STATE TEA SECTOR: A FRAMEWORK FOR POLICY CONSIDERATIONS TO OPTIMIZE EFFICIENC' AND EQUITY

by
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Abstract: This paper provides a broader framework for possible policy considerations for the state tea sector. These policies are partly based on the findings of an empirical study reported in "Production Function Analysis of Tea Estates in Sri Lanka" (Mendis, Economic Review, May 1990. Such policy options are further complimented by a qualitative and quantitative analysis.

Introduction

In this paper Nuwara Eliya and Ratnapura, with the greatest estate area in cultivated tea, in the central and southwest portion of Sri Lanka respectively, are selected as study districts to represent high – and low-quality of tea.[1] Within Nuwara Eliya and Ratnapura districts, all reported public sector tea plantations are included in the study.[2] Two districts have about 56 percent of tea cultivation on lands managed by government agencies: 28 percent by the Janatha Estate Development Board (JEDB), 25 percent by the Sri Lanka State Plantation Corporation (SLSPC), and 3 percent by other public sector entities. Of these, there are reported 88 JEDB-managed estates and 27 SLSPC-managed estates in Ratnapura district

The main purpose of this paper is to present a host of policy alternatives for the estate tea sector and to analyze their implications with respect to the anticipated impact on direction of efficiency and equity changes.

II
Possible Policy Approach

Can we conclude that location by altitudinal zone, and in turn, in quality of tea, is the fundamental factor in determining the policy framework because the influence of varying management and environmental relations between Nuwara Eliya and Ratnapura districts differs? If we are convinced that these two districts are geographically distinctive, not only on the bases of altitude and rainfall but also on labor, fertilizer, and estate size, the policy considerations should be based on the geographic character of the two regions. The policy framework for tea production in Sri Lanka may be guided by either of two approaches:

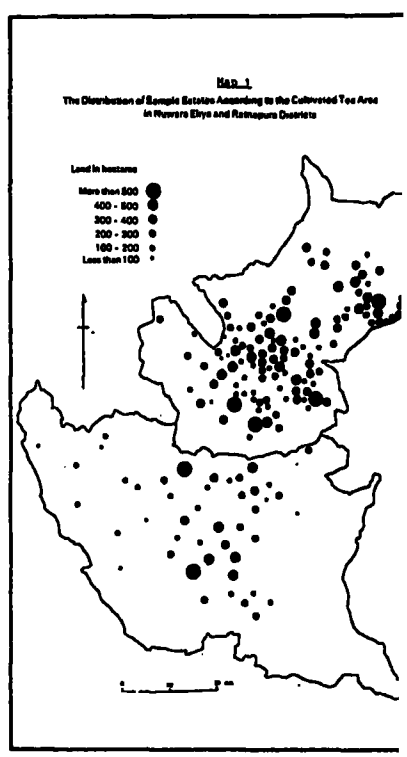
1. The **regionalization approach,** in which locational factors govern the geography of tea production in different elevations zones. The high and low-elevation zones are distinctive in terms of estate size, fertilizer application, labor intensity, topography, and other agro-ecological variables. The policy choices, therefore, should be based on this distinctiveness.

2. The **specialization approach,** in which locational and other economic factors determine the quality of tea. The high- quality Dimbula, Uva, and Kotmale tea of the high – elevation zone attracts traditional tea buyers of the United Kingdom, the United States, Canada, Australia, and other Western developed countries. The low-quality "tippy" tea of the low-elevation zone finds new tea markets in the Middle Eastern Arabic countries and in Pakistan. The high-grown tea is known for its quality, but the low-grown tea answers the need for quantity. Fine plucking (only two leaves and a bud) needs specialized labor skils for which Tamil women tea pluckers have been well-known for more than a century in the high-elevation tea plantations. Coarse plucking, particularly in the low-elevation zone, brings a larger quantity of tea leave but does not yield high-quality.

It is recognized that the spatial aspect policy undesirable outcome. These t approaches, therefore, will be re-exa ined in the context of locational factors policy planning to evaluate efficiency a equity considerations for the state t sector.

