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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
INTERNATIONAL DEVELOPMENT ASSOCIATION

REPORT ON
THE WORLD TEA ECONOMY

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Economics Department
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CURRENCY EQUIVALENTS

US\$1.00	= 7.5 Indian rupees
	= 5.95 Ceylonese rupees
	= 378 Indonesian rupees
	= 7.14 East African shillings
	= 100 old pence
	= 41.67 new pence
1 new pence	= 2.4 old pence

To convert from old pence per pound to new pence per kilogram, multiply by .9185.

WEIGHTS AND MEASURES

1 hectare	= 2.47 acres
1 kilogram	= 2.204 pounds
1 metric ton <u>1</u> / ₂	= 1,000 kilograms

1/₂ Only the metric ton is used in this study.

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SUMMARY AND CONCLUSIONS

1. Projections indicate that world import demand will grow at about 2.0 percent yearly during the 1970's. Export availability will grow between 2.0 percent and 2.5 percent yearly. The lower rate of growth of export availabilities assumes that production in India will continue to grow at the past rate of 2.0 percent yearly. The higher growth rate assumes that the process of replanting and new planting of tea in India will be accelerated. So far there is no convincing evidence that this is going to be the case. Since it takes about six years before newly replanted tea produces significantly, the performance in replanting and new planting in India during the next two or three years will significantly influence the world market situation. This study provides a year-to-year output projection for India which should be achieved for one or the other growth rates in export availabilities to prevail and thus allows early evaluation on long-term supplies.

2. There are, of course, other factors which can exercise a considerable influence on world market demand and supply, such as consumption development in the United Kingdom and export expansion in Ceylon. These have been taken into account by providing alternative projection assumptions. But the development in India seems to be most crucial for future world supply and demand.

3. World market prices declined from the mid-1950's to 1969 because of supply pressure. In 1970 a drastic increase in prices was experienced and the world market now appears to be in equilibrium. If world import demand and export availabilities grow at 2.0 percent yearly during the 1970's, the international tea market will be in equilibrium in 1980 at 1967-69 prices. The average price for all tea at London auction in 1967-69 was 47 old pence per pound (43.2 new pence per kilogram), compared with 49.7 old pence per pound (45.6 new pence per kilogram) in 1970. If export availabilities grow at 2.5 percent yearly and import demand at 2.0 percent yearly, projections indicate a surplus of about 35,000 tons in 1980. In that case, London average auction prices could conceivably fall to 42 old pence per pound (38.6 new pence per kilogram).

4. To date the World Bank Group has committed \$37.2 million for tea expansion including road construction. The output from these projects will amount to about 38,000 tons in 1980. With the exception of one loan made to Kenya in 1964, all other loans were made after 1967. Since it takes at least eight years before the tea plant reaches full maturity, exports from these projects did not contribute to the decline in world market prices which was experienced until 1969. Future output from these projects and others which the Bank Group is considering for financing are included in our supply, demand and price forecast.

5. All projects are distinguished by efficient production methods - expressed, among other criteria, in terms of high yields per hectare and low cost per unit of output. By organizing efficient smallholder production

and marketing schemes, the Bank has also contributed to the introduction of a new institutional dimension into the tea economy. Approximately 50,000 farmers are expected to participate in these projects.

6. Future problems will be different in the traditional tea producing countries (Ceylon, India and Indonesia) than in Africa and other parts of the world.

7. In India and Ceylon the expansion process requires replanting and modernizing tea manufacture. Most of the tea is too old to expect major yield increases. This is particularly true for Ceylon, where little replanting has been done. Replanting programs should be accelerated, since production costs from newly planted tea will be considerably lower at maturity than those from old tea. In Ceylon the replanting process should be connected with a diversification program, as the cost of replanting the entire tea area would be prohibitive, and marginal tea growing areas should be increasingly taken out of production.

8. In Indonesia, the third largest individual tea exporter, the problem is one of rehabilitation rather than of output expansion. During and after World War II the tea economy deteriorated and, although the tea bushes are old, all phases of cultivation and harvesting have first to be improved before replanting can be undertaken. This rehabilitation will also require the replacement of machinery. The old method of manufacturing is now outmoded and no longer suitable for modern processing methods.

9. In the new tea growing countries strong emphasis should be put on maintaining the quality of leaf. This may prove to be a formidable task since it involves strict control of a large number of smallholders.

10. The expansion process has to aim at efficient production methods. One of the most important factors influencing the viability of tea holdings is yield. Considerable increase in net income will be experienced if yields can be raised without quality deterioration. In the traditional tea growing countries - Ceylon, India and Indonesia - this can only be economically achieved through replanting or new planting. The potential for high yields is greater, on the average, on good tea land in Ceylon than in other areas. In the new growing regions of East Africa the planted tea is already of high yielding potential, and yields on the whole exceed yields in other growing areas. While yield increases will take place there, the rate of increase will be slower than with replanted tea in Ceylon.

11. The investment costs in terms of U.S. dollars for replanting or new planting of tea are highest in Ceylon and in India. The lower costs in the East African countries are mainly explained by higher labor productivity.

12. What are the implications of this report from an investor's point of view? Tea is a crop with a long gestation period and it will

be about six years before today's investment decision regarding new planting or replanting will make an appreciable impact on the world supply situation. Expansion plans in Africa and other new tea growing countries are comparatively firm, and thus their influence on 1980 world supply is already fairly well determined. The same is true in Indonesia but here there is somewhat more uncertainty. The process of rehabilitation in India and Ceylon should be closely watched during the next three or four years to assess their effect on future world output. If their development plans fall short of our expectations, expansion in other areas could be contemplated. Otherwise prices would be pushed upward because of a restricted supply situation. The reverse would hold true if tea rehabilitation proceeded faster than expected.

13. The Bank's plans for investment in tea are certain until 1973, and the expected impact on output has been included in our projections. Any additional investment until then should probably be channelled into the traditional tea growing areas to help in the rehabilitation process. Financial assistance for new planting beyond that already contemplated would raise the danger of contributing to an excess supply of tea.

14. Decisions for investment after 1973/74 should take account of the actual experience in replanting or new planting up to then as compared with our projections and also by the further experience the Bank will have gained in supporting smallholder production. Again one would have to consider the possibility of further involvement in the rehabilitation process. But this time the expansion of tea in new areas should also be considered. Based on the practical experience gained thus far and on findings in this study, this expansion might well concentrate on smallholder production based on family labor. Such a system is labor intensive, provides cash income to growers and, if controlled effectively, educates farmers in the techniques of production and marketing efficiency which will be essential if they are to remain competitive in the tea industry.

INTRODUCTION

1. In its report on international development ^{1/} the Pearson Commission recommended that international lending agencies should take into account in their lending policies the impact of new productive capacity on world market prices.
2. From the mid-1950's to 1969 world market prices for tea have declined; further declines may be possible as a continuing consequence of excess supplies. The World Bank Group has helped to finance tea development in a number of countries. Although production from these projects is only now reaching maturity and only contributed to a minor degree to the past supply situation, future production and exports will influence the international tea market.
3. This study is designed to improve the Bank's understanding of the world tea economy and provide help in making operational decisions. Its objective is to analyze the past and expected (1980) world market demand, supply and price situation on the basis of existing studies. The paper relies on an earlier Bank study, ^{2/} although it tries to avoid any repetition and introduces aspects not previously covered. Particular emphasis is given to developments arising subsequent to the writing of the earlier study.
4. Projections are included for all tea producing and consuming countries of any importance except the centrally planned countries. Adequate statistics for a detailed analysis of the latter were not available, but an effort was made to determine whether there was any likelihood that developments in these countries could materially upset our projection. Such was found not to be the case.
5. The study places special emphasis on a comparison of supply and demand conditions in major tea producing countries. Ceylon and the East African countries received a somewhat more detailed comment as their expansion will be mainly export orientated. In India a large share of the expansion in output will go into domestic consumption. In most cases it will be the relative efficiency of production which will determine to what extent these countries will be able to face future adjustment prerequisites of the world market. This involved a considerable amount of gathering and evaluating information on all aspects of production and marketing costs.

^{1/} Lester B. Pearson, Partners in Development, Praeger Publishers, 1969, Chapter 4, text, page 83.

^{2/} "Review of the World Tea Economy", EC-174, April 1970. This report will be especially helpful if the reader requires more detailed comment, particularly concerning individual country situations.

6. The recent decline in world market prices has led exporters to seek an international tea agreement based on export quotas. The history and prospects for such an agreement are discussed. An account is given of the Bank Group involvement in tea. Finally, the findings of the study are brought together to outline the future of the tea economy. An attempt is made to indicate strategy for future investment in expanded or improved production of tea.

7. The study was prepared in the Trade Policies and Export Projections Division, Economics Department, by Dieter Elz. Mr. Raffaello Marsili contributed to the preparation of the study.

I. HISTORY AND CHARACTERISTICS OF TEA ^{1/}

1. Tea was first cultivated in both black (fermented) and green (unfermented) forms in China many centuries ago. The first authentic account about tea was written in that country in 780 A.D. Around 800 A.D. the tea plant was introduced to Japan. There it was first regarded as a medicine, but green tea later became the national beverage. Chinese tea plants were introduced into Assam, India, at the beginning of the 19th century. Commercial production in Assam began around 1830, spreading to South India and Ceylon in the second part of the 19th century.

2. At the beginning of the 20th century tea production was undertaken in Africa (about 10 countries), Caucasia (Georgia, Iran and Turkey) and in Argentina, Brazil and Peru in South America. Of the 30-odd countries now producing tea, Georgia is the most northerly (on the 42nd parallel), and Argentina and South Africa are the most southerly (on the 27th parallel).

3. Tea was first traded internationally in 1610, when the Dutch brought tea from China and Japan to Europe. After 1640 the British East India Company rapidly developed the China tea trade and by 1715 it was in complete control of the export trade. The company lost its monopoly as tea buyer in China in 1834, but before this happened it had started tea production in Assam and later in other parts of India.

4. The tea export trade from Mainland China reached its peak in 1890 with 135,000 tons and thereafter declined. In 1968 Mainland China exported 32,000 tons. Coinciding with the decline in Chinese tea exports was an increase in Indian world market supplies. At the end of the 19th century India became the world's largest tea exporter; it maintained this status until 1965 when Ceylon moved into first place.

Production

5. Tea can be grown over a considerable geographic range from Mediterranean climates to hot, humid tropics. Production is centered in equably warm places with a mean ambient temperature of 22.5° Centigrade (72.5° Fahrenheit) or higher, and a well-distributed rainfall of 178 centimeters (70 inches) or more; commercially viable plantations have, however, been established in much cooler and drier places. Production, which depends on the availability of an adequate supply of water and nutrients for uptake by the roots, is curtailed in most traditional tea producing areas during dry or cold weather. Irrigation is used by some producers to improve the continuity of the flow of leaf for processing, but the high cost of installing irrigation equipment often makes it an unprofitable proposition at present (1969-71) world market prices.

^{1/} Part of the chapter is based on Harter, C.R.: World Tea Production: Trend Report, World Coffee & Tea, August 1970.

6. Production and replacement of nutrients through fertilizer are closely correlated. Deficiencies in the level of nutrients not only have an immediate effect on output, but since they impede vigorous growth, they also make the bush more susceptible to plant diseases. Nutrient uptake by tea roots is optimum for the nutritional requirements of the plant at pH 5.6. The requirements vary for different areas according to climate, soil, etc. Foliar analysis is usually an accurate method of detecting deficiencies of a considerable variety of nutrients and permits additional corrective doses of specific nutrients.

7. Apart from nitrogen, phosphate is generally in short supply for tea plants in all major tea growing areas. Even if supplied in sufficient quantities as fertilizer, its absorption by plant roots has been a problem. It has now been demonstrated that phosphate absorption can be greatly improved when weeds are eliminated and soil disturbances cease, as is the case when chemical weed control replaces hand cultivating. This not only increases the absorption capacity of the surface-feeding roots, but also reduces labor requirements by over 50 percent.

8. Climatic differences in the various tea countries call for different field procedures for the development of nurseries, the pruning and plucking of the bush, the use of fertilizers and the control of weeds and blight. On flat land tea normally is planted in parallel rows, the systems being modified for contour planting on sloping land. Current planting systems require between 8,000 and 13,000 plants per hectare.

9. Traditionally, seedlings have been used as planting material. The seeds are obtained from tea trees, allowed to germinate in seed beds and the young teashoots are then transplanted into the field. It takes about nine years from planting to maturity but the bush produces leaf for processing as quickly as four years after planting. In 1930 it was shown in Cashor, India, that fully grown leaf cuttings will root and propagate to produce plants identical with the parent. And so the vegetative propagation era began.

10. Vegetative propagation (VP) involves taking cuttings from tea bushes of proven yield and quality characteristics and rooting these in a simply constructed propagator. The group of plants originating from one parent by vegetative propagation is termed a clone and all its members have an identical genetic makeup. By selecting parent plants with high yield potential and other desirable qualities, it is possible to produce clones capable of yields two to three times as great as those obtained from seedling tea, the genetic makeup of which cannot be satisfactorily predetermined, despite the fact that the seed may be collected from high yielding mother plants. Because of the high yields, it is estimated that field production costs can be reduced.

11. Although the method offers great possibilities, it also involves some risk and the selection of high yielding plants of high quality is not easy. By submitting whole areas to the production of one variety with the

same characteristics (such as flavor, strength, etc.) changes in demand can severely affect the profitability of individual estates. It is also thought that the productive life of VP tea bushes is shorter than that of seedling tea, although this has not been proved. But it is fairly certain that the high yielding properties of VP tea are greatly diminished on marginal (in terms of soil and climate) tea land and probably offer no greater return than seedling tea considering the higher nutritional requirements of VP tea. Disease is probably the greatest risk factor in VP production. Since all plants have the same genetic makeup, lack of resistance to disease could be disastrous.

Harvesting

12. During harvest the young shoots are plucked as they appear above the level of the table of mature teas. The terminal bud is removed together with two, three or four leaves. The best tea is made from the terminal bud plus the two youngest leaves, and most of the black tea is made from the traditional "two leaves and a bud". Short-term changes in output can be achieved by changing plucking practices. This implies that either larger or more leaves are plucked (coarse plucking). Three and a bud increases the crop, but this practice usually results in lower quality and prices and thus impairs profitability. If practiced continuously, coarse plucking is always detrimental to income since it not only reduces leaf quality, but it affects the plant metabolism resulting in lower yields. In contrast, fine plucking implies that smaller (smaller than optimal) and sometimes fewer leaves are plucked. This method usually results in better leaf quality and, in contrast to coarse plucking, often increases yields in the long run. Thus over time tea planters have had to adhere to the practice of "two and a bud", plucked at the right stage of growth.

13. Frequency of harvesting is related to growth rate. Usually there are a series of distinct harvest periods, called flushes, during which leaves grow particularly rapidly. Intervals between plucking rounds normally vary between five and fourteen days, but under less favorable climatic conditions harvesting ceases for two (Assam) to four months (Georgia).

14. Most of the world's tea is plucked by hand, and it is probable that this method will continue because of the major unemployment situation which could arise from large-scale mechanization. In Japan, shears are used for harvesting and in Georgia (USSR) plucking has been fully mechanized. With full or partial mechanization the quality of tea usually suffers and yields are reduced. Thus the selection of shoots of two leaves and a bud for quality production can best be done by hand.

Manufacture

15. There are two different types of tea manufacture: green tea and black tea. The basic difference between the two methods is that in green tea manufacture the leaf is not fermented. Far more important in

the world market is black tea, the manufacture of which is also more complicated than that of green tea. A description of black tea manufacture follows.

16. After the leaf is harvested, it goes through a series of processing steps to reduce the water content and bring out the inherent tea characteristics. The process begins by the dehydration, or withering, of the freshly plucked shoot. In chung withering ^{1/} the leaf is spread thinly on hessian or nylon and air-dried until leaves are reduced to about 50-80 percent of their fresh weight. In the more efficient labor-and-space-saving trough withering, dehydration is accomplished by passing air supplied by reversible fans through loosely packed fresh leaf troughs. The withering process takes about 16-20 hours. It is followed by the rolling process which permits the leaf enzymes to oxidize and act as a catalyst in the fermentation process.

17. The rolling process takes about two to four hours. There are five ways to do this. In orthodox manufacture the withered leaf is subjected to the wringing action of a rolling machine. In the CTC (crushing, tearing, curling) process the withered leaf is abraded and fragmented between revolving cutters. The third method is the McTear rotorvane process which operates on the principle of the mincing machine by squeezing and then cutting the leaf. The fourth process is a combination of the CTC and the McTear methods. A fifth method of rolling uses the Legge tobacco cutter to shred unwithered leaf, sometimes in combination with the rotorvane. The basic difference among these methods is between the orthodox process and the four alternatives. Orthodox manufacture is unique in preserving the flavor of the leaf. In the other processes flavor is often lost, but the liquoring qualities are greatly enhanced.

18. Rolling is followed by fermentation, which involves a series of oxidations and condensations initiated by the rolling process. During the fermentation process the fragmented leaf is stacked in aerated troughs or on open trays. The former is the technologically more advanced method.

19. At the conclusion of fermentation the changes are abruptly arrested by heat. The fermented leaf is exposed to hot air in a dryer with inlet temperatures of 190-210° Fahrenheit and outlet temperatures of 120-130° Fahrenheit. Drying time takes from 15 to 30 minutes.

20. The dried leaf is sorted mechanically into leaf grades, and packed in plywood, foil-lined chests at a moisture content level of 3 ± 1 percent. Tea is hygroscopic and readily absorbs moisture from the air; at moisture contents in excess of six percent, it deteriorates quickly. For this reason storage in the hot, humid climate which prevails in many tea producing countries is detrimental to quality. But even in the temperate climate of importing countries tea deteriorates during lengthy storage.

^{1/} Wight, W.: Current Science (India) 31, 298-299 (1962).

Tea characteristics

21. Tea is grown at a wide range of altitudes, varying from near sea level in Ceylon to 7,000 feet in Darjeeling. The elevational level not only has a distinct influence on tea characteristics such as flavor, briskness, color, etc., but also influences yield. In higher altitudes and cooler temperatures tea grows more slowly and yields are usually lower, but this reduced growth process allows for the development of specific characteristics, particularly flavor.

22. There are a host of attributes which indicate tea characteristics. They include quality, briskness, pungency, color and strength. Teas grown in individual countries and at different locations within these countries are distinguished by a certain composition of characteristics. If they fail to have these characteristics, they are often called plain or common teas.

23. None of the attributes used to define tea is as controversial as quality. The word denotes the inherent merit of a tea. The definition of quality is rather elusive and is often used to indicate the presence or absence of tea characteristics, some of which have just been mentioned. For example, the expression "low-quality tea" implies a tea with few or none of the characteristics associated with teas of a certain country or elevation or even of an individual estate.

24. Any tea, however, from whatever area or elevation may be of poor quality in the sense that its inherent characteristics or properties may be impaired by detrimental practices during harvesting, processing or transportation. Cultural practices, especially fine or coarse plucking, greatly influence quality. The practice is to pluck "two and a bud". If this ratio is altered by plucking more leaves or plucking too late, quality is affected.

25. Much depends, too, on the manufacturing process. Such factors as overloading machinery, high firing, stewing or bacterial infection can result in complete loss of quality. This problem has become very prominent in many tea growing areas, particularly the older regions where expansion in output through yields and area has not been matched by a corresponding expansion in manufacturing capacity.

26. Finally, all efforts at good harvesting and manufacturing practices may be defeated if teas are not packed properly in chests nor quickly disposed of to the end consumer.

II. REVIEW AND PROSPECTS OF THE WORLD TEA ECONOMY ^{1/}

27. The major findings of this chapter are consolidated in Table 1. The table indicates past and projected output, consumption and trade of all tea producing countries of any importance and of most of the tea consuming countries. It was considered worthwhile to give such a detailed account in order to be able to recognize changes or errors in country projections and quickly assess the impact of these changes on the world situation. Using this together with the price analysis also described in this chapter, it is possible to consider changes in trade projections on world market prices.

28. This chapter does not analyze individual country situations unless this is necessary for an understanding of general trends. Developments in individual producing countries are described briefly in Chapter III.

