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LTC Research Paper

Land Tenure and the Management of Land Resources in Trinidad and Tobago

Part 1: Land Tenure

edited by

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with

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LAND TENURE AND THE
MANAGEMENT OF LAND RESOURCES
IN TRINIDAD AND TOBAGO

PART 1: LAND TENURE

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This study was undertaken for the Government of Trinidad and Tobago through its Ministry of Food Production and Marine Exploitation, Port of Spain, with financial support from the Interamerican Development Bank.

The research is continued with "Part 2: "Institutional roots of tenure insecurity," available as LTC Research Paper no. 116 (July 1993).

All views, interpretations, recommendations, and conclusions expressed in this publication are those of the authors and not necessarily those of the supporting or cooperating organizations.

LTC Research Paper 115

**Land Tenure Center
University of Wisconsin-Madison**

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INTRODUCTION

BACKGROUND OF THE STUDY

The agricultural sector in Trinidad and Tobago could be an important productive sector, although its potential has not been realized in recent decades. The more productive land resources of the country are underutilized, while many of the more fragile ecosystems are in danger of irrevocable damage. This threatens to deny the country potential income from ecotourism as well as deprive future generations of a stable land, forest, and water base. The optimal use of the country's land resources requires a stable and secure tenure system defining land rights.

The Government of the Republic of Trinidad and Tobago (GOTT) approached the Interamerican Development Bank (IDB) for assistance in strengthening the agricultural sector to deal with the problems of the land tenure system in order to create the conditions for attracting investment for the sector. IDB proposed a comprehensive agricultural sector review, which led to the initiation of the Basic Agricultural Studies, one of which is the study reported on in this paper, "Land Use Rationalization via Land Development and Land Tenure Regularization and Protected Areas." The study was coordinated by David Stanfield of the Land Tenure Center, University of Wisconsin-Madison, and Norman Singer of the University of Alabama.

This publication presents the background studies which were intended to assist in the preparation of an Action Plan to deal with the problems of the land tenure system. The overall objectives of that Action Plan were defined to be the following:

- ▶ explore the feasibility of rationalizing the present land tenure situation by giving titles or alternative plots of land, in accordance with the technical assessment of each individual case, to qualified farmers who are in irregular possession of state land;
- ▶ review the legislation and institutional capabilities for processing and recording land transactions, including sales, rentals, and inheritances, and develop options to improve the security of those acquiring rights to land and to reduce the costs of these transactions involving both public and private land;
- ▶ develop options for new leasehold contracts or other mechanisms for farmers who are now renting state or private land in order better to specify mutual rights and obligations of the contracting parties;
- ▶ establish mechanisms to distribute the agriculturally productive portions of the estates bought by the government which are abandoned or semi-abandoned,

- and take steps to reserve the non-agricultural portions of these estates for other uses; and
- ▶ review governmental policies and institutional structures and procedures affecting land use, including the impact of land taxation, credit policies and programs, and zoning on holders of private and publicly owned land, and land assignment, use, and settlement policies regarding state land to determine what changes may be necessary to improve access to land and the security of that access in order to raise levels of investment and encourage more appropriate land uses.

APPROACH AND METHODOLOGY

On 1 May 1991, the government contracted the Land Tenure Center (LTC) of the University of Wisconsin-Madison to carry out the land rationalization studies, together with a team of local counterparts from the staff of the Land and Surveys Division of the Ministry of Planning and Development (MPD), the Ministry of Food Production and Marine Resources [which was reorganized into the Ministry of Agriculture, Land and Marine Resources (MALMR) in 1992], the Ministry of Legal Affairs, and the Ministry of Housing and Settlement. The studies were carried out over a ten-month period, and resulted in the preparation of twenty-one studies.

The University of Wisconsin provided the international expertise for these studies and through the Economic Commission for Latin America and the Caribbean (ECLAC) administered the contracting of local expertise for completing the studies. The Association for Caribbean Transformation (ACT) provided valuable assistance with field interviewing of landholders, entering data into the computer, and tabulating data.

A final report presented to the government in August 1992 described a Land Rationalization and Development Programme which was derived from the twenty-one studies.

STUDIES COMPLETED

The twenty-one studies have been organized into two research papers. LTC Research Paper no. 115 explores the nature and extent of tenure insecurities in both urban and rural contexts, although the focus is on agricultural land tenure problems. In this paper several hypotheses are advanced concerning the possible constraints which legal and social insecurity of tenure pose for the future development of the country. Also explored are the environmental problems which the past tenure regimes have helped to generate, and what might comprise a strategy for protecting fragile ecosystems.

The second paper, LTC Research Paper no. 116, digs more deeply into the institutional and historical roots of the tenure insecurity problems. The hypothesis is that a program to legally document legitimate rights to land and thereby reduce tenure insecurities

would only be justified if accompanied by a program to correct the institutional failings which have significantly contributed to creating the problem in the first place. Without this emphasis on identifying and correcting the institutional causes of tenure problems, the formalization and documentation of existing rights would soon decay into the morass of problems which the country presently faces.

In all of these studies, the authors were requested to extend their analyses of problems into proposals for their solution. These proposals were debated by the team charged with the design of the Land Rationalization and Development Programme, and provided the invaluable basis for the final preparation of that program.

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- ▶ Winston Rudder, Permanent Secretary of the Ministry of Agriculture, Land and Marine Resources, who facilitated the access by the study team to previous studies of the land tenure problems of the country, and who guided the linkages among the various ministries involved in the proposed Programme for Land Rationalization and Development.
- ▶ Francis Charles, Commissioner of Lands and Director of Surveys of the Ministry of Planning and Development, who coordinated the entire study and without whose counsel, advice energy and encouragement the study would not have been possible.
- ▶ Knolly Beckles, National Coordinator of the Basic Agricultural Sector Studies, and Dr. Peretz Ram, International Advisor, who suggested procedures and concepts for preparing the Action Plan which were compatible with government policies and administrative structures, the requirements of the IDB, and the activities being undertaken in the Basic Agricultural Studies. Their advice and guidance were invaluable to the study team.
- ▶ The Technical Advisory Committee provided continuity and guidance throughout the study, and helped the team avoid pitfalls and incorporate needed elements in their analyses. The Committee was composed of Francis Charles, Chairman, Tyrone Leong and Marion Ramroop of the Lands and Surveys Division of the Ministry of Planning and Development; Hugh Robertson of the Law Commission; Hugh Wilson, Jacqueline Ganteaume-Farrell, Vernon Douglas, and Kenny Singh, of the Ministry of Agriculture, Land and Marine Resources; Victoria Mendez-Charles, and Florabelle Nurse, Town and Country Planning Division and Robert Beard, Valuation Division

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- ▶ Important and appreciated guidance for the study at critical moments came from Dr. Clyde Applewhite, Dr. P.I. Gomes, and Wilma Primus of ECLAC; Lance Hayles, Michael Smart, and Naoto Yoshikawa of FAO; Carol James of the Forestry Division; Dr. Paul Trapido, Alfonso Blandon, Mathais Meyers, Hugo Souza, Federico Otero, and Robert Bellefeuille of the IDB.
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NOTES ON THE TWO RESEARCH PAPERS

In the process of producing these studies, the Ministry of Food Production and Marine Exploitation (MFPME) was reorganized into the Ministry of Agriculture, Land and Marine Resources (MALMR). Since the original contract was with the MFPME, this name has been retained in most of the studies.

The exchange rate in effect at the time of the studies was US\$1.00 = TT\$4.25. Throughout the research papers, the symbol "\$" refers to Trinidad and Tobago dollars, unless specific reference is made to US dollars.

The abbreviations used in the research papers are numerous. For reference purposes, a list follows.

GLOSSARY

AAIII	Agricultural Assistant III
ACB	Agricultural Credit Bank
ACT	Association for Caribbean Transformation
ADB	Agricultural Development Bank
AIS	Agricultural Information System
ALMA	Agricultural Land Management Authority
AOI	Agricultural Officer I
AOII	Agricultural Officer II
ARP	Administrative Reform Program
AUTOCAD	automatic computer-aided design
CAD	computer-aided design
CADP	Chaguaramas Agricultural Development Project
CARDI	Caribbean Agricultural Development Institute
CDA	Chaguaramas Development Authority
CDB	Caribbean Development Bank
CEO	chief executive officer
CLDP	Crown Lands Development Project
COPE	Council of Presidents of the Environment
CPI	composite price index
CSO	Central Statistical Office
DCI	Development Control Inspector
DCN	Draft Cabinet Note
DRO	District Revenue Office
ECLAC	Economic Commission for Latin America and the Caribbean
EDM	electronic distance measure
ENRP	Eastern Northern Range Project
FAO	Food and Agriculture Organization
GDP	gross domestic product
GIS	Geographic Information System
GLOBE	Global Legislators Organization for a Balanced Environment
GOTT	Government of the Republic of Trinidad and Tobago
GPS	Global Positioning System
HMB	Home Mortgage Bank
IDB	Interamerican Development Bank
IMA	Institute of Marine Affairs

IUCN	International Union for the Conservation of Nature
L&S	Lands and Surveys Division
LAND	Land Administration Division
LIS	Land Information System
LIMS	Land Information Management System
LPDP	Land Policy Development Project
LRMD	Land Resources Management Division
LRDP	Land Rationalization and Development Programme
LRP	Land Registration Project
LTC	Land Tenure Center
MALFP	Ministry of Agriculture, Lands, and Food Production
MALMR	Ministry of Agriculture, Land and Marine Resources (formerly MFPME)
MENS	Ministry of the Environment and National Service
MFP	Ministry of Finance and Planning
ME	Ministry of Food Production and Marine Resources (now MALMR)
MPC	Mortgage Participation Certificate
MPCU	Mt. Pleasant Credit Union
MPD	Ministry of Planning and Development
MPLIS	Multi-purpose Land Information System
ND	not determinable
NDTF	National Data Transfer Format
NEA	National Environmental Authority
NGO	Non-Governmental Organization
NHA	National Housing Authority
NIB	National Insurance Board
NPEL	Non Pareil Estates, Ltd.
NTCP	National Technical Cooperation Program
NTF	National Transfer Format
OAS	Organization of American States
PAP	Protected Areas Project
PEU	Project Execution Unit
PIMS	Property Information Management System
PIU	Project Implementation Unit
P/M	person/months
POS	Port of Spain
PRO	Public Relations Officer
PMU	Programme Management Unit
PS	Permanent Secretary

PSAEL	Palo Seco Agricultural Enterprises, Ltd.
PTA	Probationary Tenancy Agreement
QA	quality assurance
RDBM	Relational Data Base Management
RGD	Registrar General's Department
RO	Registration Officer
RPCU	Rationalization Programme Coordination Unit
RPO	Real Property Ordinance
SAL	Standard Agricultural Lease
SILWC	Sugar Industry Labor Welfare Committee
SLDP	State Lands Development Projects
S/RO	Survey/Recording Officer
STA	Security of Tenure Act
T&CP	Town and Country Planning Division
TAC	Technical Advisor Committee
TC	technical cooperation
TCL	Trinidad Cement, Ltd.
TDA	Tourism Development Authority
TFAP	Tropical Forestry Action Plan
THA	Tobago House of Assembly
TO	technical officer
TRINTOC	Trinidad and Tobago Oil Company, Ltd.
TRINTOPEC	Trinidad and Tobago Petroleum Company, Ltd.
TTEC	Trinidad and Tobago Electricity
TTMF	Trinidad and Tobago Mortgage Finance Co.
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UPRN	Unique Parcel Reference Number
UTM	Universal Transverse Mercator
UWI	University of the West Indies
WASA	Water and Sewerage Authority

PART 1

**LAND TENURE AND THE DEVELOPMENT
OF TRINIDAD AND TOBAGO**

Chapter 1

LAND TENURE SYSTEMS AND TENURE INSECURITY IN TRINIDAD AND TOBAGO: BACKGROUND ANALYSIS

by

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BACKGROUND

Historical events, governmental policies, economic factors, and popular customs have produced a land tenure system in Trinidad and Tobago which is quite complicated and under substantial strain. The following are the system's general characteristics.

The total land area is 5,126 square kilometers or 512,600 hectares, of which 52 percent (that is, 266,550 hectares) is owned by the state. The extent of state ownership differs considerably between Trinidad and Tobago: 53 percent of all land in Trinidad (255,778 hectares) is in the public domain while the corresponding percentage for Tobago is 34 percent (10,772 hectares).¹

In Trinidad, 126,490 hectares or 47 percent of the land in the public domain is under forest cover and, to a degree, protected by law from indiscriminate use (constituted forests). The area under forest in Tobago is 3,930 hectares. In Trinidad, some 32,514 hectares (26 percent) of these constituted forests are intensively managed by the state for the production of teak, Caribbean pine, mixed tropical hardwoods, and the like. These activities are both soil conserving and revenue producing.

The remainder of the land in the public domain (that is, land outside the constituted forests) covers 134,169 hectares in Trinidad and 3,665 hectares in Tobago; it represents a considerable resource available to the state for the promotion of productive activity and tourism and for the generation of income and employment.

A single state-owned corporation, Caroni (1975), Ltd., owns 79,577 acres, of which 55,109 acres are cultivated, which represents 20 percent of the cultivated land (cropland and

1. Michael Smart, "A New Policy for Land Distribution and Agricultural Development," in L.I.M., *Problems and Perceptions*, ed. D. Jeyanandan and M. Robertson (University of the West Indies, 1988), p. 3.

pastures in the 1982 census) or 16 percent of the cultivable land in the country (141,000 hectares).² The Non-Pareil Estates, another corporation of which the state is the principal shareholder, has 1,872 acres.

Two wholly state-owned oil companies, TRINTOPEC and TRINTOC, control large acreages of land, mostly through leases for oil mining. TRINTOPEC controls approximately 170,000 acres, including approximately 5,000 acres of land it owns. TRINTOC controls approximately 320,000 acres of land, including four estates which it owns outright. Both companies are hesitant to grant leases to lands they own because of the implications of the Agricultural Small Holder's Act of 1961, which makes it difficult, if not impossible, to terminate the leases.

In 1963, 42 percent of holdings (16,450) with an area of less than 5 hectares occupied 9 percent of the total cropped area while 580 large enterprises (100 hectares and above), representing only 1.5 percent of all holdings, controlled 45 percent of the cultivated land. By 1982, however, the extremely skewed pattern of land distribution had improved somewhat: 26,249 holdings (84 percent of the total) of less than 5 hectares occupied 31.7 percent of the cropped area. This constitutes an increase of 60 percent in the number of such holdings in the period between censuses. Conversely, the number of large holdings declined to 80 (0.3 percent of the total), occupying 32.7 percent of the cropped area. Since the net gain accruing to the lowest size group (29,819 hectares) is much greater than the net loss to the largest size group (16,654 hectares), it seems likely that the source of the change in land distribution is to be found in the state land distribution programs carried out over the period.³

PROBLEMS OF AGRICULTURE

Decline of land used for agriculture. Just over one-third (35 percent, or 178,897 hectares) of the total land area of the country is suitable for cultivation. The 1963 *Agricultural Census* recorded a cropped area totaling 131,862 hectares. Between then and the next census in 1982, this area decreased by 18.5 percent to 107,400 hectares. Similarly, cultivated grasslands lessened by 42 percent from 7,854 hectares to 4,504 hectares while the area under private forest fell precipitately by 84.6 percent from 54,433 hectares to 8,470 hectares (Smart 1988, p. 2). Although it is acknowledged that there are deficiencies in the data concerning the land and that abandoned lands have not been adequately counted, the conclusion is inescapable that significant amounts of land resources have been withdrawn from agricultural production between 1963 and 1982. The evidence indicates that these lands may have been alienated from agricultural use and converted, without proper authorization, to residential, commercial, or even industrial uses.

2. See Ministry of Food Production and Marine Exploitation (MFPME), "National Agricultural Development Plan, 1988-1992" (Port of Spain: MFPME, 1988).

3. Central Statistical Office (CSO), *1982 Agricultural Census* (Port of Spain: Government Printer, 1986).

In 1963, the relative contribution of agriculture to gross domestic product (GDP) was 10 percent. By 1982, this had dropped to 2.5 percent. Thus, agricultural production per capita declined over the same period during which the amount of land available to the smallholder sector increased. Yet the contribution of agriculture to the GDP rose slightly in the following four years, up to 3.7 percent by 1987. Employment in agriculture in 1987 represented 11.7 percent of total employment, up slightly from 9.8 percent in 1983. However, labor productivity in agriculture was just 33 percent of the national average in 1987, the lowest of all major sectors.⁴

Fragmentation of holdings. Very small-scale agricultural holdings on both private and state lands are numerous, possibly acting to constrain and depress the level of agricultural production, which operates within a high-labor-cost environment and where a substantial proportion of farm operations are part time. The *1982 Agricultural Census* (CSO 1986) showed that 16,302 holdings, more than half of the total, are smaller than 2 hectares. About 35 percent of all holdings are under 1 hectare, while 23 percent are under 0.5 hectare. Much of this fragmentation has occurred on private lands due to subdivisions of inheritances.

Population dynamics. In 1982, there were 32,434 households holding agricultural land, with a total population of 175,976, or 5.4 people per household. Of the economically active people in these households (82,184), about 51 percent were employed in nonagricultural activities. In Tobago, 70 percent of the farm households earned less than 50 percent of their total income from agriculture while in Trinidad, 61 percent of the farm families had income from agriculture of less than 50 percent of total household income (CSO 1986).

The population of the country has grown from 1,079,791 in 1980 to 1,234,388 in 1990, an increase of 14.32 percent. The city of Port of Spain has declined by 12.92 percent to 50,878 persons in 1990, with a similar percentage decline in San Fernando. The areas around these cities, however, have grown rapidly, indicating a continuing process of suburbanization.⁵

The sectoral shifts have been dramatic. It is difficult to visualize land use in Trinidad and Tobago in traditional terms since so much of the urban expansion has been into the agricultural areas that once surrounded the smaller urban complexes. Now one finds urban areas surrounding the agricultural ones, especially on the east-west corridor in northern Trinidad.

4. Central Statistical Office (CSO), *The National Income of Trinidad and Tobago, 1983-1987* (Port of Spain: Government Printer, 1989).

5. Central Statistical Office, "1990 Population and Housing Census," CSO Bulletin no. 1 (Port of Spain: CSO, 1990).

DIAGNOSIS OF TENURE PROBLEMS

DEFICIENCIES IN THE MANAGEMENT OF AGRICULTURAL LEASES FOR STATE LANDS

The management of agriculturally usable lands in the public domain has relied on long-term leases granted by the state to private farmers. The decision to transfer state-land use rights through leasehold rather than freehold tenure was made by the Governor General and Intendant of Lands, Hubert Young, in a legal notice entitled, "Land Grants (Temporary Provisions) Regulations, 1941," which stated,

Notwithstanding anything to the contrary contained in the Land Regulations dated 24 December 1917. No petition for the granting of Crown Lands of any description in fee simple shall be received by the Subintendant of state lands or by Wardens until further notice.

Provided if it is made to appear to the Subintendant of State Lands that there are special and cogent reasons why any parcel or lot of Crown Lands might be granted in fee simple, he shall refer the matter to the Governor and Intendant who may in his absolute discretion direct that these Regulations shall not apply to such parcel or lot of land.

As a result of this policy, the state remains the major property owner in the country, with responsibilities of selecting lessees of land, enforcing the terms of leases granted, and collecting rents owed.

With the state as owner of over half the land of the country, state policies for the use of that land, and the administrative structure for executing those policies, are of fundamental importance. However, it has long been recognized that the management system concerning leaseholds granted by the Commissioner of Lands is deficient. The administrative responsibilities for managing state lands are fragmented among various agencies and suffer from a lack of coordination.

The Ministry of Agriculture, Land, and Marine Resources (MALMR) is charged with selecting applicants to receive leases in Trinidad and, with the supervision of these lessees, to see that they abide by the covenants of their leases. The Department of Agriculture of the Tobago House of Assembly (THA) carries out the same duties in Tobago. The selection process is often very lengthy, involving thirty points of administrative review. In 1990, only 10 percent of all applications for land had been processed. The process relies on cumbersome data management and is afflicted by inadequate storage space for files and insufficient labor in relation to the workload.

The Commissioner of State Lands in the Ministry of Planning and Development, who is the legal landlord, is responsible for the overall administration of the entire system.

However, there has been a limited capacity for surveying the parcels being considered for allotment and even more limited capacity for enforcing the terms of the leases.

The Chief State Solicitor's Office in the Ministry of Legal Affairs actually drafts the leases, adding another administrative responsibility to an already overburdened department.

The District Revenue Officers of the Ministry of Finance's Inland Revenue Division have the responsibility of collecting rents. Few rents are actually collected, however. A 1985 study concluded that "overall the state has likely allowed its tenants to accumulate outstanding rents now totalling a few million dollars,¹⁶ which has certainly grown to many millions of dollars in recent years.

The Valuation Division of the Ministry of Planning and Development recommends the annual rental value of the leases. However, the levels once set are not adjusted for inflation or the increasing value of the land. Until recently, the rental rates were set at TT\$6.00 per acre for land which in the open market would rent for \$120 per acre.

If a tenant on state land has received a bank loan which is in arrears, the bank has the authority to sell the lease on the open market to recoup its losses without the consent of the Commissioner of State Lands. While protective of bank interests in recouping loans, this act of selling the lease on the open market results in potentially undermining the selection process that the MALMR and Department of Agriculture of the THA have gone through.

One indicator of the problems which have emerged from this administrative fragmentation is that it is virtually impossible, except for lands distributed under the State Lands Development Projects (SLDP) in the 1960s and 1970s, to make any exact assessment of the amount of state lands leased out for productive agricultural purposes. Not counting the Caroni (1975), Ltd., leases (an estimated 4,300 are presumably in existence), Smart estimates that, through 1984, approximately 21,300 hectares of state-owned land have been leased out to 5,447 private farmers representing about 15 percent of the cultivable area of the country.⁷ One must presume that the large percentage of those leases were distributions under the SLDP. Smart also noted that the present number of leases, though not known, is certainly over 6,000.

Alternative sources of information are often contradictory. The *Agricultural Census of 1982* showed 4,638 parcels of government land being rented or leased to private farmers.

6. Project Implementation Unit (PIU), "Report of the Committee for the Review of the Rental Rates of State Lands for Agriculture" (Port of Spain: Ministry of Agriculture, Lands and Food Production, 1985), p. 27.

7. Smart, "A New Policy," p. 3.

The "Report on the Distribution of State Lands" examined 6,587 allotments, which was a reference to activities under the SLDP and its predecessor programs.

In fact, it is impossible to determine the number of functioning and valid leases from the records system as presently organized within the Lands and Surveys Division.

Four important problems of land use in the country derive from the breakdown of the state's administrative capacity for the management of the leasehold system:

(a) UNDERUTILIZATION OF STATE LANDS. The 1977 study (MALFP) concluded that only 17 percent of all tenanted state lands showed a level of cultivation of 75 percent or higher. The 1985 Project Implementation Unit study concluded that "there are no indicators to suggest that the situation has significantly improved since then. . . . [The landlord, the state, cannot be] satisfied that such land resource is being adequately used for the production of goods and services." Low and uncollected rents do not motivate people in possession of the land to put it to productive use. The lack of governmental evaluation of leaseholders' observance of the terms of the leases leaves landholders shielded from market or policy pressures to invest in the land or to transfer it to others who will do so.

(b) UNDOCUMENTED AND INSECURE TENURES. The normal process of legal and documented transfer of rights to land is thwarted since original leaseholders (probationary or permanent) transfer their rights without securing the necessary documentation from the Lands Department, the landlord. Moreover, with the passage of time, leases or other allotments expire, leaving the holders of the land without legally valid documentation of their rights to the land. The result is insecurity of tenure, with the attendant disincentives for the acquisition of loans for investment in the properties.

(c) EXTENSIVE SQUATTING. The unsupervised leasehold system basically seals land off from market pressures. People who demand land for food production, housing, or other economic activity cannot satisfy this demand through the normal but very lengthy and complicated channels for securing leases. This frustration leads many to simply take a piece of land, particularly state land, and challenge the owner to defend its interests. (See chapter 18.)

(d) ENVIRONMENTAL DEGRADATION. While the terms of the leases typically include stipulations for the "practice of good husbandry" of the land, there is little capacity on the part of the landlord to assure the observance of this clause. Moreover, in the cases of lease interests which have been informally transferred, the holders of the use rights to the land may not be motivated to maintain the productivity of the land because of tenure insecurity.

8. Ministry of Agriculture, Lands and Food Production (MALFP), "Report on the Distribution of State Lands" (Port of Spain: MALFP, 1977).

9. PIU, "Report of the Committee for Review," p. 21.

With these problems, it is imperative that the state adjust its land management ambitions to the reality of its capacity to administer its responsibilities as landlord. It may be better to abdicate its landlord responsibilities in some instances and grant land rights in freehold, relying on zoning, tax incentives, and public education to achieve desired forms of land use. In other instances, budgetary support has to be given to the land administrative agencies to permit them to act as landlord and enforce lease arrangements. The process for the granting of leases has to be much more fluid and flexible to satisfy demands for land while using rental rates and collections to eliminate the loss of revenues and subsidies which plagues the present leasing system.

LAND MANAGEMENT DIFFICULTIES OF THE OIL COMPANIES

In the case of TRINTOPEC, company policy precludes entering into any formal agreements concerning the surface rights of the lands that it owns or exercising its option to acquire the surface rights to land for which it holds private mining leases. One result of this relatively passive attitude to land management is that persons wanting to engage in agriculture, often company employees, simply move onto company land as squatters. In the instances of leased state land, particularly lands in the forest reserves, company inaction allows squatters to clear forested lands.

TRINTOC has a more active land management program and is willing to enter into tenancy agreements on a month-to-month basis. However, due to serious lapses in land information management over the years, for most of the Southern Basin of Trinidad the company has been forced to embark on a land identification program to determine ownership of surface and subsurface rights and land use for an estimated 20,000 parcels. Information on the interests its predecessors have acquired in land is not available in the Registrar General's Department, nor in the Lands and Surveys Division, nor in the company's own records. (See chapter 13.)

LAND MANAGEMENT PROBLEMS OF CAROM (1975), Lm.

A variety of factors over the years has produced a need for substantial subsidies of the Caroni (1975), Ltd., corporation, and for restructuring its activities, including the reduction of the cane acreage managed by the company, the distribution of land to approximately 5,100 tenants, and the shift of emphasis from production to research and extension in support of the farming activities of individual farmers in the region.

The inability of the corporation to carry out land distribution programs (due in part to fear of losing control over the land because of the application of the Agricultural Small Holdings Tenure Act of 1961) has led to the twin problems of underused lands and squatting (mostly for residential purposes). The rigidities of its land management program has led to problems of unapproved transfers of leases and the resulting tenure insecurity of the individual cane producers, leading in some cases to boundary disputes. The paralysis in the distribution of land has, moreover, led to substantial squatting on the corporation's land, the

latest estimate involving over 13,000 housing and agricultural squatters on Caroni land. (See chapters 15 and 16.)

LAND MANAGEMENT OF THE FORESTRY DIVISION OF THE MALMR/MFPME

Of the protected areas identified in the 1980 proposed system of national parks and other protected areas, only those that are of difficult access, for example, Saut d'Eau, Soldado Rock, and the St. Giles Islands, remain relatively undisturbed. The causes of environmental degradation vary from area to area, though there are certain problems, such as poaching and squatting, that threaten almost every protected area. (See chapter 9.)

Pressing problems in the Northern Range include the slash-and-burn practices of shifting cultivators on steep slopes and cyclical bush fires. The extraction of inorganic minerals, both the blue limestone of the Northern Range and the sands and gravel of the Northern Basin, pose a severe threat to certain areas, for example, the Aripo savannas (a prohibited area) and the Valencia Forest Reserve and Game Sanctuary. The latter area has been devastated by quarrying notwithstanding its protected status. Quarry operators often remain in business long after their leases expire and abandon lands without any rehabilitation, (for example, San Fernando Hill Natural Landmark). In addition to having eliminated the forest and wildlife resources of this area, quarrying activities have also polluted the North Oropouche River from the Valencia Bridge to the sea. The heavy discharge of silt from the North Oropouche River may have a long-term detrimental effect on the habitats of the endangered leatherback turtle nesting in the prohibited area at Matura Beach, immediately north of the mouth of the river.

Mineral exploitation also poses a major threat to the integrity of protected areas in southern Trinidad. Here the problem is posed by petroleum operations through routine and accidental oil spills and the intrusion of oil exploration and production operations into protected areas. Wide corridors are often bulldozed through virgin forests for the construction of all-weather roads serving isolated wellheads. Exploration activity has affected such areas as Morne L'Enfer, Trinity Hills, and the Southern Watershed Reserve and may now threaten the Bush Wildlife Sanctuary in Nariva.

Apart from quarrying and oil production activities, the most serious threat of irreversible damage in the short to medium term is posed by squatting. Much of the Southern Watershed Game Sanctuary has been destroyed by squatters over the last thirty years. Squatting now poses a serious threat to the Bush Bush Wildlife Sanctuary in the proposed Nariva National Park. It is not unknown for the destruction of these protected areas to be perpetrated by large operators instead of the landless peasantry. These large operators use bulldozers and herbicidal and pesticidal spraying equipment to create large clearings for subsequent use in intensive agriculture.

The National Parks Section of the Forestry Division has undertaken an exercise to determine both the present condition of and the extent of damage to proposed park areas in the central and southern areas of Trinidad since the 1980 systems plan was written. The

extent of damage could be such that the removal of some areas from the proposed system is warranted. Such is the case in the Kronstadt Island Wildlife Sanctuary, Morne L'Enfer, and a sizable portion of Valencia, where an application to redefine boundaries or eliminate reserves entirely is proceeding.

Some areas noted in the systems plan include considerable amounts of private lands within the proposed areas. In drawing the boundaries for these areas, natural features such as watersheds, coastlines, roads, and natural vegetation types were often used, which naturally led to the inclusion of private lands.

Approximately 17,000 hectares or 24 percent of the total area under the system is privately owned. In the absence of legislation which provides for the incorporation of private lands within a national park, implementation of the system will therefore require the allocation of appreciable financial resources to cover compensation for land acquisition.

The great challenge exists to involve private landowners in the planning and management of national parks. As yet, no serious, concerted effort has been made to involve private landowners in the protection of lands and natural resources or to control the exploitation of renewable resources at sustainable levels through discussion or incentives. Dialogue in this area should be a major component for the future planning of protected areas and for the drafting of legislation.

The most serious problem facing the Forestry Division is the prevalence of squatting in the forest reserves and parks. The Division itself does not have the power to evict squatters, relying on the Director of Surveys/Commissioner of Lands for this action, which is difficult to exercise. Unauthorized use of forest resources can be policed by the Division, but labor and transport limitations restrict the effectiveness of its enforcement.

The Division also has no control over the activities of the oil companies, which drill where they wish and undertake few repairs of the environmental damages they cause.

Finally, the Forestry Division has attempted to enter into agreements with forest residents to engage in agroforestry activities. However, these agreements often lapse and suffer from the same sort of inattention as the agricultural leases which the Lands and Surveys Division attempts to manage. (See chapter 14.)

TENURE INSECURITY

BACKGROUND

The land management problems noted above frequently result in a serious divergence between the rights which may be formally documented in leases at some point in time and the actual possession and exercise of those rights. People grow old, die, or move from the

area. The inadequacies of the land administrative system induce lessees simply to transfer their rights to the land to their heirs or to other people, without following the prescribed procedure of advising the Commissioner of Lands or other entity charged with land management. Moreover, while the twenty-five-year period of the leases expires, the system in place for renewing or reassigning the leases does not respond to such events.

Since there is little oversight of the leaseholds in the field, transactions in leasehold rights as well as de facto continuation of expired leaseholds are not officially noted. The result is a growing disparity between the actual possession and use of the land and the official documentation of who has the legal rights to the land. The users of the land cannot prove their rights with a valid lease and the lease administrators lose track of who their tenants are, what they are doing with the land, and what rents are being foregone.

In addition, the administrative confusion makes it difficult to meet the existing demands for land. This induces people simply to occupy state lands and put them to their own use. The de facto rule appears to be that if no one from the state administrative apparatus makes an attempt to evict a squatter for one year, then it becomes almost impossible to do so, and rights to land accumulate without official sanction or rent collection.

In summary, substantial portions of state lands are at present occupied by people who have no documentation of their personal rights to the land. This formal insecurity of tenure is due to:

- ▶ unapproved transfers and inheritances where legitimate leases had at one point been issued;
- ▶ the expiration of the term of the lease; and
- ▶ outright squatting where no lease had ever been issued.

It is also true that there are problems of formal tenure insecurity on private lands as well. There appears to be a substantial amount of land in the possession of people who do not have a legal ownership or leasehold title to the land. This situation arises in various ways:

- ▶ undivided inheritances, privately agreed upon by the heirs but not legally sanctioned (family land), a typical problem in Tobago but also widespread in Trinidad;
- ▶ unrecorded transfers done through private documents; and
- ▶ squatting.

A major reason for these various situations is the breakdown in the institutions of the land market in Trinidad and Tobago. The processes for legally handling inheritances are long and costly, and in the cases of small parcels, subdivisions of the land among the heirs is prohibited. Furthermore, many people do not use wills to pass on their property to their heirs, which throws the transfer of the estate into the complicated administration process and the Administrator General's Office. These high transaction costs induce people simply to

make arrangements among the immediate heirs and postpone or never initiate the legally defined steps for handling the estate of the deceased. (See chapter 12.)

In Trinidad, but especially in Tobago, the lack of ready and easy access to the Registrar General's Department has required people either to go to Port of Spain themselves or, more commonly, to pay for their attorney to travel there to do the necessary title searches and paper filing, adding to the transaction costs for estate transfers or other transactions in land. Private, unrecorded transfers have been the norm under such conditions, until recent rapidly rising land prices have motivated people to get their claims to the land legalized by bringing the land they claim under the protection of the Real Property Ordinance (RPO).

Finally, the deeds registry system as presently organized does not provide accurate estimates of the root of title for those claiming to be owners of the land. Many leases are not recorded there. The costs of dealing in deeded land are higher than would be the case under a modern parcel-based registration system. This registration system does not require a survey of the parcels, leading to many imprecise property descriptions and adding to the insecurity of the interests recorded therein.

The parallel title registration system under the Real Property Ordinance has attracted few property owners, with annual incorporation rates of only around 100 parcels a year. Evasion of parcel subdivision requirements seems to be easier through the deeds registry, as no survey is required or reviewed by the Survey Department. There have been some cases of land once titled through the RPO, whose owners had desired to partition it without the authorization of the Town and Country Planning Department, having been transferred to others with documents recorded in the Registry of Deeds. Finally, under the present system, the state's interests in land are not recorded either in the deeds registry system or in the RPO registry. (See chapter 11.)

These institutional weaknesses have combined to produce the allegedly widespread possession of land without legal title. But how extensive is this problem of formal tenure insecurity, that is, the lack of legally recognized rights to land? To answer this question a survey was undertaken of a representative sample of 435 land users in 6 areas of high priority for agriculture (Warren-Munro, Fairfield-Bromage, Couva, Penal/Puzzle Island, Freeport/Arena Road, and Goldsborough in Tobago). These land users were questioned concerning each parcel of land which they possessed, yielding a sample of 1,040 parcels of land, including 820 agricultural parcels and 225 house parcels.

The problem of insecurity of tenure has a formal, legal basis. It is also the case that this documentary insecurity may or may not be reflected in the perceptions of the holders of land as to the security of their land rights. The survey explores both aspects. The data refer to 1,040 parcels of land held by the 435 people interviewed in the 5 high priority agricultural areas. The tenure status of landholders in these areas should motivate them to secure the best documentation available concerning their rights to the land. Any problems with lack of formal documentation of tenure rights which are detected in these high-agricultural-potential areas should be less than in areas of less potential, though there are undoubtedly pressures

from the urban land market which may be encouraging people to clarify and document their rights in areas of lower agricultural potential. Basically, we expect the data from this sample to be an underestimate of the problems of tenure insecurity for the country as a whole.

LACK OF FORMAL DOCUMENTATION OF TENURE STATUS

Extent of the problem of formal tenure insecurity. The survey questionnaire asked each land user interviewed, "Are there any documents which you could use to back up your claim to the land?" The interviewers recorded all documents which the respondents mentioned and coded the document with the most legal status. Thus, a person who had a deed and a tax payment receipt was coded as having a deed. Table 1.1 shows the responses of the land users pertaining to the parcels they use.

TABLE 1.1
Existence of formal documents defining land rights

TYPE OF DOCUMENT	FREQUENCY	PERCENT
1. No documents of any kind	287	27.6
2. Documents naming another person as holder of rights (tax receipt, private purchase or rent agreement lease, deed, or will)	184	17.7
3. Unrecorded or informal document naming user as holder of the rights:		
a) Tax receipt in name of user	46	4.4
b) Private purchase or rent agreement in name of user	105	10.1
Subtotal (some documentation)	151	14.56
4. Legally documented holding:		
a) Lease in name of user	171	16.4
b) Deed or will in name of user	247	23.8
Subtotal (proper documents)	418	40.2
Total	1,040	100.0*

Source: LTC Landholder Survey, 1991.

* No information concerning documentation was forthcoming for 5 parcels.

Only about one-fourth of the parcels are held under a deed or will, which names the holder as legal owner. Another 16 percent of the parcels are held under a lease naming the holder as the legal lessee. In strictly legal terms, then, only about 40 percent of the parcels in the sample are supported by documents naming the holders as the legitimate possessors of the land. Even for these cases, however, there may be deeds or wills which are unrecorded or leases which have expired. It may be the case that the respondents interviewed were not forthcoming in the interviews about the documentation they possess, which may account in part for the high number of people without any documents whatsoever. The interviewers were well trained and spoke with the respondents on a number of topics before entering the theme of documentation of tenure rights. It seems likely that any underreporting which may have occurred is balanced in large part by the even greater lack of documentation of rights in other areas of the country. We estimate that about 60 percent of the parcels of land held by agriculturalists (holders of agricultural land) are in a relatively insecure tenure situation.

SUBJECTIVE INSECURITY OF TENURE

The survey team also asked the respondents about their feelings of tenure insecurity. It is possible that the legal description of insecurity is not reflected in practice in the subjective evaluation of insecurity by the holders of the land. The question asked for each parcel held by the 435 people was, "In general, how concerned are you that you could lose the right to use this piece of land?" Table 1.2 shows the responses to this question.

TABLE 1.2

Subjective security of tenure

VALUE LABEL	VALUE	FREQUENCY	VALID PERCENT
Not concerned at all	1	570	54.5
Concerned about being able to renew lease	2	24	2.3
Slightly concerned	3	80	7.7
Very concerned	4	363	34.7
No response	9	7	.7
Missing		1	.1
Total		1,045	100.0
Valid cases	1,044	Missing cases	1

Source: LTC Landholder Survey, 1991.

The responses do indicate that the subjective feelings of insecurity are not as extensive as the lack of legal documents would suggest, that is, about 55 percent of the owners or leaseholders are not concerned about losing their rights to use the parcels. However, the

holders of about 35 percent of the parcels are very concerned about losing their rights, a very high level of subjective insecurity.

Limited practical rights to land. The various forms of holding the land rights and subjective insecurity of tenure may or may not have practical effects on the ways people deal in land. In order to document what the holders of land consider as their rights to land, the interviewers asked the questions depicted in table 1.3.

TABLE 1.3
Effective rights to land

As FAR AS YOU ARE CONCERNED, ARE YOU ABLE TO:	No. OF PARCELS FOR WHICH RIGHTS EXIST	
	Number	Percent
Sell the parcel another person	249	23.8
Rent out the parcel to another person	254	24.3
Use the parcel as collateral for a loan	305	29.2
Will the parcel to heirs	557	53.3
Use the parcel as desired for agriculture	790	75.6
Use the parcel as desired for building	599	57.3

Source: LTC Landholder Survey, 1991.

The responses indicate that in the perceptions of the land users, their rights to the land are limited, especially in terms of their access to the land market. Only about a quarter of the parcels are perceived as being eligible for sale or rental to another person. The parcels are not viewed as being useful as collateral for loans (only 29 percent of the parcels are perceived as guaranteeing loans). There is more widespread perception that parcels can be willed to heirs (53.3 percent).

The perceived usefulness of the land for agriculture is more limited than expected, in that only 75.6 percent of the parcels are felt to be agriculturally viable. This is due to the inclusion in the sample of all parcels held by the 435 people interviewed, including parcels with only a residential use. The perceived ability of the landholders to use the land for building is relatively high, over 57 percent, though not as high as one might assume given the housing demand.

In general, the subjective evaluation of people in the sample about their rights to the land they possess is that these rights are rather limited. The bulk of the parcels cannot be used for collateral, nor can they be sold or rented. The parcels can be passed on to heirs and

used for building. Most can be used as desired for agriculture, the minimum right expected among this sample of land users.

EXTENT OF TENURE INSECURITY FOR AGRICULTURAL LAND

Analysis in this section deals with the agricultural parcels. The data yield some insights concerning the extent of formal tenure insecurity, that is, the degree to which the people who hold and use the land have a legally recognized document which is a deed or certificate of title for privately owned land or a lease for state lands. Since the policy options for correcting the situations of formal tenure insecurity are different for privately owned and state-owned lands, the data are presented separately for each type of ownership.

In order to estimate the extent of the tenure insecurity problem for the country as a whole, the sample data were used along with the *1982 Agricultural Census* figures to estimate the overall degree of formal tenure insecurity in agriculture for people in possession of privately owned and state-owned land. Table 1.4 shows these estimates. The figures are undoubtedly only approximate indicators of the actual situation in 1992 due to the continuing occupation of state-owned land through formal and informal leases and squatting and the continual unrecorded transferring of rights to privately owned land. In 1982, there were 43,376 parcels of land used for agriculture by individual farmers, occupying 102,987 hectares.

The options for dealing with formal tenure insecurity on privately owned land include:

- ▶ finding a way to provide documentation of rights to land for multiple owners whose rights derive from undivided inheritances (the sample data indicate that approximately 12.9 percent of the privately owned land, or 10,696 hectares, is in this category); and
- ▶ providing certificates of title to those people who have legitimately purchased rights to privately owned land without recording those rights (the sample data indicate that there are approximately 21,476 hectares in this category; see annex 1 for a methodological note).

For the state-owned land, the objective would be to provide standard agricultural leases (SAL) to those who qualify and in some cases to grant land in freehold. At this point, we will assume that the most likely option is the granting of SALs to those who possess the land without such leases. For calculating costs, we make the conservative assumption that all present possessors of the land have a legitimate claim, though that assumption can be modified by some proportion once the field adjudication program has generated more information.

TABLE 1.4
Formal tenure insecurity on agricultural parcels
which are held on privately owned and state-owned land

	DOCUMENTS POSSESSED BY PARCEL HOLDERS				Total
	Up-to-date deed	Up-to-date lease	Other document*	No document	
Agricultural parcels, privately owned					
No. of parcels	12,416	1,879	9,551	6,963	30,809
% of total parcels	40.3%	6.1%	30.9%	22.6%	100%
Total area (acres)	37,313	6,633	24,959	14,013	82,918
% of total area	45.0%	8.0%	30.1%	16.9%	100%
Agricultural parcels, state-owned					
No. of parcels	0	2,337	6,045	4,185	12,567
% of total parcels	0.0%	18.6%	48.1%	33.3%	100%
Total area (acres)	0	4,094	8,610	7,365	20,069
% of total area	0.0%	20.4%	42.9%	36.7%	100%
Total agricultural parcels					
No. of parcels	12,416	4,216	15,596	11,148	43,376
% of total parcels	28.6%	9.7%	36.0%	25.7%	100%
Total area (acres)	37,313	10,727	33,569	21,378	102,987
% of total area	36.2%	10.4%	32.6%	20.8%	100%

Source: Central Statistical Office, *1982 Agricultural Census* (Port of Spain: Government Printer, 1986); and LTC Landholder Survey, 1991.

* Other documents include an out-of-date lease or a lease in the name of a person other than the landholder, a deed in the name of a person other than the holder, a tax receipt, a rent payment receipt, and a private purchase document or receipt.

With that supposition, the survey data indicate that there are 119 acres in the sample which are held through an out-of-date lease, 2 acres with a tax receipt only, 352 acres with a rental receipt only, and 405 acres with no documentation, for a total of 878 acres or 79.6 percent of the state-owned land that is individually held. Expanding to the national level, there are 15,975 hectares of land whose leasehold rights could be legally documented and recognized. It is assumed that the leases to be issued would be the standard agricultural lease of twenty-five years.

It should be noted that these estimates of the lack of legalized rights to land for both privately owned and state-owned land are conservative for two reasons:

- ▶ the sample data came from holdings of land with high agricultural potential (on lands with less agricultural potential, it is probable that the degree of legalized documentation of rights is substantially less because of the lack of incentive to register those rights); and
- ▶ the amount of state-owned land which is individually held in 1992 is substantially higher than was the case when the *1982 Agricultural Census* was conducted because of the leasing and occupation of state-owned land which has occurred during the past ten years.

What would be the results of the legalization of rights not presently legally documented? There are three likely economic results from the legalization of rights:

- ▶ increased access to short-term credit, with the expectation of a resultant increase in agricultural production of annual crops;
- ▶ increased investment in permanent tree crops (with the increased area planted in such crops, production should increase); and
- ▶ increased investment in semipermanent structures (animal enclosures, irrigation, soil conservation), with the expectation of increased income from such investments.

TENURE INSECURITY IN HOUSING

The implications of formal tenure insecurity for house plots are also illuminated from the 1991 landholder survey. While the sample was initially limited to holders of agricultural land, the sample of landholders was interviewed concerning all parcels of land which they held, including house parcels. There were 33 house parcels in the sample that were located on state-owned land, and 186 parcels located on privately owned land. Whether this sample of 219 house parcels is representative of the country as a whole is certainly debatable. Moreover, the sample is very small. However, the study can provide some indication of the situation. Annex 2 shows the results of the survey for house parcels.

Using these data in conjunction with the 1990 population census yields estimates of the extent of housing tenure insecurity at the national level. According to preliminary figures of the 1990 population census, there are 300,592 private households in the country (a household is defined as one or more persons living together and sharing at least one of the main daily meals).

Using the sample data as representative of the country as a whole, and assuming that each household occupies a house, an estimate of housing tenure security and insecurity can be generated, as in table 1.5.

TABLE 1.5
Formal tenure insecurity on house parcels which are held
on privately owned and state-owned land, national estimates

	DOCUMENTS POSSESSED BY PARCEL HOLDERS				Total
	Up-to-date deed	Up-to-date lease	Other document*	No document	
House parcels on privately owned land	119,435	34,197	69,926	31,645	255,203
%	46.8	13.4	27.4	12.4	100.0
House parcels on state-owned land	0	5,492	17,883	22,014	45,389
%	0	12.1	39.4	48.5	100.0
Total	119,435	39,689	87,809	53,659	300,592
%	39.7	13.2	29.2	17.9	100.0

Source: LTC Landholder Survey, 1991; and Central Statistical Office, "1990 Population and Housing Census," CSO Bulletin no. 1 (Port of Spain: CSO, 1990).

* Other documents include an out-of-date lease or a lease in the name of a person other than the landholder, a deed in the name of a person other than the holder, a tax receipt, a rent payment receipt, and a private purchase document or receipt.

While a more extensive study would be desirable, the available data indicate that a land rationalization program, which would provide legal documentation of rights to land, would improve the security of tenure for 47.1 percent of the households of the country, or 141,468 households with a total population of approximately 576,959 people. That improved security of tenure would enable those households to have easier access to credit for house improvements and would help assure that investments made in homes would be legally protected.

IMPLICATIONS OF TENURE INSECURITY

The land situation in the country has two faces: on the one hand, many lands, state-owned and private, are either abandoned or underutilized; on the other hand, there is widespread squatting on both public and private lands. There seem to be few market mechanisms or policy pressures that function to encourage a transfer of these abandoned or underutilized lands to those who would put them to better use. The rising population pressure, increasing demand for land, and a restricted land market have resulted in a significant increase in squatting on both state and private lands, for both agricultural and nonagricultural uses.

Part of the reason that the pressures on the land base find little release through the land market is the divergence between formal land records, which document in a legally acceptable way the interests in land, and the actual possessory interests in the land, which are not protected by the law. In simple terms, there is a high degree of tenure insecurity in the country. Landholders do not have the documentation that the law recognizes regarding their interests in land. Those who might wish to acquire those interests are inhibited from doing so because of the risk of not dealing with the true holders of those interests, as defined by law. Thus, landholders are constrained in the formal capital and land markets due to their insecure titles. Investors are constrained from placing their capital in the local capital and land markets because of this same tenure insecurity. Finally, the tenure insecurity and the rigidities of the land administration system have effectively withdrawn good agricultural land from the land market, forcing people who want land to squat or otherwise illegally appropriate resources from biologically fragile areas and from forest reserves.

The implications of these tenure patterns on Trinidad and Tobago's unique environment are significant. The separation of the land mass from that of South America left the country with tropical rain forests and a rich biological diversity. The colonial period saw the destruction of much of that environmental richness in order to satisfy the demand for sugar, cacao, and other crops. In recent years the pressure on forest reserves and national parks has increased due to the demands of the oil and timber industries and the limited land available for urban expansion and agricultural production, which has resulted in squatting. Forest- or swampland is sometimes viewed by urban and agricultural developers as offering high, though short-run, benefits if the use is changed to residential or commercial purposes rather than agriculture.

In terms of the tenure system for land with agricultural potential, landholders without secure title are less inclined to invest in preserving the long-term productivity of the agricultural land they inherit or purchase than they otherwise would be. This lack of productive investment contributes to soil loss through erosion, and the overall lack of secure title inhibits investment in the maintenance of forest resources, which require a long planning horizon and the security that investments made today can be enjoyed in the future.

The preservation of the country's biological resources and the development of a sustainable system for their protection and use is of critical importance for assuring a sustainable supply of forest products as well as for the development of tourism and the sustainable use of marine resources. Some more adequate combination of private and public interests in the management of the protected areas has to be found.