Size of Tea Estates

The size of tea estates ranges from le than 100 hectares to over 500 hectares Nuwara Eliya and Ratnapura distric Map shows that a relatively higl



proportion of large estates are locate Nuwara Eliya district, whereas Ratnapura district a larger number smaller estates are sparsely settled fact, the high-elevation district has l torically been a large-scale tea produ and specializes in intensive cultivati

able lands in the low-elevation district, the other hand, are utilized extensively not only in tea but also in other crops such as rubber, coconut, rice, and other staple foods. Small-scale operations are common in Ratnapura district.

For an analysis of broader policy considerations, tea estates can be grouped into small, medium, and large sizes based largely on the use of land, and then, labor and fertilizer. Table 1 presents the proposed classification:

Table 1

Classification of Tea Estates According to Inputs Use

Size of Estates	Land Area (hectares)	Labor Force (Numbers)	Fertilizer Use (Metric Tons)
Large	More than 400	More than 1000	More than 400
Medium	200 - 400	500 - 1000	200 - 400
Small	Less than 200	Less than 500	Less than 200

Source: 1989 Survey Questionnaires.

The following three questions are raised on the basis of the above classification:

1. Are Small Tea Estates Better?

Superintendents can pay closer attention to small tea estates because they are small enough to manage (less than 200 hectares) and enable supervision of the labor force (fewer than 500 workers) under a single person. The conservation of land and labor relations in small estates are said be better due to the personal attention rendered by people who work there. Cooke and Knutson also provide similar reasons to argue that small estates are better managed and maintained. Managers give careful attention to tea plants and will more likely detect diseases, pests, frost, and soil erosion. Therefore, small estates are likely tove preferable units from the perspective of environmental management.

In Ratnapura district, almost 50 percent of all estates are small in size, whereas in Nuwara Eliya district small estates represent 29 percent of the total (Table 2). Estates with a small labor force comprise 64 percent (28 estats) of the total in Ratnapura district, whereas the corresponding figure is only 14 percent (16 estates) in Nuwara Eliya (Table 3). Map 2 further illustrates the use of labor force in both districts.

2. Should Medium-size Tea Estates be Saved?

The medium-size estates with 200 to 400 hectares of cultivated tea land and 500 to 1,000 workers maintain higher tea production than do small estates. They also have greater capacity to withstand adverse market conditions. Superintendents of medium estates enjoy flexibility in allocating the labor force, as needs arise, among harvesting, upkeeping, and other activities.

The number of medium-size estates in Nuwara Eliya district is 54 percent in terms of land area and 50 percent with respect to labor use. In Ratnapura, the corresponding figures are 36 percent and 27 percent respectively (Table 2 and 3). In general, these statistics indicate that Nuwara Eliya district tends to be characterized by medium-size, [illegible] large estates.

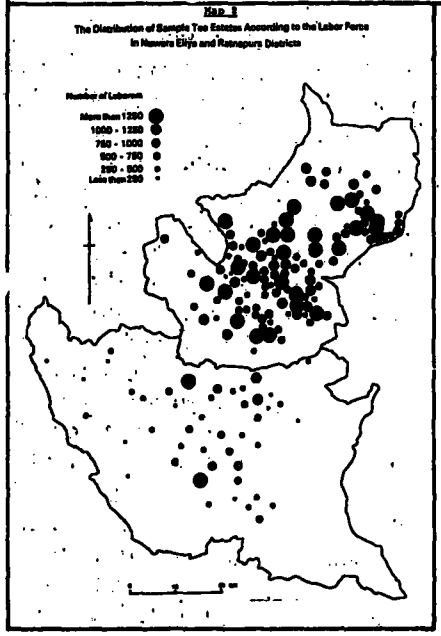
Table 2

The Distribution of Sample Tea Estates According to the Cultivated Land Area in Nuwara Eliya and Ratnapura Districts

Land size (hectares)	Nuwara Eliya District No. of Estates	%	Ratnapura District No. of Estates	%
Large (>400)	20	17	7	16
Medium (200 – 400)	62	54	16	36
Small (> 200)	33	29	21	48
	115	100	44	100