Supply

29. World ^{2/} tea production is concentrated in a small number of countries. In 1967-69 970,000 tons of tea were produced (Table 1). About 63 percent of this tea was supplied by India and Ceylon and around ten percent by Africa (7 percent by East Africa ^{3/}). Ninety percent of this tea was produced on plantations and ten percent on smallholdings of less than five hectares. There have been some significant trends in the share of output in the past which are likely to continue into the future. India's and Ceylon's share of world production declined while African countries increased their share - particularly the four East African countries (Annex Table 1).

30. From 1955-57 to 1967-69 world tea production increased by 2.9 percent yearly. Yield increases and area expansion contributed to the higher output. The average world tea yield increased from about 800 kilograms per hectare in 1956-58 to about 1,000 kilograms in 1967-69. The area under tea expanded at the same time by one percent yearly (Annex Table 2).

^{1/} A more detailed account of this topic is given in "Review of the World Tea Economy", EC-174, April 1970. This chapter consolidates and updates some of the data in this publication, in addition to introducing some new findings which developed after the above-mentioned report was written.

^{2/} "World" is taken to exclude the centrally planned countries except when otherwise stated. The situation in the centrally planned countries is described later in this chapter.

^{3/} Kenya, Malawi, Tanzania, Uganda.

Table A: TEA: PRODUCTION, CONSUMPTION, TRADE BALANCES AND PER CAPITA CONSUMPTION, ACTUAL 1967-69, PROJECTED 1980

Country or Region	Actual 1967-69			Per Capita Consumption (kilograms)	Projected 1980 *			
	Production	Apparent Consumption	Net Trade		Production	Apparent Consumption	Balance	
Developed Countries								
EEC	-	222.9	223.2	4.02	-	224.5(233.5)	224.5(233.5)	3.70(3.05)
United Kingdom	-	22.4	25.7	0.12	-	23.8	23.8	0.12
Ireland	-	11.6	11.6	4.00	-	13.6	13.6	4.00
Other Western Europe	-	9.2	9.2	0.08	-	14.0	14.0	0.12
United States	-	64.0	66.0	0.32	-	88.5	88.5	0.47
Canada	-	20.6	20.6	0.99	-	26.0	26.0	1.40
South Africa	-	18.5	18.5	0.85	9.1	30.0	20.9	1.35
Australia	-	28.3	28.3	2.35	-	32.3	32.3	2.30
New Zealand	-	7.7	7.7	2.82	-	9.2	9.2	2.70
Japan	85.9	87.3	-1.8	0.86	107.0	102.0	4.0	0.71
Green	0.6	4.9	-4.1	0.05	55.0	11.0	44.0	0.11
Black	27.9	19.3	-8.1	0.59	162.1	31.7	130.4	0.39
Turkey	111.4	577.2	465.8	0.70	608.9(618.9)	113.8(127.8)	495.1	0.77(0.77)
Total Developed	221.7	18.0	-208.9	1.50	276.2	28.8	247.4	1.50
Developing Countries								
CEYLON	21.3	4.9	-16.4	0.36	2.7	7.3	-4.6	0.10
China (Taiwan):	3.7	0.5	-3.2	0.04	2.7	6.7	-4.0	0.20
Black	391.3	195.5	-196.9	0.37	510.0(550.0)	350.0	-160.0(-200.0)	0.51
India	37.5	8.0	-29.5	0.07	52.0	12.0	-40.0	0.16
Iran	18.0	24.0	6.0	0.24	32.1	40.5	8.4	0.26
Pakistan	29.2	29.2	0.0	0.24	35.5	40.5	5.0	0.24
Other producers	9.1	8.5	-0.6	0.32	11.0	11.0	0.0	0.32
Non-producers	63.5	63.5	0.0	0.29	109.6	109.6	0.0	0.35
Total Asia	731.8	392.1	-366.0	0.33	916.8(986.8)	581.6	-334.0(-402.8)	0.41
Africa								
Cameroon	1.0	0.5	-0.5	0.09	4.7	9.7	-5.0	0.16
Congo, Dem. Rep.	4.0	0.6	-3.4	0.04	18.0	4.2	-13.8	0.16
Kenya	29.5	4.2	-26.3	0.11	71.6	7.3	-64.3	0.23
Mali	6.5	0.6	-5.9	0.09	26.1	0.8	-25.3	0.28
Mauritius	4.6	0.7	-3.9	0.13	10.3	1.0	-9.3	1.04
Mozambique	14.9	0.5	-14.7	0.07	21.9	1.0	-19.9	0.20
Tanzania	4.0	1.9	-2.1	0.15	22.0	1.7	-20.3	0.25
Uganda	14.7	1.2	-13.1	0.15	45.4	2.5	-42.9	0.20
Other producers	3.5	2.6	-0.7	0.28	6.8	4.5	-2.3	0.30
Non-producers	22.4	22.4	0.0	0.30	222.1	112.7	-109.4	0.36
Total Africa	98.7	86.5	-12.1	0.27	322.1	182.7	-139.4	0.33
Latin America								
Argentina	16.3	2.2	-13.6	0.11	24.0	4.2	-19.8	0.15
Other producers	5.7	2.7	-3.0	0.03	10.0	4.7	-5.3	0.06
Non-producers	22.0	11.2	-10.8	0.08	20.6	20.6	0.0	0.10
Total Latin America	44.0	16.7	-27.3	0.05	54.6	30.5	-24.1	0.08
Oceania								
Papua and New Guinea	0.1	0.2	0.1	0.04	4.0	0.8	-3.2	0.13
Other	0.1	0.5	0.4	0.09	4.0	0.7	-3.3	0.13
Total Oceania	0.2	0.7	0.5	0.02	8.0	1.5	-6.5	0.16
Total Developing								
World (excluding Generally Planned Countries)	855.6	456.0	-399.6	0.28	1,207.2(1,247.2)	758.7	-448.5(-488.5)	0.30
Net exporters	970.0	973.2	4.4	0.11	1,373.3(1,413.3)	1,368.6(1,377.6)	-4.7(-5.7)	0.15
Net importers	865.5	-567.2	-1,432.7	0.08	1,230.1(1,270.1)	-223.4(-164.7)	-966.7	0.15
Total	204.5	571.6	-367.1	0.05	144.2	30.5	-113.7	0.08
Generally Planned Countries								
USSR	57.4	11.7	-45.7	0.04	99.0	12.0	-87.0	0.04
China (Mainland)	160.0	-26.4	-186.4	0.03	218.0	-30.0	-248.0	0.03
North Vietnam	1.0	-14.0	-15.0	0.01	4.0	-	-4.0	0.01
Eastern Europe	220.8	-3.7	-224.5	0.02	421.0	-	-421.0	0.02
Total Generally Planned	439.2	-42.6	-481.8	0.02	742.0	-42.0	-784.0	0.02
World (including Generally Planned Countries)	1,190.8	0.7	-1,190.1	0.27	1,669.3(1,738.3)	-12.3(-82.7)	-1,557.0	0.27

* Figures in parentheses represent alternative assumptions for consumption in the United Kingdom and production in India and their influence on world import and export availabilities.
 / / Black tea only.
 / / Not included.
 / / Net weight.
 / / Includes Malaya and South Vietnam.
 / / Southern Rhodesia and Swaziland.
 / / Inclusion green tea.

Source: IBRD, Economic Department; population data: U.S. Department of Agriculture.

31. The rate of growth in tea production has not been the same in all tea growing regions (Chart 1). From 1955-57 to 1967-69 it was 9.5 percent yearly for African teas but only 2.0 percent yearly for Indian and Ceylonese teas. However, in the same period the cumulative absolute addition to world supplies from Africa amounted to only 66,000 tons, compared with 85,000 tons from India and 47,000 tons from Ceylon. Thus, of the total cumulative production increases in these three regions (198,000 tons), African output expansion accounted for one third.

32. Output projections indicate that world tea production is expected to increase yearly by either 2.9 percent or 3.1 percent during the 1970's (Table 1). The lower rate would prevail if production expansion in India continues in line with past trends. The higher growth rate would be achieved if India succeeds in accelerating her tea rehabilitation plans (described later). The projections are based partly on output projections made in the "Review of the World Tea Economy" referred to earlier and partly on the basis of new analyses for a number of countries which seemed necessary in the light of new production developments. Supply analyses were based on simple trend extrapolation, detailed area and yield forecasts and what seemed to be reasonable production development plans.

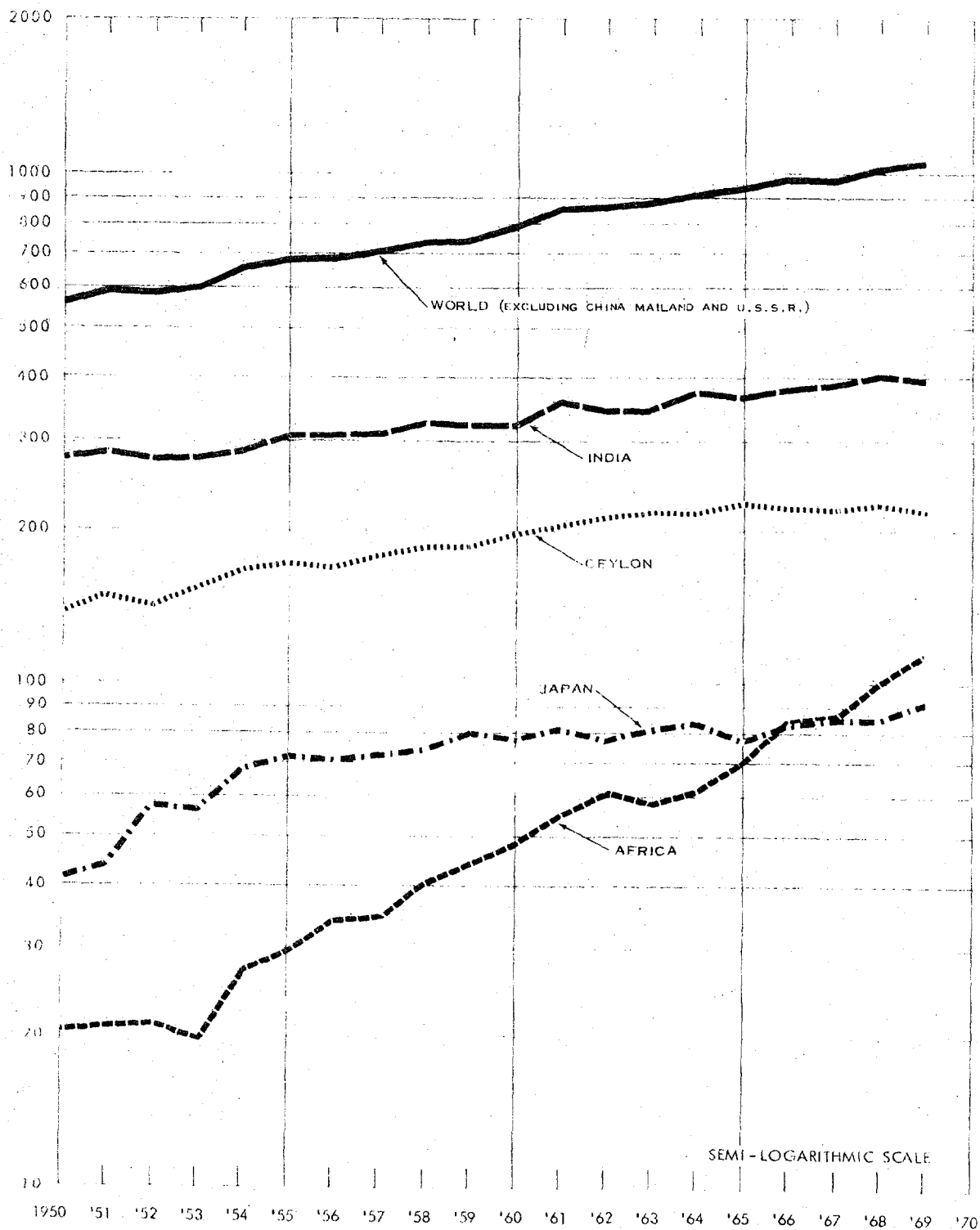
33. There are two major uncertainties which influence output in India and Ceylon. Since these two countries play such an important role in world supply and trade, uncertainties in their output projections materially influence the world market situation.

34. In India future production expansion was based on the assumption that the past growth rate of 2.0 percent yearly will be maintained during the 1970's. The Indian government is trying to increase output expansion by encouraging replanting and new planting through subsidies and reduction in export duties (described in Chapter III). So far these efforts have not succeeded in increasing the output trend. If this process does not get under way in the next two or three years, 1980 output will not be materially higher than projected since it takes at least eight years before the tea plants reach maturity. On the other hand, if India succeeds in increasing the production growth rate, our projections may underestimate 1980 output by about 40,000 tons. In this case world production would increase by 3.1 percent yearly. In Annex Table 13 we indicated two production trends which would have to be experienced to achieve projected supply. Production could, of course, fluctuate around the trend.

35. The recent political unrest in Ceylon could also influence future long-run production developments in that country if the government has to reallocate funds presently used to subsidize the tea industry for other purposes. This would reduce supply growth. It is too early to evaluate the outcome of such a reallocation on future replanting efforts and output expansion. Annex Table 13 indicates the expected production development. Shortfalls in replanting in the next few years would reduce the 1980 output projection.

TEA PRODUCTION IN MAJOR PRODUCING REGIONS, 1950-1969

(THOUSANDS OF METRIC TONS)





Consumption

36. The major characteristics of world tea consumption are (as with production) concentration of consumption and differences in consumption expansion. In 1967-69 world consumption amounted to 973,200 tons (Table 1). The United Kingdom and India accounted for 43 percent of this total. Total consumption in Great Britain was always greater than in any other country because of high per capita consumption, but in 1970 total consumption in India rose to over 220,000 tons and for the first time exceeded that in the United Kingdom. In spite of a low per capita consumption India is expected to maintain first place in total world tea consumption not only because of its large and increasing population, but also because of increases in per capita consumption.

37. The developed countries, of which only Japan and Turkey produce tea, accounted for about 53 percent of world consumption. This share declined steadily from 61 percent in 1955-57, while the share of the developing countries increased correspondingly. The developing countries consumed 456,300 tons of tea in 1967-69. Of this total about 67 percent was consumed in producing countries and the remainder in non-producing countries.

38. From 1955-57 to 1967-69 total world tea consumption increased by 2.9 percent yearly. However, growth rates differed considerably among economic regions and consequently the share of these regions on total consumption changed (Annex Table 3). The yearly rate of growth in the developed countries as a whole was 1.4 percent, compared with 4.8 percent in the developing countries.

39. There are considerable differences in per capita consumption of black tea, as Table 1 indicates. In Commonwealth countries or those countries which are influenced by British consumption habits, per capita consumption is above 1.0 kilogram per capita. The United Kingdom has the highest per capita consumption, reaching 4.0 kilograms in 1967-69. However, in these countries per capita consumption has not increased significantly in the 1960's. The exception in terms of per capita consumption trends since the mid-fifties is India, where per capita consumption is low, but increasing markedly. In those countries which are little influenced by British consumption habits, per capita consumption is well below 1.0 kilogram, but rising. A good example is the United States, where per capita consumption, though low, is rising. This together with a large population makes this country of particular importance for world import demand (Table 1).

40. Consumption developments in the United Kingdom and India are two major sources which substantially affect the projection and are major sources of potential errors. In the United Kingdom total consumption declined by 4,400 tons from 1955-57 to 1967-69 and per capita consumption

declined from 4.4 kilograms in 1955-57 to 3.85 kilograms in 1970. ^{1/} Studies ^{2/} indicate that with adequate promotion further declines can be avoided, and that even an increase in per capita consumption may be achieved. In our own analysis of U.K. consumption ^{3/} the relevant economic parameters influencing consumption development - per capita real income and real retail prices - were statistically not significant, presumably because household expenditure for tea is very low and national customs rather than relative prices seem to determine whether people drink tea or any other beverage in Britain. It was, therefore, assumed that per capita consumption in the United Kingdom will decline further to 3.7 kilograms by 1980 and total consumption will increase by 1,400 tons because of population increases. On the other hand, if per capita consumption is maintained during the 1970's at the 1970 level of 3.85 kilograms, total consumption will expand in line with population increases by 10,300 tons between 1967-69 and 1980. Both projections are indicated in Table 1 and Annex Table 13.

41. In India the source of uncertainty confronted in the analysis was the difficulty of making assumptions regarding future retail price movements. From 1957 to 1969 real retail prices for tea declined by about three percent yearly. Actual retail prices for tea at the same time increased by 2.5 percent yearly. If the past rate of decline in real retail prices is projected to continue in the 1970's, total Indian tea consumption would reach 373,000 tons in 1980, compared with estimates of 350,000 tons as indicated in Table 1. Thus our projections for India could underestimate total consumption (and world exports) by 23,000 tons.

42. We arrived at the lower estimate because we assumed that the decline in real retail prices will be slowed down to one percent yearly, which implies a considerable increase in actual retail prices if past rates of inflation continue into the future. The Indian government is trying to slow down the rapid expansion in domestic consumption by increasing the retail price through higher excise taxes. We assumed that this price increase will, at least partly, achieve its objective. Based on this assumption our estimate coincides with an estimate reached by an extrapolation of past rates of growth in per capita consumption and a rate of growth in total consumption of five percent yearly. This rate was experienced in the past 20 years, although during the 1960's it increased to six percent yearly.

^{1/} This decrease was mainly due to the increased use of tea bags which tend to reduce the quantity of tea required to make a cup of tea. The use of tea bags has increased continuously and to date accounts for about 10 percent of the volume of consumption.

^{2/} Ogilvy & Mather, Ltd., An Econometric Analysis of Demand for Tea in the United Kingdom, London, 1969.

^{3/} "Review of the World Tea Economy", EC-174, April 1970.

43. Whether or not we are justified in projecting the longer-run trend should become apparent in the next few years and can be detected by comparing actual year-to-year consumption developments with the year-to-year projections indicated in Annex Table 13.

Exports and Imports

44. The principal feature of the international tea market from the mid-1950's to 1967-69 has been the steady increase in export volume of about 2.0 percent yearly, and at the same time a stagnation in the total export value as the result of the downward trend in prices. In 1955-57 world exports amounted to 416,000 tons, representing an export value of £206 million. By 1967-69 exports had risen to 573,000 tons but export value did not increase significantly (Table 2). Within this period, India's export earnings from tea declined by £11.8 million and Ceylon's by £3.6 million. In contrast African exports increased by £19.5 million.

45. Production and consumption projections for the producing countries indicate that at 1967-69 prices export availabilities for tea are expected to grow by about 2.0 percent yearly between 1967-69 and 1980. They would reach 721,700 tons in 1980, as Table 1 indicates. If India succeeds, however, in increasing her production growth and output and Ceylon production does not fall short of the projection, world net exports are expected to reach 761,700 tons and the yearly expansion will amount to 2.5 percent.

46. In 1967-69 the developed countries accounted for 73 percent of world tea imports (Table 1) compared with about 75 percent in 1955-57. The United Kingdom is the dominant importer on the world market. Total gross imports into that country in 1967-69 amounted to 243,000 tons and accounted for 42 percent of total world imports. About 223,000 tons of these gross imports are for domestic consumption. The remainder is re-exported. The share of U.K. gross imports on total world imports decreased slightly since the mid-1950's because of contraction in domestic consumption. Re-exports actually increased slightly, as Annex Table 4 indicates.

47. The United States is the second largest importer but accounted for only about 12 percent of world imports in 1967-69. Yet with the expansion in U.S. consumption, the importance of that market has been growing and is expected to continue to expand.

48. Consumption projections in Table 1 for 1980 indicate that demand in the importing countries will rise to 717,000 tons compared to 571,600 tons in 1967-69. This represents a yearly growth rate of 1.9 percent which is only slightly lower than the rate of growth in export availabilities (2.0 percent yearly). A small statistical surplus (4,700 tons) would arise which can be ignored considering the length of the projection period and the fact that U.K. and Indian consumption may have been underestimated. Consequently exports and imports should be in equilibrium similar to the situation in 1970/71 (described below).