ANNEX 1.1**A methodological note on how the estimate
for legally undocumented rights
to agricultural land was calculated**

The sample data showed that there are 143 acres of private land with out-of-date deeds, 43 acres of land held with only a tax receipt, 175 acres with a private purchase agreement, and 209 acres with no documentation of how the land was acquired, for a total of 570 acres. Excluding the rent-free situation affecting 89 acres, leaves 481 acres as legitimately "owned" land but held without legal documentation of ownership, or 38.8% of the privately owned land in the sample. If we exclude the 12.9% of privately owned but undivided collective family ownership, we are left with an estimate of 25.9% of the privately owned land not having legal documentation of ownership. Generalizing that proportion to the national level (82,918 hectares x 25.9%) yields the estimate of 21,476 hectares.

ANNEX 1.2

**Formal tenure insecurity on house parcels
which are held on privately owned and state-owned land:
sample data from the 1991 landholder survey**

	DOCUMENTS POSSESSED BY PARCEL HOLDERS				Total
	Up-to-date deed	Up-to- date lease	Other docu- ment*	No docu- ment	
House parcels on privately owned land	87	25	51	23	186
%	46.8	13.4	54.8	12.4	100.0 (84.9% of total)
House parcels on state- owned land	0	4	13	16	33
%	0	12.1	39.4	48.5	100.0 (15.1% of total)
Total	87	29	64	39	219
%	39.7	13.2	29.2	17.9	100.0

Source: LTC Landholder Survey, 1991.

* Other documents include an out-of-date lease or a lease in the name of a person other than the landholder, a deed in the name of a person other than the holder, a tax receipt, a rent payment receipt, and a private purchase document or receipt.

Chapter 2

FORMAL AND CUSTOMARILY DEFINED TENURE SYSTEMS: OBSERVATIONS FROM A FIELD STUDY IN TRINIDAD AND TOBAGO

by

Harry Lemel

INTRODUCTION

In coordinating the landholder survey conducted by the Association for Caribbean Transformation (ACT) in four areas in Trinidad and one area in Tobago, I had the opportunity to get a close look at some of the complexities likely to be encountered in any future land adjudication process. Although the land tenure survey data will help quantify the occurrence of certain phenomena, it seemed worthwhile at this stage to highlight aspects of the situation which may be difficult to evaluate through formal data analysis:

- ▶ How do the people interviewed perceive their rights to land?
- ▶ How do their general aspirations, beliefs, and needs influence those perceptions?

These are critical questions to improving the fit between land policy and those who will be most directly affected by it.

My comments are presented here in a rather unstructured format and are simply meant as a way to collect and share some observations and thoughts at this stage of the research. Emphasis has been placed on issues which will likely have to be considered in adjudicating tenure rights. Most of my remarks are based on interviews with respondents and others in two of the research sites: Fairfield/Broomage and Goldsborough estates, and Pembroke and Goodwood villages in Tobago. The dominant tenure categories/situations encountered in those sites as well as others included in the survey are indicated in table 2.1.

Respondents advanced a wide variety of bases to legitimize claims to land currently at their disposal. Some claims were verbally based, others were documented, and others might be termed "equitable" in the sense of being recognized locally as justified. Before presenting examples of what was encountered, it is useful to start by considering the matter of "squattling." To what extent do official and popular views of what this constitutes diverge?

In grappling with this question, some of the more profound difficulties in adjudicating rights will be highlighted.

Table 2.1
Major tenure forms represented in the survey sites

Sites	Tenure type				
	Caroni	NHA	State land	Private	Squatting
Fairfield-Broomage	**	**		*	
Warren-Munro				**	*
Couva			*	**	
Squatter site (Freeport district)			*		**
Puzzle Island/Penal			**	**	
Goldsborough			**	*	*

** Major tenure category in site.

* Minor tenure category in site.

WHO IS A SQUATTER?

In weighing claims to land, it will quickly emerge that from a strictly technical and legal point of view, a very large number of people indeed are "squatters," and from a legal perspective might be denied a claim to the land they occupy. However, one is struck by the variety of situations that would bear on the relative equity of potential claimants' positions and the necessity of taking these circumstances into account.

In some of the areas covered by the landholder survey, current occupants and their ancestors (going back two to three generations) have long been occupying and using the same land and have been living in stable communities. What has changed over the years is the ownership of the land they use, that is, the buying and selling of large estates which have ultimately come into the state's possession. People in these cases argue that their rights precede this new situation and should not be extinguished. These same people, however, are labeled "squatters" in many instances because of the questionable nature of documents possessed as proof of a legitimate connection to the land they occupy and use.

Fairfield Estate is a prime example of this dynamic. Most people there possess only rental receipts, with the majority of these receipts being in the names of deceased persons. This is allegedly due to NHA's unwillingness to change the names on their receipts to reflect the identity of current occupants. The problem is most severe for those who marry into local

families and move into the community while utilizing land "inherited" by their wives. In those cases the names of users of the land and the names on the receipts have little to do with each other. The insecurity felt by people using Fairfield Estate lands is further aggravated by the absence of parcel surveys, something that has resulted in widespread encroachment and frequent boundary disputes.

A similar situation prevails on leased state lands in Puzzle Island near Penal. Many respondents there claimed that they had been operating in accordance with rental agreements with those who owned the land before it was purchased by the state. Some even speak of having verbal 99-year lease arrangements with the previous owners. Many had stopped paying rent several years ago. Those who were paying were frequently doing so in the names of deceased persons. Some respondents claimed that the local land office had ceased collecting rents.

If the adjudication process evaluates claims solely on the strength of currently available documents, it will ignore a complex historical reality and in so doing will undervalue the equity of claims in situations such as those just described.

The above cases should be distinguished from those in which occupants are more readily identifiable as "squatters." The Derreck Estate (see case 1 below) is now occupied by over 50 squatters. It is common to hear claims of "verbal permission" having been given to use the land. This was the claim of one of the respondents, Francois (5303).¹ Formerly an employee on the estate, he says that he started using the parcel 50 years ago. Following the destruction and abandonment of the estate after Hurricane Flora in 1962, he and some of his friends were each given verbal permission by the owner to use the land for crop farming. Now the owner is dead and Derreck's sole surviving son, who lives and works in Trinidad, shows no interest in the land. Francois occupies 4.0 acres, which are used for a garden. He is quite aware of his status as a squatter and refused to provide the names of those land users bounding his parcel for fear of incriminating them. His wife manages the parcel with the assistance of her children. They said that they would have done much more with the parcel in terms of building structures, planting trees, and so on, had their tenure position been more secure. They acknowledge that they are taking a chance, something reflected by the fact that Francois and other users of the Derreck lands do their farming out of sight from the road.

Generally squatters view the prospect of being ejected from private land as much more of a real possibility than being removed from state or Caroni land. The main reason is that they have seen the government's hesitation to eject squatters. One person (George) squatting on state land in Tobago's Goldsborough Estate claimed that he was not too worried about losing access to the land and felt secure growing whatever he wished, because he saw that, even in cases where land had been assigned by the state, people rarely moved onto the land to begin cultivation. Squatters have also observed many people who had been squatting on

1. Numbers cited in connection with cases refer to landholding ID numbers utilized in the landholder survey.

state lands ultimately obtaining provisional leases or verbal permission to use the land. This was especially common in our Tobago sample (5251, for example, squatted for 10 years; 5331, parcel 2, is another case).

George has been squatting for 9 years and recently obtained THA verbal permission to use the land; 5219 applied, but has not heard anything yet. In another case (5244), amusing in its irony, the respondent used to farm together with his father and brother-in-law, but does so no longer. They all used to be squatters. He gave up due to praedial larceny. Every time he would clear a portion of land, someone else would come and allegedly claim it "the next day." So to avoid any problems, he gave up. He has since applied to THA for 5 acres but has not yet received a reply.

Yet even on state land, concern evidently heightens when the state begins to assert its control over a given area. One respondent, who is squatting on 2 acres of state land in Tobago, is "very concerned" that he might lose his acreage since the government was sending new farmers to take over land in nearby parcels. This has led him to use the parcel less than he otherwise might have wanted (5272, parcel 2).

According to one self-confessed squatter on Caroni land near Prince's Town, he and other squatters have been served with quit notices, but he has paid them no attention. He feels that he has nothing to lose: he does not have to worry about land preparation fees—his father owns a tractor; his biggest expenses are for fertilizer and labor. He says that most squatters, including himself, restrict themselves to short-term crops (yams, vegetables, etc.), though some accept the risk of growing cane.

BASES FOR CLAIMS

UNDOCUMENTED

Active use. The clearing and continuous cultivation of land have much to do with people's perceived rights of use. This is partly due to the rapid reversion to bush or forest of unattended land and the high costs of clearing once this happens.

The active use of specific portions of family land parcels constitutes the main criterion for establishing individual rights in a particular parcel for which there may be several co-owners. This connection between use and rights finds its way into virtually all land tenure situations. On state land, squatters often feel they have use rights due to their having actively cultivated otherwise abandoned land. The state partially recognizes this type of claim by intermittent promises of regularization. In the case of state leases, attempts to throw people off or switch plots are often met with fierce resistance. (In one such case the lease was probationary and never upgraded by the ministry or the respondent.) In Goldsborough Estate (Tobago), where a distribution program is under way, a squatter who was offered a plot was threatened by the current occupant that he would be "chopped up" if he dared set foot on the

land; he decided not to. In another case from the same estate, a respondent was involved in a dispute with extension over his right to continue using land that he had been leasing for the last 19 years. (See case 3 below.)

Land is often given rent-free by people who no longer can use land to those who need it. This is both altruistic in the sense of helping out another individual and practical as a way of keeping the land clear. Such users or even renters on private land will claim justness of their right to continue using or renting land on the basis of having "cleared the land" and having applied their labor to improving it.

Informal inheritance assignments of land. In all tenure categories, the informal assignment of parcels to children when the parent or grandparent is too old to farm is a widespread and evidently dominant pattern. In some cases these assignments are regarded as final by those involved, while in others the allocations are not as explicit and are perceived as potentially open-ended and somewhat uncertain. One striking feature of such transfers is the frequency with which they occur while the parent is still alive.

STATE AND CARONI LAND. There appears to be an overwhelmingly popular perception that state leases, whether documented or not, are heritable or bequeathable. In many cases such transfers take place while the parent is still alive but approaching an age when farming has become too difficult. Such assignments of land to heirs may be more or less firm; in many cases, heirs are in what may be referred to as a "rent-free" status for several years with the likelihood, but no guarantee, that they will end up with the parcel they are currently using. In one case of a more explicit assignment, the patriarch of the family had assigned specific parcels, both owned and rented (from NHA), to his married children. His eldest daughter, who had just married, was to take over a rented parcel, build a house there, and plant crops. In many cases, a family land situation develops; this may be the consequence of the ascendant's explicit wishes or the result of death without a will, either verbal or written.

Such informal transfers are in formal terms forbidden in land under Caroni, state, or NHA control. Yet they remain pervasive. On Caroni lands procedures exist for such transfers, but are evidently difficult to effect. This was explained by some respondents and Caroni field officers to be due to the fact that there are people "in line" for the land when it frees up. It also provides Caroni officers with a powerful temptation for influence peddling. The transfer from parents to children of land rented from NHA is virtually universal on Fairfield Estate. However, NHA has been incapable of updating or transferring the names of renters on rental receipts from parent to child (e.g., 1129 and Saddoo Boodoo). This can be a major factor in undermining tenure security and increasing social conflict. In one case (1124), two brothers inherited an NHA lease some 20 years ago. The fact that the receipt was and remains only in the older brother's name is a cause for concern for the younger brother.

In annual state leases, which in practice frequently last for decades, descendants are not allowed to inherit by will. They must appeal to the Ministry of Food Production for the

transfer, which in turn must be approved by the cabinet. This is a lengthy and discouraging process, leading many to skirt the risk of being turned down by simply reaching informal arrangements among themselves. The result is a proliferation of lease documents which refer to deceased former lessees, not to the actual occupants.

While family land situations of co-ownership among heirs of undivided shares are usually associated with private lands, the same phenomenon develops on state land. For example, in Fairfield Estate, a 1.5-acre parcel (1067), originally and still in the name of the grandmother, was portioned out to seven heirs (uncles, aunts, and parents of the respondent). The heirs could use any unused portion; none of the heirs have sold shares to other heirs, among whom there are no serious disagreements. Asked if he was concerned over rights to land, the respondent answered, "No, because family relationships are good." However, his discretion over parcel use was limited to agriculture, with all the heirs agreeing that other uses would not be tolerated. Some informal border marking has taken place since the inheritance took effect. Heirs have added fences, bushes, and gates to mark off their parcels.

Verbal permission. Informal inheritance arrangements constitute one variant of "verbal permission" to use land. Reference to such verbal permission as the origin of rights is encountered in connection with both state and private land. The claimed permission may be directly from the landowner or from a nonowning occupant who is renting the land. While claims of verbal permission may be nothing but an unprovable myth, it appears often to be based on fact, something confirmed by several respondents who said that they themselves had given such permission to friends or relatives. Some variants of this practice are described below.

STATE LAND. In Tobago, THA officials occasionally give such land-use permission to aspiring farmers, sometimes with and sometimes without the understanding that the permission will evolve into a formal lease. Local extension officers in Trinidad and Tobago will also sometimes extend such permission. Those with leases may "give permission" to relatives or friends to use the land if and when they are no longer in a position to do so themselves. Sometimes the new occupant pays whatever rental is due under the name of the legitimate lessee and sometimes the new occupant is freed of this obligation.

PRIVATE LAND. As already noted, many people presently using formerly estate land now owned by the government say that they first began using the land with the permission of the former owners. This is also commonly heard on estates which are still in private hands but long unattended by the owner or the owners' successors. Rental agreements involving private lands, which for the most part remain unwritten, also leave the current occupants in the position of being able to claim only verbal permission even when they are regularly paying rent. More common is the extension of permission by owners to friends or relatives in what are "rent-free" arrangements. This ensures that the land remains cleared and serves the purpose of preventing encroachment by squatters. The perceived security of occupants under rent-free arrangements varies. (See case 5 below.)

DOCUMENTED CLAIMS TO LAND

Approximately two-thirds of the users of 945 parcels of land studied in the landholder survey cited some type of document as the basis for their land use rights. In connection with "owned land," deeds were cited for some 30 percent of the parcels, 23 percent being in the respondents' names. Preliminary figures from the survey indicate that about half of those who inherited or purchased land had deeds in their own name; about 15 percent referred to the presence of deeds in the names of parents or grandparents; others had only tax receipts or sales receipts. Mentioned in connection with nonowned parcels were lease documents and rental receipts, some of which were in the respondents' names and some of which were in the names of parents, grandparents, or other relatives.

Among nonowners the possession of a lease or rental document is rare indeed. While documented agreements existed in most of Caroni's leases, lessees complained that they were not given copies and had little idea of the provisions other than that the land was intended for agricultural purposes. One respondent said that he did not know what he could or could not do with the land, though as a holder of an agricultural lease, he presumed that building permanent structures would not be allowed. As for planting trees, he was unsure but felt that he could; he had "never asked."

For other types of leases, and especially for private rental agreements, most were verbally decided. In addition, a substantial number of people were utilizing private and state land under "rent-free" arrangements without the benefit of any documents to describe the terms of the agreement. Details about some of the variants of these documents are presented below, as are observations on their implications.

Deeds. Claimants with deeds will presumably be the simplest to deal with in an adjudication effort. However, even for them several complications are likely to surface. One area of possible difficulty concerns "joint deeds," which appear to be quite common in the sample. These are often sought to prevent the subdivision and unauthorized sale of what is regarded as family land. Such deeds appear to be especially routine for parcels used for housing.

In one case, the respondent bought eight lots from Gelnish and Waller in Fairfield. The original deed had been in the name of the respondent, his father, and his mother. After the respondent's mother died, his wife became party to the deed, co-inheriting the respondent's mother's two lots. These lots were not partitioned off or separately named in a deed, but remained part of the original joint deed. Partition did occur, however, after the wife transferred her share to one of her sons. A survey was conducted and a deed issued in the son's name.

In another case, the respondent's father had a parcel with a joint deed in the names of the respondent's father, his brothers, and his sisters. The original tract was 5 acres. Each of the three siblings, including the respondent, got about 1.6 acres. However, there was no written will or formal survey partitioning the parcel, and the original joint deed in the father's

name is all that the heirs currently have. A similar situation existed for another respondent whose father had bought two 5-acre parcels in 1919 for a total of \$200 under his and his mother's name. This joint deed is all the respondent currently has in his possession.

While people such as those just described may have wanted to formally partition the land they inherited, the time and cost involved and the fact that people regard payment of property tax as sufficient to maintain the legitimacy of their claims inhibit them from going to the trouble.

One phenomenon encountered among Fairfield residents was the possession of copies of deeds rather than officially drafted and stamped versions. These copies are all that purchasers received for lots sold by the original private owners of the estate. The latter had subdivided lots along the roads running through the estate and sold these as front and back lots for \$500 in 1959/60. Only recipients who went to the Red House to get bona fide deed documents got them, and these represent a small minority of cases. Others who had approached banks for loans utilizing documents in hand were turned down because the deeds "were no good."

Rental of land. As noted above, renters, whether of state or private land, rarely possess documented lease agreements. Most receive only rental receipts, and the practice of updating these to reflect changes in the identities of current occupants is rare, frequently because the owners refuse to make accommodation for such changes.

Major aspects of the situation of NHA lands in Fairfield Estate have already been described. In addition to the pervasive problem of so many receipts being in the names of deceased persons, these receipts generally combine payments for all parcels being utilized; payments are not itemized on a parcel-by-parcel basis. Another troubling feature of the situation is the evidently widespread practice of selling leases or, more precisely, the sale of what locals term the "good will" of the leases to people to build houses. The only document that the new occupant retains is a rental receipt of the original lessee, usually not even in that former occupant's name, but instead in the name of a deceased parent or grandparent. The person buying the lease then continues paying rent to NHA under that name. In one such case, involving 2 acres of NHA land, a lease was "sold" in 1984 for \$1,900. No survey was done and the seller presented only a rental receipt in his name. There was no written record of the transfer and the lease is still in the original occupant's name.

Renters generally feel secure as long as they are up-to-date on their payments and have receipts to reflect such payments. This was the general sense one got from lessees of Caroni lands on Broomage Estate. In most cases, the same lands had been in the family for many years, with many having inherited use rights to parcels with or without those transfers having been registered on the receipts. Any insecurity that was felt related to uncertainty over the government's ultimate intentions regarding Caroni lands.

Many in the two rice-growing portions of the state land sector in Puzzle Island have been operating without documents of any kind and have not been paying rent. In many cases,

land had been leased by ascendants on what were claimed to have been 99-year verbal leases. This has led to an understandably insecure tenure situation. One person in this predicament (4002) had been paying rent, but the government stopped collecting a few years ago. He said that he felt more secure when he was paying rent and had a receipt to indicate access/use rights to the parcel. Now he feared that he could be removed from the land. He said that many of the rice growers in the area shared his sense of insecurity about the future.

Most of the problems cited in connection with public land are also encountered on private lands. Private owners generally voice a reluctance to rent out their lands. The virtually universal refrain is: "Once the land is rented out, it will be impossible to get the renters off the land." Many respondents said that they would rather see the land revert to bush than rent it out. This indeed is what frequently happens when the owners find it uneconomic or physically impossible to actively farm their land. Their main fear under such a strategy is that lack of presence may invite squatting. Rent-free arrangements which establish a presence on the land represent one way to fend off squatter encroachment. In the Warren-Munro area, the site where renting is most widespread, owners seek to protect themselves by providing nothing in writing to the renter; agreements are verbal and no rent receipts are provided. In the Fairfield/Broomage area, a private owner who intends to subdivide into house lots land which he has long rented out for agricultural purposes has stopped accepting rental payments in order to deny renters any basis for claiming rights to the land.

Persad lands border the eastern side of Fairfield estate. Evidently these lands, which many in the Fairfield area have been renting for several decades on an annual basis for agriculture and housing, are the same 100+ acres labeled as "Maharadge" (the original owner's name was Debe Maharaj Persad) lands in the ward sheet for the area. Currently the land is owned by Basdeo Persad and his brother. Some people, when asked why the Persads continue to hold onto their land while receiving so little in rent, responded that the Persads did not want to sell because they considered the land to be family land. One renter (1071) said that the same land had been rented from the Persads since at least 1910. Rent currently stands at \$20 per acre (\$15 for 7 tasks) plus valued-added tax (VAT), a recent addition. Rent receipts are still in the father's name. There is some uncertainty about the ability to continue renting these lands, since the owners have raised questions about the future disposition of the land (this seems to contradict the supposed reluctance of the Persads to sell out). Indications are that they may wish to subdivide the land into housing lots.

Interestingly, the Warren-Munro study area, which consists almost exclusively of private lands, has a very high level of rentals. Virtually all agreements are verbal and payment of the usual \$300 is not recorded by receipt to prevent renters from then making claims of use rights at some point in the future.

On what was formerly known as Craignish Estate, Mr. Gopaul, the current owner, has been in a 20-year legal battle with agricultural tenants since he announced his intention to subdivide the land for housing. The land is prime agricultural land, something that led the government to prevent Gopaul from pressing ahead with his plans. He has apparently won

the subdivision and change-of-use battle and now refuses to receive rental payments from tenants.

Tax receipts. Primary reasons for relying on tax receipts instead of updating deeds or settling an estate are the high survey and legal costs. People realize that payment of taxes may be adequate to preserve their claim. Sometimes (as in 5266) people in the process of acquiring land will pay taxes in the interim, even if the legal deed is still in that other person's name. In addition, extremely low levels of property tax invite the practice of competing heirs trying to establish their claims by making tax payments.

Some cases will illustrate these phenomena:

In one case where taxes were relied upon to maintain the legitimacy of a claim, the cost of surveying the 1-acre parcel in 1990 was \$7,000 and the lawyer's fees to update the deed were \$10,000, amounts the respondent felt he was unable to afford. The respondent said that although the parcel was left for him by his father, he had to get matters straightened out by having the deed transferred into his name. There was a will in this case, something which makes the respondent confident about the eventual outcome. In the meantime, he continues to pay the tax.

There are also cases where there is a deed in a grandparent's or parent's name, with the land having been informally divided and each heir paying property tax in proportion to the respective share of land occupied (e.g., 5339). Some pay taxes for the whole parcel, even though they are eligible for only a portion of it, hoping that this may establish a claim for the whole parcel sometime in the future.

In cases of intestate inheritance, one heir may (with the agreement of the other heirs who informally renounce interest in the land) bear the burden of making tax payments over several years. Since this in itself does not extinguish the other heirs' claims and there is nothing in writing to record renunciation by some of the heirs, those paying the tax are left feeling exposed to possible claims in the future. One case illustrating this involves a respondent who inherited rights to a 5-acre parcel through his father, who had died 2 years earlier. The father had acquired it through his own mother, who had a registered deed in her name and a survey plan. The father obtained the deed (which he subsequently lost) from his mother, who on her deathbed asked that the land not be sold or subdivided. There are 6 potential heirs: the respondent, one brother, and 3 sisters, plus the respondent's father's brother, who is in his late 70s and who has no children. The respondent's father had been paying property tax on the land for many years. Apparently the respondent discontinued those payments. The uncle had never paid tax, saying all along that he was not interested in the land. What the respondent fears is that the uncle may now turn around and press his claim for half of the land. The respondent's son planted cane on the land last year, but on only 1 acre. This is partly because the son is the only one in the family able to work and partly because they fear trouble from the other heirs should they wish to do something with the land. Cane is a 4-5 year crop.

There is also the case of family land inherited from a grandmother (5325). There were originally 2 heirs, one of them being the respondent. The grandmother had been paying property tax, something continued by the respondent's father for over 50 years and then by the respondent for over 19 years after the father died. Now the respondent's cousin has started paying property tax in the grandparent's name. This has caused the respondent some concern over his future access to the parcel. Although he feels free to plant and build what he wants, he does not feel that he could sell, rent, or will the parcel to heirs or use the parcel as loan collateral.

GENERAL OBSERVATIONS

This review has focused on the difficult and problematic aspects of the current situation. Yet circumstances such as those described appear to be far from isolated cases. In addition to the confusing and outdated state of records and maps, which will have to be put in order, it will be necessary to understand why matters are so disorganized. Certainly part of the answer lies in the chasm between administrative procedures and rules and the needs and desires of occupants and users of land, especially the users of state and Caroni land. Areas in which these gaps are most notable include:

- ▶ the popular desire to pass on land to children,
- ▶ the matter of adapting to changing capacities and needs of households, and
- ▶ adapting to the problem of praedial larceny.

Regardless of rules to the contrary on state lands and to a certain extent on Caroni lands and rules against excessive subdivision (under 5 acres) on private lands, informal divisions have been very numerous and will probably continue to occur. Informal divisions are difficult to observe, which makes enforcement of the formal rules difficult. It is also the case that the pressures to subdivide informally are immediate and pressing for those concerned. Parents wish land they have worked on all their lives to go to their children. Often land is the only valuable good that the parents have been able to accumulate, and often it is viewed as the most prized asset they can offer their children.

Furthermore, as the domestic cycle goes through its stages and the capacities and needs of the households change, renters and lessees confront leasehold arrangements which provide little flexibility to respond to these changes. Households that are no longer able to cultivate the land and are unable to rent it out or assign it to those who could farm, and yet wish to maintain a grip on the land to permit them to pass it on to children, engage in officially prohibited transfer practices.

Unauthorized building poses another serious problem for land administrators. Yet, in the absence of alternative affordable lands to give to their children, people will build on state land even if they know this to be contrary to law.

Another key reason for people engaging in such illegal building is that in face of widespread praedial larceny, a presence on the land is necessary if certain crops are to be grown. Tree crops and vegetables are especially prone to theft, leading many to concentrate on crops such as cane, rice, and root crops. Current diversification efforts will fail unless the problem of praedial larceny can be dealt with either by undertaking special measures (patrols, etc.) or by permitting farmers a presence on the lands they farm.

In a basic sense, people are adapting to problems created by an inherited estate structure in which homes and cultivated lands were physically separated from one another. Spiraling land values have fueled the desire to hold onto lands even if they are not used or remain underutilized, since parents realize that a situation has developed in which the purchase of land by children for housing is now virtually out of reach. It should be noted in this connection that one of the major tenure security problems encountered in the survey pertained to houses built on land owned by other private persons or the state. People pay rent for the land, but worry about their ultimate fate. Will the heirs of the person originally rented from want to dispose of the land or use it for different purposes? Although they may have the first-option to buy if the owner decides to sell, many cannot afford to do so, suggesting the need for a credit program providing for such buy-outs through government-guaranteed long-term mortgages.

CASES

CASE 1 SQUATTERS ON DERRECK ESTATE, PEMBROKE VILLAGE, TOBAGO

The original size of the estate parcel was 150 acres. There is no indication that any portion of it has been officially sold or given away. This was once a prime cocoa plantation which was devastated in 1962 by Hurricane Flora. Efforts were made by two heirs of the original owner to recultivate and upgrade the estate, but one was killed in an accident on the estate while at work. The other heir left and never returned.

For the past 25 years the taxes have been paid by the caretaker, John Duncan, who has worked on the land and maintained as much as he could. However, three years ago, when disabled by rheumatism and arthritis, he stopped paying the taxes. He has since contacted the remaining heir, who lives in Trinidad, but the heir showed no interest in what was happening on the estate.

Duncan still lives on the estate in a broken-down shack underneath a cocoa drying shed, the estate house having been burned down. His only current source of income is his pension.

There are about 20 squatters who may have been given permission to use the land. Some of these people were previously laborers on the plantation and probably rented from the Derricks after the hurricane. These persons no longer pay any rent, being unwilling to

pay to Duncan. Squatters have moved into other areas of the estate, cutting down the remaining cocoa trees and clearing the land to cultivate short-term crops.

The Derrick land is bounded on the northeast by Richmond Estate, on the southwest by the Pembroke River, and on the northwest by Benjamin's, Duncan's, and Robert's estates. All of these estates, formerly prime cocoa farmland, have been abandoned. The main factors contributing to this decline were:

- (1) the devastation caused by Hurricane Flora;
- (2) high intensive-labor demands;
- (3) irregular rainfall and prolonged droughts;
- (4) low yields from existing trees; and
- (5) competition from West Africa.

Since cocoa is not a ready cash crop, preference has shifted to bananas, ground provisions, and legumes. Moreover, the squatters, unsure of their future on the land, have opted for quick-turnaround crops.

CASE 2 TOBAGO/GOLDSBOROUGH ESTATE

The respondent has a tourist guide business and has been in control of some 25 acres for the last 14 years. The land used to be covered with cocoa trees and was controlled by a nonprofit community organization. The respondent was allowed access to the land, clearing cocoa trees from some 5-7 acres, where he now has hundreds of citrus trees, other fruit trees, and the like. He also raises vegetables and has developed some stands of bananas. During the more recent phase of his occupation of the land, he was under a probationary state lease for 3 years. In 1989, he obtained agreement for taking over the house that was on the land before he occupied it. Since then he has been waiting to obtain cabinet approval for transfer of the lease. He now has a document which indicates that he has applied for a lease. The lease is to be for 25 years. (He had assumed control of the land 12 years ago.) In a sense he was squatting for most of his occupation of the land; this did not stop him from investing in the land and planting long-term crops. He said that the main limitation on what he could do with the land was his inability to obtain subsidized tractor-pool services to get the area plowed. This problem, incidentally, was cited by many Tobago respondents.

He says that the tourism business and farming are mutually supportive; tourist guide business provides cash for the farming; he can sell fruit and so on to visitors. He is well educated and used to work for ADB. He has a post-secondary certificate.

This case raised some ambiguities as to classification: Was the respondent a squatter, or was he utilizing the land rent-free?

CASE 3 TOBAGO/GOLDSBOROUGH ESTATE

Steven Des Vignes, 87 years old, was interviewed in his daughter's store, which is on Mr. Des Vignes's homesite parcel on Windward Main Road. He is currently involved in a dispute with extension over his right to continue using land that he has been leasing for the last 19 years. The government wants to transfer his land to a government employee who is also involved in a taxi business of his own. Mr. Des Vignes feels that after all the effort he put into clearing the land, it is unfair that some other person should simply take over without any compensation for all the work he put into clearing the land and for all the trees he has planted. He feels that this is doubly unjust, given the fact that there is so much land available which this other person could be assigned to clear and use. He feels that the assignment of government leases is based on politics, not interest in and capacity to work the land. He cites cases where people given leases go to the bank to get the low interest loans for which they become eligible to start up their farming operations and then use the money for other purposes such as buying a car. He says that he would be willing to give up the land, if he would be compensated, and suggests that the government send in an evaluator to assess the value of the improvements he has put onto the land. [An extension agent told us that the problem with this informant was engendered by a mix-up over the parcel numbers and that his was assigned by mistake.]

This would be the second time that he was moved off land that he had cleared and put to productive use. The first time was when a former owner of the estate for whom he had worked allowed him to use some land. He lost it when a new owner bought out Nanton. In the mid-1960s the new owner sold the estate to the government for \$450,000 (he had bought it 14 years earlier for around \$150,000). He started using his currently leased plot around 1968 and was given a probationary lease in 1972. He has since continued paying rent on the land. The lease has not been upgraded to a regular lease. He feels that he should have been informed about the lapse if there was one.

Despite his advanced age, Des Vignes is actively involved in farming, going out into his fields—an hour's walk away—every day. He is currently clearing a 1-acre portion of a 2-acre adjoining plot which he has encroached upon during the last couple of years. He claims that the trees on this plot were "shading his crops," so he cleared them, and since no one was using the land, started planting there himself. He restricts himself to short-crops there. In terms of boundaries around parcels on the estate, he says that although these may exist, they are currently invisible, being covered up by trees and brush. He thinks that the government should do something to clear traces around the plots and maintain them.

His hope is to leave that land to his daughter and son-in-law, who provide him with help occasionally. They have nothing but a small store and part-time work to support them and their five children. He helps out in the store during the day when his daughter is away at work. Production on the leased parcel is largely for consumption purposes. Although he grows about 100 plantain/banana trees, he sells little, bartering with friends and neighbors for what he needs and occasionally selling some mangoes or avocados for pocket money.

The situation about the parcel does not worry Des Vignes that much; he is determined to stay on unless he is compensated. If ultimately forced off, he will be content to live off his pension and plant more intensively around his house. He is also in the process of trying to sell a 4-acre parcel which he owns jointly with one of his sons, who is in New York and who does not intend to return to Tobago. He expects to get something like \$90,000 for the land and will split the proceeds with his son.

CASE 4 TOBAGO

This is an interesting inheritance situation. The land belongs to the respondent's wife's family. The wife was purchasing the land (5 acres) for \$30,000. She made a down payment and then stopped because she did not get the deed for the land, as had been arranged. Her uncle is very old now and everything has come to a standstill. Although she is confident that she will ultimately inherit the land after her uncle dies, she still feels insecure because her financial situation does not allow her to finish her payments to be completely certain. She has already put improvements onto the land: a pigpen, a chicken coop, a house and pipes for water. She has also planted some 190 trees, 150 of which are bananas. She has been using the land for 8 years.

CASE 5 PRINCESS TOWN

Agostini Baptiste, the respondent (aged 64), and his wife, Veronica (59), are both too old and sick to work. She does a little puttering around in the yard. They live in a house owned by the wife's mother—not her natural mother but someone who raised her after her mother died when she was less than a year old. They scrape by on public assistance. The mother also lives on the same 2-lot parcel, in a house behind the Baptiste's, along with 2 other adopted daughters. The respondent and his wife feel a bit insecure about this "rent-free situation."

The lots were bought in the 1950s, apparently from a Mr. Gelnish, for \$500. Angelica, the wife, says that she expects to inherit but is unsure. She is not on good terms with her 2 sisters and fears that she might be left out of a will. Agostini has some rights to another parcel through his father, who died two years ago. This is a 5-acre parcel passed down to the father through the father's mother. She (Mary Baptiste) had a registered deed and apparently there is a survey plan for this parcel. The father obtained the deed from his mother, who on her deathbed asked that the land not be sold or divided. There are 6 potential heirs: the respondent, one brother, and three sisters, plus the respondent's father's brother, who is in his late 70s and has no children.

The respondent's father had been paying property tax on the land for many years. Apparently he has stopped making these payments. The uncle has not paid, saying all along that he was not interested in the land. What Agostini fears is that the uncle will decide to press his claim now or in the near future despite his not having paid any of the tax. The respondent's son planted cane on the land last year, but only 1 acre. This is partly because the son is the only one available to contribute labor, but also because they fear trouble from

the other heirs should they wish to do something with the land. Cane is a four- to five-year crop. Although Agostini claims that he once had his mother's deed, he lost it. No will exists and no lawyers were involved after the respondent's father died.

Agostini wants to get things straightened out, but says that he barely scrapes by as it is and cannot afford the services of a lawyer to try and find the deed and arrange for the final disposition of the estate. Part of the problem is that he would have to go to Port of Spain, probably several times, before he might be able to track down record of his grandmother's deed.

CASE 6 PRINCESS TOWN/FAIRFIELD ESTATE

The respondent, Pinky Lalchan, had inherited four parcels from her father, one that had been owned by the father, two rented from NHA, and one rented from Persad, a large private owner in the area. Her homesite parcel is part of a 1-acre parcel, the owned one which she and a sister inherited.

The details of that inheritance are as follows: The parcel had been purchased by the grandfather and was passed on to her father, who had no brothers or sisters. Pinky has three sisters and one brother. The father left that parcel to her and one of her sisters. Although the father died nine years ago, formal arrangements, including the land survey, are still incomplete. The original registered deed is still in the grandfather's name (Sharmnath Ramdalip). There is also a survey plan for the entire 1-acre parcel. The respondent's father had not updated the deed in his name.

The father did, however, transfer the deed into the names of the two sisters before he died. The two sisters started the process of partitioning the land, hiring a surveyor to fix the boundaries for the constituent 0.5-acre parcels due each sister. Survey work commenced in 1985, with a \$500 down payment toward the total \$1,500 due. Survey work was halted in the face of disagreements with neighbors about the precise location of the parcel's outer boundaries. This was cleared up after the neighbors themselves had surveys commissioned for their own parcels. The two sisters are still waiting for the surveyor to complete his work so that the partition can be finalized. Currently the respondent lives on her portion of the parcel, having renovated and expanded the house that her father had originally built there. She farms the other 0.5 acre that her sister will eventually take over. The Inland Revenue Assessment ID number for this parcel is Z-127.

Another parcel (8.75 lots or 1.75 acres) on Matilda Road went to the respondent's brother and her mother. The third piece, 1.5 acres, went to the two remaining sisters and her brother. All these arrangements were made while the father was still alive. In addition to the owned parcels, the father had been leasing three parcels, two from Fairfield Estate owners (private prior to 1965 and public afterward when it was purchased by NHA), and one from Persad (a private landowner), with over 100 acres bounding Fairfield Estate on its eastern side. These rentals date back to the respondent's grandparents' days. She farms the privately owned parcel and the smaller of the two NHA parcels herself and another farm

jointly (1.7 acres) in what amounts to a family land situation. A nephew (who was raised by the respondent's father) built a house on that land and occupies two lots. The house occupies the same spot formerly occupied by the respondent's grandmother's sister's house. That house was destroyed by fire. The land is farmed jointly by the respondent, her sister, a brother, and the nephew. While the respondent has priority by virtue of the inheritance arrangements to plant on that parcel, a brother-in-law is the main farmer-manager.

This complicated arrangement is an example where a family land-management agreement has resulted in maximal cultivation of a parcel that otherwise would probably have been left uncultivated, or at best partially cultivated, due to distance of the parcel from the respondent's home, advancing age, and shortage of labor in her immediate family. Everyone helps out and profits are divided from crops grown. The parcel is intensively cultivated with root crops, vegetables (mainly lettuce and bok choy), and corn and peas during both dry and rainy seasons, something made possible because of a spring located on the parcel.

The respondent says that she wants to build a house for her daughter on the smaller of the family's two NHA parcels, but has held back in the absence of papers or permits allowing her to do so; she doesn't want to see the house razed. She recalled the trauma in the past: one of the tenants in the area, who had some land fully planted, had his crops cleared without any compensation when the land, along with other parcels, was sold for the construction of Christ College. She would like to build three houses there, with crops planted in the back—an apparently ideal arrangement for many because of the sometimes long distances from current homes to cultivated fields and fears of praedial larceny.

The respondent says that her restraint in building is atypical of people in the area. She speaks of those living in the Fairfield region as "hasty people" who do just as they please. One particular problem is the "sale" of leases or, more precisely, the sale of what they term the "good will" of people to build houses. The only document that the builder is left with is a rental receipt of the original lessee, usually not even in that former occupant's name, but in the name of a deceased parent or grandparent. The person buying the lease then continues paying rent to NHA under that name. There is a widespread belief (also heard in the Puzzle Island area about state land leased out there) that tenants or their ascendants had originally been under 99-year lease arrangements with the former owner (Gelnish) of those lands. But no one has anything in writing to back up this claim.

She also says that those who had purchased front-back lot parcels from Gelnish in 1959/60 did not receive actual deeds but only copies, which, among other things, retained rights for the former owners to anything of value (i.e., presumably minerals) discovered more than 6 feet below the surface. Only those who went to the Red House to get bona fide deed documents got them.

Chapter 3

DATA ANALYSIS AND FINDINGS ON TENURE, DOCUMENTATION, AND LAND USE

by

Harry Lemel

INTRODUCTION

The IDB/LTC survey, which sought to evaluate the current state of land documentation among land owners/users, revealed that a substantial proportion of respondents either lacked documents or possessed minimal or out-of-date proof linking them to the land they were using (see chapter 1). Such imprecision is believed to carry heavy social and economic costs including those associated with reduced land use and investment in agriculture.

This report explores this connection empirically, focusing on parcels used or usable for agricultural purposes in six areas of Trinidad and Tobago selected to represent major tenure and agricultural situations in the country: (1) Fairfield-Broomage estates in County Victoria, near Princess Town; (2) Warren-Munro in County Caroni, ward of Cunupia; (3) the Couva area, also in County Caroni, ward of Montserrat; (4) Penal-Puzzle Island in County Victoria, ward of Siparia; (5) the Parish of St. Mary in Tobago, covering Goldsborough, Goodwood, and Pembroke; and (6) the Freeport/Arena Road areas in Freeport District.

The central question here will be: What connections exist between intensity and type of land use and investment on the one hand and tenure status on the other? Attempting to explore such connections involves: (1) operationalizing tenure security as it might bear on differences in investment and land use; (2) identifying which elements of land use might be subject to the influence of tenure and tenure security differences; and (3) isolating as much as possible the impact of tenure from other possible explanatory factors.

TENURE FORMS AND DISTRIBUTION

The sample of 817 agricultural parcels is rather evenly split between public and private land. Over two-thirds of these parcels fall into the two major tenure categories of freehold (25 percent) and rental/leasehold (43 percent); squatted parcels account for an additional 16 percent. Subsumed under the larger categories of freehold and leasehold are two informal

and largely undocumented tenure categories which account for the remainder of parcels: "rent-free" and "family land" tenure. Tables 3.1 and 3.2 show how these tenure categories and tenure documentation categories are distributed over the 6 study sites, and table 3.3 displays how tenure and documentation are associated with each other.

TABLE 3.1
Distribution of agricultural parcels by study site and tenure

	Individual ownership	Lease/ rent	Squatting	Rent- free	Family land	TOTAL
Fairfield/ Broomage	17 8.8%	147 76.2%	3 1.6%	21 10.9%	5 2.6%	193 23.7%
Warren- Munro	33.3%	43.4%	5.1%	14.1%	4.0%	12.1%
Couva	18 28.6%	30 47.6%	6 9.5%	7 11.1%	2 3.2%	63 7.7%
Penal/ Puzzle Isle	71 33.8%	92 43.8%	24 11.4%	10 4.8%	13 6.2%	210 25.7%
Tobago	61 40.4%	31 20.5%	13 8.6%	16 10.6%	30 19.9%	151 18.5%
Freeport/ Arena Road	2 2.0%	12 12.0%	81 81.0%	4 4.0%	1 1.0%	100 12.3%
TOTAL	202 24.8%	355 43.5%	132 16.2%	72 8.8%	55 6.7%	816
	Chi square = 519.84259		DF = 20	P = 0.00000		
	Contingency coefficient C		=	0.62382		
	Tschuprows T		=	0.17847		
	Lambda:					
	Ownership as dependent		=	0.21475		
	Symmetrical		=	0.22399		
	Area as dependent		=	0.23102		

TABLE 3.2
Distribution of agricultural parcels by study site and documents

	Deed	Written lease	Tax exempt	Purchase/ rent receipt	No document	TOTAL
Fairfield/ Broomage	19 9.8%	5 7.8%	4 2.1%	136 70.5%	19 9.8%	193 23.7%
Warren- Munro	41 41.4%	5 5.1%	2 2.0%	14 14.1%	37 37.4%	99 12.1%
Couva	19 30.2%	15 23.8%	0 0.0%	17 27.0%	12 19.0%	63 7.7%
Penal/ Puzzle Isle	68 32.4%	38 18.1%	3 1.4%	51 24.3%	50 23.8%	210 25.7%
Tobago	76 50.3%	22 14.6%	8 5.3%	18 11.9%	27 17.9%	151 18.5%
Freeport/ Arena Road	2 2.0%	9 9.0%	0 0.0%	2 2.0%	87 87.0%	100 12.3%
TOTAL	225 27.6%	112 12.7%	17 2.1%	238 29.2%	232 28.4%	816
Chi square = 434.17618			DF = 20		P = 0.00000	
Contingency coefficient C			=		0.58931	
Phi			=		0.72944	
Cramers V			=		0.36472	
Tschuprows T			=		0.16311	
Lambda:						
Docscat as dependent			=		0.32699	
Symmetrical			=		0.27365	
Area as dependent			=		0.22277	

TABLE 3.3
Relationship between tenure forms and documents

	Deed	Written lease	Tax receipt	Purchase/ rent receipt	No document	TOTAL
Individual ownership	175 86.6%	2 1.0%	6 3.0%	16 7.9%	3 1.5%	202 24.8%
Lease/rent	0.3%	28.2%	0.0%	57.2%	14.4%	43.5%
Squatting	0.0%	0.0%	0.0%	2.3%	97.7%	16.2%
"Rent-free"	20.8%	1.4%	4.2%	18.1%	55.6%	8.8%
Family land	61.8%	1.8%	14.5%	5.5%	16.4%	6.7%
TOTAL	225 27.6%	104 12.7%	17 2.1%	238 29.2%	232 28.4%	816

Chi square = 1077.10058	DF = 16	P = 0.00000
Contingency coefficient C =		0.75430
Phi =		1.14890
Cramers V =		0.57445
Tschuprows T =		0.28723
Lambda:		
Docscat as dependent =		0.59343
Symmetrical =		0.58037
Ownership as dependent =		0.56399

FREEHOLD

Approximately a quarter of the agricultural parcels in the sample are privately and individually owned. About three-quarters of these parcels are concentrated in three sites: Puzzle Island/Penal, Warren-Munro, and Tobago, the latter being the site in which private land is most prevalent. The great majority of these parcels originated from purchases either by the respondents themselves or by their ascendants. Some 87 percent of these parcels are deeded, with the remainder documented through purchase receipts (8 percent) or tax receipts (3 percent). The great majority of deeds, about 80 percent, were reported to have been up-to-date.

RENTAL AND LEASING

This is the largest single tenure category, accounting for over 40 percent of all agricultural parcels. Despite some common features, such as the dominance of short-term verbal and minimally documented arrangements, this set of parcels is highly differentiated according to whether the land involved is public or private and, on public land, according to the agency or authority administering the land (that is, the Ministry of Food Production and Marine Exploitation (MFPME), the National Housing Authority (NHA), and Caroni, Ltd.).

While over three-quarters of agricultural tenancies were annual, most of these annual tenancies had been in effect for many years, over 60 percent for more than ten years and 45 percent for over twenty-five years. Such long-standing connection with the land can be expected to moderate the insecurity that otherwise might be expected under such tenancies. Reflecting this is the substantial minority of renters (43 percent) who said that they were not at all concerned about losing access to parcels they were using. This is all the more surprising in view of the inferior state of documentation enjoyed by renters. Over two-thirds of tenanted parcels on either state or private land were without written leases. In most cases there were only rental receipts to link users to parcels, and for over 20 percent there were no documents at all. Rental receipts are rarely updated to reflect changes in the identities of current users/occupants, frequently because owners refuse to accommodate or recognize such changes.

Renters generally felt secure as long as they were current in their payments and had receipts to reflect such payments. This was the general sense one got from lessees of Caroni lands on Broomage estate and state lands in Puzzle Island. The situation in Puzzle Island is representative of a more widespread set of problems in Trinidad and Tobago which arise in the wake of state acquisition of lands formerly under private ownership. The land in question is a sector of lands in Puzzle Island—referred to as "Block Four" by the local land office—which had been part of the Jamandar estate. Residents had been renting the land prior to the state purchase. Now many were left in a de facto squatter status, operating without documents of any kind and without paying rent. This has understandably led to an insecure tenure situation. One person in this predicament claimed that he had been paying rent but that the government had stopped collecting a few years ago. He said that he felt more secure when he was paying rent and had a receipt to indicate access/use rights to the parcel. Now he feared that he could be removed from the land at any time. He said that many of the rice growers in the area shared his sense of insecurity about the future. The government is now in the process of assigning "provisional" or "recommended" leases to some of the farmers there.

Private owners generally voice a reluctance to rent out their lands. The virtually universal refrain is: "Once the land is rented out, it will be impossible to get the renters off the land." Many said that they would rather see the land revert to bush than rent it out, and this indeed is what frequently happens as the owners find it uneconomic or physically impossible to actively farm the land. The main fear is that lack of a presence may invite squatting. Rent-free arrangements described below, which establish a presence on the land,

represent one way to fend off squatter encroachment. In the Warren-Munro and Couva sites, where private renting is more widespread, owners frequently seek to protect themselves by providing nothing in writing to the renter; agreements are verbal and no rent receipts are provided.

On both private and public lands, tenure insecurity appears to be highest in areas rumored to be subject to an imminent change of status. On public land this is the situation in Fairfield, where the fate of NHA lands has been under discussion for the last several years. Public discussion over the fate of Caroni, Ltd., lands has fueled similar concerns among Caroni lessees. On private lands located in some of the sites,¹ the trend toward subdivision for housing has undermined the security of agricultural renters. Several long-standing tenants have been served notices that their rents would no longer be accepted since the owners intended to subdivide the land and sell it as house lots. Such uncertainty about the future of the lands evidently outweighs other factors, such as the quality of documentation, in heightening tenure insecurity.

SQUATTING

Squatting, or the unauthorized occupation and use of land, is reportedly a widespread phenomenon in Trinidad. It accounts for 16 percent of the surveyed agricultural parcels, with 90 percent of squatter parcels being publicly owned. Squatting is the main feature of the Freeport site, where it accounts for 90 percent of the parcels. In the remainder of the sites, the rate of squatting ranges between 1.6 percent and 11 percent.

Abandoned estates and limited state enforcement capacity will provide fertile ground for squatting. There are also cultural/ideological and historical elements that infuse squatting with popular legitimacy. The most notable of these is the high value placed on the clearing and active use and cultivation of land as a way to establish rights. This is something even the law recognizes in weighing cases of alleged squatting. Also pertinent in shaping people's views on squatting has been the historical evolution of tenure relations. Many who are now in a technical and legal sense squatting on public lands are people who, two or three decades ago, were renting the land from private estate owners before these people sold out to the current owners. Grandparents may have been laborers on those estates.² As ownership has shifted to the state, the status of those already on the land has tended either not to be recognized or incorporated into the new tenure order.

1. Gopaul lands (formerly Craignish estate) and Persad lands in the Fairfield/Broomage site and Murray estate in Tobago. Similar fears are also voiced by renters in the Warren-Munro.

2. In Tobago, a typical claim of former estate workers who are now squatting on either abandoned private lands or land taken over by the state is that they had received verbal permission to use the land from former estate owners.

As in the case of renters, long years of effectively unchallenged association with land evidently reduces inhibitions about how to use the land. Over 70 percent of squatters had been using their parcels for ten years or more and about 40 percent for twenty years or more. While long use is a factor possibly influencing tenure security as it translates into land use for most of the squatters, especially those in Freeport, it does not so operate among what might be termed occasional or opportunistic squatters, who use lands for grazing or who have only recently occupied lands, which is the case among a few respondents in Tobago.