Map 2

The Distribution of Sample Tea Estates According to the Labor Force in Nuwara Eliya and Ratnapura Districts



3. Are Big Tea Estates Better?

Big plantations, employing more than 1,000 laborers in estates on areas larger than 400 hectares, seem to be more successful than medium and small ones in respect to acquiring land, labor, and fertilizer. The efficient use of these inputs contributes to the competitive status of large estates. Big plantations tend to obtain government support simply because they are bigger than others. For example, according to Cooke and Knutson, government programs seem to allocate benefits on the basis of volume of production to enhance the competitive position of large farms. Large farms may exploit more input(s) than do small ones, and large estates have maximum flexibility in allocating their labor force in whatever ways seem necessary. They also have the greatest capacity to deal with adverse environmental, economic, and market conditions.

Compared to Ratnapura district, Nuwara Eliya district devotes a larger percentage of its land area (17 percent) and labor force (36 percent) to tea cultivation on big plantations (see Maps 1 and 2). This indicates its relative regional specialization in large-scale tea production. Ratnapura district, with a larger percentage of small estates (48 percent) and of estates with a small labor force (64 per- has a regional specialization in small-scale production.

III

Estate Size, Efficiency, and Equity

Each size group has its own merits. Although one district may have some comparative advantages in tea production over the other, the existence of more or less constnat returns to scale in both districts suggests that productivity and efficiency in every estate, despite of size, can be enhanced. Competition among smal, medium, and large tea estates should be encouraged as well as within

Table 3

The Distribution of Sample Tea Estates According to the Labor Force in the Both Districts

Number of Laborers	Nuwara Eliya District No. of Estates	%	Ratnapura District No. of Estates	%
Large (>1000)	42	36	4	9
Medium (500 - 1000)	57	50	12	27
Small (<500)	16	14	28	64
	115	100	44	100

Source: 1989 Survey Questionnaires.

each size category. Every estate, irrespective of size, can be developed and assisted with appropriate financial and institutional support.

One may ask whether Sri Lanka can achieve efficiency and social equity in the estate tea sector. When economies of scale exist, large tea estates are said to be more efficient and productive than small ones. The converse is true with decreasing returns to scale (diseconomices of scale). But because the results of our Cobb-Douglas production function models show constant returns to scale, as inputs increase the amount of output rises in about the same proportion, irrespective of estate size. [10] Therefore the potential trade-offs are not significant in acquiring efficiency at the expense of achieving equity goals. Because every size of estate operates at the same productivity and efficiency level, equity considerations need not to be compromised to achieve economic gains.

In this study an optimal size of a tea estate is not identified. If size is not an important issue with respect to efficiency, large tea estates can be divided in to smaller and more manageable units to achieve socially desirable objectives without adversely affecting the existing efficiency and productivity level. A policy choice toward this end would be land redistribution (or segmentation) whereby potential tea productivity would gain through dividing the land among many individuals. This measure would not require additional inputs of labor or fertilizer because those factors of production are already, utilized in tea cultivation. Policy makers should, however, be cautions in utilizing such policy measures to achieve efficiency over equity, or vice versa, because the potential consequences of relevant policies may be costly to achieve the other, if they are not implemented properly. [11]

If size, on the other hand, is an important matter to policy makers on the basis of social, economic, and political realities in the country, the existing pattern of estate landholding should be maintained. In such a situation, the efficiency and equity considerations might best be enhanced by a policy designed to encourage competitiveness within and between size groups. Promoting one size group of estates over another may result in increasing efficiency, but could compromise equity.

Both the regionalization and specialization approaches, discussed above with regard to size differences between the two districts, should be considered in formulating specific policies. Policy makers, for example, should be aware of the disparity between the high and low-elevation zones in terms of returns to scale and intensity of inputs use. Spatially differentiated policy choices should not be subordinated to general policies based on the country's constant returns to scale, because locational factors in the two regions do mater in achieving long-term policy goals.