Table 2: WORLD 1/ TEA EXPORTS, EXPORT VALUE, EXPORT UNIT VALUE AND LONDON AUCTION PRICES, AVERAGES 1955-57, 1960-62 AND 1967-69

	1955-57	1960-62	1967-69	Annual % Change	
				1955-57 to 1960-62	1960-62 to 1967-69
<u>Exports (1,000 m. tons)</u>					
World Total	461.0	513.0	573.0	2.1	1.6
Developed Countries 2/	12.0	9.0	9.9	- 5.6	1.2
Developing Countries	449.0	504.0	563.1	2.3	1.4
Asia	420.0	450.0	457.5	1.4	0.2
Ceylon	163.0	195.0	208.9	3.6	1.0
India	202.0	204.0	196.9	0.2	- 0.5
Others	55.0	51.0	51.7	- 1.5	0.2
Africa	28.0	48.0	89.0	11.4	9.3
Latin America	0.3	6.0	16.6	81.0	15.7
<u>Export Value (Million £) 3/</u>					
World Total	206.0	208.7	206.1	0.3	- 0.2
Developed Countries 2/	2.5	1.9	1.3	- 6.4	- 5.3
Developing Countries	203.5	206.8	204.8	0.3	- 0.1
Asia	193.4	189.6	171.5	- 0.4	- 1.4
Ceylon	81.5	83.9	77.9	0.6	- 1.1
India	95.0	92.0	83.2	- 0.7	- 1.5
Others	16.9	13.7	10.4	- 4.1	- 3.8
Africa	10.0	15.8	29.5	9.5	9.3
Latin America	0.1	1.4	3.8	60.0	15.3
<u>Export Unit Value (Pence/Kg.)</u>					
World	108.3	97.5	86.2	- 2.1	- 1.8
Ceylon	119.7	103.5	89.5	- 2.9	- 2.1
India	113.0	108.4	100.9	- 0.8	- 1.0
Africa	85.4	78.6	79.6	- 1.7	0.2
<u>London Auction Prices</u> (Pence/Kg.)					
All tea	126.5	118.9	103.9	- 1.3	- 2.0
North India	133.1	129.2	108.5	- 0.6	- 2.5
South India	110.0	101.6	87.6	- 1.6	- 2.1
Ceylon	138.6	125.2	110.3	- 2.1	- 1.8
Africa	89.0	91.5	90.7	0.5	- 0.1

1/ Excluding centrally planned countries.

2/ Japan and Turkey.

3/ Converted from U.S. dollars at: one pound sterling = 2.8 U.S. dollars up to and including 1967; one pound sterling = 2.4 U.S. dollars after 1967.

Source: FAO, Tea Statistics, doc. CCP:Tah/IA69/WF1, and doc. CCP:TE70/2, October 1970.

49. The projected balance in supply and demand could be upset if India succeeds in accelerating production and exports. In that case a world market surplus of 35,700 tons would arise. This surplus in turn would be lower if Ceylon is unable to carry out its tea rehabilitation program. We assume she will succeed in her efforts to increase output. Thus production developments in these two countries will be the main factor in determining the future world balance of supply and demand for tea.

50. The projections assume that demand and supply developments in the centrally planned countries will continue to exercise only a minor influence on the international tea market.

Centrally Planned Countries

51. In all centrally planned countries, tea consumption is regulated by decisions of the planning authorities. These decisions affect not only net imports but, in the cases of the Soviet Union and Mainland China, domestic production plans as well. These two countries are important tea producers and are estimated to account for about one fifth of world output, most of which is directed to their domestic markets. Mainland China exports around 30,000 tons of tea yearly, of which a large part is green tea. Because of inadequate data on production and population, it is not possible to estimate total consumption or evaluate trends in per capita consumption with any accuracy. In the USSR, the greater part of consumption requirements are met from domestic output. Although imports have been approved as part of the state trading plans and it is state policy to increase imports of commodities from developing countries (among them tea), domestic production is also being expanded to meet growing consumption requirements.

52. The USSR is a net importing country, while Mainland China is a net exporter. Net imports of the USSR in 1967-69 were 11,700 tons. Net exports from China (and North Vietnam) fluctuated between 26,000 and 30,000 tons during the 1960's. In neither case has there been any perceptible increasing or decreasing trend, although year-to-year fluctuations are large. Since lack of data prevents a detailed demand analysis for these two countries, it was assumed that net imports of the USSR and net exports of Mainland China would remain at their past levels in 1980.

53. In the Eastern European centrally planned countries, total as well as per capita consumption has been increasing. For projection purposes, it was assumed that trends will continue until 1980.

54. The results of the analysis for the centrally planned countries indicate that they will be self-sufficient in tea production and consumption, that is, exports will be compensated for by imports.

Prices

55. The international market price for tea is determined at three major auction centers: London, Calcutta and Colombo. ^{1/} Before World War II the London auction dominated the price-setting process. In recent years the other two centers have gained in importance, but the London price still remains the leading price indicator in the world market, not only because Britain is by far the largest tea importing country, but also because Britain has the largest tea stocks and is an important entrepôt and trading center for this commodity.

56. The development of actual market prices for individual teas and the average for all teas on the London market are indicated in Annex Table 5 and Chart 2.

57. Until 1958 all teas moved fairly parallel to one another in price. Since then there have been marked divergencies. Indian and Ceylon tea prices continued to decline with short interruptions until 1969, particularly after 1960. In contrast, prices for African teas have not experienced the same declining trend since the late 1950's (even though their prices fluctuated more than prices of other teas), and the traditional premium commanded by Indian and Ceylon tea prices, a reflection of quality differences, narrowed or disappeared. These developments mainly reflected quality improvements in African teas and the fact that usually only the best quality teas are sent to London. The remainder is sold ex-factory or at local (Nairobi) auctions.

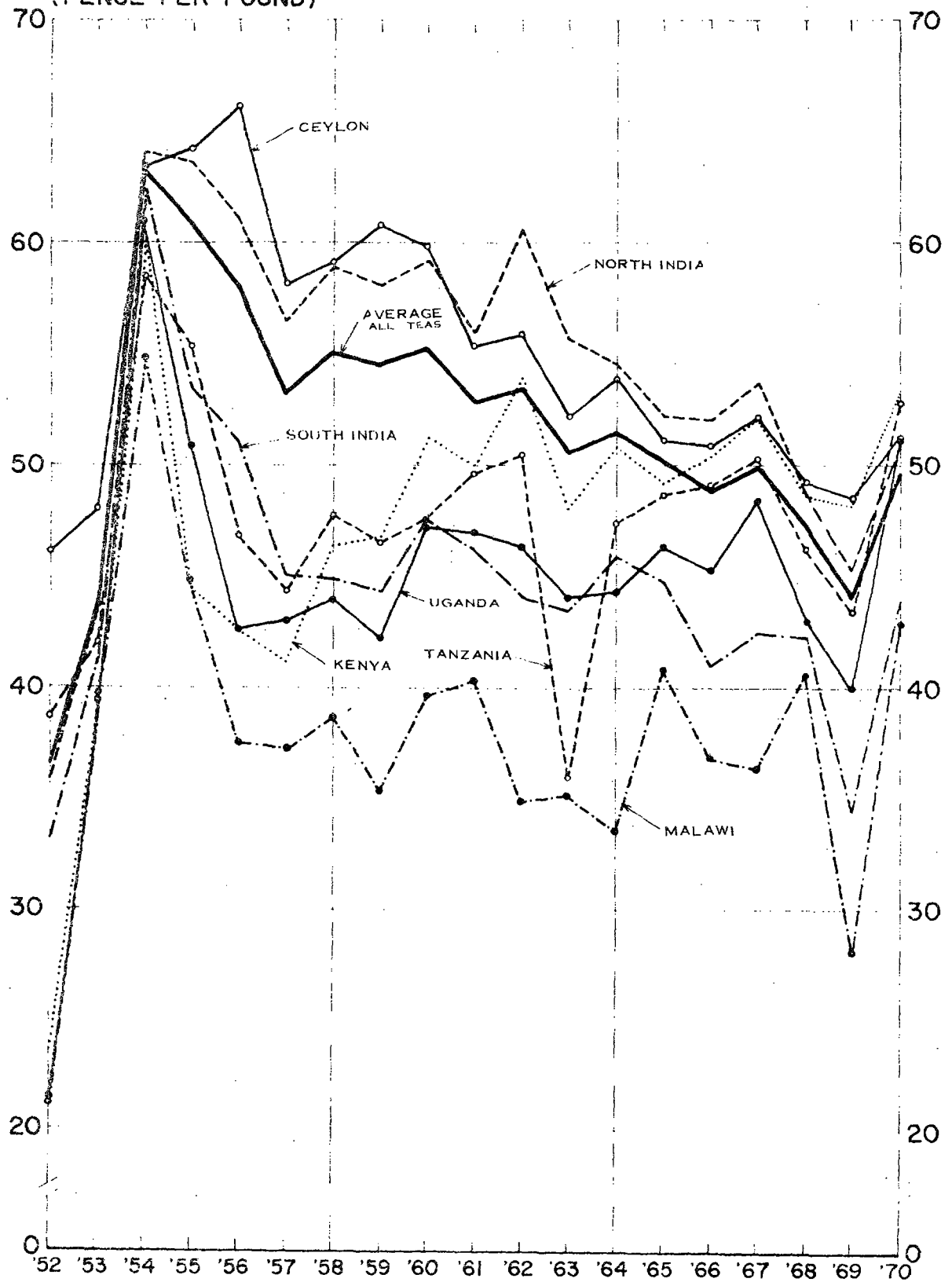
58. In 1970 prices of all teas moved sharply upwards in response to a drastic change in the supply situation at the end of 1969. Exports from India were considerably reduced because of strikes of estate labor at the height of the plucking season, and production was cut severely. Exports from Ceylon were also lower due to finer plucking, climatic factors and lower fertilizer applications, consequences of the low 1969 tea prices.

59. Because of these developments London stocks of tea at the beginning of 1970 were the lowest since 1958. At the end of the year they were replenished to normal levels and world supply and demand were in equilibrium at an average London auction price for all teas of 49.7 pence per pound and average stocks of 73,360 tons. ^{2/}

^{1/} Other auction centers are Cochin, Amritsar, Coonoor and Gauhati in India, Chittagong in Pakistan, Nairobi in East Africa and Antwerp in Belgium.

^{2/} Average end-month stocks in bonded warehouses in the United Kingdom.

ANNUAL AVERAGE TEA PRICES FOR SELECTED COUNTRIES AT LONDON AUCTION, 1952-1970 (PENNY PER POUND)



60. The London price is not only influenced by the supply and demand situation in one particular year, but also by the level of stocks. London stocks account for about 50 percent of world market inventories and are the determining factor for the international market. If the unsold stock level in London is in excess of working requirements, the degree of competition among buyers slackens and prices fall. Since tea is perishable, buyers' inventories would soon decline in value if they bought more than working requirements for extended periods. A shortage of stocks, on the other hand, stimulates competition and prices rise.

61. The close relationship between London prices and stock changes suggests that a good statistical explanation can be found and used for price projections. The relevant equation 1/ shows that a change in U.K. stocks of 10,000 tons is associated with a price change of about £30.4 per ton (3.31 old pence per pound) in the opposite direction.

62. As previously projected world import demand and export availabilities in 1980 are expected to be in equilibrium at 1967-69 prices. 2/ The London average auction price for all teas at that time was 47.0 old pence per pound (43.2 new pence per kilogram). 3/

1/ For the years 1956-69, a regression of price on stocks gave the following result:

$$P = 75.3501 - 0.3315 S^t \qquad R^2 = 0.95$$

where P = the actual annual average price for all teas at London auction in pence per pound; and

S^t = the annual average end-of-month stocks in thousand metric tons in bonded warehouses in the United Kingdom.

2/ The analysis on which this price forecast is based has indicated that in the past inflation has not had any appreciable (if any at all) effect on international tea prices. We therefore assumed that this will be the case in the future.

3/ In February 1971 the United Kingdom introduced the decimal currency system. One new pence equals 2.4 old pence. Tea prices are now quoted in new pence per kilogram. The projected price of 42 (old) pence per pound is equivalent to 38.6 new pence per kilogram.

63. The projection also indicated that a surplus of about 35,700 tons could arise if Indian production and export expansion increases at a faster rate than can be foreseen at this time.

64. Stock accumulation will take place gradually and could reach a yearly increase of about 35,700 tons in 1980. According to past distribution patterns, 50 percent would accumulate in the United Kingdom. Based on the price-stock relationship, the average London auction price for all teas would fall to about 42 (old) pence per pound (38.6 new pence per kilogram) for all teas sold at London auction.

65. A decline in tea prices below 42.0 old pence per pound is unlikely since some areas of tea will prove unprofitable at this price. They will reduce output, thereby establishing equilibrium in supply and demand. This had already happened to some extent in Ceylon in 1970 in response to low 1969 world market prices.

66. Since tea is perishable and soon deteriorates, storage is not practicable for any length of time. Thus subsidizing tea to maintain production and exports would not be a long-run solution, since demand in the developed importing countries is price inelastic, implying that the decline in prices will not be accompanied by any appreciable increase in consumption. Buyers would simply stop buying when stocks rise above working inventory requirements.

67. Based on the above projections it is possible to estimate the total 1980 export value under the two different price forecasts. The first projection indicated that import demand and supply in 1980 would be in equilibrium at 1967-69 prices. According to Table 2 the world export unit value for tea in that year was 35.9 new pence per kilogram (86.2 old pence per kilogram) and projected net exports in 1980 would be 721,700 tons, according to Table 1. Thus the total export value would amount to about £259 million.

68. To calculate the total 1980 world export value at the projected lower price (38.6 new pence per kilogram for the average of all teas sold at London auction) the relationship between the London auction price and the average and world export unit value had to be established.

69. In 1960-62 the statistical spread between the London average auction price and the world export unit value was 21 old pence per kilogram (8.9 new pence per kilogram). By 1967-69 this spread had declined to 18 old pence per kilogram (7.4 new pence per kilogram). For our projection it was assumed that the spread will remain in 1980 at the 1967-69 level. Thus, based on the projected London auction price of 38.6 new pence per kilogram, the corresponding world export unit value is projected at 31.2 new pence per kilogram.

10. According to Table 1 net exports corresponding to the lower price would amount to 756,700 tons. Consequently the total world export value would amount to about £236 million. Thus the prevention of a surplus would raise export earnings by £23 million (\$55 million). 1/

1/ This would also roughly be the benefit which could be expected from an international tea agreement designed to prevent a surplus in the tea industry.

III. DEVELOPMENT ASPECTS AND ADJUSTMENT PROBLEMS
OF TEA IN MAJOR PRODUCING COUNTRIES

71. Wide differences exist in the contribution tea makes to the economy of individual countries as well as in the role of exporting countries in the world market. Table 3 brings some of the important data together.

72. This chapter is not a description of the tea economies in the producing countries. This has been given elsewhere. ^{1/} The following remarks are intended to point out the issues and problems which individual countries face in light of the expected development of the world market situation.

India

73. India is the world's largest producer and consumer of tea. Until 1965 she was also the world's largest exporter of tea. In that year Ceylon moved into first place because the production expansion in India was insufficient to provide for the rapidly growing domestic market as well as the expanding export market.

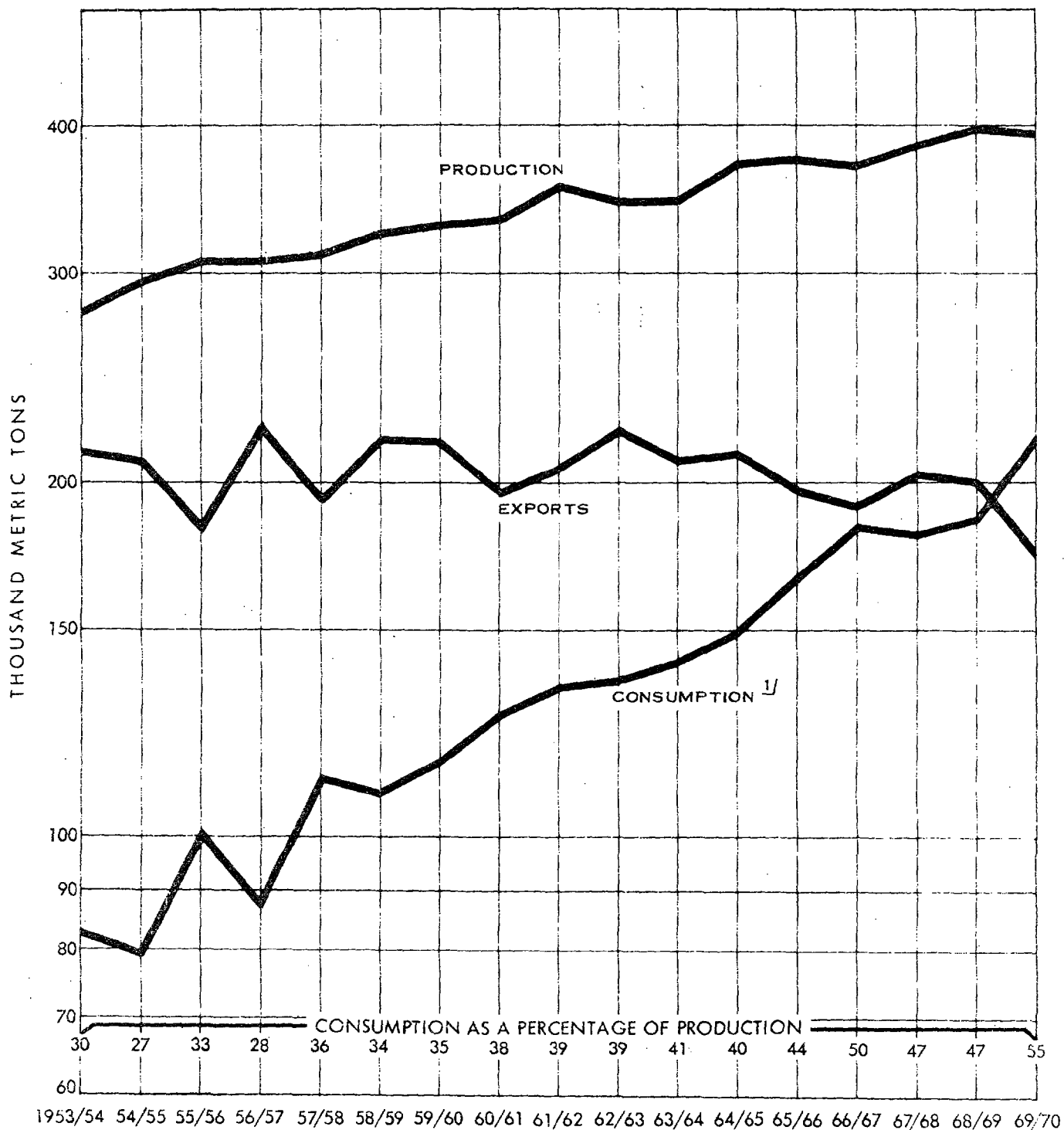
Consumption

74. Indian tea consumption is of great importance in the supply and demand situation of the international tea market. Tea is a national drink, but the pattern of consumption varies widely from state to state. In the lower income classes it is considered more as a food than simply a beverage, since together with sugar it supplies energy. Per capita consumption, which is still one of the lowest in the world, increased from 1955-57 to 1967-69 from 0.25 kilogram to 0.37 kilogram. Total consumption increased at the same time by 5.8 percent yearly or by a cumulative total of 95,500 tons, thereby taking an increasing share of production. This resulted in declining exports, as is illustrated in Chart 3.

75. Total consumption is expected to increase by five percent yearly between 1967-69 and 1980, reaching 350,000 tons in the latter year. This rate of expansion was experienced during 1955-57 and 1965. Since 1965 consumption increased by 5.8 percent, however. The Indian government is trying to slow down the rate of growth in consumption expansion by increasing retail prices through higher excise taxes. The latest increase was decreed in April 1970. Since retail demand is price elastic it may be assumed that higher prices will reduce the growth rate

^{1/} "Review of the World Tea Economy", EC-174, April 1970.

THE INDIAN TEA MARKET



^{1/} ADJUSTED FOR CHANGES IN STOCKS



Table 3: VALUE ^{1/} OF TEA EXPORTS, SHARE OF COUNTRY IN WORLD EXPORTS AND SHARE OF TEA IN TOTAL COUNTRY EXPORT EARNINGS, 1955-57 AND 1967-69 AVERAGE

	1955-57			1967-69		
	Tea Export Value	Country Tea Share in:		Tea Export Value	Country Tea Share in:	
	World Tea Export Value	Country Total Export Earnings		World Tea Export Value	Country Total Export Earnings	
	(million £)	(.....percent.....)		(million £)	(.....percent.....)	
India	95.0	46.1	19.9	83.2	40.6	12.1
Ceylon	81.5	39.5	60.8	77.9	37.8	58.3
Kenya	3.0	1.5	9.9	11.2	5.4	15.8
Malawi	3.2	1.6	n.a.	4.7	2.3	22.7
Uganda	1.0	0.5	2.4	4.4	2.1	5.8
Tanzania	0.6	0.3	1.3	3.1	1.3	3.4
Mauritius	0.1	0.05	0.5	0.8	0.4	3.1
World ^{2/}	206.0	100.0		206.1	100.0	

n.a. = not available.

