27 percent of the gross income from the sale of all the dried fish, *terasi*, and dried prawns produced at Bagan Si Api Api.<sup>52</sup> For the Indies government too, Bagan Si Api Api was a gold mine.

Despite the great revenue collected from Bagan Si Api Api, some of Colijn's fellow officials suggested that the government might do even better by abolishing the farm. By this time the government, which was becoming increasingly bureaucratized and thus less and less tolerant of "semi-independent organizations" such as farms, had abolished the great opium farms in Java<sup>53</sup> and was in the process of abolishing various farms in the Outside Possessions, but Colijn went to great lengths in his report to attack various proposed alternatives to the salt farm. He vehemently opposed the suggestion that the government extend the government's own salt regie, which monopolized the supply of salt in Kalimantan and southern and western Sumatra as well as in Java and Madura, to Bagan Si Api Api. In his view the salt farm would have been worth keeping even if the farmer made several times as much money as he did, "because the farmer in my view is essential for the success of the business on a big scale": only the farmer could bring in workers, buy off smugglers, give credit, and do all the other things that he did to promote the industry.<sup>54</sup> Colijn also attacked a proposal for a system that would have allowed anyone to import salt on paying a certain duty, for, he argued, there would be no guarantee of the regular supplies that were so essential for the prosperity of the industry and, since small traders would have to pay more for salt than one big buyer, the import duty would have to be set very low in order to keep the price of salt at its current level. An underlying reason for Colijn's vigorous support for the farm was his belief that "big Chinese capital [was] losing opportunities for useful investment" in the Indies, as had happened when the opium farms in Java were replaced by the government's own monopoly. "If this capital is driven out further then it will find a way out of our colony; it would be received with open arms on the other side [of the Straits of Malacca]." To abolish the salt farm at Bagan Si Api Api because of the profits made by the farmer would be to "slaughter the hen that lays the golden eggs."<sup>55</sup>

As it turned out, Colijn succeeded not only in defending the farm at Bagan Si Api Api, but also in persuading the government to set up a salt farm further north along the coast at Panai, where a group of Chinese traders had petitioned the government for a farm. The Director of Finance opposed the establishment of a farm at Panai, arguing that duties on fish imported into Java had already been falling because of the growth of the fishing industry at Bagan Si Api Api and that if Panai became "a second Bagan Si Api Api," the government would lose more from a further decline in import duties than it would gain from the farm and various taxes.<sup>56</sup> Partly in response to this argument, Colijn suggested that the government impose a small duty on fish products

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<sup>52</sup> Ibid., pp. 7-9.

<sup>53</sup> James R. Rush, *Opium to Java: Revenue Farming and Chinese Enterprise in Colonial Indonesia, 1860-1910* (Ithaca: Cornell University Press, 1990), p. 215 for quote.

<sup>54</sup> Colijn, "Advies," pp. 17, 10-11.

<sup>55</sup> Ibid., pp. 22-25.

<sup>56</sup> Director of Finance to Governor-General, January 4, 1906, in Verbaal 15/6/1907/25.

imported into Java from elsewhere in the Netherlands Indies, but the Council of the Indies, reflecting the Ethical concerns of the time, persuaded the Governor-General to reject this proposal on the grounds that the government should not "make heavier the burden on the people" by making them pay more for "one of the few animal foods that is within their reach."<sup>57</sup>

In summary, the salt farm brought about the growth of the fishing industry of Bagan Si Api Api. In order to make as much money as possible from his monopoly, the farmer provided salt on credit, advanced money to the fishers, and operated a shipping service, and in so doing he promoted fishing on a rapidly expanding scale. At the most fundamental level, this expansion depended on the extraordinary wealth of marine fauna in the estuary. Colijn's report contains no suggestion that there might be a limit to that wealth.

### Rising Farm Rents and Stagnating Production

Until the very early 1900s the farmer had the best of both worlds, namely, steady rents and rapidly rising production. Beginning in 1904, however, this lucrative combination began to break down, as rents rose and production stagnated.

After having stayed at about the same level for at least a decade, the rent for the salt farm at Bagan Si Api Api increased very substantially between 1904 and 1910. In 1904 it increased from f6060 to f13,550 per month; when the farm was relet in 1907 it increased slightly, to f15,630; and at the next renewal of the farm in 1910 it more than doubled to f32,000.<sup>58</sup> Why rents rose in 1904 and 1907 is far from clear. Colijn wrote at the time that "there is not a great deal of competition" for the farm.<sup>59</sup> But in 1910 there was indeed an intense struggle for the farm, as we know from a letter written by the Resident of the East Coast of Sumatra. The Resident reported "serious squabbles in the bosom of the syndicate." One group, apparently based in Singapore, split off to form a rival syndicate. Its goal was not simply to obtain the farm but to destroy the farmer, identified by the Resident as "the Capitan China Oei Koen Poey,"<sup>60</sup> though just why it maintained such "a big grudge" against him is not clear. With some encouragement

<sup>57</sup> "Advies van. . . 15 Februari 1907," (p. 7), in Verbaal 15/6/1907/25.

<sup>58</sup> Haga, "Beteekenis der Visscherij," p. 240.

<sup>59</sup> Colijn, "Zoutpacht Panai," p. 7.

<sup>60</sup> Resident to Director of Finance, January 31, 1910, Verbaal 21/1/1911/32. Given the vagaries in European transcription of Chinese names, it is not easy to identify the farmer with full certainty. The Resident's statement that "the farmer has always showed himself to be steady and trustworthy" and that "under his lead Bagan Si Api Api has developed to an important fishing place" implies that Oei Koen Poey was the same person Van Kampen identified as "Oey I Tam," but whereas the Resident referred to Oei Koen Poey as "the Capitan China," Van Kampen had described Oey I Tam as "the former captain" (my emphasis), which would suggest they were in fact different people. What is certain is that the farmer for many years up to 1913 was a prominent member of the Oei ("Wee" in Singapore) family. A biographical sketch of Wee Leong Tan published in 1908 noted that he "has seven sons, three of whom hold office as honorary captains and lieutenants on the east coast of Sumatra." Arnold Wright and H. A. Cartwright, *Twentieth Century Impressions of British Malaya* (London: Lloyd's Greater Britain Publishing Co., 1908), p. 640. According to a report written in 1916, the same syndicate had held the farm between 1900 and 1913. H. Mouw, quoted in Gobée, "Omvang en Beteekenis van de Visscheryindustrie" (p. 6), February 14, 1916, in Verbaal 17/1/1917/10. All of the records that refer to the farm during the years 1910 to 1913 give Oei Koen Poey as the name of the farmer.

from the Resident, the rival syndicate put in a very high tender, so high that they expected to make a loss if they were actually granted the farm. As it turned out, Oei was able to hold the farm by offering even more, but his victory was almost completely undermined when the government in Batavia withdrew its offer to give him the Panai farm. Oei feared that if the farm fell into the hands of his rivals they would smuggle cheap salt into his nearby farm district and in so doing destroy his business. Thanks to the intervention of the Resident, however, he was able to hold the Panai farm as well, though at a higher rent than he had originally offered. "It is appropriate," commented the Resident, "for us to take advantage of the feud between competitors to drive up the farm rent but not to facilitate the collapse of the farmer."<sup>61</sup>

In the meantime, the fishing industry of Bagan Si Api Api stopped growing. Exports in dried fish gradually declined from a peak of 25.9 million kilograms in 1904 and leveled off at about 20 million kilograms beginning in 1909. At the same time, exports of *terasi* at first increased rapidly, reaching a peak of 10.1 million kilograms in 1909, but then fell off in 1910.<sup>62</sup> Thus, by about 1910 the fishing industry had ceased to expand. Indeed, by 1912 Dutch writers had begun to refer to what they called the *achteruitgang* or decline of the fishing industry at Bagan Si Api Api.

Any study of the fishing industry of Bagan Si Api Api must attempt to unravel the relationship between these two phenomena of rising rents and stagnating or even declining production. Most officials who wrote about Bagan Si Api Api at this time were certain they understood this relationship. According to them, the farmer was forced by the great increase in the rent he had to pay to increase the price of salt in order to meet his obligations, which in turn brought about a decline in production. There are two aspects of this line of reasoning that must be examined.

