

A HISTORY OF TIMBER EXPORTS FROM THAILAND WITH EMPHASIS ON THE 1870-1937 PERIOD

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A B S T R A C T

In common with those of other SE Asian nations, Thailand's forests have been depleted rapidly since the 19th Century. The following briefly assesses why Thai forests were important and where they were situated. It then reviews how this resource was depleted over the period 1870-1937. In recording this depletion, tables are presented for selected periods which give a breakdown of timber species exported by weight/volume, value, and destination. These tables are accompanied by information and commentaries on the political, ecological, and economic factors affecting production and exports during particular periods. A final overview assesses the effectiveness of certain forest policies, the role of the British in the exploitation process, the relative value of the resource over time, and its role in more modern developments within Thailand.

I N T R O D U C T I O N

From a very early period in Thai history there has been a strong interest in forest product exports. This interest has been for two reasons; Thailand had excellent reserves of teak, and there were river systems suitable for floating logs to the coast. In more recent times, Thailand has had, relative to its neighbors, reasonable political stability. It has also not been a direct (occupied) colonial playground except by the Japanese during World War II. Thus, it has had some historical continuity in control of its resources. It has used this control to exploit natural resources, particularly forest products, for export. The exploitation of such natural resources has been used to underwrite urban growth, imports and manufacturing. However, forest depletion feedback now indicates that this resource has been used to over-cut to a point where it will cease to exist. The Royal Thai Government is therefore taking "stop-and-go" steps to reduce unprocessed forest product exports and develop substitution products. It also seeks to establish plantation forests, exploit the forests of neighboring countries, and reduce park and forest encroachment by land-hungry farmers and corporate interests. The paper describes in some detail timber exports from 1870 to 1937 and factors giving rise to this depletion situation.

A constraint to doing this paper has been that timber exploitation and exports are currently contentious issues and some involved Royal Thai Government agencies are therefore less than willing to share information, particularly on recent export figures, to use for historically comparative purposes. Additionally, some of the original documents consulted from the last century were literally crumbling and worm-eaten and could not be easily read

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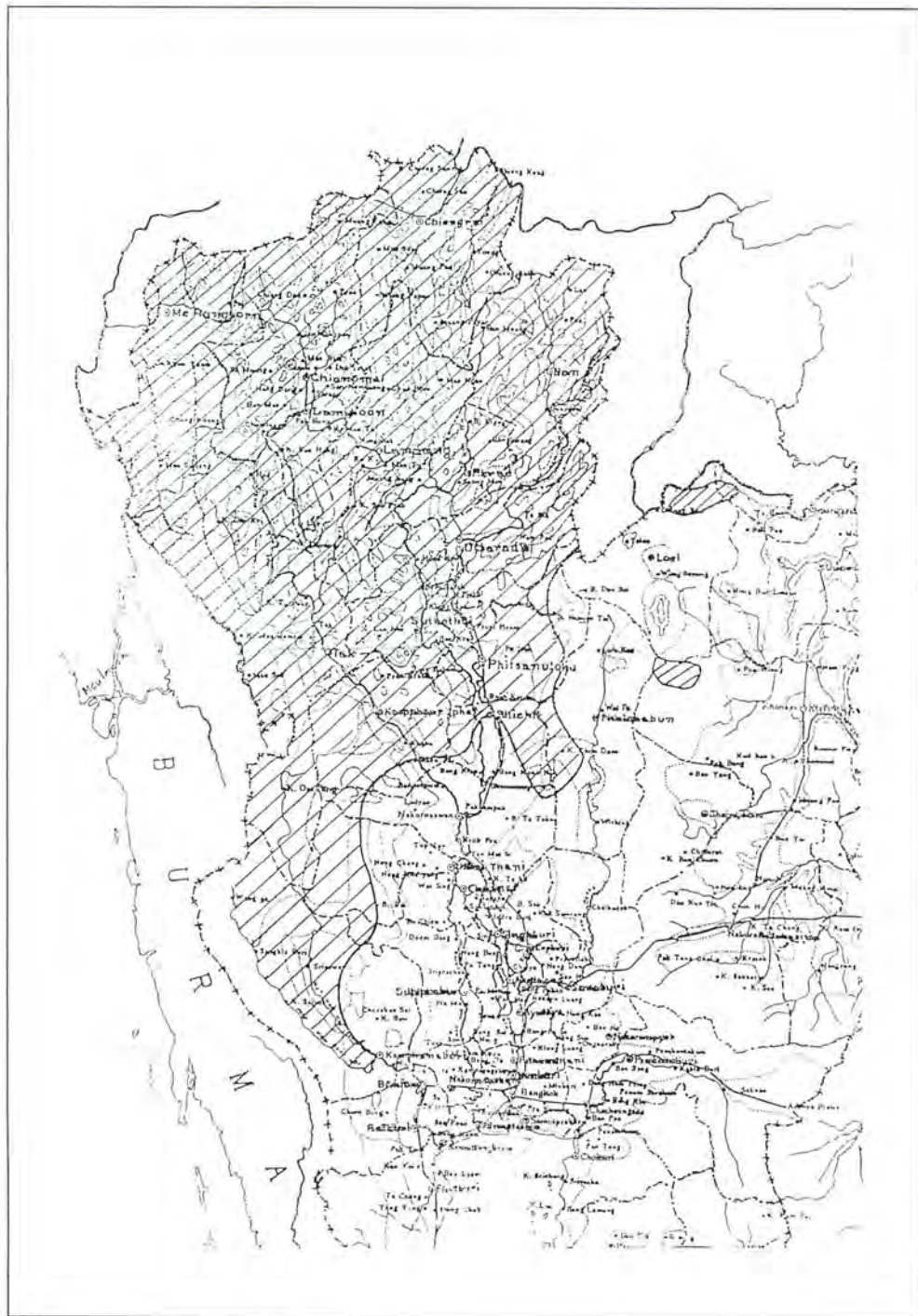