IV

A Mix of Policy Considerations

1. Labor Utilization

A highly concentrated labor force, shown on Map 2 in Nuwara Eliya district, indicates that most tea estates employ a large number of workers compared to the low-elevation district. Large estates, employing more than 1,000 laborers, are relatively few in Ratnapura district, whereas in Nuwara Eliya they represent more than a third of the total. Two-thirds of the sample in the low-elevation district are small estates, using less than 500 laborers, as against barely one-sixth in Nuwara Eliya. Half of the sample estates in Nuwara Eliya district are the medium-size group employing 500 to 1,000 workers. Map 2 demonstrates that te estates in Nuwara Eliya district generall employ more workers than those i Ratnapura.

The intensity of labor use on the te estates is greater in Nuwara Eliya distri than is Ratnapura. The increase of th labor force with respect to the increase land size in Nuwara Eliya district su gests that cultivated tea areas are utilize intensively in tea production. The coef cient in Table 4 represents the 1.1 pe cent change of labor when land siz increases by one percent. It demo strates an increasing intensity of lab use in Nuwara Eliya. By contras Ratnapura, district has a relatively lo labor coefficient of .55, which sugges that cultivated tea lands are more exte sively used in the low-elevation distri Both regression coefficients are at t 0.5 percent of significance level on a on tailed test.

Table 4

Regression Estimates for the Use of Labor Against Estate Size in Nuwara Eliya and Ratnapura Districts

Model: Log (L) = log a + b log (X)

Nuwara Eliya District (Number of observations = 115)				
Variables	Intercept	Coefficients	r2	F-ra
Labor (L)	.52290* (2.011)	1.11073** (23.799)	.83977	566.2
Ratnapura District (Number of observations = 44)				
Variables	Intercept	Coefficients	r2	F-ra
Labor (L)	3.05490** (10.836)	.55095** (10.218)	.69679	104.3

Notes: Labor (L), Land (X), Intercept (a), and Coefficient (b). T-statistics are given in parentheses. * Significance level at 0.5 percent (one-tailed test). ** Significance level at 2.5 percent (one-tailed test).

A possible policy measure to increa land use intensity in Ratnapura distr would be to mobilize and transfer Ratnapura the excess labor force fr Nuwara Eliya. Such labor mobilizat measure would not only reduce regio disparity, but also provide necess manpower for the low-elevation distr The seeming misallocation of labor, wh now exists, could be used to equal labor allocation as well as to increa production in Ratnapura district. T statement assumes that the produc functions are homogeneous and la prices are equal between the two tricts. The results of Cobb-Doug models suggest that constant return scale exist in both districts. As far as la prices are concerned, the Governmer Sri Lanka declared a minimum w requirement for all workers in the es tea sector. These observations wo argue, theoretically, for the transfe

labor from Nuwara Eliya district to Ratnapura. The introduction of several incentive package, such as better housing, schooling, and community services for Tamil workers, might result in mobilizing labor to Ratnapura district. However, given the political realities in the country, including the prevailing ethnic tensions between Tamils and Sinhalese and the high level of unemployment and underemployment among the politically dominant Sinhalese, this measure is presently impracticable, although economically and statisticaly justifiable.

2. Fertilizer Application

Fertilizer is one of the most important inputs in increasing yield. Over time, major nutrients in the soil are depleted by physicaly, chemical, and biological processes.[12] The purpose of fertilizer application is to restore the soil nutrients required by the tea plants. Basic nutrients are nitrogen (N), phosphorus (P), and potassium (K). After each harvest, substantial quantities of NPK are removed from the soil. Wickramasinghe of the Tea Research Institute recommends that the nutrients removed with each harvested tea crop be returned to the soil to maintain its fertility.[13] Superintendents of tea estates apply the necessary quota of NPK on the basis of the estimated yield-potential of individual tea fields.[14]

The use of fertilizer, as presented in Map 3, varies among tea estates. In Nuwara Eliya district, 94 percent of the sample tea estates apply less than 100 metric tons of NPK (Table 5). Only a few estates, all in the central part of the district, use higher amounts of fertilizer (these estates are managed by SLSPC). In Ratnapura, however, more than 20 percent of the sample tea estates apply more than 200 metric tons of fertilizer; nearly four-fifths use less than 200 metric tons (Table 5). The salient feature in the study area is that the SLSPC-managed Hapugastenne estate applied more than 500 metric tons of NPK in 1988 (the largest dot in Ratnapura district on Map 3). With respect to both cultivated land area and labor force, Hapugastenne is the largest tea estate in the low-elevation district.