Fear of squatting may be seen as a major factor in the emergence of tenure arrangements such as rent-free tenure (see below), in which a landowner or authorized user allows a friend or relative to use land without any payment to the owner/tenant.

RENT-FREE TENURE

This tenure form emerges from informal inheritance practices and from an overall desire to establish a presence on the land to fend off any possible encroachment or theft. It may be seen as an adaptation, respectively, to the changing needs and capacities of both the donor and the recipient of land. In the Warren-Munro site, an additional factor behind this tenure form emerged. Since Town and Country Planning prohibits subdivision into parcels smaller than 5 acres, informal inheritance subdivision has occurred without deeds being updated to reflect these subdivisions. Consequently, heirs frequently assume rent-free status, being in a situation resembling that of co-owners of "family land" (see below). The apparent difference is that parcel assignments tend to be more definite under rent-free tenure.

In all tenure categories, the informal assignment of parcels to children when the parent or grandparent is too old to farm is widespread. In some cases, these assignments are regarded as final, while in others, the assignments are not as explicit and are perceived as potentially open-ended but still somewhat uncertain. One striking feature of such transfers is the frequency with which they occur while the parent is still alive.

Contrary to formal rules and procedures, there appears to be an overwhelmingly popular perception that state leases, whether documented or not, are inheritable or transferable to heirs; this was felt to be possible for 57 percent of rented/leased parcels owned by the state. In many cases such transfers take place while the parent is still alive but approaching an age when farming has become too difficult. Assignments of land to heirs may be more or less firm; in many cases, heirs are in a rent-free status for several years with the likelihood, but no guarantee, that they will end up with the parcel they are currently using. In one case of a more explicit assignment, the patriarch of the family had assigned specific parcels, both owned and rented (from NHA), to his married children. His eldest daughter, who had just married, was to take over a rented parcel, build a house there, and plant crops. In many cases, a family land situation develops; this may be the consequence of the ascendant's explicit wishes or the result of death without a will, either verbal or written, having been prepared.

A major consequence of such unauthorized, informal transfers is that land users are often left without any documents or documents that are out-of-date. This can undermine tenure security and increase social conflict, as was the case for two brothers who inherited an NHA lease some twenty years ago. The fact that the receipt was and remains only in the older brother's name is a cause for concern for the younger brother.'

Informal, rent-free arrangements are not restricted to relatives. Land is often given rent-free by people who no longer can use it to those who can and need the land. This is both altruistic and practical, providing a way to keep the land clear and in use. Renters on private land will claim justness of right to continue use on the basis of having "cleared the land."

While enjoying discretion over use for agriculture, those under rent-free tenure arrangements face uncertainty over how long they may continue using the land. They are also usually not allowed to transfer the land or build on it unless the land is given for this express purpose.

FAMILY LAND/CO-OWNERSHIP/USE RIGHTS

Co-ownership, or ownership in undivided shares, usually labeled "family land" tenure, is a common feature of the Caribbean tenure scene. Among the surveyed parcels,' it was most common in Tobago, where it accounted for 20 percent of agricultural parcels. Generally such tenure emerges from a process of intestate succession, with claims typically becoming extremely complex and difficult to unravel after a couple generations. Many ills

3. Such transfers are forbidden on Caroni, state, or NHA lands. Yet, they remain pervasive. On Caroni lands procedures exist for such transfers but are evidently difficult to effect. This was explained by some respondents and Caroni field officers to be due to the fact that there are people "in line" for the land when it frees up. It also provides Caroni officers with a powerful vehicle for influence peddling. The transfer from parents to children of land rented from NHA is virtually universal on Fairfield Estate lands. However, NHA refuses to update or transfer the names of renters on rental receipts from parent to child.

In annual state leases, which in practice frequently last for decades, descendants are not allowed to inherit by will. They must appeal to the Ministry of Agriculture for the transfer, which in turn must be approved by the Cabinet. This is a lengthy and discouraging process, and many skirt the risk of being turned down by simply reaching informal arrangements among themselves. The result is a proliferation of lease documents which refer to deceased former lessees, not to the actual occupants.

4. The survey did not query respondents directly on whether a given parcel was a "family land" parcel or not, since different understandings of the term exist. Instead, "family land parcels" were identified from the data as those parcels over which several heirs had a say in what could or could not be done with the land, whether nephews and nieces were likely heirs, and so on. It was sometimes difficult to distinguish "rent-free" parcels from "family land" parcels where individuals were given direct permission by a parent with an interest in a family land parcel.

are associated with this form. One is unmarketability, the result of having to obtain the consent of all heirs before a sale is possible. Another is that it supposedly acts as a disincentive to production because of fears that co-owners might intervene in the production process or claim the fruits of investment or labor.⁵ Certain advantages of family land have also been recognized, however. For one, it is seen as a flexible tenure form which inhibits overfragmentation and provides active cultivators with more land than they otherwise might have. Family land also serves as a social security institution, providing co-heirs with something to fall back on during hard times or for retirement. From study of this tenure form in St. Lucia, it emerged as not inherently inimical to production as long as heirs were able to reach mutually satisfactory arrangements about the exercise of rights on the land. In Trinidad and Tobago, family land sometimes emerges in documented form as joint deeds, with wills specifying that the land not be divided and that it remain available for future generations of descendants.

While family land is usually associated with private lands, it sometimes emerges on state land. One illustration comes from Fairfield estate, where a 1.5-acre parcel, which was originally held and still remained in name of the grandmother, was portioned out to seven heirs (uncles, aunts, and parents). Heirs can use any unused portion; none of the heirs sold shares to other heirs, among whom there were no serious disagreements. Asked if the respondent was concerned over rights to land, he answered, "No, because family relationships are good." However, his discretion over parcel use was limited to agriculture. Some informal border marking had taken place since the inheritance took effect. Heirs have added fences, bushes, and a gate to mark off the parcel.

LINKAGES BETWEEN TENURE SECURITY, LAND USE, AND INVESTMENT

On what grounds could it be said that a farmer's growing a certain crop or making certain investments in a parcel reflects the constraints/possibilities associated with different tenure forms? This section proposes two dimensions of tenure as central in grappling with this question: (1) investment time-horizons, a matter tied to how secure people feel about their ability to hold on to the land they are using; and (2) discretion over land use.

TENURE SECURITY AND INVESTMENT TIME HORIZONS

Owners or those possessing long-term written leases might be expected to grow permanent crops, and short-term renters or squatters, more inclined to restrict themselves to

5. Hans Meliczek ["Land Tenure: St. Lucia, Project Findings and Recommendations," mimeo. (Rome: UNDP/FAO, 1975), p. 29] maintains that the disincentives associated with family land have been exaggerated and that "according to local custom, annual crops are the recognized property of the actual cultivator." He does state that clashes might occur in the case of permanent tree crops. However, disputes tend to be minimal and those that do arise tend to be over the matter of whether or not to sell the land in question.

annual or short-term crops, because they presumably have no guarantee that the land will be available to them from one year to the next. Extending this logic to rent-free tenure runs into the problem of great variability in how secure people feel about future access to land, with such security depending so much, as it does, on the strength of relations between land donor and recipient. The same is true of family land parcels in which the quality of social relations among co-owners largely determines how secure a person might feel about access to the land.

Aspects of the tenure situation, including the strength of documentation, which cast doubt over land access and restrict the period over which secure access is perceived to exist, would presumably be reflected in a preference for short-term crops and investments in which returns could be recouped quickly. An example of such an investment is the application of fertilizer or other inputs from which benefits would be realized in the same season that the fertilizer was applied. As it is meant here, investment is restricted not only to improvements that require capital outlays, but also to those that can be made by the expenditure of labor. These would include the application of conservation measures which provide returns in the form of sustained levels of production over a long period.

As already noted, assessing perceptions of investment time-horizons solely on the basis of formal tenure categories is problematic because even people under annual tenancy arrangements may come to see such agreements as semipermanent after decades of having their leases renewed. Over two-thirds of renters and squatters have used their parcels for over ten years; indeed, there is no association between tenure or documents, on the one hand, and the length of time people have been using parcels, on the other.'

Reference to respondents' degree of concern over losing the right to use land should encapsulate the reality under which they are working. As table 3.4 indicates, the overall pattern is as expected: individual owners exhibit the lowest rate of concern, followed by family land, rent-free, rented, and squatted parcels, in that order. Long histories of use and lax enforcement may explain why the percentage of renters who are concerned about future access is not higher than it is. Table 3.5 indicates how levels of tenure security are distributed across the various study sites.

DISCRETION/RESTRICTIONS ON USE

Tenure situations differ widely in the discretion they afford over land use. Restrictions generally affect crop choices and rights to build permanent structures on the land. The planting of tree crops is a matter of particular sensitivity. With most rental agreements being either undocumented or minimally documented by rent receipts, owners, whether public or private, fear that introducing these changes tenants could establish a basis for future claims on the land. On state land, unauthorized tree planting and building weaken the flexibility to eject unsatisfactory tenants and raise complex issues of compensation.

6. The only exceptions are people operating under rent-free tenure who tend to be younger and have a shorter period of association with the parcels they are using.

TABLE 3.4
Levels of tenure insecurity by tenure status

	Not concerned	Somewhat concerned	Very concerned	TOTAL
Individual ownership	88.5%	3.7%	8.0%	200
Lease/rent	151	47	10	208
Squatting	42.9%	13.4%	43.8%	131
Rent-free	16.8%	9.2%	74.0%	16.2%
Family land	59.7%	12.5%	27.8%	8.9%
TOTAL	69.1%	12.7%	18.2%	6.8%
	431	82	297	
	53.2%	10.1%	36.7%	

Chi square = 209.09258 DF = 8 P = 0.00000

TABLE 3.5
Levels of perceived security by study site

	Not concerned	Somewhat concerned	Very concerned	TOTAL
Fairfield-Broomage	96	16	8	120
Warren-Munro	56	6	27	89
Couva	45.9%	9.8%	44.3%	7.5%
Penal/Puzzle	109	24	26	159
Island	52.2%	11.5%	36.4%	25.8%
Tobago	123	10	18	151
Freeport/Arena Road	81.5%	11.4%	6.6%	18.6%
TOTAL	19	10	71	100
	19.0%	10.0%	71.0%	12.3%
	4	82	298	811
	53.1%	10.1%	36.7%	

Chi square = 119.80607 DF = 10 P = 0.00000

As will be seen below, restrictions appear to be taken more seriously on privately than on publicly owned parcels. Among the latter, formal restrictions are most stringent for Caroni land, where 80 percent is supposed to be planted in cane; on state land, tenants are supposed to conform to recommended land-use plans and maintain at least a 50 percent cropping level. On NHA lands, no active intervention or clear-cut proscription exists on land use. Insecurity attributed to family land is also advanced as a factor discouraging permanent crops. Except in the few cases where it is explicitly allowed, building on Caroni parcels is proscribed. On state land parcels administered by the MFPME Land Offices, permanent structures are allowed only on standard 25-year leased parcels, but not on the great majority (in our sample), which are "provisional" or "recommended." On NHA lands which are under annual rental arrangements, home building is also disallowed.

Perceived discretion over use. The survey queried respondents whether they felt free to use the land as they wished for agriculture and building. One would expect greater levels of discretion among owners and co-owners (that is, "family land") than nonowners, and among nonowners, less discretion among squatters than those under some sort of legitimate tenancy arrangement. Among tenants one would expect differences according to the verbal or written conditions of the tenancy agreement.

These expectations are largely confirmed by the data. Particularly striking is how prevalent the view is that respondents have full discretion over agricultural use; this was held to be the case for over 80 percent of all parcels (see table 3.6). Similarly, high rates extended over all tenure categories including squatted parcels: for almost 70 percent of these parcels respondents felt no inhibition in using the land as they saw fit for agriculture (table 3.6a). A closer look at the renters reveals some notable differences: a lower level of perceived discretion over privately rented land (table 3.6b), and on public land, a lower level of discretion perceived for Caroni, Ltd., parcels (table 3.6c). These differences would seem to reflect the relative enforcement capacities of the different owners or administering agencies, which appears to be particularly low on NHA land.

Differences among tenure groups are far more dramatic when it comes to perceived discretion over building, but follow the same general pattern as for agricultural use (tables 3.7a-3.7c). The percentage of parcels over which respondents felt full discretion reduces to 50 percent. Only among individually owned or co-owned parcels are levels very high—above 80 percent (table 3.7a). Among renters, the same relative differences exist in perceived discretion as for agricultural use between renters of public versus private land and among parcels under the authority of Caroni, MFPME, and NHA, respectively (tables 3.7b, 3.7c).

SELECTING LAND USE AND INVESTMENT INDICATORS

The next section explores how perceptions of tenure security and discretion translate into actual land use and investment differences. This requires the identification of what might be considered short-, medium-, or long-term crops and investments and consideration of factors besides tenure that might explain their occurrence among sampled parcels.

Gestation period. Gestation period refers to how long it takes to begin benefiting from investments of labor or capital. The longer this gap, the greater the risk that benefits might not be enjoyed. Tenure insecurity would seem to encourage preference for activities or investments with the promise of benefits in the short (one year or less) or medium (two-three years) term. Field crops fitting into these categories include vegetables; rice; most food crops including root crops, corn, and peas; and tree crops promising benefits in the short-to-medium term such as bananas and papaya. Examples of investments would be inputs such as fertilizer and the construction of field irrigation/drainage ditches. Greater certainty about future hold on the land might pave the way for long-term crops or investments, including tree crops such as citrus and avocado for which it takes four to six years for the first fruits future hold on the land might pave the way for long-term crops or investments, including tree crops such as citrus and avocado for which it takes four to six years for the first fruits to be obtained. However, ambiguity is possible in linking tree crops to tenure security since risks may be hedged by intercropping saplings with annual crops. Furthermore, if the costs of establishing trees are low enough, the gamble might be worthwhile even with tenure insecurity.

Length of benefit streams. Another time-related aspect to consider is the period over which benefits could be enjoyed, something that becomes particularly salient for large investments justifiable only on the basis of a prospective benefit stream of several years. Fixed infrastructures such as houses or the equipment and buildings necessary for hot-house-based vegetable production would be examples of such investments.⁷ These would be lost if the person investing were ejected from the land without compensation, a very real threat for squatters or others with tenuous or uncertain legal rights to use the land.

Semipermanent structures and irrigation and drainage infrastructure are more difficult to place in this category. Initial costs in terms of labor and/or capital are highly variable and benefits likely to be long term. However, these benefits would be expected as soon as the next production season. In contrast, conservation measures to prevent erosion (for example, contour plowing, windbreaks, terraces) would seem more unambiguously to reflect a concern over the long-term productivity of the land, which would seem unlikely among people expecting a short association with a particular parcel.

Tenure implications. Finally, activities and investments differ in their tenure implications, with some undertaken expressly to establish or strengthen land claims. The significance of trees and permanent structures in this regard has already been mentioned. Mango trees are sometimes planted in parcel corners to demarcate boundaries; banana trees often serve the same purpose. As a crop with a productive life of about four years, and once established difficult to remove, the age of sugarcane stools may be used to back up a claim of continuous use for at least that length of time; drainage channels along the edges of cane

7. While fears to invest might be reduced by the ability to sell off such items in the event that the right to use the land were lost, it is often difficult to separate the land from what is on it, complicating the prospects for such a sale.

fields also may serve to mark off parcel boundaries. In Fairfield Estate, the rumor that a final disposition of the rented parcels there was under consideration led to a flurry of building activity, with many wooden houses being converted to concrete, permanent ones.

In selecting land use and investments indicators, those least likely to have resulted from nontenure factors are preferable. Investments or activities particularly demanding in their capital or labor requirements might be more reflective of relative household wealth or labor capacity than tenure security. Reference to indicators requiring very particular parcel slope or water availability characteristics, and so forth, may lead to similarly ambiguous findings. Table 3.8 lays out possible indicators as they relate to the various dimensions discussed. Some of the more salient points concerning potential indicators are highlighted below:

- ▶ Fertilizer use would seem to be a poor indicator because its availability is largely a matter of cash accessibility or incorporation in crop marketing arrangements (as, for example, are cane growers organized). Also, benefits can be expected in the same season that it is applied.
- ▶ Emphasis on short-term crops such as vegetables *to the exclusion of* other uses would seem to reflect uncertainty over future access rights.⁸
- ▶ Papaya trees with an expected productive life of four to five years are on the borderline between long and short term as we have defined them here; however, with fruits produced as soon as one year after planting and given the small investments involved, it should not be seen as a crop requiring long-term tenure security.
- ▶ Tree crops are a relatively good indicator of long-term security because of their long gestation periods and because they reflect relatively wide perceived discretion over land use. Analytical advantages in referring to tree crops include that they require little initial capital and they can be grown in a wide range of slope conditions.
- ▶ Permanent structures are strong indicators of long-term security, though interpretation is clouded by the fact that they may be built simply to establish a claim rather than reflecting an existing, secure right.

8. As far as short-term crops are concerned, these will be treated as a single category; respondents' preferences in deciding to grow one or another of these crops would most likely reflect nontenure factors, such as susceptibility to theft (see below), intensity of labor demands against the labor available to households, and so on.

TABLE 3.8
Categorization of investments and land use

		GESTATION PERIODS		
		Low (season)	Medium (1-3 years)	High (3+ years)
Initial capital				
Low		vegetables, root crops	bananas, papaya	avocado, citrus
			conservation	
High		fertilizer, house, green house		land clearing
Expected flow of benefits				
Short		vegetables, root crops		
Medium		cane	papaya, bananas	
			semipermanent, irrigation, drainage	
Long		permanent structures conservation		citrus, avocado

- ▶ Semipermanent structures such as pens and sheds can be built gradually and are not marked by necessarily high initial capital investments. The presence of such investments would seem to reflect medium- to long-term tenure security.
- ▶ Reference to irrigation/drainage investments as indicators of medium- to long-term security are also advantageous analytically in that they accommodate substitutions of labor for capital and would therefore not be restricted a priori to wealthy farmers. However, as investments with almost immediate benefits they may be ambiguous in indicating long-term security unless distinctions are possible between elaborate, expensive infrastructure and simpler, inexpensive, and less permanent ones.
- ▶ Conservation measures to prevent erosion (for example, contour plowing, windbreaks, terraces) would seem to reflect a concern over

the long-term productivity of the land that would seem unlikely among people expecting a short association with a particular parcel.

CONTROLLING FOR NONTENURE FACTORS AFFECTING LAND USE AND INVESTMENT

To avoid drawing spurious relationships between tenure and land use/investment, factors other than tenure or tenure documentation likely to impinge on land use and investment need to be considered and controlled for. How do these vary across the sample, and, most importantly, are these correlated with the tenure categories of interest?

Factors bearing on land use and investment occur at three basic levels: the household/holding level, the parcel-level, and the study-site level. An additional nontenure factor of profound influence in Trinidad and Tobago is that of praedial larceny, something which can affect both the extent and character of land use. This last factor is discussed in a separate section.

Each parcel is not an isolated entity but part of a holding of possibly several parcels managed by one or more people. Variations in respondents' personal characteristics, such as age and education, and level of involvement in agriculture can be expected to bear directly on how and to what extent such parcels are utilized. Extent of involvement in agriculture or reliance on agricultural income could in turn reflect the adequacy of land to support the family. Bearing this last point out is the steady increase in full-time farming as total land and the number of parcels in the holding available increases (tables 3.9a and 3.9b). In terms of age, we see full-time and part-time farmers with similar age distributions (table 3.9c).

The number of parcels per holding is also likely to affect use. As seen in table 3.10, the great majority of respondents have more than one parcel at their disposal.

Those with only one parcel, who represent 24 percent of the sample, have only two basic choices open to them: increase the intensity of use on that parcel, or turn to other income-earning activities. More parcels permit greater selectivity and parcel specialization, with the possibility existing for certain parcels being chosen for particular attention or types of use.

Statistically, this factor can distort interpretation of relative levels of certain investments, especially permanent or semipermanent investments. Someone with three or more parcels (a substantial percentage of the sample, 20 percent of respondents; 41 percent of parcels belong to such holdings) is unlikely to build houses, storage sheds, or other similar items on all parcels. Home parcels or those nearest the home parcel may be selected for such investments, with the others devoted to other uses—crops, grazing, and so on—or to no use at all.

TABLE 3.9
Distribution of parcels owned or used by respondents
according to whether respondents are full- or part-time farmers,
by total land and number of parcels in holding, and respondent's age
 (shows adjusted percents)

		(a)						
		TOTAL LAND IN HOLDING						
		<1 acre	1-1.99 acres	2-4.99 acres	5-9.99 acres	10-14.99 acres	15-19.99 acres	≥ 20 acres
Total respondents	817	44	74	226	292	70	37	64
	C 100%	100%	100%	100%	100%	100%	100%	100%
Time spent fanning								
Most of the time	437	6	27	104	181	55	27	36
	C 54%	14%	36%	46%	62%	79%	73%	56%
Part-time	347	31	46	116	104	11	7	28
	C 43%	70%	62%	51%	36%	16%	19%	44%
No farming	28	7	1	6	7	4	3	
	C 3%	16%	1%	3%	2%	6%	8%	
Std dev (n)	110.9969	115.4722	108.6462	112.0844	106.9007	82.9332	90.6634	110.1550
Chi square		100.34	CELL < 5					
Chi probability		0.00000						

		(b)				
		# OF PARCELS IN HOLDING				
		1 parcel	2 parcels	3 parcels	3+ parcels	
Total respondents	817	95	244	146	327	
	C 100%	100%	100%	100%	100%	
Time spent farming						
Most of the time	437	36	108	92	202	
	C 54%	38%	44%	62%	62%	
Part-time	347	50	128	55	114	
	C 43%	53%	52%	38%	35%	
No farming	28	9	8		11	
	C 3%	9%	3%		3%	
Std dev (n)	110.9969	116.6917	112.4098	107.1213	106.8320	
Chi square		42.6850	CELL < 5			
Chi probability		0.00000				

in their elaborateness and permanency, it is difficult a priori to say whether or how these are likely to be affected by household- or parcel-level factors (other than by slope). Certainly study-area differences are pertinent here, since the distribution of drainage and water shortage problems tend to be concentrated in some of the sites (drainage, for example, is most salient in the Warren-Munro and Penal Island sites). Certain types of conservation measures such as contour plowing are most pertinent in the hillier sites, such as Tobago, Fairfield, and Couva.

Before presenting data linking parcel tenure and tenure documentation to land use and investment, it will be useful to highlight ways in which tenure categories correlate to some of the nontenure factors noted above. In terms of average age, individual owners at 55 and co-owners at 51 are significantly older than squatters (47) or those under rent-free tenure, who tend to be the youngest (42). At 4, the average number of parcels per holding among renters is higher than that of any other tenure category by 1 or more. Squatted parcels belong to holdings averaging 3.3 parcels and are between the two extremes. Part-time farming or no involvement in farming is most prevalent among respondents with owned parcels and least prevalent among those using rented and squatted parcels. The percentage of parcels with slopes that are somewhat steep or very steep is highest among owned or co-owned parcels, especially the latter, characterizing over two-thirds of such parcels and 45 percent of individually owned parcels. At the other extreme are squatted parcels, of which only 25 percent in the sample were described as hilly. Certain conservation practices such as contour plowing would be more likely on the hillier parcels.

FINDINGS ON LAND USE AND INVESTMENT

EXTENT OF USE

The extent of parcel area used for production or building has no obvious connection to tenure security. However, it remains a matter of interest to see if any relationships exist with tenure status or tenure documentation. It may be that maintaining maximal active use serves to maintain or build claims.

Tenure categories. One can speak of an inverse relationship between what would conventionally be regarded as tenure security and intensity of land use by farmers. In the aggregate, the average percent of land used⁹ is highest on squatted parcels (79 percent), slightly lower on rented parcels (77 percent), substantially lower on privately owned parcels (63 percent), and lowest of all on family-land parcels (50 percent) (see table 3.11). While 35 percent of individually owned parcels are utilized at less than half their capacity, this is true of only 18 percent of squatted parcels (table 3.13a).

9. Percent used for crops and structures; land used solely for grazing but considered by respondents as appropriate for raising crops or trees is classified as "unused."

Documents. Parcels with written leases or deeds display the lowest levels of average parcel use (53 percent) compared to those with either no documents or only rental or purchase receipts (77 percent).

OWNED OR CO-OWNED LAND. No significant differences emerge among parcels under the various private ownership documents or between deeds that are either out-of date or up-to-date. Average parcel utilization levels range narrowly between 57 percent and 63 percent.

LEASED/RENTED LAND. Table 3.12 reveals that parcels documented by written leases average significantly lower in percentage of parcel use (60 percent)¹⁰ than those documented only by rental receipts (85 percent)." Table 3.14b reveals that less than half of the area is utilized in 48 percent of parcels documented by long-term leases (most standard 25-year leases) versus only 12 percent, 19 percent, and 24 percent, respectively, of parcels documented by short-term written leases, rental receipts, or no documents at all.¹² Among written leases, those that are up-to-date display a higher average level of use (67 percent) than those that are out-of-date (49 percent).¹³

Two factors appear to be operating here. First, it is perhaps the weak legal/formal connections that renters and squatters have to the land that makes maintaining active use all the more important to preserve use-right claims. This is not a concern under freehold tenure, which affords the freedom and security not to use the land to its full capacity. Second, the differences among tenure categories would appear to reflect the fact that owners and co-owners are more likely than squatters or renters to be part-time farmers and older than their counterparts. Similar contrasts apply to those with short-term as opposed to long-term written leases: while 50 percent of parcels under long-term leases belonged to holdings managed by part-time farmers, this was true of only 25 percent of parcels under short-term leases. The former also averaged 13 years older than the latter.

10. This number derives from pooling the averages for parcels documented by long-term and short-term written leases.

11. Several of the long-term leases entail primary involvement in livestock, increasing the likelihood that these would have lower levels of parcel use than those relying primarily on crop farming. Using the absence or presence of animal sheds as an indicator of livestock involvement, 42 percent of parcels under long-term leases which have such structures could be affected by this factor. Leaving out these parcels raises average use levels for these parcels to 70 percent. However, this level remains below that for undocumented rentals (78 percent) and those documented by receipts (82 percent).

12. The percentage of parcels under long-term lease at this level of use falls to 32 percent when involvement in livestock is taken into account.

13. $F = 3.68$; probability = .06.

TABLE 3.11
Percent of land used by tenure category

Dependent variable: percent of land used

SOURCE	DF	SUM OF SQUARES	MEAN OF SQUARES	F	PROBABILITY
Factor A	4	5.92901	1.48225	11.5148	0.0000
Residual	811	104.397	0.128726		
Total	815	110.326			
FACTOR A: TENURE FORMS		MEAN	STANDARD DEVIATION	CELL N	
Family land		0.50	0.403367	55	
Own		0.63	0.386255	202	
Rent-free		0.76	0.342727	72	
Rent		0.77	0.337976	355	
Squat		0.79	0.358608	132	
SCHEFFE TEST FOR GROUPS WITH SIGNIFICANT DIFFERENCES					
Group one	Group two	Mean difference	Probability		
Family land	rent-free	-0.25	0.0041		
Family land	rent	-0.27	0.0000		
Family land	squat	-0.28	0.0000		
Own	rent-free	-0.13	0.1450		
Own	rent	-0.14	0.0004		
Own	squat	-0.16	0.0035		

TABLE 3.12
Percent of land used
by lease type and document category

Dependent variable: percent of land used

SOURCE	DF	SUM OF SQUARES	MEAN OF SQUARES	F	PROBABILITY
Factor A	3	3.92573	1.30858	12.3796	0.0000
Residual	274	28.9629	0.105704		
Total	277	32.8886			
Cell means / standard deviations for maximum probability of 1.0000					
AVERAGE LEVELS OF USE					
FACTOR A: LEASE CATEGORY*		Mean	Standard deviation	Cell N	
AND		0.59	0.406219	10	
LTL		0.57	0.331744	36	
REC		0.85	0.264886	169	
STL		0.63	0.436965	63	
SCHEFFE TEST FOR GROUPS WITH SIGNIFICANT DIFFERENCES					
Group one		Group two	Mean difference	Proba- bility	
AND		REC	-0.26	0.1114	
LTL		REC	-0.28	0.0001	
REC		STL	+0.22	0.0002	

* AND: no document; LTL: standard agricultural/long-term lease; STL: probationary/short-term lease; REC: receipt (most annual).

TABLE 3.13

Percent of parcel area used for crops and structures

PERCENT LAND USED	(a) TENURE STATUS						(b) DOCUMENTS				
	i Individual ownership	Lease/rent	Squatting	Rent-free	Family land	Deed	Lease	Tax Receipt	Purchase/rent receipt	No document	
Total respondents	817	202	355	132	72	55	225	110	17	232	233
75-100 %	506	102	238	96	49	20	111	56	6	169	164
	C 62 %	50 %	67 %	73%	68%	36%	49 %	51%	35 %	73 %	70 %
50-74 %	110	32	52	12	8	6	34	14	5	31	26
	C 13%	16%	15%	9%	11%	11%	15%	13%	29 %	13%	11%
25-49 %	61	18	22	4	7	10	22	13	4	13	9
	C 7%	9%	6%	3%	10%	18%	10%	12%	24 %	6%	4%
0-24 %	140	50	43	20	8	19	58	27	2	19	34
	C 17%	25 %	12%	15%	11%	35%	26 %	25 %	12%	8%	15%
Std dev (n)	16.4093	18.8288	14.2195	15.6636	13.7730	20.8852	19.0786	18.8148	14.4532	11.9593	15.3969
Chi square		55.4846	CELL < 5				62.3907	CELL < 5			
Chi probability		0.00000					0.00000				

TABLE 3.14

Percent of parcel area used for crops and structures

PERCENT LAND USED		(a) PRIVATE LANDOWNERSHIP DOCUMENTS					(b) TYPES OF LEASE DOCUMENT			
		Deed, up- to-date	Deed, out- of-date	Tax receipt	Purchase receipt	No document	Long-term lease	Short- term lease	Annual rental (rec.)	Annual no docu- ment
Total respon-	817	164	60	16	19	8	38	73	232	51
dents	C 100 %	100 %	100%	100%	100%	100%	100%	100%	100%	100%
75-100 %	506	85	26	5	8	3	13	43	169	34
	C 62%	52%	43%	31%	42%	38%	34%	59 %	73 %	67 %
50-74 %	140	41	16	2	7	4	7	21	19	5
	C 17%	25%	27 %	13%	37%	50 %	18%	29 %	8%	10%
25-49 %	110	24	10	5	1		9	4	13	3
	C 13%	15%	17%	31%	5%		24 %	5%	6%	6%
0-24 %	61	50	43	20	8	19	58	27	2	3
	C 7%	25%	12%	15%	11%	35%	26 %	25 %	12%	6%
Std dev (n)	16.4093	18.9024	19.4077	14.8649	21.5683	23.2624	17.0972	19.8368	11.9593	13.0702
Chi square	:	15.5355	CELL <5				48.1959	CELL <5		
Chi probability	:	0.21345					0.00000			

LONG-TERM VERSUS SHORT-TERM ACTIVITIES AND INVESTMENTS

Short-term crops: vegetables. As can be seen in table 3.15, vegetable growing is most pronounced among rented and squatted parcels. Among the latter, the percentage of parcels in which most or all of the area is planted in vegetables reaches 35 percent compared to 6.5 percent among owners and 4 percent among co-owners.

Quality of documentation among either owned or leased/rented parcels is not associated with any statistically significant differences in levels of vegetable growing.

Long-term crops: trees. The measure of comparison here is the number of trees per acre (excluding bananas and papaya) planted by respondents on the parcels.

Tenure categories. Relationships are the reverse of those seen for percentage of land used. Compared to owned parcels on which an average of 32 trees per acre had been planted, the number among rented parcels was much lower (11), and among squatted parcels, even lower (9).¹⁴ While 61 percent of owners had planted at least some trees, only 30 percent of renters and 33 percent of squatters had done so (table 3.16a). Although low in relation to owned parcels, the rate of tree growing on squatted and rented parcels is still higher than one would expect, something that probably reflects confidence gained from many years of access to the parcels and the apparent belief that restrictions will not be enforced.

Documentation. As seen in table 3.16c, no significant differences emerge in the rate of tree planting among individually owned parcels based on types of documentation. However, among **deeded** parcels, those with up-to-date deeds average more than double the number of trees per acre than those with out-of-date deeds: 32 versus 14.¹⁵ Notably, many of those with out-of-date deeds are co-owners of family land or involved in a rent-free tenure arrangement, suggesting the operation of disincentives or restrictions under those tenure forms.¹⁶

Although rented parcels with up-to-date leases exhibit greater average levels of tree growing than those with out-of-date leases (14.5 to 9), these differences are not statistically significant. What is notable is that while over three-quarters of parcels under written long-term leases had some trees planted on them by respondents, this was true of only 20 percent or less of parcels under other lease arrangements (see table 3.16d). Dividing the sample into private and public rentals/leases reveals no role for documentation differences on private

14. These figures are based on an ANOVA with $F = 7.97$; probability $> .00$.

15. $F = 3.68$; probability = .05.

16. Another aspect of holders of family land parcels that may explain their position is that a very high proportion are part-time farmers and lack sufficient total land to make a living from agriculture.

TABLE 3.15

Extent of parcel use for vegetable growing

		(a) TENURE STATUS						(b) DOCUMENTS			
		Individual ownership	Lease/ rent	Squat- ting	Rent- free	Family land	Deed	Lease	Tax receipt	Purchase /rent receipt	No document
TOTAL RESPON-	817	202	355	132	72	55	225	110	17	232	233
DENTS	C 100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
No vegetables	558	155	243	66	47	46	171	78	14	157	138
	C 68%	77%	68%	50%	65%	84%	76%	71%	82%	68%	59%
Some vegetables	132	34	58	19	15	6	40	16	2	42	32
	C 16%	17%	16%	14%	21%	11%	18%	15%	12%	18%	14%
Mostly vegeta- bles	63	7	25	23	8		10	6		16	31
	C 8%	3%	7%	17%	11%		4%	5%		7%	13%
All vegetables	59	5	28	24		2	3	10	1	16	29
	C 7%	2%	8%	18%		4%	1%	9%	6%	7%	12%
Std dev (n)	84.5008	84.2000	84.5381	85.0957	95.5848	70.40041	86.3256	80.5705	73.8295	87.7945	82.3270
Chi square		73.6988	CELL < 5				42.6178	CELL < 5			
Chi probability		0.00000					0.00003				

[TABLE 3.15, Extent of parcel use, cont.]

		(c)					(d)			
		PRIVATE OWNERSHIP DOCUMENTS					TYPES OF LEASE			
		Deed, up-to- date	Deed, out-of- date	Tax receipt	Purchase receipt	No document	Long- term lease	Short- term lease	Annual rental (rec.)	Annual no doc- ument
TOTAL RESPON- DENTS	817	164	60	16	19	8	38	73	232	51
	C 100%	i 100%	100%	100%	100%	100%	100%	100%	100%	100%
No vegetables	558	128	43	14	15	6	26	52	157	35
	C 68%	i 78%	72%	88%	79%	75%	68%	71%	68%	69%
Some vegetables	132	25	14	2	3		9	8	42	6
	C 16%	15%	23%	13%	16%		24%	11%	18%	12%
Mostly vegetables	63	7	3				1	5	16	5
	C 8%	4%	5%				3%	7%	7%	10%
All vegetables	59	3			1	1	2	8	16	5
	C 7%	2%			5%	13%	5%	11%	7%	10%
Std dev (n)	84.5008	81.3760	96.0825	75.2502	82.6152	28.9861	95.4332	73.3613	87.7945	76.5708
Chi square		13.9092	CELL < 5				7.0604	CELL < 5		
Chi probability		0.30654					0.63083			

TABLE 3.16

**Trees per acre planted by respondents
(adjusted percents)**

TREES PLANTED	PER ACRE	(a) TENURE STATUS					(b) DOCUMENTS					(c) PRIVATE OWNERSHIP DOCUMENTS					(d) TYPES OF LEASE							
		Individual owner-ship	Lease/rent	Squatting	Rent-free	Family land	Deed	Lease	Tax receipt	Purchase/rent receipt	No document	Deed, up-to-date	Deed, out-of-date	Tax receipt	Purchase receipt	No document	Long-term lease	Short-term lease	Annual rental (rec.)	Annual no document				
TOTAL RESPONDENTS	817	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%				
No trees (exclbsn)	505	62%	39%	70%	77%	68%	54%	43%	30%	47%	65%	79%	41%	47%	44%	37%	71%	24%	81%	65%				
1-20 trees	166	20%	28%	17%	12%	23%	31%	30%	22%	24%	19%	11%	28%	37%	25%	32%	29%	45%	11%	19%				
21-40 trees	51	6%	11%	5%	5%	1%	4%	8%	5%	18%	6%	4%	10%	3%	19%	11%	11%	3%	6%	2%				
41-60 trees	24	3%	4%	2%	2%	4%	6%	4%	3%	6%	3%	2%	4%	5%	6%	5%	5%	1%	3%	1%				
61-80 trees	17	2%	3%	2%	2%	1%	3%	4%	4%	2%	1%	2%	3%	3%	3%	3%	8%	1%	1%	2%				
81-100 trees	16	2%	3%	2%	1%	1%	4%	4%	2%	6%	2%	0%	4%	3%	6%		3%	1%	2%	4%				
100+ trees	33	4%	10%	2%	2%	3%	2%	8%	3%	8%	3%	2%	17%	2%	3%	16%	5%	1%	3%	8%				
St dev (n)	202.7004	217.9382	187.6705	169.6163	208.5287	221.3624	1221.3071	205.2097	200.1265	197.6699	163.2920	1281.9286	228.5557	202.1959	221.8944	233.1523	1224.2850	160.1027	197.6699	96.0126				
Chi square		89.0720	CELL<5					80.9188	CELL<5					18.7834	CELL<5					60.9080	CELL<5			
Chi probability		0.00000						0.00000						0.76344						0.00000				

rented land where tree growing is consistently rare (12 percent of the parcels, with an average of 10 per acre)," but rather sharp differences on public land. These differences appear to be related mostly to the length of lease terms rather than to the existence of documentation per se. Parcels documented by long-term leases average a tree-planting rate of 28 trees per acre compared to 6 among written short-term leases and between 3.5 to 10, respectively, for undocumented annual rentals and those for annual agreements documented by rental receipts.¹⁸ Notably, the few cases (5) of open-ended rentals documented by rental receipts come very close (average trees planted per acre = 26) to the average among leases documented by written long-term leases.

Tenure seems to be the main factor here, with owners most likely to plant more trees. Potential gains from updating deeds appear to exist, though there is a question of whether the real constraint here is that of family land tenure. Lengthening written lease terms on public land would also appear to increase rates of tree planting.

PERMANENT STRUCTURES

Tenure categories. Actual building rates among the various tenure categories, seen in table 3.17, closely mirror patterns presented earlier regarding perceived discretion over building. The long-term security and broad discretion of private ownership manifests itself in the highest percentage (50 percent) of parcels with permanent structures on them. The percentage falls to 38 percent among family land parcels, 33 percent among "rent-free" parcels, 22 percent among rented or leased parcels, and the lowest level, 10 percent, among squatted parcels.¹⁹

Documentation. No statistically significant differences distinguish owned parcels documented by up-to-date versus out-of-date deeds or between parcels documented by deeds versus tax or purchase receipts.

While a higher percentage of rented parcels with written leases (31 percent) have permanent structures on them than either those minimally documented by rental receipts (24 percent) or those lacking any type of document (6 percent), the fact of leases being out-of-date or up-to-date apparently accounts for no significant difference in the rate of home building (table 3.17d). Comparisons among Caroni, NHA, and state land parcels, also

17. This average is bloated by one parcel with 460 trees per acre.

18. Figures are based on ANOVA with $F = 5.14$ and probability = .001.

19. In one-parcel holdings, parcels in all of the various tenure categories have a high percentage with houses on them, between a high of 97 percent of individually owned parcels to 75 percent among rent-free parcels. This holds for the various documentation categories discussed immediately below with the exception of parcels rented without any documents. Differences corresponding to the pattern seen for the aggregate figures emerge in holdings of two or more parcels.

TABLE 3.17
Presence or absence of house on parcel
(adjusted percents)

		(a) TENURE STATUS						(b) DOCUMENTS					(c) PRIVATE OWNRESMP DOCUMENTS					(d) TYPES OF LEASE			
		Individu- al owner- ship	Lease/ rent	Squatting	Rent- free	Family land	Deed	Lease	Tax receipt	Purchase /rent receipt	No docu- ment	Deed, up-to- date	Deed, out-of- date	Tax receipt	Purchase receipt	No docu- ment	Long- term lease	Short- term lease	Annual rental (rec.)	Annual no docu- ment	
TOTAL.	817	202	355	132	72	55	225	110	17	232	233	164	60	16	19	8	38	73	232	51	
RESPON- DENTS	C 100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
House not on parcel C	578 71%	101 50%	275 77%	119 90%	48 67%	34 62%	114 51%	77 70%	7 41%	177 76%	203 87%	85 52%	29 48%	6 38%	12 63%	6 75%	17 45%	60 82%	177 76%	48 94%	
House on parcel C	239 29%	101 50%	80 23%	13 10%	24 33%	21 38%	111 49%	33 30%	10 59%	55 24%	30 13%	79 48%	31 52%	10 63%	7 37%	2 25%	21 55%	13 18%	55 24%	3 6%	
Stdev (n)	113.7648	1125.2705	104.5675	74.7521	118.6402	122.5383	1125.2275	115.0519	126.7843	106.5170	83.8857	1125.2588	125.9445	124.9600	123.8590	115.6905	1125.9338	96.2766	106.5170	59.3898	
Chi square		76.4121					84.6949					4.3035	CELL<5				31.5867	CELL<5			
Chi prob- ability		0.00000					0.00000					0.36649					0.00000				

yielded no significant differences, with between 25 and 26 percent in all three categories having permanent structures on them.

The most striking differences are between parcels documented by **long-term** leases, which have a rate of home building (55 percent) rivaling that of privately owned parcels, and all the other forms of documentation, of which no more than 24 percent had homes on them (table 3.17d). Most of the long-term lease parcels are under standard agricultural leases, which permit the construction of concrete buildings. While among parcels documented by short-term written leases, the percentage with permanent structures is only 18, the percentage among parcels under open-ended rentals documented only by rental receipts is 40.

SEMI-PERMANENT LIGHT STRUCTURES

About one-third of agricultural parcels (287/817) had some type of light or semipermanent structure built on them. Types of structures break down as follows:

TYPE	(N)	(%)
Storage shed	80	28.5
Kiln/copra house	5	2.0
Animal shed	77	27.0
Chicken coop	80	28.5
Rabbit hutch	7	2.0
Field shelter	35	12.0
TOTAL	287	100.0

Tenure categories. Owned parcels were most likely (36 percent) to have had sheds, temporary field shelters (known as *ajoupa* or *kyamp*), or chicken coops built on them, while rented parcels were least likely (18 percent) to have such structures (see table 3.18a). This relationship holds even when controlling for whether respondents were full- or part-time farmers.

Tenure documentation. Although a higher percentage of owned parcels documented by up-to-date deeds than with out-of-date deeds had light structures built on them by respondents, differences are not statistically significant (table 3.18c). Of all documentation categories, the few parcels (16) documented by tax receipts consistently ranked highest in the presence of such structures. Perhaps the fact that respondents with tax receipts were more likely to be full-time farmers than those with deeded parcels (56 percent versus 41 percent) may have something to do with this. Ranking lowest in the presence of light structures were parcels documented by out-of-date deeds, a position unchanged regardless of whether respondents holding those parcels were full- or part-time farmers. About two-thirds of these parcels were family land or rent-free parcels.

TABLE 3.18
Semipermanent structures installed by respondents
(shows adjusted percents)

	(a) TENURE STATUS						(b) DOCUMENTS				
	Individual ownership	Lease/rent	Squat-Ling	Rent-free	Family land	Deed	Lease	Tax receipt	Purchase/rent receipt	No document	
Total respondents	817 C 100%	202 100%	355 100%	132 100%	72 100%	55 100%	225 100%	110 100%	17 100%	232 100%	233 100%
Semipermanent structures											
Not installed	616 C 75%	130 64%	291 82%	101 77%	52 72%	41 75%	153 68%	77 70%	9 53%	198 85%	179 77%
Installed	201 C 25%	72 36%	64 18%	31 23%	20 28%	14 25%	72 32%	33 30%	85 47%	34 15%	54 23%
Std dev (n)	205.9191	229.4186	183.9437	203.3215	215.5190	210.0594	223.3886	219.9668	245.8364	169.3505	202.0532
Chi square		22.0302					25.6182				
Chi probability		0.00020					0.00004				
	(c) PRIVATE LANDOWNERSHIP DOCUMENTS						(d) TYPES OF LEASE DOCUMENT				
	Deed, up-to-date	Deed, out-of-date	Tax receipt	Purchase receipt	No document	Long-term lease	Short-term lease	Annual rental (rec.)	Annual no document		
Total respondents	817 C 100%	164 100%	60 100%	16 100%	19 100%	8 100%	38 100%	73 100%	232 100%	51 100%	
Light structures											
No sheds, ajoupa, etc.	616 C 75%	107 65%	46 77%	8 50%	12 63%	6 75%	17 45%	60 82%	198 85%	44 86%	
Sheds, ajoupa, etc.	201 C 25%	57 35%	14 23%	8 50%	7 37%	2 25%	21 55%	13 18%	34 15%	7 14%	
Std dev (n)	205.9191	228.2327	203.8007	246.7452	236.8050	221.1877	240.7719	184.0704	169.3505	166.0617	
Chi square		5.2174	CELL<5				36.2524				
Chi probability		0.26571					0.00000				

Rented parcels documented by written leases were much more likely to have had such structures built on them than any other rental document category (table 3.18d). Once again, it appears that the lease term is the most important factor, not the quality or type of documentation per se; 55 percent of parcels with long-term written leases have such structures versus 14-17 percent among the other categories, including parcels with short-term written leases. Annual nondocumented rental agreements are least likely to have such structures (14 percent). Differences among parcels with either out-of-date and up-to-date written leases are not statistically significant.²⁰

The long-term tenure security afforded by either freehold ownership or long-term leases appear to be primary factors contributing to such investments.

DRAINAGE INFRASTRUCTURE INVESTMENTS

Drainage problems emerged as especially prevalent in two of the research sites, Warren-Munro and Penal/Puzzle Island, with 37 percent (77/209) of parcels said to be affected in the former, and 47 percent (47/99) in the latter. Of parcels suffering from this difficulty, interviewees responded by digging drainage ditches or doing land leveling on 73 percent (143/195).

Since it is possible that those who said drainage was not a problem had already taken care of it, the following figures may be relevant: for 25 percent of *all* parcels and for 36 percent of parcels in the two problem areas mentioned above, respondents had installed some sort of drainage system.

Tenure categories. Of parcels for which drainage was said to be an occasional problem, the vast majority benefited from countermeasures. The only exceptions were family land parcels, of which only 11 percent had drainage ditches dug or land leveled. Notably, the highest rate of such measures, 84 percent, occurred on squatted parcels. For the remainder of tenure categories, percentages ranged between 62 percent and 72 percent of parcels (see table 3.19a). Although percentages are lower, the respective tenure categories remain similarly ranked when all parcels are considered, with squatted and family land parcels least likely to have been the objects of drainage measures.

Documentation. Drainage problems were far more likely to be responded to on owned parcels with up-to-date than out-of-date deeds, which for the most part were family land parcels (table 3.19c).

20. Among rented public land parcels, those administered by the Ministry of Agriculture are more likely (27 percent) to have semipermanent structures on them than either Caroni or NHA parcels, of which the lowest percentage had such structures built on them (10 percent). This may have something to do with the fact that state land parcels were being utilized for livestock.

TABLE 3.19
Distribution of parcels with drainage problems
by construction of drainage infrastructure
 (shows adjusted percents)

	TENURE STATUS						DOCUMENTS					
	Individual ownership	Lease/rest	Squatting	Rent-free	Family land	Deed	Lease	Tax receipt	Purchase/rest receipt	No document		
Total respondents	194	47	93	32	13	9	55	27	3	59	50	
	C 100%	!	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Drainage installed	143	j	36	71	27	8	1	37	18	2	48	38
	C 74%	!	77%	76%	84%	62%	11%	67%	67%	67%	81%	76%
Not installed	51	!	11	22	5	5	8	18	9	1	11	12
	C 26%	!	23%	24%	16%	38%	89%	33%	33%	33%	19%	24%
Std dev (n)	97.2317	j	94.2875	94.1234	81.2728	111.5583	73.43671	104.3261	105.8335	127.1960	86.5389	95.0459
Chi square			21.6072	CELL<5			3.8594	CELL<5				
Chi probability			0.00024				1 0.42536					

(c)

(d)

PRIVATE LANDOWNERSHIP DOCUMENTS

TYPES OF UKASE DOCUMENT

	PRIVATE LANDOWNERSHIP DOCUMENTS					TYPES OF UKASE DOCUMENT						
	Deed, up-to-date	Deed, out-of-date	Tax receipt	Purchase receipt	No document	Long-term lease	Short-term lease	Annual rental (rec.)	Annual no Document			
Total respondents	194	40	15	2	2	0	6	21	59	13		
	C 100%	!	100%	100%	100%	100%	100%	100%	100%	100%		
DRAIN10												
Drainage installed	143	30	7	2	1		4	14	48	7		
	C 74%	!	75%	47%	100%	50%	67%	67%	81%	54%		
Not installed	51	10	8		1		2	7	11	6		
	C 26%	!	25%	53%	50%		33%	33%	19%	46%		
Std dev (n)	97.2317		96.6123	113.7676	0.0000	155.7827	0.0000	j	113.7676	106.5389	86.5389	114.3132
Chi square			5.2582	CELL<5			5.1215	CELL<5				
Chi probability			0.15384				1 0.16311					

No statistically significant differences emerged on rented parcels (table 3.19d). However, at 54 percent, undocumented rentals were substantially below the other categories (67 percent-83 percent) in the rate of drainage investments.

Drainage investments generally are labor rather than capital intensive and have virtually immediate benefits for production. They are therefore not particularly good indicators of tenure security. With the exception of family land tenure,²¹ tenure or tenure documentation appear to have little bearing on the likelihood of such investments. As seen, squatters emerged as no less likely to build such infrastructure than other tenure categories.