First, the evidence is very strong that increases in the price of salt undermined the profitability of the industry and discouraged further production. As can be seen from Figure 1, the price of salt rose quite considerably up to a peak of f4.20 in 1911. Since the consumption of salt, as indicated by the amount of salt the farmer imported, fell proportionally more than did exports of dried fish, and since more and more salt was being used for the preparation of *terasi* and dried prawns, it is clear that, as Gobée noted, the fishers began to use less salt to dry a given quantity of fish. Consequently the fish spoiled sooner and the price of fish from Bagan Si Api Api fell in Java. Gobée reported that shortly after a big increase in the price of salt in 1910, many fishers abandoned their *jermals* and changed over to the preparation of dried prawns and

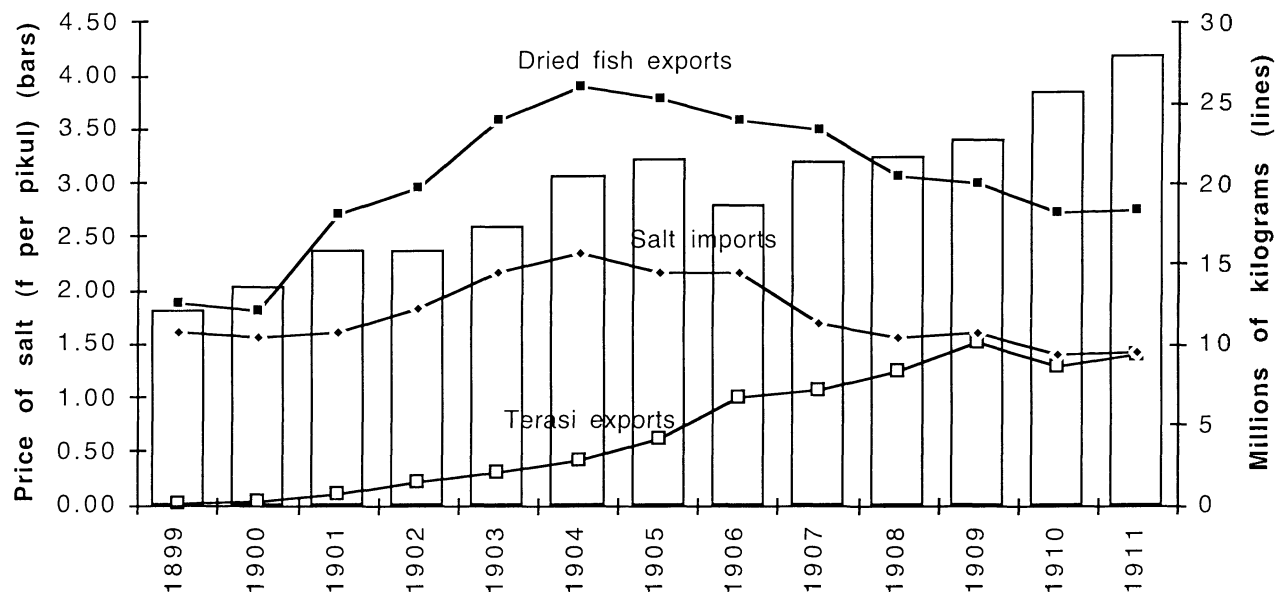
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<sup>61</sup> Resident to Director of Finance, January 31, 1910, in Verbaal 21/1/1911/32.

<sup>62</sup> Haga, "Beteekenis der Visscherij," p. 240. It is possible that the big increase in exports of *terasi* between 1908 and 1909 came about more because of adulteration than because of bigger catches of *belacan*. Bottemanne, *Verslag over de Visscherij*, p. 12.

Figure 1

Bagan Si Api Api: Exports of Dried Fish and Terasi, Salt Imports, and Salt Prices, 1899-1911



Sources: A.L.J. Sunier, "Nog Eens de Vischindustrie te Bagan Si Api-Api," *Tijdschrift voor het Binnenlandsch Bestuur* 44, 1(1913): 44-56, p.56; B.J. Haga, "De Beteekenis der Visscherij Industrie van Bagan Api Api en Hare Toekomst," *Economist* (1917): 237-62, p.240.

*terasi*, for which much less salt was needed,<sup>63</sup> “as presumably others had already done earlier.”<sup>64</sup> Indeed, the rising price of salt may have been one reason for the big expansion in production of dried prawns and *terasi*, but the profitability of these products fell too by the extent to which the price of salt rose.

The other aspect of the logic adopted by most officials was that the rising rent forced the farmer to increase the price of salt. There is strong evidence to support this view too. In particular, the farmer kept increasing the price of salt as the rent went up, most notably after the rent more than doubled early in 1910. Nevertheless, the farmer might, at least in theory, have responded to the big increase in rent in almost the exactly opposite way. If he had kept the price of salt low, then the fishers might have continued to buy more and more salt from him. In this way, he might have made more money than he did by raising the price and discouraging consumption. The fact is, of course, that he did not do this. If we assume that he was trying to maximize his income, then presumably he believed that the policy he adopted was the most profitable one. It is possible he expected that the production of *terasi* would rise in spite of increasing prices for salt, thereby allowing him to collect more in export duties, but there is no reason to believe that he would deliberately suppress the production of dried fish when he might well have gained from encouraging it. The answer, in my view, is that the farmer was indeed maximizing his profits, but that the situation in which he operated had changed radically. In particular, it was no longer possible to continue catching ever increasing quantities of fish, *belacan*, and prawns in the estuary, a point that requires some elaboration.

During the early years, the fishers of Bagan Si Api Api were blessed with an extraordinary wealth of marine life in the estuary. In large part because of the salt farm, the number of fishers steadily increased, and these fishers built more and more *jermals* (“a few hundred” altogether in 1908<sup>65</sup>) in the inner part of the estuary until there were so many that they “stood close together” in the mouth of the river, catching “everything that was carried out with the ebb tide.”<sup>66</sup> At the same time, the fishers of Bagan Si Api Api were equipping their *jermals* to catch prawns and *belacan* and constructing *ambais*, which were of course specifically designed to trap these animals. In other words, they adopted means by which they could extract even more of the fauna available in the estuary. By about 1908 or so the fishing industry had reached a

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<sup>63</sup> Writing in 1916, Haga (“Beteekenis der Visscherij,” p. 252) asserted that the cost of salt made up 20 percent of the selling price of dried fish as compared to 13 percent in the case of *terasi*, but apparently the amount of salt used to prepare *terasi* could be reduced quite substantially. “Terasi can be prepared . . . just by adding a little sea water, though naturally the product sells for less.” A. L. J. Sunier, “Nog Eens de Vischindustrie te Bagan Si Api-Api,” *Tijdschrift voor het Binnenlandsch Bestuur* 44, 1 (1913): 44-56, p. 53.

<sup>64</sup> Gobée, “Achteruitgang,” p. 13. Sunier gave a somewhat different account of events, claiming that 1500 fishers left Bagan Si Api Api for Malaya and China. Report by Sunier, quoted in Bottemanne, *Verslag over de Visscherij*, p. 13; Sunier, “Nog Eens de Vischindustrie,” p. 50.

<sup>65</sup> Van Kampen, “Aanteekeningen omtrent de Visscherij,” p. 9.

<sup>66</sup> Gobée, “Achteruitgang,” p. 9. In this article I refer to “the inner estuary” and “the inner part of the estuary,” but in the absence of any maps or descriptions regarding the location of *jermals* at this time, I cannot define this area with any precision. Presumably the *jermals* were no further out to sea than Pulau Alang Besar and most were considerably closer to the entrance to the river. Bottemanne simply writes that “before 1910 the *jermals* stood . . . close together in the beginning of the mouth.” Bottemanne, *Verslag over de Visscherij*, p. 14.



point at which it was nearly impossible to extract any more fish, and perhaps prawns and *belacan* as well, from the inner estuary.