The rate of increase in fertilizer use with increasing estate size in the world-renowned Nuwara Eliya tea district is higher than in Ratnapura district. Table 6 shows when Nuwara Eliya district's land size increases by one percent, fertilizer increases by 1.06 percent as indicated in the coefficient. The fertilizer coefficient (.908) in Ratnapura indicates that the relative increase in fertilizer is less than the increase in land size. Ratnapura district, however, actually applies a relatively larger amount of fertilizer per estate than does Nuwara Eliya (cf. Map 3). These observations imply that a lower quality of land in terms of the growth of tea bushes exists among Ratnapura district's tea estates. The results of the regression model for fertilizer and estate size suport the idea that the quality land factor leads to relatively low intensity of fertilizer application as estate size increases in the low-elevation district. In Nuwara Eliya district, where fertile tea lands exist, the impact of NPK use on output is relatively small.

The use of fertilizer according to the Tea Research Institute (TRI) recommendations needs to be stressed. The application of fertilizer, which is determined by the potential-yield capacity of the estate, should be altered. One desirable policy measure, therefore, would be based on identifying high – and low-yielding tea estates and assessing the nutrient content of their soil. When such estates are identified, the TRI should recommend the appropriate amount of fertilizer compounds for each of them, contrary to the long-standing approach based on the fertilizer replacement theory. Furthermore, it would be desirable to give estate managers an opportunity to decide the

Table 5

The Distribution of Sample Tea Estates According to the Fertilizer Application in the Two Districts

Fertilizer Use (Metric Tons)	Nuwara Eliya District No. of Estates	%	Ratnapura District No. of Estates	%
Large (> 400)	–	–	2	5
Medium (200 – 400)	7	6	8	18
Small (>200)	108	94	34	77
	115	100	44	100

Source: 1989 Survey Questionnaires.

Map 3

The Distribution of Sample Tea Estates According to Fertilizer Application in Nuwara Eliya and Ratnapura Districts

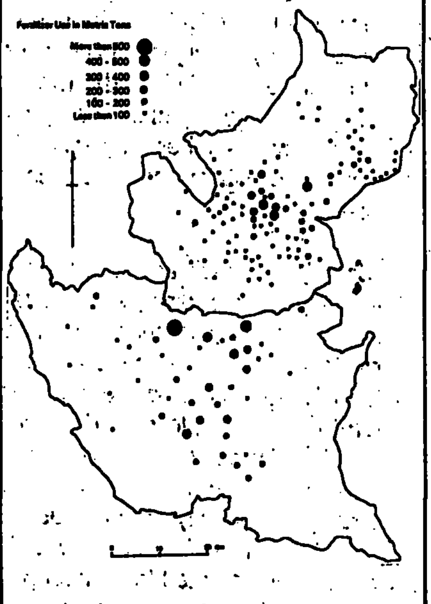


Table 6

Regression Estimates for Fertilizer Against Estate Size in Nuwara Eliya and Ratnapura Districts

Model: Log (F) = log a + b log (X)

Nuwara Eliya District (Number of observations = 115)

Variables	Intercept	Coefficients	r2	F – ration
Fertilizer (F)	–1.84726*	1.06207**	.4489	93.977**
	(–3.019)	(9.679)		

Ratnapura District (Number of observations = 44)

Variables	Intercept	Coefficients	r2	F-ratio
Fertilizer (F)	–.06755	.90634**	.82994	219.5112**
	(–.211)	(14.819)		

Notes: Fertilizer (F), Land (x), Intercept (a), and Coefficient (b). T– statistics are given in parentheses.
** Significance level at 0.5 percent (one-tailed test).
* Significance level at 2.5 percent (one-tailed test).

fertilizer requirement for each plantation. This would allow them to become more competitive.