IRRIGATION INFRASTRUCTURE INVESTMENTS

Almost half (46 percent) of all agricultural parcels were said to suffer from shortage of water; 24 percent (196/817) of all parcels benefited from some form of irrigation. Of these, respondents said that they had installed irrigation equipment or dug canals for 69 percent (136/196) and had brought an old system back into operation for 36 percent (71/196).

Tenure. The most notable contrast is that between family land parcels with the lowest rate of irrigation investments (7 percent) and all other tenure categories, which vary narrowly between 20 and 31 percent with such investments (table 3.20a).

Tenure documentation. Owned parcels documented by up-to-date deeds are about 12 percent more likely to have such investments than those documented by out-of-date deeds (table 3.20c). Again, it should be noted that most of the parcels with out-of-date deeds are under family land or rent-free tenure. Comparing parcels with deeds to those documented by purchase or tax receipts reveals no statistically significant differences.

No significant differences emerge among the various rental/lease document categories (table 3.20d).

Patterns are difficult to interpret or relate to variations in tenure security because such infrastructure can vary greatly in quality and permanence; the data fail to make this distinction possible. Digging irrigation canals promises benefits in the following growing season; however, concrete canals or extensive and costly land-leveling activities would be justified only if access to the land were assured for several seasons.

21. With regard to the low rate of drainage investment among family land parcels, it should be noted that only about a third were in flat areas in which drainage tends to be most problematic.

22. Only the percentage differences between family land and rented parcels are statistically significant.

TABLE 3.20

**Distribution of parcels by installation
of irrigation infrastructure by respondents
(shows adjusted percents)**

	(a)						(b)				
	TENURE STATUS						DocumENLs				
	Individual ownership	Lease/rent	Squatting	Rent-free	Family land	Deed	Lease	Tax receipt	Purchase/rent receipt	No docu-	
Total respondents	807	355	132	72	55	225	110	17	232	233	
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
No irrigation investment	607	156	243	105	51	51	176	77	14	160	180
	74%	77%	68%	80%	71%	93%	78%	70%	82%	69%	77%
Irrigation investment	210	46	112	27	21	4	49	33	3	72	53
	26%	23%	32%	20%	29%	7%	22%	30%	18%	31%	23%
Std dev (n)	96.3346	92.6193	102.5252	89.2048	100.8402	57.7392	91.1325	101.4208	86.5714	102.1434	92.5521
Chi square		19.3854	CELL<5				7.9760	CELL<5			
Chi probability		0.00066					0.09246				

	(c)						(d)			
	PRIVATE LANDOWNERSHIP DOCUMENTS						TYPES OF LEASE DOCUMENT			
	Deed, up-to-date	Deed, out-of-date	Tax receipt	Purchase receipt	No docu-merit	Long-term lease	Short-term lease	Annual rental (rent)	Annual no docu-	
Total respondents	817	164	60	16	19	8	38	73	132	51
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
IRRIGIO										
No irrigation investment	607	123	52	13	16	8	27	51	160	37
	74%	75%	87%	81%	84%	100%	71%	70%	69%	73%
Irrigation investment	210	41	8	3	3		11	22	72	14
	26%	25%	13%	19%	16%		29%	30%	31%	27%
Std dev (n)	96.3346	95.6892	75.5230	88.8098	82.5357	0.0000	101.2558	101.7895	102.1434	99.2954
Chi square		6.2562	CELL<5				0.2879	CELL<5		
Chi probability		0.18081					0.96229			

CONSERVATION PRACTICES AND INVESTMENTS

Conservation activities range from contour plowing to construction of terraces or contour strips to planting of trees as windbreaks. Their adoption would seem to reflect long-term commitment to the land, something unlikely if future access to it were in serious question. With the exception of windbreaks, which would be of benefit in open expanses of level land, these measures are most relevant to parcels with some degree of slope, which account for 42 percent (38 percent "slightly steep," and 4 percent "very steep and difficult to farm") of the agricultural parcels in the sample.²³ The table below shows the relative frequency of these measures among parcels in the sample.

TYPE	CONSERVATION/ANTI-EROSION MEASURES		
	(n)	Total (%)	Parcels with slope (%)
Contour plowing	93	11	28
Contour strips	32	4	9
Terraces	9	1	3
Windbreaks	39	5	12

a. Contour plowing, contour strips, and terracing

TENURE CATEGORIES. Focusing on parcels reported to have slopes that were either "slightly steep" or "very steep and difficult to farm" which would be most susceptible to erosion (table 3.21a), family land parcels emerge as most likely (56 percent) to have benefited from such conservation measures. The other categories are all very similar in the rate of such measures at around 30 percent.

TENURE DOCUMENTATION. Comparisons among document categories for owned and rented parcels (tables 3.21c and 3.21d) revealed no other significant differences, except between up-to-date deeds and out-of-date deeds, most of which are associated with family land parcels and for which anti-erosion practices were most prevalent. Also notable is the low rate among both owned and rented parcels with no documents at all.

23. Of parcels on which anti-erosion measures were taken, 88% were hilly.

TABLE 3.21
Distribution of anti-erosion measures on hilly land by tenure and documents
(shows adjusted percents)

	TENURE STATUS						DOCUMENTS				
	Individual ownership	Lease/rest	Squat-tiog	Rent-free	Family land	Deed	Lease	Tax receipt	Purchase/rent receipt	No document	
Total respondents	335	89	151	33	28	34	96	30	13	137	59
	C 100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Anti-erosion contour	115	27	49	11	9	19	33	10	5	48	19
	C 34%	30%	32%	33%	32%	56%	34%	33%	38%	35%	32%
No anti-erosion	220	62	102	22	19	15	63	20	8	89	40
	C 66%	70%	68%	67%	68%	44%	66%	67%	62%	65%	68%
Std dev (n)	104.7608	101.8534	103.4900	105.4654	104.7783	111.0351	105.6306	105.1875	105.4921	111.5583	103.8248
Chi square		7.9455					0.2604				
Chi probability		0.09360					0.99222				

(c)

(d)

	PRIVATE LANDOWNERSHIP DOCUMENTS						TYPES OF LEASE DOCUMENT				
	Deed, up-to-date	Deed, out-of-date	Tax receipt	Purchase receipt	No document	Long-term lease	Short-term lease	Annual rental (rec.)	Annual no document		
Total respondents	335	60	35	12	15	2	11	20	137	10	
	C 100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Anti-erosion contour	115	16	17	4	7	2	4	6	48	2	
	C 34%	27%	49%	33%	47%	100%	36%	30%	35%	20%	
No anti-erosion	220	44	18	8	8	0	7	14	89	8	
	C 66%	73%	51%	67%	53%	0%	64%	70%	65%	80%	
Std dev(n)	104.7608	98.2469	111.7176	108.4731	113.7676	0.0000	111.1519	103.5815	105.4921	92.8909	
Chi square		8.8249	CELL<5				1.1069	CELL<5			
Chi probability		0.06563					0.77541				

b. Windbreaks

Windbreaks may be useful under a wider range of terrain conditions than the other conservation measures just reviewed. Since most of the time windbreaks take the form of tree planting, the link already discussed between tenure and tree planting needs to be kept in mind in weighing the evidence. Two sets of tables present data, first, on explicit mention by respondents of having installed windbreaks (tables 3.22a-d) and, then, on the occurrence of windbreaks or of 20 or more trees per acre (tables 3.23a-d), a reasonable cut-off point of the minimum number of trees needed to establish a windbreak.

TENURE. Although the numbers are small for clear-cut instances of windbreaks, owned and co-owned parcels are two to three times more likely to have them than the remaining tenure categories (table 3.22a). The relative rankings remain similar when the dependent variable is "trees or windbreaks."

DOCUMENTS. No significant differences appear among the various documentation categories for owned land (tables 3.22c and 3.23c).

Parcels held under written long-term leases substantially surpass all the other categories (tables 3.22d and 3.23d).

PRAEDIAL LARCENY

Concern over praedial larceny, which is widespread, is a critical element in the land use equation. Respondents indicated this to be a major problem for 43 percent of the parcels under their control. As high as it is, this figure understates the problem since many who said that it was not a concern explained either that they did not plant anything on the parcel or that they planted crops that were not prone to theft.

Possible influences of praedial larceny on land use choices are: the concentration on parcels where respondents have a presence or are near enough to monitor the situation closely; the preference for crops less prone to theft (rice, cane, and root crops fall into the "safe" category; vegetables and tree crops fall into the "unsafe" category). Levels of land use intensity and the practice of conservation measures should not be affected by fear of theft, though the tendency to concentrate on parcels close to the house may be a factor among those not restricted to one parcel.

Levels of concern about praedial larceny vary sharply among the study sites (table 3.24). While parcels for which theft is "a major problem" range narrowly between 30 and 45 percent among four of the sites, the level of concern is remarkably low (7 percent) in the Tobago site and remarkably high (71 percent) in the Freeport area (the squatter site). The Tobago site is one marked by longstanding, cohesive (not necessarily harmonious)

TABLE 3.22
Distribution of windbreaks by tenure and tenure documentation
(shows adjusted percents)

	TENURE STATUS DOCUMENTS										
		Individual ownership	Lease/ rent	Squat- ting	Rent- free	Family land	Deed	Lease	Tax receipt	Purchase/ rent receipt	No docu- ment
Total nation- dents	817 C 100%	202 100%	355 100%	132 100%	72 100%	55 100%	225 100%	110 100%	17 100%	232 100%	233 100%
No windbreaks	770 C 95%	186 94%	335 95%	128 98%	71 99%	49 92%	205 94%	98 89%	17 100%	223 97%	227 98%
Were there before	21 C 3%	5 3%	12 3%	2 2%	1 1%	1 2%	5 2%	9 8%	0 0%	2 1%	5 2%
Established by respondent	18 C 2%	7 4%	7 2%	1 1%	0 0%	3 6%	9 4%	3 3%	0 0%	6 3%	0 0%
Std dev (n)	47.3450	49.9415	51.8608	34.9681	30.8464	50.8908	49.6627	75.4216	0.0000	34.9257	38.0906
Chi square		9.4940	CELL<5				26.6332	CELL<5			
Chi probability		0.30235					0.00082				

(c)

(d)

	PRIVATE LANDOWNERSHIP DOCUMENTS						TYPES OF LEASE DOCUMENT			
	Deed, up- to-date	Deed, out- of-date	Tax receipt	Purchase receipt	No docu- ment	Long-term lease	Short-term lease	Annual rental (rec.)	Annual no docu- ment	
Total respon- dents	817 C 100%	164 100%	60 100%	16 100%	19 100%	8 100%	38 100%	73 100%	232 100%	51 100%
No windbreaks	770 C 95%	151 94%	53 91%	16 100%	17 89%	8 100%	30 79%	69 95%	223 97%	49 96%
Were there before	21 C 3%	3 2%	2 3%		1 5%		7 18%	2 3%	2 1%	2 4%
Established by respondent	18 C 2%	6 4%	3 5%		1 5%		1 3%	2 3%	6 3%	
Std dev (n)	47.3450	46.2131	58.6704	0.0000	68.5836	0.0000	104.0596	49.7630	34.9257	51.3113
Chi square		3.2104	CELL<5				32.9680	CELL<5		
Chi probability		0.072047					0.00001			

TABLE 3.23
Distribution of windbreaks or planting of more than 20 trees per acre by respondents
(shows adjusted percents)

	(a)							(b)				
	TENURE STATUS							NTS				
	Individual ownership	Lease/rent	Squat-	Rent-free	Family land	Deed	Lease	DOCUME Tax receipt	Purchase/rent receipt	No docu-		
Total respon-	817	202	355	132	72	55	225	110	17	232	233	
dents	C 100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Windbreaks or	208	78	74	26	13	17	81	29	9	49	40	
20+ trees per	C 26%	39%	21%	20%	18%	31%	36%	28%	53%	21%	17%	
acre												
Neither	598	121	274	105	59	38	141	76	8	183	190	
	C 74%	61%	79%	80%	82%	69%	64%	72%	47%	79%	83%	
Std dev (n)	114.6006	128.1005	107.2524	104.7959	101.3847	122.0698	126.2844	117.5884	134.6641	107.0641	99.4249	
Chi square		27.7967					31.1099					
Chi probability		0.00001					0.00000					
	(c)						(d)					
	PRIVATE LANDOWNERSHIP DOCUMENTS						TYPES OF LEASE DOCUMENT					
	Deed, up-to-date	Deed, out-of-date	Tax receipt	Purchase receipt	No document	Long-term lease	Short-term lease	Annual rental (rec.)	Annual no document			
Total respon-	817	60	164	16	19	8	38	73	232	51		
dents	C 100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Windbreaks or	208	20	61	9	6	0	20	9	49	5		
20+ trees per	C 26%	34%	37%	56%	32%	0%	59%	13%	21%	10%		
acre												
Neither	598	38	102	7	13	8	14	63	183	44		
	C 74%	66%	63%	44%	68%	100%	41%	88%	79%	90%		
Std dev (n)	114.6006	125.4947	127.0527	134.1018	124.9984	0.0000	130.7533	87.1698	107.0641	80.0503		
Chi square		7.6615	CELL<5				35.3055					
Chi probability		0.10479					0.00000					

TABLE 3.24

Characterization of praedial larceny as a problem by study area

	No problem	Somewhat of problem	Major problem	TOTAL
Fairfield/Broomage	67 35.1%	22 11.5%	102 53.4%	191 23.8%
Warren-Munro	46 47.4%	16 16.5%	35 36.1%	97 12.1%
Couva	14 22.6%	9 27.4%	31 50.0%	62 7.7%
Penal/Puzzle Isle.	91 43.3%	18 13.3%	24 43.3%	210 26.1%
Tobago	71.2%	12.3%	16.4%	18.2%
Freeport	32.7%	2.0%	65.3%	12.2%
TOTAL	354 44.0%	347 12.8%	804 43.2%	
Chi square = 99.93315 DF = 10 P = 0.00000				

communities, a feature apparently lacking or weaker than in the Freeport or other Trinidad sites; intensive settlement of the area dates back to the post-World War II years. Also possibly a factor is the respect of neighbors for ownership rights and boundaries, which may be expected to be lower in the squatter site than in the

Tobago also has the highest level of private ownership; Warren-Munro site, also with a high percentage of private parcels, has the second lowest percentage of parcels for which praedial larceny is considered to be a major problem. Table 3.25 indicates that concern over individually owned and co-owned parcels is lowest while it is highest among squatted and rented parcels. A possible reason for these differences, beyond general community characteristics of the sites, may be differences among the respective tenure forms in terms of the likelihood of the parcel being a home parcel. As seen in table 3.17a, the three tenure categories with the greatest likelihood of having a house on the parcel are parcels under

24. The NHA lands in Fairfield estate, in which the formal legitimacy in terms of documents and formal tenure rights is weakest and where no boundary surveys demarcate agricultural parcels, make up an area plagued by encroachment and boundary disputes.

TABLE 3.25
Fear of praedial larceny by tenure

	No problem	Somewhat of problem	Major problem	TOTAL
Individual ownership	110 55.6%	22 11.1%	66 33.3%	198 24.6%
Lease/rent	124 35.3%	77 15.4%	150 49.3%	351 43.7%
Squatting	52 39.7%	8 6.1%	51 54.2%	111 16.3%
"Rent-free"	34 47.2%	17 19.4%	21 33.3%	72 9.0%
Family land	34 65.4%	5 9.6%	13 25.0%	52 6.5%
TOTAL	354 44.0%	117 12.8%	273 43.2%	744

Chi square = 44.63369 DF = 8 P = 0.00000

TABLE 3.26
Tenure insecurity and fear of thieving

CONCERN OVER PRAEDIAL LARCENY	CONCERN OVER CONTINUED USE			TOTAL
	Not concerned	Somewhat concerned	Very concerned	
No problem	239 67.7%	40 11.3%	74 21.0%	353 44.0%
Somewhat of problem	58 56.3%	19 18.4%	26 25.2%	103 12.8%
Major problem	127 36.7%	23 6.6%	196 56.6%	346 43.1%
TOTAL	424 52.9%	82 10.2%	296 36.9%	802

Chi square = 108.23251 DF = 4 P = 0.00000

Gamma = 0.48683

Tau B = 0.30585

Tau C = 0.27001

Somers D:

V 107CAT as dependent = 0.29820

V 108CAT as dependent = 0.31370

TABLE 3.27

Trees per acre by presence or absence of home on parcel
(trees per acre, excluding bananas)

	No trees	1-20	21-40	41-60	61-80	81-100	> 100	
House on parcel	45	95	35	18	12	11	22	238
	18.9%	39.9%	14.7%	7.6%	5.0%	4.6%	9.2%	29.3%
House not on parcel	459	71	16	6	5	5	11	573
	80.1%	12.4%	2.8%	1.0%	0.9%	0.9%	1.9%	70.7%
TOTAL	504	51	24	17	16	33	81	
	62.1%	20.5%	6.3%	3.0%	2.1%	2.0%	4.1%	
Chi square = 273.74924			DF = 6		P = 0.00000			

individual ownership, co-ownership, and rent-free tenure; rented parcels are less likely²⁵ and squatted parcels are least likely to have houses on them.

REVIEW OF FINDINGS AND GENERAL COMMENTS:

POTENTIAL BENEFITS OF UPGRADING TENURE STATUS AND DOCUMENTS

OWNED LAND

Here we are talking about two possible interventions: updating deeds, and upgrading the documentation of those with only tax receipts or purchase receipts in their possession. The first intervention would encompass approximately 24 percent of parcels with deeds and only 8 percent of total parcels (6 percent of total area) in the sample. About one-third of deeded parcels with out-of-date deeds are nonagricultural parcels, indicating an even smaller potential benefit to agricultural investment.

Many of the parcels documented by out-of-date deeds are family land parcels. Relative to other tenure categories, with the exception of individual ownership, these exhibit relatively high rates of building and tree growing. Home building is traditionally considered to be a central purpose of family land. However, building and tree-planting rates remain significantly below those on parcels with up-to-date deeds. Also, while unsurpassed in the frequency with which conservation practices are applied, family land/out-of-date deeded parcels exhibit very low rates of drainage or irrigation infrastructure development. Applying

25. The NHA parcels of Fairfield estate are an exception here, with a relatively high number of rented parcels with homes on them.

conservation practices is consistent with the sense of family land as a heritage that needs to be preserved for future generations; installation of irrigation and drainage infrastructure, effecting physical changes in the land and suggesting the intention to intensify agricultural use, may be discouraged by concern over possible objections of co-owners. Extent of parcel use is also lower than for other tenure categories.

The proportion of land that would benefit in increased use levels and investments by sorting out family land claims and updating deeds would be rather small (an estimated 10 percent of total land area), weakening the economic argument in terms of social benefits derivable for a major initiative in dealing with this tenure form. It would therefore seem to be advisable to incorporate initiatives on family land into a broader effort to simplify and reduce the costs of registration and surveying with the addition of possible mechanisms for adjudicating cases of conflicting claims among kin.

The second intervention—upgrading the documentation of those with only tax receipts or purchase receipts in their possession—would benefit only about 8 percent of private parcels and 9 percent of total land represented in the sample.

Likely consequences. While no major increases in field crop production would be anticipated (with the possible exception of those changing from family land status to individual ownership), one could expect substantial gains in the number of tree crops (an estimated average addition of 20 trees per acre), substantial gains in on-parcel investments, in particular, drainage and irrigation infrastructure, and possibly greater investment in semipermanent structures (sheds and so forth).

There are likely to be some indirect benefits in the realm of private rentals from the sorts of initiatives described above. First, increasing ownership security may encourage more renting of land by owners unable or uninterested in using the land for agriculture. Second, it may provide the foundation for the issuance of more written lease agreements with tenants; it seems that a higher proportion of parcels currently under such agreements were surveyed, suggesting that these were registered deed parcels. One gain in particular appears probable from such a development: improved conservation practices. Their incidence on privately rented parcels lacking documents was extremely low.

LEASED AND RENTED LAND/PUBLIC LAND

As with privately owned land, measures could take two directions: bringing out-of-date leases up-to-date; and providing written lease documents to those currently with only rental receipts. Again, the main benefits would be in the form of greater investments and permanent crops, not in the extent of land use. However, the numbers of farmers and the amount of land affected would be much greater than in the case of initiatives directed at the private land sector.

As consideration is given to these measures, an additional dimension needs to be weighed: lengthening lease terms. While short-term rentals and leases exceeded long-term

leases in the extent of land used, they lagged behind long-term leases, which were virtually on a par with privately owned deeded land, in terms of the planting of permanent crops and investments.²⁶ A question clouding these potential gains is the extent to which tree growing and other permanent or semipermanent investments would be permitted in such leases. As management of such leases is improved, it will be crucial to build in the latitude and avoid disincentives for adding to the land's value and productivity.

SQUATTED LAND

Squatted parcels apparently suffer no disadvantages relative to other tenure categories in the extent of use. This relatively positive picture extends unexpectedly to other areas as well: the installation of drainage and irrigation infrastructure and the adoption of conservation practices where they count most—hilly land subject to erosion, in which such parcels are on a par with all other tenure categories except for family land parcels. This would seem to reflect the long period of use and doubts as to the capacity or will of the state to reassert control.

Regularization in the direction of either written leases or freehold could be expected to raise performance in other areas, most notably in the rate of construction of permanent and semipermanent structures and tree growing.

OTHER ISSUES

If the concern is with maintaining agricultural production on prime agricultural land and providing needed land to those willing to work it, it may be necessary to implement tax and other incentives to nudge inactive private owners to use or transfer their land (temporarily or permanently) to those who will use it.

Preserving prime agricultural land. Public leaseholds provide a good instrument to achieve this goal, but not if management and enforcement are deficient. Moreover, these leaseholds must be made more flexible and responsive to people's changing needs and capacities. Permitting people officially to sublet parcels or portions of parcels (which they do informally anyway) would be a way to maintain production and keep people with farming skills on the land and within their traditional communities. No obviously satisfactory answer exists to the question of what to do when tenants have aged to the point where they cannot maintain the required levels of cultivation. Assignments of publicly rented land to children for housing is another difficult issue. This is so not only because of the high cost of obtaining land in the private market, but also because presence on the land is so important against praedial larceny. An option that has been discussed is to develop a rural housing

26. Average number of trees per acre planted by respondents with long-term leases was 28 versus 6 for short-term leases and 3-9 for other rentals. Similar differences emerged with regard to the building of semipermanent structures, such as sheds, chicken coops, and the like.

policy in which areas close to leased fields could be designated or zoned for low-cost housing.

Privatizing what are now public leaseholds and rentals invites the wholesale conversion to housing through the irresistible temptation to subdivide and sell the land as house lots. On virtually all private sectors within the study sites, agricultural tenants were receiving notices that they would have to stop using the land and that it was being converted to housing.

Chapter 4

ASSESSING THE IMPLICATIONS OF THE CURRENT LAND TENURE SITUATION FOR LAND MARKETS

by

Harry Lemel

INTRODUCTION

This chapter seeks to characterize the scope and quality of land transactions with a focus on formal transactions involving the sale or rental of private land. A smoothly running land market would enable people to dispose of or obtain land as their needs and capacities change. Further, such transactions would be possible at a reasonable cost and within reasonable time frames. While informal transactions are usually possible to accomplish the immediate needs of those involved (see discussions of rent-free tenure in the land use and investment report, in chapter 3, above), resort to them simply because formal ones are impractical or too costly inevitably pushes the formal land system into chaos and irrelevance and leaves those involved in transactions exposed to legal challenge and mischief.

Key issues addressed will be the extent to which changes in tenure status are accurately recorded, and how wide and what the implications are of the gap between formally and legally prescribed procedures, on the one hand, and what actually seems to be transpiring among landholders, on the other. What obvious bottlenecks and deficiencies appear in the current functioning of the system and what do these suggest in terms of remedial action?

SCOPE OF LAND PURCHASES

Parcels purchased by the respondents and those purchased by ascendants and then inherited together account for almost a third (31%) of all parcels.¹ With only a couple of exceptions involving the sale of leases (see below) and squatted parcels, these purchases involve privately owned land. Rates of parcel purchases and their relative frequency over the years vary widely across the study sites (see table 4. 1a). The Tobago site exhibits the highest level and longest history of substantial buying and selling of land, with over half of all parcels

1. Respectively, 15% and 16%.

having been originally purchased and with over a third of these having been purchased prior to 1950. The lowest levels of land purchases are found in the Fairfield-Broomage (17%) and Freeport (squatter site, 5 %) sites. Elsewhere, purchased parcels represent between 30 percent and 38 percent of all parcels.

TABLE 4.1

Year of purchase by area for parcels purchased by respondents and originally purchased parcels inherited by respondents

	YEAR OF PURCHASE				TOTAL
	Up to 1950	1951-1970	1971-1990	No information	
Fairfield-Broomage	5	24	11	2	42
R`	11.9%	57.1%	26.2%	4.8%	13.0%
Warren-Munro	14	20	18	8	60
R	23.3%	33.3%	30.0%	13.3%	18.6%
Couva	3	9	10	2	24
R	12.5%	37.5%	41.7%	8.3%	7.4%
Penal/Puzzle Isle.	17	33	40	10	100
R	17.0%	33.0%	40.0%	10.0%	31.0%
Tobago	32	25	24	9	90
R	35.6%	27.8%	26.7%	10.0%	27.9%
Freeport/Arena Road	3	1	3	0	7
R ;	42.9%	14.3%	42.9%	0.0%	2.2%
TOTAL	75	112	105	32	323
	23.2%	37.7%	32.5%	9.6%	100.0%
Chi square = 26.45616		DF = 15	P = 0.03349		

* R = ROW%.

CHARACTERISTICS OF THOSE BUYING LAND

Only a slightly higher percentage of males than females in the sample purchased land. More distinctive is the relatively young age of those who had bought land: 75 percent were younger than 45 years of age at the time of purchase; the mean age was 37, and the median

age, 34. Government employees and people with their own businesses were also more highly represented among buyers of land than others, though only slightly so; the percentage of parcels purchased by those belonging to the former occupational categories was 39 percent compared to 26 percent among others.

FINANCING LAND PURCHASES

Less than a third of land purchases² were financed through bank loans. Of those that were bank-financed (14), half relied on other land as collateral (table 4.2).³

TABLE 4.2
Collateral used in bank-financed land purchases

COLLATERAL	(%)	(n)
None	7	1
Land	50	7
Salary	15	2
Other	28	4
TOTAL	100	14

PROCEDURES FOLLOWED IN LAM) PURCHASES

While the great majority of owned parcels are today registered and documented by up-to-date deeds (68%; 247/364),⁴ about a third of the parcels are not. This situation reflects, first, what buyers either did or did not do to place their purchases on firm legal ground and, then, what was done to maintain this status as purchased land passed from one generation to the next. Heirs face the challenge of updating and annotating deeds, conducting re-surveys as land is partitioned, and obtaining approval from Town and Country Planning for such partitions. This section reviews the extent to which these procedures were adhered to and assesses the implications for future transactions or marketability of the land.

2. This refers to household-level data on investments and financing; no data were gathered on financing at the parcel level.

3. Collateral for the remaining bank-financed land purchases reported included 2 salary liens and 5 other forms of collateral.

4. This excludes private parcels under rent-free tenure.

For the vast majority of sales (80%), sellers presented deeds as evidence of ownership (table 4.3) and commissioned surveys (77%; 120/156). Attorneys or solicitors were involved in over 80 percent of the purchases, and 86 percent of the purchases were reported as having been registered in the Deeds Registry.

Many respondents complained of the complexity, time-consuming nature, and costliness of deed registration and surveying. According to the data (table 4), surveying costs have escalated sharply over the last couple of decades. From an average of TT\$650⁵ in the 1960s, the reported average for purchases in the last decade was nearly \$1,400. While the modal cost was reported to be between \$500 and \$1,000, 16 percent of the surveys were reported to have cost over \$3,000.

TABLE 4.3
Evidence of ownership provided by sellers
in respondents' land purchases

	COUNT	%	CUMULATIVE %
None	3	1.9	1.9
Deed, ascendant	14	9.1	11.0
Deed, seller's name	121	78.6	89.6
Receipt	10	6.5	96.1
Other	6	3.9	100.0
<i>TOTAL</i>	154	100.0	100.0

PURCHASED PARCELS INHERITED BY RESPONDENTS

The rise in surveying costs and difficulties associated with updating deeds to reflect inheritance transfers is particularly relevant if the hope of maintaining an accurate system of land records is to be realized. Taking respondents' assertions about whether ascendants had registered deeds as accurate, the data reveal a sharp deterioration in the quality of documentation. As is seen in table 4.5, only 60 percent of the parcels originally reported to have had registered deeds currently had up-to-date deeds. Of parcels inherited from someone without registered deeds, only 31 percent were currently documented by up-to-date deeds. Aggregating both sets of parcels, only 59 percent of purchased parcels were documented by up-to-date deeds at the time of the study.

5. References throughout are to Trinidad and Tobago dollars.

TABLE 4.4
Costs of land surveying by year survey was conducted

	Less than \$100	\$100-\$499	\$500-\$999	\$1000-\$1499	\$1500-\$1999	\$2000-\$2999	\$3000-\$3999	\$4000+	TOTAL
Before 1940	1	0	0	1	0	0	0	0	2
R*	50.0%	0.0%	0.0%	50.0%	0.0%	0.0%	0.0%	0.0%	3.6%
1940-1950	2	1	0	0	1	0	0	0	4
R	50.0%	25.0%	0.0%	0.0%	25.0%	0.0%	0.0%	0.0%	7.3%
1951-1960	1	5	0	0	0	2	0	0	8
R	12.5%	62.5%	0.0%	0.0%	0.0%	25.0%	0.0%	0.0%	14.5%
1961-1970	1	4	0	1	1	2	1	0	10
R	10.0%	40.0%	0.0%	10.0%	10.0%	20.0%	10.0%	0.0%	18.2%
1971-1980	2	1	2	3	0	1	0	1	10
R	20.0%	10.0%	20.0%	30.0%	0.0%	10.0%	0.0%	10.0%	18.2%
1981-present	0	2	7	3	1	2	2	1	18
R	0.0%	11.1%	38.9%	16.7%	5.6%	11.1%	11.1%	5.6%	32.7%
DK	0	0	0	0	1	2	0	0	3
R	0.0%	0.0%	0.0%	0.0%	33.3%	66.7%	0.0%	0.0%	5.5%
TOTAL	13	13	7	4	2	5	3	1	55
	12.7%	23.6%	12.7%	7.3%	3.6%	9.1%	5.5%	1.8%	100.0%
	Chi square = 52.90019			DF = 42		P = 0.12080			

R=ROW%.

Difficulties and costs associated with conducting surveys, partitioning the land, and obtaining Town and Country Planning approval for such partitions may be part of the reason for not recording deeds of transfer. Of parcels with two or more heirs, only about one-third (23/66) had partitions registered in the Deeds Registry or sought Town and Country approval (21/67) for partitions. Of those who did seek such approval, processing times were extremely lengthy: the shortest period reported was three months (n=3); in the majority of cases (7/12), waiting periods exceeded five years.⁶ Also clearly a factor inhibiting formalized partitions

6. Times reported for Town and Country Planning approval were as follows:

ttl)	Time
3	3 months
1	9 months
2	1.5 years
1	5 years
6	over 5 years

is that Town and Country Planning disallows partitions below 5 acres; most of the parcels held are already smaller than this.

TABLE 4.5

**Parcels originally purchased by ascendants and inherited by respondents:
presence or absence of registered deed prior to inheritance
and current form of tenure documentation**

ORIGINAL	CURRENT DOCUMENTATION					TOTAL
	Deed, up- to-date	Deed, out-of- date	Tax re- ceipt	Purchase receipt	No docu- ment	
Registered deed	94 R* 61.0%	52 33.8%	6 3.9%	2 1.3%	0 0.0%	154 92.2%
No regis- tered deed	4 R 30.8%	2 15.4%	3 23.1%	4 30.8%	0 0.0%	13 7.8%
TOTAL	98 58.7%	54 32.3%	9 5.4%	6 3.6%	0 0.0%	167 100.0%
	Chi square = 40.28762		DF = 3		P = 0.0000	

* R = ROW%.

Unlike purchases by the respondents themselves, in which attorneys were involved, in the great majority of cases (81%; 127/156), this was true of less than half (83/168) of the inheritances involving purchased parcels. Inheritance arrangements were reported as still incomplete in 26 percent (43/165) of the cases, with most of these being inheritances of ascendants who died more than ten years ago (table 4.6). The majority of these still pending inheritances involve family land parcels. Also indicating a widespread failure to re-demarcate parcels to reflect inheritance is the fact that substantially fewer than those purchased by respondents themselves had iron pins added and almost twice the percentage than the latter had either no boundary markers or markers other than iron pins (see table 4.7).

TABLE 4.6
The use of iron pins for boundary demarcation
by mode of acquisition

Mode of acquisition	Were pins; + added	Were pins; none added	Were none; added	No pins; other mark	No boundary markers	TOTAL
Not purchased	5 R* 0.7%	241 33.4%	13 1.8%	216 30.0%	246 34.1%	721 69.0%
Inherited purchased parcel	96 R ; 4.8%	11 57.1%	35 6.5%	168 20.8%	168 10.7%	168 16.1%
Purchased by respondent	16 R 10.3%	92 59.0%	19 12.2%	17 10.9%	12 7.7%	156 14.9%
TOTAL	29	429 41.1%	43 4.1%	268 25.6%	276 26.4%	1045 100.0%
Chi square = 187.12960		DF = 8		P = 0.00000		

R = ROW%.

TABLE 4.7
Inherited purchased parcels by tenure status:
whether inheritance arrangements were completed

Tenure	Arrangement completed	Not completed	Total		
Individual ownership	101 R* 80.8%	24 19.2%	125 75.8%		
Lease/rent	1 100.0%	0 0.0%	1 0.6%		
"Rent-free"	0 0.0%	1 100.0%	1 0.6%		
Family land	20 R 52.6%	18 47.4%	28 23.0%		
TOTAL	122 R 73.9%	3 26.1%	125 100.0%		
Chi square = 15.19667		DF = 3		P = 0.00166	

* R=ROW%.

GAUGING THE MARKETABILITY OF PRIVATELY OWNED PARCELS

PERCEPTIONS OF SALABILITY

Only about a quarter of all parcels, or about 20 percent of the land area in the sample, was considered salable by the respondents. With few exceptions, these parcels were privately and individually owned (see table 4.8). Table 4.9 reveals that among such parcels, those with up-to-date deeds were most likely to be regarded as salable; 83 percent of such parcels were so regarded compared to only 33 percent with out-of-date deeds. The only other tenure documentation category with high levels of perceived salability was the few parcels documented by purchase receipts. The quality of boundary demarcation also emerges as an important factor in perceived salability (see table 4.10).

As noted above, the accuracy of records tends to undergo degradation as one generation passes land on to the next. This manifests itself (see table 4.11) in the much lower percentage of inherited purchased parcels regarded as salable (56%) than those purchased by the respondents themselves (88%).⁷ This contrast may also be partially due to changes in perceptions of alienability that accompany inheritance. O.R. Marshall suggests that "once bought land has been inherited by all the family, the principle of inalienability is automatically invoked,"⁸ something that suggests the transfer of "family land ideology" to purchased land.

WILLINGNESS TO SELL

A major constraint on the potential scope for land sales, even among parcels regarded as salable, arises from the widespread desire to hold onto land; 82 percent (198/241) with such parcels said that they would "never" sell them. This sentiment appears to be strongest for owned parcels on which respondents had their homes (see table 4.12) and among female respondents, 94 percent (29/31) of whom said that they would never sell the land compared to 80 percent (163/204) of males.

7. In terms of respective percentages of land area regarded as salable, the figures are 44% for inherited purchased parcels and 91% for parcels purchased by the respondents themselves.

8. O.R. Marshall, "West Indian Land Law: Conspectus and Reform," *Social and Economic Studies*, 20:1 (1971), p. 6.

TABLE 4.8
Perceived ability to sell parcels by tenure status
 (report shows sum and average for parcel area)

TENURE	PERCEIVED ABILITY TO SELL		
	Can't sell	Can sell	Total
Individual ownership	59	239	298
R	19.8%	80.2%	28.8%
S	189.22	514.26	703.48
R	26.9%	73.1%	28.7%
C	10.0%	92.0%	
T	7.7%	21.0%	
A	3.21	2.15	2.36
Lease/rent	413		418
R	98.8%	1.2%	40.5%
S	1011.11	4.00	1015.11
R	99.6%	0.4%	41.4%
C	53.4%	0.7%	
T	41.2%	0.2%	
A	2.45	0.800000	2.43
Squatting		3	
R	98.0%	2.0%	14.2%
S	401.02	8.25	409.27
R	98.0%	2.0%	16.7%
C	21.2%	1.5%	
T	16.3%	0.3%	
A	2.78	2.75	2.78
"Rent-free"	102	7	109
R	93.6%	6.4%	10.6%
S	159.83	9.75	169.58
R	94.3%	5.7%	6.9%
C	8.4%	1.7%	
T	6.5%	0.4%	
A	1.57	1.39	1.56
Family land			
R	90.2%	9.8%	5.9%
S	134.00	23.00	157.00
R	85.4%	14.6%	6.4%
C	7.1%	4.1%	
T	5.5%	0.9%	
A	2.44	3.83	2.57
TOTAL	773	260	1033
T	74.8%	25.2%	100.0%
S	1895.18	559.26	2454.44
A	2.45	2.15	2.38

Chi square = 676.42910 DF = 4 P = 0.00000

R=ROW%; C=COLUMN%; T=TOTAL%; S=SUM; A=AVERAGE.

TABLE 4.9
Perceived ability to sell parcels by tenure documentation
 (report shows sum and average for parcel area)'

		Can't sell	Can sell	TOTAL
Deed, up-to-date		43		X47
	R	16.6%	83.4%	68.6%
	S	171.73	466.19	637.92
	R	26.9%	73.1%	73.6%
	C	52.2%	86.7%	
	T	19.8%	53.8%	
Deed, out-of-date		43		
	R	66.7%	33.3%	18.3%
	S	88.54	45.86	134.40
	R	65.9%	34.1%	15.5%
	C	26.9%	8.5%	
	T	10.2%	5.3%	
Tax receipt			4	1
	R	78.9%	21.1%	5.3%
	S	37.51	7.63	45.14
	R	83.1%	16.9%	5.2%
	C	11.4%	1.4%	
	T	4.3%	0.9%	
Purchase receipt			1	2b
	R	35.0%	65.0%	5.6%
	S	16.75	18.28	35.03
	R	47.8%	52.2%	4.0%
	C	5.1%	3.4%	
	T	1.9%	2.1%	
No document				
	R	100.0%	0.0%	2.2%
	S	14.50	0.00	14.50
	R	100.0%	0.0%	1.7%
	C	4.4%	0.0%	
		1.7%	0.0%	
TOTAL		1	245	6
	T	31.9%	68.1%	100.0%
	S	329.03	537.96	866.99
Chi square = 99.79313		DF = 4	P = 0.00000	

* R=ROW%; C=COLUMN%; T=TOTAL%; S=SUM; A=AVERAGE.

TABLE 4.10
Perceived ability to sell parcel by the nature of boundary demarcation

1-WAY ANALYSIS OF VARIANCE WITH NO REPLICATIONS					
Dependent variable:		<i>Perceived ability to sell parcel (0/1);</i>			
Variable:		values are percent of parcels in category deemed salable.			
		Boundary demarcation			
SOURCE	DF	SUM OF SQUARES	MEAN OF SQUARES	F	PROBABILITY
Factor A	4	23.3030	5.82576	34.9113	0.0000
Residual	1030	171.880	0.166873		
Total	1034	195.183			
FACTOR A		MEAN	STD. DEV.	CELL N	
	1	0.655172	0.483725	29	
	2	0.368794	0.483049	423	
	3	0.511628	0.505781	43	
	4	0.142322	0.350036	267	
	6	0.095238	0.294083	273	
	1:	Were pins and pins added			
	2:	Were pins, but none added			
	3:	Were no pins; pins added			
	4:	No pins; other boundary markers			
	5:	No boundary markers			
SCHEFFE TEST FOR GROUPS WITH SIGNIFICANT DIFFERENCES					
Group one	Group two	Mean difference	Probability		
1	2	0.286378	0.0101		
1	4	0.512850	0.0000		
1	6	0.559934	0.0000		
2	3	-0.142834	0.3122		
2	4	0.226472	0.0000		
2	6	0.273556	0.0000		
3	4	0.369306	0.0000		
3	6	0.416390	0.0000		

TABLE 4.11

Perceived ability to sell parcels by tenure documentation
(report shows sum and average for parcel area)

		Can't sell	Can sell	Total
Inherited purchased parcel		72	93	165
	R	43.6%	56.4%	51.6%
	S	249.92	198.39	448.31
	R	55.7%	44.3%	55.4%
	C	88.5%	37.7%	
	T	30.9%	24.5%	
	A	3.47	2.13	2.72
Purchased by respondent		136	155	
	R	12.3%	87.7%	48.4%
	S	32.42	328.39	360.81
	R	9.0%	91.0%	44.6%
	C	11.5%	62.3%	
	T	4.0%	40.6%	
	A	1.71	2.41	2.33
TOTAL		229	320	
	T	78.4%	71.6%	100.0%
	S	282.34	526.78	809.12
	A	3.10	2.30	2.53
Chi square = 37.14		DF = 1	P = 0.0000	

R=ROW%; C=COLUMN%; T=TOTAL%; S=SUM; A=AVERAGE.

TABLE 4.12

Willingness to sell parcel by the presence or absence of respondents' homes on the parcel

	Would never sell	For a good price	Depends on consent	Other	TOTAL
House on parcel	121	9	3	8	141
-R	85.5%	6.4%	2.1%	5.7%	59.0%
House not on parcel	75	4	2	2	98
-R	76.5%	17.3%	4.1%	2.0%	41.0%
TOTAL	82.0%	10.9%	2.9%	4.2%	100.0%
Chi square = 9.57382		DF = 3	P = 0.02256		

TABLE 4.14

**Land price information among respondents by
(a) nature of boundary markers and (b) distance to all-weather road**

		141						
		BOUNDARY MARKERS					PINS OR FENCES	
		Were pins + added	Were pins; none added	Were none; added	No pins; other markers	No boundary markers	No fence/pins	Fence/pins by respondent
TOTAL PARCELS	1045	29	429	43	268	276	688	201
	100%	100%	100%	100%	100%	100%	100%	100%
No idea of price	616	12	228	17	174	185	414	104
	59%	41%	53%	40%	65%	67%	62%	52%
Idea of price	429	17	201	26	94	91	264	97
	41%	59%	47%	60%	35%	33%	38%	48%
Std dev (n)	69.6758	70.9591	70.7271	70.0363	67.6841	66.6741	68.8943	70.9187
Chi square		27.7662					5.9011	
Chi probability		0.00001					0.01513	
(b)								
DISTANCE TO ALL-WEATHER ROAD								
		On all-weather road	1-5 minutes	6-10 minutes	11-20 minutes	More than 20 minutes		
TOTAL RESPONDENTS	1045	588	273	71	52	59		
	100%	100%	100%	100%	100%	100%		
No idea of price	616	346	138	45	40	45		
	59%	59%	51%	63%	77%	76%		
Idea of price	429	242	135	26	12	14		
	41%	41%	49%	37%	23%	24%		
Std dev (n)	69.6758	69.7283	70.9107	68.6888	60.2289	60.7437		
Chi square		22.7798						
Chi probability		0.00014						

LAND VALUES

Respondents were able to estimate current land values for only 41 percent of all parcels. Price consciousness increases along with those factors bearing on land marketability. These include: the extent of market activity in particular areas (table 4.13a), parcel tenure status (table 4.13d), documentation (table 4.13e), quality of boundary demarcation (table 4.14a), and parcel location (table 4.14b). The highest levels of land value information appear in Warren-Munro, among owned and deeded parcels, among those surveyed and demarcated by iron pins, and among those close to all-weather roads. In addition to the above factors, males who are more actively engaged in the land market emerge as more frequently able to estimate the value of parcels under their control than their female counterparts (table 4.15).

TABLE 4.15

Land price information among respondents by gender

		MALE	FEMALE
TOTAL RESPONDENTS	1045	876	160
	100%	100%	100%
No idea of price	616	493	120
	59%	56%	75%
Idea of price	429	383	40
	41%	44%	25%
Std dev (n)	69.6758	70.2648	61.4941
Chi square		18.8601	
Chi probability		0.00001	

Data limitations preclude detailed statistical analysis of land value differences and their determinants. However, certain broad patterns can be identified. Data consist of prices for purchased parcels and respondents' estimates of what the parcels at their disposal were worth in 1991.⁹

Land values have escalated explosively since World War II. In Tobago, which among the study sites has the longest history of land transactions, parcels purchased for less than \$100 in the late 1930s and early 1940s now fetch \$90,000 or more. There, the most dramatic

9. While data for purchased parcels were unambiguous, estimated value data are only for parcels between .76 and 1.24 acres to ensure that figures approximate per acre values.

rise in values—more than a tenfold increase occurred in the 1970s. Tourist development has had a profound impact on the Tobago land market. Along the Windward Main Road, per acre values of over \$150,000 were the norm. One respondent noted that high as such values were, they were still about half of what land in prime tourist/urban locations of Crown Point or Scarborough would go for. In contrast more remotely located parcels were estimated to be worth as little as \$2,000 per acre.

The extremely low land values prevailing in the 1940s and 1950s in Tobago are absent in other areas where respondents reported buying land parcels in the same period. Parcel values appeared significantly higher than Tobago's in these other sites as early as the 1950s and appeared to grow less explosively except for those in prime urban locations and along major roads. During the 1950s, compared to a median per acre land purchase price of \$450 in Tobago, Penal's was \$889; Fairfield/Broomage's, \$2,000; Warren-Munro's, \$2,300; Couva's, \$2,100; and Penal's, \$3,800. By the 1980s, the median per acre values were as follows for the respective study sites:

SITES	MEDIAN PER ACRE VALUES
Fairfield/Broomage	\$ 3,166
Warren-Munro	\$150,694
Couva	\$ 14,286
Penal	\$ 18,000
Tobago	\$ 78,461

More complete data on the movement of per acre prices for parcels purchased by respondents over the last five decades in the six study sites are presented in table 4.16.

In prime urban locations such as those on the outskirts of Princess town, current values of up to \$1 million per acre were quoted. In Fairfield, double lots sold in the 1960s for \$500 were now estimated to be worth between \$75,000 and \$80,000 per acre. In contrast, the estimated values of agricultural parcels rented from the NHA were around \$23,000 per acre. The critical importance of location in determining value in this site is illustrated by one respondent, who compared the values of parcels at his disposal as follows: Lots like his home parcel on the main road were going for \$260,000; another, off the main road but on an adjoining secondary road, he valued at \$80,000 per acre; one located 15 minutes from an all-weather road was put at \$3,000 per acre. Much the same order of difference apparently prevails in Penal, where a respondent estimated the per acre value of a parcel on an all-weather road to be \$200,000 while one situated 45 minutes from such a road was said to be worth \$3,000.

TABLE 4.16
Price data for parcels purchased by survey respondents
by study site and year of purchase

SITE	MEAN	MEDIAN	RANGE	(N)
Fairfield-Broomage				
-1940				
1941-1950	\$ 2,423	\$ 2,423	\$1,000-\$ 3,846	(2)
1951-1950	\$ 2,175	\$ 2,000	\$1,923-\$ 3,000	(7)
1961-1970	\$19,944	\$ 2,250	\$ 260-\$ 14,000	(10)
1971-1980	\$20,769	\$20,769		(1)
1981-1990	\$44,007	\$ 3,166	\$ 950-\$235,262	(6)
Warren-Mun'o				
-1940	\$ 20	\$ 20		(1)
1941-1950				(0)
1951-1950	\$ 11,248	\$ 2,372	\$ 250-\$ 40,000	(4)
1961-1970	\$ 13,722	\$ 700	\$ 467-\$ 40,000	(2)
1971-1980	\$ 10,052	\$ 3,500	\$1,200-\$ 30,000	(7)
1981-1991	\$263,264	\$150,694	\$1,667-\$750,000	(4)
Couva				
-1940				
1941-1950				
1951-1950	\$ 2,100	\$ 2,100	\$1,200-\$ 3,000	(2)
1961-1970				
1971-1980	\$23,352	\$28,000	\$2,800-\$42,500	(5)
1981-1991	\$15,510	\$14,286	\$3,077-\$29,167	(3)
Penal/Puzzle Isle.				
-1940				
1941-1950	\$ 1,457	\$ 889	\$ 450-\$ 3,600	(4)
1951-1950	\$ 3,800	\$ 3,800	\$1,600-\$ 6,000	(2)
1961-1970	\$ 10,153	\$10,050	\$ 350-\$ 66,714	(12)
1971-1980	\$ 17,567	\$ 5,333	\$ 250-\$120,000	(13)
1981-1991	\$111,461	\$18,000	\$ 500-\$384,615	(17)
Tobago				
-1940	\$ 679	\$ 26	\$ 12-\$ 2,000	(3)
1941-1950	\$ 222	\$ 67	\$ 12-\$ 1,300	(9)
1951-1950	\$ 1,665	\$ 450	\$ 93-\$ 10,000	(8)
1961-1970	\$ 2,890	\$ 2,890	\$2,581-\$ 3,200	(2)
1971-1980	\$58,500	\$48,461	\$ 250-\$120,000	(13)
1981-1991	\$75,160	\$78,461	\$8,000-\$153,846	(17)
Freeport				
-1940	\$154	\$154	\$154	(2)
1941-1950	\$160	\$160		(1)
1951-1950				(0)
1961-1970				(0)
1971-1980				(0)
1981-1991				(0)

Tables 4.17-4.21 relate respondents' estimates of per-acre land values for parcels without houses on them (to avoid possible overstatements of value due to inclusion during data collection of the structure's value) to study site, tenure documentation, tenure status, distance to an all-weather road, and boundary demarcation.

a. **Study** site (table 4.17). Land values are highest in the Tobago and Warren-Munro sites, where 53% and 36%, respectively, of parcels are estimated to be worth over \$50,000 per acre. Values are lowest in the Fairfield-Broomage and Freeport squatter sites, with 42% and 22%, respectively, of parcels being valued at under \$10,000 and 95% and 78%, respectively, valued at under \$30,000 per acre.¹⁰

TABLE 4.17
Respondents' per acre value estimates (1991) by study site^a

STUDY SITE	ESTIMATED PER ACRE VALUES (1991)					TOTAL
	<\$10,000	\$10,000 - \$30,000	\$30,000 - \$50,000	\$50,000 - \$100,000	>\$100,000	
Fairfield-Broomage	8	10	1	0	0	19
	R ^b 42.1%	52.6%	5.3%	0.0%	0.0%	17.4%
Warren-Munro	0	5	2	3	1	11
	R 0.0%	45.5%	18.2%	27.3%	9.1%	10.1%
Penal/Puzzle Isle.	3	6	5	0	1	14
	R 21.4%	42.9%	35.7%	0.0%	0.0%	12.8%
Tobago	11	19	11	11	19	56
	R 14.3%	26.8%	5.4%	19.6%	33.9%	51.4%
Freeport/Arena Road	2	0	0	0	0	2
	R 22.2%	55.6%	0.0%	22.2%	0.0%	8.3%
TOTAL	21	41	11	16	20	109
	R 19.3%	37.6%	10.1%	14.7%	18.3%	100.0%

Chi square = 47.35857 DF = 16 P= 0.00006

Only parcels between .76 and 1.25 acres without houses on them or explicitly estimated without the value of structures added.