There is a great deal of evidence showing that the *jermals* and *ambais* used at Bagan Si Api Api had a destructive effect on the fauna in the estuary. Van Kampen reported that a *jermal* he watched in operation in 1908 caught everything that came into it. Young, unusable fish were released, but by this time many were dead or injured. It was, he wrote, a "murderous way of fishing."<sup>67</sup> Several reports prepared by British officials on the other side of the straits support Van Kampen's assessment. In 1904, H. C. Robinson, a member of a committee set up to investigate the fishing industry along the west coast of Malaya, examined the fish caught by a *jermal* in a similar, though much smaller estuary at Kuala Selangor, directly opposite Bagan Si Api Api: "the fish caught consisted to a very large extent of quite immature specimens of estuarine and surface-feeding varieties, and, at a rough estimate, individuals of marketable weight formed not more than a third of the total weight." According to Robinson, *jermals* located in estuarine waters captured "not only the young fry, but also the breeding stock of those fish that deposit their spawn in brackish and muddy water which in Malayan seas form a considerable proportion of the fauna."<sup>68</sup> As a result of such findings, the governments of the Federated Malay States (FMS) and the Straits Settlements imposed a ban on *ambais* and stipulated that the screens used in *jermals* have one-inch interstices. It is clear, however, that enforcement of these regulations was later relaxed, for in 1912 the Robinson reported that the *belacan* fishers were "destroying much of the fry of the larger food fishes."<sup>69</sup> In 1914 an investigation of a number of *ambais* at Tanjong Piandang on the coast of Perak showed that ten tons of fish were caught during the year for each fisher and that this catch consisted "very largely [of] fry of good food fishes, none of which is used for human consumption."<sup>70</sup> Several reports from this period indicate that much of what was caught in *jermals* and *ambais* along the west coast of Malaya was used as food for pigs and ducks or as fertilizer for sugar plantations.<sup>71</sup> Much more recently the authorities in Thailand stopped issuing permits for devices similar to the *jermal* and the *ambai* because they "are claimed to destroy many larvae of valuable fish."<sup>72</sup>

Despite all this evidence on the effects of *jermals* and *ambais*, it is impossible to prove that overfishing was taking place in the Rokan estuary. Indeed, in an article on "The Causes of the Decline of the Fishing Industry of Bagan Si Api Api" published in

<sup>67</sup> Van Kampen, "Aanteekeningen omtrent de Visscherij," p. 12.

<sup>68</sup> R. J. Wilkinson, H. Berkeley, and H. C. Robinson, *Report on the Fishing Industry of the Straits Settlements and Federated Malay States on the West Coast of the Peninsula* (Kuala Lumpur: Federal Government Printing Office, 1904), pp. 33-34.

<sup>69</sup> Annual Report, Inspector of Fisheries, Federated Malay States, 1912, SS 2037/1913.

<sup>70</sup> Report of the Fisheries Department, Federated Malay States, 1916, SS 1203/1917.

<sup>71</sup> HCO 370/1905; C. N. Maxwell, "Malayan Fishes," *Journal of the Straits Branch of the Royal Asiatic Society* 84 (November 1921): 184, as well as previously cited sources. In 1916 the controleur at Bagan Si Api Api reported that the poorest quality *ikan busuk* was used as pig food, but he did not mention when this had become a common practice or how large a proportion of the catch was used in this way. Haga, "Beteekenis der Visscherij," p. 242.

<sup>72</sup> *Management and Utilization of Mangroves in Asia and the Pacific*, FAO Environment Paper 3 (Rome: Food and Agriculture Organization of the United Nations, 1982), p. 50.

1912, E. Gobée, the deputy head of the fisheries division of the Department of Agriculture, Industry, and Trade, argued strenuously against this suggestion, which he described as merely a "postulate." He noted that the regulations imposed along the coast of Malaya had made *belacan* fishing impossible, but claimed that they had not brought about any increase in catches of fish over the following years.<sup>73</sup> Moreover, it is possible that even if (to borrow a term used by fishery biologists) the total "biomass" of the fish in the Rokan estuary was declining, this may have been offset by an increase in the biomass of shrimps and prawns, for, despite the fact that shrimps and prawns were also being caught on a massive scale, the rate at which they were being *recruited* may have increased greatly due to the removal of fish that preyed on them or competed with them for the same food.<sup>74</sup> If this is what happened, then the rapid increase in catches of shrimps and prawns beginning in about 1904 came about not only because the fishers put more effort into catching them, but also because there were more of them there to be caught. More generally, it is possible that, as has been argued in the case of San Miguel Bay in the Philippines, which has been fished very intensively for several decades, "the large-size slow turnover species" of marine life were being "replaced by smaller, fast-turnover species."<sup>75</sup> Nevertheless, we can at least conclude that, whether or not overfishing was taking place, the fishers of Bagan Si Api Api were exploiting the inner estuary to its limit.<sup>76</sup>

At the same time another important change was taking place in the estuary: it was silting up. Maps 2 and 3, based on hydrographic maps prepared in 1893 and 1918, demonstrate how rapidly this process was taking place. During this period many areas which had previously been below the low water mark came to be above it; the size of Pulau Alang Besar grew quite considerably; Pulau Alang Kecil, no longer an island at low tide, had begun to merge with the mainland; and a new island, Pulau Perdamaran, formed at the entrance to the river. The silting up of rivers along the east coast of Sumatra, or, put differently, the extension of the coastline, has of course been going on for thousands of years, but it is possible that in the case of the Rokan River the process had accelerated in recent years. By about 1910 the fishers of Bagan Si Api Api had cut down large portions of the mangrove forests in the area for the poles and stakes

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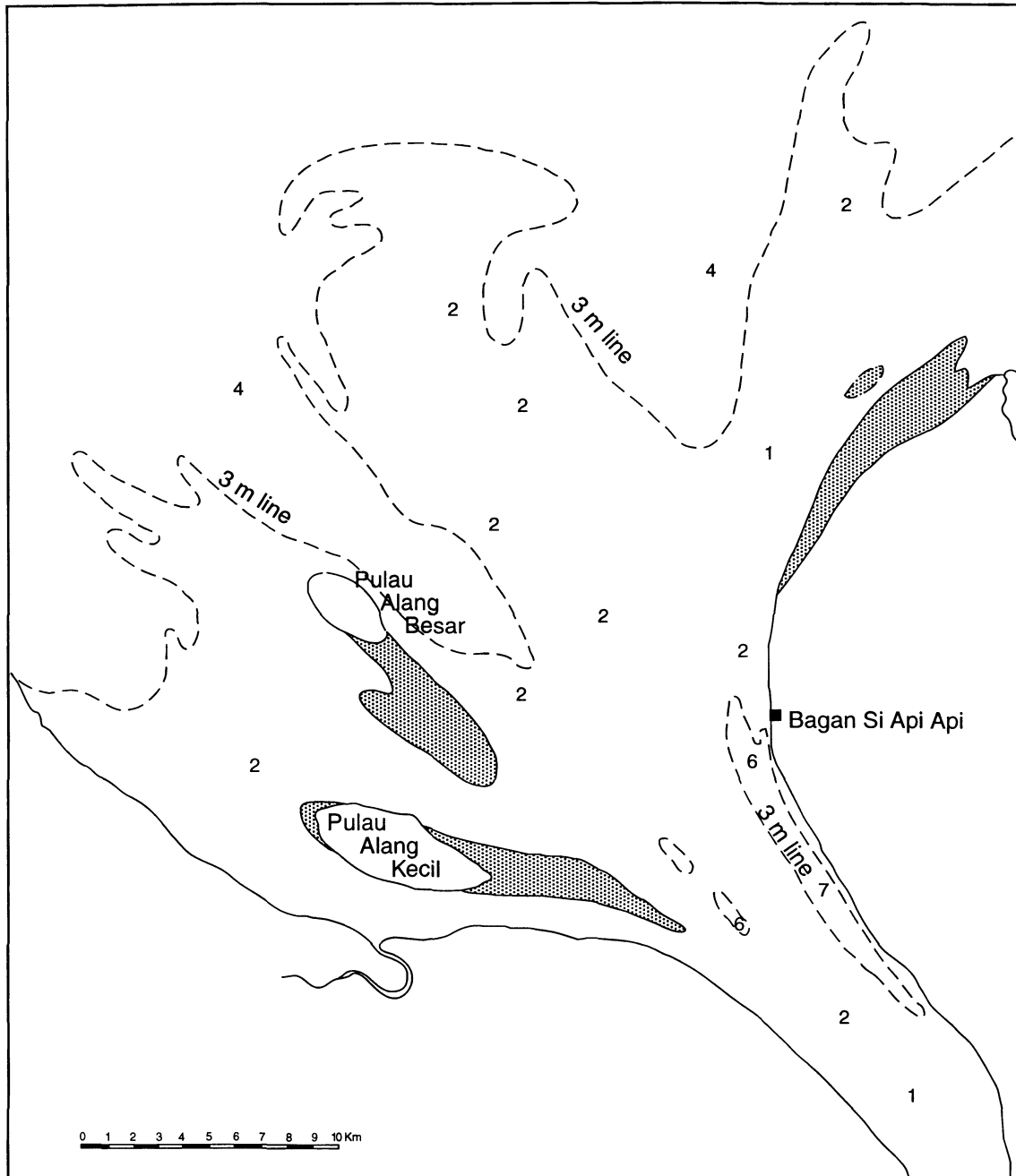
<sup>73</sup> Gobée, "Achteruitgang," p. 8.

