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A BRIEF REVIEW OF THE PAINT INDUSTRY IN THAILAND

BY

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F O R E W O R D

This is one of a series of "brief reviews of industries" which ASRCT is producing. The aim of each review is briefly to examine an industrial sector from both economic and technological points of view as an indication of the capability of the sector and the problems which exist within it.

Brief reviews do not purport to be detailed and comprehensive studies of each industrial sector. They are based on statistical and other data of a non-confidential character which are available from government departments and other fact-collecting agencies as well as from discussions with various persons associated with the industry.

The brief reviews are primarily designed to assist the Board and management of ASRCT in formulating research programmes regarding each sector.

All reviews in the series will conform to a more-or-less standardized format so as, finally, to present a synoptic view of industry in Thailand, in which each sector can be compared, point to point, with all other sectors. This again will assist the Board and management of ASRCT in allocating research resources more effectively between the various sectors.

Each brief review also has a secondary function in that it indicates the need, and forms a "launching pad", for more intensive examinations of particular aspects within each sector.

In the present instance, ASRCT gratefully acknowledges the advice and assistance of members of the paint industry and other sources of information, particularly statistics made available by the Department of Customs and by the Ministry of Industry.

A BRIEF REVIEW OF THE PAINT INDUSTRY IN THAILAND

By Norman L. Wake* and B. Ph. Esselink+

SUMMARY

(1) The paint industry in Thailand is now of significant size producing products worth 200 million baht annually, and using materials to the value of about 120 million baht.

(2) Current demand for paint (see II. Definitions) in Thailand appears to be about 25,000 tonnes per annum and annual increase, some 3,000 tonnes per annum or about 12 per cent. Due to a likely lessening in building construction, demand for paint will probably maintain its present growth rate, so that demand would double over the next 8 years. Demand is largely for emulsion-based paints.

(3) Supplies of paint have come mainly from import in the past, but local manufacture now contributes almost half the total. Unpromoted firms still provide the major portion of local output but production by promoted firms is increasing rapidly.

(4) Production capacity of the 8 firms so far promoted is 14,400 tonnes per annum and, with the addition of the capacity of unpromoted firms, total capacity currently is about 22,000 tonnes per annum. Thus current demand exceeds existing capacity for production. The Board of Investment has therefore invited further applications for Promotion Certificates. Production capacity by applicant firms now totals 12,000 tonnes per annum.

(5) Attention is drawn to several apparent anomalies in the tariff structure, duty drawback procedures and government buying policies, all of which tend to affect the more rapid development of the industry and its backward linkages.

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* Economic Evaluation Group, ASRCT.

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(6) *Usage of local raw materials* by the industry varies from firm to firm and is largely confined to the fillers, whiting and kaolin. By early 1970, locally polymerized polyvinyl acetate will be available. Possible fiscal and other means are discussed of promoting additional usage of indigenous raw materials.

I. INTRODUCTION

The manufacture of paints, varnishes, enamels, and lacquers has expanded rapidly in Thailand during the 1960's due largely to the industry being accorded Promotional Privileges by the Board of Investment. An auxiliary factor in the expansion has been the boom in the building industry in recent years.

In most countries, and in developing countries particularly, paint, varnish, enamel, and lacquer "manufacture" comprise a simple mixing of purchased ingredients, (with the addition of boiling and solvation in the case of varnishes and lacquers).

Because of its simplicity, the industry is easily established yet, despite its simplicity, the industry is important in that it usually shows a net saving of foreign exchange for finished products, it is moderately labour intensive, and, most importantly, it provides backward linkages for the local supply of raw materials and finishing materials.

Thus, while this brief review provides an overall description of the local industry, it pays particular attention to the potential of the industry in stimulating production of its raw material needs from within the Kingdom.

II. DEFINITIONS

The precise significance of the terms 'paint', 'varnish', 'enamel', 'lacquer', etc., has gradually been lost owing to increasing variety and complexity of the products manufactured in the surface coating field, particularly since the advent of synthetic resins.

Broadly speaking, paint may be defined as a suspension of finely divided solids in a fluid medium, which, when applied to a surface will "dry" or set to an opaque film, by oxidation, polymerization, and/or evaporation. The solids are generally known as pigments and extenders, and the fluid medium as the vehicle. Today the various types of surface coatings are usually classified in relation to the nature of the vehicle used. It is not possible to make clear lines of demarcation between each type, but the following is a brief description of the products under major consideration in this review.

Ready-mixed paints.—These are composed essentially of a vehicle and pigments. Usually the vehicle consists of drying oil together with volatile solvents and driers. When applied to a surface, the vehicle and pigments form an elastic film by evaporation of the solvents and oxidation of the drying oil. The driers, which are compounds such as metallic naphthenates, linoleates, etc., catalyze the oxidation or drying of the oil. A proportion of varnish or natural or synthetic resin such as an alkyd resin may be included in the vehicle, and incorporation of alkyd resins has, in fact, distinguished the modern trend. In this case, the "paint" is closely allied to an "enamel".

Most undercoats, primers, and sealers resemble in composition the surface coating which is to be used as the final coating.

Varnishes.—Varnishes are non-pigmented liquid bodies which may be divided into two main types, namely:-

(1) Oil varnishes consisting of resins, combined with drying oils and driers, and thinned with volatile solvent;

(2) Spirit varnishes which are solutions of resins in volatile solvents.

Oil varnishes dry or set both by evaporation of solvent and oxidation of drying oil, whereas spirit varnishes dry entirely by evaporation.

As the result of the incorporation of resins the film produced by varnishes usually has a high gloss, though some non-glossy varnishes are produced.

Stains.—There are two types of stains, flat stains and varnish stains. Flat stains consist mainly of colouring matter and solvent, and are applied to wood for colouring, rather than protecting the surface. Varnish stains are similar except that they also include varnish resins and oils, and like a varnish leave a protective film which is usually glossy.

Enamels.—These may be described briefly as pigmented varnishes and normally produce a tough elastic film of high gloss and excellent durability. Enamels usually incorporate synthetic resins, oils, solvents, plasticizers and pigments, and the difference between such enamels and paints containing alkyd resins has become indistinct.

Nitrocellulose lacquers.—Nitrocellulose is the main film-forming substance in these lacquers which are prepared in clear and pigmented form. Other ingredients include plasticizers, solvents, thinners and resins.

The term lacquer is, in some cases, applied to those finishes which have been described under spirit varnishes. It is the commonly accepted practice in the paint trade today, however, to reserve the term lacquer for finishes in which the film-forming material is composed mainly of cellulose ester.

Water dispersed paints.—This type of finish is a dispersion of pigments in water containing dissolved or emulsified bonding material. The bonding material consists of one of a combination of ingredients, such as casein, drying oil, synthetic resin or other film-forming material together with emulsifiers, preservatives and driers. Kalsomine, a particular type of water paint, consists essentially of pigments such as chalk, whiting, titanium oxide, clay, gypsum etc., incorporated with a blending agent composed of glue and/or gelatine or casein. Kalsomines are marketed in powder form, and are used after mixing with hot or cold water. They are sometimes known as distempers.

The modern trend has been to use polyvinyl acetate homopolymer or co-polymer emulsions or, less frequently, acrylic emulsions as the film-forming material. Such synthetic resin-based paints have largely displaced the distempers (kalsomines) which were marketed in powder form.

For simplicity in this report, the term "paint" will be used to include all the products described above, except where specific products are discussed.