^b R=ROW %.

10. No parcels in the Couva site met the selection criteria of being between .76 and 1.25 acres in size and having no house on them. Simply dividing estimated values by parcel size yields values most closely approximate to patterns in Tobago and Warren-Munro: The average value given per acre was \$73,452; the median was \$24,500; 36% of the parcels were estimated to be worth over \$50,000/acre and 14% were worth less than \$10,000. The modal category accounting for 39% of parcels was \$10-\$30,000/acre.

b. **Documents** (table 4.18). Deeded parcels are the most highly valued, with over half of them estimated to be worth more than \$50,000. Leased and rented parcel values were generally estimated to be under \$30,000."

TABLE 4.18
Respondents' per acre value estimates (1991) by tenure documentation

DOCUMENT	ESTIMATED PER ACRE VALUES (1991)					TOTAL
	<\$10,000	\$10- \$30,000	\$31- \$50,000	\$51- \$100,000	> \$100,000	
Deed	3	12	5	10	13	43
R ^o	7.0%	27.9%	11.6%	23.3%	30.2%	39.4%
Lease	3	4	0	0	0	12
R	25.0%	41.7%	33.3%	0.0%	0.0%	11.0%
Tax receipt	0	0	0	0	1	1
R	0.0%	0.0%	0.0%	0.0%	100.0%	0.9%
Purchase/rent receipt	12	20	1	1	4	38
R	31.6%	52.6%	2.6%	2.6%	10.5%	34.9%
No document	3	4	1	5	2	15
R	20.0%	26.7%	6.7%	33.3%	13.3%	13.8%
TOTAL	21	41	11	16	20	109
R	19.3%	37.6%	10.1%	14.7%	18.3%	100.0%
Chi square = 41.91358 DF = 16 P = 0.00041						

R= ROW %.

11. Parcels for which current users have no documents and which were valued at over \$50,000 were all either rent-free or family-land parcels.

c. **Tenure status** (table 4.19). The majority of privately owned parcels, whether individually owned or held under rent-free or family-land tenure, are valued at over \$50,000/acre. Nearly 80% of rented or squatted parcels were valued at under \$30,000/acre.

TABLE 4.19
Respondents' per acre value estimates (1991) by tenure status

TENURE	ESTIMATED PER ACRE VALUES (1991)					TOTAL
	< \$10,000	\$10 \$30,000	\$31 \$50,000	\$51-- \$100,000	> \$100,000	
Individual ownership	6	11	5	5	16	43
R ^a	14.0%	25.6%	11.6%	11.6%	37.2%	39.4%
Lease/rent	9	24	5	2	1	41
R	22.0%	58.5%	12.2%	4.9%	2.4%	37.6%
Squatting	3	4	0	2	0	9
R	33.3%	44.4%	0.0%	22.2%	0.0%	8.3%
"Rent-free"	2	1	1	3	2	9
R	22.2%	11.1%	11.1%	33.3%	22.2%	8.3%
Family land	1	1	0	4	1	7
R	14.3%	14.3%	0.0%	57.1%	14.3%	6.4%
TOTAL	21	41	11	16	20	109
R	19.3%	37.6%	10.1%	14.7%	18.3%	100.0%
Chi square = 42.79195 DF = 16 P = 0.00030						

^a R=ROW%.

d. Distance to all-weather road (table 4.20). Parcels valued at over \$50,000 per acre constitute between 36% and 42% of those within 5 minutes from an all-weather road, after which values drop off **precipitously**. All parcels estimated to be worth more than \$100,000 were within 5 minutes of an all-weather road.

TABLE 4.20
Respondents' per acre value estimates (1991) by distance to all-weather road

DISTANCE	ESTIMATED PER ACRE VALUES (1991)					TOTAL
	<\$10,000	\$10-\$30,000	\$31-\$50,000	\$51-\$100,000	>\$100,000	
On all-weather road	9	19	4	11	12	55
R ^a	16.4%	34.5%	7.3%	20.0%	21.8%	50.9%
1-5 minutes	5	12	4	5	7	33
R	15.2%	36.4%	12.1%	15.2%	21.2%	30.6%
6-10 minutes						
R	37.5%	37.5%	25.0%	0.0%	0.0%	7.4%
11-20 minutes	0	4	0	0	0	4
R	0.0%	100.0%	0.0%	0.0%	0.0%	3.7%
21-30 minutes	1	1	1	0	0	3
R	33.3%	33.3%	33.3%	0.0%	0.0%	2.8%
31-45 minutes	2	0	0	0	0	2
R	100.0%	0.0%	0.0%	0.0%	0.0%	1.9%
46-60 minutes	1	0	0	0	0	1
R	100.0%	0.0%	0.0%	0.0%	0.0%	0.9%
More than 1 hour	0	2	0	0	0	2
R	0.0%	100.0%	0.0%	0.0%	0.0%	1.9%
TOTAL	21	41	11	16	19	108
R	19.4%	38.0%	10.2%	14.8%	17.6%	100.0%
Chi square = 33.91355 DF = 28 P = 0.20373						

a R=ROW%.

e. **Quality of boundary demarcation** (table 4.21). The percentage of parcels with **boundaries** marked by iron pins valued at over \$50,000 was 40% compared to 21%-25% among parcels lacking such markers.

TABLE 4.21
Respondents' per acre value estimates (1991) by nature of boundary demarcation`

DEMARICATION	ESTIMATED PER ACRE VALUES (1991)					TOTAL
	<\$10,000	\$30,000	\$50,000	\$100,000	> \$100,000	
Were pins + added	0	2	0	0	1	3
R ^b	0.0%	66.7%	0.0%	0.0%	33.3%	2.8%
Were pins; none added	9	13	5	10	10	47
R	19.1%	27.7%	10.6%	21.3%	21.3%	43.5%
Were none; added	1	2	1	0	2	6
R	16.7%	33.3%	16.7%	0.0%	33.3%	5.6%
No pins; other markers	9	12	1	0	6	28
R	32.1%	42.9%	3.6%	0.0%	21.4%	25.9%
No boundary markers	2	12	4	6	0	24
R	8.3%	50.0%	16.7%	25.0%	0.0%	22.2%
TOTAL	21	41	11	16	19	108
R	19.4%	38.0%	10.2%	14.8%	17.6%	100.0%
Chi square = 24.87514 DF = 16 P = 0.07206						
Pins present	10	17	6	10	13	56
R	17.9%	30.4%	10.7%	17.9%	23.2%	51.4%
No pins; other markers	9	12	1	0	6	28
R	32.1%	42.9%	3.6%	0.0%	21.4%	25.7%
No boundary markers	2	12	4	6	1	25
R	8.0%	48.0%	16.0%	24.0%	4.0%	22.9%
TOTAL	21	41	11	16	20	109
R	19.3%	37.6%	10.1%	14.7%	18.3%	100.0%
Chi square = 17.53357 DF = 8 P = 0.02501						

Caution: at least one cell has a frequency less than 5.

^b R=ROW%.

The data raise two major points. One is that land rationalization is likely to stimulate or at least facilitate the buying and selling of land. As was observed, those parcels that were

most formally and accurately documented and surveyed changed hands most often and were recognized by respondents as the most salable. It should be kept in mind, however, that land is still not seen as a salable commodity by many; even those who said that they could sell land at their disposal were more likely than not also to say that they would not consider doing so. The second point has to do with the sustainability of any improvements introduced by the project in upgrading documentation and sorting out tenure statuses. As long as procedures are costly and time-consuming, it is likely that each successive inheritance cycle will steadily undermine any headway made through the project. Of particular concern are problems associated with partition, that is, problems originating in disagreements among the heirs themselves and inflexible policies regarding permissible levels of partition.

LEASE AND RENTAL

An effective framework for leases and rentals infuses the land market with the flexibility to match people who need and can use land with land that owners are unable to utilize adequately. To the extent that such transactions are facilitated and the parties to them feel secure about their respective rights, one could expect a well-functioning tenancy regime to enhance levels of land utilization. For a variety of reasons, which will be developed below, this is generally not the situation in Trinidad and Tobago.

About 40% of the parcels and 40% of the land area in the sample were either rented or leased by respondents (table 4.22). While almost two-thirds of public land is under this tenure form, rentals are far less prevalent on private lands, accounting for only about a quarter of the parcels and the land area. Among the study sites (see table 4.23), private rentals are most prevalent in Warren-Munro, where nearly 40% of the parcels are under this tenure form and where virtually all rentals (57/61) involve private land. Rental levels are also high in Fairfield-Broomage and Penal, but are for the most part restricted to public lands. In Tobago, the site with the highest proportion of private lands, little private rental is encountered. Instead, the functions of renting there appear to be met by family land and rent-free tenure arrangements. As seen in table 4.24, substantial proportions of such privately rented parcels are residential, with the highest percentages being in the Freeport area and Tobago. In Fairfield-Broomage and in Couva, such rentals are primarily agricultural.

PUBLIC LAND RENTALS AND THE LAND MARKET

In terms of land market issues, public rentals may be said to have a dual impact on private land prices. First, by reducing the supply of land available for private transactions, they place upward pressures on private land prices; conversely, to the extent that they provide a cheap alternative to sizable segments of the population for land (either through formal arrangements or for squatting), they dampen what might otherwise be even greater price inflation in the private land sector.

TABLE 4.22
Distribution of tenure forms by study area

STUDY AREA	TENURE					TOTAL
	Individual ownership	Lease/rent	Squatting	"Rent-free"	Family land	
Fairfield-Broomage	40	158	3	30	6	237
	R 16.9%	66.7%	1.3%	12.7%	2.5%	22.7%
Warren-Munro	61	63	5	22	4	155
	R 39.4%	40.6%	3.2%	14.2%	2.6%	14.9%
Couva	26	31	7	13		
	R 32.5%	38.7%	8.7%	16.2%	3.7%	7.7%
Penal/Puzzle Isle.	100	106	24	17	17	264
	R 37.9%	40.2%	9.1%	6.4%	6.4%	25.3%
Tobago	60	34	1	17	31	162
	R 40.7%	21.0%	8.6%	10.5%	19.1%	15.5%
Freeport/Arena Road	8	29	97	10	1	145
	R 5.5%	20.0%	66.9%	6.9%	0.7%	13.9%
TOTAL	301	421	150	109	62	1043
	R 28.9%	40.4%	14.4%	10.5%	5.9%	100.0%
	Chi square = 535.97104		DF = 20	P = 0.00000		

^a R=ROW%.

TABLE 4.23
Distribution of privately rented parcels by study area

STUDY AREA	TENURE		TOTAL
	Other tenure	Private rental	
Fairfield-Broomage	219	18	237
	R 92.4%	7.6%	22.7%
Warren-Munro	98	1	99
	R 63.2%	36.8%	14.9%
Couva	66	14	80
	R 82.5%	17.5%	7.7%
Penal/Puzzle Isle.	238	26	264
	R 90.2%	9.8%	25.3%
Tobago	155	7	162
	R 95.7%	4.3%	15.5%
Freeport/Arena Road	123	22	145
	R 84.8%	15.2%	13.9%
TOTAL	899	144	1043
	R 86.2%	13.8%	100.0%
	Chi square = 93.26138		DF = 5
	P = 0.00000		

R=ROW%.

TABLE 4.24
**Distribution of privately rented parcels by area
 and by status as agricultural or nonagricultural^o**

SITE		AGRICULTURAL PARCELS	NONAGRICULTURAL PARCELS	TOTAL
Fairfield-Broomage		15	3	18
	R	83.3 %	16.7%	12.5 %
	S	47.13	0.390000	47.52
	R	99.2 %	0.8 %	13.5 %
	T	13.3 %	0.1 %	
Warren-Munro	A	3.14	0.130000	2.64
		39	18	57
	R	68.4%	31.6%	39.6%
	S	78.80	4.68	83.48
	R	94.4%	5.6%	23.6%
Couva	T	22.3%	1.3%	
	A	2.02	0.260000	1.46
		13	1	14
	R	92.9%	7.1%	9.7%
	S	117.50	0.120000	117.62
Penal/Puzzle Isle.	R	99.9%	0.1%	33.3%
	T	33.3%	0.0%	
	A	9.04	0.120000	8.40
		18	8	26
	R	69.2 %	30.8 %	18.1 %
Freeport/Arena Road	S	55.12	2.47	57.59
	R	95.7%	4.3%	16.3%
	T	15.6 %	0.7 %	
	A	3.06	0.308750	2.22
Freeport/Arena Road	R	57.1%	42.9%	4.9%
	S	26.50	1.81	28.31
	R	93.6%	6.4%	8.0%
	T	7.5 %	0.5 %	
	A	6.63	0.603333	4.04
Freeport/Arena Road		5	17	22
	R	22.7%	77.3%	15.3%
	S	15.50	3.02	18.52
	R	83.7%	16.3%	5.2%
	T	4.4%	0.9%	
TOTAL	A	3.10	0.177647	0.841818
		94	50	144
		65.3%	34.7%	100.0%
	S	340.55	12.49	353.04
	A	3.62	0.249800	2.45
Chi square = 25.49268		DF	5	P = 0.00011

R=ROW%; C=COLUMN%; T=TOTAL%; S=SUM; A=AVERAGE.

The nexus between public rentals and capital markets is also of relevance here. To the extent that leases are utilized as a form of collateral for formal loans, the value of the lease and its transferability become pertinent issues. In cases of loan defaults, it becomes necessary to calculate the residual value of the defaulting borrower's lease and the value of improvements on the land. In practice this daunting task yields to a process of negotiation: the residual value of the lease is set somewhere between the outstanding loan amount and the best the lenders can obtain from prospective renters who would assume the lease. It should be kept in mind that given the relatively small proportion of public lands covered by standard agricultural leases (which are usually the only ones deemed acceptable as collateral), the current pertinence of this issue is limited.

In popular parlance, the value of a lease is referred to as the "goodwill" of the lease, a term that surfaces in cases where public leases or rights to public rented land are "sold." The survey recorded only a couple of cases of people selling leases. However, the practice is apparently more common than the data suggest and was commented upon as a relatively common phenomenon in Fairfield-Broomage and Penal-Puzzle Island sites. One of the reported cases involved the purchase of an NHA rental for 2 acres of NHA land in 1984 for \$1,900. The seller presented only a rental receipt in his name; there was merely a written agreement on the transfer of produce on the land. The buyer continues to pay rent under the former renter's name. A similar case is recorded in Penal of the sale of a lease for 5 acres in 1988 for \$2,500 with a "goodwill note."

PRIVATE RENTALS

Private owners are generally wary of renting out land, fearing problems in ultimately being able to get renters off in the future. The typical sentiment and adverse consequence of this fear were expressed by one respondent: "I would rather let my land go to bush than rent it out." Reflecting this aversion is the fact that only 5 out of 301 private individually owned parcels had ever been rented out by respondents even though some of these parcels were largely unutilized; one of these respondents said that he regretted having rented his land out because of problems that ensued with the tenant. Owners' fears are based in part on actual difficulties encountered by other owners and in part on an apparent misreading of the Tenants Law. The clause of greatest concern to owners is that which stipulates a tenant's option to buy the land. While this law applies only to those who had begun renting prior to 1986 and only if the tenant had built a house on the land, in practice, tenants become immovable once they get documented possession of the land.

Owners' efforts to preempt future tenant claims generally occur at the expense of tenant security and discretion over land use: written agreements are eschewed and, in many cases, even rental receipts are not issued to tenants; the cultivation of permanent crops, most notably tree crops, is also usually forbidden. For the most part, private rental agreements were annual and minimally documented, if at all. As can be seen in table 4.25a, only 14% of rentals engaged in by respondents involved written agreements; 31% were documented neither by an agreement nor a rental receipt. Separating out agricultural from residential

parcels (tables 4.25b and 4.25c) reveals an even worse situation among the former: only 10% are documented by leases and 44% lack any documents at all (table 4.25b). The data confirm (see table 4.26) what one would expect under these circumstances: a high level of tenure insecurity, one that is exceeded only by squatted parcels. Insecurity is particularly high among those renting parcels with no documents, almost three-quarters of whom express some level of concern that they might lose access to the parcels and more than half of whom are very concerned that this could happen. Comparable figures of "very concerned" were 75% for squatted parcels, 44% for all rented parcels, and only 8% for individually owned parcels.

Acting to moderate the insecurity one would expect to be inherent in such a state of affairs is the fact that annual rentals tend to be extended for decades (see table 4.27); 46% of those in the sample had been rented for over 20 years.

TABLE 4.25
Characteristics of private rentals

DOCUMENTATION AND TERM	COUNT		CUMULATIVE %
a. All private land rentals			
Long-term written lease	2	1.4	1.4
Short-term written lease	18	12.6	14.0
Annual rental (receipt)	78	54.5	68.5
Annual no document	45	31.5	100.0
TOTAL	143	100.0	100.0
b. Agricultural parcels			
Long-term lease	2	2.1	2.1
Short-term lease	7	7.4	9.6
Annual rental (receipt)	44	46.8	56.4
Annual no document	41	43.6	100.0
TOTAL	94	100.0	100.0
c. Nonagricultural parcels			
Long-term lease	0	0.0	0.0
Short-term lease	11	22.4	22.4
Annual rental (receipt)	34	69.4	91.8
Annual no document	4	8.2	100.0
TOTAL	49	100.0	100.0

Source: Landholder Survey, Trinidad and Tobago, 1991.

TABLE 4.26

Levels of concern about losing access rights to privately rented parcels
by rental term and documentation

		NOT CONCERNED	SOMEWHAT CONCERNED	VERY CONCERNED	TOTAL
Long-term lease		1	1	0	2
	R 1	50.0%	50.0%	0.0%	1.4%
Short-term lease		6	9	3	18
	R	33.3%	50.0%	16.7%	12.9%
Annual rental (receipt)		45	9	23	77
	R	58.4%	11.7%	29.9%	55.0%
Annual rental (no document)		12	8	23	43
	R 1	27.9%	18.6%	53.5%	30.7%
TOTAL		64	27	49	140
		45.7%	19.3%	35.0%	100.0%
Chi square = 25.62771		DF = 6		P = 0.00026	

TABLE 4.26a

Levels of concern about losing access rights to parcels
by rental term and documentation (agricultural parcels)

		NOT CONCERNED	SOMEWHAT CONCERNED	VERY CONCERNED	TOTAL
Long-term lease		1	1	0	2
	R	50.0%	50.0%	0.0%	2.2%
Short-term lease		1	4	2	7
	R	14.3%	57.1%	28.6%	7.6%
Annual rental (receipt)		26	5	13	44
	R	59.1%	11.4%	29.5%	47.8%
Annual rental (no document)		10	7	22	39
	R	25.6%	17.9%	56.4%	42.4%
TOTAL		38	17	37	92
		41.3%	18.5%	40.2%	100.0%
Chi square = 19.73944		DF = 6		P = 0.00308	

TABLE 4.26b

**Levels of concern about losing access rights to privately rented parcels
by rental term and documentation (nonagricultural parcels)**

		NOT CONCERNED	SOMEWHAT CONCERNED	VERY CONCERNED	TOTAL
Long-term lease		0	0	0	0
	R	0.0%	0.0%	0.0%	0.0%
Short-term lease		5	5	1	11
	R	45.5%	45.5%	9.1%	22.9%
Annual rental (receipt)		19	4	10	33
	R	57.6%	12.1%	30.3%	68.8%
Annual rental (no document)		2	1	1	4
	R	50.0%	25.0%	25.0%	8.3%
TOTAL		26	10	12	48
		54.2%	20.8%	25.0%	100.0%
Chi square = 6.15897			DF = 4	P = 0.18759	

TABLE 4.27

Number of years tenants had been using the parcel

TIME SPAN	COUNT		CUMULATIVE %
1-3 years	28	19.9	19.9
4-5 years	11	7.8	27.7
6-10 years	15	10.6	38.3
11-20 years	23	16.3	54.6
20-30 years	24	17.0	71.6
31-40 years	25	17.7	89.4
> 40 years	15	10.6	100.0
TOTAL	141	100.0	100.0

Rental fees (table 4.28) for private land are generally low, averaging \$161¹² per acre. However, as low as these fees are, they tend to be higher than those charged for public land. Public land rentals range from \$6 on NHA to \$70 on Caroni land and an average of \$82/acre¹³ on leased state land.

TABLE 4.28
Rental fee levels for private land rentals

RENTAL FEE	COUNT	%	CUMULATIVE %
Under \$50 per acre	36	25.2	25.2
\$50-\$99	35	24.5	49.7
\$100-\$149	18	12.6	62.2
\$150-\$199	6	4.2	66.4
\$200-\$399	28	19.6	86.0
\$400-\$599	15	10.5	96.5
\$600 or more	5	3.5	100.0
TOTAL	143	100.0	100.0

Given the mutual insecurity of renters and owners, one would expect that owners with better quality documentation attesting to their rights would be more willing to rent out their land than those who did not, and that such added security would in turn render owners more predisposed to provide tenants with better documentation. Unfortunately, the questionnaire did not solicit details on owners' tenure documentation status. A possible proxy variable indicating parcel registration is whether the parcel was formally surveyed, as indicated by the installation of iron pins in the parcel corners. Table 4.29 appears to confirm these expectations: while 65% of written leases involved parcels demarcated by iron pins, only 33% of unwritten tenancy agreements were so demarcated.

12. Range: \$3-\$1,096; median, \$100.

13. Range: \$3-\$700; median, \$30.

TABLE 4.29

Type of private rental agreement by type of boundary demarcation

		WERE PINS + ADDED	WERE PINS; NONE ADDED	WERE NONE; ADDED	No PINS; OTHER MARK	No BOUNDARY MARKERS	TOTAL
Long-term lease (written)	R	0	1	0	1	0	2
		0.0%	50.0%	0.0%	50.0%	0.0%	1.4%
Short-term lease (written)	R	1	11	0	3	3	18
		5.6%	61.1%	0.0%	16.7%	16.7%	12.6%
Annual rental (receipt)	R	0	21	2	35	20	78
		0.0%	26.9%	2.6%	44.9%	25.6%	54.5%
Annual rental (no document)	R	0	18	0	8	19	45
		0.0%	40.0%	0.0%	17.8%	42.2%	31.5%
TOTAL		1	51	2	47	42	143
		0.7%	35.7%	1.4%	32.9%	29.4%	100.0%
		Chi square = 26.53272		DF = 12		P = 0.00902	

The current tenancy situation, especially as regards private land rentals, is one in which land rationalization affecting owners may yield benefits in the form of greater security for renters. To the extent that owners feel more secure about renting out their land, the agricultural economy may also stand to benefit in less unutilized land capacity. Any measure taken to upgrade the status of private parcels will, however, be of limited effect if not coupled with legislative changes and publicity to inform the public of any new basis for tenancies that may be promulgated.

Chapter 5

ASSESSING THE IMPLICATIONS FOR CREDIT OF THE CURRENT LAND TENURE SITUATION

by

Harry Lemel

INTRODUCTION

This chapter seeks to place the actual and potential role of land as loan collateral into perspective. What impact does the current state of tenure and tenure documentation have on credit access and what might be the likely consequences of land tenure rationalization in this area?

To accurately gauge the extent to which tenure status is a constraint on credit access, it is necessary to view individual's overall tenure and economic situation. For potential borrowers and investors, possession of at least one parcel acceptable as collateral to lending institutions is what determines credit availability, not whether each and every parcel is acceptable. This perspective is especially pertinent in a context such as Trinidad and Tobago's, where, as reflected by the survey data, the great majority of landholders—70 percent (309/435)—have more than 1 parcel at their disposal; the average number of parcels per holding is 2.4. While deeded parcels represent only about a quarter of all parcels, the percentage of respondents with at least one deeded parcel is nearly twice as big, 45 percent. A holding- or household-wide perspective is warranted also because funds and investments obtained from loans secured on the basis of one parcel may be transferable to the entire holding, as is the case with tractors, fumigators/sprayers, vehicles, and the like. Even inputs such as fertilizer or seed are easily transferable from parcels deemed acceptable as collateral by funding institutions to those parcels that are not. Another justification for adopting a broader household-level perspective rather than focusing on each parcel individually is that ownership of other assets or regular sources of income (business, government salary, and so on) may represent alternatives to land as collateral. With all of this in mind, analysis will proceed at two levels: the household/holding level, and the parcel level, where more direct and specific links can be made between documentation on tenure and credit.

GENERAL PATTERNS

Slightly less than half of respondents (46 percent) sought credit from formal sources to meet their financial or investment needs. As shown in table 5.1, the bulk of formal loans (55.6 percent) were for home purchases/repairs and vehicles. More explicitly agricultural investments (tractors, livestock, and agricultural inputs) account for 19 percent (34/180) and land purchases for an additional 8 percent.¹

TABLE 5.1

Distribution of types of investments/purchases among those utilizing credit/financing channel?

TYPES OF INVESTMENT	FORMAL CHANNELS		ANY CHANNEL	
	(n)	(%)	(n)	(%)
Land	14	7.8	56	7.7
House	46	25.6	177	24.2
Tractor	18	10.0	36	4.9
Vehicle	54	30.0	139	19.0
Livestock	9	5.0	54	7.4
Agricultural inputs	7	3.9	104	14.2
Other	32	17.7	166	22.8
Total	180	100.0	732	100.0

^a This table pools data on the last two major investments cited by respondents in which the source of the loan was either a bank or a credit union; n represents the number of investments, not respondents.

Self-financing and informal loans emerge as the dominant financing modalities (see table 5.2). The reason most commonly given for not seeking formal credit was the desire not to incur debt. Also mentioned were adequate income to meet needs (13 percent), the complexity of loan procedures (11 percent),² or expectations that the respondent will be turned down (6 percent).

1. While not usually viewed as an agricultural investment, vehicles, representing 30 percent of formal loans, greatly facilitate marketing, input acquisition, and transport.

2. Women are no more likely than men to cite this as a factor.

TABLE 5.2
Percentage distribution of loan sources

SOURCE	COUNT	%	CUMULATIVE %
Commercial bank	81	20.2	20.2
Agricultural Development Bank	21	5.2	25.4
Credit unions	7	1.7	27.2
Personal savings	258	64.3	91.5
Informal loans	10	2.5	94.0
Livestock sales	9	2.2	96.3
Other	15	3.7	100.0
Total	401	100.0	100.0

While not the dominant financing modality, formal credit access means access to the largest potential resources; the value of respondents' purchases or investments financed by bank loans averaged over twice the size of those financed from other sources, including self-financing, or TT\$47,000 versus TT\$22,000 (see table 5.3). Improved access to formal credit

TABLE 5.3
Analysis of variance: comparison of investment value
by whether or not investment was financed by banks

Independent variable: bank financing (T=true; F=false)
 Dependent variable: value of investment (in TT dollars)

SOURCE	DF	SUM OF SQUARES	MEAN OF SQUARES	F	PROBABILITY
Factor A	1	47444276546	47444276546	18.9198	0.0000
Residual	392	9.82998E+ 11	2507648859		
Total	393	1.03044E+ 12			
FACTOR A FINANCING		MEAN	STANDARD DEVIATION	CELL N	
Not by bank		22349.1	45267.3	288	
By bank		47094.2	61326.4	106	

would therefore appear to enhance capital availability, though it should not be assumed that this capital would necessarily be directed to agriculture (as already seen, much of the credit obtained from banks is directed to housing or vehicle purchases).

COLLATERAL

Of those who sought bank loans (45 percent of respondents), the great majority (85 percent) were approved. Inadequate collateral accounted for over three-quarters (n =20) of rejections.' This does not necessarily equate with the lack of deeded parcels, which is generally considered so critical in determining access to formal credit. Of those with at least one deeded land parcel, the rate of bank credit use was only slightly higher (33 percent versus 22 percent) than among those who lacked such a parcel. Nevertheless, it remains significant that those with deeded parcels and utilizing bank credit obtained the highest average loans (\$62,000).

TABLE 5.4
Resort to banks by presence or absence of
at least one deeded parcel in holding'

	Used bank	Did not use bank	TOTAL
Has deeded parcel	59	120	179
R	33.0	67.0	45.4
C	55.7	41.7	
A	62016.78	27475.08	38860.33
No deeded parcel	47	168	215
R	21.9	78.1	54.6
C	44.3	58.3	
A	28361.70	18687.61	20802.41
TOTAL	106	288	394
	26.9	73.1	
T	43.7	56.3	
A	47094.25	22349.05	29006.39
Chi square =	5.56880	DF = 1	P = 0.01828

' Report shows average for purchase/investment value (V28b). R=row%; C=column%; T=total%; A=average.

3. This set of respondents accounts for only 4.6 percent of total respondents.

As implied above, collateral can take several forms in addition to fixed assets such as land or houses. Indeed, the survey indicates that the significance of such fixed assets is overshadowed by other forms, most particularly vehicles and salary liens: while 22 percent of formal loans relied on collateral in the form of land or houses, 38.5 percent were approved on the basis of these alternative forms of collateral. Thus, in evaluating formal credit access, availability of collateral other than land must be taken into account. Doing so reveals a much more positive credit access picture than would otherwise be expected. Over three-quarters of respondents either owned a vehicle, had a government job, or ran their own (nonagricultural) business. If the possession of deeded parcels is added to the picture, the proportion of those with some form of collateral rises to over 80 percent of the respondents. Notably, the absence of the sorts of nonland collateral cited above figures significantly among those who never applied for a formal loan (table 5.5).

TABLE 5.5
Application for bank loans by presence or absence
of collateral other than land or houses^a

	r	Never applied	Applied for loan	TOTAL
Collateral available		119	149	268
		44.4%	55.6%	61.8%
None	F	116	50	166
		69.9%	30.1%	38.2%
TOTAL		235	199	434
		54.1%	45.9%	
		Chi square = 25.78108	DF = 1	P = 0.00000

^a Ownership of a vehicle; proprietorship of a business; government employment.

Female respondents, who accounted for about 17 percent of the total, exhibited some credit access disadvantages compared to their male counterparts. Over 76 percent of the females and about half of the males never applied for a bank loan. Only 9 women in the sample of females (about 13 percent) actually got a bank loan to finance farm investments, while 97 men in the sample of males (27 percent) obtained bank credit. These differences appear to be accounted for partly by a lower rate, though only a slightly lower rate, of possession of at least one deeded parcel (46 percent for males versus 39 percent for females). Apparently a more significant difference is the relatively lower level of female possession of other forms of collateral; less than half of female landholders in the sample had these alternative sources compared to almost two-thirds of their male counterparts. However, even when these differences are taken into account, the average value of male and female investments differs only slightly (\$29,953 for males and \$24,020 for females).

TABLE 5.6
Application for bank loans by gender

		Never applied	Applied for loan	TOTAL
Male	R	180 49.7%	182 50.3%	362 83.4%
Female	R	55 76.4%	17 23.6%	72 16.6%
TOTAL		235 54.1%	199 45.9%	434
Chi square =		16.14154	DF = 1	P = 0.00006

TABLE 5.7
**Presence or absence of collateral
 other than land or houses by gender ^s**

		Collateral	None	TOTAL
Male	R	234 64.6%	128 35.4%	362 83.4%
Female	R	34 47.2%	38 52.8%	72 16.6%
TOTAL		268 61.8%	166 38.2%	434
Chi square =		6.99482	DF = 1	P = 0.00818

Ownership of a vehicle; proprietorship of a business; government employment.

TABLE 5.8
Use of banks to finance investments/purchases by gender ^a

		Used bank	Did not use bank	TOTAL
Male	R	29.0	71.0	85.2
	C	91.5	82.9	
	A	47884.43	22645.12	29953.22
Female		9	49	58
	R	15.5	84.5	14.8
	C	8.5	17.1	
	A	38577.78	21346.71	24020.50
TOTAL		106	287	393
		27.0	73.0	
	A	47094.25	22423.44	29077.65
Chi square = 3.87602		DF = 1	P = 0.04898	

R =row %; C =column %; A =average value of investment/purchase.

PARCEL TENURE AND DOCUMENTATION FEATURES AND CREDIT

Parcel-level data provide more specifics on how tenure and tenure documentation bear on formal credit access. While the overall percentage of parcels used to secure loans is very low (7 percent), owned and deeded parcels are most likely—though at 16 percent (table 5.9), still not very likely—to be used in this manner. Among deeded parcels, the quality of documentation plays a key role: parcels documented by up-to-date deeds in the name of the landholder are over three times more likely (24 percent) to be used as collateral than non-up-to-date deeds (8 percent) (see table 5.10). Slightly over half of the latter are family land or rent-free parcels. While the percentage of leased or rented parcels used for collateral is very low (4 percent), over a quarter (26 percent) of those documented by long-term leases (mostly 25-year standard agricultural leases) were used as collateral compared with only 2 percent among parcels documented by short-term (mostly probationary) lease documents. Needless to say, none of the squatted parcels was used as collateral (table 5.9).

The main differences between deeded and/or owned parcels and those documented by written leases that were used as collateral lie in the sources for loans and in their purposes (tables 5.12 and 5.13). In the case of owned, deeded parcels, most were used to secure commercial bank loans, mainly for expensive items such as home building/repair, vehicles, and land purchases. In the case of leased parcels, most were used to obtain input loans from ADB.

TABLE 5.9
ANOVA comparing use of parcels as loan collateral by tenure form

Dependent variable: parcel used as collateral

SOURCE	DF	SUM OF SQUARES	MEAN OF SQUARES	F	PROBABILITY
Factor A	4	3.54836	0.887091	15.2188	0.000
Residual	1029	59.9797	0.0582893		
Total	1033	63.5280			
Cell means / standard deviations for maximum probability of 1.000					
FACTOR A VARIABLE: TENURE FORMS		MEAN	STANDARD DEVIATION	CELL N	
Family land		0.02	0.127000	62	
Own		0.16	0.362904	296	
Rent-free		0.03	0.165856	107	
Rent		0.04	0.202776	420	
Squat		0.00	0.000000	149	

TABLE 5.10
**ANOVA comparing use of parcels as loan collateral
by quality of deed documentation**

Dependent variable: use of parcel as collateral for loan

SOURCE	DF	SUM OF SQUARES	MEAN OF SQUARES	F	PROBABILITY
Factor A	1	0.761248	0.761248	6.18674	0.0134
Residual	327	40.2357	0.123045		
Total	328	40.9970			
FACTOR A VARIABLE: DEED		MEAN	STANDARD DEVIATION	CELL N	
Not out-of-date		0.17	0.379347	248	
Out-of-date		0.06	0.242161	81	

TABLE 5.11
ANOVA comparing lease categories by percentage
of parcels used as loan collateral

Dependent variable: use of parcels as collateral for loans

SOURCE	DF	SUM OF SQUARES	MEAN OF SQUARES	F	PROBABILITY
Factor A	3	1.97313	0.657710	15.4549	0.0000
Residual	288	12.2563	0.0425567		
Total	291	14.2295			
FACTOR A VARIABLE: LEASE CATEGORIES^a		MEAN	STANDARD DEVIATION	CELL N	
AND		0.00000	0.00000	11	
LTL		0.263158	0.446258	38	
REC		0.0168539	0.129087	178	
STL		0.0307692	0.174036	65	
SCHEFFE TEST FOR GROUPS WITH SIGNIFICANT DIFFERENCES					
	GROUP ONE	GROUP TWO	MEAN DIFFERENCE	PROBABILITY	
	AND	LTL	-0.263158	0.0035	
	LTL	REC	0.246304	0.0000	
	LTL	STL	0.232389	0.0000	

^a AND: no document; LTL: standard agricultural/long-term lease; STL: probationary/short-term lease; REC: receipt (most annual).

TABLE 5.12
Sources of loans by tenure
among those using parcels as collateral

Tenure form		Credit union	ADB ^a	Commercial bank	Informal loan	Other	TOTAL
Individual ownership		3	10	26	2	5	46
	R ^b	6.5	21.7	56.5	4.3	10.9	69.7
Lease/rent		1	12	2	0	1	16
	R	6.3	75.0	12.5	0.0	6.3	24.2
Squatting		0	0	0	0	0	0
	R	0.0	0.0	0.0	0.0	0.0	0.0
"Rent-free"		1	0	1	0	1	3
	R	33.3	0.0	33.3	0.0	33.3	4.5
Family land		0	1	0	0	0	0
	R	0.0	100.0	0.0	0.0	0.0	0.0
TOTAL		5	23	29	2	7	66
	R	7.6	34.8	43.9	3.0	10.6	
		Chi square = 23.24024		DF = 12	P = 0.02575		

^a ADB = Agricultural Development Bank.

^b R=row%.

TABLE 5.13
Purposes of loans by source
among those using parcels as collateral

Source	Ag. inputs	Vehicle	Construct/ repair house	Purchase land	Other	TOTAL
Credit union	3	0	2	0	1	5
R	60.0%	0.0%	20.0%	0.0%	20.0%	7.6%
C	13.6%	0.0%	6.3%	0.0%	9.1%	
ADB	17	4	0	0	2	23
R	73.9%	17.4%	0.0%	0.0%	8.7%	34.8%
C	17.3%	36.4%	0.0%	0.0%	18.2%	
Commercial bank	0	7	10	4	8	29
R	0.0%	24.1%	34.5%	13.8%	27.6%	43.9%
C	0.0%	63.6%	62.5%	66.7%	72.7%	
Informal loan	1	0	0	1	0	2
R	50.0	0.0	0.0	50.0	0.0	3.0
C	4.5	0.0	0.0	16.7	0.0	
Other	1	0	5	2	0	7
R	14.3	0.0	71.4	14.3	0.0	10.6
C	4.5	0.0	31.3	16.7	0.0	
TOTAL	22	11	16	6	11	66
	33.3%	16.7%	24.2%	9.1%	16.7%	
Chi square = 51.74260 DF = 16 P = 0.00001						

R=row% ;C=column% .

CONCLUDING REMARKS

Tenure and tenure documentation play a significant, though not determinative, role in the capacity to raise capital for investment purposes. They rank low in respondents' priorities of problems or constraints in their agricultural production efforts. Other forms of collateral are at least as important, if not more important, than land. Even those with deeded parcels or homes are unlikely to use these assets as collateral, and banks may prefer other collateral to avoid the problems associated with foreclosures on land. Furthermore, much of the credit obtained from formal sources is directed at vehicle and home purchases, something that reduces the importance of such credit for agriculture per se. This point is reinforced by the fact that inputs are obtainable from a variety of sources which are not dependent on the possession of fixed assets, a prime example being cane growers who obtain fertilizer through contractual arrangements with Caroni. Notably, the rate of fertilizer purchases is highest in the squatter site (Freeport) and lowest in the site with the highest percentage of owned parcels (Tobago).

Nevertheless, the significance of land collateral remains relevant in securing large funds of capital. It will be especially important in efforts to introduce capital-intensive agricultural enterprises. Upgrading tenure documentation to up-to-date deeds and expanding the proportion of standard agricultural leases should broaden the scope for such investments.

Chapter 6

METHODOLOGY OF THE LANDHOLDER SURVEY AND DESCRIPTION OF THE STUDY SITES

by

Louis Bertrand, Harry Lemel, and Desmond Hunte

INTRODUCTION

The purposes of the survey of landholders were: (1) to describe the tenure status of landholders in high priority agricultural areas; (2) to test for the effects of tenure status, particularly tenure insecurity, on such variables as levels of investment, land use, and participation in the land market; and (3) to determine the accuracy and usefulness of available data sources linking people to land.

Four sites were chosen in Trinidad and one in Tobago. In addition, two protected areas were chosen in Trinidad and one in Tobago to examine land use patterns.

The five agriculturally important areas were expected to yield about 80 interviews each. The sites chosen were an area of Warren-Munro Road in the ward of Cunupia, an area in the vicinity of Freeport/La Philippine estates in the ward of Montserrat, Puzzle Island in the ward of Siparia, the Broomage-Fairfield area in the ward of Savana Grande, and the Goldsborough district in Tobago.

A second part of the study focused on land users in three protected areas. The objective was to describe the tenure and land use patterns within the boundaries of protected areas as well as the relative importance of these protected resources to the people using them.

SAMPLE SELECTION AND INTERVIEWER TRAINING

In general, it was found that the ward maps as produced by the Lands and Surveys Department were not suitable for locating a sample of people to interview, except for the topographic information which helped demarcate the area of study. In most instances the parcel information was outdated; for example, the names on the parcels were of persons who had died decades ago, and the boundaries of parcels on the sheets have changed because of either subdivision or consolidation of parcels.

To conduct the sample interview exercise in Trinidad, thirteen people were selected to be trained as interviewers and three to be trained as supervisors. While all had previous experience in interviewing, the complexity of the tenure questionnaire and the use of special terminology required a period of intensive instruction. The training lasted three days, with supervisors having some additional preparation.

The interviewers were then divided into two teams, each headed by a supervisor. Each group had six interviewers, and these people were used for the conduct of the entire exercise in Trinidad.

In Tobago, the same procedures were followed, but here one supervisor and three interviewers were trained.

To ensure that the quality of the data was at an acceptable level, meetings were held between the supervisor and his team of interviewers on each of the first two days at each site. Supervisors were required to edit all questionnaires and to conduct re-interviews on a one in ten basis.

However, it was not possible to follow the detailed work plan of the quality control aspect of the exercise. A considerable amount of time was spent by the supervisors in locating households to be interviewed because of vague and sometimes erroneous addresses. As a result, some completed questionnaires were checked in the field, but a more detailed edit was done in the office. Based on the edits, it was necessary for supervisors to revisit some landholders to ensure that the data collected were accurate.

The exercise, which started on 15 July 1991, took about 5 weeks to complete. Rains interfered to some extent with the conduct of the interviews, but overall the target production rate of 150 interviews per week was met, when discounting time loss due to rain.

AREAS STUDIED

WARREN-MUNRO AREA

Originally it was planned that the ward sheet map of the area would be adequate for the sample selection process. It was therefore decided that blocks of five to eight contiguous parcels of land would be selected. However, since it was soon established that in many instances the lands were not being utilized by the people named on the maps, it was not possible to locate the owner/user of selected parcels. Another problem was locating the persons with use rights to the land, since many parcels in the area were not being used at the time of the study. In general, the ward sheet maps were not very helpful in locating people with rights to the land.

A list of known farmers in the area was therefore prepared by the personnel from the Ministry of Food Production and Marine Exploitation (MFPME) and, based on the addresses, a number of zones were created. These zones had an average of seven names, ranging from three to nine entries.

Fourteen such zones were selected, of which twelve were to be utilized and two kept in reserve. Because of the vague addresses, it was not possible to locate many farmers, and it was thus necessary to use the two reserve zones in order to get the required number of interviews.

The majority of land was owned by the farmers, with about 25 percent of respondents renting. Overall, 81 interviews were conducted in this area.

FREEPORT/LA PHILIPPINE ESTATE

At this site, which is located in central Trinidad, it became necessary to move away from the original plan of interviewing persons found on the selected area regardless of land tenure status. Because of the lack of squatters in the three other locations, it was decided to select an area where it was known that squatting dominated.

As in the case of Warren-Munro Road site, a list of farmers in the area was provided by MFPME.

A complete census was undertaken of the area demarcated, which was basically a land settlement project. A list of 70 names/parcels was provided, but 76 were found upon visiting the sites, of whom it was possible to interview only 62 since most were not living on the land.

While the users were originally squatters, they were subsequently provided with leases. Some even claimed to own the land.

From the original site, only 43 farmers were interviewed. This area therefore comprised mainly squatters and a similar proportion of farmers. Problems encountered were similar to those in the other sites, that is, vague addresses and the like.

PUZZLE ISLAND

This area is made up of two distinct groups and was treated as such for the selection of the sample of landholders. In the first group was comprised of persons who owned the land that they farmed while the second group was made of persons who had leased their land from the state. Again, utilizing the map provided to locate parcels and owners was not possible, and it was necessary to resort to the MFPME once more.

From the list of owners provided by the ministry, four zones were formed based on addresses. A one in five sample was selected, yielding sixty names. Only about 5 percent of the names provided did not correspond to the person interviewed.

The second group was composed of rice farmers who were using land leased to them by the state for rice production. There was no difficulty in finding the individuals and the parcels of land in this group. The list was very much up-to-date.

To a great extent this site is part of the Oropouche lagoon or bordering it and is located in the southwestern part of the island, which explains the types of farmers interviewed in the survey. Overall, 83 interviews were conducted in this area.

BROOMAGE-FAIRFIELD ESTATE

There were three groups in this site, the first composed of persons who were leasing land from Caroni (1975), Ltd., on the Broomage estate. From the list of names and parcels of land provided by Caroni, clusters of five contiguous parcels each were constructed and twelve such clusters were selected.

On visiting the clusters, however, it was very often found that the name on the official list was not the person utilizing the land. The current user may have inherited the land from a relative; in other instances, a child's name may have been added to the lease but not recorded. Even though a list and a map were provided, it still proved to be extremely difficult to locate individuals and/or parcels of land. Respondents found it difficult to matching their parcels with what was on the map.

The second group came from a list, again provided by the MFPME, of farmers who were occupying state lands on the Fairfield estate. The names were given by address and a one in two sample was selected for interviewing. Many farmers were not in fact living on the land, and in about 20 percent of the cases the name provided on the list was not the user of the land (the land may have been unofficially transferred).

The third group in this site was that of persons on the periphery of the two area mentioned. It was compiled from the records of the *1990 Population and Housing Census*, and was made up of households where the head had indicated that some member of the household was involved in agriculture. Maps to locate the households were provided by the Census Office, and persons were interviewed where found. Locating households did not prove to be difficult.

A total of 86 interviews were conducted at this site, which is located in south\central Trinidad.

TOBAGO

In the eastern part of Tobago, the area selected was the Goldsborough estate, which had been acquired by the state from private landowners. Farmers who had been assigned land on this former estate were listed as well as farmers who had private lands in the immediate vicinity.

The Agriculture Division of the Tobago House of Assembly provided a list of names for this site as well as a map which was well laid out. The list contained the addresses at which the farmers lived. A one in three selection was made from the list, and those selected were interviewed. The major problem here was the fact that many of those chosen were part-time farmers and therefore hard to find. However, there was little or no difficulty in terms of identifying the parcels of land. Here a total of 80 interviews were conducted.

PROTECTED AREAS

As indicated, three sites were selected. The first site was in Matura, in the county of St. Andrew on the northeastern coast of Trinidad. Here a list of the names of persons utilizing land in the protected area was provided by the Forestry Division, Ministry of Food Production and Marine Exploitation. However, because the boundaries of the area were not well defined, many persons were not able to say whether they were in fact using land in the protected area.

In the case of the Nariva swamp, which is in the county of Nariva in the southeastern part of Trinidad, a similar list was provided by the department, but the record contained names of people who were using lands mainly on the periphery of the protected areas, and they all were farmers.

In Tobago, the protected area was in the vicinity of Charlotteville on the western part of island, and a list of names was provided by personnel from the Protected Area Task Force. From the list, a sample was selected. Here again the list contained mainly farmers.

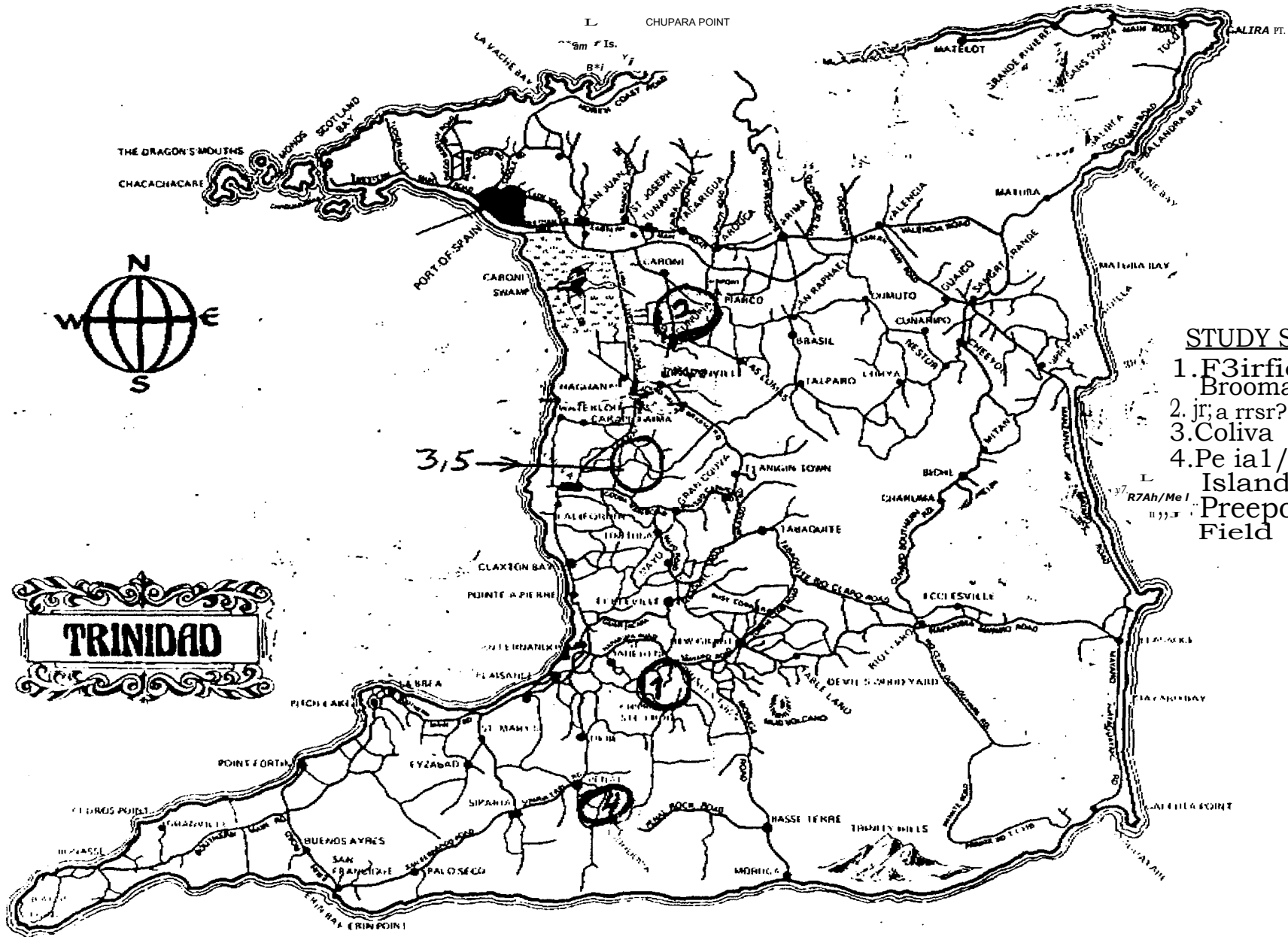
DATA ENTRY

Following the completion of the questionnaires in the field, all were checked in the central office of ACT in POS for consistency and completeness. For those questionnaires judged acceptable, the data were entered into computer files, using a data entry program which had been prepared from the questionnaire format. Data were then again checked for consistency and valid codes, with corrections being made as required.