<sup>74</sup> D. Pauly, "History and Status of the San Miguel Bay Fisheries," in D. Pauly and A. N. Mines, eds., *Small-scale Fisheries of San Miguel Bay, Philippines: Biology and Stock Assessment*, ICLARM Technical Reports 7 (Manila: International Center for Living Aquatic Resources Management, 1982), p. 107.

<sup>75</sup> Ian R. Smith and Daniel Pauly, "Resolving Multigear Competition in Nearshore Fisheries," *ICLARM Newsletter* 6, 4(October 1983): 14.

<sup>76</sup> One difficulty in ascertaining whether overfishing was taking place concerns the ambiguity of the term "overfishing" itself. Pauly questions whether the concepts of "growth overfishing" and "recruitment overfishing" developed for the study of single-species stocks can be applied to a multi-species fishery, of which the Rokan estuary would be a prime example. He distinguishes between "ecosystem overfishing," which he defines as "what takes place in a mixed fishery when the decline [through fishing] of the originally abundant stocks is not fully matched by the contemporary or subsequent increase of the biomass of other exploitable animals," and "economic overfishing," when a catch similar to the one being caught could be obtained with less effort and cost. Pauly, "History and Status of the San Miguel Bay Fisheries," p. 121.

## Map 2 The Rokan Estuary 1893 (at low tide during a spring tide)



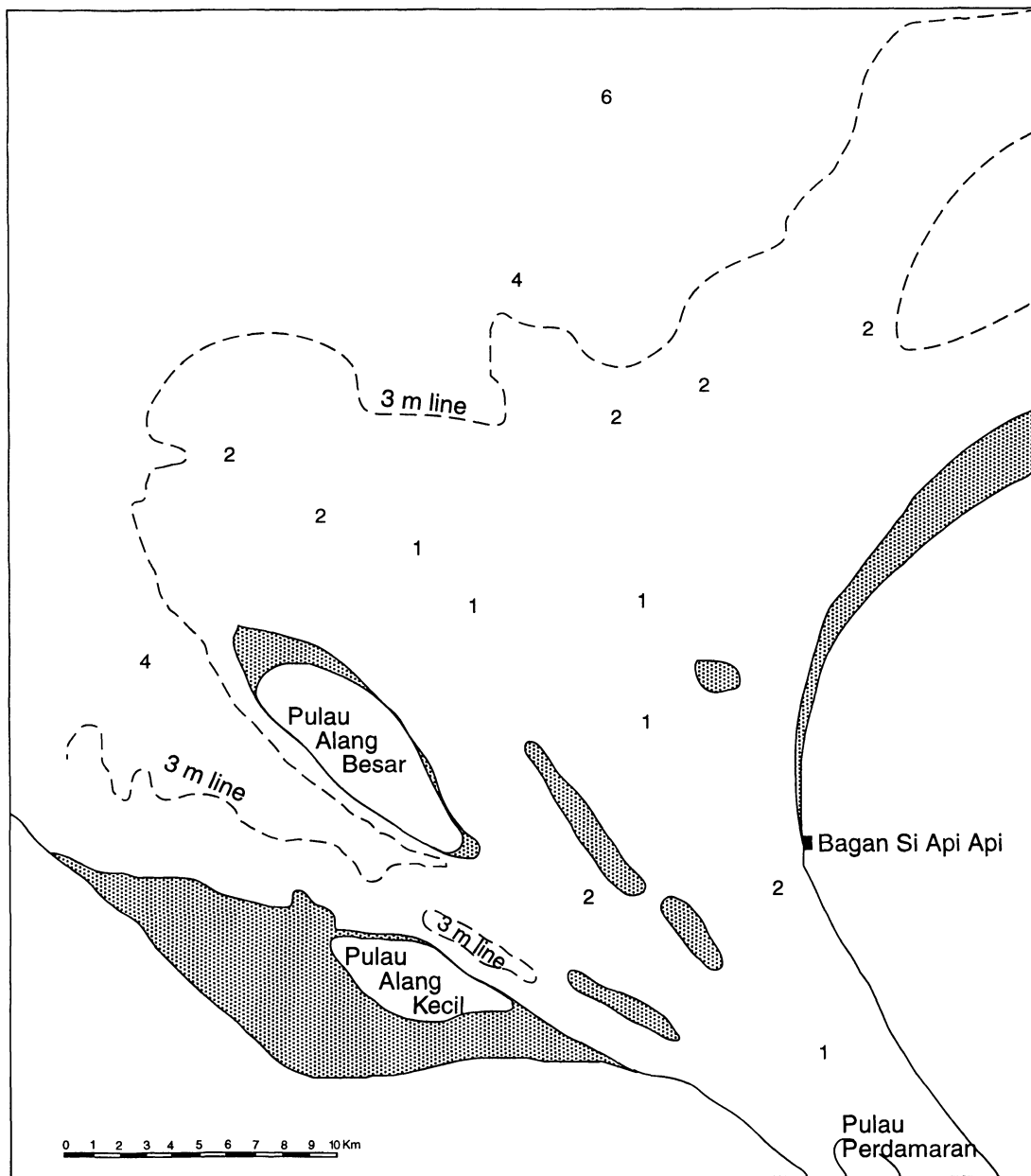
Source : "Mond der Rokan-Rivier",  
HydroOIA-161-10/110  
Maps and Drawings Division, Algemeen Rijksarchief

Depths indicated in metres  
Mud flats exposed at low tide

### Map 3

## The Rokan Estuary 1918

(at low tide during a spring tide)



Source : "Mond der Rokan-Rivier",  
Hydro/OIA-172-10/111,  
Maps and Drawings Division, Algemeen Rijksarchief

Depths indicated in metres  
Mud flats exposed at low tide

needed to construct *jermals* and *ambais*. According to two sources, one type of mangrove tree, *Rhizophora* (*bakau* in Malay), was used for the construction of *jermals*.<sup>77</sup> Vast areas of mangroves must have been cut down. Each of the several hundred *jermals* in the estuary required several dozen large poles for the construction of the main framework and up to two thousand smaller stakes for the wings. Moreover, these materials had to be replaced often because of weathering and the damage done by shipworms, to which *Rhizophora* is not resistant. At the same time, the fishers needed great quantities of timber to build drying platforms, houses, and sheds, not least because of devastating fires that swept the town from time to time, most notably in 1908, when "235 shops, 15 warehouses, 80 houses, and about 100 inhabited hovels" were destroyed.<sup>78</sup> As far as I can tell, most of the timber used for building at Bagan Si Api Api came from the timberyards (called *panglong*) on the islands and along the coast near the mouth of the Siak River to the south of Bagan Si Api Api, but it seems very likely that some of it also came from up the Rokan River. In 1916 the controleur of Bagan Si Api Api described a process which presumably had been going on since the Chinese first settled in the area: "Because of the great demand for wood for the fishing industry this wood must be cut away deeper and deeper into the interior."<sup>79</sup> In all likelihood, these activities promoted erosion and hence speeded up the rate of siltation. Moreover, if recent studies of mangroves are any guide, the loss of the mangroves around Bagan Si Api Api may have had a detrimental effect on the potential productivity of the estuary, both because the litterfall from the trees had been an important source of detritus and because the mangroves provided nursery grounds for some species of fish and crustaceans,<sup>80</sup> but it is possible that this loss was to some extent compensated for by the extra nutrients provided by the increased quantity of silt.<sup>81</sup> As all this suggests, there is a great deal about the siltation that was taking place in the estuary that is far from clear. There is, however, one consequence of the silting up of the estuary about which we can be quite confident, as I will now explain.

The most obvious and probably most important consequence of the silting up of the mouth of the Rokan River was that *jermals* in that area were now located in very shallow water, where they could not catch fish as efficiently and where in any case there would have been fewer large fish to catch, since many species would have shifted further seaward in order to remain in deeper water. According to Gobée, the increasing shallowness of the estuary was "the reason for the fact that for several years few large types of fish have been caught"—a phenomenon that might also be

<sup>77</sup> Van Kampen, "Aanteekeningen omtrent de Visscherij," p. 10; Bottemanne, *Verslag over de Visscherij*, p. 27.

<sup>78</sup> Resident to Governor-General, telegram of July 11, 1908, in Verbaal 5/5/1909/40.

<sup>79</sup> Haga, "De Beteekenis van der Visscherij," pp. 252-53. See also Bottemanne, *Verslag over de Visscherij*, p. 35.