^{1/} Converted from U.S. dollars at: one pound sterling = 2.8 U.S. dollars up to and including 1967; one pound sterling = 2.4 U.S. dollars after 1967.

^{2/} Excluding centrally planned countries.

Source: FAO Tea Statistics, doc. CCP:Tah/IA69/WP1 and doc. CCP:TE70/2, October 1970; UN Monthly Bulletin of Statistics (various issues).

from 5.8 percent yearly to 5.0 percent yearly. ^{1/} However, even with the lower growth rate output expansion will have to increase from 2.2 percent yearly to 2.8 percent yearly to maintain exports at 1967-69 levels. Presently there are great doubts that this can be achieved.

Production

76. The major drawback in the struggle of the Indian tea industry to increase output is the old age of tea bushes. About 30 percent of the plants are over 50 years old, 40 percent are between 30 and 50 years old, and 20 percent are up to 20 years of age. In spite of this age structure, yields increased during the 1960's (Annex Table 6) by 0.8 percent yearly in North India and by 2.8 percent yearly in South India. This was the result of better management, higher fertilizer applications and newly planted tea achieving yields far beyond average yields of old tea. However, the rate of growth is likely to decline unless replanting and general rehabilitation measures are accelerated.

77. Accepting the assumption that tea plants become uneconomic after 50 years at the price and tax structure existing at the end of the 1960's, India would have to replant or replace 30 percent of its area immediately. Based on 1966-68 data (Annex Table 2), this would require about 100,000 hectares to be replanted immediately.

78. Even if it is assumed that the area with bushes over 50 years old should not be replanted at once, but should be included in an overall two percent yearly replanting program, ^{2/} the record is poor (as Annex Table 7 indicates). A replanting or replacement program of two percent yearly would require about 7,000 hectares to be planted annually. This is a far cry from the 1,562 hectares achieved in 1968/69. The tea industry has tried to compensate for the lack of replanting by extending the tea area, but even then the two percent target has not been achieved.

79. The rehabilitation of the tea industry on a large scale should have been started during the 1950's. At that time tea prices were comparatively high and profits would have allowed estates to finance a

$$\frac{1}{\log C = -0.80 - 0.93 \log P + 0.43 \log Y} \quad R^2 = 0.51$$

(0.26) (0.86)

where: log C = per capita consumption in kilograms (actual income divided by cost-of-living index 1967 = 100);

log P = real retail price for loose tea in rupees per kilogram (actual price divided by cost-of-living index);

and log Y = real per capita income in rupees.

^{2/} Replanting yearly two percent of the total area would replace old by new tea every 50 years. Replanting involves uprooting and replanting within two years after uprooting. Replacement involves planting new land with tea and uprooting an equal area of tea after the new tea produces.

replanting program out of their own resources. The failure to replant or rehabilitate the tea industry was largely the result of the lack of proven seed materials and clones as well as the uncertainty of foreign-owned estates regarding their future in India. After 1960 prices and income declined and profit margins became too small to enable individual growers to undertake a vigorous replanting program out of their own resources.

80. One of the reasons for the small profit margin is the heavy burden of taxation which accounted for about 65 percent of the margin between price received and actual cost of production in 1968, as Table 8 indicates. Although the Indian government reduced the incidence of excise taxes for export tea and abolished the export duty in 1970, the burden of taxes is still high.

81. The Tea Board of India has set a production target of 460,000 tons for the fourth Five-Year Plan ending in 1973-74 and projected production to reach 586,000 tons. This represents a yearly growth rate from 1967-69 to 1980/81 of 3.3 percent, compared with 2.0 percent during the 1960's. The plan envisages an average yearly replanting target between 1969/70 and 1980/81 of 6,600 hectares and a goal for new plantings of about 3,700 hectares. This compares with average yearly replantings and new plantings in 1966/67-1968/69 of 1,811 hectares and 2,975 hectares respectively. Obviously replanting and new plantings would have to be stepped up considerably.

82. There is no doubt that this plan would greatly increase the efficiency of the Indian tea industry. Among other factors, yields would increase from about 1,150 kilograms per hectare to 1,500 kilograms per hectare. Of particular importance would be the improvement in labor productivity. Presently 2.5-3.0 laborers are employed per hectare of tea (described later) but many of them are not engaged in productive tea production. The increase in output per hectare would improve productivity without increasing the number of workers.

83. This would be an expensive undertaking. It cost about 18,000 rupees to replant and 12,000 rupees to extend one hectare of tea - including the cost of factory expansion to take account of higher yields. Taking the government tea development target of yearly replanting of 6,600 hectares and new planting (equivalent to extension) of 3,700 hectares yearly implies a cost of about 112 million rupees per year for replanting and about 45 million rupees yearly for extension.

84. In addition to replanting and extension, each of other rehabilitation measures, such as draining, infilling, improvements in pruning, fertilizer and weed control, and better management practices would have to be applied. According to a study by the Indian Tea Association, ^{1/}

^{1/} A Strategy for Tea in the Seventies, Indian Tea Association, Calcutta, February 17, 1971.

this would cost about 0.23 rupees per kilogram of increased output under North Indian conditions.

85. We doubt that enough capital would become available to increase output to 586,000 tons. It is feasible, however, that output could increase to 550,000 tons by 1980. This would require an acceleration in replanting and extension from an average of about 4,800 hectares per year in 1966-68 to an average of about 6,000 hectares per year in 1970-74, assuming that the tea replanted or newly planted in the latter period will reach maturity by 1980. But to achieve this goal the Indian government would have to give greater incentives such as subsidies, reduction in taxes, etc. to stimulate investment.

86. The Government of India realizes the need for support of the industry in order to accelerate production expansion. A special section of the Tea Board has been set up to encourage the development of tea production. The Plantation Finance Scheme, introduced in 1962, has a fund of Rs. 45 million from which loans are made to finance new plantings and replantings. In order to make the scheme available to those estates which obtain their working capital by means of short-term loans from a bank against hypothecation of crops, the government will accept a second mortgage with the fixed assets of the estate as security. Up to March 31, 1967, loans of Rs. 25 million had been advanced and 1,284 hectares planted or replanted. An Irrigation Loan Scheme with a fund of Rs. 10 million met with little response, but a total of Rs. 47 million were advanced to provide tea machinery and irrigation equipment under hire-purchase schemes. For small growers, loans of Rs. 3 million have been made for the construction of cooperative factories, while both subsidies and loans have been extended for the purchase of fertilizers.

87. Tax rebates have also been given by the Government of India to encourage planting of tea. In 1965 a development allowance of 40 percent of the actual cost of planting in new areas and 20 percent of the cost in other areas was granted, subject to specified maxima. These allowances, which were to be applied to the Central Income Tax, were increased in October 1968 to 50 and 30 percent respectively. Direct subsidies for replanting were introduced in 1968 at the rate of Rs. 3,500 per hectare for tea gardens in the plains, and Rs. 4,500 for those in the hills.

88. Thus far, these measures have not succeeded in increasing the rate of growth in production, and it is doubtful that this will be the case during the 1970's. Therefore, we project 1980 output at 510,000 tons in line with the past trend. A larger 1980 supply can only be achieved if replanting and extension are accelerated in the next two or three years since it takes about eight years before a plant reaches full maturity.

Ceylon

89. Next to India, Ceylon is the second largest producer of tea in the world, accounting for nearly 23 percent (or 221,700 tons) of the world total in 1967-69. Unlike India, however, the Ceylon tea economy is almost entirely dependent on exports since domestic consumption (18,000 tons in 1967-69) accounts for only about eight percent of domestic production. Since 1965 Ceylon has been the world's largest tea exporter with exports in 1967-69 amounting to 208,900 tons.

90. Because of the small domestic consumption and the comparatively small increase expected in the future, any appreciable increase in production will move into export channels. Thus, unlike India where domestic consumption determines and even restricts exports, production in Ceylon strongly affects and in turn is affected by the international tea market situation.

91. Between 1965 and 1970 the value of tea exported ranged between 63 percent and 55 percent of Ceylon's total exports. It accounted for 1,120 million rupees in 1970. Because of falling prices and a static export situation since 1966, foreign exchange earnings have been falling quite drastically, as Table 4 indicates. The reason for this decline in prices is not absolutely clear. The increasing saturation of the world market no doubt played a major role. There have also been complaints by importers that the quality of tea has deteriorated, probably because of coarse plucking and because the expansion in factory capacity did not keep step with the increase in tea production, and overloading of manufacturing machinery usually reduces quality.

92. About 70 percent of the area under tea is owned by Ceylon companies ^{1/} (i.e., "rupee companies") and Ceylon individuals. The rest is owned by sterling companies or non-Ceylon individuals, but their share has been declining. In terms of value of production, however, the latter companies still account for 40-45 percent, mainly because sterling companies own a greater share of the area in the high elevations where higher priced teas are produced.

Production

93. The registered area under tea changed very little since 1965 (Table 4). This is a reflection of the lack of good land for new plantings, lack of capital for area extensions and the policy of the government not to increase the country's dependency on tea exports.

94. Nearly two thirds (about 160,000 hectares) of the tea bushes in Ceylon are 70-80 years old and should be replaced. As in India, this process should have started early in the 1950's, but severe taxation and

^{1/} Companies registered in Ceylon as opposed to "sterling companies", companies registered in the United Kingdom.

Table 1: CEYLON: AREA, PRODUCTION,
EXPORTS AND PRICES OF TEA, 1965-70

Year	Registered Tea Area	Production	Exports	Export Value ^{1/}		Unit Value ^{1/}		Tea Exports as % of Total Exports
				Rupees	U.S. Dollars	Rupee Cents	Dollar Cents	
	(hectares)	(....metric tons....)	(...million...)	(...million...)	(...million...)	(.per pound.)	(percent)	
1965	240,695	228,159	224,349	1,210	254	2.45	51	62
1966	241,560	222,263	200,172	1,027	216	2.33	49	60
1967	242,520	220,902	216,683	1,061	223	2.22	46	63
1968	241,984	224,984	208,745	1,162	195	2.52	42	57
1969	241,988	219,541	201,624	1,062	179	2.39	40	55
1970	241,988	212,283	208,519	1,120	188	2.44	41	56

^{1/} In November 1967 the Ceylon rupee was devalued in terms of the U.S. dollar from \$1 = 4.76 rupees to \$1 = 5.95 rupees.

Source: Annual Report, Central Bank of Ceylon, 1970, p. 12, Customs Returns and Administration Report of the Tea Controller for 1969, Ceylon, July 1970.

the erosion of investors' confidence stemming from sporadic government threats to nationalize the industry created an unsatisfactory investment climate. The situation improved somewhat with the introduction of the tea subsidy schemes which demonstrated the government's desire to actively support the industry irrespective of ownership. But up to now only about six percent of the total area has been replanted since 1966.

95. Yields are low compared with other tea growing countries (Annex Table 6). Low yields of smallholder production and the age structure account for this. On estates, yields of 1,300 kilograms per hectare are not uncommon. Due to favorable climatic and geographic conditions the potential of increasing yields with newly planted varieties is greater in Ceylon than in most other tea growing areas, including East Africa - a fact which puts Ceylon in a very favorably competitive situation. To take advantage of this situation, however, a stringent replanting program has to be undertaken which can be quite expensive since in many cases soil fertility has suffered and disease problems exist.

96. Heavy taxation is still a major impediment to an accelerated replanting program. As Table 8 indicates, the various taxes in 1968 accounted for nearly 70 percent of the margin between costs and prices received. Sales tax and export duties account for nearly 20 percent of the value of tea exports (Annex Table 8). But even with the present age structure, the Ceylon tea industry would probably be able to withstand competition from other producers if taxes and duties were abolished. But the Ceylon government would lose one of its most important sources of revenue.

97. In order to encourage replanting in the tea industry the government introduced the Tea Replanting Subsidy Scheme, under which Rs. 9,260 per hectare (Rs. 3,750 per acre) are paid as a subsidy towards replanting costs. The funds for the subsidy are collected by a cess at the rate of 4 cents per pound. A replanting incentive loan scheme is also in operation under which loans up to Rs. 4,940 per hectare (Rs. 2,000 per acre) are granted by the Central Mortgage Bank at low interest rates. These schemes cover about the expenditure for field costs. They do not, however, take account of the loss in income during the time from uprooting the old tea until the time the new tea starts producing. This period covers about six years until the newly planted tea reaches yields achieved previously with old tea (900 kilograms per hectare). At average 1969 Colombo net auction prices (Rs. 3.37 per kilogram) the loss in income would thus amount to about Rs. 18,000 per hectare.

98. In addition to replanting, factories have to be modernized and their capacity increased to take account of the increase in yield. Average factory capacity on estates is about 275,000 kilograms, which would have to be doubled to take account of higher yields. It is estimated that it costs about Rs. 4.0 per kilogram to enlarge capacity and modernize factories under Ceylon conditions. The average tea estate is about 300 hectares, and consequently investment costs would account for

about Rs. 3,667 per hectare. Thus per hectare field investment costs (Rs. 14,200) plus per hectare factory investment cost for replanting amount to about Rs. 18,000.

99. To induce factory owners to invest capital on factory development the Tea Factory Development Subsidy Scheme was introduced. Under the scheme the following subsidies are applicable:

- (a) An outright payment of a subsidy equivalent to one third of the cost of approved items of tea machinery, equipment, etc. installed in tea factories;
- (b) On loans taken for improvements to existing factories and for the construction of new factories the full interest is subsidized for 20 years; and
- (c) Imports of raw materials and finished goods required for tea factory development are duty free.

100. The foreign exchange cost of the Tea Factory Development Scheme is presently financed by two loans from the Asian Development Bank. The first loan of \$2.0 million has been fully allocated. The second loan for \$3.5 million was approved in October 1970. In spite of these subsidies there still exists a backlog of investments to provide adequate factory capacity for the present production. In 1966 this backlog was Rs. 90 million (US \$15.13 million equivalent). In the meantime, there has been an upsurge of investments in tea factories of about Rs. 21 million. Taking account of this and the second loan of ADB would still leave a deficit of Rs. 48 million (US \$8.06 million equivalent) to bring factory capacity in line with production. This does not take account of additional requirements for any increase in output beyond 1970 levels.

101. Present supply forecasts indicate that Ceylon will increase her production by 61,300 tons between 1967-69 and 1980 (Table 1). The projection assumes that the replanting program will be accelerated by 1980 to 1.4 percent yearly of the total registered tea area, compared with 0.8 percent yearly in 1969. The registered tea area, however, will not be allowed to increase (Table 5).

102. To achieve the projected output the replanted tea area will increase by 28,500 hectares. According to investment cost data established earlier, the achievement of this goal would require a total amount of about Rs. 513 million (US \$88 million). Some additional funds would also have to be allocated to improve yields on the old seedling area.

103. In view of the past performance one could doubt that this target will be achieved. However, as of June 1969, replanting permits had been issued for about 20,000 hectares; 16,500 hectares had been uprooted and about 12,000 hectares replanted. These amounts are not large compared to the present total area (242,000 hectares), but they are significant when compared to the 90,000 hectares that will remain in tea when replanting is completed. Thus the projected output is feasible provided subsidies will

Table 5: CEYLON: PRODUCTION, YIELD AND AREA UNDER TEA,
ACTUAL 1967-69, PROJECTED 1980

	Total Registered Tea Area	Area of Tea in bearing (clonal, seedling)	Seedling Area in Bearing			Clonal Area in Bearing			Total Output
			Yield per hectare	Area	Output	Yield per hectare	Area	Output	
	(...1,000 hectares....)		(kilograms)	(1,000 hectares)	(1,000 tons)	(kilograms)	(1,000 hectares)	(1,000 tons)	(1,000 tons)
1967	242.5	232.1	942	229.2	215.7	1,767	3.0	5.3	221.0
1968	242.0	231.4	954	227.2	216.7	1,976	4.2	8.3	225.0
1969	242.0	230.7	924	225.1	207.8	2,182	5.5	12.0	219.8
1975	242.0	227.5	1,011	208.7	210.6	2,500	18.8	47.0	257.6
1980	242.0	223.4	1,011	193.1	191.2	2,500	34.0	85.0	276.2

- Assumptions:
- (a) The registered tea area is kept constant from 1968 to 1980.
 - (b) The seedling tea area is progressively reduced from 2,024 hectares yearly in 1969 to 4,250 hectares yearly in 1980.
 - (c) The clonal tea area is progressively increased from 1,340 hectares yearly in 1969 to 3,440 hectares yearly in 1980.
 - (d) Seedling and clonal tea yields will increase as shown.

Source: IBRD, Economics Department.

be continued and, probably even more important, investors' confidence in the future of a private Ceylon tea industry is restored.

104. The plan as outlined in Table 5 presents a gradual replanting, which is feasible if the necessary resources can be provided. It would allow more efficient use to be made of the labor force without increasing its size. It is unlikely and actually undesirable that all of the tea area should be replanted because the necessary funds are unlikely to be available and marginal areas should be taken out of production permanently. A reduction in area does not imply a decline in output, however, since yields will improve. With replanted tea Ceylon would be able to produce the 1980 projected output of 276,200 tons with only about 110,000 hectares, less than half of the present registered tea area. Ceylon will have to set a target to indicate the area which should remain under tea and which would eventually be replanted. The remaining area would have to be phased out of tea and put to other uses.

Diversification

105. Presently FAO is engaged in a large diversification study financed by UNDP. There are three major issues which arise out of this situation.

106. First, questions to be answered are: (a) What is the proper rate of replanting; (b) which are the areas that should be replanted; and (c) what incentives are required to bring about the required rate of replanting? Answers to these questions require information on the technical production requirements of the plant, yields and production costs at different altitudes, effects on employment and possible changes in the pattern of demand for tea of different qualities in markets likely to be important to Ceylon.

107. Second, decisions have to be made regarding the introduction of new crops or the expansion of present crops whenever tea land becomes available. This involves information on cropping patterns, cost and returns, labor utilization, domestic and export marketing prospects and the institutional requirements to grow and market the crops.

108. Third, a decision has to be made whether the replanting program should be restricted to plantations, or if smallholdings should be included.

109. As stated before, Ceylon tea gardens were established a long time ago. Areas which were at that time profitable because of cost and price advantages are not necessarily remunerative today. This seems to be particularly true for the medium-grown tea which was first established over 100 years ago. Diversification into other crops is likely to be more pronounced in this area than in the others. Yields are comparatively low, and since there is a close relationship between yield and production cost, the profit margins for medium-grown tea are slim.

110. Cost and yield statistics are indicated in Table 6. Although the data are based on a comparatively small sample, they roughly indicate the real situation. What is of particular importance is the fact that the lower yields in medium-grown areas are apparently due not only to age but also to climate and soil. This is confirmed by the low VP tea yields, indicating that marginal lands are less suitable for VP teas. One should thus be careful before recommending that low yielding areas should be replanted with VP tea in order to increase the average yield. The Ceylon government recognized this and recently changed its replanting policy so that permission to replant would only be granted if the land had been proved suitable.

111. It should also be noted that there are disadvantages to diversification. It might be easier to maintain the status quo and raise yields on the existing acreage (even without replanting) than to press forward with a more complex multiple cropping system. The expertise required to improve tea output is almost certainly greater than the knowledge needed to initiate and expand other crops. Furthermore, tea exports provide a low-cost and administratively simple form of taxation. The effect on employment could also be serious, since tea is a labor-intensive crop and alternative crops are likely to be less labor-intensive. Previously it has been shown that the projected output could be produced with 110,000 hectares if all were planted with high yielding varieties. The present registered tea area is 242,000 hectares. Thus 132,000 hectares would become redundant assuming no further increase in production. Since about three laborers are required to produce one hectare of tea under present conditions of productivity prevailing in the industry, about 400,000 laborers will have to leave the industry.