III. METHODS

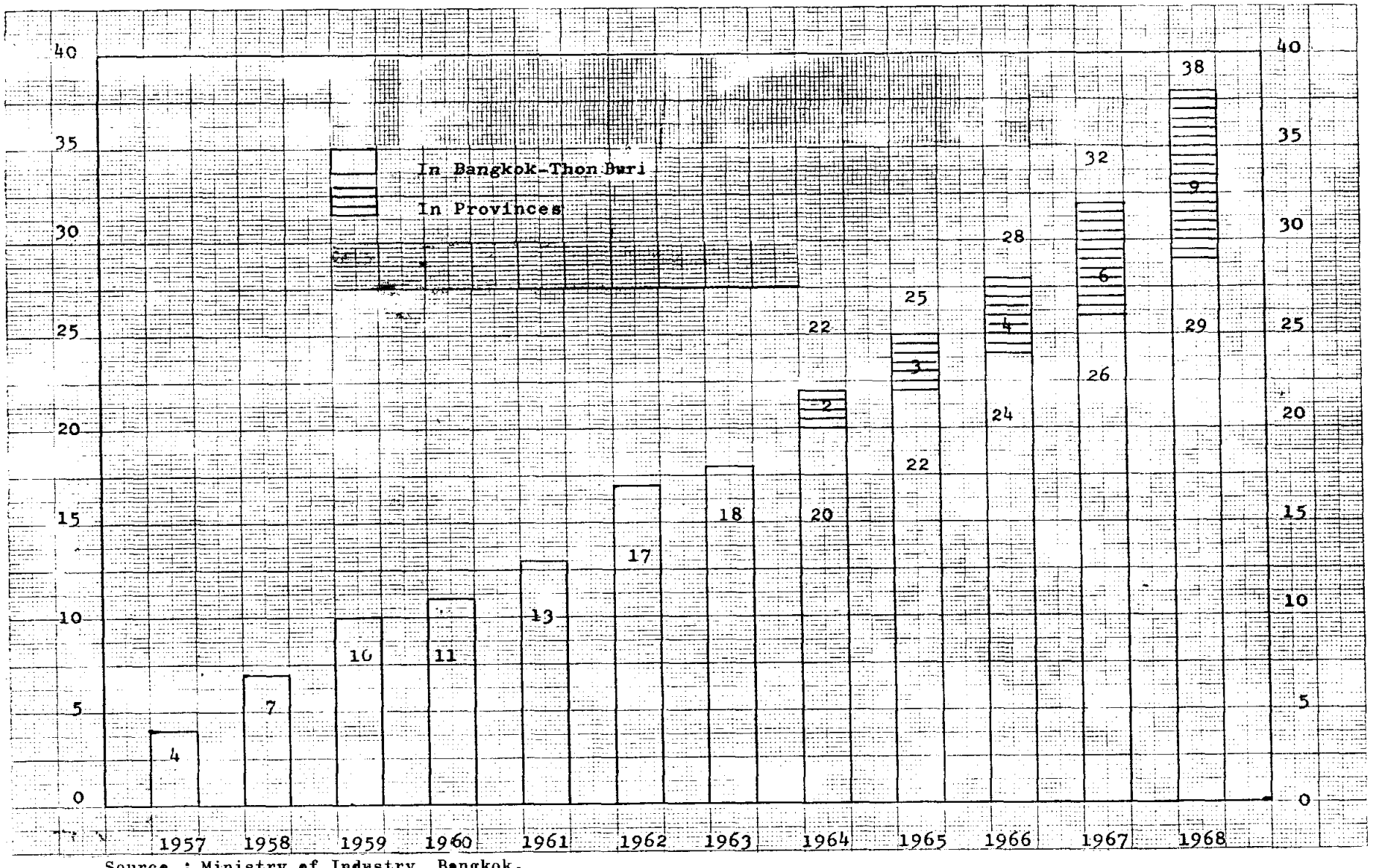
The procedure adopted in the collection of data and preparation of this report followed the normal practice of, first, reviewing available data on the industry, formulating questionnaires, visiting each of the major and some of the minor factories in turn, as well as other sources of relevant information, then assembling, tabulating, and analysing results and finally preparing the report.

The survey is a joint effort between members of the Technological Research Institute and the Economic Evaluation Group, both units of the Applied Scientific Research Corporation of Thailand.

In presenting the data, every care has been taken to avoid disclosure of the activities of individual firms except where such data has already been published elsewhere. Thus, it has been found convenient to aggregate the data obtained in the survey so as to comply with the "Statistician's rule", as applied locally, i.e. unless production data from four or more establishments is available, an aggregate figure cannot be published.

IV. HISTORY OF DEVELOPMENT OF THE INDUSTRY

Figure 1 shows the growth in the number of paint factories since 1957, the earliest record available from the Ministry of Industry. In 1964, the first paint factories were established in the provinces. The Ministry's latest figures show that for 1968, there were 38 paint factories in Thailand of which 29 were in Bangkok-Thon Buri. As will be seen from Table 1, there has been a concomitant increase in paint output, production having more than trebled between 1964 and 1968, the only period for which reasonably complete data are available.



Source : Ministry of Industry, Bangkok.

Figure 1. Growth in the number of paint factories in Thailand 1957-1968.

TABLE 1

THAILAND: SUPPLY OF PAINT, 1964-1968

Year	From import* (tonnes)	From local production+ (tonnes)	Total supply (tonnes)
1964	7,852	2,457	10,309
1965	8,772	3,909	12,681
1966	11,618	5,430	17,048
1967	12,188	6,494	18,682
1968	13,409	8,346	21,755

Sources: * Department of Customs, Bangkok.
+ ASRCT survey.

V. NATURE OF THE INDUSTRY

(a) Structure of the industry

Ownership of the paint industry in Thailand is wholly in the private sector, there being no government manufacturing units.

Although data held by the Ministry of Industry indicates that there were 38 paint factories in 1968, less than 30 are of any considerable size and of these, 8 are "promoted." To receive a Promotion Certificate, a manufacturer must have "a daily producing capacity of not less than five thousand kilogrammes." Only a very few of the non-promoted firms have capacities of this size.

It is, of course, always difficult to define "capacity" in the paint industry; in the first place the product range is not homogeneous and may comprise all or only some of the items listed in section II. Moreover, output from the same equipment varies according to the product being "run;" rate of output of a single large batch of paint of the same colour may be double that when small batches of different colours have to be made. Furthermore, such is the simplicity of "manufacturing" emulsion paints, that capacity can be increased very easily.

However, taking the present pattern of production of the local industry, total capacity is estimated to be about 22,000 tonnes per annum which, incidentally, is rather less than existing demand. Of this total capacity, the promoted firms contribute about 66 per cent. As will be pointed out in section VI(b)(ii), however, output of non-promoted firms still exceeds that of promoted firms, most of which have only recently come into operation.

While the number of "paint and linseed oil" factories registered with the Ministry of Industry was 38 in 1968, the total number is undoubtedly much more. Indeed, it is difficult to demarcate the nether end of the "industry" because a number of master painters "make" their own paints by blending other ingredients with imported PVAc* or with zinc white in oil. (Oddly enough, pink primer seems rarely to be used in Thailand.)

There is little integration in the local paint industry. None of the present operators produce any of their own materials. Two firms are known to produce paint for other products they make (in these cases, metal drums and vacuum flasks).

The industry is almost wholly centralized within a radius of 40 kilometres from Bangkok, where lies the largest market.

(b) Economic importance of the industry

Current local production of paint, at 12,000 tonnes per annum has a value of factory output of about 200 million baht assuming an ex-factory sales value of 17,000 baht per tonne. The corresponding value of production (i.e. the value added to materials by the process of paint manufacture) is approximately 80 million baht and the value of materials used is slightly under 120 million baht or about 60 per cent of the factory sales value of the paint produced.

The local paint manufacturing industry is thus already of significant size in terms of value of output, already producing, for example, goods valued at over half the value of gunny sacks being produced by the Thai Kenaf Mill Industry, itself considered one of the Kingdom's

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* PVAc = Polyvinyl acetate.

important industries*. From the size of current imports at least, the paint industry appears to have ample growth potential.

(c) Mode of operation of the industry

(i) Technical operations process equipment

Paint, enamel, varnish, and lacquer manufacture is a relatively simple operation from the technical viewpoint, since it is largely a matter of grinding and mixing. The degree of control required for the final product depends very much upon the consistency of quality of ingredients.

In Thailand, equipment is almost wholly imported from abroad and, in the case of the larger manufacturers, formulations are obtained from parent companies, whereas the smaller makers, with no overseas links, are able to use formulations supplied from abroad by producers of raw materials. A few factories have a laboratory to do the simpler routine tests on finished products but, so far as raw materials are concerned, reliance is placed on the specifications of overseas suppliers. This reliance militates against the use of indigenous raw materials.

(ii) Commercial operations

The larger paint manufacturers usually have their own sales outlet in the form of a wholesale-retail shop or office which, in turn, sells to independent distributors as well as direct to users.

Those promoted firms which have overseas links often have a market ready made for them by virtue of the fact that the overseas partner has been exporting to Thailand through a local agent prior to establishment of the manufacturing unit. In such cases, the local agent has often become a partner in the manufacturing venture and continues to act as the primary sales outlet.