<sup>80</sup> It should be noted that the trees closest to the sea and the open estuary tend to consist of species of *Avicennia* (*api-api* in Malay) rather than *Rhizophora*, which the sources report was the wood used in the construction of traps. However, according to Watson's model of the distribution of species in a typical mangrove (*Mangrove Forests of the Malay Peninsula*, p. 128), at least one species of *Rhizophora* was often found along the shore of inlets and small streams, which would have been very important nursery grounds. Moreover, I have no evidence that the fishers did not cut down at least some *Avicennias* as well.

<sup>81</sup> D. Pauly, "The Fishes and Their Ecology," in Pauly and Mines, eds., *Small-scale Fisheries*, p. 21.

interpreted as indicating overfishing—but he went on to dismiss siltation as having any significance in explaining the decline in production, arguing that a process which had been taking place gradually while production at Bagan Si Api Api was rising could not possibly have been responsible for the sudden fall in production.<sup>82</sup> We know from Hardenberg's investigations some years later, however, that conditions in the estuary *could* in fact change quite rapidly. When Hardenberg revisited Bagan Si Api Api in 1933, just four years after his major study, he found that the configuration of the bottom of the estuary had changed quite considerably and that a new island ("of several hectares and covered with young *Avicennia*-trees") had formed to the southwest of the town, that as a result there had been a marked shift in the currents within the estuary during the outgoing tide, that the greatest mixing of sea and river water now took place further seaward, that biological conditions within various parts of the estuary had changed, and that, because of all this, the areas where certain species were most abundant had changed. The consequence of these changes was that "the catches of many *jeremals* have decreased" and in fact "many *jeremals* have been abandoned."<sup>83</sup> Thus, silting up of the estuary (or more precisely the *way* this took place) may very well have had something to do with the fall in exports of fish after 1904.

In these circumstances fishers responded to the changes at the mouth of the Rokan River by abandoning those *jermals* in the innermost part of the estuary and setting up *jermals* and *ambais* further out into the estuary. "According to the salt farmer's agent," wrote Gobée after a visit to Bagan Si Api Api in August 1911, "about 250 *jermals* have been abandoned or moved or new ones built further to sea." Gobée also reported that some *jermals* were now so far out to sea from Bagan Si Api Api that it had become necessary to build temporary shelters on them. Near the island of Senebui, at the most easterly fringe of the estuary, "one finds oneself in the middle of a sprawling kampong of *jermals* resembling giant hammocks."<sup>84</sup> And in 1914, the zoological assistant at the Fisheries Station in Batavia, A. L. J. Sunier, reported that "of the about four hundred *jermals* that are in use at Bagan Si Api Api about two hundred stand in their original places, the remaining two hundred having been built by people who have had to abandon their first *jermals*."<sup>85</sup> Sunier gave no indication where the new *jermals* were located, but the hydrographic map of 1918 shows a few *jermals* as far out as twenty kilometers from shore. Some years later a fisheries expert, Bottemanne, commented that it was not certain whether this rapid spreading out of *jermals* was due "only to silting," as some had claimed, or whether it happened because "generally the catch in the mouth region declined."<sup>86</sup> Certainly moving out from the inner part of the estuary enabled the fishers to sustain yields. It may also be that because they were much more spread out, the *jermals* and *ambais* were, collectively, less destructive of the fauna in the estuary. "The location [of *jermals*] over a much greater area," noted Gobée, "has meant

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<sup>82</sup> Gobée, "Achteruitgang," pp. 10-11.

<sup>83</sup> Hardenberg, "Additional Notes to My Paper 'The Fishfauna of the Rokan Mouth'," *Treubia* 14, 3 (Août 1934): 299-312, pp.299, 302-303.

<sup>84</sup> Gobée, "Achteruitgang," p. 9.

<sup>85</sup> Quoted in Bottemanne, *Verslag over de Visscherij*, p. 14.

<sup>86</sup> Bottemanne, *Verslag over de Visscherij*, p. 14. Emphasis in original.

that the chance of catching fish retreating from the river on the falling tide has become very much smaller."<sup>87</sup>

It is important to note that the fishery at Bagan Si Api Api was an "open access resource," as economists would say, one owned by no one but available for exploitation by all.<sup>88</sup> Although all the fishers were dependent on the salt farmer, they operated in separate groups. Since there was no restriction on the number of groups that could exploit this fishery, the number of groups continued to increase so long as it was possible to make a profit. Each group tried to maximize its catch. At the same time, each group had no incentive whatsoever to protect the resource by, for example, fishing less frequently or using a wider mesh, since this would only benefit the other groups. Likewise the farmer had no incentive to encourage such conservation, even if he had been aware of its benefits, since his concern was to pay his rent and make a profit during the term of his farm. Only the government was in a position to try to conserve stocks, but the dominant view among officials was that the high price of salt rather than overfishing was the reason for the decline in production. I have suggested that stocks of fish in the inner estuary declined because of intensive fishing and siltation, but even if this were not the case, we can conclude that, as the number of groups increased and the total catch from the estuary dropped (or stayed roughly the same if we include prawns and *belacan*), the profits gained by each group declined. The fishers of Bagan Si Api Api compensated for these changes by spreading out over a much wider area and, in so doing, extended the process to the entire estuary.

With all this as background it becomes clear why the farmer raised the price of salt. The reason, I believe, is that this was the best way to maximize his profits at a time when production was not only not rising, but *could not* rise significantly. He could not encourage production on a large scale by keeping down the price of salt, simply because production had reached or had nearly reached the limit set by the ecology of the estuary. Thus, as competition for the farm forced up the rent, he raised the price of salt in order to meet his obligations to the government. This of course dampened consumption, but the farmer's overall profit probably was greater than if he had not increased the price. Viewed in the short term, then, the rising price of salt contributed to a decline in production. Viewed in the long term, however, the rising price of salt was not so much the cause of stagnating production, but rather itself the result of fundamental ecological changes taking place in the estuary.

Thus, by 1910 the salt farm was no longer the "little gold mine" described by Colijn just a few years earlier. Caught between rising rents on the one hand and declining consumption of salt and a drop in production on the other, the farmer's profits fell sharply. Beginning in 1911, the farmer, Oei Koen Poey, tried to boost the consumption of salt by offering more and more of it on credit, bringing about a massive "credit inflation."<sup>89</sup> The farmer's imports of salt jumped from 9.5 million kilograms in 1911 to

<sup>87</sup> Gobée, "Achteruitgang," pp. 9-10. Gobée was trying to explain the role of siltation in declining yields, whereas my point is that, whatever the reasons for it, the great spreading out of the traps may have benefited the fishery in the long term.

<sup>88</sup> Much of the interpretation in this paragraph has been shaped by Francis T. Christy, Jr., and Anthony Scott, *The Common Wealth in Ocean Fisheries* (Baltimore: Johns Hopkins University Press, 1965), chapter 2.

<sup>89</sup> Bottemanne, *Verslag over de Visscherij*, p. 34.

13.1 in 1912.<sup>90</sup> By this time, the usual practice was for the farmer to deal with the traders rather than directly with the *towkays* and fishers. Thus, the farmer sold great quantities of salt to the traders on credit, and the traders in turn sold it on credit to the *towkays*, who then supplied the fishers in their kongsies. When, however, the traders failed to pay back their mounting debts, the farmer began to suffer big losses. In 1912 he successfully appealed to the government for a reduction in his rent to f26,000 a month in return for which he agreed not to sell salt above f4.00 a pikul.<sup>91</sup> Despite this relief, the farmer continued to lose money. Towards the end of his contract, which was to finish at the end of March 1913, Oei Koen Poey either failed to submit a big enough bid to retain the farm or decided not to tender at all. In any case, the government awarded the farm to Khoe Tjin Tek, a leading businessman based in Medan.<sup>92</sup> As the date at which Khoe was to take over approached, Oei had his attorney call in the debts owed him by the traders. Many of them could not pay, and over the next few months a large number of them went bankrupt. In the end the farmer and his syndicate were left with debts of about f200,000, of which they were never able to collect f170,000, the equivalent of more than six months rent.<sup>93</sup>

### A New Syndicate and Tighter Credit

Under the terms of his contract, the new farmer, Khoe Tjin Tek, agreed to sell salt at no more than f3.50 per pikul and to pay a monthly rent of f36,200, which was even more than Oei had been paying before he had been granted a reduction. Like his predecessor Khoe sold salt on credit to the traders, but unlike Oei, he adopted a very different approach to the granting of credit, as an official explained in 1916:

It is in his interests on the one hand, in so far as the riches of the sea permit, to raise the business to such a point by the supplying of salt on credit that he, after having paid the farm rent, will still make a good profit, yet, on the other, take care not to become the dupe of his credit giving.<sup>94</sup>

Since in fact "the riches of the sea" did *not* permit unlimited expansion, the farmer acted with great caution. As soon as it became apparent that a trader would be unable to pay his debts the farmer cut off his line of credit and let him go bankrupt rather than risk any more of his money. In order to understand the changing circumstances in which the farm operated it is necessary to take a closer look at the traders.