112. An important consideration is the fact that export income from an acre of tea is likely to be greater than the foreign exchange earnings from suitable alternative crops. However, this situation has to be viewed in the light of investment requirements. Some of the relevant cost and income data for important crops grown in Ceylon are brought together in Table 7. The gross value per acre given in the table is an indication of the potential foreign exchange earnings to the economy. Apart from two spices, tea is by far the most important source of foreign exchange. This would be true even if tea prices fell by 30 percent. The return to the farmer is lower for tea than for any other crop, however, because tea production costs greatly exceed those of other crops. Furthermore, the investment for tea replanting would be higher than investment requirements for other crops likely to be grown in Ceylon (Annex Table 9). Thus there is a strong incentive for the farmer to consider crop diversification.

113. The climate and soil are suitable for the planting of a wide variety of other crops. The choice of crops should not be too difficult since considerable possibilities for import substitution exist, as Annex Table 10 indicates. Rice would be the most important of these crops since the country imports about 50 percent of its cereal requirements.

Table 6: YIELDS, COSTS AND PRICES FOR
CEYLON TEA BY ELEVATION GROUPS, 1968

Elevation Groups	Yields ^{1/}		Cost _{3/}	Average Colombo Net Auction Price	
	VP	National Average			Estates _{2/}
	(.kilograms per hectare.)		(.rupees per kilogram..)		
High grown	2,765	983	1,327	7.91	9.39
Medium grown	2,302	862	1,079	7.63	8.11
Low grown	3,904	949	1,169	7.25	7.94

1/ Based on sample of 118 estates.

2/ Based on 1967 yields of 360 estates.

3/ Based on sample survey of 107 tea factories.

Source: Ceylon Tea Control Department.

Table 7: CEYLON: COST OF PRODUCTION
AND INCOME FROM SELECTED CROPS

Crop	Price per Unit ^{1/}	Yield per Acre	Gross Value	Cost of Production	Return
	(rupees)	(kilograms)	(.....rupees per acre.....)		
Tea	0.71/kg.	374	2,655	2,461	194
Coconut					
Oil	1,489/ton	300	447		
Cake	300/ton	150	45		
			<u>492</u>	228	264
Oil Palm					
Oil	1,135/ton	1,000	1,135		
Kernel oil	1,282/ton	100	128		
Cake	285/ton	100	29		
			<u>1,292</u>	810	482
Coffee	7,000/ton	100	700	200	500
Cocoa	2,800/ton	150	420	225	195
Cinnamon	11.0/kg	100	1,110	550	560
Cardamon	43.2/kg.	70	3,024	600	2,424
Pepper	35.3/kg.	77	2,720	1,700	1,020
Nutmeg/Mace	5.4/kg.	227	1,225	500	725

^{1/} 1966 prices and cost of production for tea, coconut, oil palm, coffee, cocoa; 1968 prices and cost of production for cinnamon, cardamon, pepper, nutmeg/mace.

Source: Ceylon Sessional Papers, 1968, Report of the Tea Commission; Report of the Working on Other Perennial Crops; Annual Administration Report of Teacontroller, 1966-68.

But there are a large variety of other commodities which could be produced: These include coconut, palm oil, livestock, forestry products, spices, starchy roots, vegetables and fruits. There are export markets for most of these products, and Ceylon's share of these markets thus far has been very small (except for cardamon).

114. One of the major tasks would be to educate farmers as to production techniques, establish an efficient market organization and determine domestic and export market possibilities. It may also be desirable to have a separate scheme for smallholders and small estates whose size of holding, technical knowledge and financial resources are different from those of large estates.

115. Tea production in Ceylon comes predominantly from estates. Of the 241,500 hectares under tea at end-1969, smallholdings accounted for 42,052 hectares, or about 17 percent. There were 112,231 smallholdings and thus the average area was 0.4 hectares. Although the figures on yields according to size of holdings are not readily available it is well known that the yields of smallholdings are much below those on estates. The condition of many of the smallholders' tea lands is unsatisfactory as is the quality of the tea they produce.^{1/} However, some smallholders are attempting to improve their situation.

116. Replanting and diversification provide opportunities for a change in the smallholder sector. Experiences in other countries show that properly organized smallholder tea growing with cooperative processing can be fully as efficient as estate operations. It would, however, be difficult to weld present scattered smallholder production (much of it on not very suitable land) into effective cooperative units. It should, therefore, be considered if smallholder production should be limited to the best areas while owners of low-productivity tea land would be assisted in changing to other types of farming. The choice between these two alternatives is a matter of social and political rather than economic policy.

Africa

117. Most important for future output expansion in Africa are the East African countries, particularly Kenya, Tanzania and Uganda.

118. There are a number of important similarities in East African tea production. Although the first tea was planted as early as 1878 in Malawi, the industry developed slowly and today there are virtually no tea bushes over 50 years old, the original areas having been replanted or abandoned. Thus replanting does not present a problem. The expansion

^{1/} Report of the Ceylon Tea Commission, Ceylon, 1968, par. 25-28.

that is taking place is on cleared land or land that has previously been planted with other crops. Because the major development took place recently, modern methods of manufacturing and production could be applied, and today the East African tea industry as a whole is the most up-to-date in the world. The industry developed at a time when there was a strong demand for CTC tea. The African countries took advantage of this situation and filled a market gap. As a result, prices for these teas did decline less, if at all, than Indian and Ceylonese tea prices.

119. Probably the most important development in East Africa is the change in the institutional structure. While up to the early 1960's tea was mainly produced on estates, since then the major thrust in tea expansion came from smallholders. These are organized into efficient centralized production and marketing units based on cooperative efforts. Future tea expansion in these areas will be based mainly on smallholders, and it is in this field that the Bank Group has invested in tea development (described below).

120. Among the East African tea producing countries, Kenya most rapidly developed her tea output and exports. In 1967-69 that country produced 29,500 tons of tea on about 25,000 hectares. Official plans call for an area increase to 46,100 hectares by 1975, of which approximately 23,100 would be in smallholder tea. Smallholder production accounted for about 10 percent of total tea output in 1969/70. The number of smallholders was 48,433 and the average plot size about 0.4 hectare.

121. Thus far tea has been almost entirely a plantation crop in Tanzania. In 1969 about 11,200 hectares were under tea, of which 9,300 hectares were grown by estates. The number of smallholders in that year was about 4,600, but is expected to rise to 19,300 by 1975. Total Tanzanian tea production in 1980 is projected at 22,000 tons of which 12,000 tons will be produced by smallholders.

122. In Uganda tea is grown at an altitude between 4,000 and 6,000 feet. It was first introduced into the country at the beginning of the century, and at the end of the 1960's 15,120 hectares produced 14,700 tons of black tea. By 1980 estate and smallholder productions should reach 45,400 tons of which about 20,000 tons would be produced by smallholders. Up to the mid-1960's about 85 percent of the tea area had been planted by estates. In 1966 the Uganda Tea Growers' Corporation was set up as the authority for implementing government plans for expansion of tea growing by African smallholders. The Corporation expects to increase the smallholder tea planting to about 16,000 hectares by 1975 which would be in full production by around 1980. Area expansion on estates is expected to be small but yields will continue to rise.

123. Tea cultivation has been developed by the Government of Mauritius as a means of diversifying the economy of the island and finding a crop able to resist cyclones. Production expanded with area and reached about 4,000 tons on 3,600 hectares. The Government of Mauritius is supporting further tea expansion. It is estimated that by 1980 an additional 10,550

hectares will be planted, most of it cultivated by smallholders. Total production in that year is estimated to amount to 10,000 tons, of which 9,000 will be exported.

124. There are a number of other African countries which produce and export tea; among them are Rwanda, Burundi, Cameroon, Congo (Kinshasa), Malawi, Madagascar, Seychelles, Réunion, Mozambique, South Africa and the Sudan. The production of these countries is relatively small; together they accounted for 2.8 percent of total world production in 1967-69. Output projections based mainly on official development plans indicate the aggregate supply from these countries will increase from 25,700 tons in 1967-69 to 47,200 tons in 1980.

Turkey

125. Tea production was developed by the Government of Turkey as a smallholding industry on the Black Sea Coast. Output expansion has been encouraged by high producer support prices; these more than doubled between 1954 and 1969. It was the intention of the Turkish Government to substitute domestic production for tea imports, but production expanded faster than expected, and there have been no imports since 1963.

126. So far producer prices have not been reduced to put a brake on the production expansion. New plantings are continuing at a rate of 2,000 hectares yearly. It is estimated that production will reach 45,000 tons in 1975, a figure which would be possible from present plantings at current yields (1,000 kilograms per hectare). Assuming that the past rate of area expansion continues, output in 1980 would amount to about 55,000 tons (from an additional 10,000 hectares).

127. In 1964 the State Monopolies Department, which is in charge of the industry, began exporting tea. These exports increased steeply from 1,500 tons in 1964 to 8,100 tons in 1967-69. However, the import unit value for Turkish tea in the Netherlands (the main market) is low and has been declining. Consequently the Monopoly incurs losses in its export operations. In 1968-69 it sustained a loss of LT (Turkish lira) 132 million from tea sold abroad. The basis of such losses is illustrated when the Monopoly's production cost (LT 21.38 per kilogram) in 1968 is compared with the average export price (LT 2.18 per kilogram) actually obtained. The Monopoly pays growers LT 3.50 per kilogram of leaf tea. In contrast Ceylonese and Indian growers receive the equivalent of LT 0.70 to LT 1.00 per kilogram and African growers about LT 0.50 to 0.80 kilogram.

Pakistan

128. Tea production in Pakistan was 29,200 tons in 1967-69. Until 1966 Pakistan exported tea, but since consumption is increasing at a higher rate than production, Pakistan is now an importer of tea. Imports were about 5,000 tons in 1970 and are not expected to decline.

129. Because of the scarcity and high cost of foreign exchange and lack of re-investment by estates, the tea industry has not been able to replace worn-out and outmoded machinery and the quality of domestically produced tea is deteriorating. Young tea planted under a compulsory expansion program is now coming into production, exacerbating the strain on existing facilities. Pakistan's major problem is to improve and expand factory capacity. The rate of increase in output is expected to prevail in the 1970's, with expansion of production from newly planted tea compensating for the decline in output of old tea (Table 1).

Indonesia

130. Before World War II, Indonesia exported between 70,000 and 80,000 tons of tea. During the war large areas of tea were torn up for food production and have never been replanted. Since then there has been a decrease in the tea area and a decline in exports to about 33,000 tons (average for the 1960's) as well as a severe deterioration in quality and consequently in prices. In 1968 about 42,700 tons of black tea were produced, of which 34,700 tons were exported. The rest, which is generally of the lowest quality, was consumed domestically.

131. The Indonesian tea industry comprises three different sectors: government-owned estates, consisting almost entirely of former Dutch estates; private estates; and smallholdings. Government estates produce black tea, most of which is exported. Smallholders produce mainly green tea, often by primitive methods of home manufacture. Their total production of black tea is less than 4,000 tons. This tea, which is of low quality, generally goes into domestic consumption together with about another 4,000 tons of black tea from government and private estates. Private estates produce black and green tea.

132. The decline in the Indonesian tea industry affected all sectors. Though area data are misleading and not very reliable, of the 50,000 hectares of smallholder tea in 1968 only about 37,000 hectares were productive; and of this area only 20 percent is considered to have reasonable stands of tea in good maintenance.

133. Only comprehensive rehabilitation followed by replanting at a later date can prevent a further decline in Indonesian tea output and quality. Direct replanting without prior rehabilitation is difficult, since soil conditions have deteriorated during the period of neglect to such an extent that they would not be suitable to support the vigorous growth of newly planted tea. Furthermore, considerable yield increases are still possible from existing tea areas. Rehabilitation would, however, require modernizing and expanding the factory sector so that little if any additional investment would be required when the replanting process gets under way. Part of the replanting can be incorporated in the rehabilitation process. The Bank will finance a tea rehabilitation project in Indonesia involving 25 government estates with 23,300 hectares including 2,300 hectares of replanted tea.

Argentina

134. Tea production in Latin America amounted to 22,000 tons in 1967-69. Argentina produced about 75 percent of the total output. The Government of Argentina has been concerned since 1960 with developing the tea industry in order to achieve self-sufficiency. It succeeded and Argentina is now a net exporter (Table 1). Soil and climatic conditions are favorable for tea growing as in many Latin American countries, but it becomes increasingly difficult to hire labor for tea growing. It is assumed that production expansion in Argentina will continue according to past trends, reaching 24,000 tons in 1980.

Japan

135. Japan produces and consumes mainly green tea. Of the 105,000 tons consumed in 1969 only about 5.0 percent was black tea. Domestic green tea production accounted for 95.0 percent of total green tea consumption in that year. In the early 1960's green tea imports increased because the area under tea declined as a result of tea land being converted to industrial use. The declining trend in area came to an end in 1966 when authorities began to encourage the displacement of upland rice with tea in order to prevent continuous accumulation of rice surpluses.

136. The situation is different for black tea. Japan produces little of this type and production is declining. Consumption and imports, on the other hand, are increasing. It is estimated that by 1980 imports will reach 14,000 tons compared with about 4,300 tons in 1967-69. The expansion in imports will be encouraged by the abolishment of import quota restrictions in 1971.

IV. ECONOMIC AND EMPLOYMENT FACTORS IN THE TEA INDUSTRY

137. The previous chapter indicated some basic differences in structure and problems facing the tea industry in individual producing countries. This chapter concentrates on major economic and employment aspects in producing countries.

Taxes and Duties

138. The long-term supply and demand adjustment in the tea industry is influenced, among other factors, by the profit margin, ^{1/} the difference between prices received and costs. This margin determines the competitiveness of individual tea regions in international markets, since it indicates the extent to which individual producers can lower their prices to meet competition.

139. Table 8 indicates a cost and income comparison for a number of estates in each country. This is not a random sample, since it was impossible to collect the statistics on this basis. In general the estates are well managed, with higher than average yields and their costs would be lower than district and country averages, particularly in the cases of North India (Assam) and South India. On the other hand, the costs as such are somewhat understated since they do not include depreciation. Unfortunately, it was not possible to obtain 1970 data for India and Ceylon and 1968 statistics have to suffice for the comparison. There is also the well-known difficulty of expressing costs in a common currency. This tends to produce a comparison of exchange rates and since some official rates are over-valued introduces distortions into inter-country comparison. We are well aware of these difficulties and urge the reader to consider the data only as a general guide. They offer some striking findings, however, which persuaded us to include Table 8 in this study in spite of its shortcomings.

140. They indicate that there are considerable differences in production costs (up to selling point). Malawi has the lowest production cost, but also receives lower prices for its tea because of quality differences. The highest costs are encountered in Assam, which is the largest tea growing region in North India. Costs in the other tea growing area of North India are slightly lower, except for the Darjeeling district.

141. Prices are compared at the London auction, since the bulk of the African teas and a large share of Indian and Ceylonese teas are shipped to that market. Table 8 indicates that transportation costs from Africa are

^{1/} The words "uneconomic" and "unprofitable" have both been used in this paper, although it is realized that "uneconomic" has a broader meaning than "unprofitable". The concept of profitability has validity for this paper because the bulk of the tea is produced by companies whose policy is guided by the prospect of earning a profit.

Table 8: TEA: COSTS, DUTIES AND CHARGES, AND
PRICES RECEIVED AT LONDON AUCTIONS BY ESTATES,
IN SELECTED COUNTRIES

(US cents per pound)

	India (1968)		Ceylon (1968)	Uganda (1970)	Kenya (1970)	Malawi (1970)	Tanzania (1970)
	North	South					
I <u>Cost</u>							
At selling point ^{1/}	28.50	24.00	25.38	27.37	24.77	22.50	28.32
Transportation charges ^{2/}	4.37	4.34	4.67	6.04	5.34	6.22	5.34
London Auction charges ^{3/}	2.50	2.28	2.50	2.50	2.50	2.28	2.50
Total cost	35.37	30.62	32.55	35.91	32.61	31.00	36.16
II <u>Prices Received at London Auctions</u>	48.07	42.26	49.30	50.98	52.98	43.41	52.80
III <u>Margin, before duties & taxes (II-I)</u>	12.70	11.64	16.75	15.07	20.37	12.41	16.64
IV <u>Duties & Taxes</u>							
Cess	0.24	0.24	1.56	0.28	0.28	0.33	0.10
Excise duty	3.09 ^{4/}	2.35 ^{4/}	-	-	-	-	-
Export duty	4.75 ^{5/}	3.70 ^{5/}	6.72	-	-	-	1.40
Sales tax	-	-	3.34 ^{6/}	-	-	-	-
Total	8.08	6.29	11.62	0.28	0.28	0.33	1.50
V <u>Margin, after costs, duties & taxes (III-IV)</u>	4.62	5.32	5.13	14.79	20.09	12.08	15.14

1/ F.a.s. embarkation point.

2/ Freight, shipping charges, brokerage, commissions and insurance.

3/ Landing charges, warehousing, insurance and brokerage for tea on pallets.

4/ Average rate of excise duty collected per pound.

5/ 20 percent ad valorem less 1.62 cents per pound on f.a.s. cost.

6/ Average ad valorem sales tax collected per pound on tea sold at London Auctions.

Source: Data obtained from individual tea growers and estate companies.

slightly higher for African teas than for teas from India and Ceylon, because shipping charges (loading, etc.) are lower in Calcutta and Colombo. Details on these charges are indicated in Annex Table 11.

142. The difference between total costs (up to London) and the prices received at London auction is the income that would be available to the estate if no other cost were applied. This margin (III in Table 8) is the most meaningful for inter-country comparisons since it takes costs as well as prices into account. The margin varies from a low of 25 percent of the selling price in the case of Malawi to a high of 38 percent in Kenya. The margins are not unduly low for any of the countries and from this point of view one cannot say that the industry is in a state of depression.

143. However, the real difference in profitability and competitive position becomes clear when taxes and duties are considered. These severely depress the profit margin in India and Ceylon, but hardly affect the African countries. In 1968 duties and taxes accounted for nearly 65 percent of the profit margin in India and about 70 percent for Ceylon. In 1970 India abolished the export duty and reduced excise taxes, and in Ceylon the export duty rebate reduced that tax somewhat. However, since costs also rose, the situation may not have changed much. Part of these taxes are returned as subsidies, but if individual estates are not involved in rehabilitation, they would, of course, not benefit by this support.

144. The margin after costs, the last item in Table 8, would be a rough indication of the potential price decline before these estates became completely unprofitable. Since the data refer to above-average estates, average and marginal estates would experience this state earlier. As a matter of fact, when international tea prices at London auction reached their lowest level in 1969, a number of estates in India and Ceylon were reported to have experienced considerable losses.

145. Apart from differences in taxation, there are some important differences in the input structure between the traditional tea producing countries and the new emerging producers in East Africa which also explain the differences in production cost.

Labor

146. Previously it was said that production in the latter countries is technologically more advanced. Labor costs and physical labor input illustrate the differences in technology. In India and Ceylon the labor force is about 3.0 laborers per hectare and in some cases is as high as 3.7 laborers per hectare. In Kenya, Tanzania and Uganda, on the other hand, the labor force is 1.9 to 2.0 laborers per hectare.

147. These differences in labor requirements are due to historic circumstances, differences in seasonal requirements and differences in the technology of tea production and manufacturing.

148. India and Ceylon have traditionally had a large labor force. When the industry was established in these countries decades ago, labor-saving practices in the production process were limited and not imperative since labor was cheap. Over time the number of laborers increased with population growth, but since there were few alternative means of employment, tea estates had to increase their labor force. Since labor was inexpensive, this did not originally meet much opposition from estate owners. The employment situation is particularly aggravated in Ceylon where the tea industry was based on immigrant Indian labor which was never absorbed into the Ceylonese population and stayed on or around tea estates. Agreement was reached between Indian and Ceylonese authorities to repatriate 525,000 Indian workers with their natural increase over a period of 15 years and to give 300,000 of the Indians Ceylonese citizenship. So far, however, very few Indian laborers have been repatriated. The exodus of Indian labor would alleviate the problem of excess labor, if Ceylon reduced its tea area and replanted with high yielding clones. In Chapter II we indicated that about 400,000 laborers would become redundant because of replanting and factory modernization.

149. The East African tea industry is younger and the original labor complement was always smaller, and has always been kept strictly under control with the aim of increasing labor efficiency. Recently concluded work contracts indicate that the goal is still higher wages in exchange for higher labor productivity.