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* "A brief review of the Thai kenaf mill industry" by Chien Chu and Ampika Krairit. Report No. 1 on Research Project 1/8 (Spinning and weaving of kenaf fibre) ASRCT unpublished report.

VI. MARKET SITUATION

Marketing is an integral part of the paint industry, the number of persons employed in marketing considerably exceeding those directly employed in manufacture, particularly in the larger firms. There is considerable variation in paint selling methods, depending on the product, customer, and the location and volume of sales.

Compared with many overseas countries, Thailand is in a state of transition so far as the paint industry is concerned. The older system still exists here whereby master-painters buy zinc white in oil and add to it pigments, driers, thinners, and other components according to their needs. More recently, some master-painters have been buying the base polyvinyl acetate emulsion, adding pigments and thinning to make their own plastic paint.

There has always been, of course, a large market for ready-mixed paints imported from abroad, as Table 1 shows. Imports have been increasingly complemented by the local manufacture of ready-to-use paints as well as by the final compounding, as described above, which is carried out by the master painters themselves.

Paint is sold mainly through retail outlets which are small hardware shops in the cities, suburbs, and country towns. These, in turn, draw their supplies mainly from larger central wholesale-retail shops which are captive to paint manufacturers or are the local representatives of oversea producers. Specialty lines are marketed through appropriate merchants, an example being the sale of antifouling paint by ships' chandlers.

In the U.S.A., it is estimated that about 75 per cent of paint applied to homes is on a "do-it-yourself" basis as a result of the rising cost of employing tradesmen and consequent efforts by paint manufacturers to develop a mass market.

Advertising in Thailand is of growing importance for paint sales but cannot be said to have reached anything like the intense promotional efforts expended in developed countries. Painting is little boosted in Thailand on a "do-it-yourself" basis so that such advertising as there is, is largely aimed at the master-painter through Chinese newspapers with a minor effort via radio and television.

(a) Demand

(i) Local demand

The traditional Thai house was unpainted, the timbers formerly available in plenty being intrinsically weather resistant. With dwindling supplies and rising prices of the more desirable timber species, together with a commercial building boom (see Figure 2), the demand for architectural paints has increased rapidly in recent years.

The demand for industrial paints has probably increased at an even faster rate with the general sophistication, particularly of the urban economy. Automotive lacquers, especially, have markedly increased in demand but the volume is still small in absolute terms.

Apart from statistics of import and export published by the Department of Customs, there are no official statistics of production or consumption upon which estimates of total demand can be based. Such conclusions as are reached must therefore arise from discussions with the trade, government departments, and other relevant sources of information.

Currently, it is estimated that demand in Thailand for paints, enamels, varnishes, and lacquers is of the order of 25,000 tonnes. Of this, demand for "plastic finishes," i.e. formulations mainly based on water-dispersible vinyl acetate homopolymers and co-polymers, is by far the largest component, probably exceeding the demand for oil-based and alkyd-based paints in the ratio of five to one.

Exports of paints, etc, are shown in Table 2. In 1967, exports had reached about 100,000 baht in value and were mainly to the less-developed surrounding countries. Exports show a curiously irregular pattern since 1959.

Demand for paints is somewhat seasonal, declining by about 15 per cent in the wet season.

(ii) Future demand

The market for paints in Thailand is very largely an architectural market, the demand for industrial finishes still being in its infancy. Near future demand is therefore mainly keyed with the probable rate of the local building industry, although, as mentioned below, export demand could contribute significantly.

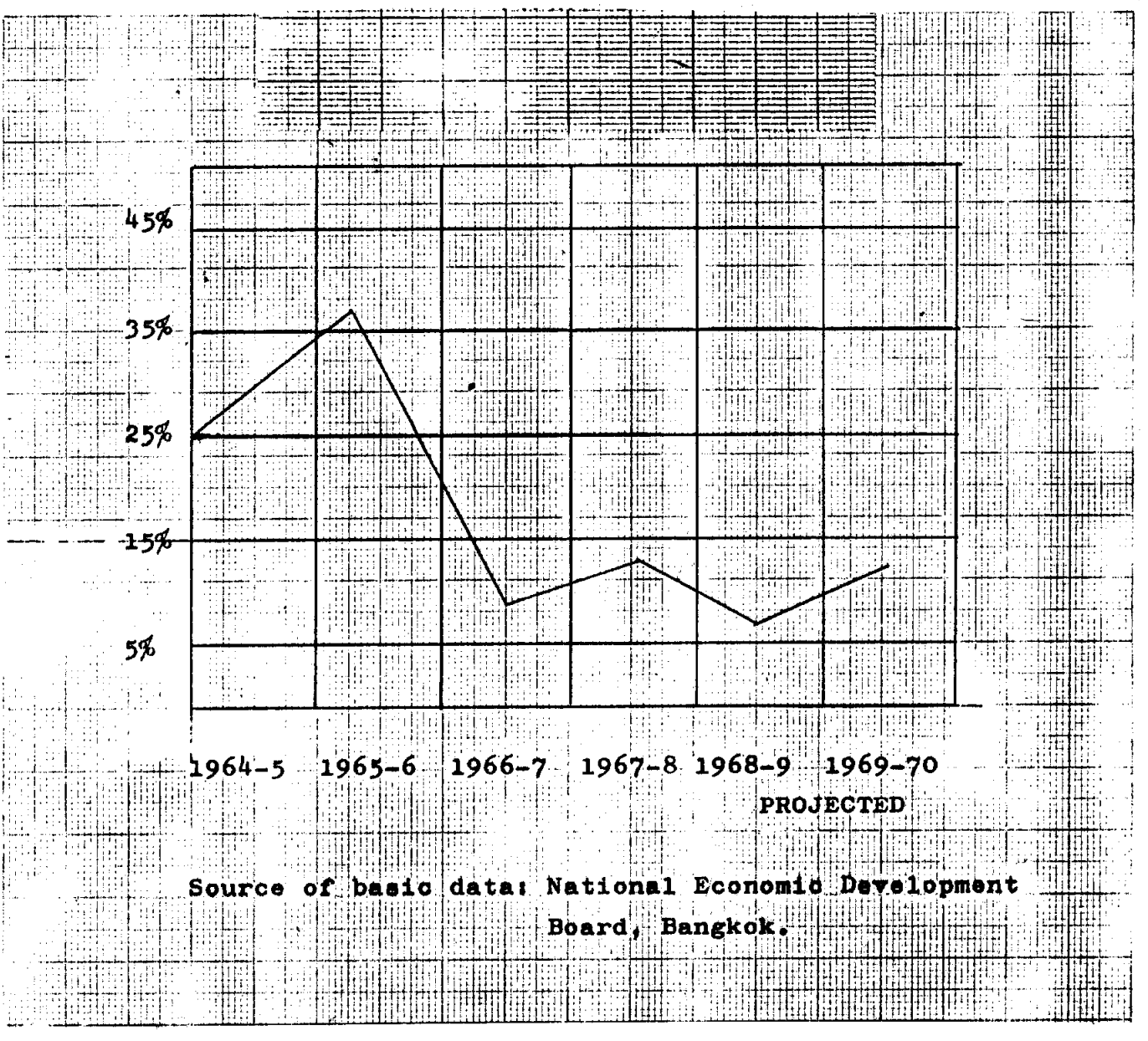

Figure 2. Rate of growth of building construction in Thailand.

TABLE 2

EXPORTS OF PREPARED PAINTS, ENAMELS, LACQUERS, VARNISHES, OIL AND CELLULOSE FROM THAILAND

	Total		Burma		Cambodia		Indonesia		Laos		Malaysia		U.S.A.		Vietnam	
	Quantity (kg)	Value f.o.b. (baht)	Quantity (kg)	Value f.o.b. (baht)	Quantity (kg)	Value f.o.b. (baht)	Quantity (kg)	Value f.o.b. (baht)	Quantity (kg)	Value f.o.b. (baht)	Quantity (kg)	Value f.o.b. (baht)	Quantity (kg)	Value f.o.b. (baht)	Quantity (kg)	Value f.o.b. (baht)
1959	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1960	90	1,057	-	-	90	1,057	-	-	-	-	-	-	-	-	-	-
1961	126	3,059	80	2,099	-	-	-	-	46	960	-	-	-	-	-	-
1962	240	9,131	-	-	-	-	-	-	240	9,131	-	-	-	-	-	-
1963	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1964	2	104	-	-	-	-	-	-	-	-	-	-	2	104	-	-
1965	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1966	137	2,156	-	-	-	-	-	-	130	728	7	1,428	-	-	-	-
1967	22,480	97,756	-	-	-	-	20,000	62,400	2,340	28,460	38	4,896	-	-	102	2,000
1968	14,119	60,772	-	-	-	-	14,000	43,680	-	-	119	17,092	-	-	-	-

1968 Port of Bangkok only.

Source: Department Customs, Bangkok.