3. Estate Segmentation

A policy consideration for the division of big tea estates is predicated on the basis of following observations: (1) The results of the Cobb-Douglas models indicate that returns to scale are constant for the two districts; and (2) In Ratnapura district, the intensity of use of labor (.55 percent) and fertilizer (.90 percent) per tea estate declines as estate size rises, whereas intensity increases as size increases in Nuwara Eliya (see Tables 4 and 6). The results for Ratnapura district imply that the division of large tea plantaitons into smaller ones could increase the intensity of labor input. There exists an unemployed rural labor force in the district. The use of fertilizer is more efficient in smaller estates, but efficiency declines as estate size increases. Therefore, another desirable result of dividing larger estates would be to increase the use of production factors in Ratnapura district. A land redistribution policy can be justified on the basis of both efficiency and social justice considerations in Ratnapura because of the district's constant returns to scale and decreasing intensity of labor and fertilizer use as estate size increases. In Nuwara Eliya, virtualy all tea estates operate at similar efficiency levels; but the intensity of land use in terms of labor and fertilizer use increases as estate size increases; therefore, the division of large plantations would yield no obvious gains.

4. Privatization and Peoplization

The Government's new policy on (re) privatization of a portion of state-owned tea estates can be considered in light of advocacy promoted by Western development aid agencies, particularly the World Bank, and Sri Lankan policy makers.[15] When equal efficiency exists across varying sizes, selected estates can be given to private enterprises to initiate competition under free market conditions. A Sri Lankan-style privatization – in contrast to a British-style, to be noted later – is meant to give the people and the employees of estates the opportunity to participate in private enterprises as shareholders.[16] This would enhance both efficiency and equity because workers and ordinary people would then own and manage the enterprise.[17] Private entrepreneurs. who are inspired by the profit motive, may become more productive and efficient because they are independent of government control. The results of the Cobb-Douglas model do not, however, provide a basis to identify specific estates on which the privatization option can best be considered. Nor would it preclude any form consideration.

If large estates in Ratnapura district are subdivided to increase the intensity of labor use, those subdivided lands could be allocated to private enterprises. Privatization is a more viable option, politically and sociologically, in Ratnapura district than in Nuwara Eliya. Giving Tamil laborers the opportunity to participate in private ownership in the prosperous tea estates in the high-elevation district would probably be opposed by Sri Lanka's majority sinhalese comunity. A relatively large number of entrepreneurs from other sectors of the Ratnapura economy (i.e., gems, rubber, and coconut) could be encouraged to buy shares in privatized estate enterprises. The Tamil population in Nuwara Eliya's tea estates is not yet adequately integrated into the existing social system in the country to own shares in private enterprises (Tamils of Indian origin were granted Sri Lankan citizenship only in 1988). Therefore, the Sri Lankan-style privatization (i.e., peoplization) efforts in the high-elevation district are not sociologically feasible.

Land distribution and (re) privatization measures would be recommended in Nuwara Eliya district if lands were to be turned over to private companies (e.g., transnational corporations such as lipton, Brook Bond, Walkers', etc.). This is the way the British government privatized its state-owned enterprises: the unprofitable, inefficient public enterprises were sold out to large corporations.[18] The World Bank has proposed such a British-style privatization as an option for JEDB-owned tea estates. If selected estates were transferred to private companies, competition among tea estates would emerge, production might increase, and plantations might become profitable. In a British-style privatization, however, the equity consideration would probably be compromised.