150. Seasonal factors also account for major differences in labor requirements between North India and the other tea producing countries. In Assam the crop is harvested from mid-April to about the third week in November, whereas in South India, Ceylon and most of the East African countries harvesting goes on throughout the year. This allows for an even spread of labor requirements although peak periods occur. In Assam year-round labor requirements are determined by the peak six-months harvest so that large numbers of laborers have to be carried over considerable stretches of slack periods without performing adequate productive work.

151. Technology is another factor influencing labor requirements and costs. The use of herbicides, modern methods in manufacture, mechanization of road work, etc. means quite a reduction in the labor employed. Because of the high complement of permanent labor in India and Ceylon, labor-intensive methods of road and building maintenance as well as cultivation practices are used. This does not apply to East Africa. Old fashioned factories, such as are often found in India and Ceylon, increase the amount of labor to be employed on transporting leaf and the finished product. Modern factories and methods in the new tea producing regions reduce the factory labor force by about 50 percent.

152. Table 9 indicates the distribution of input items in total production cost. Although direct African wages are higher than in India and Ceylon (Annex Table 12), labor costs are higher in the two latter countries, accounting for 43 percent and 53 percent of total costs in India and Ceylon

Table 9: PERCENTAGE SHARE OF LABOR AND OTHER INPUTS ON TOTAL PRODUCTION COSTS
AND ON INDIVIDUAL PRODUCTION OPERATIONS IN VARIOUS PRODUCING COUNTRIES
(percentages)

	India (1968) North	Ceylon (1968)				Kenya (1970)	Uganda (1970)	Tanzania (1970)
		High Grown	Medium Grown	Low Grown	Average for All Teas			
I. Total Production Cost								
of which: Labor	43.3	52.5	53.2	53.2	53.0	31.8	40.3	31.0
Other inputs	56.7	47.5	46.8	46.8	47.0	65.2	59.7	69.0
Total cost	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
II. Individual Operations								
Plucking	n.a.	28.5	28.8	27.0	28.2	23.6	20.7	29.9
of which: Labor	n.a.	28.5	28.8	27.0	28.2	23.6	20.7	29.9
Other inputs	-	-	-	-	-	-	-	-
Fertilizing	n.a.	10.4	9.7	11.7	10.5	7.2	5.6	5.8
of which: Labor	n.a.	1.3	1.2	1.7	1.4	1.0	0.9	0.9
Other inputs	4.1	9.1	8.5	9.7	9.1	6.2	4.7	4.9
Weeding	n.a.	7.0	9.7	8.4	8.3	3.3	3.3	2.9
of which: Labor	n.a.	6.6 ^{1/}	8.9 ^{1/}	8.1 ^{1/}	7.8 ^{1/}	1.5	1.1	1.3
Other inputs	0.7	0.4 ^{1/}	0.8 ^{1/}	0.3 ^{1/}	0.5 ^{1/}	1.8	2.2	1.6
Control of pest & disease	n.a.	1.6	1.3	0.6	1.1	<u>2/</u>	<u>2/</u>	<u>2/</u>
of which: Labor	n.a.	1.0	0.8	0.5	0.8	<u>2/</u>	<u>2/</u>	<u>2/</u>
Other inputs	<u>2/</u>	0.6	0.5	0.1	0.3	<u>2/</u>	<u>2/</u>	<u>2/</u>
Manufacturing	n.a.	21.6	20.3	23.4	21.7	31.7	27.7	31.1
of which: Labor	n.a.	5.7	5.5	7.2	6.1	2.9	2.5	2.6
Other inputs	15.0	15.9	14.8 ^{3/}	16.2 ^{3/}	15.6 ^{3/}	28.8 ^{3/}	25.2 ^{3/}	28.5 ^{3/}

n.a. = not available.

^{1/} Includes upkeep of fences.

^{2/} If any, included under weeding.

^{3/} Includes transportation and handling.

Source: Data supplied by government agencies and individual estate companies.

respectively. In these two countries labor intensive methods are often used for operations like weeding, and pest and disease control. In East Africa insecticides and herbicides reduce labor requirements but increase material costs in the case of weeding, while pests and diseases are comparatively unimportant because the tea is young and vigorous. In the manufacturing process labor requirements in India and Ceylon are high while other input expenditures are low. In East Africa the situation is exactly the opposite.

153. The differences in labor requirements indicate a conflict between economic and social goals. In most of the tea growing countries labor is plentiful and underemployed. Tea offers employment opportunities, but economic necessities force owners to convert to capital intensive production and manufacturing methods.

Yields

154. Important differences in yields exist not only among tea producing countries (Annex Table 6) but also between districts and estates within a country. Geographical conditions, such as climate, soil, etc., are major factors determining differences in output per hectare between and within countries. Others are management, cultivation practices, etc. Usually yields are higher at lower altitudes, which, however, does not imply that this affects profitability, since teas grown at high elevations are better priced because the supply of this type of tea is limited and teas grown at high altitudes have specific characteristics with specific demands.

155. One of the most important factors influencing the profitability of tea estates is yield. With increases in yield per hectare the revenue rises, provided leaf quality is maintained by adhering to proper plucking standards. Costs, on the other hand, do not rise proportionately with output because there are a number of activities, such as pruning and weeding, which vary little, regardless of yield levels.

156. Labor costs for harvesting will, of course, increase with higher yields, but not in a linear function, because only variable costs increase, since the existing labor force can usually handle the higher output without employing additional workers. It is also easier and quicker to pluck vigorous, well-grown bushes where the "two leaves and a bud" are readily accessible, than to look for the harvest-ready leaf on a sparsely grown tea plant in a field with lots of vacancies. Peak harvesting periods impose a strain on laborers, but as experience in East Africa shows, in practice very little extra labor is required as they are mostly paid on a piece-work basis and go flat out for the extra money. However, there are differences in the amount of leaf plucked between India and Ceylon on the one hand, and East Africa on the other. The plucking average in Kenya per worker a day is about 25 kilograms as against 15 kilograms on comparable

estates in South India and Ceylon. The plucking norm in Kenya is 20 kilograms as against 10 kilograms in South India and Ceylon. ^{1/}

157. In Table 10 the effect of yield changes on cost and net profit (price received less cost) is indicated for East African tea growing countries and Ceylon. Inputs are prices at the 1969/70 levels and tea prices are 1969 prices, a year when prices were generally low. Ceylon prices are after taxes and duties. The estates selected for this example are well-managed estates, but their other characteristics (such as climate, soil, etc.) do not necessarily vary much from other estates in the area. The data do not include establishment and capital costs. These fixed costs are comparatively small and account for not more than five percent of total costs per unit of output, assuming a 50-year production period. Estates which have been operating for many years have usually written off these costs. This applies to Ceylon, but less so for the East African countries where tea production is comparatively young. Lack of sufficient statistics prevented the inclusion of these costs in the above cost analysis. Thus the data in Table 10 somewhat underestimate production costs in the East African countries.

158. It is interesting to note that with the given cost and price structure at that time, estates in Kenya still made a profit at yields of 700-800 kilograms per hectare, while profits in the other East African countries are only possible at higher yields. All the selected estates were, however, profitable at country average yields in 1969 (underlined for each country in the table).

159. This was not the case for the medium and low grown teas in Ceylon. Since yields of the sample estates were higher than country averages, mainly due to better management, high and medium grown teas for these estates were profitable. Low grown teas were not, however, as the table shows. The situation would of course be much more favorable if duties and taxes had not reduced tea prices. Unfortunately, similar data are not available for India.

160. Ceylon is in a difficult situation since most of its tea bushes are old, implying lower growth rates of yields and increased fertilizer applications and consequently stronger pressure on profitability. In contrast yields in East Africa, with the exception of Tanzania, are already higher than in Ceylon and are expected to increase further.

161. Table 10 also serves to indicate the effect of technology in terms of higher yields on production costs. For this analysis it was assumed that costs and prices were constant at the 1969/70 level. Average past yield data (Annex Table 6) were then multiplied with the

^{1/} The United Planters Association of Southern India, The Case for Tea, 1968 and estates' records in Ceylon.

Table 10: YIELD PER HECTARE, COSTS AND NET PROFITS ^{1/} PER KILOGRAM
FOR SELECTED SAMPLES ^{2/} OF TEA ESTATES IN EAST AFRICA
AND FOR DIFFERENT ALTITUDES IN CEYLON

(national currencies)

Yield (kilograms)	Kenya		Tanzania		Uganda		Ceylon ^{3/}					
	Cost	Net	Cost	Net	Cost	Net	High		Medium		Low	
		Profit ^{4/}		Profit ^{5/}		Profit ^{6/}	Cost	Profit	Cost	Profit	Cost	Profit
	(.....East African shillings per kilogram.....)						(.....rupees per kilogram.....)					
700-800	4.93	1.34	5.66	- 0.12	5.59	- 0.78not available.....					
800-900	4.73	1.54	5.24	0.30	5.34	- 0.53	4.25	- 0.20	3.46	-	3.63	- 0.46
900-1,000	4.53	1.74	4.98	0.56	5.09	- 0.28	4.11	- 0.04	3.68	- 0.22	3.48	- 0.31
1,000-1,100	4.31	1.96	4.79	0.75	4.90	- 0.09	3.92	0.13	3.53	- 0.07	3.35	- 0.18
1,100-1,200	4.11	2.16	4.60	0.94	4.75	0.06	3.68	0.37	3.35	- 0.11	3.30	- 0.13
1,200-1,300	4.00	2.27	4.46	1.08	4.59	0.22	3.63	0.42	3.37	- 0.09	3.26	- 0.09
1,300-1,400	3.90	2.37	4.30	1.24	4.49	0.32	3.45	- 0.60	3.37	0.09	3.06	0.11
1,400-1,500	3.82	2.45	4.20	1.34	4.39	0.42	3.35	- 0.70	3.28	0.18	3.08	0.09
1,500-1,600	3.72	2.55	4.10	1.44	4.31	0.50	3.33	0.70	not available		3.00	0.15
1,600-1,700	3.69	2.58	4.02	1.52	4.25	0.56	3.30	0.72	"	"	2.89	0.28
1,700-1,800	3.60	2.67	3.94	1.60	4.19	0.62	3.28	0.77	"	"	not available	

Note: Underlined data refer to 1969 country average yield range. Broken line in case of Ceylon refers to average yield of sample (332 estates accounting for 57 percent of island production).

- ^{1/} Costs were calculated at 1969/70 input prices. Tea prices are actual 1969 f.o.b. prices for the East African countries and for Ceylon prices at auction in Colombo (where most of the tea is sold).
- ^{2/} Estates in East Africa were selected according to similar altitude (5,000-6,000 feet), comparable climate and average distance from estates to port. In Kenya the Kericho District was chosen; in Tanzania the Rungive District; and in Uganda the Toro District. In Ceylon high implies elevations above 4,000 feet; medium elevation between 2,000-4,000 feet; and low elevation up to 2,000 feet.
- ^{3/} Prices at Colombo auction net of all taxes and duties in 1969: High 4.05 Rs/kg; Medium 3.46 Rs/kg; Low 3.17 Rs/kg.
- ^{4/} At 1969 f.o.b. prices: 6.27 East African shillings per kilogram.
- ^{5/} At 1969 f.o.b. prices: 5.54 " " " " "
- ^{6/} At 1969 f.o.b. prices: 4.81 " " " " "

Source: Economics Department, IBRD, based on information collected in individual countries. For Ceylon data supplied by Central Economic Research Unit.

respective costs at that yield level, as indicated in Table 10. The results indicate that cost of production per hectare of tea generally declined in East Africa and for low grown tea in Ceylon because of yield improvement. For high and medium grown tea in Ceylon costs remained constant.

Establishment Costs

162. As previously stated, in order to meet the increase in demand tea production has to expand either through replanting or expansion into new areas. In East Africa future expansion depends on developing new tea land and establishing new tea factories. In Ceylon and India, and also partly in Indonesia, improvement of the industry's efficiency requires replanting and modernization of manufacture. The foremost requirement for Indonesia is rehabilitating estates by improving the productivity of existing tea bushes.

163. Investment requirements for these measures vary according to type of investment, but also according to country. A comparison of these differences is shown in Table 11. The table indicates that, in terms of U.S. dollars, Ceylon has the highest investment costs for estates because of high field investment costs. These are explained mainly by high labor costs, since the number of man days per hectare is nearly twice as high as for estates in East Africa (Table 12). Since additional costs, such as materials, management and other overhead are not appreciably lower than in East Africa, there is no compensating effect to counterbalance high labor costs.

164. Underlying the Ceylonese calculation is the assumption that this country continues to produce orthodox tea. Conversion to CTC machinery would increase investment costs for manufacture. Manufacturing investment costs in Ceylon are, however, lower than in East Africa by about U.S. \$300-400 per hectare since part of the old equipment can be used in the modernization process.

165. Indonesia was included in the calculation because that country is now undertaking a substantial estate rehabilitation program involving about 36,000 hectares. The objectives of this program are to improve tea quality and raise yields from about 800 kilograms at present to 1,100 kilograms in 1975. At the same time factories are to be modernized and expanded to take account of the larger volume. Eventually all of the 36,000 hectares will have to be replanted, but little expansion in factory capacities would be required since they will be modernized and expanded, keeping in mind the expansion after rehabilitation. If the cost of replanting were to be added to the rehabilitation, a rough estimate indicates that investment cost per hectare (at 1970 prices) would increase by about \$1,000.

166. In every case the investments would raise yields, which would represent a cost saving as has previously been explained. It is therefore interesting to show the effect of these yield increases on net income,

**Table 11: INVESTMENT COSTS PER HECTARE FOR ESTABLISHING, MODERNISING OR REHABILITATING
TEA INDUSTRIES IN INDIA, CEYLON, INDONESIA, KENYA, TANZANIA, AND UGANDA
AT 1970 INPUT PRICES, IN NATIONAL CURRENCIES AND U.S. DOLLARS ^{1/}**

Country	Field	Manufacture ^{2/}	Total	Total Cost in US dollars	Yield per hectare		Net income per hectare ^{3/}		
					Projected at maturity ^{4/}	Actual 1969	Projected	Actual 1969	
(.....National currencies.....)				(.....Kilograms.....)			(....US dollars....)		
<u>India ^{5/}</u>									
	Replanting	14,000	4,000	18,000	2,400	2,000	1,075	560 (204 ^{6/})	301 (109 ^{6/})
	Extension	10,000	4,000	14,000	1,867	2,000	1,075	560 (204 ^{6/})	301 (109 ^{6/})
<u>Ceylon ^{5/ 7/}</u>									
	Replanting	14,000	4,000	18,000	3,025	2,500	953	923 (283 ^{6/})	352 (108 ^{6/})
<u>Indonesia ^{8/}</u>									
		170,171	189,914	360,085	952	1,100	800	308	224
<u>Kenya ^{9/}</u>									
	Estates	5,479 ^{10/}	6,530	12,009	1,681	1,700	1,314	763	590
	Estates	6,750 ^{11/}	6,530	13,280	1,860	1,700	1,314	763	590
	Smallholders ^{12/}								
	I	8,517	6,530	15,047	2,100	1,600	1,314	719	590
	II	3,747	6,530	10,277	1,439	1,600	1,314	719	590
<u>Tanzania ^{9/}</u>									
	Estates	6,019 ^{13/}	6,798	12,817	1,743	1,700	868	624	318
	Estates	6,205 ^{14/}	6,798	13,003	1,820	1,700	868	624	318
	Smallholders ^{15/}								
	I	10,295	6,798	17,093	2,393	1,600	868	587	318
	II	4,691	6,798	11,489	1,608	1,600	868	587	318
<u>Uganda ^{9/}</u>									
	Estates	5,827 ^{16/}	4,908	10,735	1,503	1,800	1,528	598	508
	Estates	6,835 ^{17/}	4,908	11,743	1,644	1,800	1,528	598	508
	Smallholders ^{18/}								
	I	11,001	4,908	15,909	2,227	1,700	1,528	565	508
	II	4,850	4,908	9,758	1,366	1,700	1,528	565	508

Source: Producers' associations and individual estates.

(Footnotes on next page)

Footnotes to Table II:

- 1/ Conversion factors: One US dollar = 7.5 Indian rupees, 5.95 Ceylonese rupees, 378 Indonesian rupees, 7.14 East African shillings.
- 2/ Includes lorries, housing, etc.
- 3/ To calculate net income, the margin on tea sold in London before duties and taxes, as indicated in Table 8, line III, was multiplied by the yield data given in Table II. The following margins were used in US cents per kilogram: India 28.00, Ceylon 36.93, Kenya 44.91, Tanzania 36.88 and Uganda 33.22. For Indonesia a margin of 28.00 US cents per kilogram was used.
- 4/ Yield achieved through investment.
- 5/ Replanting includes uprooting old tea, preparing land for planting new tea and modernizing machinery. Extension is the same as for replanting except uprooting.
- 6/ Net income derived by using the margin after payment of duties and taxes as listed in Table 8, line IV.

7/ No extension planned. See text.

8/ For explanation, see text.

9/ Manufacturing costs include new factory. Construction cost of factory is related to size of estate or smallholder sector and intake of tea. The tendency to build larger automated factories is shown in Uganda, as indicated below:

	<u>Kenya</u>	<u>Tanzania</u>	<u>Uganda</u>
Construction cost of factory	£165,200	£172,000	£199,000
Annual capacity (kilograms)	909,091	909,091	2,000,000
Number of hectares	506	506	811
Factory cost per hectare (shares)	6,530	6,798	4,908

- 10/ Location: Kericho - Includes actual costs incurred in land preparation and road improvement. No account is taken of land value.
- 11/ Location: Kericho - Assumes clearing of new land (100 man days per hectare more than labor needed in land preparation at EA Sh 4.56 per man day) and construction of new roads at EA Sh 1,976 per hectare. No account is taken of land value.
- 12/ Assumptions: Estimated family labor input equals total labor input: 1,046 man days per hectare with heavy clearing of bush; charge for opening up road: EA Sh 1,976 per hectare; cost of purchased inputs: EA Sh 1,771; Location: Area already served by KTDA.

I All labor charged at 1970 wage rate (including labor benefits) of EA Sh 4.56 per man day. Assumes clearing of bush and new road construction.

II No labor charge (shadow wage rate is zero), otherwise as in I.

Note: Light clearing of bush and no road construction charge would reduce cost by EA Sh 2,432.

Footnotes to Table 11 (cont'd.):

13/ Location: Rungwe - Includes actual costs incurred in land preparation and road improvement. No account is taken of land value.

14/ Location: Rungwe - Assumes clearing of heavy bush (100 man days more than labor needed in land preparation at EA Sh 3.85 per man day) and charge for road construction at EA Sh 717 per hectare. No account is taken of land value.

15/ Assumptions: Estimated family labor input equals total labor inputs: 1,412 man days per hectare with light clearing of bush. Heavy clearing of bush (100 man days in addition to light clearing) is done by hired labor. Charge for road construction: EA Sh 717 per hectare. Cost of purchased inputs: EA Sh 3,589. Location Rungwe, Upper Area.

I All labor charged at 1970 wage rate (including labor benefits) of EA Sh 3.85 per man day. Assumes heavy clearing of bush and new road construction.

II No labor charge for family labor (1,412 man days) but charge for heavy clearing (100 man days at EA Sh 3.85). Includes charge for new road construction.

Note: Light clearing of bush and no road construction charge would reduce cost by EA Sh 1,102 per hectare.

16/ Location: Toro - Includes actual costs incurred in land preparation and road improvement. No account is taken of land value.

17/ Location: Toro - Assumes additional charge for clearing heavy bush (100 man days more than labor needed in land preparation at EA Sh 5.00 per man day) and charge for road construction: EA Sh 2,500 per hectare. No account is taken of land value.

18/ Assumptions: Estimated family labor input equals total labor inputs: 1,229 man days per hectare with light clearing of bush. Heavy clearing of bush (100 man days in addition to light clearing) is done by hired labor. Charge for road construction: EA Sh 2,500 per hectare. Cost of purchased inputs: EA Sh 1,856.

I All labor (including family) charged at 1970 wage rate (including labor benefits) of EA Sh 5.00 per man day. Assumes heavy clearing of bush and new road construction.

II No labor charge for family labor (1,229 man days) but charge for heavy clearing (100 man days at EA Sh 5.00). Includes charge for new road construction.

Note: Light clearing of bush and no road construction charge would reduce cost by EA Sh 3,000 per hectare.