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<sup>90</sup> Haga, "Beteekenis der Visscherij," p. 240.

<sup>91</sup> Gobée, "Achteruitgang," pp. 13-14.

<sup>92</sup> I have almost no information on the syndicate of which Khoe was a part. Tjong A Fie was one of his guarantors when he retained the farm in 1917 (Mail Rapport 413/1917), and, according to Vleming (*Chineesche Zakenleven*, pp. 236-37), Tjong, who by this time was the Chinese major of East Sumatra, belonged to the syndicate that held the farm, but I do not know when Khoe and Tjong first became associated. A letter by J. van den Brand in 1904 described how the two Tjong brothers, who were Hakkas, had gone to great lengths to prevent Khoe, a Hokkian, from being appointed as a Chinese officer, apparently because they believed that he would then use his position to try to gain control over the farms. Van den Brand to Minister of Colonies, March 29, 1904, in Verbaal 28/1/1905/6.

<sup>93</sup> Mouw, quoted in Gobée, "Visscheryindustrie," pp. 7-9.

<sup>94</sup> Mouw, quoted in Gobée, "Visscheryindustrie," p. 6. An identical passage is in Haga, "Beteekenis der Visscherij," p. 249.



In order to pay off their debts to the farmer, the traders competed with one another in offering credit to the fishers and in buying up their catches. In fact, the controleur of Bagan Si Api Api reported in 1916 that the traders sometimes bought up fish even before they had been caught.<sup>95</sup> Because of this competition, the fishers demanded and received good prices for their catches. At the same time, the traders were faced with declining prices for their products. In Java, where an even greater proportion of the fish from Bagan Si Api Api was shipped than at the time of Colijn's report, the demand for dried fish continued to grow. As the *Yearbook of the Netherlands East Indies* for 1920 explained, the "great increase in population" in Java made it necessary to import more dried fish "to supply the increasing shortage of fishfoods,"<sup>96</sup> for the fishing industry in Java was unable to meet local demand despite the government's attempts to stimulate production by, among other things, setting up salting sheds where fishers could buy salt at lower prices.<sup>97</sup> Much of the shortage, however, was met by increased imports of better-quality fish from outside the Netherlands Indies, particularly from Siam.<sup>98</sup> This means that the prices of fish from Bagan Si Api Api in Java were not rising despite the greater demand for seafood there. Because of the great fluctuations in price, Gobée could not detect a long-term decline in the price of fish from Bagan Si Api Api, but certainly prices in 1915 were lower than they had been the previous two years.

As for *terasi*, prices "had undergone a rather considerable decline" and in fact had fallen below the point at which "an adequate profit could be made."<sup>99</sup> Whereas the price of dried fish changed largely because of influences beyond the traders' control, it was the traders themselves who brought about the fall in the price of *terasi* from Bagan Si Api Api. During the credit inflation of 1911-12, some traders began adulterating *terasi* with large amounts of bran in order to boost production. In the short run, exports of *terasi* rose sharply, reaching a peak of 12.7 million kilograms in 1913,<sup>100</sup> but adulteration rather than bigger catches of *belacan* accounted for most of this increase, and the price of *terasi* from Bagan Si Api Api (unlike that of *terasi* from other sources) fell when it began to gain a reputation as an inferior product.<sup>101</sup>

As the price at which they bought catches from the fishers rose and as the price at which they sold it dropped, the traders found it increasingly difficult to stay in business. As the controleur at Bagan Si Api Api explained,

The whole risk of this business falls on the trader. If the fishers flee to Malacca [i.e., Malaya] (as has happened more than once), if the catch is not big enough even to

<sup>95</sup> Haga, "Beteekenis der Vischerij," p. 251.

<sup>96</sup> *Yearbook of the Netherlands East Indies 1920* (Weltevreden: Albrecht & Co.), p. 121.

<sup>97</sup> Sorting out the story of what was happening in the fisheries of Java and Madura at this time is a formidable task. For a pioneering analysis see Masyhuri, "Usaha Penangkapan Ikan," especially pp. 19-25. Masyhuri argues that the fishing industry of West Java, the biggest consumer of imported fish, was particularly moribund, while in Madura and parts of central and east Java production began to recover.

<sup>98</sup> Total imports into Java from outside the Netherlands Indies amounted to 28.0 million kilograms in 1907, 33.9 in 1910, and 40.0 in 1915. Haga, "Beteekenis der Visscherij," p. 251.

<sup>99</sup> Gobée, "Visscherijindustrie," pp. 15, 12-13.

<sup>100</sup> Haga, "Beteekenis der Visscherij," p. 240.

<sup>101</sup> *Ibid.*, pp. 245-46.

pay back the advance [to the farmer], if the prices in Java suddenly fall, everything falls on his head.<sup>102</sup>

In these circumstances, the traders' difficulties were accentuated by the absence of a telegraphic link between Bagan Si Api Api and its main market. On the one hand, the traders lacked information about current prices in Java and could "only guess" when best to order their agents there to sell their shipments of fish and *terasi*.<sup>103</sup> On the other, they had to await the arrival by ship of bills of exchange from their agents before they received any money for what they had sold.<sup>104</sup> Thus, when the farmer decided to refuse any further advances to a trader, the trader was forced into bankruptcy. Between the end of Oei's term as farmer and 1915, twenty-three of the somewhat more than fifty fish and *terasi* traders in Bagan Si Api Api went bankrupt. The bankruptcy of these traders in turn brought about the collapse of the many *towkays*—about thirty in all—who had depended on them for salt and credit.<sup>105</sup>

In the meantime, the economic situation of the fishers of Bagan Si Api Api had improved somewhat. As mentioned, they profited from the competition between traders. Perhaps more importantly, they appear to have taken advantage of the collapse of many *towkays* to reorganize themselves into small, independent groups that owned their own boats and *jermals*. The result, as the adviser for Chinese affairs for the Indies explained, was that "a great part of the proceeds from fish products that earlier flowed into the pockets of the *towkays* now goes to the fishers".<sup>106</sup> It should be noted that the fishers were also faced with rising operating costs. The most important of these concerned the wood needed to build *jermals* and *ambais*. Not only did they need more wood to construct the larger *jermals* they were building further out to sea, but also the cost of this wood rose considerably because, as the Rhizophoras (and perhaps other species of mangrove trees as well<sup>107</sup>) around Bagan Si Api Api were cut down, it had to be procured from farther and farther away. Thus, by 1916 a large *jermal* cost f5000.<sup>108</sup> Nevertheless, most of the fishers, numbering about five thousand at this

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<sup>102</sup> Ibid., p. 250.

<sup>103</sup> Mouw, quoted in Gobée, "Visscheryindustrie," p. 11

<sup>104</sup> Using cash collected from the farm and other sources, the controleur at Bagan Si Api Api bought up these bills, which were drawn on the Java Bank, and then transferred them (and thus, indirectly, the revenue he had collected) to the Bengkalis branch of the treasury. O. P. Besseling, "De visscherijbank 'Bagan Madjoe' and de visscherij-industrie te Bagan Si Api-Api," *Koloniale Studiën* 1, 1 (1916-17): 346.

<sup>105</sup> Mouw, quoted in Gobée, "Visscheryindustrie," pp. 5 and 9.

<sup>106</sup> Ibid., pp. 4-5. The way in which many fishers freed themselves from the *towkays* seems to imply that they had accumulated enough capital to survive on their own, but it is not clear to me exactly how they did this. In any case, it appears that this process continued throughout the 1910s. In 1918 Haga reported "a great decline in the number of *bangliau* in recent years." However, those fishers engaged in the capture of prawns remained in groups headed by *towkays*, because, Haga suggested, more work was involved in the preparation of prawns for the market than was the case with dried fish. B. J. Haga, "De Garnalenvisscherij van Bagan Api-api," *Koloniale Studiën* 3, 1 (1919): 158.

<sup>107</sup> According to Bottemane (*Verslag over de Visscherij*, p. 27), by the late 1920s *nibong* (*Oncosperma tigillarum*), a palm found in "the brackish inland edge of the mangrove forests," was being used to construct large *jermals*. See T. C. Whitmore, *Palms of Malaya*, revised edition (Kuala Lumpur: Oxford University Press, 1977), p. 83.