According to the National Economic Development Board, growth of building construction in Thailand will increase by 8.0 per cent in 1969 and 9.8 per cent in 1970.

On the other hand, the Annual Report of ECAFE*, concluded that "with the certainty of a reduction of U.S. spending, much of the service industry (in Thailand) is likely to find itself redundant. Construction, which has already begun to taper off, is expected to show only a five per cent increase this year" (1969).

Doubtless the precise figure for growth-rate in building construction is intermediate between the two predictions, but whatever is the exact figure, it is bound to be much less than the recent growth rates depicted in Figure 2.

Growth of demand for paint normally follows an exponential course dictated by rising living standards and increasing industrialization. In the near future, however, in the case of Thailand, the increase in demand is more likely to continue the linear course which it has hitherto followed because of the probable continued reduction in building construction. Some paint manufacturers intend to promote the re-painting of buildings, an outlet which has hitherto accounted for only a very small proportion of architectural paint sales. The effect of such a campaign is likely to be gradual, however.

The trend of paint consumption+ between 1964 and 1968 is shown in Table 1 and Figure 3. A trend line fitted to these data by the method of least squares indicates that paint consumption has been rising at an average rate of 2,889 tonnes per annum during the 1964-68 period and, as pointed out above, it is felt that this trend will continue over, say, the next five years. Assuming for simplicity that the rate over that period will be 3,000 tonnes per annum, then in five years consumption will be 60 per cent greater than at present. Current demand growth is at the rate of 12 per cent annually.

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* ECAFE (1969).—Annual Report 1968-1969.

\+ Consumption is taken to be equal to supply, since paint has a relatively brief shelf life.

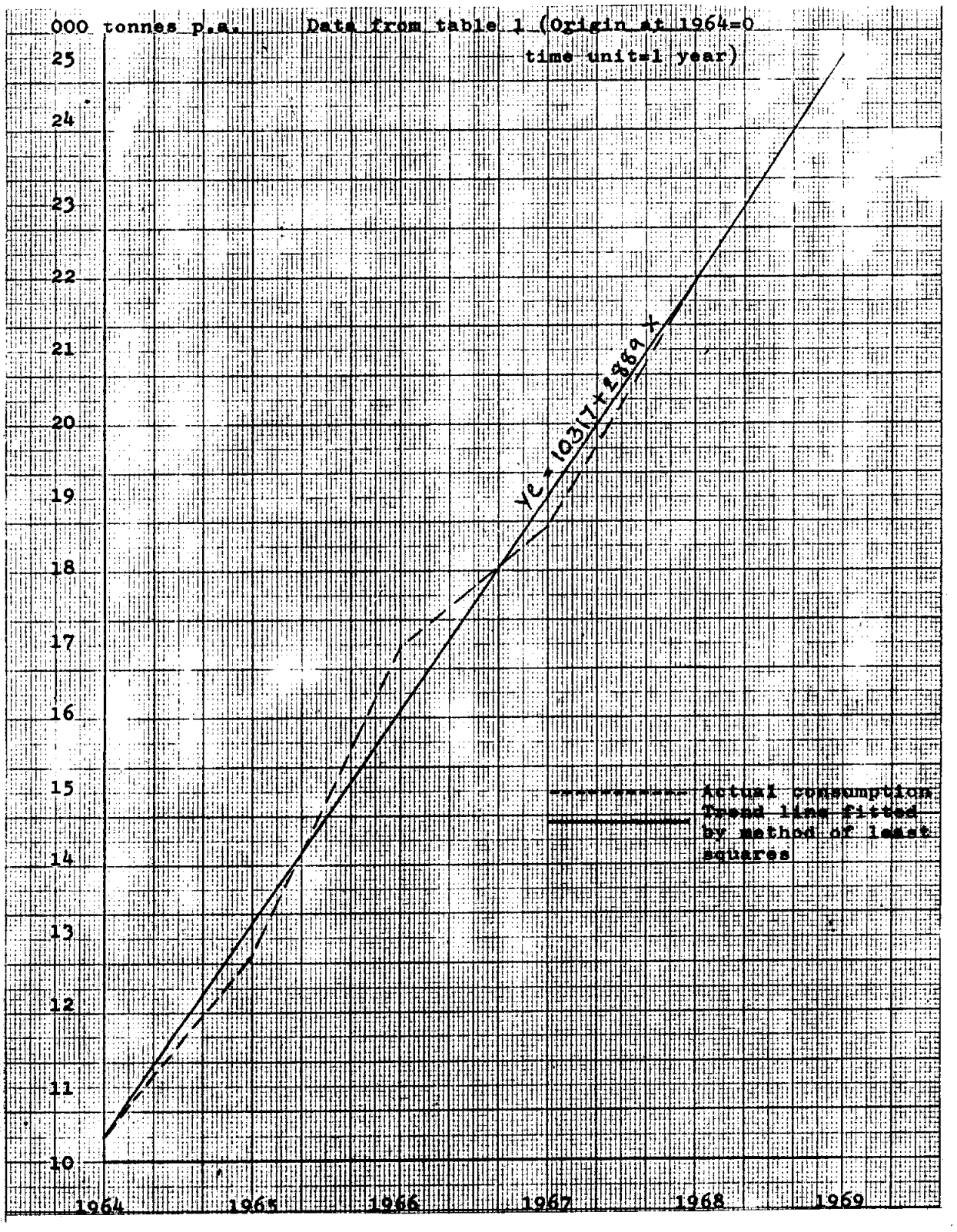


Figure 3. Thailand: Paint consumption.

One factor which could markedly alter this prediction is the possibility of large exports from Thailand. The fact is that some of the promoted firms have overseas parent companies which have traditional markets in south-east Asia. The parents will permit the Thai subsidiary not only to take over their former market in Thailand but, in some cases, as much of the market in other countries in the region as the Thai subsidiary can capture, allowing the subsidiary to use the established sales force in each country. Some of these potential "take-over" markets are extremely large and could add significantly to Thailand's export income.

Other companies, with similar international links, have, on the other hand, received no export franchise from their parents, other than for Laos.

Realization of the export potential is, to some extent, dependent on a stream-lining of procedures for drawback of duty by the Department of Customs (Section VII(i)).

It is more difficult to make projections for particular types of paint, especially for alkyd enamels and plastic emulsion paints. Much of the supply of paint has come from import and this proportion is still over 50 per cent of total supply. Statistics, as published by the Department of Customs, (Table 3), classify imports and exports of paint into "Prepared paints," "Enamels," "Lacquers" and "Varnishes." As pointed out in Section II above, this classification* has increasingly lost its precise significance so that, for purposes of projection, it is best to deal in composite terms.

(b) Supply

(i) From import

Table 3 shows that, in 1967, import of prepared paints, enamels, lacquers, oil and cellulose varnishes, and distempers totalled a little over 12,000 tonnes and this rose to 13,400 tonnes in 1968,,the latter figure being for the Port of Bangkok only. Imports through provincial ports in 1966 and 1967 were some 300, and 200 tonnes respectively so that import in 1968 for the whole Kingdom would probably be close to 13,650 tonnes.

* This classification is used by most countries in the world.