Figure 1. Teak Areas of Thailand

and photo-copied. Then there has been the problem of a multiplicity of currencies, weights and linear and solid calibrations spanning the gambit of Thai, SE Asian and Western measurements. Reconciling some of these measurements (and exchange rates) was never adequately resolved; the measurements used in the paper are:

1 cubic ton = 50 ft.³ = 1.4² m³

M\$4.8 (Mexican silver dollar) = one £ (United Kingdom pound sterling) = 13 to 16r (rupees)

The Mexican dollar seems to have been favoured in the earlier period because it was pure silver and could thus be used as currency or bullion for transportation purposes.

There has been an attempt to use "Siam" and "Siamese" for the early period and Thai and Thailand for the whole of history of the nation and for recent history dating from 1938.

Given the above difficulties, the paper treats the following themes sporadically and unevenly throughout a 120-year period commencing in 1870. These themes:

- briefly examine timber exports in the context of other exports;
- identify the relative importance of timber origins exporting points and destinations;
- indicate the nationalities of the main consumers;
- highlight the importance of teak relative to other species;
- explore the ecological, commercial and political contexts in which these exports were generated,

"Timber" in the following context, refers to growing trees and their woods, to felled logs and, to a lesser extent, semi and finished wood products in the more modern period. It is thus not limited to lumber in its narrower sense, i.e., dressed and prepared wood for use in construction.

THE HISTORICAL AND ECOLOGICAL CONTEXT

The history of Siamese (Thai) forests is largely the history of teak (*mai sak*), the premier wood of Thailand and, ironically given the extensive river networks, other non-floatable hard-woods. Historically, teak has been ranked second (after rice) to fourth in importance in Thai exports although it has seldom exceeded 5% of the total value of exports.

Teak grows chiefly in the north-western quadrant of Thailand (See Figure 1) and has been exploited through three river systems which flood during the monsoons. These river systems have their outlets through Burma to Moulmein, along the Mekhong River bordering other Indo-China countries to Ho Chi Minh City (Saigon), and south via the Menam Chao Phraya River to Bangkok. Levies on logs were collected at various places along these rivers by Thai officials. Thai forests were traditionally classified into three categories by foresters: lateritic forests, evergreen forests, and teak-bearing forests. These occur at an altitude of 200–750 m, with a rainfall of 100–178 cm, and with a temperature of 22 ° to 40 ° C) (ROYAL FOREST DEPARTMENT, 1926, p.4). A teak tree typically takes

140–160 years to reach a girth of 2 m. However, older trees may reach four times this girth. It is deciduous and seldom grows naturally in groves; it is scattered among other deciduous species. It is an outstanding timber for use in ships, furniture and housing construction. It also lasts well in water. Teak timber is still usable after some hundreds of years of use and is not destroyed by termites.