ANNEX 6.1

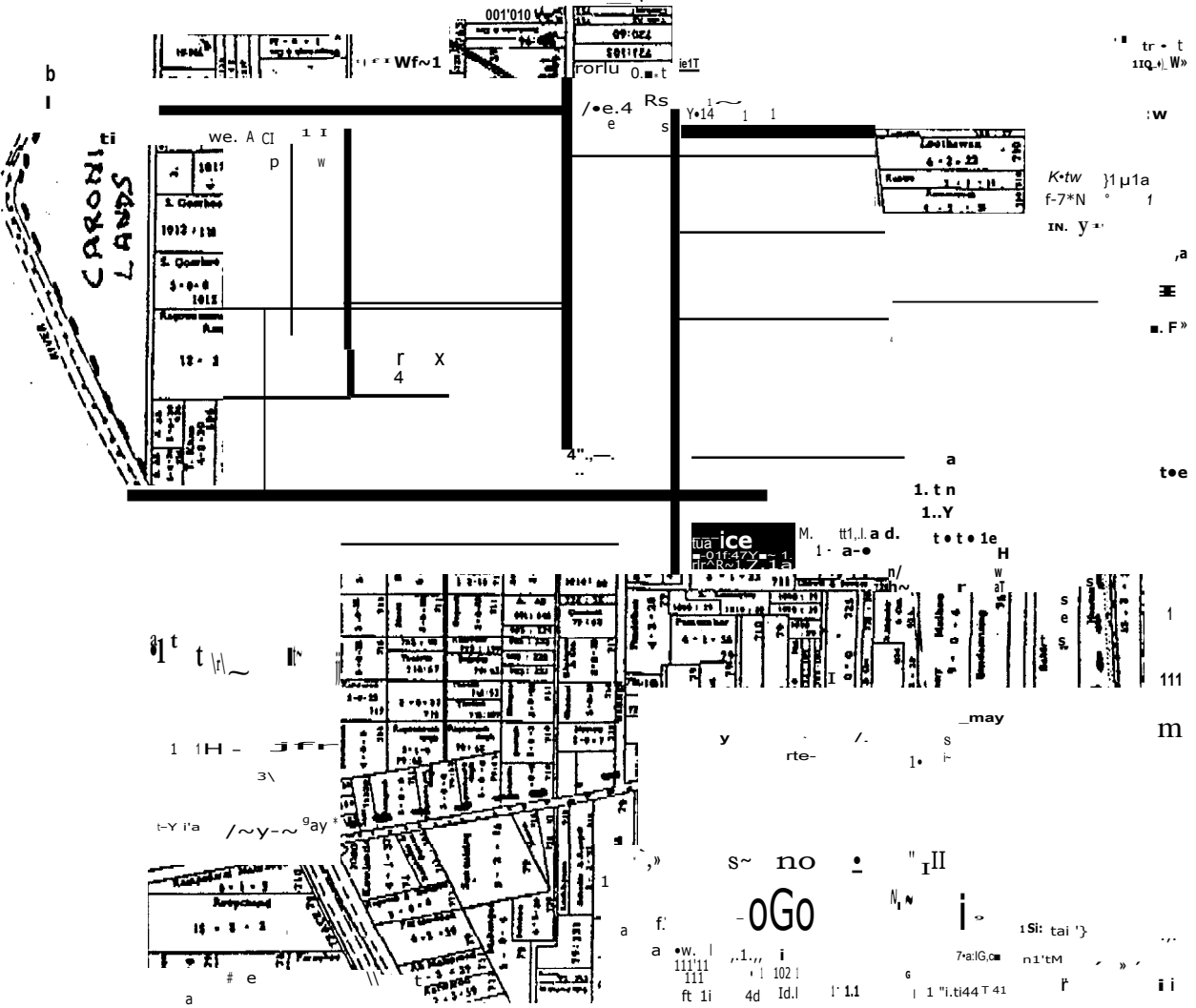
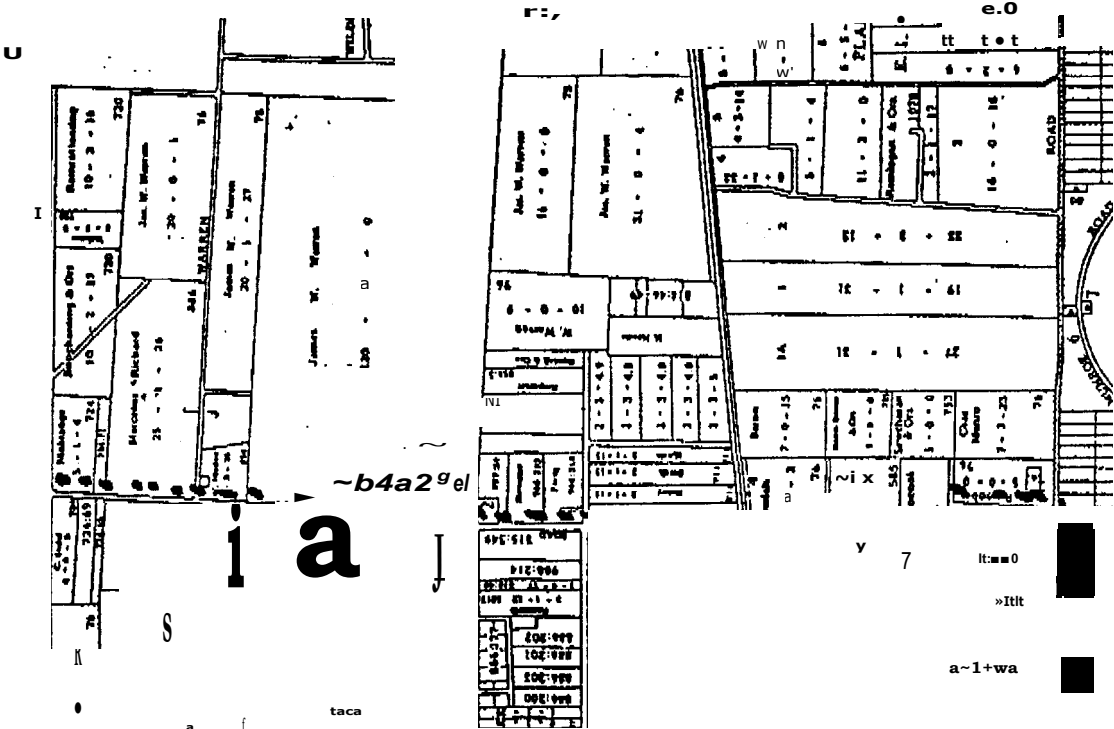
MAPS OF STUDY SITES

STUDY SITES IN TRINIDAD



STUDY SITES

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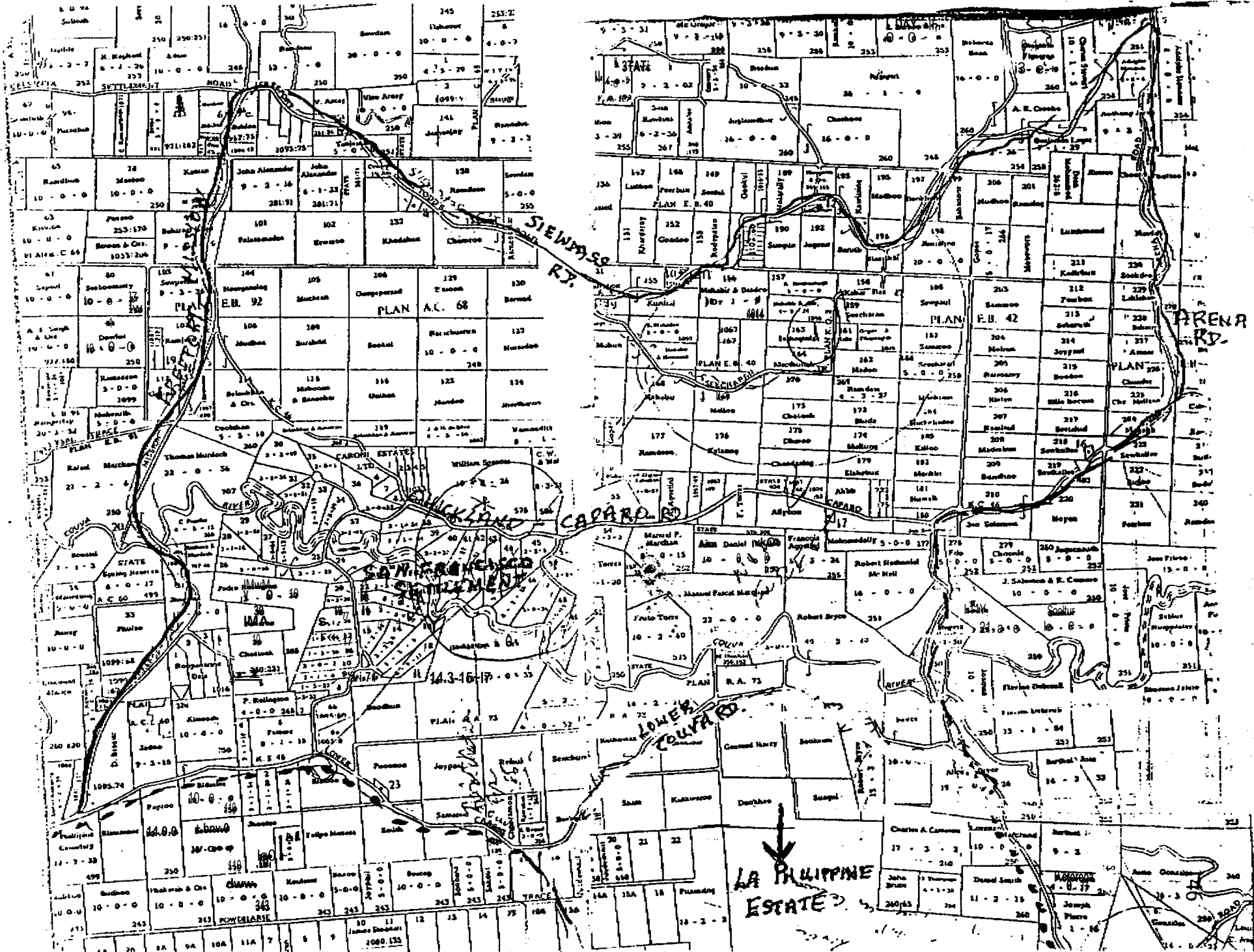
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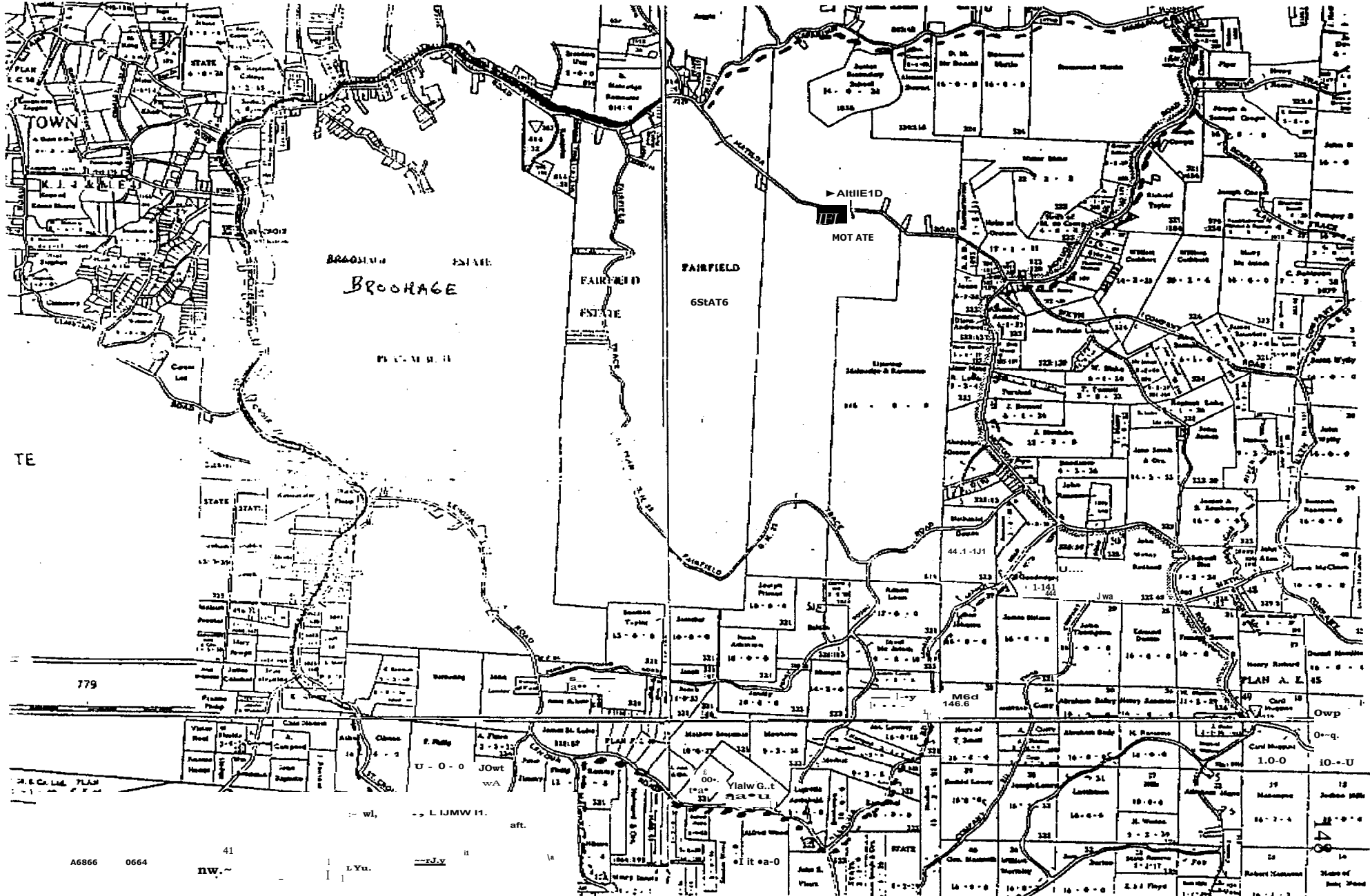
MAP 4
COUVA/ LA PHILIPPINE ESTATE



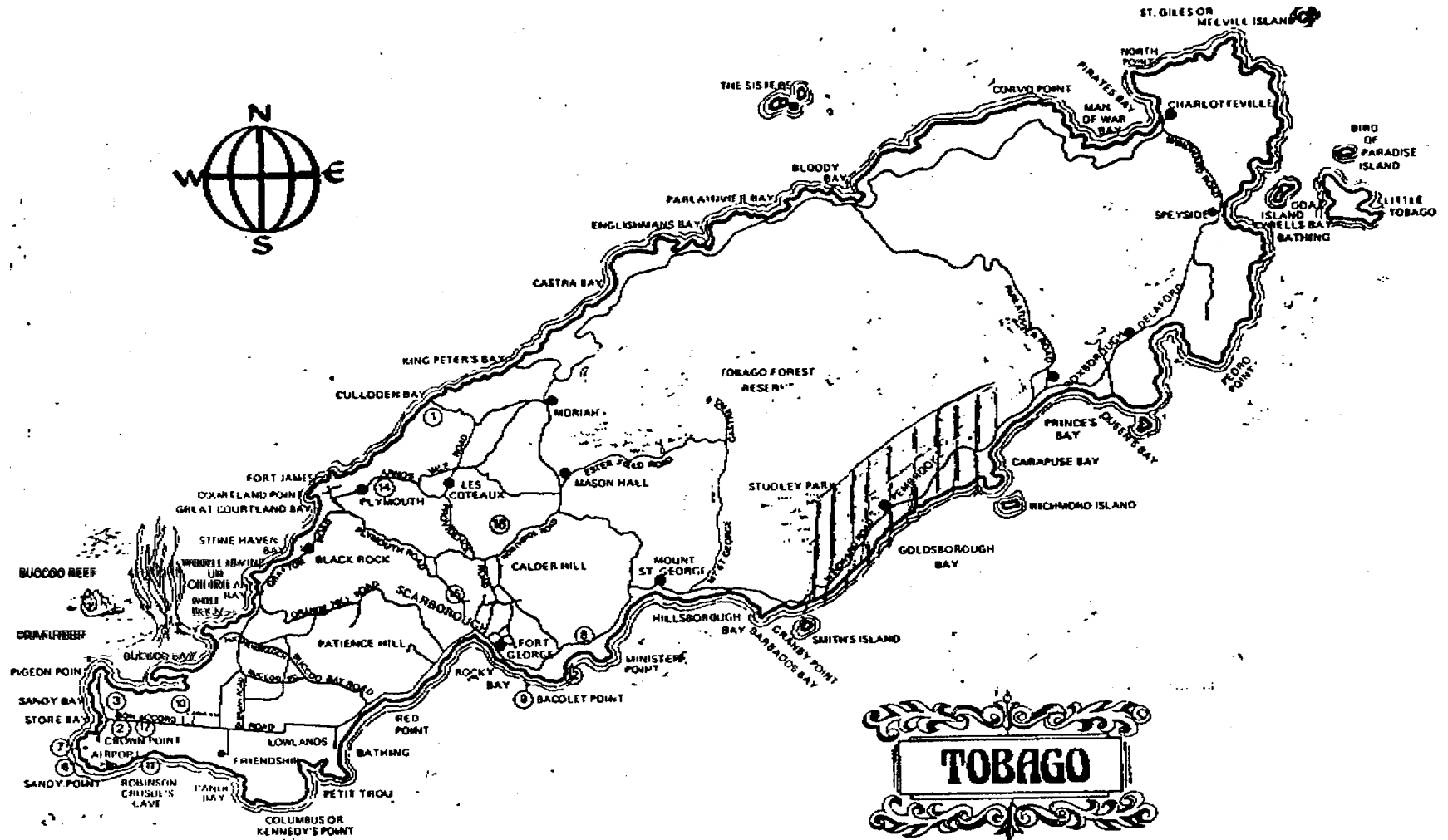
MAP 5
PENAL PUZZLE ISLAND



MAP 6
 FAIRFIELD/BROOCHAGE

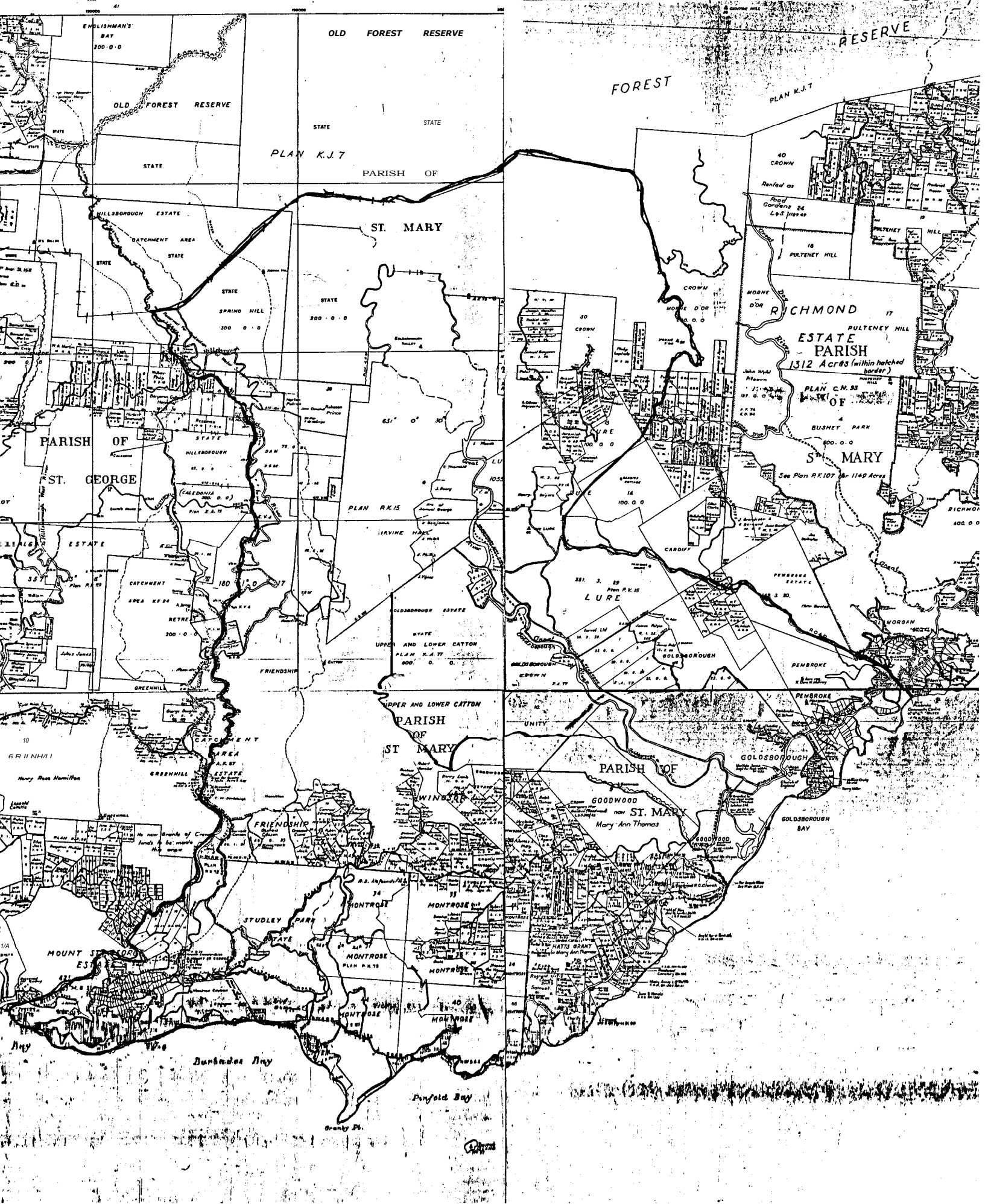


AREAS' - COVERED IN - TOBAGO



MAP 8
GOLDSBOROUGH ESTATE

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Chapter 7

PRIORITY AGRICULTURAL AREAS

by

**Stephen Ventura,
with William Searl, Hugh Wilson, and Puneet Kishor**

INTRODUCTION

The primary purpose of this report is to identify five priority agricultural areas for subsequent land tenure-related studies. The report provides a general description of the selected sites and brief descriptions of other sites that were considered; a detailed report on land soil and land capabilities is provided in the annex. The report also provides several observations on the availability and reliability of land-related information necessary to select study sites and conduct the subsequent studies.

Selected sites:

- (1) Craignish, Fairfield, and Broomage estates (Princes Town);
- (2) Warren-Munro area (southwest of Piarco Airport);
- (3) La Philippine estate and north (east of Gran Couva);
- (4) Puzzle Island area (between Penal and Debe);
- (5) Goldsborough estate, Tobago.

Alternative sites:

- (6) Kernaham Rice Project (Nariva Swamp, north of St. Joseph);
- (7) Bonne Aventure estate and north (north of Gasparillo).

Unsuitable sites:

- (8) La Compensation estate and Clyde Vierra lands (west of Centeno);
- (9) Paramain (between Maraval and Diego Martin).

SITE SELECTION PROCESS

Several criteria were specified for the selection of sites. In general, the area had to be part of a productive agricultural region, had to have a good land capability rating (as

indicated by the Land Capability Survey of Trinidad, no. 6), and had to have land tenure-related problems. Four specific criteria were specified in the terms of work:

- ▶ one site had to have potential for irrigated agriculture;
- ▶ one site had to involve Caroni (1975) Ltd. ;
- ▶ one site had to be a highly productive area in Victoria County; and
- ▶ one site had to be in Tobago.

Based on discussion with Hugh Wilson (Director, Land Capability Unit, Centeno Station, Ministry of Food Production and Marine Exploitation), nine sites were selected for investigation. Of these, two sites were excluded from further consideration, one because it lacked significant tenure-related problems, the other because of the logistical difficulty of interviewing farmers. On June 8, 9, 10, and 12, 1991, the remaining seven sites were toured. Whenever it could be arranged, a Ministry of Food Production and Marine Exploitation (MFPME) Extension Division employee accompanied the selection team or discussed the site. Five sites were selected based on observation during the site tours, discussion with various agency staff, and examination of land capability maps, 1:10,000 cadastral maps ("ward sheets"), and other land information. The remaining two sites can be considered alternatives since they generally meet the specified criteria.

In terms of the general selection criteria, all of the sites are very active agricultural areas. On a dollar per acre basis, site #2 probably produces the greatest gross receipts. As explained in more detail in their descriptions, sites #1 and #3 are somewhat constrained by steep slopes and site #4 is limited by saline soils. Site #5 was reported as one of the most productive areas on Tobago. All have tenure-related issues, including ambiguous title, uncertain leases, squatting, and land abandonment. The four Trinidad sites represent a good geographic range, though not including agriculture of either the Southern Watershed or Northern Range. There are some locally important spots in both areas. The selected sites include most crops commonly grown on the islands.

The specific criterion concerning potential for irrigation could be met by any of the sites. In general, from a water availability/water use standpoint, almost any agricultural area in Trinidad could be developed for and benefit from irrigation. The drainage system at site #4 could be rehabilitated to provide dry season irrigation and water controls for rice in the wet season. A plan has been developed by local extension staff for irrigation at site #2.

The draft report for agricultural sector readjustment prepared by the other set of IDB consultants on this project (Tahal Consulting Engineers, Ltd.) calls for irrigation projects. Abba Niv (Agricultural Engineer, Soil Conservation Division, Israeli Ministry of Agriculture) described the type of irrigation project they will recommend: they are looking at small watershed projects in rolling uplands with undulating slopes and a well-formed drainage network. They envision small, high bank reservoirs located near the headwaters of 20-100 square kilometer sub-watersheds, filled by diversion or pumping in the wet season and irrigating nearby fields in the dry season.

Tahal will be recommending some activity south of the Tumpuna Reserve. Since neither is this a particularly intensively cropped area nor does it present the diversity of land tenure-related problems we wish to study, we did not evaluate this area. However, based on Abba Niv's specified criteria concerning their site requirements, site #3 (in the Gran Couva area) has similar potential. The sub-watershed is about 25-30 square kilometers and has undulating uplands with a well-dissected drainage network. Although it has drought problems in the dry season, it has several possible reservoir sites. Our study will be useful to indicate what kind of tenure-related impediments may exist for the type of irrigation proposed. Apparently, the Gran Couva area was considered by the Tahal team, but was ultimately rejected because there was not any meteorological station nearby and there were many residences in the area.

Site #1 meets the criterion for a site in Victoria County. Site #4 is just across the Victoria County boundary in St. Patrick County as well. The Tobago House of Assembly suggested the site in Tobago that would be appropriate, primarily because of current land regularization activity there.

All Trinidad sites have Caroni (1975) Ltd. lands within or near the study area. Sites #2 and #3 are within County Caroni. La Philippine (site #3) is apparently state land leased to Caroni, and possibly subleased or abandoned by Caroni. Site #4 typifies several Caroni tenure relations. Within this study area, there are Caroni-owned lands, some that they manage, some that they lease, and some occupied by squatters. There are other lands in the area, either state lands or freehold, where cane is grown for Caroni under contract.

BRIEF DESCRIPTIONS OF SELECTED SITES

CRAIGNISH, FAIRFIELD, AND BROOMAGE ESTATES (WARD SHEETS 54D AND 54E)

This area southeast of Princes Town consists of rolling hills of the southern plateau. Soils were formed on calcareous materials, giving rise to good natural fertility. These lands have traditionally produced good crops of sugarcane. The rolling sides and ridges are suitable for most common food crops grown in Trinidad, though the steepest lands should be limited to tree crops without soil disturbance due to erosion hazard. The alluvial valleys are also quite productive. Imperfect drainage and flood hazard create some restrictions.

Squatting is considered to be a significant problem in this area. There are a variety of tenure situations, described in more detail below. Most residences have electricity, but only those along main roads have water.

Craignish. According to information from the district extension officer, this is apparently an area of private land now occupied by long-term squatters. The Persad clan held it as family lands, leasing it privately to farmers for many years. The last of the Persad clan died intestate; there is no rent collected from the current occupants, who are mostly the

former leaseholders. There are other private lands in this area; much of it may be abandoned by the owner listed on ward sheets and occupied by local farmers. There is a variety of cash crops, primarily fresh market vegetables grown on small plots. Boundaries are established by common practice.

Broomage estate. These Caroni lands are almost completely leased to small farmers. There is a mixture of cane and root crops grown away from the roads. (The Caroni leasehold stipulates that four-fifths of leased land be put in cane; this is obviously not the case in this area, where less than half is in cane.) Many of the plots adjacent to the road have been sold or leased by Caroni to the residents who occupy them.

Fairfield estate. Fairfield is state land, supposedly bought by the state for residential development. The National Housing Authority (NHA) encountered an active, organized group of farmers, but never followed through on their plans for a subdivision. Rents are collected there by NHA. The farmers are growing cane and vegetables.

WARREN-MUNRO AREA (WARD SHEETS 24D AND 24E)

This area lies south of the Guaramare River and east of the Uriah Butler highway. It is exceptionally good agricultural land, used for intensive vegetable production.

Squatters as well as occupants recognized by law have built residences along all the paved roads in this region; they are quite dense along some stretches. These people will farm a few acres somewhere in the area. They are growing cash crops for the fresh foods market, in the process using some intensive practices such as shaded sets and raised beds. There are a variety of crops, usually two per year adapted to wet and dry seasons. The dry season crops may be supplemented by water drawn from ditches that traverse the area. Most residences are served by Trinidad and Tobago Electricity (T&TEC) and seemingly by the Water and Sewerage Authority (WASA) as well.

Most of the land is state-owned, though there are some apparent freeholds of questionable status. There does not appear to be any arrangement for the residential lands, though squatters are demanding rationalization. An extension officer reported that farmers have month-to-month leases for the agricultural lands and pay taxes to the revenue office. The farmers in this area are well organized and seem internally to agree on boundaries.

LA PHILIPPINE ESTATE (WARD SHEETS 44A, 44D, AND 43C)

This area is east of Gran Couva, on the north side of the central range. Land cover is primarily lastro, cane, and vegetables on very steep hills. It is farmed by hundreds of cultivators. The land is reasonably productive, but soil erosion and land slippage are problems. Residential development has taken place along the paved roads that follow the ridge tops; it is generally fairly scattered. The most remote sites have neither water nor electricity.

Information from Caroni (1975) Ltd. indicates that La Philippine estate itself is owned by the state and leased to Caroni. Caroni has apparently abandoned the land, though it will be worth checking to see if they have subleased any of it to these farmers. Cane occurs on less than one-quarter of the land, generally the flatter slopes. Vegetables are grown sporadically on steeper slopes, and lastro and grasses cover at least half of the area.

The area north of La Philippine estate is also state-owned. It has much the same land use patterns. There is a large dairy operation in the valley south of Chickland-Caparo Road. From the ward sheets, it appears that several pieces were subdivided sometime prior to the production of the current sheets (circa mid-1970s). Many of the plots are blank, indicating that they were never officially leased. It is likely that many of the other plots were never occupied by the leaseholder of note.

PUZZLE ISLAND AREA (WARD SHEETS 63B AND 63E)

This area is in the San Francique District, Oropouche Lagoon, between Penal and Debe. It is an area of extensive flat to undulating land, much of it drained swampland. Where the canal systems and sluice gates still function, there are highly productive soils that can support rice in the wet season and vegetable crops in the dry season when properly managed (the soils tend to be acid clays, and so require liming for highest productivity).

The area was ditched and diked by the Dutch in the 1940s, but the second phase of that project was never completed. Since then, sluice gates and canals have fallen into disrepair, resulting in saltwater intrusion. A new ditch, known as the "New Cut Channel," was dredged in the early 1960s; it seems to have made the saltwater intrusion worse.

Salinity will initially render rice-growing impossible on these soils. In some areas, this has resulted in a shift to two vegetable crops, one adapted to wet season crops with some salt tolerance (for example, melons, greens, root crops, and the like), and another to dry season conditions (for example, deep-rooted crops such as *ochro*, black-eyed peas, and *gub-gub*). Some hand or motorized pumps in canals supplement the dry season crops. In more saline areas, the land will support only coarse grasses; extensive areas are grazed by cattle. At its worst, the land will support only a thick sedge, locally known as jaw-grass, that has no use.

The primary area of interest is called "Block 4." It is one of several blocks of land expropriated from the Jamadar estate. It was subdivided for agricultural purposes, probably in the 1950s or early 1960s, into nominal 2- to 5-acre plots. In fact, the 1:10,000 ward sheets (at least those maintained by Food Production at the Land Capability Office) bear little resemblance to the actual layout of the area. Even the road and canal network bears only nominal resemblance to that mapped. The New Cut Channel is not even shown, and many new traces exist.

According to local extension records, Block 4 consists of 442 plots. The State Lands Office has an active program for developing probationary agreements (short-term leases) with

the farmers in the area, and currently has 176 agreements. It also has a list of the farmers who use the other lands in the area. Both these groups of farmers have ties to these lands tracing back to estate days. They continue to use relatively unsophisticated farming techniques and rely on family labor. The probationary agreements have a general description of the location of the plot along with its dimensions; they probably do not correspond with plots shown on the ward sheets. This was confirmed by a farmer who said he was involved in measuring lands into plots in 1962.

The farmers who work this area live just to the south along a couple of built-up traces, or on Puzzle Island. Puzzle Island is a 20-30 acre high area with many residences just west of Block 4. Presumably, the farmers are occupying former estate land. Areas on the slopes of Puzzle Island not used for residences are also cropped.

There is a smattering of freeholds in this area shown on the ward sheets, though it is likely that these, too, were abandoned by the legal owners and then occupied by squatters. These residences have electricity and WASA delivered water (barrels on Puzzle Island, piped along the traces near the highway). To the east of Block 4 there are some Caroni lands that should also be sampled in the study. Some of these Caroni lands are probably being occupied, though there is cane grown where it is high and dry enough to avoid the flooding and salinity problems. On private lands south of Block 4, there is also some cane grown, presumably sold to Caroni.

GOLDSBOROUGH ESTATE, TOBAGO¹ (WARD SHEETS 113, 114, 118, 119)

Some of the best agricultural lands on Tobago are located on the flat alluvial sections of this valley in St. Mary Parish, about one-third of the way up the south coast of Tobago. These clay loams are quite productive for most food crops commonly grown on the island. The steep valley sides are also used, primarily for fruit crops. In a few spots the sides are terraced and tilled for vegetable crops.

The estate was first subdivided in 1966. A perimeter survey was conducted and lots created on maps (these lots were apparently not staked on the ground; maps showed only relative position and size of lots). A land use plan was developed as part of this exercise, which called for 13 dairy lots averaging 20 acres, 10 pig farms at about 5 acres each, about 20 4-acre fruit tree lots on steep valley sides, and about 25 vegetable production lots of about 2 acres each on the flat, narrow, upper valley.

1. This information came from E. Harris, Extension Branch, Agricultural Division, Tobago House of Assembly (639-2234 or 639-6056) and Keith Spencer (Survey Team Leader, Land and Surveys Division, Ministry of **Planning and** Mobilization). Harold Leggeton is the Extension Officer assigned to Goldsborough (contact through E. Harris). He is in the process of updating the farmer's registry for this area and will provide whatever is available. Though the final maps will not be drafted for some time, Spencer will provide working maps from their current survey through L&S POS.

Some probationary leases were let for these lands in the early 1970s. Leases were generally available to farmers who had traditionally used these lands, though not all applied. New farmers also came in at this time. Availability was (and seemingly still is) through word of mouth and extension.

All of the dairy and pig lots were leased, though today only one pig and one dairy operation appear to be commercially viable. The others are semi-abandoned or used for raising only a few animals. Only a portion of the vegetable lots were leased, and even less of the fruit lots. Some of these areas are being used very productively today, though apparently with only nominal regard to the designated sites and provisions of leases. Some of the farmers currently using these lands have old probationary leases; others are squatters. There are a few residences on the dairy and pig lots, but most farmers live in nearby villages or family lands.

The Tobago House of Assembly has recognized a need to rationalize leases for these lands (to issue new temporary and ultimately permanent leases) and to resolve boundary-related issues. They recently requested that Land and Surveys resurvey and divide the estate. This work should be completed within a few months. In their work, Lands and Surveys has had to do "field adjudication," for example, to show farmers that they are farming more area than they were allocated or to resolve differences of opinion about the location of boundaries. To the extent possible, the survey team is trying to use existing occupation lines, but they are constrained to make lots meet size criteria. This has been complicated by the relocation of a road since the original division, which has expanded the area of lots bounded by the road and made it necessary to make the lots narrower.

BRIEF DESCRIPTIONS: ALTERNATIVE/UNSUITABLE SITES

KERNAHAM RICE PROJECT

This area is on the edge of Nariva Swamp, north of St. Joseph, just inland from the coast highway. The area we looked at was along the Cascadoux Trace, a few kilometers north of Mayaro. This is an area where diking and ditching for rice was put in place as part of a Forestry reclamation project. It is apparently all state-owned. MFP Extension Division has developed a plan for rice production here. Rice infrastructure was previously started, but would need additional work to be truly productive.

Squatters farm an area of rich flat clay soils between the beach ridge and coconut groves to the east and rolling, forested hills to the west. The farmers grow rice in the wet season and vegetables in the dry season, with watermelons providing the biggest source of income. Farmers are only loosely organized and not efficiently using the rice-growing infrastructure in place.

There are a few residences in the flat farmed areas. These residences appear to have neither electricity nor water. In addition to farming these soils, squatters are occupying lands to the west intended as sanctuary, because such lands are above the floodplain. The continuing push deeper into the reserved area is considered a conservation problem, though the area visible from Cascadoux Trace appeared to be grasslands and lastro. Presumably, the residences in the uplands also lack water or electric service.

This area was not selected as a study area because it presents only one kind of tenure relation and one type of agriculture. It is also the farthest site from Port of Spain, requiring at least a couple hours of travel. It may be a useful site for the conservation area studies. A much smaller sample size should effectively characterize the area's problems. We have not pursued contacts for further information about occupants.

BONNE AVENTURE ESTATE AND NORTH

This area is north of Gasparillo, in very steep hills of the Central Range. It is an area of former cacao estates. The soils are generally productive, but, because of their slope, present a severe erosion hazard. They are best left unfilled.

The estate still has some cacao trees, though who harvests them is unclear. The land just north of the estate is a mixture of abandoned smallholding and Trinidad Cement Ltd. (TCL) land (presumably held for future quarrying—they wish to retain their right to do so). It is now sporadically occupied (perhaps one-third of the area shows signs of recent activity) and planted in vegetables, with a little cane here and there. Farmers live in small settlements nearby, the old TCL company towns.

We did not pursue more information for this site, because it presents a situation similar to that found at La Philippine estate.

LA COMPENSATION ESTATE AND CLYDE VIERRA LANDS

This area is just west of Piarco Airport and Centeno Agricultural Station, south of the Caroni River. It is an area of intensive vegetable production, with good potential for irrigation. The soils are very good for a variety of crops, though there are some water-related restrictions.

La Compensation estate has 37 freehold parcels, each about 5 acres in size. The Clyde Vierra lands are divided into "well-organized" 2-acre leases. This area was not selected for further study because there are not apparent tenure or land rights-related issues.

PARAMAIN

This area is between Maraval and Diego Martin, north of Coco Road, on the top of the North Range. It is cropped by shifting cultivation of high cash value spices and vegetables on very steep land. The land is productive but very erodible. This area has

apparently been farmed by the same stable community of farmers for many generations, and a "family lands" concept has evolved. It was not selected for further study due to the extremely difficult access to the area.

AVAILABILITY AND RELIABILITY OF LAND-RELATED INFORMATION

This exercise has provided a first-hand opportunity to observe the availability and reliability of sources of information needed to select agricultural study areas. Because we have used this exercise to begin developing a pool of farmers from which to select survey participants, it has also provided insight into the status of information about who is actually managing the land and where they can be contacted.

Although the exercise has been, of necessity, limited in geographic scope and conducted with some haste, there is no reason to believe that the assessment of information sources cannot be extrapolated to most of the agricultural areas of the nation. This section reviews the information requirements of the study and then assesses the adequacy of several potential sources.

There were three general categories of information needed for this exercise:

- ▶ agro-ecological data to assess the potential for and viability of agriculture in study areas. These data came primarily from small-scale MFPME Land Capability maps, topographic maps, and site observation;
- ▶ cadastral data to assess land tenure-related issues, including land ownership and leasing. These data came from 1:10,000 ward sheets and reports from local agency staff; and
- ▶ land use data to assess who was using the land for what purpose. These data came from observation and reports from local agency staff.

Because this exercise required only initial screening, generalized information was acceptable. Much more detailed data will be needed for the next phase of the study. In particular, that phase will require a linkage between land use and cadastral data, a linkage for which no agency currently has specific responsibility. This will require the integration of several different types of records.

The remainder of this report provides some observations on data sources used for this exercise, and how useful they may be for selecting farmers for interviews and for determining where to contact them. A recent technical report (Report of Committee "C" of the Interministerial Technical Team, established in accordance with Cabinet Minute No. 2385, 14 December 1989) provides a more detailed review of several of the data sets we examined.

In general, the most current and reliable information came directly from people, particularly individuals dealing directly with farmers, such as extension agents. Even so, such individuals admitted they did not always know a situation fully, or provided contradictory information. The next most reliable source of information was tabular records of agencies with day-to-day responsibilities at the local level, such as Farmer's Registries, Valuation roles, and WASA customer lists. Finally, spatial data from agencies with nationwide responsibilities such as Lands and Surveys, Town and Country Planning, or Land Capability Division, MFPME, were generally quite out-of-date and in some cases of questionable accuracy. Their documents are undoubtedly useful for some purposes, but are quite limited at the scale/scope of our individual study regions.

LAND CAPABILITY AND SOILS MAPS

In the early 1970s, the land capability maps were derived from soils mapping conducted during the 1930s and 1940s. Even the small-scale (1:150,000) composite map was quite useful in determining the land capability classes of potential study areas. Maps at scales 1:10,000 were produced for some areas. Report #6, *Trinidad Land Capability*,² is a good source of information about land capability of various combinations of soils and other ecological conditions (for example, slope and rainfall). Information from this report for the study areas is summarized in annex 7.1.

Although general land capability will probably not change over time, aspects of these maps may be obsolete. They do not reflect significant changes that can take place in tropical soils under continuous cultivation, particularly structural and chemical changes that affect suitability for crop production. Capability recommendations should be updated to reflect such cultural changes and changes in production techniques. Though soils maps are useful for general planning purposes, they only go to a soil series level. Site-specific management decisions (for example, the allocation of land for agricultural purposes as part of a land rationalization program) require detail to the level of soil phase. MFPME should begin a program of modern soil survey, starting in agriculturally important regions.

LAND USE MAPS

The nationwide 1:150,000 land use map developed in the early 1970s is quite out-of-date and was not very useful for this exercise. Other land use data exist on a project or site basis, with a variety of scales, bases, classification schemes, and dates. Effective land planning requires current, reliable, land use information. A single custodian for such data should be identified (for example, Town and Country Planning), and a program for the creation and update of a national land use data base should be created. Classification standards useful to the broadest array of agencies should be adopted.

2. F. Hardy, *Trinidad Land Capability*, Report no. 6, ed. B. Searl (Port of Spain: Lands and Surveys Division, 1974).

AERIAL PHOTOGRAPHY

The most recent nationwide aerial photography was acquired in 1986. It is fairly small scale, probably 1:50,000, and used black and white film. As such, it is of limited value in determining land use or occupation. Where soils have been recently tilled, it is possible to distinguish areas with cultivated crops, though not their type. Fruit tree crops cannot always be distinguished from lastro or other abandoned land. Not all dwellings can be detected. Presumably, new large-scale aerial photography will be a recommendation from the study looking at the cadastral data base. If possible, specifications for such an acquisition should accommodate land use determination as well.

1:10,000 CADASTRAL WARD SHEETS

The currency and reliability of these maps will be detailed in other reports. For the purpose of this exercise, the maps were most useful for general navigation purposes. Even for this, they were not completely reliable. For example, in the Puzzle Island area, the ward sheets did not provide an accurate representation of traces and canals. In several areas, the ward sheets provided only a general index of parcels, showing the approximate size and spatial relation of lots to one another. Actual occupation boundaries on the ground were based on tradition, agreement, or natural features.

According to local officials, the names shown as landowners on the ward sheets often bore little resemblance to current occupants. The sheets did provide an index to plans for estate lands. The availability and usefulness of these plans was not assessed as part of this study.

ANNEX 7.1

SOIL AND LAND CAPABILITY EVALUATION OF STUDY AREAS**FAIRFIELD AND BROOMAGE ESTATE AND LENGUA**

Three soil series were identified on this site: 474/L Princess Town, 177 Talparo, and 278/L Tarouba. These are all soils of the intermediate uplands with restricted internal drainage.

474/L PRINCESS TOWN

Princess Town clay is the main soil type. It is a restricted drainage soil developed over soft sandstone having gently to steeply sloping relief. It occupies a total of approximately 46.6 hectares, which is distributed over the site in smaller areas with C and D slopes. It falls under land capability classes Ve (C slope) and Vle (D slope).

This soil is marginal for cultivation owing to adverse soil characteristics, mainly poor workability due to stickiness and risk of erosion. Minimum management practices include cambering, contour planting, and contour drains. Recommended crop plantings in order of priority are sugarcane, food plants, cacao, citrus, timber. The soil's nutrient status is medium.

177 TALPARO

Talparo silty clay is the main soil type. It is a restricted drainage soil developed over variably calcareous pyritic red-weathering siltstone and clay-shale having moderately to steeply sloping relief. It occupies a total of approximately 54.3 hectares, which is distributed over the site in smaller areas with C, D, and E slopes. It falls under land capability classes IVw (C slope), Vw (D slope), and Ve (E slope).

This soil is marginal for cultivation owing to excessive wetness in the wet season, excessive dryness in the dry season, and the presence of a perched water table. Minimum management practices are contour planting and contour drains. Recommended crop plantings in order of priority are citrus, sugarcane, pasture, fruit trees, and timber. Nutrient status is medium to high.

278/L TAROUBA

Tarouba clay is the main soil type. It is a restricted drainage soil developed over highly calcareous gypseous clay-shale having moderate to steeply sloping relief. It occupies

a total of approximately 491.1 hectares and is the main soil type of the site with C, D, and E slopes. It falls under land capability classes Ivw (C slope), Vw (D slope), and Ve (E slope).

This soil is marginal for cultivation owing to its excessive wetness and dryness and the serious risk of erosion on steep slopes. Minimum management practices are contour planting, contour drains, and gully barriers. Recommended crop plantings in order of priority are sugarcane, fruit trees, pasture, and timber. Nutrient status is medium.

SUMMARY: SOIL DATA ACREAGE (HECTARES)

SOIL	SLOPE				CAPABILITY CLASS				
	C	D	E	Total	Ivw	Vw	Ve	Vle	Total
177 Talparo s/c	13.0	39.4	1.9	54.3	13.0	39.4		1.9	54.3
474/L Princess Town c	35.3	11.3		46.6			35.3	11.3	46.6
278/L Tarouba c	31.5	451.4	8.2	491.1	31.5	451.4	8.2		491.1
Total	79.8	502.1	10.1	592.0	44.5	490.8	43.5	13.2	592.0

w = **unsatisfactory** water relations; **land** too wet or too dry.

e = degree of erosion **dependent mainly upon angle** of slope.

WARREN-MUNRO AREA

Four soil series are identified on this site: 9 Bejucal, 309 Cacandee, 409 Frederick, and 33 Cunupia. The Bejucal, Cacandee, and Frederick series are deep hydromorphic soils with free internal drainage. The Cunupia series is a deep alluvial soil with restricted internal drainage.

9 BEJUCAL

Bejucal clay is the main soil type. It is a restricted drainage soil developed over deep freshwater lagoon alluvium upon level relief. It occupies a total of approximately 521.9 hectares and is the main soil type on the site with an A slope. It falls under land capability class Ivw.

This soil is marginal for cultivation owing to flooding and waterlogging in the wet season. Minimum management practices are cambering, graded drains, and diversion channels. Recommended crop plantings in order of priority are rice, sugarcane, and food plants. Nutrient status is medium.

309 CACANDEE

Cacandee clay is the main soil type. It is a restricted drainage soil developed over deep swamp clay alluvium upon level relief. It occupies a total of approximately 81.9 hectares and is found mainly along the western boundary of the site area with an A slope. It falls under land capability class Ivw.

This soil is marginal for cultivation owing to deep flooding and waterlogging in the wet season. Minimum management practices are cambering, graded drains, and diversion channels. Recommended crop plantings in order of priority are rice, sugarcane, and food plants. Nutrient status is high.