TABLE 3

IMPORT OF PREPARED PAINTS, ENAMELS, LACQUERS, VARNISHES AND DISTEMPERS INTO THAILAND

Commodity	1959		1960		1961		1962		1963	
	Quantity (kg)	Value c.i.f. (baht)	Quantity (kg)	Value c.i.f. (baht)	Quantity (kg)	Value c.i.f. (baht)	Quantity (kg)	Value c.i.f. (baht)	Quantity (kg)	Value c.i.f. (baht)
Paints, prepared	2,409,620	23,997,752	2,605,328	27,924,191	3,616,404	34,314,831	3,776,984	40,640,230	4,440,836	48,293,692
Enamels	913,188	16,149,275	778,863	13,846,583	742,820	11,028,188	760,002	12,031,794	922,579	14,145,036
Lacquers	551,401	11,566,288	578,475	11,506,354	632,130	10,493,011	566,571	16,806,440	679,861	10,837,785
Varnishes, oil, cellulose	249,151	3,828,055	245,745	3,682,093	349,060	5,289,516	240,084	3,966,579	270,001	4,275,093
Distempers	93,670	611,796	127,603	616,103	110,591	583,555	128,595	531,426	70,289	261,536
Total	4,217,030	56,153,416	4,336,014	57,575,314	5,451,005	62,709,101	5,472,236	73,976,471	6,383,566	77,813,145
Totals excluding distempers	4,123,360		4,208,411		5,340,414		5,343,641		6,313,277	

Commodity	1964		1965		1966		1967		1968*	
	Quantity (kg)	Value c.i.f. (baht)	Quantity (kg)	Value c.i.f. (baht)	Quantity (kg)	Value c.i.f. (baht)	Quantity (kg)	Value c.i.f. (baht)	Quantity (kg)	Value c.i.f. (baht)
Paints, prepared	5,472,600	56,509,393	6,002,838	64,166,639	8,328,191	84,028,569	8,362,859	89,496,859*	8,775,580	84,780,823
Enamels	1,187,202	17,551,608	1,310,509	17,438,552	1,689,023	21,341,424	1,589,301	23,502,026	1,807,335	25,462,849
Lacquers	902,160	13,362,364	977,616	13,637,829	1,108,078	24,087,551	1,422,011	20,480,155	1,641,326	21,034,369
Varnishes, oil, cellulose	319,945	4,797,879	481,187	6,045,764	492,271	6,705,775	815,386	10,432,794	923,622	11,965,096
Distempers	117,886	439,318	20,666	105,419	7,644	47,610	352	14,909	18,908	153,919
Total	7,999,793	92,660,562	8,792,816	101,394,203	11,625,207	136,210,929	12,189,909	144,024,743	13,166,771	142,397,046
Totals excluding distempers	7,881,907		8,772,150		11,617,563		12,189,557		13,147,863	

* Port of Bangkok only.

Source: Department of Customs, Bangkok.

The graph in Figure 4 indicates that imports rose fairly rapidly overall from 1964 until 1968 but the trend was uneven. Actual recent increases have been (on a quantity basis) as follows:-

1963/1962	16.7%
1964/1963	25.4%
1965/1964	9.9%
1966/1965	32.5%
1967/1966	4.8%
1968/1967	19.0%

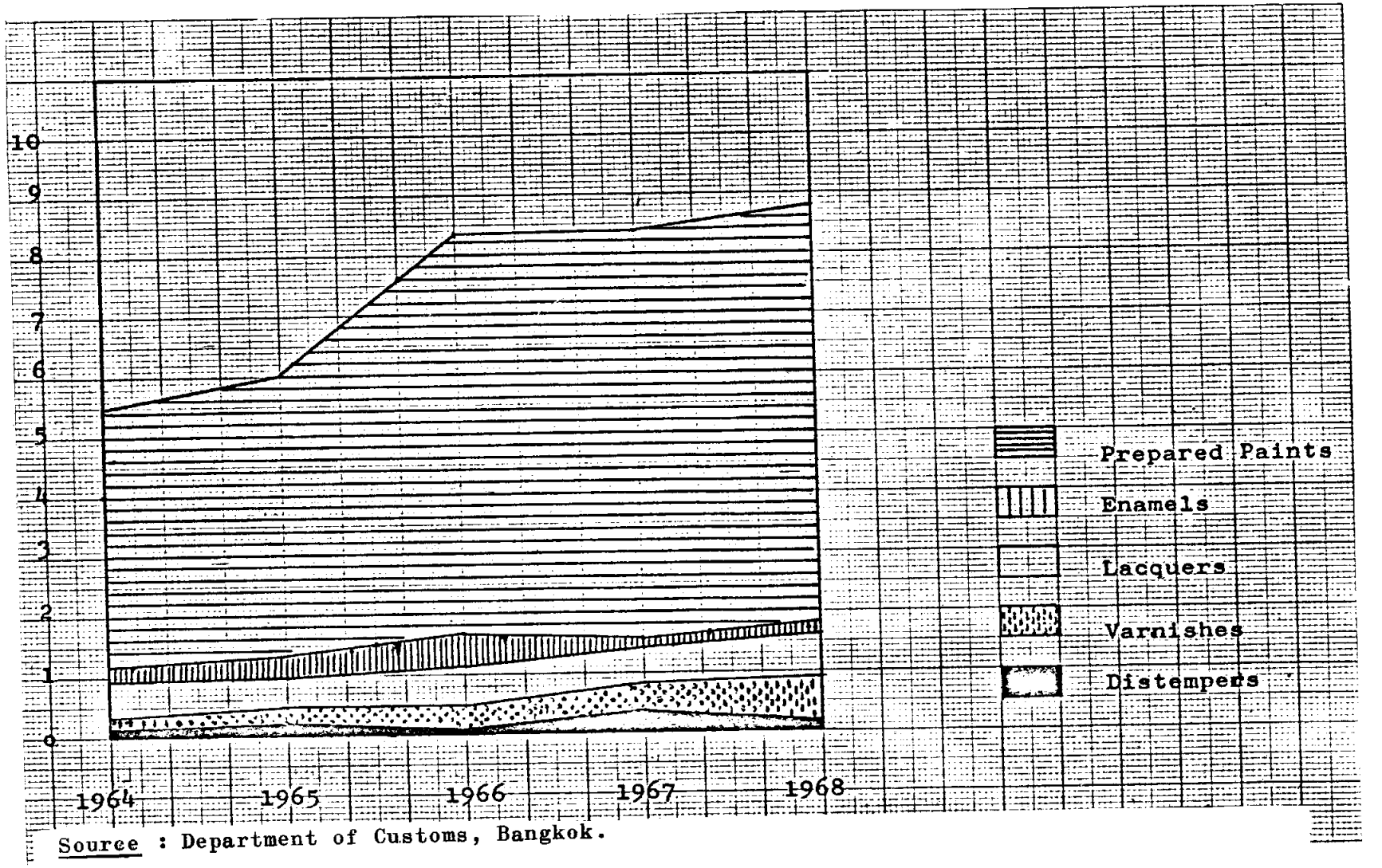
Leading suppliers of paint and enamel to Thailand are Japan, U.S.A., Hong Kong, and the U.K. Imports from these countries have been making from 77 per cent to over 80 per cent of total imports, with Japan and the U.S.A. as the major suppliers as Table 4 shows.

(ii) From local production

From our own discussions direct with paint producers, it would appear that total current production of all types is of the order of 10,000 tonnes per annum of which promoted firms are contributing about 40 per cent, the remainder coming from non-promoted firms.

The future trend of local production is difficult to assess because of the coming into production of a number of recently promoted firms as well as the possibility of additional promoted firms, the overseas associates of which have already been enjoying as exporters, a significant part of the Thai market; these new firms can be expected to hold at least part of that share.

Thus, factories which have an already-established brand-name, may be expected to assist substantially in import replacement. However, some of the market being, and to be captured, by newly-promoted firms will undoubtedly be at the expense of the older-established local producers so that the emerging pattern of growing competition will depend largely on the rather irrational factor of the extent of brand loyalties, together with the effectiveness of distribution and promotion in each case.



Source : Department of Customs, Bangkok.

Figure 4. Import of prepared paints, enamels, lacquers, varnishes and distemper into Thailand.