5. Diversification of Land

Since the national tea industry faces increasing competition from the emerging East African tea producers Sri Lanka needs to search for countermeasures either by increasing productivity or diversifying land use on insufficiently productive tea lands. Presently, the comparative advantage now enjoyed by Sri Lanka is shifting toward African countries. East African tea producers, led by Kenya, Malawi, and Uganda, are not only in close proximity to potential tea markets in the Middle East and Western European countries, but they are also protected by the Lome Agreement which provides them with a price-support system.[19] Sri Lanka does not have this advantage. Unproductive tea estates and marginal lands, therefore, need to be rehabilitated into more profitable enterprises such as spice cultivation, hardwood plantations, and fuelwood production. In this case, the present Government's presidential directive on allotting marginal lands to landless people is one of the sensible approaches toward achieving equity and, now they should be encouraged to make their land more economical and productive. Especially, Ratnapura district, where various type of agricultural crops are grown, is more conducive climatically to spice, hardwood, and fuelwood production than is Nuwara Eliya. Estate managers in Nuwara Eliya should strive for increasing tea productivity by optimizing the use of land, labour, and fertilizer.

Concluding Remarks

The policy alternatives are proposed partly on a qualitative assessment in the hope that they shed some light on the direction of change needed to increase levels of productivity, enhance equity, and make the operation of tea estates more competitive and profitable. Policy planning in the estate tea sector should be made with the expectation that they will be sensitive to efficiency, equity, and spatial considerations.

In the analysis, as summmarized in Table 7, several "conventional policies" were presented to increase tea productivity by

inducing the application of more inputs such as fertilizer and labor into structurally inefficient areas. Redistribution of land was proposed to increase tea output in large insufficiently productive estates, thereby improving efficiency while achieving equity goals. Conventional policies are deeded less efficient and less preferable than structural reform on the basis of social justice arguments. Land redistribution would operate to achieve two goals simultaneously: (1) greater efficiency in increasing tea production, and (2) greater equity in regard to employment opportunities and sources of income for a large number of individuals. However, conventional policies to increase production are often considered in place of land reform because of the lower political, social, and economical risk and complexity that policy makers face. Such policies to increase tea output would actually raise the level of fertilizer and labor use in the tea plantation sector without changes in estate size. Increased use of fertilizer would enhance the yield-potential in less productive tea estates while the use of more labor would alleviate unemployment. Thus, policies directed toward increasing production may have an incidental effect on equity (Table 7).

Land segmentation and redistribution measures can be politically biased and administratively costly. The crucial question is whether land redistribution would be more cost efficient on economic and social grounds than conventional policies. Such reform policies should, therefore, be based on a broad analysis of their equity and efficiency implications in the economy as a whole.

The Sri Lankan-style privatization or peoplization, by giving an opportunity to the people of Sri Lanka and especially workers on the estates to participate in ownership, should increase both efficiency and equity. When estates were operated as private profit-making enterprises, workers who owned them were motivated to maximize their production capacity in Ratnapura district. The British-style privatization, selling state-owned enterprises' assets to private companies, may generate competition and efficiency in tea estates, but equity considerations would then become secondary for profit-seeking investors. This measure is politically and sociologically more viable in Nuwara Eliya district than the proposed Sri Lankan-style privatization.

By diversifying their use of land, managers/owners of unproductive tea estates can establish more efficient and profitable enterprises. Such a measure may or may not provide more employment for a large number of people. The impact of diversification will depend largely on the wisdom with which new land-use patterns are established.

The direction of change likely to come about from the proposed policy alternatives for the two elevation districts can be summarized in Table 7.

Table 7 presents a heuristic analysis of the anticipated directions of change resulting from the proposed policy options aimed at increasing efficiency by enhancing the level of production and promoting equity by generating more employment. The analysis of direction and magnitude of change is based on a qualitative and quantitative assessment and of the study results to provide a broader policy picture in the state tea sector. The importance of locational analysis is, therefore, stressed to accommodate spatially sensitive policy choices because they are more desirable in achieving long-term goals, whether they are concerned with efficiency or equity.