Most branded, single teak logs and non-floatable hardwoods on bamboo rafts, have traditionally been floated down rivers in the central drainage basin to a point 200–4000 km from their origins to where the rapids finish. Here the teak would be bound into rafts containing 200 logs each and floated a further 340 km to Bangkok. Bangkok has always had many sawmills and these have reduced the logs to “shippable” sizes. This was particularly important when sailing ships had small cargo capacities.

THE PRE-COLONIAL PERIOD, 1870–80

Traditionally, the teak forests were under the control of the Lao chiefs and they issued leases and permits to Burman, Shan and Chinese traders. Various ethnic groups, Hill Tribespeople, and Burmese in particular, were used for forest exploitation. They were skilled in the use of elephants, rafts and forest living. These skills were lacking in the central, Thai rice-growing, plainspeople. Forest dwellers were few in number and the corvee system (forced labor) too, made central Siam laborers unwilling, inefficient and unsuitable for such work.

Typically, Burman foresters would negotiate “leases” with the “owners” of the forests. They would then receive advances from mostly Chinese middlemen traders in Bangkok to buy elephants at 2,000 to 3,000 r each and to pay their coolies. Interest rates would be high and the traders would have a right to logs at fixed prices once they were in a position to be floated to port. Tribute in one form or another would be paid to the Lao princes by the forest fellers (this later changed to the merchants having to pay it). Disputes were common but Bangkok and Rangoon were so distant that it was difficult for them to be settled, especially when there were quarrels among Burman and Siamese citizens. The British therefore asked for a Vice Consul to be installed at Chiangmai to draw up timber leases, mediate disputes and exercise control over British subjects. Eventually, all of these local actors were squeezed out as the Europeans, mainly British, vertically integrated the industry and the Siamese Government gained more than nominal control over the forests and revenue therefrom. The ability to corner this and other rural resources and revenues, could be seen as both a cause and an effect of national consolidation under the central Thai Chakri dynasty.

Table 1 gives some indication what hinterland timbers were being produced and exported through Bangkok. It should be noted that exports from year to year were affected by the amount of rain falling between May and November; logs could not be floated down the small tributaries unless sufficient rain fell. Other Thai exports “leaked” out through Burma or down the great Mekhong River and often went unrecorded in the national export figures.

It will also be noted from Table 1 that nearby British colonies and China were the main end users (or transshippers) of Thai timber. Total timber export value (M\$320,253) relative to other exports (M\$6,634,439) was not particularly significant (4.82%). This was

Table 1. Timber exports from Bangkok, 1870.

Timber type	Weight/Vol.	Value	Destination
Sapan	74,874 piculs		Hong Kong
	2,933		Singapore
	6,709		China
	1,823		Europe/America
	1,417		Java
	492		Japan
	88,248	M\$159,165	
Teak planks	5,019 pieces		Hong Kong
	541		Singapore
	415		China
	770		Java
	12		Coast
		6,757	35,366
Teak timber	1,018		Hong Kong
	635		China
	459		Europe/America
	192		Java
		2,304	46,273
Rosewood	32,607 piculs		Hong Kong
	4,610		China
	37,217	79,149	
Ebony	250	300	Hong Kong
Total		320,253	

Source: HMC (1870, p.12-13).

Table 2. Timber exports from Bangkok, 1875.

Timber type	Weight/Vol.	Value	Destination
Sapan	56,595 piculs 7,709 14,110 4,186 2,022		Hong Kong Singapore China Europe/America Coast
Total	84,622	M\$101,544	
Teak planks	33,04 pieces 6,702 3,065 2,375 8,865		Hong Kong Singapore China Europe/America Coast
Total	54,052	68,104	
Rosewood	40,182 piculs 3,818 4,142 30 3,579		Hong Kong Singapore China Java Coast
Total	51,751	51,751	
Total value		221,399	

Source: HMCG (1875, p.9-10).

Table 3. Timber exports from Bangkok, 1880.