<sup>108</sup> Haga, "Beteekenis der Visscherij," p. 243.

time,<sup>109</sup> earned incomes that both covered their costs and allowed them to make a small profit.<sup>110</sup>

For his part, the farmer, Khoe Tjin Tek, made a large profit at the beginning of his contract. By setting up his own salt business in Singapore, he was able to import salt into Bagan Si Api Api much more cheaply than his predecessor had (it cost Khoe f1.00 to buy, import, and distribute a pikul of salt) and presumably he made a bigger profit on each pikul even though he sold salt at a lower price (f3.50 per pikul, the maximum price allowed by his contract). At the same time, he went into business as a major fish trader in his own right, which gave him a distinct advantage over the other traders, since he advanced salt to the fishers at a lower price than they could. Unlike the previous farmer, Khoe did not have his own ships, but it can be assumed, as various writers of the time did, that he took advantage of his position as the local agent for the KPM, which now shipped most of the produce of Bagan Si Api Api exported to Java. And he charged interest on money he advanced to traders on the security of their shipments at the rate of 30 percent per year from the time the trader shipped his goods to when he received payment, about one month later.<sup>111</sup> Finally, by exceeding the powers granted to him by the government, he exploited two growing branches of the fishing industry of Bagan Si Api Api that would otherwise have been beyond his reach: he imposed a duty on fresh, unsalted fish that the fishers sold at their *jermals* to traders who came from Malaya in boats loaded with ice, and he charged a duty on the export of preserved (but still wet) prawns in hermetically sealed tins.<sup>112</sup> The farmer, of course, had to pay rent to the government, and he had many other expenses. His large establishment included "a big office" at Bagan Si Api Api, a couple of warehouses, "selling places in all the important Chinese settlements," and a large number of workers. In order to protect his monopoly, he also employed spies and operated a steam launch "as an inspecting vessel."<sup>113</sup> Nevertheless, Dutch officials who investigated the farm were certain that Khoe's income far exceeded his expenses during the first two years of his contract.

During the third year of his contract, however, the farmer's profits fell sharply. Shortly after war broke out in Europe in 1914, the farmer secured an eight-month contract for a large quantity of salt at a low price.<sup>114</sup> The amount of salt imported into Bagan Si Api Api jumped from 13.8 million kilograms in 1914 to 16.7 in 1915.<sup>115</sup> During the early months of the war, however, the price of salt on the world market rose sharply mainly because of the disruption to shipping. Thus, when the farmer's stocks

<sup>109</sup> Ibid., p. 238. Haga gives a total of 4,800 Chinese fishers for all of the subdistrict of Bagan Si Api Api, of whom 3,000 were settled at the town of Bagan Si Api Api itself, but he did not include the fishers of Panipahan on the other side of the estuary in this total. The total Chinese population of the town was 8,800, while the total for the subdistrict was 12,000. Compared to many other Chinese communities in Southeast Asia at this time, that of Bagan Si Api Api had a high proportion of women and children.

<sup>110</sup> Mouw, quoted in Gobée, "Visscheryindustrie," pp. 4-5.

<sup>111</sup> Gobée, "Visscheryindustrie," pp. 7, 19, 20; Haga, "Beteekenis der Visscherij," pp. 255-56.

<sup>112</sup> Gobée, "Visscheryindustrie," pp. 20-21; Haga, "Beteekenis der Visscherij," pp. 248-49.

<sup>113</sup> Haga, "Beteekenis der Visscherij," p. 248.

<sup>114</sup> Mouw, quoted in Gobée, "Visscheryindustrie," p. 7.

<sup>115</sup> Haga, "Beteekenis der Visscherij," p. 240.

began to run out, he was forced to buy more salt at a very much higher price; the salt that he sold to the traders now cost him f1.78 per pikul as compared to f1.00 just a short time before.<sup>116</sup> In the meantime, the government began to enforce the farmer's contract much more rigorously, thereby depriving him of some of his extra sources of income. During 1915 the farmer was fined twice for selling underweight bags of salt and for imposing duties on the export of fresh fish and prawns in tins.<sup>117</sup> Whether the farmer actually lost money at this time is difficult to know. Early in 1916 an official who examined the farmer's accounts predicted that by the end of its three-year contract "this syndicate certainly will not make a big profit, but it will get off with a whole skin."<sup>118</sup>

Whatever the profits made by the farmer, it is clear that the fishing industry of Bagan Si Api Api became even more of a gold mine for the Indies government than it had been at the time of Colijn's visit. Between 1910 and 1914 it extracted a total of between f1,000,000 and f1,200,000 each year from Bagan Si Api Api in the form of farm rents, income from the sale of opium, import and export duties, and various other taxes. Indeed, the proportion of the income generated by the fishing industry that found its way into the treasury had risen quite sharply since the early years of the century, since the amount it had collected in rent had increased manyfold while actual production had remained about the same. In 1914 the government's net revenue from Bagan Si Api Api amounted to nearly 40 percent of the fishing industry's total income from the sale of dried fish and *terasi*.<sup>119</sup>

It is, I believe, impossible to arrive at any definitive assessment of the impact of the farm on the fishing industry of Bagan Si Api Api during these years. Between 1910 and 1915, there was no increase in the production of dried fish<sup>120</sup> and, if we discount adulteration, little if any increase in the production of *terasi*, but we cannot be sure that production would have increased if the farm rent had been much lower, since the farmers might have chosen to keep the price of salt high and extract increased profits from those sales. Nor can we be certain that some alternative arrangement would have led to expanded production, simply because, as I have already suggested, it may well have been that the fauna in the estuary were already being exploited to their limit. What is certain is that by encouraging competition for the farm, the government extracted as much revenue as it could from the industry, and that for his part the farmer did the same, exploiting not only the monopoly officially granted to him by the government but also his virtual monopoly over the supply of credit. Between them the farmer and the Indies government extracted nearly all of the surplus wealth produced

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<sup>116</sup> Ibid., p. 256.

<sup>117</sup> Gobée, "Visscheryindustrie," pp. 20-21; Haga, "Beteekenis der Visscherij," pp. 248-49.

<sup>118</sup> Quoted in Gobée, "Visscheryindustrie," p. 8.

<sup>119</sup> Haga, "Beteekenis der Visscherij," pp. 254-55; Mouw, quoted in Gobée, "Visscheryindustrie," p. 10.

<sup>120</sup> Export figures show a slight increase (from 18.2 million kilograms in 1910 to 19.9 in 1915 [Haga, "Beteekenis der Visscherij," p. 240]), but whether these reflect greater production is far from clear. In 1916 officials in Malaya discovered that dried fish was being transported from Selangor across the Straits to Bagan Si Api Api and then exported to Java as if it originated from Bagan Si Api Api, thereby avoiding the import duty in Java. "Report of the Fisheries Department, Federated Malay States, for the Year 1916," SS 1203/1917. At the same time, as already noted, a (probably very small) proportion of the fish caught in the estuary was taken in ice to Malaya and therefore did not show up in the export figures.

by the industry, and in so doing they made it almost impossible for any of the traders to accumulate enough capital to become independent of the farmer, thus protecting his control over the supply of credit. Up until the very early years of the century, when the wealth of the sea and the possibilities for expansion seemed limitless, the traders and *towkays* had earned more than enough to cover what was being extracted from them by the farm. But by the 1910s, when the limits had nearly been reached, the traders were unable to keep up with the exactions placed on them, and as they collapsed, so too did the *towkays* who had been tied to them. As for the fishers, they may have had "as 'coolies' little to complain about," as one official condescendingly noted,<sup>121</sup> but their gains came about not because production expanded, but because they now received some of the income that had previously gone to the *towkays* and traders. Far from promoting production, the farm had become above all else a gigantic device extracting revenue from the industry for the benefit of the government and the holder of the farm.