TABLE 4

IMPORTS OF PAINTS, PREPARED, ENAMELS, LACQUERS, VARNISHES, OIL AND CELLULOSE INTO THAILAND FROM VARIOUS COUNTRIES

	1964		1965		1966		1967		1968	
	Quantity (kg)	Value c.i.f. (baht)	Quantity (kg)	Value c.i.f. (baht)	Quantity (kg)	Value c.i.f. (baht)	Quantity (kg)	Value c.i.f. (baht)	Quantity (kg)	Value c.i.f. (baht)
Japan	2,118,729	17,843,122	2,276,093	22,192,074	3,312,368	30,566,392	4,681,361	45,941,313	5,064,616	51,689,914
U.S.A.	1,359,566	22,570,496	1,103,561	22,466,833	2,433,386	30,729,823	1,468,707	25,757,149	1,741,861	26,371,989
United Kingdom	990,729	9,830,629	1,333,970	11,965,646	1,205,444	12,214,417	1,174,756	12,366,030	1,159,982	12,569,868
Hong Kong	1,988,304	20,089,469	2,246,703	18,886,535	2,209,627	25,976,276	2,398,694	22,034,113	2,523,895	21,366,635
W. Germany	303,950	5,704,995	288,463	5,579,556	345,280	7,218,534	395,225	8,431,365	352,215	7,854,474
Malaysia	393,961	5,852,937	491,137	7,399,860	661,395	10,998,076	618,341	10,747,508	380,059	6,130,373
	7,155,239	81,891,648	7,739,927	88,490,504	10,167,500	117,703,518	10,737,084	125,277,478	11,222,628	125,983,253
Other countries	726,668	10,329,596	1,032,223	12,798,280	1,450,063	18,459,801	1,452,473	18,634,356	1,925,235	17,259,884
Total	7,881,907	92,221,244	8,772,150	101,288,784	11,617,563	136,163,319	12,189,557	143,911,834	13,147,863	143,243,137

1968 Port of Bangkok only.

Source: Department of Customs, Bangkok.

(iii) Production capacity in use

One of the requirements of the Board of Investment in issuing Promotion Certificates is that the promoted paint manufacture must have a "daily producing capacity of not less than five thousand kilogrammes". Five tonnes per day is commonly taken to be equivalent to 1,500 tonnes per year.

Upon receipt of its application, the Board of Investment allows the manufacturer's claimed capacity to be published.

The following are the claimed capacities of paint factories promoted so far:-

TABLE 5

Short title*		
Metropolitan	6	tonnes per day
Thai Udom	5	" " "
Jotun	7	" " "
Sissons	5	" " "
Nippon	10	" " "
National Lead	5	" " "
Sri Thai Kansai	5	" " "
Sigma	5	" " "
Total	48	

Thus, claimed capacity of firms already promoted is 14,400 tonnes annually. Trade enquiries suggest that capacity of unpromoted firms is of the order of 7,000 to 8,000 tonnes per annum, giving a total capacity for the industry of some 23,000 tonnes per annum. From data on capacity, mentioned in the previous section, it appears that non-promoted firms are working at 80 per cent of their capacity, while promoted firms are working at about 28 per cent at present.

This is, of course, a transient situation because most of the promoted firms have only recently come into production and, overall, can be expected to take an increasing slice of the total market including some portion, presumably, of the market formerly held by the non-promoted firms.

* See Appendix for full names.

The capability of the existing paint industry is worth examination with regard to its potential both to effect increasing import substitution as well as to cope with the growing paint demand.

The position can be summarized in the following table:-

TABLE 6

	Promoted firms (tonnes p.a.)	Unpromoted firms (tonnes p.a.)	Total (tonnes p.a.)
Existing capacity	14,400	7,500	21,900
1969 output	4,000	6,000	10,000
Thus, unused capacity	10,400	1,500	11,900
Estimated 1969 demand			25,000
Deficiency of capacity to meet demand			3,100

Thus, there is a deficiency in capacity to meet present demand of some 3,000 tonnes. This is equivalent to about 2 paint plants of minimum promotable size (i.e. 5 tonnes capacity per day or 1,500 tonnes p.a.).

Moreover, the question arises as to how much of the demand currently supplied by import, could be captured by existing manufacturers. This, as mentioned above, involves matters of brand loyalty, and/or of effective distribution and promotion, matters which can only be pragmatically answered. Suffice it to say that a number of imported brands of paint appear to have a strong local following.

Furthermore, demand is increasing at the rate of some 3,000 tonnes per annum or, in other words, at a rate equivalent to two paint factories of promotable size annually.

Leaving aside the indeterminate questions of brand loyalties and of effective marketing, the fact remains that Thailand is already short of paint manufacturing capacity as set out above.

In view of this situation, presumably, the Board of Investment recently reopened the industry for the award of additional Promotion Certificates. Amongst applicants for privileges were the following:-

		Stated capacity		
1.	Camel Paint (Thailand) Ltd.	1,500	tonnes	p.a.
2.	East Asiatic Co., Ltd.	2,000	"	"
3.	Glidden and General Paint Co., Ltd.	1,500	"	"
4.	Mr. Kasem Sihasophon	1,500	"	"
5.	Rock Paint (Thailand) Ltd.	2,200	"	"
6.	Sinclair Paint (Thailand) Co., Ltd.	1,500	"	"
7.	Snowcem (Thailand) Ltd.	1,000-1,500	"	"
8.	Thomas Hubbuck and Son Ltd.	1,700	"	"

On 20 September, 1969, the Board of Investment announced that it had approved the applications by Thomas Hubbuck, Camel Paint, Sinclair Paint, Glidden and General Paint, and East Asiatic.

VII. GOVERNMENT POLICIES

(a) Tariffs and other direct taxes

Thailand has a single-column tariff and provides no remissions of duty except in the case of plant, equipment and raw materials imported for use by promoted firms (see Section VII.(b)).

Paints, enamels, varnishes, and lacquers carry duties of 35 per cent while raw materials generally carry duties totalling 33 per cent of c.i.f. cost, so that, as manufacturers are quick to point out, there is little margin favouring local production (see Section IX.(b)).

(i) Duty drawback on exports

There is provision in the Customs Act (No. 9 of 1939) under regulations gazetted as Customs Notice No. 18/2482 for the following:-

"When any goods capable of being easily identified, which have been imported into the Kingdom and upon which duty has been paid, are re-exported to a foreign port ....., seven-eights of such duty ..... shall be repaid as drawback ....."

Only about half the number of paint manufacturers approached knew of this provision and of those which knew of it and were exporting, none was using it, preferring to forgo the rebate involved.

Of such firms, most complained that the mechanism was too cumbersome. The firms claim that they must not only lodge their formulae with the Customs Department but that elaborate chemical tests, beyond the capability of any laboratory in Thailand, are required to establish the identity and quality of each consignment. This greatly slows up the execution of export orders.

A further handicap to export, is the stipulation that those raw materials required from abroad must be specially imported and "earmarked" for re-export. This imposes an almost impossible condition, so the firms claim.

While no attempt has been made by ASRCT to examine the points made by complainants, they appear to be worthy of investigation. Not only would the facilitation of exports help in increasing direct foreign exchange earnings, but, since there appears to be a large potential export market for the Thai paint industry (Section VI.(II)), its realization could lead to backward-linked incentives to produce locally raw materials used in paints.

A number of other countries have, in recent years, overhauled their duty-drawback procedures with the above-mentioned benefits in mind.

(b) Promotion privileges

Under the Promotion of Industrial Investment Act (1962), manufacture of paint was accorded promotional privileges (for five years from commencement of production) which included:-

(1) Exemption from import duties and business tax on plant and equipment.

(2) Exemption from one-third of the import duties and business taxes on "raw and necessary materials".

(3) Exemption from corporate income taxes.

By June, 1967, the Board of Investment had issued Promotion Certificates to eight paint producers and then decided to cease issuing further certificates. Early in 1969, having reviewed the future supply-demand situation, the Board decided to invite additional applications for Promotion Certificates.

The Board took this action, it is understood, because, although local capacity was then roughly equal to demand, it was felt that the total capacity of promoted firms was unlikely to be fully used for some time to come because of brand loyalties (see Section VI.(iii)). Moreover, there was the factor of market growth as discussed in Section VI.(ii) above.

As mentioned in Section VI.(iii) above, the Board of Investment, on 20 September, 1969, announced approval of applications for Promotion Certificates by five additional firms, but in these cases the Board stated that "no privileges on income tax holiday and duty reduction on raw materials were granted".

(c) Government buying policies

Government organizations in Thailand normally call tenders for the supply of their requirements of paints. They frequently specify a list of accepted brands to which bidding is limited, the accepted list of brands having been drawn up, partly at least, as a result of quality tests carried out by the Department of Science.

Most of the newly-promoted firms complain that it is difficult to have products added to the "accepted" lists and have shown examples of tender calls in which all the listed brands were made abroad.

In view of this, local firms claim somewhat justifiably that, as the government has seen fit to "promote" the industry, it should logically draw as much of its requirements as possible from local production.

VIII. INDUSTRY ASSOCIATIONS

No association of paint manufactures at present exists in Thailand, but it is understood that a number of the larger companies have attempted to form such a group.