Timber type	Weight/Vol.	Value	Destination
Sapan	33,553 piculs		Hong Kong
	2,155		Singapore
	11,829		China
	2,562		Europe/America
	100		Java/Saigon
	50,199	M\$127,346	
Teak planks	45,993 pieces		Hong Kong
	5,260		Singapore
	39,414		China
	720		Europe/America
	8,500		Java/Saigon
	401		Coast & India
	100,288	157,982	
Teak timber	1,891		Hong Kong
	420		Singapore
	4,902		China
	10,181		Coast & India
	17,394	35,048	
Rosewood	33,278 piculs		Hong Kong
	4,621		China
	37,899	108,609	
Ebony	1269	2,550	Hong Kong
Kalaa	80	480	Hong Kong
Total		432,015	

Source: HMC (1880, p. 9-11).

due to the inefficiency of the exploitation process, poor internal transportation, distance from western markets, size of the mainly sailing boats taking it to other nations, and the difficulty of doing commerce in Thailand. Teak at that time was popular for boat building and for built structures in the expanding British colonies. However, it might also be noted that Sapan wood was as popular as all of the other timbers, including teak, put together. For some unknown reason, Sapan wood, and its demise in popularity, are not discussed in the Consular reports and Thai and forest industry people do not currently know of a wood by this name! Actually it was a wood valued by the Japanese and Chinese for its red dye and suitability for making small polished ornaments. Its demise was probably caused by substitute chemical dyes. Consular reports for this period also mention the heavy impacts on exports of less-than-usual monsoonal rains, e.g., in 1873. Log stealing, the inefficient corvee system, the chopping down of under-age trees for house posts, and a general shortage of skilled and healthy labor also had effects from time to time on exports. Skilled labor was needed to work the elephants which moved the logs from the felling places to the stream and river systems. The Consular Commercial Report for 1873–74 (HMCG, 1873–74, p.1) mentions that 29,244 logs in one year were floated to Bangkok from the upper provinces. It was mentioned occasionally too, in the reports, that many loggers (foresters) were “British subjects” (given the size of the British Empire in this part of the world at that time, this was a very embracing term indeed!) and the various logs, including redwood and ebony, were being shipped to Moulmein in British Burma. River systems originating in Mae Hong Son and Chiangmai Provinces lead out to the Burmese coast and it was via this route that much of northern Thailand was penetrated by foresters.

The value of timber exports decreased by one-third over the five-year period from 1870 (Table 2). Figures for total exports were M\$10,807,412 and for timber, M\$221,399 (2.04% of the total). This decrease in timber exports may be attributed to a combination of weather conditions, internal security problems, poor record keeping and international market demands.

THE COLONIAL PERIOD, POST 1880

In the last two decades of the 19th century, the Europeans began to exploit the forests rather than just buy the end products.

The uneasy political climate prevailing in Thailand during this period is reflected in the unevenness and paucity of the empirical information available. The following data therefore do not follow the format of the above and are more fragmentary. However, patterns are discernible.

Table 3 indicates a nearly two-fold increase in timber exports in 1880. However, an increasing variety of other exports kept pace with this greater timber export which was 4.45% of total exports. This compares with 4.82% in 1870 and 2.04% in 1875.

In this year (1880) the British were either plainly worried about the Siamese internal situation and/or were preparing themselves to get more involved in direct colonial control. They complained in their Consular Report (HMCG, 1880, p.1) of the “uncertainty of life and property in the provinces” and went on to discuss the pervasive effects of opium

consumption, gambling, sickness, excessive taxation, government monopolies, tolls, and the lack of legal protection. In any event, the demand for timber, especially from the British colonies, seemed to be increasing. The then available timber supplies, especially teak from such colonies as India and Burma, appeared incapable of satisfying the demands of the empire builders.

In the 1882 Consular Report (p.1) there is disquiet with the lack of husbandry for the teak forests. In particular, the indiscriminate felling of young, immature teak logs is mentioned. In 1885 mention is made of droughts and the difficulty of getting logs down the rivers from the interior. Comment is also made on the inadequacy of 3-year timber cutting leases and the problems faced by Burmese lessors who did not have access to capital and adequate technology. Additionally, the European ship-building was in one of its stagnation phases as it began to change from the smaller wooden hulls to larger steel ones. However, such cheap durable woods as teak were still needed for decking and cabin fittings. The 1893 the Consular Report (p.12) mentions elephant stealing as a problem! These animals played vital roles in:

- moving logs to streams (these had been ring barked and left standing for two years to dry out before felling)
- breaking up log jams
- making larger, log rafts

Most of their work had to be done in the rainy season to avoid damage to the logs and to take advantage of river flows.