Table 12: ESTIMATE OF MAN DAYS TO ESTABLISH ONE HECTARE OF TEA

	India	Ceylon	Indonesia	Kenya 1/		Tanzania 1/		Uganda 1/, 2/	
	Replanting		Rehabilitation	I	II	I	II	I	II
Estates	1,000	1,100	177	465	565	508	608	533	633
Smallholders				946	1,046	1,412	1,512	1,229	1,329
of which family labor				946	1,046	1,412	1,412	1,229	1,229

1/ Assumptions: I Assumes light clearing of bush.

II Assumes heavy clearing of bush, i.e., I + 100 man days per hectare.

2/ The low family labor input is due to the fact that for many owners of smallholdings, farming is not their main occupation; often they hold city jobs and hire labor to run the holding.

Source: IBRD.

neglecting the cost saving effect which could not be assessed with the available data for India and Ceylon but which has been taken into account in East Africa and Indonesia.

167. Presently the net income per hectare is higher in East Africa than in the other countries shown in Table 11 if the reduction in net income through taxes and duties in India and Ceylon is taken into account (as it should be). At 1968 prices, costs and yields, taxes and duties reduce for the estate the net profit per hectare for exported tea by about U.S. \$190 in India and by about U.S. \$240 in Ceylon.

168. The improvement in yield through replanting would increase net incomes in all countries, but would still leave the East African countries in first place if taxes and duties remained at 1968 levels in India and Ceylon.

169. If we assume, however, that these charges were abolished, Ceylon would outdistance all other countries in terms of net income. Another way of looking at it is to calculate the effect on government revenue from replanting. At 1968 cost, price and tax levels the revenues received by governments in India and Ceylon were about U.S. \$190 per hectare and U.S. \$240 per hectare respectively for exported tea. Through replanting this revenue would be increased to U.S. \$355 for India and U.S. \$640 for Ceylon, assuming the 1968 tax structure prevails.

Smallholders

170. An interesting finding offers a comparison between smallholders and estates in East Africa. Investment costs for the former are higher than for estates if the labor input is priced at 1970 wage rates. This discrepancy arises because smallholder establishment is more labor intensive than investment on estates (Table 12) where more capital intensive methods are applied. In this respect the smallholder sector resembles the situation in Ceylon where labor intensive methods are also applied. However, in that country the cost is further increased by overhead costs such as management, administration, etc. - costs which are much lower or non-existent in the smallholder sector.

171. If family labor wage is assumed to be zero ^{1/} (shadow wage rate equals zero), smallholder investment is lower than for estates. In some cases smallholdings are too large to be managed by the family or the

^{1/} Whether this is a justifiable assumption is not discussed here. Since man days as well as wage rates are indicated in footnotes to Table 11, it is quite easy to assume different shadow wage rates and calculate their effect on investment costs.

owner has another job and does not work on the farm. Our calculations indicate that in this case investment costs are higher than for estates, since capital intensive methods cannot be applied. This implies that tea smallholdings should be managed by the family and should be of a size to allow all activities to be carried out by the family.

172. Finally, it should be noted that the investment requirements should only be one aspect in the decision making process. Social, other economic and even political factors are equally important.

V. INTERNATIONAL ACTION

173. The slump in tea prices which occurred in 1969 was the seventh in the history of the world tea economy. The first three (1866, 1879, 1896) arose because of sudden increases in exports. The consequent drop in prices was, however, soon followed by increases as supply and demand quickly reached equilibrium. In this respect these situations resemble the developments on the world tea market in 1969 and 1970.

174. The fourth (1920) and the sixth (1951-52) slumps were the result of wartime stock releases in the United Kingdom or other adjustments to the postwar market situation. They were short-lived. Of greater importance was the fifth slump which fell between those two price falls. It occurred in 1927 and, since it extended over several years, finally led to an international agreement among producers to restrict their exports.

International Tea Agreements

175. In 1933 after a prolonged period of rising production, depressed demand and falling prices, the International Tea Agreement was set up. The Agreement, which was essentially an oligopoly, was based on two main principles: (a) limitation of expansion of planted area; and (b) restriction of exports from participating countries. Participating countries were India, Ceylon, Pakistan, Indonesia, Malaya and the British East African territories. At that time this group accounted for about 80 percent of world exports. The last-mentioned group and Malaya obtained conditions which allowed them a greater degree of expansion of plantings and special export ceilings. Efforts to associate Mainland China and Japan with the scheme were not successful.

176. During the years 1933 to 1938 exports were restricted by approximately 10 percent, as compared with the last four pre-Agreement years, although they had been relatively high in the pre-Agreement period. International prices were maintained at about 75-80 percent of the pre-Depression level, on the average, which was a considerably better performance than for many other agricultural commodities. No doubt the fixed tea drinking habits and low price elasticity of demand in the chief tea consuming countries made it possible to avoid a larger price decline during this period. However, it might be noted that, although prices did not decline greatly, year-to-year changes in London auction prices averaged 9.5 percent and thus were nearly three times as high as during the 1956-66 period when no agreement was in effect. ^{1/}

^{1/} During the period 1956-66, the average price fluctuations for "all teas" were 3.5 percent. These fluctuations were considerably smaller than for many agricultural products. However, tea prices declined steadily during this period.

177. During World War II special arrangements based on bulk purchasing by the United Kingdom were in operation. The Agreement remained in force until 1955 without the East African territories and Malaya as members. No attempt was made after 1938 to force tea prices up by restricting exports; indeed, export quotas were on the average (1945-55) some 30 percent above the actual exports of the participating countries. Thus the Agreement had no effect on postwar output, trade or prices.

178. Two main arguments were offered in 1955 against renewal of the Agreement. The first one was that an increase in tea production and exports was necessary to accelerate economic growth and protect the foreign trade balance of each of the exporting countries. None of these countries was, therefore, prepared to accept restrictions from which the others might benefit. Secondly, a large number of new producers were emerging, notably in East Africa. Since these were determined on vigorous expansion, any restrictions applicable to the old producers would have amounted to a guarantee of a growing market to the new ones. ^{1/}

179. A series of meetings was held in 1969 under the auspices of the FAO to discuss the establishment of a new long-term international tea agreement, based on limitations of export growth to about 6,000-8,000 tons yearly to match the annual increment in import demand. India and Ceylon expressed themselves very much in favor of such an arrangement. The two major exporting countries agreed to the principle of differential growth in the exports of individual countries in order to safeguard the interests of small producers, particularly those which had already committed themselves to tea cultivation as an important part of their diversification programs, while insuring an equitable share in growth to all exporting countries. African producers, however, were reluctant to commit themselves before their tea development plans are completed. Nevertheless, agreement was reached to limit 1970 exports so that they would not exceed the long-term growth in import demand.

180. Originally a global export quota of 598,800 tons was fixed at a meeting in Mauritius in the autumn of 1969. This quota was reduced to 594,800 tons when it turned out that the original amount was unrealistic in view of production developments in 1969-70. This quota of 594,800 tons was divided among exporters of black tea excluding the centrally planned countries, Brazil and Rhodesia. The share of individual countries in this quota is indicated in Table 13. By the end of 1970 it turned out that some countries had considerably overestimated their 1970 exports when applying for a quota. This was due partly to weather conditions and partly to a general misjudgment of their export situation. As a result total exports fell short of the quota by about 15,000 tons or 2.5 percent (Table 13).

^{1/} The fact that the average price for "all teas" in 1954 and 1955 were at their highest level ever no doubt also influenced producers to terminate the Agreement.

Table 13: EXPORTS OF BLACK TEA BY COUNTRY,
1967 TO 1970 AND 1970 QUOTAS

(thousand metric tons)

	Actual Exports				Quota for 1970	
	1967	1968	1969	1970	Total	Percentage Exported
Ceylon	216.5	208.7	201.5	208.3		
India	212.3	206.1	164.8	204.1		
(Ceylon + India)	(428.8)	(414.8)	(366.3)	(412.4)	420.9	98.0
Indonesia	26.6 ^{1/}	34.7 ^{1/}	27.1 ^{1/}	35.5 ^{1/}	34.9	102.0
Kenya ^{2/}	18.5	27.5	32.8	35.0	38.9	90.0
Uganda ^{2/}	9.3	11.2	15.8	15.9	18.4	86.4
Malawi	16.8	15.8	17.2	17.7	17.4	101.7
Mozambique	14.4	14.1	15.6	16.7	16.4	101.8
Argentina	11.4	14.7	14.6	16.2	14.7	110.2
Congo, Dem. Rep.	5.6	7.6	4.1	7.7 ^{3/}	10.0	77.0
Turkey	8.6	7.4	8.3	7.8	9.4	83.0
Tanzania ^{2/}	6.0	6.7	7.6	(7.8 ^{4/})	7.8	100.0 ^{4/}
Mauritius	1.6	1.7	2.6	2.6	3.0	86.7
China (Taiwan)	3.3	3.8	2.4	2.1	3.7	56.8
Rwanda	0.3	0.8	1.0	1.3	1.5	86.7
Cameroon	0.1	0.8	0.6	(0.6 ^{4/})	0.9	66.7 ^{4/}
Vietnam Rep.	1.0	0.7	0.2	(0.2 ^{4/})	0.7	
Burundi		0.1	0.1	(0.1 ^{4/})	0.2	
Original quota					598.8	
Shortfall					- 4.0	
Total	552.3	562.4	516.3	579.7	594.8	
China (Mainland)	22.3	26.0	26.7	n.a.		
North Vietnam	1.1	1.6	1.6	n.a.		
Brazil	3.0	3.0	2.8	n.a.		
Rhodesia (South)	0.5	0.5	0.5	n.a.		
World Net Exports (Black tea)	579.2	593.5	547.9	610.7 ^{4/}		

n.a. = not available

^{1/} Net weight.

^{2/} Excluding intra-trade with other members of the East African Community.

^{3/} Excluding "uncontrolled" exports estimated at 2.5 thousand metric tons.

^{4/} Partly estimated.

Source: FAO, Consultative Committee on Tea, doc. CCP:TE 71/EXPO 3/4, April 13, 1971.

181. The Exporters' Group of the Consultative Committee on Tea met in April 1971 and agreed that there should be a quota running from January 1, 1971, to March 31, 1972. For the calendar year 1971 the global quota would be 594,800 tons, the same total as agreed for 1970. The quota for the full 15-month period would be decided at a review session of the Group to be held in September 1971. It was further agreed that any individual quotas would not be definitive figures which would commit countries from the point of view of a future long-term agreement.

182. The prospects for such an agreement are uncertain at this time. Furthermore, since world market prices in the meantime have recovered from their 1969 low and the danger of a long-term surplus is less imminent, the pressure for reaching a long-term agreement has been reduced. A number of African countries still oppose such an agreement. All countries agreed, however, to discuss their long-term tea development plans and perhaps make adjustments, if necessary, to take account of the world market situation. India and Ceylon, on the other hand, indicated that they are not interested in a series of short-term agreements if there are no prospects of arriving at a long-run arrangement.

Diversification

183. Diversification is often proposed or implemented in conjunction with an international agreement to restrict exports of a particular commodity. The International Coffee Agreement, which incorporates a diversification fund, is an example. Diversification has also been discussed in international conferences as a possibility to help adjust supply and demand in the tea industry. ^{1/}

184. However, its implementation ultimately depends on opportunities and necessities in individual countries, and it has been treated as such in this paper in the discussion of the Ceylonese tea industry. In that country the tea industry is faced with a massive problem of rehabilitation if the level of efficiency is to be improved. In this process tea land has to be converted because it is either not suited for optimum output under expected future economic developments in the industry, or the necessary financing is not available for replanting the entire tea area, or because completely replanting the present tea area would drown the market in surpluses.

185. In some respects the condition of the tea industry in East Africa is quite the opposite from Ceylon. In these countries tea is comparatively young and replanting is not an issue. Adjustment to the future world market situation would not imply taking tea out of production and putting the land to other uses. Any contribution to a worldwide supply adjustment would only be done through a postponement of expansion plans, but not a

^{1/} UNCTAD, Some Aspects of Diversification in the Tea Industry, by Dieter Elz, TD/ACBCC(VI)/R.10, Geneva, March 3, 1971.

reduction in area. Furthermore, diversification is already a requirement of smallholder production, and this is the only sector which is expected to expand in future. In Kenya, for example, the government requires that each smallholding should produce subsistence as well as one or more cash crops. Tea planting is, therefore, designed to utilize only part of each individual holding.

Bank Group Involvement in Tea

186. To date the Bank Group has committed \$37.2 million for tea development in five producing countries, namely, Indonesia, Kenya, Mauritius, Tanzania and Uganda (Table 14). It is estimated that the total output or the increased production through rehabilitation which will be generated by these projects will amount to around 38,000 tons by 1980, of which about 34,000 tons is expected to go into export channels. This represents less than five percent of the projected world exports in that year. Except for Indonesia, all these projects are smallholder projects in which about 50,000 farmers participate.

187. The Bank is currently considering becoming involved in financing further tea development projects in three countries, that is, East Pakistan, Tanzania and Uganda. Appraisal for the Tanzanian project has been concluded, and it is expected that financing will commence in fiscal year 1972, if approved by the Board. About 15,000 farmers are expected to participate, and it is estimated that this project would add 7,500 tons to world exports in 1980.

188. Exports from the above projects and anticipated exports from projects not yet appraised have been included in our projections. All projects are distinguished by efficient production methods, expressed, among other criteria, by high yields per hectare and low cost per unit of output. By organizing efficient smallholder production and marketing schemes, they have also contributed to the introduction of a new institutional dimension into the tea economy which, as the example of the Kenya Tea Development Authority shows, has been highly effective.

Table 14: PAST AND ANTICIPATED BANK GROUP LENDING FOR TEA

Country	Date of Loan/ Credit Agreement or Fiscal Year of Anticipated Lending	Amount of Loan or Credit (U.S. \$ million)	Area of Project in Tea (hectares)	Projected Output 1980 (1,000 m. tons)	Type of Project	Farmers Expected to Participate
<u>Past lending</u>						
Kenya	8/17/64	2.8	5,800	5,000-7,000	Smallholder	15,000
Kenya <u>1/</u>	6/30/65	3.0			Tea roads	
Kenya	6/17/68	2.1	14,200	18,000	Smallholder	26,000
Tanzania <u>2/</u>	1/13/66	1.7			Tea factory, fertilizer and plants	
Uganda <u>3/</u>	7/28/67	0.5			Tea roads	
Uganda	9/15/67	3.4	3,900	4,500	Smallholder	5,500
Uganda <u>3/</u>	9/29/69	3.5			Tea roads	
Mauritius	4/9/70	5.2	2,365	2,360	Smallholder	3,730
Indonesia	6/17/71	15.0	23,300	7,000 <u>4/</u>	Rehabilitation - estate	
<u>Within firm lending program</u>						
Tanzania	1972	7.3	8,300	7,600	Smallholder	15,000 ±

1/ Part of road project. 2/ Part of Agricultural Credit Project. 3/ Part of road project.
4/ Increase in output from 1970 output.

Note: The Cameroon Development Corporation Project (1967) includes 400 hectares of tea. The original planting schedule has been postponed. To date it has not been decided how many hectares will be planted, but it is unlikely that more than 100 hectares (producing about 150 tons) will be in full bearing by 1980. The financial contribution of the Bank for tea development of this project is also uncertain at this stage.

Source: IBRD.

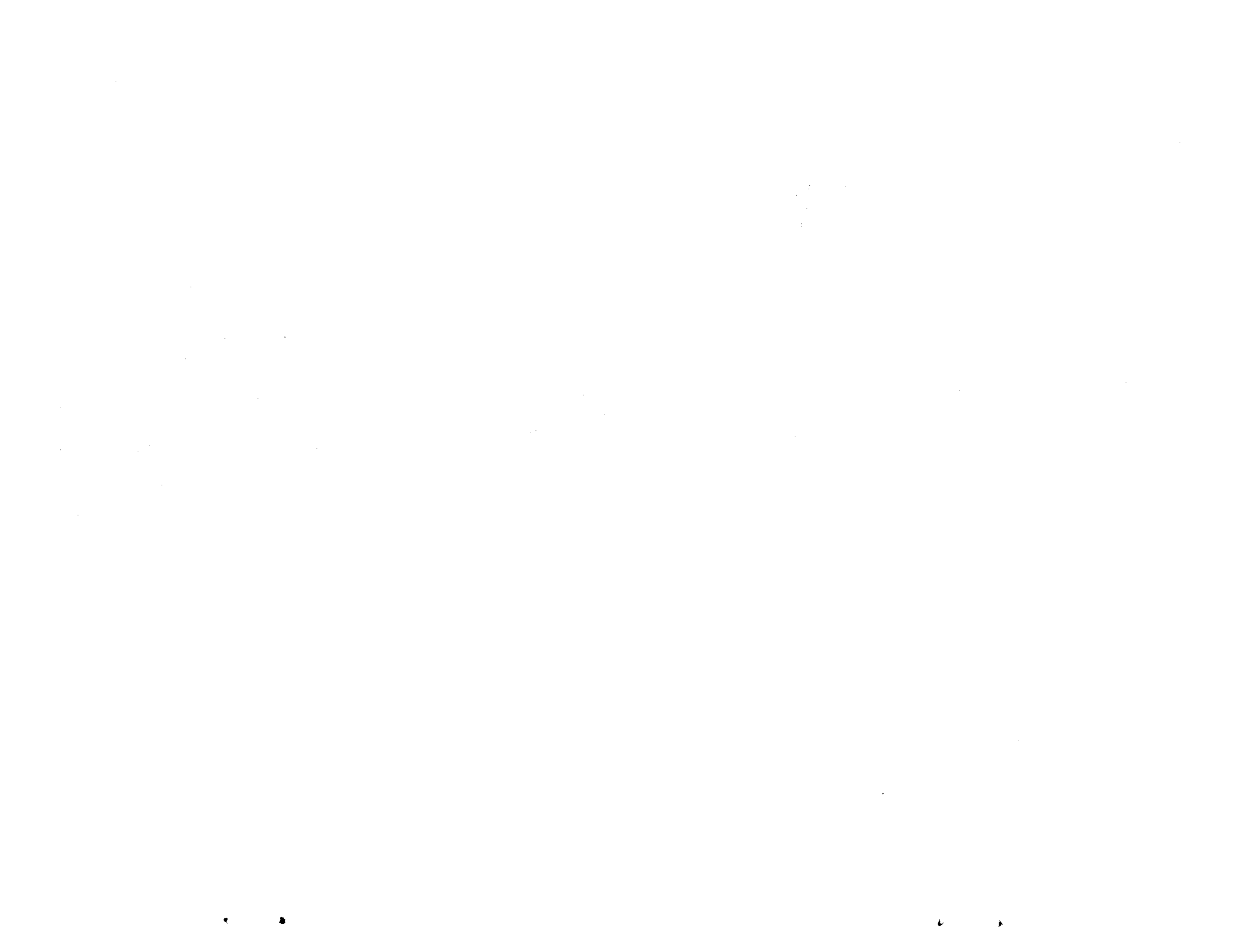


Table 1: TEA PRODUCTION BY REGIONS AND COUNTRIES
AND SHARE OF REGIONS AND COUNTRIES ON
WORLD, TOTAL AVERAGE 1955-57 AND 1967-69

Region and Country	Production		Yearly Rates of Change	Share on World ^{1/} Total	
	1955-57	1967-69		1955-57	1967-69
	(1,000 metric tons)		(.....percent.....)		
<u>Asia</u>					
India	309	394	2.0	44.9	40.6
Ceylon	175	222	2.0	25.5	22.9
Indonesia ^{2/}	45	38	- 1.4	6.5	3.9
Pakistan	23	29	2.0	3.3	3.0
Japan ^{3/}	72	87	1.6	10.5	9.0
China (Taiwan) ^{4/}	14	25	5.0	2.0	2.6
Iran	6	18	9.6	0.9	1.9
Turkey	2	26	24.0	0.3	2.7
Other Asia	6	10	4.4	0.9	1.0
Total	652	849	2.3	94.8	87.6
<u>Africa</u>					
Kenya	10	30	9.6	1.4	3.1
Uganda	3	15	14.4	0.4	1.5
Tanzania	2	8	12.2	0.3	0.8
Malawi	9	17	5.5	1.2	1.8
Mozambique	6	15	7.9	0.9	1.5
Congo (Kinshasa)	2	8	12.2	0.2	0.8
Other Africa	2	7	11.0	0.3	0.7
Total	34	100	9.5	4.7	10.2
<u>Latin America</u>					
Argentina	2	16	18.9	0.3	1.6
Other Latin America	2	6	9.6	0.2	0.6
Total	4	22	15.2	0.5	2.2
<u>World (excluding centrally planned)</u>	690	971	2.9	100.0	100.0

^{1/} World excluding centrally planned countries.