It is understood that one of the activities of the association (if and when formed), will be to seek relief from anomalous legislation and unfavourable practices such as duties on raw materials and on finished paint, some government buying practices and also drawback procedures.

IX. RAW MATERIALS

As pointed out in the Introduction, one aim of this review is to examine the potential of the paint industry as a stimulus for the local production of raw materials.

(a) Current usage of local materials

Currently, raw materials (including containers) used by the paint industry are valued at about 120 million baht. Of this total, it is probable that not more than 10 million baht worth is drawn from local resources.

The reaction of paint manufacturers in Thailand to the use of local raw materials varies considerably.

One manufacturer claimed that 40 per cent of his total raw material requirements come from indigenous sources -- mainly kaolin and whiting, with lesser quantities of soya and tung oils.

Over half the paint makers contacted were using some local whiting and kaolin but the remainder held that local materials were not sufficiently good or reliable in quality to warrant their use.

Minor quantities of other local raw materials, such as ethyl alcohol and sulphonated alkyl benzene, are being used, but in relation to local alcohol, one firm found that the pyridine used as a denaturant imparted a pinkish tinge to white paints.

Lithographed paint cans are made in Bangkok-Thon Buri but the lithographic ink and the tin-plate are both imported.

(b) Potential usage of raw materials

Table 7 shows the imports of some materials used in the manufacture of paint or associated with its use. It should be mentioned that the Table contains only those items which are specified separately in Customs statistics. On the other hand, some materials appearing in the Table are used by other industries as well as by the paint industry.

The following comments are made on particular materials.

TABLE 7

IMPORT INTO THAILAND OF SOME MATERIALS USED IN MANUFACTURE OF PAINT OR ASSOCIATED WITH ITS USE

(Quantity in tonnes; value in thousand baht)

Commodity	1962		1963		1964		1965		1966		1967		1968	
	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value
Pigment	390	2,562	319	2,297	443	2,823	272	2,270	113	1,033	240	2,102	362	2,399
Lithophone	719	2,084	547	1,554	664	1,930	927	2,814	898	2,706	124	3,846	859	8,539
Clay and kaolin	1,234	1,608	2,852	3,871	1,628	2,063	2,348	3,635	2,674	3,236	420	4,586	935	1,339
Gypsum crude and gypsum calcined	31	59	90	180	104	210	160	301	149	269	983	4,104	641	1,279
Zinc oxide	304	1,531	348	1,768	401	2,455	585	3,687	66	4,358	819	5,889	107	6,625
Putty, filling and stopping materials	127	1,241	202	1,978	351	3,241	455	5,104	910	7,640	106	1,085	992	1,065
Driers, prepared	8	156	35	303	20	228	17	158	3	60	120	1,700	141	2,370
Glycerine	334	3,862	304	3,007	380	4,002	526	5,622	529	5,779	646	8,585	900	1,607
Soya bean oil	2.5	21.6	9	72	30	238	111	939	51	426	917	7,589	174	1,153
Castor oil	17	203	25	313	16	176	36	322	59	524	307	3,400	604	7,594
Linseed oil	34	324	33	268	96	807	264	2,269	89	725	189	1,445	192	1,244
Linseed oils, oxidized, blown or boiled	503	4,735	607	5,314	520	4,611	447	3,775	6.8	4,944	558	4,646	638	5,302
Tung oil	55	878	2.4	33.5	11	169	19	247	17	178	583	4,346	338	1,961
Natural gums, resin, balsam, lac	31	563	52	824	40	727	62	1,290	136	1,933	-	-	-	-
Shellac crude	0.5	14.8	2.6	46.6	3.2	54.3	4.2	58.4	4.8	108.0	877	7,623	321	2,421
Composite solvents and thinners for varnishes and similar products	2,575	7,195	2,352	6,748	3,940	10,401	4,622	10,425	5,808	12,509	-	-	-	-

1968 Port of Bangkok.

Source: Department of Customs, Bangkok.

(i) Pigments

All titanium dioxide is at present imported, the exact quantity being unknown as it is not yet a separate item in Customs statistics. Most paint manufacturers agree, however, that titanium dioxide constitutes about 40 per cent of the weight of paint on average, so that current usage by the paint industry alone would be some 4,000 tonnes per annum. It is also used in the rubber, plastics, and possibly the paper industry. The raw material (ilmenite) for its manufacture occurs in Thailand both as beach deposits (40-50 per cent ilmenite) near Phetchaburi, Prachuap Khiri Khan and other shore-line locations, and as a component of tailing dumps of the tin washing sheds in southern Thailand, in which ilmenite constitutes about 20 to 40 per cent of the tailings.

It is interesting to note that manufacture of the rutile form of titanium dioxide has commenced in other parts of the world when local demand was only some 3,000 tonnes per annum, the manufacture being afforded some tariff protection.

Zinc oxide is a relatively simple manufacture and imports had reached 107 tonnes valued at 6.6 million baht by 1968. Much of the pigment is used by the rubber industry and some investigation needs to be made of the separate demands for French process and American process materials. With an increasing volume of local galvanizing (giving rise to ash and dross) and the existence of a rather large and rich zinc deposit in Thailand, the possibility of local production seems to merit special attention.

Extender pigments were imported into Thailand to a value of over 4 million baht annually prior to 1968, but in that year, imports dropped (Port of Bangkok data only) to only 1.3 million baht worth. This may well be due to a rising local production, as export of these materials showed an increase in that year (Table 8).

(ii) Resins

The most widely used paint resin is polyvinyl acetate (PVAc) imports of which do not presently appear as a separate item in Customs statistics. The demand is believed to be some 1,800 tonnes per annum of which rather more than half is used in adhesives, the remainder in paint.

TABLE 8

EXPORT OF SOME MATERIALS USED IN PAINT

(Quantity in metric tonne, value in thousand baht)

Commodity	1962		1963		1964		1965		1966		1967		1968	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Clay and kaolin	-	-	-	-	0.3	0.4	2.0	0.8	-	-	42	49	166	3,640
Glycerine	173	636	314	1,471	270	1,514	350	1,967	380	2,334	646	8,585	475	2,997
Gum dammer	1,164	3,440	1,428	3,978	1,481	3,783	1,747	3,616	935	1,763	279	6,456	655	1,273
Shellac crude	0.1	1.1	0.6	3.8	60.5	544	979	6,400	654	5,086	142	2,048	321	2,421
Sticklac	11,469	5,062	3,121	9,231	2,873	9,262	12,802	10,547	2,977	9,904	1,721	2,882	237	8,960
Lac seed	13,168	51,193	8,279	26,342	8,100	30,291	14,424	53,270	12,286	45,845	12,267	409,177	783	2,910
Natural gums, resins, balsam and lac, n.e.s.	19	53	1.5	6.2	26	160	9.5	104	8	26	7	77	-	-

1968 Port of Bangkok.

Source: Department of Customs, Bangkok.

Toward the end of 1969, polymerization of PVAc will be undertaken by Hoechst Thai Ltd., (with an initial capacity of 1,200 tonnes per annum) and by Union Carbide (Thailand) Ltd. It is expected that Thailand will be self-supporting with PVAc when these two factories come into production.

Alkyd resins, which are not presently specified in Customs statistics, are all imported. One local paint manufacturer expressed the view that local production could become economic with an output of 500-700 tonnes per annum.

Of the raw materials for alkyd manufacture, Thailand already has good potential in glycerine* and some potential in soya, cotton seed, tung, fish, dehydrated castor and possibly linseed oils.

Chlorinated rubber, a paint resin with especially useful properties in wet and corrosive environments appears to be worthy of consideration for local manufacture because of the existence of both raw rubber and, at least currently, a surphus of chlorine. The local market for chlorinated rubber is small and achievement of a consistent product does not appear easy. The feasibility of its manufacture is discussed by Esselink+.

(iii) Drying oils

Although demand for oil-based (including alkyd resin-based paints) in Thailand is smaller than demand for latex-type paints, oil paint manufacture affords, at least, the beginning of a doorstep market for local vegetable and fish oil production.

Linseed oil, as such, and blown and boiled linseed oil are, of course, most important oils in the paint industry. Linseed oil is not produced in Thailand. Local production should be considered as in India cultivation of linseed has been undertaken on a large scale for many years.