Table 4 indicates an increase in the flow of logs for the latter half of the 1880's but an overall decline in unit value. It should be noted from the 1889 Consular Report (p.5) that about 64% of the 1889 logs went to Europe, mainly to the Clyde River shipbuilding industry in the United Kingdom.

Table 4. Teak log exports from Bangkok for selected years

Year	Amount (tons)	Value (U.K.£)
1885	15,238	95,384
1886	21,747	115,497
1887	21,107	101,159
1888	29,538	156,772
1889	43,146	254,149
Totals	130,776	772,961

Source : HMCG (1889, p.4).

Table 5. Exports of teak and other timbers from Bangkok, 1890-1902 and their role in total exports.

Year	Timber type*	Amount (tons)	Value (£)	Total expts. (%)
1890	Teak	38,735	240,128	Not available
	Other woods	4,248	212,264	
1891	Teak	16,150	75,207	8,144,770 (1.35)
	Other woods	7,100	32,720	
			107,927	
1893	Teak	30,089	445,200	Not available
	Other woods	3,953	84,566	
1894	Teak	57,719	768,014	Not available
	Other woods	6,982	171,269	
1898)	Teak	40,991**	1,350,744	17,705,827 (8.39)
av.) 1902)	Other woods	7,334**	135,014	
			1,485,758	

Source: HMCG (1895, p.7; 1891, p.6; 1902, p.18).

* These timbers included; Agilla, Iron, Padoo, Kalaa, and Yellow woods, Ebony, Sapan, Box, Rosewood, log ends, sleepers, spars, and mangrove bark

** By value, about 26% of this timber went to Hong Kong

Table 5 gives some indication of the exports of teak relative to other timbers and their role in the value of total exports. Admittedly, 1891 was a poor year for wood exports (1.35% of total exports) but even in the later, "normal" years (1898-1902) of this period they did not exceed this percentage by more than six times (8.39%). It seems as though problems internal to Siam caused this low production rather than slightly reduced external prices. This in turn, may have made the colonial British more anxious to have some control over the resource. Water police had been formed in 1885 to protect log rafts against theft but enforcement seems not to have been very effective. Additionally, there were supposed worries about the non-enforcement of the provisos of the then (executed in 1893) leases for the planting of four young teak for every one felled and the cutting at ground level of large teak to avoid waste. And the British did in fact get their men into Siam from Burma to "rationalize" the industry; one a forester, Mr. Slade, to head up as the Chief Conservator of Forests the new forestry agency, and later the other, a Vice Consul who has been mentioned above, in Chiangmai in the North. Under their supervision and with a rapid escalation in international prices, production increased markedly.

The national Siamese Government had earlier begun to apprehend that their 30,000 km² of teak forests, because of indiscriminate felling and waste, could easily be worked out and that their levy entitlements were being jeopardized by unscrupulous local officials. It was during this period (1896) that British Forester Slade was brought in from Burma to regulate the industry (ROYAL FOREST DEPARTMENT, 1926, p.6 passim) and implement the Brandis Selection System then popular in Burma and India. Of course, he recruited fellow nationals to work with him and young Siamese officers were sent abroad for training. British foresters of that time, largely from their work in India, fondly believed that forests could be exploited and operated on a sustainable basis. His first priorities included:

- collecting data on the resource;
- replacing the staffs of the Lao chiefs, although they still shared revenues;
- dividing the teak forests into divisions for control purposes;
- implementing regular official leases with the Royal Thai Government as lessor (periods of leases were increased from three to 12 years and then to 30 years in 1925);
- prohibiting the felling of under-sized trees and closing off large areas to selective logging;
- establishing new duty stations on the various rivers;
- increasing revenue from royalties and levies.

As will be seen subsequently, the positioning of a British forester as head of the new Forest Department quickly worked to the advantage of British and European forest exploitation Companies and exporters, some of whom are still in Thailand. Unfortunately, the Department came under the agricultural minister and, later in history, this caused a number of problems because of differing perceptions between foresters and agriculturalists on land use priorities.