409 FREDERICK

This soil series can be disregarded since it is not significant to the site area. It occupies a total acreage of approximately 2.7 hectares and is confined to two small areas along the Guayamare River. Its characteristics are similar to the Cacandee clay.

33 CUNUPIA

Cunupia clay loam is the main soil type. It is a restricted drainage soil developed over deep river alluvium upon level to gently sloping relief. It occupies a total of approximately 34.5 hectares and is found mainly along the northeastern boundary of the site with an A slope. It falls under land capability class IIIw.

This soil is suitable for cultivation with strong limitations, chiefly excessive wetness in the wet season and excessive dryness in the dry season. Minimum management practices are cambering, graded drains, diversion channels, and irrigation in the dry season. Recommended crop plantings in order of priority are citrus, sugarcane, rice, food plants, tree crops, and pasture. Nutrient status is medium.

SUMMARY: SOIL DATA ACREAGE (HECTARES)

SOIL	SLOPE		CAPABILITY CLASS	
	A	IIIw	Ivw	Total
9 Bejucal c	521.9		521.9	521.9
309 Cacandee c	81.9		81.9	81.9
409 Frederick c	2.7		2.7	2.7
33 Cunupia cl	34.5	34.5		34.5
Total	641.0	34.5	606.5	

LA PHILIPPINE ESTATE

Twelve soil series are identified on this site. They are: 131 Freeport; 35 L'Ebranche; 77 Ecclesville; 177 Talparo; 121 McBean; 241 Las Lomas; 261 Arena; 178/L Chicldand; 575 Moruga; 32/L Caracas; 68/L Montserrat; 674/L Brasso.

These soils are characterized as follows:

- ▶ deep alluvial soils with free internal drainage (121 McBean);
- ▶ deep alluvial soils with restricted internal drainage (32/L Caracas, 35 L'Ebranche, 131 Freeport);
- ▶ terrace soils with free internal drainage (241 Las Lomas);
- ▶ soils of intermediate uplands with free internal drainage (261 Arena, 68/L Montserrat); and
- ▶ soils of intermediate uplands with restricted internal drainage (674/L Brasso, 575 Moruga, 77 Ecclesville, 177 Talparo, 178/L Chickland).

121 McBEAN

McBean sandy loam is the main soil type. It is a free draining soil developed over deep river levee alluvium upon level to gently sloping relief. It occupies a total of approximately 21 hectares on a B slope. It falls under land capability class Vs. This soil is marginal for cultivation owing to its sandy texture imparting proneness to desiccation in the dry season and because of its low nutrient status and high acidity. Minimum management practice is irrigation in the dry season. Recommended crop plantings in order of priority are citrus, coconut, tobacco, fruit trees, and pasture. Nutrient status is low.

32/L CARACAS

Caracas clay is the main soil type. It is a restricted drainage soil developed over deep calcareous river alluvium of the Savaneta River upon level to gently sloping relief. It occupies a total of approximately 106 hectares and is found along the banks of the Savaneta River, which passes through the site, on A and B slopes. It falls under land capability class IIIw.

This soil is suitable for cultivation with strong limitations owing to risk of flooding on occasions. Minimum management practices are cambering, graded drains, and diversion channels. Recommended crop plantings in order of priority are sugarcane, food plants, fruit trees, and pasture. Nutrient status is high.

35 L'EBRANCHE

L'Ebranche clay is the main soil type. This soil can be regarded as being insignificant in the site since it occupies a total acreage of only about 5 hectares and is located in two

small areas along the Lower Caroni road in the northeastern area of the site. It has similar characteristics to the Caracas clay except that it is moderately to strongly acidic.

131 FREEPORT

Freeport loam is the main soil type. It is a restricted drainage soil developed over deep river levee alluvium with level to gently sloping relief. It is found in combination with 121 McBean series and occupies a total of approximately 17 hectares. It is located in the same area of the site as 121 McBean series on A and B slopes. It falls under land capability classes IIIw and Ivw.

This soil is suitable for cultivation with strong limitations owing to excessive wetness, but without flooding, alternating with excessive dryness. Minimum management practices include cambering, diversion channels, graded drains, and irrigation in the dry season. Recommended crop plantings in order of priority are citrus, sugarcane, rice, and tobacco. Nutrient status is low.

241 Las LOMAS

Las Lomas fine sandy loam is the main soil type. It is a free-draining soil developed over sandy detritus upon terraces and subsidiary hills with gently to strongly sloping relief. It occupies a total of approximately 37.2 hectares and is located mainly south of Mowlah Trace, on C and D slopes. It falls under land capability classes Ve and Vl.

This soil is not suitable for cultivation owing to erosion hazard. Minimum management practices are contour planting and contour drains. Recommended crop plantings in order of priority are fruit trees, timber trees, and pasture. Nutrient status is extremely low.

261 ARENA

Arena sand is the main soil type. It is a free-draining soil developed over loose white or pale red sand upon intermediate uplands with gently to steeply sloping relief. It occupies a total of approximately 19.1 hectares and is found mainly at the junction of Freeport Mission and Lower Caroni roads on B and D slopes and in two very small areas along the Arena road on C and D slopes. It falls under land capability classes Vw and Vl.

This soil is not suitable for cultivation owing to the risk of desiccation due to loose sandy texture and because of a great risk of severe erosion on steep unstable slopes. The recommended crop planting on B slopes is tobacco; however, C and D slopes are best retained in natural forest. Nutrient status is extremely low.

68/L MONTSERRAT

Montserrat clay is the main soil type. It is a free-draining soil developed over glauconitic calcareous sandstone upon intermediate uplands with gently to very steeply sloping relief. It occupies approximately 17.3 hectares and is found at two locations in La Philippine estate, north of Couva road on C and D slopes. It falls under land capability classes IIIe and IVe.

This soil is marginal for cultivation due to a very strong risk of erosion. Recommended crop plantings are fruit and timber trees. Nutrient status is high.

647/L BRASSO

Brasso clay is the main soil type. It is a restricted drainage soil developed over calcareous siltstone upon intermediate uplands of the Central Range, with moderately to steeply sloping relief. It occupies a small area of approximately 10 hectares in two locations along the Couva road, on C and E slopes. It falls under land capability classes Ivs and VIe.

This soil is marginal for cultivation owing chiefly to a shallow rooting depth and a high perched water table. Minimum management practices are contour planting and contour drains. Recommended crop plantings in order of priority are food plants, cacao, and citrus. Nutrient status is medium.

575 MORUGA

Moruga loam is the main soil type. It is a restricted drainage soil developed over sandy-silty clay-shale upon intermediate uplands having gently to very steeply sloping relief. It occupies approximately 215.4 hectares and is widely spread over the southern area of the site, between Lower Caroni and Couva roads on B, C, D, and E slopes. It falls under land capability classes Ivw (B and C slopes), Ve (D slope), and VIe (E slope).

This soil is marginal for cultivation owing to excessive wetness in the wet season, desiccation in the dry season, and risk of erosion on steep slopes. Minimum management practices are contour planting, contour drains, and gully barriers. Recommended crop plantings in order of priority are tobacco, cacao, citrus, food plants, and timber trees. Nutrient status is medium.

77 ECCLESVILLE

Ecclesville clay is the main soil type. It is a restricted drainage soil developed over variably calcareous clay-shale upon intermediate uplands with gently to steeply sloping relief. It occupies approximately 61.5 hectares and is widely spread over the area between Chickland Caparo road and Couva River on C and D slopes. It falls under land capability classes Ivs and Vs.

This soil is marginal for cultivation owing to shallow rooting depth and low permeability, which causes a high perched water table in the wet season. Minimum management practices are contour planting and contour drains. Recommended crop plantings in order of priority are citrus, sugarcane, fruit trees, and pasture. Nutrient status is medium.

177 TALP₄Ro

Talparo silty clay is the main soil type. It is a restricted drainage soil developed over variably calcareous pyritic red-weathering siltstone and clay-shale upon intermediate uplands with moderately to steeply sloping relief. It occupies approximately 326.2 hectares and is widely spread over the northern area of the site, between Freeport Todd's road and Chickland Caparo road on B, C, D, and E slopes. It falls under land capability classes Ivw (B and C slopes), Vw (D slope), and Vle (E slope).

This soil is marginal for cultivation owing to excessive wetness in the wet season, excessive dryness in the dry season, a perched water table, and risk of erosion by landslides on steep slopes. Minimum management practices are contour planting and contour drains. Recommended crop plantings in order of priority are citrus, sugarcane, fruit trees, and pasture. Nutrient status is medium to high.

178/L CHICKLAND

Chickland clay is the main soil type. It is a restricted drainage soil developed over highly calcareous shelly clay upon intermediate uplands having moderately to steeply sloping relief. It occupies approximately 16.3 hectares and is found in one location along Freeport Todd's road at its junction with Arena road on a C slope. It falls under land capability class Ivw.

This soil is marginal for cultivation owing to excessive wetness in the wet season enhanced by low permeability. Minimum management practices are contour planting, contour drains, and gully barriers. Recommended crop plantings in order of priority are sugarcane, fruit trees, timber trees, and pasture. Nutrient status is medium.

SUMMARY: SOIL DATA ACREAGE (HECTARES)

SOIL	SLOPES					CAPABILITY CLASS					
	A	B	C	D	E	Total	IIIw	IVwes	Vwes	Vle	Total
121 McBean sl	3.8	29.1	1.0			33.9	1.9	17.0	14.5	0.5	33.9
131 Freeport l	9.0	8.0				17.0	8.0	9.0			17.0
32/L Caracas c	11.6	10.0				21.6	21.6				21.6
35 L'Ebranche si c	5.0					5.0	5.0				5.0
241 Las Lomas fsl			31.1	16.1		37.2			31.1	6.1	37.2
261 Arena s		6.0	1.7	11.4		19.1			6.0	13.1	19.1
68/L Montserrat c			2.9	14.4		17.3	2.9	14.4			17.3
674/L Brasso c			8.4		1.6	10.0		8.4		1.6	10.0
575 Moruga l		31.9	32.6	141.4	9.5	215.4		64.5	141.4	9.5	215.4
77 Ecclesville c			54.5	7.0		61.5		54.5	7.0		61.5
177 Talparo si c		3.9	106.9	214.1	1.3	326.2		110.8	214.1	1.3	326.2
178/L Chickland c			16.3			16.3		16.3			16.3
Total	29.4	88.9	254.4	394.4	12.4	780.5	39.4	294.9	414.1	32.1	780.5

w = unsatisfactory water relations; land too wet or dry.

e = degree of erosion dependent mainly upon angle of slope.

s = unsatisfactory inherent soil characteristics or qualities.

PUZZLE ISLAND AREA

Thirteen soil series are identified on this site. They are: 509 La Fortune; 609 San Francique; 115 Godineau; 25 Mahut; 139 Cromarty; 239 Debe; 245 Avocat; 361 Siparia; 63 Mayaro; 575 Moruga; 77 Ecclesville; 177 Talparo; 278/L Tarouba.

These soils are characterized as follows:

- ▶ deep hydromorphic soils with restricted internal drainage (509 La Fortune, 609 San Francique, 115 Godineau);
- ▶ deep alluvial soils with free internal drainage (25 Mahut);
- ▶ deep alluvial soils with restricted internal drainage (139 Cromarty, 239 Debe);
- ▶ terrace soils with free internal drainage (245 Avocat);
- ▶ soils of intermediate uplands with free internal drainage (361 Siparia, 63 Mayaro); and

- ▶ soils of intermediate uplands with restricted internal drainage (575 Moruga, 77 Ecclesville, 177 Talparo, 278/L Tarouba).

509 LA FORTUNE

La Fortune clay is the main soil type. It is a restricted drainage soil developed over deep swamp clay alluvium upon level relief. It occupies a total of approximately 317.6 hectares and is the most extensive soil type in the area. It is located mainly south of the Godineau River and between the Blackwater, Tennants, and Timuls Channels on an A slope. It falls under land capability class Ivw.

This soil is marginal for cultivation owing to flooding and waterlogging in the wet season. Minimum management practices are cambering, graded drains, and diversion channels. Recommended crop plantings in order of priority are rice, sugarcane, and food plants. Nutrient status is high.

609 SAN FRANCIQUE

San Francique clay is the main soil type. It is a restricted drainage soil developed over deep swamp clay alluvium upon level relief of Oropouche Lagoon. It occupies a total of approximately 137.1 hectares and is found in the area north of San Francique road and east of Timuls Channel and Tulsa Trace on an A slope. It falls under land capability class IIIw.

This soil is suitable for cultivation with strong limitations imposed by extreme wetness and salinity in the wet season. Minimum management practices are cambering, graded drains, diversion channels, and irrigation in the dry season. Recommended crop plantings in order of priority are rice, food plants, and sugarcane. Nutrient status is high.

115 GODINEAU

Godineau clay is the main soil type. It is a restricted drainage soil developed over deep swamp clay upon level relief. It occupies a total of approximately 199 hectares and is found in two locations, the larger area being at the junction south of the Godineau River and east of the La Fortune Pluck road and the smaller area bordering the Tennants Channel on an A slope. It falls under land capability class Vw.

This soil is not suitable for cultivation owing to annual flooding, waterlogging, and salinity. Minimum management practices are graded drains and diversion channels. The recommended crop planting is rice. Nutrient status is high.

25 MAHUT

Mahut sandy loam is the main soil type. It is a free draining soil developed over deep mixed sandy and clayey river alluvium upon level to gently sloping relief. It occupies a

relatively small area of approximately 3.6 hectares in one location, north of San Francique road and west of Timuls Channel on an A slope. It is not significant at this site.

139 CROMARTY

Cromarty clay is the main soil type. It is a restricted drainage soil developed over deep river alluvium upon level relief. It occupies a total of approximately 16.1 hectares and is confined to one area bordering San Francique road in the vicinity of Timuls Channel on an A slope. It falls under land capability class IIIw.

This soil is suitable for cultivation with strong limitations owing to excessive wetness in the wet season and dryness in the dry season. It is liable to flood. Minimum management practices are cambering, graded drains, diversion channels, and irrigation in the dry season. Recommended crop plantings in order of priority are food plants, sugarcane, rice, and pasture. Nutrient status is medium.

239 DEBE

Debe clay is the main soil type. It is a restricted drainage soil developed over deep river alluvium upon level relief. It occupies a total of 22.4 hectares and occurs in two areas, the larger area bordering San Francique road in the vicinity of Tennants Channel and the smaller area bordering La Fortune Pluck road south on an A slope. It falls under land capability class Iw.

This soil is marginal for cultivation owing to excessive wetness in the wet season and dryness in the dry season. It is liable to flood for long periods. Minimum management practices are cambering, graded drains, and diversion channels. Recommended crop plantings in order of priority are rice, sugarcane, food plants, and pasture. Nutrient status is medium.

245 AVOCAT

This soil series is not significant at the site since it occupies a very small area of approximately 1.4 hectares. It is therefore not considered.

361 SIPARIA

Siparia sand is the main soil type. It is a free draining soil developed over loose red or brown sand upon intermediate uplands with level of steeply sloping relief. It occupies a total of approximately 21.5 hectares and is found in three areas along San Francique road on C and D slopes. It falls under land capability class Ive (C slope) and Vle (D slope).

This soil is not suitable for cultivation owing to extreme desiccation in the dry season and to severe risk of erosion on steep slopes. Minimum management practice is contour planting. Recommended crop plantings in order of priority are tobacco and timber trees. Nutrient status is low.

63 MAYARO

Mayaro sand is the main soil type. It is a free draining soil developed over soft sandstone or conglomerate upon intermediate uplands with moderately to very steeply sloping relief. It occupies a total of approximately 3.8 hectares and is found in two small areas around Puzzle Island on a D slope. It falls under land capability class Vle.

This soil is not suitable for cultivation owing to the risk of severe soil erosion. It is best retained in natural forest.

575 MORUGA

Moruga loam is the main soil type. It is a restricted drainage soil developed over sandy-silty clay-shale upon intermediate uplands having gently to very steeply sloping relief. It occupies a total of approximately 28 hectares and is found in seven areas scattered over the site north of San Francique road. The largest area (10.4 hectares) is between Tennants Channel and Timuls Channel. It appears primarily on C and D slopes and falls under land capability class Ivw (C slope) and Ve (D slope).

This soil is marginal for cultivation owing to excessive wetness in the wet season, desiccation in the dry season, and risk of surface erosion on steep slopes. Minimum management practices are contour planting, contour drains, and gully barriers. Recommended crop plantings in order of priority are tobacco, cacao, citrus, food plants, fruit trees, timber trees, and pasture. Nutrient status is medium.

77 ECCLESVILLE

Ecclesville clay is the main soil type. It is a restricted drainage soil developed over variably calcareous clay-shale upon intermediate uplands with gently to steeply sloping relief. It occupies a total of approximately 11.3 hectares and is found in three widely scattered areas over the southern section of the site on C, D, and E slopes. It falls under land capability class Ivs (C slope), Vs (D slope), and Vle (E slope).

This soil is marginal for cultivation owing to shallow rooting depth and low permeability causing a high perched water table in the wet season. Minimum management practices are contour planting, contour drains, and gully barriers. Recommended crop plantings in order of priority are citrus, sugarcane, fruit trees, and pasture. Nutrient status is medium.

177 TALPARO

Talparo silty clay is the main soil type. It is a restricted drainage soil developed over variably calcareous gypseous clay-shale having moderately to steeply sloping relief. It occupies a total of approximately 35.6 hectares and is found in one area west of Tennants

Channel on C and D slopes. It falls under land capability class Ivw (C slope) and Vw (D slope).

The soil is marginal for cultivation owing to excessive wetness in the wet season and excessive dryness in the dry season. Minimum management practices are contour planting, contour drains, and gully barriers. Recommended crop plantings in order of priority are sugarcane, fruit trees, pasture, and timber trees. Nutrient status is medium.

SUMMARY: SOIL DATA ACREAGE (HECTARES)

SOIL	SLOPE				Total	CAPABILITY CLASS				
	A	C	D	E		Blw	Ivwes	Vwes	Vle	Total
509 La Fortune c	317.6				317.6		317.6			317.6
609 San Francique c	137.1				137.1	137.1				137.1
115 Godineau c	199.0				199.0			199.0		199.0
25 Mahut sl	3.6				3.6	3.6				3.6
139 Cromarty c	16.1				16.1	16.1				16.1
239 Debe c	22.4				22.4		22.4			22.4
245 Avocat sl			1.4		1.4				1.4	1.4
361 Siparia s		9.0	12.5		21.5			9.0	12.5	21.5
63 Mayaro s			3.8		3.8				3.8	3.8
575 Morugal		18.7	8.5	0.8	28.0		18.7	8.5	0.8	28.0
77 Ecclesville c		2.6	6.9	1.8	11.3		2.6	6.9	1.8	11.3
177 Talparo sc		115.0	114.3	5.0	234.3		115.0	114.3	5.0	234.3
278/L Tarouba c	17.8	17.8			35.6	17.8	17.8			35.6
Total	695.8	163.1	165.2	7.6	1031.7	156.8	494.1	355.5	25.3	1031.7

w = **unsatisfactory** water relations; land too wet or too dry.

e = degree of erosion **dependent mainly upon angle** of slope.

s = **unsatisfactory** inherent soil characteristics or qualities.

GOLDSBOROUGH ESTATE

Five soil series are identified on this site. They are: 13 Richmond; 16 Bacelot; 21 Hillsborough; 43 Hope; 45 Goldsborough. These soils are characterized as follows:

- ▶ heavy alluvial soils with moderately good to imperfect drainage (13 Richmond, 16 Bacelot);
- ▶ steepland soils with imperfect drainage (43 Hope, 45 Goldsborough); and
- ▶ miscellaneous land types—coastal beaches (21 Hillsborough).

113 RICHMOND

Richmond clay loam is the main soil type. It is an imperfect drainage soil derived from schist, volcanic, and ultrabasic rock having level to gently sloping relief. It is found bordering the Goldsborough River throughout its entire length through the estate on A and B slopes. It falls under land capability class IIw.

This soil is suitable for cultivation with easily applied protective measures which are concerned mainly with soil/water relationships. Minimum management practices are adequate drainage and fertilization. Recommended crop plantings are coconuts, cacao, bananas, citrus, food plants, and fruit trees. Nutrient status is medium.

16 BACELOT

Bacelot clay loam is the main soil type. It is an imperfect drainage soil derived from volcanic rock upon level relief. It is found in two small areas on both sides of the Windward road on an A slope and falls under land capability class 1.

This soil is suitable for cultivation with RO factors limiting its use. Any intensive cultivation must have a program of fertilization. Most agricultural crops are recommended. Nutrient status is high.

43 HOPE

Hope clay is the main soil type. It is an imperfect drainage brown or reddish deep soil developed over volcanic rock having gently to steeply sloping relief. It predominates on the estate. It lies on B, C, D, and E slopes and falls under land capability class IIe (B slope), IIIe (C slope), Ive (D slope), and Ve (E slope).

This soil is marginal for cultivation owing to an increasing proneness to erosion as slopes become steeper. Minimum management practices include graded drains, diversion channels, and contour planting. Recommended crops are bananas, cacao, coconuts, food plants, fruit trees, and pasture. Nutrient status is medium to low.

45 GOLDSBOROUGH

Goldsborough clay is the main soil type. It is physical similar to the Hope clay but differs in chemical constitution and a higher sodium content in the lower horizons. It occurs

in one area seaward of the Windward road on the eastern boundary on an E slope and falls under land capability class Ve.

This soil is not suitable for cultivation since it is severely eroded and is best maintained in natural forest.

21 HILLSBOROUGH

Hillsborough sand occupies the coastal beach of the estate and is therefore not considered.

Chapter 8**THE INFLUENCE OF THE CAPITAL MARKET
ON THE LAND MARKET AND LAND USE
IN TRINIDAD AND TOBAGO***by***Allan N. Williams and Andre A. Lashley
with Peter C. Bloch****INTRODUCTION**

As pointed out in chapter 1, the agricultural sector of Trinidad and Tobago continues to contribute to the national economy, but has become increasingly marginal. Land, the basic resource in agriculture, has not suffered a corresponding fall in value. It has changed ownership, its value has increased, its use has changed, and its economic functions have been redefined. The metamorphosis in the role of land has been a direct result of interaction between the capital market, where investment funds are acquired, and the land market, where economic forces determine the most remunerative use of this resource. Any major activity which affects the status of land in the economy, such as land tenure rationalization, will contribute to this evolution of the role of land.

The objective of the overall Land Rationalization Study is to provide input into the effort to clarify land rights and establish unambiguous titles in situations where they do not exist. A major expectation is that such an exercise would have a positive impact on the willingness of decision-makers in the capital markets to consider investment in land and especially in agricultural land. A study of the operation of the capital market and its influence on the role of land in the economy is, therefore, very appropriate background to the formulation of policy and legislation on land tenure rationalization.

The objective of this chapter is to provide answers to the following questions:

- (1) To what extent would clarity of title contribute to attracting more capital into agriculture?
- (2) Would a general upgrading of tenure lead to more investments in land or borrowing based on the value of land?

- (3) Could the costs of administration of land-based mortgages be reduced through a modernization of the Registrar General's Department and the Lands and Surveys Division? Through a modification of laws affecting security of leaseholds, freeholds, rentals? If so, how?
- (4) Do any current or past programs aimed at correcting some of the problems of an "imperfect" land market have the capability of maintaining broad-based and secure access to land?
- (5) What are the costs of mortgaging land with different types of title, and what have been the experiences of lending institutions with mortgaged loan repayment rates, the foreclosures of mortgages, in different parts of the country (especially comparisons between Trinidad and Tobago)?
- (6) What are the trends in land prices and dynamism of the land market in different parts of the country?
- (7) What has been the impact of the increase in the land tax, the Alien Land Ownership Act, and other recent institutional changes on the land market?

The approach we adopted was to interview individuals in key institutions active in the capital and land markets:

the major agricultural lender: the Agricultural Development Bank;
 commercial banks and affiliated long-term lenders;
 major mortgage financing institutions;
 land developers/project carriers; and
 large landowners.

Twenty-three interviews were conducted in the eight working days allocated to the study. From these interviews we were able to obtain some insight into the functioning of the capital market and the factors that influence decisions which channel investment funds into one sector or another of the economy. A list of the individuals interviewed is included in annex 8.1.

CAPITAL MARKET: OVERVIEW

Apart from government issues to raise general purpose revenue, the capital market in Trinidad and Tobago comprises three significant groups of actors. In the front line there are the short-term lenders. These include the commercial banks, the credit unions, and the development finance institutions. Second, there are the medium- to long-term lenders. These include the trust companies, mortgage and finance companies, and other institutions through

which long-term investment capital flows. Finally, there is the nascent secondary market for home mortgages.

There is no uniformity in the level of organization, information flow, or resources in each of these segments of the market. Their responses to land-based lending differ significantly. It became necessary to understand the orientation of decision-makers in each of these market segments in order to evaluate their assessments of the importance of tenure-related issues to capital flows in land.

INSTRUMENTS

The major instruments for channeling investment/loanable funds in the market are bonds, stocks, mortgages, and other loans. These are treated in turn below.

The **bond market.** Bonds are debt instruments used to fund current and future activities. They are a less costly and probably more stable form of long-term borrowing. Trinidad and Tobago does not have a formal bonds market; consequently the issuing of such securities requires the approval of the Capital Issues Committee, which advises the Minister of Finance. Once a more formal market is organized, this responsibility would most likely be placed into the hands of the stock exchange.

The bond market is dominated by Central Government issues. For instance, in 1988, the total value of bonds issued amounted to \$249.5 million. Of this amount, \$223.2 million or 93 percent were public offerings. The other 7 percent on the market was an issue of the Home Mortgage Bank. The public offerings were distributed as follows:

	\$ (millions)
Savings bonds	\$ 49.8
Floating rate bonds	76.2
Development bonds	75.0
Housing bonds	18.2
Funding agreements	4.0
Total	\$223.2

There have, however, been some recent changes in this market, the most significant of which has been the participation of the private sector. In the last two years, not only have we seen private bond issues, but we have also seen ample evidence of the abundance of funds currently available for investment. Since 1988, Central Government has greatly increased its new issues of bonds, but so have state corporations and purely private organizations:

Money and capital market primary market turnover

	1988	1989	1990	1991(Q1)
Government bonds	\$259.2	\$612.4	\$652.6	\$ 8.7
Other issues	26.3	253.3	323.6	235.0
State corporations	n/a	n/a	155.0	235.0
Other organizations'	n/a	n/a	168.6	0

Source: *Central Bank Quarterly Statistical Digest*, March 1991.

* Public loan issues of private organizations.

The recent history of oversubscription of bond issues is as follows:

- 11 April 1990 The ninth bond issue of the Home Mortgage Bank was oversubscribed by \$11 million. Originally intended to raise \$10 million, the issue raised \$21.19 million in two days.
- 24 May 1990 McEneaney Alstons' \$100 million bond issue was oversubscribed to the amount of \$115.33 million. This is the largest private issue to date, and was sponsored by the Royal Bank Trust Co. (Trinidad).
- 5 July 1990 The Home Mortgage Bank's eleventh bond issue was oversubscribed to an amount of \$12.995 million.
- 15 November 1990 The Home Mortgage Bank's twelfth bond issue was oversubscribed by almost \$3 million.

The liquidity in the financial system, evidenced by these successes in the bond market, should lead to renewed pressures to establish an organized bond market. This would include methods of enforcing full disclosure for investor protection and probably the standardization of minimum levels of required documentation. Once such a market is organized, it is probable that the most significant buyers would be the institutional investors such as the insurance companies, the trust companies, and the Trinidad and Tobago Unit Trust. All of these institutions have a steady source of funds to invest.

Opportunities for bond issues on behalf of private sector institutions and specialized institutions like the Agricultural Development Bank will be available. The key to successful participation in this market remains the trust and confidence in the performance of the issuing institution.

The stock exchange. The Trinidad and Tobago Stock Exchange began operations on 26 October 1981. After a lull in activity the market regained some momentum in 1989 and 1990. The Composite Price Index (CPI), which is a measure of this activity, has gained close to 35 percentage points, or over 70 percent, from 1989 to 1990; this followed an increase of about 50 percent from 1988 to 1989.

**T&T stock exchange:
composite price index**

1986	38.3
1987	39.9
1988	32.4
1989	48.7
1990	83.1

The momentum in the stock exchange is reflected by the fact that in April 1989, the GOTT was able to reduce its shareholding in the Development Finance Corporation from 94 percent to 43 percent in a special \$11 million share issue. The local private sector now owns 30 percent. The sales of the Unit Trust Corporation also give us some indication of the status of the stock exchange. This corporation, which resembles an American mutual fund, raises capital by selling "units" to the public, which it in turn invests in shares in various companies on the stock exchange. In 1989, the unit trust sales amounted to \$61.1 million. That was an increase of 102 percent over 1988 sales (\$30.2 million). By 1990, sales of units had risen by an additional 454 percent to \$338.7 million.

Mortgages. This is one of the most important instruments on the capital market, and has the most organized market. There are two recent developments that have strongly influenced the operations of the market for mortgages. The first is the establishment of the Home Mortgage Bank in 1986 and the consequent development of a secondary mortgage market. This secondary market has managed to attract funds from investors who would not have been interested in investing in mortgages. The second development is the Approved Mortgage Companies Act (No. 18 of 1989), which amended the Housing Act to enable commercial banks and trust companies to become "Approved Mortgage Lenders," lending to low- and middle-income first-time homeowners at moderate interest rates; in return, the financial institutions receive certain tax incentives.

The net effect of these two developments was to increase the number of institutions through which home mortgages at the lower end of the market, that is, below \$250,000, may be obtained at interest rates between 8 percent and 9 percent; this should be compared with the current long-term market interest rates of between 11 percent and 13 percent.

Short-term loans. The total value of short-term loans outstanding in the commercial banks has shown very little change over the last four years (1987-1990). As a result of this and the recent upturn in economic activity, the banking system has started to accumulate a significant amount of excess reserves. Thus, loanable funds are available and awaiting attractive opportunities.

**Actual liquidity position of commercial banks
(as of 31 December of corresponding year)
(in TT\$million)**

1986	-\$8.0
1987	-\$5.5
1988	+\$14.6
1989	+\$72.5
1990	+\$105.2

Source: *Central Bank Quarterly
Statistical Digest*, March 1991.

Trinidad and Tobago appears to be well on the way to developing a sound capital market. There is a substantial capital base with active investors, as is evidenced by the dynamism of both bond issues and the stock exchange. Secondly, the institutional structure and the financial instruments exist for ready access to the capital market at all levels: for the major investor, through home mortgages to the recipients of short-term credit. The only significant component missing is a more widespread secondary market in commercial paper. The example of the Home Mortgage Bank's efforts to stimulate the primary home mortgage market is a very encouraging development.

INSTITUTIONS

Private commercial institutions. There are four distinct institutional structures within the capital market through which investment funds can flow in the short, medium, and long term: (a) commercial banks; (b) financial houses and merchant banks; (c) trust and mortgage finance companies; and (d) credit unions.

Through a variety of financial arrangements, these institutions enhance and/or alter the uses in which land is employed. At present, much of agricultural borrowing is financed through short-term credit and is used to finance annual or seasonal input purchases. The larger investments that bring about a transition in land use from agricultural to other commercial uses (tourism) or to residential uses are financed through medium- to long-term credits. The relevance and significance of land tenure in the determination of investment flows differ among these institutions depending on their objectives and financial strategies.

COMMERCIAL BANKS. There are 9 major commercial banks with approximately 120 branches throughout Trinidad and Tobago. Two banks predominate, the Republic Bank and the Royal Bank, which together account for close to 50 percent of all banking activity. They are, however, not always the leaders in banking innovation. It was the National Commercial Bank, a newcomer to the system in the last 20 years, that introduced 90 percent financing on projects. This has become widespread today.

FINANCIAL **HOUSES AND MERCHANT BANKS.** There are 11 such institutions in the system. Although the total value of real estate loans from these institutions is less than 10 percent of that of the commercial banks, they do play a significant role where land is concerned. Financial houses and merchant banks are more likely than any other institutions to be the source of funding for the acquisition of large tracts of land.

TRUST AND MORTGAGE FINANCE COMPANIES. There are 7 trust and mortgage finance companies. They are all connected to the major banks in the financial system. Although statistically they are grouped together by the Central Bank Statistics, in recent times the trust companies have been operated separately from the mortgage finance companies. This makes sense particularly because these two sets of institutions obtain their money differently and have vastly different orientation with respect to the use of their funds.

The trust companies manage large volumes of pension funds. With a constant inflow of funds, their orientation is more in terms of long-term investments. These are the institutions that are attracted to the secondary markets and are very active in the secondary market for home mortgages (Mortgage Participation Certificates). Indeed, if these institutions are to participate in channeling funds into the agricultural sector, it will probably be through trading in agricommercial paper in a secondary market.

CREDIT UNIONS. The credit union movement is widespread in Trinidad and Tobago with institutions of varying sizes and orientation. Some of the credit unions are industrial-based, meaning that they involve primarily members of a specific industry or enterprise. Others are more community-based, with membership that spans all income levels. The tendency has been for the larger credit unions to open up their membership to the community at large. Assets amount to over \$1 billion, and the institution counts one-fourth of the population as members.

Development finance institutions

THE AGRICULTURAL DEVELOPMENT BANK. The Agricultural Development Bank (ADB) is the modern-day successor to the Agricultural Credit Bank (ACB), an institution formed for the specific purpose of supporting plantation-type export agriculture centered around the production of raw materials, such as sugarcane, coffee, and cocoa. Before ADB was established, agricultural credit was available primarily to large landholders to support export crop production and purchase additional land.

In 1968, the ADB inherited a portfolio of TT\$5 million from the ACB. During the next twenty years, from 1970 to 1990, the bank injected a total of \$460.4 million into the local capital market through the disbursement of loans to the agricultural, fishing, and agro-industrial sectors. These funds, in the main, were derived from interest-free advances of the GOTT. Some 50 percent of these funds were concentrated during the period 1978-1982, which coincided with the "oil boom."

With the changing fortunes of the GOTT thereafter, the flow of resources declined drastically to the point that there was a complete halt in 1986. Subsequently, capital injections other than ADB's own resources were of foreign origin and at high cost. These were loans of TT\$40 million from the Caribbean Development Bank (CDB), repayable at an interest rate of 9.5 percent per annum, and the from the Inter-American Development Bank (IDB), \$TT114 million at 8.5 percent.

Not only were the funds for lending very costly, but these funds were heavily circumscribed by conditionalities, most notably the inability to lend for the purpose of purchasing land. ADB's position and approaches in the local capital market have thus been forced to change, most visibly in the upward movement of the interest rates it charges on loans. During the "boom" period and before, cooperatives had been able to borrow at 1 percent per year and individuals at from 3 to 6.5 percent; currently cooperatives face a 10 percent interest rate and individuals, 12 percent. These rates are still highly concessionary, since the average commercial lending rate to agriculture is 14.75 percent, about 1.5 points above the prime rate.

PUBLIC-SECTOR MORTGAGE FINANCING INSTITUTIONS. During the 1980-89 period there have been four major public sector and affiliated agencies involved in mortgage financing with the explicit purpose of making lands available for shelter to lower income persons: the National Insurance Board (NIB); the Sugar Industry Labor Welfare Committee (SILWC); the Trinidad and Tobago Mortgage Finance Company (TTMF); and the National Housing Authority (NHA).

Among these, the NIB has been the most active, accounting for about 40 percent of the loans approved and 61 percent of the total value of approved mortgages during this period. In this section, we discuss all of these agencies except for SILWC, for which we were unable to gain information.

THE NATIONAL INSURANCE BOARD. The National Insurance Board (NIB) entered into the mortgage market by having all of the commercial banks act as its agent. Thus, the commercial banks did the screening of applicants and the administering of the mortgages for a service fee. This management fee, which averages about 10 percent of the mortgage investment income, cost the NIB \$10.9 million in 1989. This cost was reduced in 1990 by 20 percent to \$8.7 million.

Mortgages financed by government and quasi-government institutions, 1980-1989

Agency	No. of loans approved	Value of loans approved (\$ million)
NIB	7,281	\$1,358.1
SILWC	1,532	34.6
TTMF	3,561	578.3
NHA	5,622	316.6
Total	17,996	\$2,287.6

Source: "Restructuring for Economic Independence: Medium Term Macro Planning Framework, 1989-1995," p. 151.

The experience of the NIB with this arrangement has not been very encouraging. There has been a high rate of delinquency in repayments. As a result, the NIB is reviewing this arrangement with a view to introducing substantial changes. It is quite clear that in the new arrangements, the performance of the loans will be a key indicator.

The net result of its experiences is that the NIB is actively seeking to improve the performance of its portfolio. This swing of the NIB out of mortgages is quite justifiable from a portfolio management point of view. Analysis of the portfolio yields for 1989/90 show the cash yield on mortgages ranking fourth at 6.7 percent, while accounting for about 53 percent of total cash income from investment during that period.

Portfolio yield 1989/90		
Investment	Cash income	Cash yield
Government securities	\$15,326,106	9.7%
Fixed deposits and savings	\$40,312,830	8.5%
Other bonds	\$ 2,857,201	8.3%
Mortgages	\$80,750,620	6.7%

Source: National Insurance Board, "1989-1990 Annual Report," p. 31.

Financial prudence has demanded that the NIB move more toward these higher yielding securities, particularly fixed deposits. This movement is starting to show up in the comparative statistics on its investments during the period 1987/88-1989/90, and NIB estimates that mortgages' share plunged by 1990/91 through the sale of Workers Bank mortgages back to the Workers Bank (1989).

NIB investment portfolio at cost, 1987/88-1989/90
(percentage of total)

	1987/88	1988/89	1989/90	1990/91
Mortgages	55.01	52.09	50.0	35.0 (approx)
Fixed deposits	17.96	19.38	21.0	n.a.
Government securities	6.15	6.17	7.0	n.a.

Source: National Insurance Board, "1989-1990 Annual Report," p. 30; and NIB staff estimates for 1990/91.

The future role of NIB will probably be determined by two overriding objectives. The first will be to increase its portfolio yield, and the second, to increase the average term of its investments. Pursuit of this would place NIB more in secondary market operations, although it is hardly likely that this institution can relinquish its development objectives. After all, NIB collects approximately \$200 million annually from employee contributions throughout the nation. We can therefore expect the largest holder of mortgages to be moving more toward the secondary markets as well as long-term investments.

TRINIDAD AND TOBAGO MORTGAGE FINANCE COMPANY. The Trinidad and Tobago Mortgage Finance Company (TTMF) was established as an approved mortgage company under Schedule VII of the Finance Act No. 29 of 1966, Section 55, and Part II of the Housing Act, Chapter 33:01. The company is authorized to provide loans on properties where the purchase price or cost of construction of such properties inclusive of the cost of the land does not exceed \$250,000. This means that institution focuses primarily on mortgages at the lower end of the market.

The company extends loans under a very competitive interest rate structure, which is as follows:

Properties not exceeding \$150,000	8.0%
Properties between \$150,000 and \$200,000	8.5%
Properties exceeding \$200,000 up to \$250,000	9.0%

This compares very favorably with the residential mortgage rate of the trust and mortgage finance companies, which was 11.25 percent (median) in first quarter 1991.

Loans from the TTMF are made to first-time homeowners who must occupy the property. The TTMF finances up to 90 percent of the cost of the project. However, the company does not provide *finance* during the course of construction. Applicants are required

to make their own arrangements for bridging finance pending the completion of construction; TTMF will facilitate such arrangements with private financial institutions.

The company has a cumulative mortgage portfolio just exceeding \$500 million (1989). Over the last 3 years it has extended mortgages at a rate of about \$40 million annually. Calculated at an average loan of about \$150,000, this amounts to 260 loans annually. With the change in the emphasis of the National Insurance Board, it appears that the TTMF will become the major developmental institution operating in the home mortgage market at the lower end.

THE NATIONAL SETTLEMENTS PROGRAM. The National Settlements Program is aimed at helping low-income and landless citizens of Trinidad and Tobago obtain shelter. The focus is on supplying developed lands at affordable prices, and as an integral part of this service, promoting viable and self-sustaining communities. The program has two parts. The first is funded by government resources and implemented by the National Housing Authority. The second is being funded under a loan agreement (584/OC-TT) with the Inter-American Development Bank.

The National Housing Authority Settlements Program. The National Housing Authority (NHA) was established by Act No. 3 of 1962. The main objective was to provide housing to lower-income persons at prices they could afford. The main functions of the NHA were very wide and included construction management, housing construction, mortgage financing, land development, property acquisition, property management, and research and planning.

The original emphasis of the NHA was to provide rental housing on a very large scale. In 1987, however, there was a policy shift. NHA now limits itself to providing building lots for individuals to start their own construction efforts. Even with this change, the NHA continues to be a major player in the process of the acquisition of land for shelter purposes.

The IDB funded National Settlements Program. The IDB-funded National Settlements Program is being administered and implemented by the Project Execution Unit (PEU) of the Ministry of Settlements and Public Utilities. The program incorporates the provision of three basic elements: fully serviced building lots, shelter construction financing, and community facilities.

Sixteen sites comprising a total of approximately 5,000 lots have already been identified for development throughout Trinidad and Tobago. Land development works have already commenced on three sites comprising some 2,000 lots. These are:

SITE	LOTS
Bon Air West (Arima)	820
Couva North (Phase 1)	650
Harmony Hall	530

By October 1991, development work will begin on another 1,593 lots. These will be:

SITE	LOTS
Debe Phase 2	177
La Paille (Caroni)	160
Union Hall (San Fernando)	733
Malabar Phase 4/2	523

The funding from the IDB for the construction of dwelling units is budgeted at US\$25 million. These funds will be channeled through the TTMF and disbursed under its current lending conditions. Loans are expected to be in the neighborhood of \$15,000-\$70,000.

THE HOW MORTGAGE BANK. The Home Mortgage Bank (HMB) was set up in 1987 to create a secondary market for home mortgages and to provide a source of funding for low interest rate mortgages. The primary function of the Home Mortgage Bank is to buy and sell mortgage loans, thereby creating an organized secondary market for mortgages.

HMB buys mortgages from a set of approved lenders who are chosen on the basis of their ability to originate and service mortgage loans and who have a sound financial position. In purchasing these mortgages, the bank issues a deed of sale and administration. It is through this instrument that the primary lender continues to administer the mortgages after the sale. The primary lenders also indemnify the Home Mortgage Bank against nonperforming loans.

The mortgages bought by the Home Mortgage Bank from the primary lenders are all for homes of values less than \$400,000, with interest rates ranging between 8 percent and 9 percent for homes up to \$250,000. The HMB itself receives tax incentives from the state to facilitate its operations within these rate structures. The primary lenders, on the other hand, are oriented toward the fee income earned from originating and administering the loans rather than on the actual yields. Furthermore, the indemnity clause ensures that the originating lender uses prudent standards in assessing its clients so that the HMB purchases sound high performance mortgage loans.

On the other side of the market, **HMB** sells Mortgage Participation Certificates (MPC) to long-term investors. These are securities that represent an undivided interest in a specified pool of mortgages. HMB will remit to the holder of the MPC each month the scheduled payment of principal on the mortgages less the amount retained for servicing by the approved lender and the Home Mortgage Bank.

DYNAMICS OF THE LAND MARKET

TRINIDAD

Land values.

AGRICULTURAL LAND. The land market in Trinidad is highly segmented. It is segmented by use—agricultural, residential, and commercial; and by location—urban lands, pen-urban growth areas, and rural areas.

Agricultural land in Trinidad sells for between \$6,000 and \$20,000 per acre, depending on its location and its capability. The demand side of the market for agricultural land does not appear to be very active. One indication of this is the difficulty that the Agricultural Development Bank experiences in attempting to sell various parcels of land it has acquired from defaulting borrowers.

Many of the large parcels for sale appear to be abandoned cocoa and coconut estates. These two crops have declined significantly in economic value over the last decade. Unfortunately, there has been no other crop that has replaced them in terms of economic interest. Some activity is being witnessed on large farms in the growing of watermelons and cut flowers, both for the export market, and in beef production.

Prices of agricultural crops have not increased very much over the last three years, whereas costs—especially labor costs—have risen substantially. Thus, there is little economic incentive to expand production; estates tend either to stay in existing tree crops or to remain idle. Praedial larceny is also a factor mitigating against large-scale crop production. In fact, there is concern that the development of communities on previous agricultural lands could intensify this problem on adjacent productive lands.

Nonagricultural alternatives for these lands are numerous. Some owners have moved into such spheres as horse rearing, while others have attempted to parcel out the land into 5-acre lots for sale as farmsteads. These are not meeting with any enthusiastic demand. The preferred use would be to convert most of this land into residential lots, but this is constrained by the zoning regulations of the Town and Country Planning Division. The major problem faced by owners of large estates is uncontrolled squatting, which could, through adverse possession law, endanger their continued ownership of those portions of their land so occupied.

RESIDENTIAL PROPERTY. The value of residential property also varies significantly by location. There is a strong demand for house lots in the vicinity of the capital, Port of Spain. To the west of the city, where land is very scarce and where private development has been targeted at **higher-value** houses, residential lots can vary in prices between \$22 and \$30 per square foot. To the east, in the borough of Arima, with two reliable arteries into Port of Spain, prices are much lower, ranging between \$8 and \$12 per square foot. Lots tend to be about 5,000 square feet, though the public has shown a tendency to resist paying in excess of \$50,000 for land for housing whatever the size of the lot.

The market for residential property was in a slump for the last eight years, but currently there are an increasing number of signs of an upturn in this market. Sales in west Port of Spain have picked up, and the expectation is that with the completion of the widening of the Churchill-Roosevelt highway to Arima, the market in that area would receive an additional boost.

Land tax. The land tax of \$25/acre was aimed at forcing unutilized lands into productive activity, preferably agricultural. It has not had that effect to date. One of the reasons for this is that the options in agricultural use of land are not very attractive economically at current market prices. One of the major economic obstacles to establishing large crop acreage is the resulting high labor costs of harvesting. Mechanical harvesting not only is an unpopular option in Trinidad agriculture but also has some terrain and crop limitations.

Another option to increasing the utilization of land by large landowners would have been to rent out parts of it to landless farmers. Even though lands may be left idle, there is very little incentive in Trinidad and Tobago to rent lands to tenants for productive purposes. Law 45 of 1981, the Land Tenants Security of Tenure Act, has made the process of removing a tenant very difficult. The legal advice that is generally given to large landowners is that it is better not to have anyone settle on the land in the first place. Thus, in spite of the land tax, landowners have maintained their land unutilized, speculating that they will be able to sell the property at a higher price for nonagricultural uses. The result is that a considerable amount of agricultural land has been lost to other uses. This amount has been estimated to be about 11,000 hectares or 8 percent of the *1982 Agricultural Census* estimate of agricultural lands.

Settlements. Squatting appears to be as serious a problem on private lands as it is on state lands: it is estimated that there are about 25,000 squatter families on private lands; about the same number is present on state lands. Squatting occurs on both large and small estates. In some cases it has occurred when the Government has stated its intention to acquire the land but has been very slow in actually taking possession. An example of this is River Estate in Diego Martin. The Government is planning to acquire this tract of land from the University of the West Indies (UWI). As a result, UWI, which is still the current owner, does nothing about the squatting problem.

The only viable solution to squatting on private land appears to be an agreement with either the Settlements Ministry or the National Housing Authority to develop a regularization program for the settlers. The Bon Air Estate, which was owned by the Home Construction Company, is being developed by NHA as one of its squatter settlements program. The company is hoping to develop the other parts of the estate not occupied by squatters into residential lots. Caroni, Limited, which reportedly has some 8,000 squatters on its lands, is also developing a settlements program to regularize their tenure over the next 3 years.

When such arrangements can be worked out, landowners appear to be very happy to resolve the issue. However, there are some very strong objections from others who are not currently experiencing a squatting problem. They argue that in most cases they are prevented by the zoning regulations from altering the use of their land, while squatters can illegally occupy the land and have the state, through its settlements programs, effectively alter its zoned use. This is done because in these circumstances state officials believe that it is politically more expedient to change the land use specification than to enforce the zoning regulations. This to them is an infringement on their right of use of property.

Land development. The general impression is that land values in Trinidad can be expected to appreciate at about 3 percent per annum in real terms under normal circumstances. However, with the option to change land use, with possible financing from the capital markets, and with the demand for new housing units reportedly at 7,000 units per year, land as a form of savings is more attractive than most other assets.

One interesting observation about land development in Trinidad is that it appears that the minimum standards necessary for developing a set of small farms with access roads, water, and so forth, makes it attractive enough to be sold for lower-income housing. While agricultural land in 5-acre plots may be able to be sold for about \$1.25 per square foot, if it is developed further at an additional cost of about \$4 per square foot, it could be sold as residential lots for about \$10 per square foot.

Generally the developers are responsible for a substantial amount of infrastructural development in the process of land development. For instance, the developer has to show how drainage plans would lead to an unimpeded flow through the area and through the main arteries into the sea. Sometimes squatter activity at higher elevations imposes additional costs in terms of upgrading the drainage facilities.

One problem with private land development is that the local government authorities do not immediately take up the responsibility for maintaining the infrastructure such as roads and drainage systems. A developer with unsold lots may maintain these facilities. However, once the lots have been sold, the developer is not obliged to do so. This could lead to a rapid deterioration of these facilities and as such affect the ability of the current owners to attract new buyers.

TOBAGO

Changing landownership. There are three factors affecting the land market in Tobago. The first is the pattern of settlements. Most of the villages in Tobago are on the periphery of large estates. They developed historically in relation to the economic activities that were conducted on these estates. Now that some of these villages have expanded, they are finding themselves with no access to additional lands. In Charlotteville, for instance, most of the land adjacent to the village belongs to one large estate. In Roxborough, the Government bought the adjacent estate, and as a result it was able to provide land for the construction of a school. Currently there are twelve estates owned by the state, which in effect means that access to state-owned property is unquestionably part of the solution to land access constraints in Tobago.

The second factor affecting the land market has to do with the employment pattern in Tobago. With the decline of the estates, agricultural employment also declined. Most young, educated, and enterprising Tobagonians migrated to Trinidad or beyond. Today, it is reported that the Government of Trinidad and Tobago and the Tobago House of Assembly account for about 65 percent of the employment on the island. The unemployment rate is estimated to vary between 18 percent and 35 percent in the various parishes. The current patterns of landownership and use do not provide employment opportunities.