### Abolition of the Farm

During the war years, the Indies government began to subject the fishing industry of Bagan Si Api Api to much closer scrutiny and supervision. At the request of many of the traders of Bagan Si Api Api, the government introduced an ordinance forbidding the adulteration of *terasi*. And following a petition from some traders that the price of salt be reduced and that various export duties on *terasi* and prawns be abolished, the government commissioned Gobée, now the head of the fisheries division, and H. Mouw, the adviser for Chinese affairs, to investigate the workings of the salt farm. As the main author of the resulting report, Gobée strongly supported the traders' appeal, but he went much further. He recommended that Bagan Si Api Api be linked to the telegraph network, that the government set up a credit bank so that the traders could break their dependence on the farmer, and, most importantly, that the government abolish the farm and sell salt itself, at f1.50 per pikul if possible. As a result of Gobée's report, the government set up a branch of the Volkscredietbank (People's Credit Bank) at Bagan Si Api Api in 1917 and connected the town to the telegraph in the same year. But Gobée's proposal to abolish the farm and to have the government take over the sale of salt provoked intense debate among officials.<sup>122</sup>

Much of the debate concerned conflicting explanations of the *achteruitgang* of Bagan Si Api Api. In a report written in 1913, Sunier had argued that the fall in fish exports was mainly caused by the silting up of the mouth of the Rokan River and overfishing. As he had in his earlier article, however, Gobée rejected this view. Indeed, so sure was he that overfishing had not taken place, he also dismissed a proposal (apparently made by Sunier) for a biological investigation of the estuary and rejected any suggestion of imposing regulations on such things as the design of fishing devices or the distance between *jermals*. Gobée based his own argument almost entirely on the premise that it was the high price of salt that had brought about the industry's problems.<sup>123</sup> He was supported by the directors of the civil service and the department of agriculture, but

<sup>121</sup> Minutes of November 2, 1917, Tweede Afdeeling, in Verbaal 17/11/1917/10.

<sup>122</sup> Gobée, "Visserijindustrie," pp. 23-31.

<sup>123</sup> Gobée, "Visserijindustrie," pp. 17-19.

opposed by the Director of Finance, whose department had responsibility for the farm. The Director of Finance attributed the decline of Bagan Si Api Api not to the price of salt, but to the fast driving up of the farm rent. Prompted both by the expectation that the government would lose a great deal of revenue if the farm were abolished and the belief that "a Chinese is far better placed than an organ of the Government to know about the internal relations and practices of the Chinese," he tried to persuade the Governor-General to wait and see if the ordinance prohibiting the adulteration of *terasi*, the credit bank, and the telegraph brought about a recovery of the industry before making any decision.<sup>124</sup>

In November 1917 the Council of the Indies recommended that the farm be abolished. As it turned out, the various views about the causes of the *achteruitgang* of the fishing industry hardly mattered. After noting that "one cannot tell from these reports what the cause is" (a comment with which anyone trying to make use of these sources can sympathize completely), the council declared simply that the farm was "no longer of these times." Indeed, in 1917 the salt farm of Bagan Si Api Api was the only major farm remaining in the Indies, except for the gambling farm for East Sumatra, which the government had already decided to terminate. The council also declared that the profits the government extracted from the farm "most certainly deserve to be labeled 'excessive'." In endorsing the council's recommendation the Governor-General described the salt farm as "wrong in principle and economically unjust."<sup>125</sup> In the end the salt farm at Bagan Si Api Api was abolished because it was a farm.<sup>126</sup>

After deciding to abolish the farm, the government went about setting up an alternative means of supplying the fishers of Bagan Si Api Api with salt. Rather than incorporate Bagan Si Api Api completely into the government's own salt monopoly, the government decided to supply a company based at Bagan Si Api Api with salt and to have this company sell the salt at a fixed price for a commission on behalf of the government. Thus, when the farm was finally abolished in April 1920 (and along with it the "hated taxation" of shrimp and prawn products), the firm of Tjin Tong took over the salt business and began selling salt at f3.00 per pikul. By adopting this approach, the government continued to hand over the sale of salt to Chinese businessmen, but Tjin Tong was organized in a radically different way from the farm. All of the principal traders held shares in the firm, but none was allowed to hold more than a small proportion of the shares, and a shareholder was bound to relinquish his shares if he left Bagan Si Api Api.<sup>127</sup> In this way no one trader was able to dominate the industry as the farmer had.

During the years when officials debated how best to supply salt to the fishers of Bagan Si Api Api, the government awarded the farm from year to year to Khoe Tjin Tek without calling for tenders. Since officials stopped inquiring into its activities

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<sup>124</sup> Director of Finance to Governor-General, March 17, 1917, in Verbaal 17/11/1917/10.

<sup>125</sup> "Advies van. . .28 September 1917" and Governor-General to Minister of Colonies, November 3, 1917, in Exhibitum 26/1/1918/52.

<sup>126</sup> For various arguments about how the abolition of the salt farm can be seen as part of a much broader phenomenon, see John Butcher and Howard Dick, eds., *The Rise and Fall of Revenue Farming: Business Elites and the Emergence of the Modern State in Southeast Asia* (New York: St. Martin's Press, 1993).

<sup>127</sup> Vleming, *Chineesche Zakenleven*, p. 237; Boeijinga, "Visscherij van Bagan Api Api," p. 473.

during this time, there is little information about the farm during its final years, but it is apparent that Khoe continued to profit from the farm, for which he paid a much lower rent than he had during his first term.<sup>128</sup> Moreover, it appears that he used his position as the sole supplier of salt to prevent many of the traders at Bagan Si Api Api from taking advantage of the cheaper credit offered by the Volkscredietbank. As soon as he ceased to hold the farm, however, "he also had to abandon his banking business, even though he certainly tried to maintain himself as a banker." He continued to act as the local agent of the KPM, but without his control over the supply of salt his power was broken.<sup>129</sup>

Following the abolition of the farm the people of Bagan Si Api Api enjoyed a period of prosperity. As the prices of their products rose in Java, exports of dried fish rose to nearly the same level as they had been in the early 1900s and exports of *terasi* reached record levels. A violent storm that destroyed over a third of the *jermals* in the Rokan estuary on November 27, 1920 and two fires that destroyed most of the town in the same year were but temporary setbacks.<sup>130</sup> On the face of it, the rapid recovery of production would appear to confirm Gobée's view that the high price of salt sold by the farm rather than overfishing had stifled production under the farm. Hardenberg's carefully reasoned conclusion that there was no evidence of overfishing at the time of his visit in 1929 lends further support to Gobée's view.<sup>131</sup> At the same time, however, it should be noted that during the 1920s the area fished by the fishers of Bagan Si Api Api increased significantly as bigger *jermals* were constructed further and further from the shore ("up to 16 miles [29 kilometers] from the coast" in 1929<sup>132</sup>), as driftnetting out beyond the furthest *jermals* contributed more and more to production, and as more and more fishers adopted the *si tsji*, "a bag-shaped net with two fine-mazed wings in the shape of a V" that could be easily moved and placed in deeper water than the biggest *jermals*.<sup>133</sup> It was this spreading out and greater mobility that allowed the fishers of Bagan Si Api Api to produce just a little more than had once been extracted from the inner part of the estuary. Moreover, Hardenberg's articles make it clear that by the late 1920s there was considerable tension both between driftnetters and the operators of *jermals* and between *jermal* operators and the operators of *si tsjis*.<sup>134</sup> At the very least, these tensions indicate that the fishers themselves were coming to regard the marine

<sup>128</sup> When he was awarded the farm in 1916 Khoe's rent fell from f36,200 to f30,500 per month, while the maximum price at which he could sell salt remained at f3.50 per pikul. In 1917 he accepted the farm for a further year on the same conditions. He also held the salt farms for Panai and Bila, for which he paid a total of f6000. Haga, "Beteekenis der Visscherij," p. 240; Mail Rapport 413/1917.

<sup>129</sup> Bottemanne, *Verslag over de Visscherij*, p. 34; Boeijinga, "Visscherij van Bagan Api Api," p. 474.

<sup>130</sup> Tip, "Chineesche Visscherijbedrijf," pp. 303-05.

<sup>131</sup> Hardenberg, "Fishfauna of the Rokan Mouth," pp. 158-62.

<sup>132</sup> Markus, *Visscherij-methoden en Vischproducten*, p. 2. A hydrographic map of the estuary in 1927 (Hydro/OIA-172-10/112) shows *jermals* at the very edge of the area covered by the map, about twenty-eight kilometers from shore.

<sup>133</sup> *Ibid.*, p. 93; Hardenberg, "Additional Notes," p. 304; Bottemanne, *Verslag over de Visscherij*, pp. 14-15. In the 1920s, Panipahan and a number of other fishing villages became increasingly important, but all exports appear to have been recorded as having come from Bagan Si Api Api. The changes that took place after 1920 deserve a separate study.

<sup>134</sup> Hardenberg, "Fishfauna of the Rokan Mouth," pp. 159-60; Hardenberg, "Additional Notes," p. 300.

fauna of the Rokan estuary—once the source of great riches for salt farmers and the Indies government as well as a good livelihood for the inhabitants of Bagan Si Api Api—as a limited resource.