Some idea of quantities of logs floated from the northern provinces to Bangkok can be gleaned from Table 6. The swings in the quantities can be attributed to the intensities of the rainy seasons, rather than to external factors.

Logs shipped from the Chiengmai area to Moulmein (Burma) for export totaled 43,873 in 1891, 62,670 in 1892 and, 52,463 in 1893 (HMCG 1893, p.17). However, it is unclear whether these include Karen area (Burma) logs. Another such report (HMCG, 1890, p.15) indicates that as much as 75% of earlier exports were of Burmese origin. The British, perhaps somewhat arrogantly, referred to the whole area as "Chiengmai Territory." It seems as though the Chiengmai operations were really an extension of British forestry in Burma where they had been under way in the Salween (Salawin) and Menam River areas since before the 1850's. It took about six weeks of walking, boating and even animal riding to reach Chiengmai from Moulmein. In the Chiengmai area, the penetration of foresters occurred a little later. Timber values were originally calculated in Burmese rupees for the whole area.

Before the turn of the century, British companies were surveying and building national railway and telegraph systems to facilitate the flow of teak and other products to the rivers and to Bangkok, the capital itself. Elsewhere, elephant-powered tramways became popular and several rivers were dammed and bridged to ensure that log rafting and log flows were not impeded. Roads were poor and, in most places, non-existent in timber areas (HMCG, 1889, p.3)

Table 6. Teak logs floated from the northern provinces to Bangkok, 1888-1893.

Year	No. of logs*
1888	63,000
1889	60,000
1890	32,000
1891	12,000
1892	72,000
1893	69,500

Source: HMCG (1893, p.17)

* Presumably, these rounded figures are estimates.

Table 7. Destinations for teak exports from Bangkok, 1902.

Destination	Weight (tons)
India	27,043
Hong Kong	13,382
Singapore	5,052
France	1,322
UK	1,195
Africa	1,091
China	1,016
Germany	945
Denmark	869
Rest of Europe	3,886
Other Countries	854

Source: HMCG (1902, p.5).

Table 8. Percentage changes in destinations for teak exports, 1910-1923/25 (ave.).

Year	Destination	% of teak exports*
1910	Europe	10
	India & Ceylon	62.5
	Far East	15.5
1923	Europe	12
av.	India & Ceylon	22
1925	Far East	54

Source: Royal Forest Department (1926, p.19).

* Other destinations not included

Parenthetically, by 1926 the five largest saw mills in Bangkok were owned by Europeans. They prepared wood for export. About one-third of the rafted timber from the hinterland was inferior and was sold to smaller Chinese mills for local consumption. When the remainder was reduced to convenient sizes for export, about one-half of it was lost in cutting and processing. Supposedly, however, waste products all found some sort of local market, even the sawdust (ROYAL FOREST DEPARTMENT, 1926, p.17). The strength of the British European expatriate contingent lay in their ability to get large timber leases, to control cutting with Burmese (British) nationals who came under the jurisdiction of the Consul General and his agents, the effectiveness of their trading houses and shipping companies in the international market, and the regularity and reliability with which they paid their royalties and levies to the central government. Through their large-scale operations and with the help of the central government, they squeezed out local middlemen, the Lao chiefs, petty local officials and, less successfully, thieves and poachers.

Back at the turn of the century reliable statistics were still rather difficult for local British consular officials to come by. In 1902, however, they were able to compile a list of destinations to which teak was sent (Table 7). The lion's share of teak went to the British and their colonies and to the Europeans.

For the 1902 period timber exports to Europe declined by about 5,000 tons. The Consular Report for that year (HMCG, 1902, p.5) suggests that this may have had something to do with quality decline and the closing down of a number of areas to logging because of log misuse and the necessity for longer term conservation. As many of these closures impinged on the interests of smaller, local lessees, one might be a little cynical about the reasons for them.

In Table 8 one can see a decline in the use of Siamese teak by Britain and its colonies. This decline was caused partly by protective trade barriers erected by the British Empire leaders to bind the colonies even more closely to the imperial power and to each other. Additionally, other colonial timber areas had been opened up and small-sized cargo sailing ships had been phased out. However, Japan and China were developing their economies after having consumed much of their own forests in the process and needed supplies from countries such as Siam.