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* "Feasibility study on glycerine refining in Thailand" by Wilhemus C.J. Hermans. Appraisal Report No. 18, ASRCT.

+ "Preliminary appraisal of the feasibility of producing chlorinated rubber and/or rubber hydrochloride in Thailand" by Bernard Ph. Esselink. Appraisal Report No. 16, ASRCT.

Cashew nut shell oil is obtained from the shells of the nuts of the Anacardium occidentale. It contains a phenolic compound, called cardol, and a highly unsaturated acid, called anacardic acid. It is, however, non-drying and its principal use is for the production of resinous compounds. As the Ministry of Agriculture has promoted the cultivation of cashew nuts, the liquid may become available in Thailand in the near future.

Fish oils are obtained from the bodies of many different species of marine fish. In addition to glycerides of stearic acid and the less unsaturated fatty acids, fish oils contain glycerides of clupanodonic acids, which appear to have four double bonds. On account of the presence of highly unsaturated groups, fish oil film tends to yellow considerably. Fish oil is not produced in Thailand for the paint industry, but the production could be undertaken in conjunction with fish meal production.

Several other kinds of drying and semi-drying oils are used in the paint industry. The uses will depend on local circumstances. For Thailand three more oils are worth considering:

Rubber seed oil obtained from the seeds of the Hevea brasiliensis is semi-drying. The collection of the seeds, however, is very difficult and not economic. The oil is usually high in acid value and because of this tends to thicken with zinc oxide, making it unsatisfactory for use in some types of paint.

Sunflower seed oil is a semi-drying oil similar to soya bean oil. It is not produced in Thailand but it is worth consideration as a potential source of oil.

Castor oil is in itself a non-drying oil, but by chemical dehydration which removes the hydroxyl group and a neighbouring H-atom, it can be converted to a drying oil, dehydrated castor oil with two conjugated double bonds. Castor oil, however, is used in the preparation of other raw materials for the paint industry, e.g. alkyd resins, plasticizers for nitrocellulose lacquer. Castor oil is imported into Thailand, a situation which should change in the future, since castor beans are locally produced and exported to Japan.

Tung Oil oil is also known as China wood oil and obtained from the nuts of trees Aleurites fordii and Aleurites montana, natives of China.

Having been an expensive oil in the past, tung oil is at present produced in huge quantities in the U.S.A. which results in a very low world market price so that the traditional areas for production of tung oil are no longer able to produce the oil economically for the export market.

Tung oil has very good drying properties. The greatest use is in the production of exterior water resistant varnishes. In some areas in Thailand (Chiang Mai) the tung tree is cultivated, but almost all production of the oil has stopped as the cost of collection of the seeds is more than the price of the oil.

Soya bean oil is a semi-drying oil. When suitably treated it finds use as a component in interior paints. Its fatty acids are used in the preparation of alkyds. Soya bean oil is imported in relatively small quantities, most probably not for the paint industry. Local manufacture could easily be undertaken given an expanded production of soya beans.

Parinarium oil, from the large tree, Parinarium anamense, which occurs sporadically throughout Thailand, is occasionally expressed by vegetable oil factories in Bangkok and is used in lacquer formulation particularly around Chiang Mai. Increased production would probably be hindered by the difficulty of collecting large quantities of nuts.

(iv) Mineral turps

In 1967, some 615,000 litres of "white spirit, non-aromatic," (i.e. mineral turps) valued at 413,804 baht were imported into Thailand. This is, of course, a petroleum fraction but it seems unlikely that production will be undertaken at local refineries even after current expansion programmes.

(v) Paint cans

It is estimated that about 1,000 tonnes of tin-plate is currently used to make cans for the present production of 10,000 tonnes per annum of paint. The tin-plate used is imported waste but all cans are made locally, although the lithographic varnish for embossing is wholly imported. Total use of local tin-plate appears quite possible and certainly desirable.

X. STIMULATION OF LOCAL RAW MATERIAL USAGE

It would appear that a more selective tariff policy with regard to paint raw materials could not only help to promote further use of indigenous raw materials but could obviate the burden which is inherent in the present "blanket" tariff system.

Local paint manufacturers, of course, want an overall reduction in duties on their imported raw materials, claiming that the difference in duties between finished paint and raw materials is too slight to stimulate local production, particularly when promotional privileges are not, or cease to be, available.

The government, for its part, is loath to afford any widespread lowering of tariffs because of the loss in revenue involved.

The solution to the problem appears to be to lower tariffs on those raw materials which seem unlikely to be capable of economic local production within, say, the next decade allowing an annual average growth in paint demand of at least 13 per cent.

A corresponding raising of tariffs is indicated on those raw materials which appear to have good prospects of local production. Some raw materials used by the paint industry are also raw materials for other industries, notably mineral fillers which are common to the making of paint, rubber, paper, ceramic, and possibly plastics goods and insecticidal dusts. The added potential of such parallel industries must be taken into account in planning a tariff-promoted system.

Along with the enlightened selection of materials for additional tariff protection must obviously go assistance to the producers concerned by way of scientific advice on methods of production. Whereas some of this know-how may come along with foreign investment (and this implies a concomitant selection of appropriate industries for promotion by the Board of Investment), much of it must come from Thai government sources.

All in all, the proposal for differential tariff protection calls for fiscal action in determining appropriate levels of duty but also for a conjoint approach involving not only fiscal experts but scientific and economic advisers as well.

This composite approach has been too little used in Thailand hitherto and its implementation in the present instance could well set a pattern for similar developments affecting other industries.

APPENDIX

Major paint manufacturing companies in Thailand

	Name	Address
1.	Bangkok Thai Tharom Co.,Ltd.	78-80 Phlup-phla Chai Road Bangkok
2.	Jotun Thailand Ltd.	448 Surawong Road Bangkok
3.	Metropolitan Paint Factory Co., Ltd.	194/11 Surawong Road Bangkok
4.	Nippon Paint Co., Ltd.	2nd Floor, 283/7-12 Surawong Road Bangkok
5.	National Lead (Thailand) Ltd.	1168/60 Charoen Krung Road Yan Nawa, Bangkok
6.	Ruam Nimitre Industry, Part. Ltd.	1030/2 Phra Ram IV Road Bangkok
7.	Si-Thai Kansai Paint Co., Ltd.	135-137 Chakrawat Road Near Si-yaek Wat Tuk Bangkok
8.	Sigma Paint (Thailand) Co., Ltd.	212 Surawong Road Si-Phaya, Bang Rak Bangkok
9.	Sissons Paint Co., Ltd.	523 Mahaphruttharam Road Bangkok
10.	Sri-Arkaney Co., Ltd.	105-295 Phlup-phla Chai Road Bangkok
11.	South-East Paint Co., Ltd.	295 Phlup-phla Chai Road Bangkok
12.	Thai Udom Factory Co., Ltd.	35 Sukhumwit Road Samrong Tai, Samut Prakan
13.	Union Thai Pigment Co., Ltd.	21/1 Soi Arthorn-nu Pratham Pracharaj No. 1 Road Dusit, Bangkok

Firms which have made recent application to the Board of Investment to make paint in Thailand

	Name	Claimed capacity (tonnes per annum)	Address
1.	Mr. Furgus Allangustry (manager) on behalf of Thomas Hubbuck and Son Ltd.	1,700	101 Phitsanulok Road Bangkok
2.	Mr. Karl O. Peterson (manager) on behalf of Snowcem (Thailand) Ltd.	1,000-1,500	523 Mahaphruttharam Road Bangkok
3.	Camel Paint (Thailand) Ltd.	1,500	591-593 New Road Bangkok
4.	Mr. Savane Gonge (manager) on behalf of the East Asiatic Co., Ltd.	2,000	53-55 Oriental Lane New Road Bangkok
5.	Mr. Thiam Karnchanachari on behalf of Glidden and General Paint Co., Ltd.	1,500	614 Sukhumwit Road Phra Khanong Bangkok
6.	Mr. Raks Duronkapittaya (manager) on behalf of Sinclair Paint (Thailand) Co., Ltd.	1,500	672-8 New Road Bangkok
7.	Mr. Chin Chatsirivichaikul, major share holder of Rock Paint (Thailand)	2,200	Nichimen Co., Ltd. Nava Bldg., New Road Bangkok
8.	Mr. Kasem Sihasophon (manager) "Victory Fowl"	1,500	410-412 New Road Bangkok