^{2/} Estates only.

^{3/} Of which about 85,000 tons green tea in 1967-69.

^{4/} Of which about 21,000 tons green tea in 1967-69.

Note: Data differ slightly from those in Table _ due to rounding.

Source: FAO, Tea Statistics, doc. CCP/Tah/1A69/WP1 and
doc. CCP:TE 70/2, October 6, 1970.

Table 2: AREA UNDER TEA IN PRINCIPAL
PRODUCING COUNTRIES OF THE WORLD,
AVERAGES 1956-58, 1961-63, 1966-68

(thousand hectares)

Country or Region	1956-58	1961-63	1966-68
<u>Asia</u>	<u>788.7</u>	<u>813.4</u>	<u>835.9</u>
India	325.1	334.8	350.7
Ceylon	231.1	238.2	241.8
Pakistan	31.0	33.6	40.6
Indonesia ^{1/}	75.5	74.8	62.6
Malaysia	3.7	3.5	3.1
Japan	48.0	48.9	48.6
Taiwan	48.0	41.3	36.8
Papua and New Guinea	-	-	1.0
Iran	16.2	21.8	26.9
Turkey	10.1	16.5	23.8
<u>East Africa</u>	<u>34.3</u>	<u>48.8</u>	<u>68.7</u>
Kenya	12.2	19.8	30.3
Uganda	5.4	8.5	13.8
Tanzania	5.6	8.1	10.4
Malawi	11.1	12.4	14.2
<u>Other Africa</u>	<u>19.7</u>	<u>27.6</u>	<u>30.1</u>
Congo	4.6	9.6	8.6 ^{2/}
Mauritius	1.4	1.9	3.1
Mozambique	13.4	15.2	14.8
Others ^{3/}	0.3	0.9	3.6
<u>South America</u>	<u>37.6</u>	<u>34.9</u>	<u>35.5</u>
Argentina	30.7	28.0	28.1
Brazil	4.7	4.2	4.5
Peru	2.2	2.7	2.9
<u>USSR</u>	<u>65.6</u>	<u>65.7</u>	<u>71.7</u>
<u>World Total (excluding USSR)</u>	<u>880.3</u>	<u>924.7</u>	<u>970.2</u>

^{1/} Excluding smallholdings.

^{2/} 1966-67 only.

^{3/} Including Cameroon, Rwanda, Burundi and South Africa.

Source: International Tea Committee and Tea Board of India,
Tea Statistics.

Table 3: CONSUMPTION BY REGIONS AND COUNTRIES
AND SHARE OF REGIONS AND COUNTRIES ON WORLD TOTAL,
AVERAGES 1955-57 AND 1967-69

Region and Country	Total Consumption		Yearly Rates of Change	Share on World Total ^{1/}	
	1955-57	1967-69		1955-57	1967-69
	(1,000 metric tons)		(.....percent.....)		
Developed Countries					
United Kingdom	227.3	222.9	- 0.2	32.9	22.9
EEC	17.2	22.4	2.3	2.5	2.3
Ireland	10.1	11.6	1.2	1.5	1.2
Other W. Europe	6.2	9.2	3.3	0.9	0.9
United States	47.7	64.0	2.5	6.9	6.6
Canada	20.2	20.6	0.2	2.9	2.1
South Africa	11.9	18.5	3.7	1.7	1.9
Australia	25.4	28.3	0.9	3.7	2.9
New Zealand	6.7	7.7	1.2	1.0	0.8
Japan	58.7	92.2	3.8	8.5	9.5
Turkey	4.4	19.8	13.3	0.6	2.0
Total Developed	435.8	517.2	1.4	63.1	53.1
Developing Countries					
Non-producing:					
Asia	32.8	63.5	5.7	4.8	6.5
Africa	52.0	73.7	2.9	7.5	7.6
Latin America	5.8	11.3	5.7	0.8	1.2
Total Non-producing	90.6	148.5	4.2	13.1	15.3
Producing:					
Asia: Ceylon	8.1	18.0	6.9	1.2	1.9
India	100.0	195.5 ^{2/}	5.7	14.4	20.1
Indonesia	4.5 ^{3/}	8.0	4.9	0.6	0.8
Pakistan	17.1	29.2	4.6	2.5	3.0
Others	25.5	37.9	3.4	3.7	3.9
Total Asia	155.2	288.6	5.3	22.4	29.7
Africa: Kenya	2.3	4.2	5.1	0.3	0.4
Malawi ^{4/}	1.5	2.2 ^{2/}	3.2	0.2	0.2
Tanzania	0.8	1.9	7.5	0.1	0.2
Uganda	0.7	1.2	4.6	0.1	0.1
Others	0.9	3.3	11.4	0.1	0.3
Total Africa	6.2	12.8	6.2	0.8	1.3
Latin America	3.3	5.4	4.2	0.5	0.5
Oceania	0.5	0.7	2.8	0.1	0.1
Total Producing	165.2	307.5	5.3	23.8	31.6
Total Developing	255.6	456.0	4.9	36.9	46.9
World (excl. centrally planned countries)	691.6	973.2	2.9	100.0	100.0

^{1/} Excluding centrally planned countries.

^{2/} Includes an official estimate of 220,000 metric tons in 1969 given to the FAO Consultative Committee on Tea, Second Session, in December 1970.

^{3/} Partly estimated.

^{4/} Includes Southern Rhodesia and Zambia.

Source: FAO, Tea Statistics, doc. CCP:Tah/LA69/WPI; Consultative Committee on Tea, Second Session, doc. CCP:TE 70/2, October 6, 1970; and International Tea Committee, Annual Bulletin of Statistics, 1970.

Table 4: UNITED KINGDOM - TEA CONSUMPTION,
RE-EXPORTS, OFF-TAKE, GROSS IMPORTS
AND STOCKS, 1955-69

(thousand metric tons)

	Total Consumption (1)	Re- Exports (2)	Off-Take (1)+(2) (3)	Gross Imports (4)	End of Year Stocks (5)
1955	217.0	14.9	231.9	226.5	73.6
1956	235.7	14.4	250.1	233.0	54.9
1957	229.6	13.6	243.2	269.5	83.2
1958	234.7	14.5	249.2	266.8	100.9
1959	231.7	18.3	250.0	234.8	85.6
1960	223.5	13.7	237.2	238.5	86.9
1961	236.7	14.4	251.1	252.0	86.4
1962	230.6	17.5	248.1	252.8	90.5
1963	230.6	16.8	247.4	255.4	96.9
1964	229.6	18.4	248.0	243.0	90.6
1965	220.5	17.8	238.3	253.4	103.7
1966	219.5	19.0	238.5	232.8	98.9
1967	230.4	17.1	247.5	247.3	99.5
1968	222.8	20.3	243.1	269.6	126.7
1969	215.6	22.2	237.8	212.2	100.3

Source: FAO, Tea Statistics, doc. CCP:Tah/1A69/WPl and International Tea Committee, Annual Bulletin of Statistics, 1970

Table 5: ANNUAL AVERAGE TEA PRICES FOR
SELECTED COUNTRIES AT LONDON AUCTION, 1955-70

(old pence per pound)

	India		Ceylon	Kenya	Uganda	Tanzania	Malawi	Average All Teas
	North	South						
1955	63.6	53.6	64.3	44.6	50.9	55.4	44.9	60.9
1956	61.1	51.1	66.2	42.6	42.7	46.9	37.6	58.0
1957	56.6	45.1	58.2	41.2	43.1	44.5	37.4	53.2
1958	58.9	45.9	59.2	46.5	44.0	47.8	38.7	55.1
1959	58.1	44.5	60.8	46.9	42.3	46.6	35.4	54.6
1960	59.2	47.7	59.9	51.2	47.3	47.7	39.7	55.3
1961	56.0	46.4	55.5	50.0	47.0	49.7	40.3	52.9
1962	60.6	44.1	55.9	53.9	46.4	50.5	34.9	53.4
1963	55.7	43.4	52.3	48.1	44.1	36.0	35.2	50.7
1964	54.6	45.9	53.9	50.8	44.4	47.5	33.6	51.5
1965	52.3	44.8	51.2	49.3	46.4	48.7	40.8	50.2
1966	52.1	41.0	50.9	50.4	45.3	49.1	36.1	48.9
1967	53.7	42.5	52.3	52.1	48.4	50.3	36.0	49.9
1968	48.4	42.3	49.9	48.8	43.0	46.3	41.3	47.2
1969	45.3	34.4	48.5	48.2	40.0	43.4	28.1	44.1
1970	50.9	44.0	51.1	53.0	51.0	52.8	43.4	49.7

Source: International Tea Committee, Annual Bulletin of Statistics, 1970.

Table 6: YIELDS OF MATURE TEA PER HECTARE IN
SELECTED COUNTRIES, 1959-69

(kilograms per hectare)

	Kenya	Uganda	Tanzania	Malawi	Ceylon	India	
						North	South
1959	1,156	934	734	1,236	813	1,056	916
1960	1,139	857	658	1,194	854	947	1,051
1961	936	847	718	1,345	891	1,064	1,091
1962	1,121	992	630	1,376	903	1,018	1,128
1963	1,134	897	684	1,176	934	992	1,192
1964	1,140	994	606	1,156	919	1,102	1,103
1965	996	982	701	1,002	954	1,024	1,072
1966	1,185	1,218	808	1,314	935	1,038	1,272
1967	991	1,133	805	1,246	921	1,077	1,215
1968	1,203	1,480	839	1,250	935	1,104	1,302
1969	1,314	1,528	868	1,260	953	1,075 ^{1/}	1,291 ^{1/}

^{1/} Estimated.

Source: Tea, Journal of the Boards of East Africa, Vol. 10, No. 4,
January 1970.

Table 7: INDIA - TOTAL AREAS OF EXTENSION, REPLACEMENTS
AND REPLANTINGS IN NORTH INDIA, SOUTH INDIA AND ALL INDIA,
1955/56-1968/69

(hectares and percentages)

	Averages			
	1955/56- 1957/58	1958/59- 1960/61	1961/62- 1963/64	1966/67- 1968/69
<u>North India</u>				
Total area	251,544	255,724	260,205	276,020
Extensions	851	1,824	2,221	2,686
Replantings	2,245	2,007	1,629	1,349
Replacements	487	471	389	421
Percent of total area: Extensions	0.3	0.7	0.9	1.0
Replacements & replantings	1.1	1.0	0.8	0.6
<u>South India</u>				
Total area	71,531	73,762	74,606	74,666
Extensions	336	223	183	289
Replantings	22	27	17	25
Replacements	13	15	13	15
Percent of total area: Extensions	0.5	0.3	0.2	0.4
Replacements & replantings	0.04	0.05	0.04	0.05
<u>All India</u>				
Total area	323,075	329,486	334,811	350,686
Extensions	1,187	2,047	2,404	2,975
Replantings	2,267	2,034	1,646	1,375
Replacements	500	486	402	436
Percent of total area: Extensions	0.4	0.6	0.7	0.9
Replacements & replantings	0.9	0.8	0.6	0.5

Source: Tea Board of India, Tea Statistics, 1967/68 and 1968/69.

Table 5: DUTIES AND TAXES ON TEA EXPORTED FROM CEYLON

Calendar Year	Export duty	Ad Valorem Sales Tax ^{1/}			Total export duty and ad valorem sales tax	Declared value of exports of tea	Percentage of total represented by export duty and ad valorem sales tax	Cess ^{2/}
		Sales in Colombo	Sales in London	Total				
(.....million rupees.....)								
1957					1,021.3		8.2	
1958					1,131.0		12.8	
1959	183.0 ^{3/}				1,045.0		24.4	
1960	138.9	43.5	28.5	72.0	210.9	1,095.1	19.2	
1961	145.4	35.3	26.4	61.7	207.1	1,114.0	18.6	
1962	155.3	40.5	31.2	71.7	227.0	1,147.9	19.8	
1963	155.5	30.7	29.4	60.1	215.6	1,139.8	18.9	
1964	151.7	33.6	27.2	60.8	212.5	1,140.9	18.6	
1965	171.8	31.3	18.5 ^{4/}	49.8	221.6	1,209.6	18.3	
1966	149.3 ^{5/}	27.2	18.0	45.2	194.5	1,026.4	18.9	
1967	127.5 ^{5/}	28.7	21.8	51.1 ^{6/}	178.6	1,060.2	16.8	
1968	169.8 ^{5/}	27.6	22.0	50.8 ^{6/}	220.6	1,161.0	19.0	
1969	141.4 ^{5/}	28.8	8.4	38.2 ^{6/}	179.6	1,051.0	17.1	

n.a. = not available.

- ^{1/} This tax also applies to tea for domestic consumption if sold at the Colombo auction.
- ^{2/} Includes cesses under the Tea Propaganda Ordinance, the Tea Control Act and, effective October 6, 1958, the Tea Subsidy Act. In addition cesses levied under the Tea Research Ordinance and the Medical Wants Ordinance realized a further Rs. 2.6 million in 1957, rising to Rs. 5.5 million in 1967.
- ^{3/} Excluding rebates under the Price-Support Scheme of Rs. 14.5 million.
- ^{4/} Excluding Rs. 6.7 million subsequently refunded.
- ^{5/} Excluding rebates under the Tea Export Duty Rebate Scheme amounting to Rs. 5.0 million in 1966, Rs. 40.8 million in 1967, Rs. 12.8 million in 1968 and Rs. 33.4 million in 1969.
- ^{6/} Including ad valorem Sales Tax of Rs. 0.6 million on private export sales of tea outside the auctions in 1967, Rs. 1.2 million in 1968 and Rs. 1.1 million in 1969.

Source: FAO, Committee on Commodity Problems, Third Ad Hoc Consultation on Tea, doc. CCP:Tah 58/W.P. 4, December 18, 1968; and Ceylon, Administration Report of the Tea Controller, 1968-1969 issues.

Table 9: ESTIMATED COST OF REPLANTING TEA
AND BRINGING IN SOME ALTERNATIVE CROPS ^{1/}

Crop	Cost per Hectare
	Rupees
Coconut	2,470
Oil Palm	3,705
Coffee	4,446 ^{2/}
Cocoa	4,940 ^{2/}
Cinnamon	2,458 ^{3/}
Cardamon	2,000 ^{3/}
Pepper	5,039 ^{2/}
Cloves	3,754 ^{2/}
Nutmeg and Mace	4,446 ^{4/}
Tea	16,200

- ^{1/} Estimated cost of coconut from Agricultural Development Proposals (1966-70), Ministry of Agriculture and Food 1966, of Oil Palm from the Report on the Commercial Exploitation of Oil Palm, Ministry of Planning and Economic Affairs 1968; estimated costs of all other crops from the Department of Agriculture. All figures have been rounded.
- ^{2/} Includes cost of cultivation and maintenance up to the 5th year. In the case of pepper, a sum of Rs. 700 is included as costs of support posts; this would not apply if vines are trained to existing trees.
- ^{3/} Includes costs of cultivation and maintenance up to the 3rd year.
- ^{4/} Includes costs of cultivation and maintenance up to the 6th year.

Note: Costs do not include establishment of processing and manufacturing facilities. For tea, these costs would be higher than for alternative crops.

Source: Report of the Tea Commission, Sessional Paper No. VII - 1968.

Table 10: CEYLON: EXPORTS AND IMPORTS
BY PRINCIPAL COMMODITIES, 1966-69

(million rupees)

	1966	1967	1968	1969
<u>Exports</u> ^{1/}	<u>1,676</u>	<u>1,631</u>	<u>1,975</u>	<u>1,875</u>
Tea	1,026	1,060	1,161	1,051
Rubber	337	282	331	431
Coconut products	196	167	331	221
Others	117	122	152	172
<u>Imports</u>	<u>2,028</u>	<u>1,738</u>	<u>2,173</u>	<u>2,543</u>
Rice	367	210	341	257
Wheat flour	113	229	250	255
Milk and cream	71	62	70	52
Fish and preparations	94	52	69	71
Fruit and vegetables	123	91	88	110
Sugar	103	74	97	119
Spices	56	44	48	42
Petroleum products	133	114	192	167
Chemicals	185	164	215	195
Manufactured goods	399	321	408	579
Machinery	263	251	272	585
Others	121	126	123	111

^{1/} Excluding re-exports.

Source: UN - International Trade Statistics 1968;
Ceylon - Ceylon Customs Returns, December 1969.

Table 11: TEA - TRANSPORTATION, LOCAL CHARGES AND LONDON AUCTION CHARGES
(U.S. cents per pound)

	India Auctions				Ceylon Auctions		African Teas at London Auctions			
	North		South		Colombo	London	Uganda	Kenya	Malawi	Tanzania
	Calcutta	London	Cochin	London						
I. Transportation and local charges										
Interest		0.12		0.13						
Commission		0.54		0.54		0.71	0.72	0.72	0.70	0.72
Shipping charges		0.37		0.37		0.51 ^{1/}	1.60 ^{1/}	1.60 ^{1/}	0.74	1.60 ^{1/}
Brokerage	0.28		0.30		0.30					
Inspection, storage, etc.	0.26		0.23		0.50					
Freight		3.21		3.11		3.46	3.02	3.02	3.10	3.02
Insurance		0.13		0.19		2/	2/	2/	0.14	2/
Rail transportation							0.70		1.54 ^{3/}	
Total	0.54	4.37	0.53	4.34	0.80	4.67	6.04	5.34	6.22	5.34
II. London Auction Charges										
Warehousing ^{4/}		1.41		1.41		1.41	1.41	1.41	1.41	1.41
Insurance		0.04		0.03		0.04	0.04	0.04	0.03	0.04
Buyer discount		0.55		0.44		0.55	0.55	0.55	0.44	0.55
Brokerage		0.50		0.40		0.50	0.50	0.50	0.40	0.50
Total		2.50		2.28		2.50	2.50	2.50	2.28	2.50

^{1/} Includes insurance.

^{2/} Included under shipping charges.

^{3/} Includes road transportation.

^{4/} Tea on pallets.

Source: S. S. Smith & Son, Ltd. (Tea Brokers); Tea Statistics 1970; and data obtained from individual estate companies.

Table 12: WAGE RATE INCLUDING SPECIAL ALLOWANCES FOR
MALE FIELD TEA WORKERS IN VARIOUS PRODUCING COUNTRIES

	India (1969/70)		Ceylon (1969)	Indonesia (1970)	Kenya (1970)	Tanzania (1970)	Uganda (1970)
	North (Assam) ^{1/}	South (Madras)					
Basic rate	2.40 Rs	{ 2.80 Rs	1.35 Rs	({ 4.56 KSh	{ 3.85 TSh	{ 5.00 USh
Special allowances	.18 Rs	{	1.66 Rs	(120 Rs	{	{	{
Commercial cereals	.21 Rs ^{2/}	-		(
Wage rate per man day (local currency)	2.79 Rs	2.80 Rs	3.01 Rs	120 Rs	4.56 KSh	3.85 TSh	5.00 USh
In U.S. cents	37.2	37.3	50.6	31.7	63.8	53.9	70.0

^{1/} Zone A.

^{2/} Estimated difference per day between actual cost and price paid by tea workers for cereals supplied.

Source: India - Tea Board of India, Tea Statistics 1969-70;
Ceylon - Administration Report of the Tea Controller for 1969; and

Table 13: PROJECTED YEARLY PRODUCTION AND CONSUMPTION DEVELOPMENT
IN INDIA AND PROJECTED PRODUCTION DEVELOPMENT IN CEYLON
TO ACHIEVE 1980 OUTPUT AND CONSUMPTION LEVELS,
AS INDICATED IN TABLE 1

(thousand metric tons)

	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
<hr/>										
<u>India</u>										
Production I	422	431	442	451	461	470	479	489	500	510
Production II	433	446	459	472	485	498	511	524	537	550
Consumption	234	247	260	273	286	299	312	325	338	350
<u>Ceylon</u>										
Production	235	240	244	249	253	258	262	267	271	276

Source: IBRD, Economics Department.