For the two periods in Table 9, it was estimated that this represented 55% of Siam's total teak production. Further, it was suggested that almost all of the exports were by steamers which were bigger than sail boats and capable of reaching destinations far from Siam relatively quickly (ROYAL FOREST DEPARTMENT, 1926, p.19). About this period, the quality of the teak being exported was commented on and it was suggested that inferior logs, tailings etc. were readily sold locally. These inferior log defects and some of their causes included;

- irregular shapes caused partly by the harsh environments in which teak trees spent their 150 years of existence;
- annual fires
- standing for some years after girdling (ring barking);
- knots which after rotting allowed insects, fungi, and birds into the bole (trunk);
- borer insect holes (ROYAL FOREST DEPARTMENT, 1926);
- up to five years reaching export points after cutting;
- blasting to break up log jams;

Table 9. Value and quantity of exports of teak from Bangkok 1924/5-1925/6.

Split years	Weight (tons)	Price (U.K. £ per ton)
1924-25	53,284	114.89
1925-26	42,851	131.54

Source: ROYAL FOREST DEPARTMENT (1926, P.19).

— spending up to five years en route between girdling and Bangkok.

About this time too, the Royal Thai Forest Department also shared some of its cumulative statistics. These can be briefly summarized as follows for the years 1896-1925/26 (ROYAL FOREST DEPARTMENT, 1926, p.9, 11):

1. Total number of logs floated down the three river systems previously mentioned; 3,560,024 (the average volume of those reaching Bangkok was 12.11 m3).

2. The average numbers of logs reaching down-river collection points annually were:

Paknambo River (Bangkok)	93,454
Salween River (Burma)	21,860
Mekhong (Saigon)	6,707
Total average 1910-1925	111,631

3. The Siamese Government collected 41,379,400 Ticals (Baht) in teak revenue for the period.

4. In 1909 there were 105 timber leases in force. By 1926 there were only 28—but they were much larger and longer. The major beneficiaries of these leases were: four larger British resource exploitation and trading companies, and one each French, Danish, Chinese companies (85% of the areas); some much smaller local lessees (14%); and the Royal Forest Department itself (1%). The leases did not seem to include any provisions for reforestation. However, it should be noted that earlier, in 1893, a Consular Report (HMCG, 1893, p.18) says that leases then extant included a provision for the planting of “four saplings for every tree cut.” As previously noted, enforcement (and a continuity in leasing policies) seems to have been lacking.

The 1927–31 period was difficult for the timber industry (and for obtaining statistics!) because of the start of a world-wide economic depression. Logs could not be sold in Bangkok and companies informed their up-country workers to take them out of the rivers and retain them for later sales.

By 1932 better statistics (Table 10) were available for all timbers and these indicate trading and export patterns somewhat different from those of the past.

Although export teak quantities (Table 10) had fluctuating continuity with the preceding period (Table 9), destinations changed somewhat (Table 11). The Far East

Table 10. Timber exports by value and quantity, 1932/33–1936/37.

Year	Timber Type	Quantity 000's tons	Value 000's Baht
1932-33	Teak	37.7	3,312
	Other	1,118	
1933-34	Teak	45.9	4,274
	Other	1,078	
1934-35	Teak	45.2	4,589
	Other	1,088	
1935-36	Teak	44.5	5,052
	Other	867	
1936-37	Teak	70.7	8,652
	Other	1,046	
Totals		244.0 (Teak only)	31,076 (All)

Source: RECORD (1937).

Table 11. Teak export destinations, 1935/36–1936/37

Country	Quantity, 000's tons		Value, 000's Baht	
	1935/36	1936/37	1935/36	1936/37
Singapore	3.8	6.2	323	594
Hong Kong	7.1	8.2	676	739
China	2.3	3.6	217	338
Ceylon	4.4	5.7	322	437
India	0.6	1.6	41	119
Japan	5.2	7.3	748	1,166
United Kingdom	2.6	9.7	334	1,482
Europe	6.6	8.4	845	1,281
Africa	10.1	16.9	1,225	2,055
Other Countries	1.8	3.1	321	441
Totals	44.5	70.7	5,052	8,652

Source: RECORD (1937).

continued to import significant quantities. However, the needs of colonial possessions in Africa and Ceylon begin to increase as did those of the U.K. Without knowing what the exchange rates were on the Baht at that time, however, it is difficult to establish changes in unit costs.