Table 7

Direction of Efficiency and Equity Changes Resulting from Proposed Policy Choices within the High – and Low-elevation Districts

Policy Alternatives	Nuwara Eliya District		Ratnapura District	
	Efficiency	Equity	Efficiency	Equity
Increased Input Use:				
Fertilizer	+		+	
Labor	–	+	–	+
Land segmentation	0	+	0	+
Privatization:				
Sri Lankan – style	+	–	+	–
Other – style	+	0	+	0
Diversification	+	+	+	+

Symbols: + = increase
– = decrease
0 does not change
not relevant/significant

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NOTES

1 The mid-elevation zone is excluded because this region is a rather mixed-crop area in which government policies seek to diversify cultivation even further, largely by converting tea estates into other non-traditional export crops.

2 The author, who conducted field research in early 1989, is grateful to those officials of the Janatha Estate Development Board, the Sri Lanka State Plantation Corporation, the Tea Research Institute, the Sri Lanka Tea Board, the Presidential Secretariat, the Ministry of Policy Planning and Implementation, and the Central Bank of Ceylon for their support and cooperation.

3 JEDB operates as a statutory board and is accountable directly to the Parliament. SLSPC is said to be more independent of political influence and is governed by a different set of public corporation rules and regulations. These two agencies were created with the intention that they compete with each other. Recently, however, there is an attempt to merge these two agencies.

4 See Patrick Mendis, (1990), "Production Function Analysis of Tea Estates in Sri Lanka," Economic Review (Sri Lanka), May, pp. 14– 29.

5 See Patrick Mendis, (1989), Managing Tea Plantations in Sri Lanka: A comparative Analysis of Productivity Relationships Among Size, Management, and Environment Factors Within Two Elevation Zones, PhD Thesis, (University of Minnesota-Minneapolis), for more details on the geographic variation between Nuwara Eliya and Ratnapura districts.

6 Stephen C. Cooke and Ronald D. Knutson, (1987), "Is Bigger Better: Economies of Size in Agriculture," in A. L. Frederick and Dennis Henderson (eds.), Policy Choices for a Changing Agriculture, (Columbus, Ohio: North Central Regional Extension Publications), P. 4.

7 Cooke and Knutson (1987), p. 5.

8 Mendis, (1990), pp. 28-29.

9 The terms efficiency and productivity are interchangeably used to refer to the ways and means of increasing the production of green tea leaves. The word equity implies providing more employment opportunities so that a greater number of individuals can earn a living from the estate tea sector.

10 Mendis, (1990).

11 Philip M. Raup, (1967), "Land Reform and Agricultural Development," in Herman M. Southworth and Bruce F. Johnston (eds.), Agricultural Development and Economic Growth, (Ithaca: Cornell University Press), pp. 283-306.

12 S. Sivasubramaniam, (1981), "Fertilizer Use on Tea, "Tea Bulletin of Sri Lanka, Vol. 1, No. 1, p. 18.

13 K. N. Wickramasinghe, (1985), "Fertilizer Use in Tea, "Progress (Sri Lanka Ministry of Plan Implementation), vol. 5, September, p. 31.

14 This fertilizer application practice -- high-yielding land needs larger quantity of NPK and low-yield tea land requires smaller amount of fertilize -- is generally known as the "replacement theory" of fertilizer application.

15 Also see S. S. Jayawickrama, (1987), "Better Times Expected in Sri Lanka, " Tea and Coffee Trade Journal, October, pp. 30-31.

16 In Sri Lanka, the term "privatization" means to change inefficient state ownership to a profit-making, broad-based, share-owning system through giving the people of the country and the employees of the agency the opportunity to participate directly in the shareholding of privatized enterprise (Ceylon Daily News, August 17, 1988: p. 13).

17 According to the Presidential commission on Privatization (Peoplization), small investors are given preference in allotting shares. No single individual will be permitted to buy more than five percent of shares (Ceylon Daily News, August 17, 1988: p. 13).

18 Richard Hemming and Ali M. Mansoor, (1988), Privatization and Public Enterprises, (Washington, D. C. International Monetary Fund Publication), pp. 7-8.

19 The Lome Agreement was signed in 1975 by the European Economic Commission (EEC countries) and 46 countries in Africa, the Caribbean, and the Pacific (ACP countries) to stabilize income from the export of commodities. Tea is one of these commodities.