O V E R V I E W A N D C O M M E N T A R Y

The history of the early Siam timber exports centers mainly on sapanwood and then teak. However, it also focuses on how the British gained and kept control of the industry and how they imported methods of exploitation and control from Burma. These methods, over the longer term, failed to protect the resource despite lip service to the implementation of longer tree cutting cycles (30 years), reserved cutting systems both for tree species and forest areas, and the supervision of forest operations and revenue collections by a sizable official staff. However, "improvement fees" collected then, or even more recently, were obviously not put back into reforestation and conservation. What they did do was ensure that there was a continuity in the supply of logs for cutting and export and that the revenue for the central Siamese Government grew and was regularly collected. They also established the still-extant local notion that the Government has a monopoly on teak and to a lesser extent forest ownership. Widespread log thievery and poaching was never completely eliminated and the construction of roads to bypass this theft along the rivers actually accelerated later illegal logging, especially under the Sarit government.

Timber destination figures indicate that the British also looked after their own and their colonies' needs. They seemed to have vertically integrated the industry from 1880 onward—or had started this process even earlier in the north near Chiangmai and in Burma. They secured control of major leases, cutting, transportation, milling, trading, shipping and even end uses in their colonies. They also seemed to have had the government agency regulating the industry in their pocket. Their scales of operation made it difficult for the previous local players to compete except in smaller operations to partially satisfy the local market. Exports took all of the best teak. Waste took half of all timber milled, and exports, directly and indirectly, probably took a half of all teak produced. This pattern of disposition may have also extended to other species.

Changes in currencies used for record keeping and in exchange rates make it hazardous, without further deep research, to say that the British gradually reduced the value of the resource to themselves and to other colonial buyers. However, in money terms and in relation to the value of other products, wood doesn't seem to have been properly valued. In terms of where it appeared in the hierarchy of important exports (second to fourth) one might have expected that it would have been worth more than its 5% average of the total value of exports on an annual basis. However, the British were not the only players in the timber export game and new areas were constantly being opened up to service the needs of the dominant European consumers, but more particularly, their colonies. Also, Siamese teak was replaceable by Burmese, Javanese, and Indian teak and by certain temperate woods such as oak—but in island nations such as the U.K. and Japan and, indeed, in most of Europe, these local woods had been nearly exhausted by industrial growth. Certainly, unit shipping costs should have fallen during the period.

Both the exploitation of teak and rice led to the opening up of hinterland Siam. By the end of the period studied (1937), railways had been established from Bangkok to the North, North-east, East and South. Unfortunately, the railways themselves consumed ever-increasing amounts of wood fuel, sleepers, bridge woods, and buildings. They also consumed much forest land directly and indirectly as ribbon-type development spread along them. Of course, the British also had a major share in the design and development of this system and for the eventual switch from river to land transport for timber and other rural products.

Although exports of timber from Siam fluctuated from year to year because of local factors such as rainfall and river levels, there was a good deal of continuity in wood production. Considering the stake that the British had in the timber industry, this is not surprising; it would not have been in their interest to have restricted access to this cheap, but valuable, resource for even short time periods.

The period concludes in 1937 with the coming of World War II with its significant effects on the industry.

R E F E R E N C E S

- SURI. BUMPAMON, 1989. Teak in Siam: The Origin of the Forest Department. *Sinlapa-Wathana*, Vol. 10, No. 11, September, 1989 (In the Thai Language).
- HER MAJESTY'S CONSUL GENERAL IN SIAM (HMCG). 1870, 1873-74, 1875, 1880, 1882, 1885, 1888, 1889, 1890, 1891, 1892, 1893, 1895, 1896, 1898, 1902. Commercial Reports.
- MOUSNY, ANDRE. 1964. *The Economy of Thailand*. Social Science Press of Thailand, Bangkok.
- RECORD, Bangkok, 3rd Quarter, 1937
- ROYAL FOREST DEPARTMENT, THAILAND. 1926. *The Forests of Siam*, Bangkok, Bangkok Times Press.
- ROYAL FOREST DEPARTMENT, THAILAND. 1980. (BE 2523). *A History of the Royal Thai Forest Department*. Royal Forest Department, Bangkok (In the Thai Language).