The third factor is that of foreign ownership. There has always been some element of ownership of land by nonnationals of Trinidad and Tobago in Tobago. Now, with the Foreign Investment Act of 1990, which replaced the Alien Landholding Act, this activity is not only in the open but apparently increasing. In fact, we have been advised that land is even being advertised in overseas newspapers. Thus, the demand for land in Tobago is not simply a local demand of nationals but involves foreign money, which tends to push up the price.

Up to now, most of the market activities have been in the triangle defined loosely by Scarborough, Storebay, and Plymouth. Some of the large estates in these areas have recently been bought by major companies in Trinidad and Tobago. The main objective has been for tourism-related development. There is one interesting exception, in which the Mt. Pleasant Credit Union bought the Bon Accord Estate for a mixed-use development including housing, homesteads, tourism, and conservation.

Much of the triangle area's potentially developed land borders on the sea and also includes some mangrove swamps, which are an essential part of beach and reef ecology. There has been much concern expressed nationally about the pace of development of these lands and its likely effects on the natural resources. Fortunately, the Tobago House of Assembly has accepted most of the recommendations made by the Institute for Marine Affairs concerning land use patterns, which have had the effect of stopping new beachfront hotel development.

Prospects for agriculture. There do not seem to be very good prospects for agricultural development in Tobago. More than the landownership pattern, this is related to the social development of the island. Tobagonian farmers have a tradition of estate labor, with little experience in producing their own crops for sale. Currently, the major agricultural activities with commercial potential are fishing and small ruminants, both of which are indigenous to the cultural pattern of Tobagonians.

The migratory pattern and the very slow population increase have denied the island a substantially growing local demand for food. The population of Tobago is reported to have increased from 38,000 in 1980 to 43,000 in 1990. At the same time, an estimated 250,000 Tobagonians live in Trinidad. Thus, the island has avoided the pressures that can be placed on land by a rapidly growing population. In addition, the average age of the small farmer in Tobago exceeds 50 years, and the farming population comprises mostly retirees.

The hotel industry, which one might assume to represent a lucrative market for fresh produce, appears not to demand such inputs. One reason offered is that the hotels are concerned with predictable supplies, which the small farming population is unable to provide. There are a few exceptions in specialty crops such as bananas, which are produced in Charlotteville and marketed by a single individual to several of the luxury hotels.

Land prices. There is wide variation in land prices in Tobago. For instance, in the area developed by Sou Lands, Ltd., for housing, developed land was sold for \$1.16 per square foot (\$7,000 for a 6,000 square foot lot) one year ago. In an adjacent area called Motmot, land is being sold for \$15 per square foot today. Another example is the Mt. Irvine area, which is already developed with a major hotel and golf course. House lots in that area were selling for \$1.20/square foot in 1970 and \$4/square foot in 1990; in 1991, the price is \$12/square foot.

One finds a similar type of escalation of prices for agricultural lands, although probably not for agricultural purposes. In Englishman's Bay on the leeward side, agricultural land is selling for \$40,000/acre, while in Mary's Hill the going price is \$33,000/acre. Both of these areas are elevated and command an excellent view. In another case, where an estate with beach access was purchased within the past twelve months for 8 cents per square foot, undeveloped land is now being advertised in newspapers in the United States and the United Kingdom for \$3.21 per square foot—better than a 4000 percent increase.

The principal explanations for the recent rapid increase in land prices are the heightened interest in tourism development and the current easing of restrictions on foreign ownership of land due to the Foreign Investment Act. When these are added to the pent-up demand for housing, it is clear that land is rapidly becoming too valuable for use in agriculture.

CONCLUSION

The land market in Trinidad and Tobago is becoming more active. It appears, however, that the pressure will not be coming from a demand for land for agricultural use. The growing demand for shelter will continue to put pressure on existing lands regardless of their current use. If, as in the past, the market does not provide access to land for housing, nonmarket actions, such as squatting, are inevitable.

The tenure rationalization process should serve to clarify some of the current problems that have arisen from such nonmarket approaches. In addition, the secondary market in home mortgages will channel more funds at lower interest rates (8-9 percent) into the financial system to be used to assure broad-based access to land. It has also been shown that individuals through their indigenous saving institutions (credit unions, Sou) can effectively use the capital markets to gain access to land for the private use of their members.

It is important that the institutional structures and incentives that continue to maintain a broad-based access to the land and capital markets be promoted. The failure of this would result in the re-creation of conditions that have historically given rise to the tenure problems of today.

INFLUENCE OF THE CAPITAL MARKET ON AGRICULTURE AND THE LAND MARKET

AGRICULTURAL LENDING

Private-sector institutions. The commercial banks and other private financial institutions do currently contribute to financing the agricultural sector, roughly in proportion to agriculture's 3 percent share of gross domestic product (GDP). While overall lending has been stagnant even with the return of relatively rosy economic prospects, agricultural lending has recently grown at a substantial rate of nearly 10 percent over the year 1989-IV (fourth quarter 1989) to 1990-IV. As the table below also shows, this growth has been dwarfed by that of mortgage lending, which grew by more than 20 percent over the same period.

The main obstacle to private bank lending to agriculture is risk. Primary production is inherently more risky than intermediate or final agroindustrial processing, because of marketing and climatic uncertainties. Thus, the banks, which do not boast very much in-house expertise in primary agricultural production, prefer to finance agriculture at the stage of agroprocessing or to finance machinery and equipment in lieu of financing the production process at the primary level.

**Total loans outstanding to agriculture and real estate mortgages: commercial banks,
trust and mortgage finance companies, and finance houses and merchant banks**

	1989		1990				% Change 1989 IV 1990 IV
	III	IV	I	II	III	IV	
Agriculture	253.7	272.9	281.6	288.1	294.0	298.1	9.2
Mortgages	969.7	950.2	1026.1	1213.2	1102.7	1204.6	24.2
Overall total lending	7855.7	7882.2	8014.0	7828.8	7634.0	7998.9	1.4
Percentages of Total							
Agriculture	3.2	3.5	3.5	3.7	3.9	3.7	
Mortgages	12.3	12.1	12.8	15.5	14.4	15.1	

Source: *Central Bank Quarterly Statistical Digest*, March 1991.

It is, however, at the primary production stage that the issue of land tenure becomes of some importance. On the one hand, from the current perspective of private banks, the clarification of land tenure appears to be of little relevance to their financing decisions. On the other hand, there are some interesting developments that tend to suggest that this position is not indicative of the future. It appears that the branch managers of at least some of the commercial banks have some autonomy of decision-making in lending. Some of them, in both Trinidad and Tobago, have been lending for agricultural projects without insisting on land title as security. In addition, some of the major banks appear to be using some sort of quota system to gauge the performance of their branches. To the extent that this quota is sectorially defined, we may find local managers being forced to consider agricultural loans to meet their quotas. In this case, the clarification of tenure might well have a positive impact on agricultural loans.

Once the tenure obstacle has been removed, the principal criterion for a loan will be the marketability of products, which is, of course, very appropriate. Interviews with commercial bank managers tend to confirm this concern with markets. In the cases where the commercial banks are funding primary production, the products have been rice, poultry, dairy, and sugarcane. These commodities have one thing in common: they are very sound marketing arrangements.

Another issue is the scale of operations that will become eligible for funding after tenure rationalization. Our expectation is that tenure rationalization will legitimize more landholders in the category of 5 acres and less than in any other scale category, because estates and large commercial farms tend to have good title already. The prevalence of small-scale loan applicants should not be a problem. The institutional structure is already in place to support and encourage local branch bank managers to consider such small enterprises in the form of the Small Business Development Corporation, which guarantees up to 70 percent

of small business loans. A Mortgage and Finance Company manager suggested that extension of this principle to agriculture would increase private lenders' interest in the sector.

The potential does, therefore, exist for the clarification of land titles to attract more capital into the agricultural sector through the commercial banks. It likely resides more within the initiative of the local branch management than in official bank policies. That notwithstanding, we will expect on the whole that there will never be a boom in agricultural loans from private institutions, because agricultural loans as a group are likely to have a lower cash yield than many alternatives.

The Agricultural Development Bank. ADB is the single largest lender to the agricultural sector, having disbursed over \$450 million since 1970, of which \$330 million was loaned during 1980 to 1990. As the following table shows, ADB has lent for a much broader range of projects than have private banking institutions. But in recent years, the latter

Budgeted loans program by activities, 1989-1991
(\$ thousands)

	1989	1990	1991
Cereals	3,200	4,570	2,710
Roots and starches	1,496	1,360	1,710
Vegetables	4,582	3,430	3,210
Pulses and nuts	831	370	265
Fruits	3,832	2,760	2,464
Cocoa/coffee	2,322	1,390	2,030
Sugarcane	479	750	2,400
Condiments	330	290	395
Other crops	316	330	410
Plant propagation	445	280	295
Poultry	1,373	980	1,630
Dairy	3,944	3,430	4,350
Beef	1,605	1,290	855
Pigs	1,090	1,150	1,310
Sheep and goats	2,543	2,450	2,165
Other livestock	560	70	400
Bees	418	390	420
Forestry	130	20	485
Fish	10,596	9,330	7,760
Agriculture, n.e.s.	2,578	910	1,735
Agroindustry	17,679	9,920	11,355
Agricultural societies and cooperatives	2,578	1,880	1,100
Horticulture	7,195	8,220	5,380
Marketing	3,428	1,340	1,785
Total	73,550	56,880	56,619

estimate that their portfolio is of the same order of magnitude as ADB's, one representative stating that "ADB is exclusively for agriculture, but agriculture is not exclusively for ADB." Still, unlike the private banking sector, ADB's mission has included development, not just high and riskless returns. This helps to explain ADB's current financial difficulties.

ADB is also constrained by its funding sources. Whereas it does possess the ability to accept deposits, the mechanisms for the acceptance and management of such deposits have never been put into place. Without the private banks' source of deposits, it has had to rely on government funds and recently loans from the Caribbean and Inter-American Development Banks. These latter loans are both costly and restrictive: ADB cannot lend, as it has in the past, for land acquisition alone. The second table shows the practical disappearance of land purchase loans due to both CDB's and IDB's restrictions and to the slump in the land market after the early 1980s.

Funding of land acquisition, 1980-1990
(\$ thousands)

Year	Value
1980	4,200.0
1981	6,903.5
1982	15,624.2
1983	2,219.5
1984	2,597.6
1985	790.5
1986	1,094.0
1987	1,677.8
1988	1,495.2
1989	672.2
1990	430.0

Source: ADB Statistical Reports, 1980-1990.

Over the period, ADB funded \$37.7 million in land purchases, about 11.3 percent of its total lending. Assuming that the average transfer price of a hectare of land over the period was TT\$12,000, the conclusion is that ADB was involved in the transfer of about 3,000 hectares of agricultural land. This represents approximately 2 percent of all agricultural land in Trinidad and Tobago and is an unknown, but undoubtedly substantial, portion of all agricultural lands transferred during this period.

REAL ESTATE MORTGAGE LENDING

While the commercial banks may be lukewarm about agricultural loans, real estate mortgages have been increasing. As the next table shows, outstanding mortgages in the commercial banking system increased by 55 percent between 1988-IV and 1989-IV. This is a direct result of Act 18 of 1989, which made the banks approved mortgage lending institutions. Previously, the banks had provided only short-term bridging finance for homeowners who could afford it. By 1990-IV, outstanding mortgages had increased by an additional 32 percent. Loans by the rest of the private financial system increased as well but by lesser amounts.

Commercial banks' outstanding real estate mortgage loans
(\$ million)

Quarter	1988	1989	1990
I	\$450.6	\$468.7	\$ 883.9
II	\$475.8	\$828.0	\$1,022.0
III	\$479.3	\$811.1	\$ 931.0
IV	\$475.4	\$809.6	\$1,010.5

Source: Central Bank Quarterly Statistical Digest.

It appears that this rapid increase in mortgage lending does not reflect an orientation toward an especially high-yielding asset, but rather an orientation toward management and service fee incomes. The Home Mortgage Bank, by stimulating the secondary market for mortgages, is the institution most responsible for this orientation. It is within this context the land regularization activities are likely to make an impact.

Title regularization, especially where it is part of the settlements programs, is likely to bring into the market landowners who may be anxious to build or improve on their dwelling units at a cost of \$150,000 or below. Both the settlements programs and the Home Mortgage Bank offer the commercial banks an economically attractive return to originate such mortgages.

Title regularization alone will not be enough, however; the provisions of the title may have to be changed. The current leasehold title, which state institutions such as NHA are issuing, appears to be too restrictive to be of use by the private mortgage lenders for two reasons. First, the NHA leases allow for the rental payment on the land to be reviewed after five years, which casts a shadow on the income calculations. Second, the lease cannot be reassigned without the prior consent of the state. This means that these leases are not easily transferable and are not an effective instrument for securing loans.

The impact on the land market of this new willingness of private financial institutions to lend for housing is stunning. In recent years, as urban centers have grown in population and needed room to spread, most housing construction has been on land which had formerly been in agriculture. Residential and commercial land is inherently more valuable than agricultural land, and the capital market provides mechanisms for conversion. To illustrate this point, a 200-acre parcel of land in agricultural use in eastern or central Trinidad may be valued at about \$6,000 per acre. Short-term financing for such uses can be obtained from the Agricultural Development Bank or the commercial banks, but only if there are attractive projects. An individual wishing to buy this acreage for speculative purposes may be willing to pay as much as \$30,000 per acre. Such financing would have to come from either the commercial banks or the merchant banks and financial houses. If such financing is obtained, agricultural activities are halted. Once the land is not in actual agricultural use, and assuming that Town and Country Planning does not object, an enterprising land development company may be willing to pay \$140,000 per acre for this property and obtain financing from the same sources to do so. The land thereby moves into residential or commercial use at a value equivalent to \$3.50 per square foot. If we add another \$4/square foot as development costs, this company can develop and sell this land at \$10/square foot, or over \$400,000 per acre, with a respectable gross margin. These developed lots can be financed by any of the approved mortgage companies.

In Tobago, the conditions are similar, although the process is not as complicated. For example, a developer could currently acquire 20 acres of land and develop them into residential lots for about \$5 million. The costs would be as follows:

Land acquisition, 20 acres @ \$40,000	\$ 800,000
Land development, @ \$4.5/sq ft	\$3,600,000
Other expenses allowance (+13.6%)	\$ 600,000

Those 20 acres of land can now provide a maximum of 133 lots at 6,000 square feet per lot. If we exempt 13 lots, that is, approximately 78,000 square feet, for recreation, community structures, and essential infrastructure (roads, sewerage facility, and so on), we are left with 120 lots to sell. A price of \$10/square foot for residential property is at the lower end of the scale in Tobago. Thus, the gross sales from this property would be 120 lots, @ \$60,000/lot, or \$7,200,000. This results in a gross margin on this investment of about 40 percent.

Thus, given the right conditions, the capital market can convert \$6,000/acre land into a \$400,000/acre asset. Not only would it change the pattern of land use, but it will also significantly change the pattern of landownership.

These examples demonstrate the economic pressures on agricultural land. Abandoned estates in Tobago, scarce land in the west of Port of Spain, Caroni lands in Central, and large portions of land in the east (Trincity to Arima) are areas which will face these types of economic pressure. Capital flows into land acquisition in these areas are likely to vastly change the functional landscape in these places.

Would the regularization of tenure have any impact on these institutions? The answer is probably yes, in an indirect way. The focus of the settlements program, of which tenure regularization is a key component, is to establish communities, not simply housing lots. Establishing communities in areas that were predominantly agricultural lands will put pressure on adjacent property to be used for housing.

There is one interesting example of a credit union that has become involved in land development. The Mt. Pleasant Credit Union (MPCU), a small institution in southwestern Tobago with a membership of 5,000 and a share capital of about \$13 million, responded to its members' need for housing by attempting to acquire the 140-acre Cove Estate in 1986. Housing development at Cove was never approved by Town and Country Planning, the final reason being that it was too close to the airport runway. MPCU persisted, however, and was subsequently able to purchase the nearby Bon Accord Estate (300 acres) for \$2.75 million, with financing from the Cooperative Development Bank. The MPCU has embarked on a comprehensive plan for multiple-use development of the property: conservation, tourism, housing, cooperative farming, and homesteads. The homestead component is to consist of forty-four 1-acre plots to be sold to its members for small farming at about \$50,000 per acre; the cooperative farm is destined essentially to produce fodder for the homesteaders. Meanwhile, MPCU has retained an option on Cove Estate, which it hopes to subdivide into 5-acre parcels for production of high-valued crops such as citrus and passion fruit.

The credit union was able to effectively control land for the future use of its members because of foresight by its management, technical assistance from other development units, financing support from the Cooperative Development Bank, and the expressed desire of its members to forestall the continued alienation of land from the low-income members of communities in Tobago.

INSTITUTIONAL CONSTRAINTS AND POSSIBLE SOLUTIONS

Cost of mortgages. Mortgage transaction costs are high because of the complicated procedures specified in law. Aside from the procedures internal to lending institutions required to obtain bridge financing and ultimately a mortgage loan, there are at least thirteen additional requirements:

- (1) a legal survey showing the proper legal and municipal description of the property;
- (2) title deed or lease or deed of mortgage;
- (3) approved house plans;

- (4) report from a qualified quantity surveyor giving the estimates of the cost of construction;
- (5) an agreement for sale of property;
- (6) completion certificate from a local authority;
- (7) evidence of assessment of building with receipts for land and building taxes and water and sewerage rates;
- (8) evidence that the applicant is a national of Trinidad and Tobago;
- (9) approval for resident nonnationals;
- (10) evidence of earnings;
- (11) Board of Inland Revenue file number;
- (12) financial ability to close transaction; and
- (13) letter from employer agreeing to deduct the mortgage installments from pay checks.

There are also some nonnegligible, up-front fees involved in the processing of the mortgage. From the experiences of the Trinidad and Tobago Mortgage Finance Company, these fees can amount to as much as \$2,400, as follows:

Valuation fee	\$ 400
Surveying fee	\$ 500
Legal fees	\$1,200
Search fees	\$ 300

The major item is the legal fees. Their magnitude, according to the Home Mortgage Bank, is due to the lack of standardization of mortgage documents. Attorneys must draft title deeds and other documents essentially from scratch each time. The HMB sees the need for:

- (a) a standardized mortgage deed;
- (b) a standardized advancing and construction reporting format; and
- (c) a standardized valuation format.

The **HMB** strongly argues that standardized mortgage deeds would allow homeowners to transfer homes to qualified buyers with much greater ease. Currently one cannot do so without completely discharging the current mortgage and re-registering the documents, incurring all the fee expenditures on the same property a second time.

An issue related to both the lack of standardization and the efficiency of the Registry and the Lands and Survey Division is the use of bridging finance. It is very common for prospective homeowners to wait up to four months after their homes have been constructed before they can get a proper mortgage deed with the prime residential mortgage rate. This

is a very costly process which, when added to the fees described above, makes it much more difficult for moderate-income people to consider home ownership.

As an illustration, an individual obtaining bridging finance for \$150,000 at the current (July 1991) commercial rate of 13.4 percent calculated on the declining balance over seven years would be paying a monthly installment of \$2,761.52. At the residential mortgage rate of 8 percent over twenty years, monthly installments would be \$1,254.66. Essentially, therefore, for every month after the completion of the unit that the borrower fails to obtain a proper mortgage deed, he or she would be paying an additional \$1,476.86. A four-month delay in obtaining the deed would translate into an additional \$5,907.44 in additional payments.

The modernization of the Registrar General's Department and the Lands and Surveys Division would reduce the costs of administering land-based mortgages to the extent that they reduce the time taken to process some of these documents. However, the main influence in the reduction of costs is likely to come through the standardization of documentation.

Squatting. The principal tenure problem to be addressed under the NHA's initiative is that of squatting. NHA officials estimate that there are about 25,000 households currently squatting on state lands, with an equal number on private lands. The NHA's strategy is to develop these lands to an acceptable level for residential units within a well-defined community. The current occupiers would be able to take possession of the land under a lease arrangement with the authority.

The development of the land would include surveying; the construction of roads, drainage, and sewer facilities; earth works and grading; delineation of community and recreational areas; and the provision of the basic necessities of water, electricity, and telecommunications. The cost of this development is expected to range between \$2 and \$4 per square foot. NHA hopes to develop about 2,100 such lots within the next 2 years.

Individuals will have three lease options under which they can have title to the land:

- (a) a thirty-year lease renewable for another thirty years—under this arrangement, the client pays the full development cost of the land within five years and thereafter pays \$1 per year rental on the lease;
- (b) a thirty-year lease under which the client pays an annual lease payment;
- and
- (c) an annual rental fee for the land.

Once the client has completed payment for the land, he or she is issued a deed; the client is also directed to various financial institutions for financing of the construction of the dwelling unit. Thus, NHA leaseholders will be coming onto the capital markets for financing of residential units. Currently, NHA is unable to issue such leases because the appropriate legislation through which the land acquired under this program can be vested in NHA (999-year lease) is still to be enacted.

Beyond this hopefully temporary problem, there is one major contradiction between the requirements of the capital market with respect to leases and the policies of NHA. NHA, in its concern with the upward mobility that the capital market tends to put on land (that is, ownership tending to accumulate in the hands of persons with a larger asset base), has thought it wise to constrain the transferability of its leases. Thus, the clauses that authorize the state through NHA to approve any reassignment of the lease, and to require a review of lease payments after five years, are meant to ensure that the benefits of the program are enjoyed on a long-term basis by the target population. The private capital market, on the other hand, requires a lease that is easily transferable, with a fixed payment throughout the period, for it to be considered a sound instrument of security. Thus, although the regularization of squatter settlements would contribute much to the general upgrading of tenure in the country, investments based on the value of such lands are likely to be constrained by the conditions contained within the lease agreement. It does not appear that public-sector institutions such as TTMF, which could accept NHA leases with their restrictive provisions, will be able to handle the entire program in the short or medium term.

Abandoned or underutilized land: nonperforming mortgages. Most lenders in both agriculture and real estate have a sizable number of nonperforming loans. ADB estimates that at least half its portfolio is at least 6 months in arrears; NIB states that 75 percent of their mortgage loans are in arrears (for 1 month or more); TTMF has a stock of 181 foreclosed properties, about 5 percent of their outstanding mortgages. Up to the present time, lenders have not actively sought to sell foreclosed properties; they prefer to rent them out so that they will be occupied, in the hopes that the renter will be interested in buying later.

ADB's weak financial position dictates stronger action. Its current plan is to create a land bank as a wholly owned subsidiary, whose purpose will be to facilitate the sale of property held as security for failed loans without the constraints of ADB rules and regulations. The initial result of a land bank, currently scheduled to be established by 31 December 1991, would be to give accounting relief to ADB's balance sheet; what is now shown there as nonperforming loans would instead be considered a performing loan to the land bank. The second result would be the availability of a substantial amount of land, initially about \$34 million worth (roughly the same value as ADB has lent for land acquisition since 1980), to the land market. Since most of this land is currently abandoned, its sale would enhance its utility, and the economy would benefit. ADB hopes to use some of it to establish a land reserve available to new farm entrants and entrepreneurs rather than trying to sell it all at once on the open market.

CONCLUSIONS AND RECOMMENDATIONS FOR LAND AND CAPITAL MARKET POLICY

The general assumptions underlying the following recommendations are that: (1) the GOTT maintains an interest in encouraging agriculture in spite of the clearly higher value of nonagricultural uses of much of the islands' land; (2) the GOTT intends to pursue its housing policies to favor low- and middle-income people. The first supposition is much less evident

than the second, given past and present policies in the context of structural adjustment. A third assumption is that the current liquidity of the economy will continue for the foreseeable future, so that there will be continued activity in the bond market and downward pressure on interest rates.

THE LAND MARKET

1. The land tax and the Land Tenants Security of Tenure Act (STA)

The land tax has not had its intended effect of forcing unutilized land into better agricultural uses, but there is evidence that it has contributed to the movement of land out of agriculture. This is partly due to the inhibiting effect on tenancies of the STA. If small-scale agriculture is to be encouraged, the STA will have to be modified to encourage landowners to permit tenancies. This could be done by a modification of the terms of leases to reduce landowners' concerns about permanent alienation of their land. A legal study should be conducted to propose language that would achieve an appropriate balance between tenants' security of tenure, which is required both for equity and efficiency reasons, and landowners' security of ownership, which is required if land is to be used productively.

2. The Foreign Investment Act and the Town and Country Planning Act

There is little doubt that in Tobago, the Foreign Investment Act has encouraged the movement of land out of agriculture. Estates have been purchased by developers and subdivided, with the most attractive parcels being sold—many to foreigners—at high per-acre prices. Agriculture cannot compete with tourism and residential uses on land with intrinsic aesthetic value. There is little that can or should be done about such land, but the question remains what use can be made of the parts of estates which do not have such value. Thought should be given to the development of homestead subdivisions with lots of 1-3 acres to enable low- and middle- income Tobagonians to practice the kind of agricultural activities which they appear to prefer and which are the most likely to be economically profitable (small ruminants, vegetables, and specialty crops). This would require the modification of the Town and Country Planning Act to permit parcels of such a size within a subdivision.

In Trinidad, there is less evidence of an impact of the Foreign Investment Act. Town and Country Planning, on the other hand, has had a major effect on land use. The most dramatic example of this is the sharp border that the Churchill-Roosevelt highway makes between land in residential and agricultural uses. Currently, however, much of the land on the southern, agricultural side is underutilized. There is a clear need for a new, long-range study of the residential space needs of Port of Spain and other major population centers, which would enable Town and Country Planning to relax its restrictions on conversion from agricultural to residential uses on land where agriculture is struggling or nonexistent now and unlikely to succeed in the future.

3. The land bank

The land bank, which ADB will shortly create as a means of divesting its property portfolio, could have a major influence on the land market, raising supply and possibly depressing land prices at least in the short run. Much depends on the way the bank is managed. ADB may push for a rapid reduction in the stock of land held by this subsidiary in order to build up its nonland assets; if so, the price effect could be substantial. If the land bank chooses instead to follow the market, selling slowly, the effect might be negligible. In any event, it is important for ADB to understand that the land bank is far more than a solution to its financial crisis: it has the potential to be a major determinant of land-price trends if it chooses to be. In times of rapid changes in market conditions, the land bank could accumulate or sell land as appropriate in order to moderate the amplitude of price fluctuations. It could also—as ADB's draft strategic plan for 1991-94 states—serve as a land reserve for low- and middle- income people who desire to acquire land for farming. Both of these roles could provide significant public service to the sector. We recommend that ADB study the potential of the land bank to serve both as a regulator of the market and as an active promoter of new entrants into farming.

4. A study of the land market

The inception of the land bank provides an appropriate time to begin an intensive study of land markets, both residential/commercial and agricultural as well as the interaction among them. Such a study would serve as a baseline that could be used to fill an important gap in Trinidad and Tobago: the complete lack of systematic market information useful to buyers, sellers, and intermediaries. The study should begin by compiling a database of land transactions, possibly limited to several representative wards and parishes. Fieldwork to investigate the relationship between land price and land use—actual and potential—should follow on a sample of transactions; this would provide economic and social information useful to land-use planners. Using the database, a monitoring system to report market conditions over time should be established to provide information to market participants. The monitoring system should then be institutionalized, probably in the Department of Lands and Surveys, and would publish a set of monthly or quarterly indicators on prices and volumes of transactions.

THE CAPITAL MARKET

1. The future role of ADB in agricultural lending

ADB must determine if it will continue to play the role of a development institution, lending for riskier projects on more favorable terms than private lenders do, or if it will instead—as its current plans suggest—become increasingly similar to commercial banks in both portfolio and terms. The latter strategy will be highly unfavorable to the agricultural sector, which is at best marginally profitable even with loans on concessional terms. The agroprocessing industry, which both private lenders and ADB are willing to finance, obviously depends on the existence of primary production (or imports, which should be a last

resort for a country with balance-of-payments difficulties). The government and ADB must bite the bullet: active encouragement of agriculture will require subsidies. The credit market is a logical focus for subsidies; the problem is to make them affordable to the government.

An approach which may be promising is to confer on ADB the role of the agricultural sector equivalent of the Home Mortgage Bank, a secondary lender which would use private banks as its agents for channeling loan capital into agricultural production. ADB would float tax-exempt bond issues like HMB's, buy and sell agricultural loans just as HMB does for mortgages, and perhaps even sell an analogue of HMB's mortgage participation certificates. If tax incentives are appropriate for the housing sector, and they are clearly crucial to the success of HMB, the case can surely be made that they are also appropriate for agriculture. ADB should work with HMB to explore the possibility of creating a secondary market for agricultural loans.

2. Minimizing risk to lenders

GUARANTEES FOR AGRICULTURAL LOANS. An alternative or complement to tax incentives for agricultural lenders is to reduce risk by establishing a guarantee fund. Since banks now are unwilling to lend much more than half the value of a project, the up-front capital requirements of a potential investor are very burdensome. Our interviews suggested that government guarantees of 25-30 percent of the value of a project would be sufficient encouragement to private banks to enable them to lend up to 85 percent or so. A study of the feasibility of establishing an agricultural loan guarantee fund within the GOTT is strongly recommended.

NHA LEASEHOLD TERMS. The two restrictive provisions in NHA leases—the review of rental payments after five years and prior consent for transfer—have made it unattractive for private lenders to consider granting mortgages to beneficiaries of NHA programs. While the former provision should not by itself discourage private lending, the latter should be reconsidered. The modest nature of the subdivisions concerned in the settlements programs makes it unlikely that beneficiaries would quickly sell their house to a better-off individual, which is the principal justification of the prior consent restriction. Elimination of the provision would, given current and anticipated liquidity and the continuing efforts of the Home Mortgage Bank, do much to accelerate the flow of mortgage capital into low-income housing.

3. Bridging finance at low interest rates

The success of the Home Mortgage Bank in encouraging private lenders to accept management-fee income for low- and middle-income housing mortgages can be extended to bridging finance. A special window could be opened in the commercial banks to handle short-term lending at reduced interest rates (perhaps about 10 percent, or possibly even at the same rate currently in effect for mortgages) for the period between lot purchase and the completion of construction, with institutional arrangements similar to those existing for

approved mortgage company lending. Alternatively, TTMF could establish such a program, also with financing from the HMB.

4. Simplification of the property transfer process

Acceleration of processing by the Registry would reduce the costs of bridging finance substantially, as we have shown above, by reducing the number of months before the start of low-interest mortgage payments. More importantly, the reduction in transfer fees made possible by a standardization of legal documents would make the process of mortgage application more affordable. The goal should be to reduce the legal and search fees, currently totaling \$1,500, to below \$500 per lot, with obvious negative effects on per transaction fees of the legal profession, but the stimulation of the number of transactions would likely mean an overall increase in their incomes. Other elements in the land rationalization program should have a similar effect on valuation and surveying fees, which currently amount to \$900 per lot. HMB's proposals for standardized documents should be strongly supported.

ANNEX 8.1**List of interviewees**

1. Mrs. Linda Besson, General Manager, Eastern Credit Union Cooperative Society
2. Mr. Winston George, Company Secretary, Trinidad and Tobago Mortgage Finance Company, Ltd.
3. Mr. Roland Medina, Deputy Executive Director
Ms. Cynthia Harewood, Comptroller, Finance and Accounts
Mr. Eugene Tsoi-a-Fatt, Manager, Legal Division, National Insurance Board
4. Mr. Megha Gosein, Director of Research Division, Agricultural Development Bank
5. Mr. David Dow, Managing Director, Royal Bank Mortgage and Finance Company, Ltd.
6. Mr. Calder Hart, Executive Director, Home Mortgage Bank
7. Mr. Neil Rollingson, Marketing Manager, Republic Bank, Ltd.
8. Mr. Lennox Sankersingh, Director, Sou Lands, Ltd.
Mr. Allan Sammy, Deputy Mayor, San Fernando
Mr. John Humphrey, Parliamentary Representative
Mr. Ivan Laughlin, Director, Laughlin and Associates, Ltd.
9. Mr. Michael Pantin, Branch Manager, Republic Bank, Tobago
10. Mr. Alphonse Skerrette, Branch Manager, National Commercial Bank, Tobago
11. Mr. Dexter James, Manager, Agricultural Development Bank, Tobago
12. Mr. Lee Kelshall, Attorney, Tobago Office
13. Mr. David Knott, Land Surveyor, Tobago Office
14. Ms. Patricia Benoit, Manager, Mt. Pleasant Credit Union Cooperative Society, Ltd.
15. Mr. Eric Taylor, Attorney, Tobago Office
16. Mr. Arthur Moore, Farmer, Charlotteville, Tobago
17. Mr. Jeff Davidson, former Chairman, Tobago House of Assembly
18. Mr. Nazir Sultan, Corporate Manager, National Commercial Bank
19. Mr. Tim Mooledhar, Land Surveyor, National Housing Authority
20. Mr. William Agard, Director, Consulting Engineers Partnership, Ltd.
21. Mr. Clifford Murray, General Manager; Mr. Lance Murray, Chairman, Home Construction Company
22. Mr. George Bovell, Farmer, Malabar Farms, Caparo
23. Mr. Winston Agard, Director, Settlements Program, Ministry of Settlements

ANNEX 8.2

Commercial banks in Trinidad and Tobago

The Republic Bank, Ltd.
The Royal Bank of Trinidad and Tobago, Ltd.
The Bank of Nova Scotia
The National Commercial Bank of Trinidad and Tobago
The Bank of Commerce Trinidad and Tobago, Ltd.
The Cooperative Bank of Trinidad and Tobago
The Cooperative Development Bank
Citibank, Ltd.
The Workers Bank (1989), Ltd.

ANNEX 8.3

Trust and mortgage finance companies

Bank of Nova Scotia Trust
Royal Bank Trust
National Commercial Bank Trust
Bank of Commerce Trust
Trinidad Cooperative Bank Trust
Republic Finance and Merchant Bank
Royal Bank Mortgage and Finance Company

ANNEX 8.4

Financial houses and merchant banks

General Finance Corporation, Ltd.
Trinfinance, Ltd.
Caribbean Finance Company, Ltd.
Amalgamated Finance Company, Ltd.
International Industrial Merchant Bank of Trinidad and Tobago
Total Finance, Ltd.
Principal Finance Company, Ltd.
Caribbean Mortgage and Funds, Ltd.
Southern Finance Company
Citicorp Merchant Bank, Ltd.
Fidelity Finance Company

Chapter 9

PROTECTED AREAS IN TRINIDAD AND TOBAGO

by

**Eden Shand, Sylvia Kacal, Floyd Homer,
Robyn Cross, and Carole Smart**

INTRODUCTION

As stated in chapter 1, the goal of the current study is to prepare a Land Rationalization Action Plan for funding by the IDB. The project is approaching the question of improved production from the land through the elimination of **tenure** constraints. Protected areas, being associated more with conservation than with production, would at first glance appear not to fall within the purview of the project. However, in keeping with the current environmental preoccupation of international lending institutions, the IDB is using the opportunity presented by this project to foster improved management of protected areas principally through the elimination of problems that have to do with tenure. The opportunity will also be used to examine other constraints to the effective management of the resources of these areas.

The objectives of the protected areas component of the overall study may be summarized as follows:

- (a) conduct a diagnosis of the protected areas system of Trinidad and Tobago (including national parks, forest and marine reserves) in order

* Shand (coordinator), Kacal, and Homer are Protected Area consultants; Cross is the Forestry Division counterpart; and Smart is the T&CP Division counterpart. The team appreciates the efforts of the Association for Caribbean Transformation as field surveyors.

The team worked in close collaboration with the coordinators of the TAHAL group and the Basic Environmental Studies team so as to harmonize cost estimates and recommendations in the areas of institutions and legislation. The team also worked in concert with the Tropical Forestry Action Program Country Mission for Trinidad and Tobago, with particular regard to their efforts in the area of forest ecosystems conservation.

Finally, the team acknowledges the valuable assistance of all the individuals and agencies, governmental and nongovernmental, that provided information for the preparation of this report.

- to identify the principal constraints on the effective management of the resources in these areas, particularly the tenure constraints;
- (b) develop proposals for community co-management of protected areas in order to reduce pressures on nonconforming uses; and
 - (c) prepare a bankable proposal for policy changes, further study required, investment activities, and time schedule to solve the problems identified.

GOVERNMENT POLICY ON PROTECTED AREAS

A clear, concise, and definitive White Paper on protected areas has never been written, there being no political pressure to force a position. Moreover, the question of protected areas is buried so deeply in the larger issues of the agriculture, forestry, and fisheries sectors that a separate and elaborate policy statement in this regard is not to be expected from a government with other development priorities. Written forest policy, however, dating back to 1942, makes reference to the reservation of a forest estate to ensure direct and indirect benefits to the community. The policy was revised in 1980 and specific mention was made of national parks. A detailed policy for the establishment of a national park system in Trinidad and Tobago was formulated jointly by the Organization of American States (OAS) and the Forestry Division of the then Ministry of Agriculture, Lands, and Fisheries and was approved in principle by Cabinet in 1981. The policy was never incorporated in any national plans because the government of the day, distracted by an embarrassment of riches in petro-dollars, had abandoned the discipline of central planning. Since that time, however, with the onset of stringent economic times and a change of government in 1986, central planning has returned and references to nature conservation have appeared in national macroeconomic policies as well as sectorial and subsectorial policies. The following sections highlight the references to nature conservation in these different levels of government policy as well as in the more specific forest and protected areas policies.

NATIONAL DEVELOPMENT POLICY

The GOTT has published the "Medium-term Macro Planning Framework, 1989-1995" with a stated purpose of coordinating the various facets of national policy with a view to maximizing the development and welfare of the citizens. The framework supposedly establishes the guidelines within which the economic, social, physical, and environmental policies will coalesce and be harmonized to establish efficient and workable policies. The document admits that for this to be achieved it will be necessary to create and maintain a balance between humans and their internal and external environment that can be sustained into the future.

National development objectives include economic diversification, greater self-sufficiency in food production, higher levels of savings and investment, an environment conducive to entrepreneurship and innovation, more efficient management, increased

capability in science and technology, an efficient system of social and economic infrastructure, greater national commitment, and more productive employment opportunities.

At the sectorial level, objectives and strategies are further detailed in the areas of fiscal, monetary, and financial operations; agriculture; petroleum; tourism; manufacturing; state enterprises; health; education; training; and settlements. Very little is included about the environmental policies that will circumscribe these development areas.

The Macro Planning Framework contains a commitment by the government to embark upon "a program for the development and maintenance of a network of National Parks, marine parks and sites of historical and/or archeological interest to serve both the objectives of conservation and the building up of a stock of assets which can contribute to leisure activity and enjoyment of the population at large."

AGRICULTURE SECTORIAL POLICY

Agriculture has been assigned a pivotal role in national development over the medium term. Among the important objectives of the agricultural policy is the achievement of a rapid increase in the quantity and variety of local agricultural commodities, utilized in a manner which will increase linkages within the agricultural production system and between sectors of the economy. Agricultural development policy will be governed by certain important concerns and objectives, including the protection, conservation, and enhancement of the environment as well as the natural resource base for agriculture, forestry, and fisheries.

ECOTOURISM POLICY

The Government of Trinidad and Tobago has committed itself to the development of ecotourism as one of the pillars of its current tourism thrust. As stated in the Medium-Term Macro Planning Framework (1990-1995), the government's objective is to promote "dignified local and foreign tourism in harmony with the natural and social environment." The Tourism Development Authority (TDA) in its Strategic Plan 1990-1994 has stated its intention to place emphasis on new "niche" or special interest market segments in tourist-originating countries. Government proposals for tourism development in the short term indicate a mix of resort development (in Tobago), cultural/event-based tourism (in Trinidad), and ecotourism on both islands.

ENVIRONMENTAL POLICY

Until 1986, environmental matters were the purview of the Ministry of Health and Environment. Under this ministry, environment came to be associated with the built environment and environmental problems centered upon problems of public health. In December 1986, with a change of government, environmental matters were reallocated to the Ministry of Food Production, Marine Exploitation, Forestry, and the Environment. The assignment of environmental matters to a ministry concerned with renewable natural resources owes its genesis to the 1979 recommendations of an interministerial committee on the creation

of a management structure for the development and control of national parks and beaches. The committee argued that management of renewable natural resources, maintenance of environmental quality, and environmental planning could not be divorced if proper management and control of the three functions were to be achieved. Under the new arrangement, the natural environment gained emphasis and environmental policy formulated in these terms was attempted.

The most comprehensive statement on an environmental policy for Trinidad and Tobago, as lofty as it is cumbersome, is to be found in the January 1989 "Draft Environmental Protection Policy Act." Therein, faithful to the principle of sustainable development, it is stated that:

The Government of Trinidad and Tobago recognizes the interrelationship of the elements or segments of the environment, man's interrelationship with these and consequently the impact of man's activities on the environment, in particular the influences of population growth, high density urbanization, industrial expansion, resource exploitation, new expanding technological advances and tourism development.

The Government further recognizes the critical importance of maintaining and restoring environmental quality for the overall welfare and development of man. It is therefore declared that it is the continuing policy of the state, in cooperation with other public and private organizations to use all practicable means and measures, including financial and technical assistance in order to foster and promote, create and maintain the conditions under which man and nature can exist in productive harmony and fulfil the social, economic and other requirements of present and future generations of Trinidad and Tobago.

To this end the Government recognizes the need for careful planning and management of the natural resources of air, water, land, flora, fauna, among others and the preservation of our historical heritage.

Most importantly, the Government also recognizes that human health, which is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity, is a fundamental human right and therefore the attainment of the highest possible level of health is an important social goal for Trinidad and Tobago.

The policy obviously recognizes the importance of humanity's living in harmony with Nature and it paraphrases the principle of sustainable development. It also relates environmental management to human health. It makes no specific reference to protected areas as such.

FOREST POLICY

Up to 1942, forest policy in Trinidad and Tobago was unwritten and centered on the reservation of certain areas of forest for:

- (a) the protection of the water supply, the preservation of favorable climatic influences, and the maintenance of suitable breeding places for the bird and insect friends of agriculture; and
- (b) the production of timber and other forest products necessary for the welfare of the community.

In 1942, a written "Forest Policy of Trinidad and Tobago" was adopted by the government. This is the policy still in force and its main elements are:

- (a) reservation of an adequate forest estate to ensure direct and indirect benefits to the community;
- (b) management of these forests in such a way that they provide a permanent supply of timber and other forest produce;
- (c) management of the forests so as to become self-sufficient in timber supplies;
- (d) promotion of wider economic uses of the timber species;
- (e) conduct of research in tropical forestry;
- (f) promotion of training for subordinate staff;
- (g) dissemination of forestry knowledge; and
- (h) encouragement of private forestry.

Because of the considerable political, social, economic, and technological changes since 1942, it was felt that the 1942 Forest Policy should be revised and updated to incorporate such areas as watershed management, wildlife management, national parks, and recreation. As a consequence, the professional staff of the Forestry Division drafted a new forest policy to coincide with the Eleventh Commonwealth Forestry Conference held in Trinidad in September 1980. This new forest resources policy has not yet been formally adopted by the Government of Trinidad and Tobago. It nevertheless forms the basis for forest sector planning.

Like its 1942 counterpart, the Forest Resources Policy of 1980 has a twofold aim, namely:

- to allocate an adequate area of land in strategic places for forestry and ecological purposes; and
- to manage these resources for optimum combinations of their productive, protective, recreational, aesthetic, scientific, and educational capabilities to
 - (1) contribute to sound overall land usage;
 - (2) provide the required forest goods and services;
 - (3) contribute meaningfully to the overall socioeconomic development of the country;
 - (4) conserve sufficient representative areas of natural ecosystems to ensure their perpetuity;

ensure that the public is made aware of the importance and management of forests and forest resources; and improve the quality of life for citizens.

The policy goes on to detail twenty specific objectives and further enunciates fourteen subsectorial policy statements. Under "National Parks and Other Protected Areas," it reads as follows:

To protect in perpetuity those areas of the country which represent significant examples of the country's natural heritage and to encourage public understanding, appreciation and enjoyment of the heritage in ways which leave it unimpaired for future generations.

This general policy was endorsed by the 1980 OAS Project Report on the Establishment of a System of National Parks and Protected Areas. This project resulted from a recommendation of the 1979 Inter-Ministerial Committee on the creation of a management structure for the development and control of national parks and beaches. In their report the committee recommended "that the Conservator of Forests be directed to expedite the administrative, legal, and planning arrangements necessary to the creation of a system of National Parks and protected areas using consultants where necessary."

SPECIFIC PROTECTED AREAS POLICY

Specific policy has been suggested by the 1980 OAS project in terms of national park system objectives. The OAS project declared that areas will be established within the national park system to meet one or more of the following objectives:

- (a) maintain in a natural or near-natural state areas that constitute examples of the country's various terrestrial and marine ecosystems, landscapes, and geological formations in order to guarantee the continuity of the evolutionary processes, natural genetic succession patterns, and their existence for future generations;
- (b) provide and protect natural resources for healthful and constructive outdoor recreation needed by the country's citizens;
- (c) protect, manage, and improve the natural and cultural landscapes of the country in order to maintain the visual quality of the environment;
- (d) stimulate national and international tourism potential and consequent foreign exchange earnings;
- (e) preserve genetic materials as elements of natural communities, prevent the loss of any plant or animal species, and maintain natural diversity;
- (f) protect and manage fish and wildlife resources for their important role in environmental regulation, sport and recreational activities, and production of proteins;
- (g) provide a variety of natural features for research, formal and informal education, and study and monitoring of environmental factors; and

- (h) protect and improve watersheds and watercourses to maintain high standards of quality, quantity, and even flow; control and prevention of erosion, sedimentation, and flooding; and protection of investments that depend on water supply, such as reservoirs and irrigation projects.

POLICY RECOMMENDATIONS

The above examination of government protected areas policy reveals an absence of central direction. Current protected areas policy does not derive directly from the central clearing-house of all government development policy, the Ministry of Planning and Mobilization. Protected areas policy ought to flow logically from government's policy on environment and development.

Environmental policy could be finalized with clear distinctions between the built environment (human settlements, factories, and so on) and the natural environment. Natural environmental policy will cover forest policy as well as protected areas policy. It is expected that the protected areas policy as proposed by the OAS Project will fit into any modern progressive natural environment policy. To stay current with present efforts toward a global convention for the conservation and wise use of forests, the GOTT would do well to be mindful of the language of the draft of that convention as prepared by the Center for International Environmental Law in London.

Protected areas policy implied in that draft convention is as follows:

Governments should establish appropriate protected forest areas within the area under their jurisdiction for the purpose of safeguarding:

- (a) the ecological, physical, and biological processes essential to national, transboundary, and regional ecosystems and local and global climatic stability;
- (b) representative samples of all types of forest ecosystems found in areas under their jurisdiction or control, especially those of an exceptional or special significance;
- (c) areas of particular importance because of their scientific, educational, aesthetic, or cultural interest;
- (d) areas exceptionally rich in biological diversity or constituting the critical habitats of endangered or rare species, or species endemic to a small area, or species that migrate;
- (e) satisfactory population levels for the largest possible number of species belonging to any of these ecosystems.

Governments should take all measures necessary to ensure that the process of designation and establishment of protected forest areas is based on the effective participation of forest peoples and all local people who may be affected.

Finally, governments should ensure that all customary rights are respected and that national interests are balanced against those of any special group in the community.

This part of the global forest convention is based on the IUCN ideal that the safest strategy for conserving biological diversity is to establish large undisturbed protected areas covering representative samples of all forest types. However, human pressure on the land is now so great that options to establish large new areas are now being foreclosed. Conservation measures in the future will at best consist of the total protection of a small core area supported by partial protection of a surrounding buffer zone. Although extensive areas of the total forest estate must be set aside for total protection and as extractive reserves for forest peoples, production forestry will always be part of forest land use and must be considered within the overall conservation strategy. The success of conservation measures will, therefore, be dependent upon the extent to which systems of land use can be found that will maintain biological diversity in forests that are exploited in various ways. Systems of forest management which are based upon the extraction of nontimber products would appear to provide the most attractive option for biological diversity.

The adoption of a policy of involving local communities in the selection and management of protected areas cannot be overstressed. The most acute problems for the conservation of biodiversity are found where dense rural populations exist in the neighborhood of forests of high biological value. Application of strict protection laws would often deprive local people of access to resources on which they have traditionally been dependent. As such the establishment of extensive totally protected areas would be resisted by the population and could probably not be achieved. In these conditions buffer zones would be needed to reconcile human needs with those of biodiversity conservation. In these zones, activities which are compatible with the objectives of the protected area are permitted so as to provide compensation to local people for the loss of access to the natural resources of the protected areas. Conservation objectives can only be met if conservation programs are clearly associated with activities aimed at meeting the development needs of local communities.

LEGISLATIVE FRAMEWORK*

INTERNATIONAL CONVENTIONS

Domestic legislation does not yet fully reflect the policy provisions that are the result of international obligations or conventions. In terms of conventions of an environmental nature, Trinidad and Tobago is a signatory to and has ratified the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean (Cartagena, 1983). This convention includes provisions for the protection of fragile marine ecosystems.

* Much of this section is based on the work of the coordinator of the IDB Basic Environmental Studies team, an attorney-at-law.

Trinidad and Tobago is a supporter of the Convention Concerning the Protection of World Cultural Heritage (Paris, 1972). Steps are being taken to sign and ratify this convention. Consequently, no sites have yet been proposed for inclusion under this convention, which deals with internationally important natural sites. Trinidad and Tobago is also a signatory to and has ratified the Convention on International Trade in Endangered Species. The country is not yet a signatory to the Convention on the Transboundary Movement of Hazardous Waste (Basel).

Under the auspices of United Nations agencies, international conventions on climate change, biological diversity, and regional seas are in the process of being negotiated. There are as yet no international conventions on protected areas as such. The convention most relevant to protected areas will be the Convention for the Conservation and Wise Use of Forests. A draft of this convention has been prepared for the Global Legislators Organization for a Balanced Environment (GLOBE), with the input and advice of AID-Environment in Amsterdam, the Center for International Environmental Law in London, the Gaia Foundation, and the International Institute for Environment and Development in London. Efforts are being made to have this convention figure prominently in the 1992 United Nations Conference on Environment and Development.

RELEVANT LEGISLATION IN THE REGION

Certain Caribbean nations have already enacted legislation dealing with national parks. In most cases there are specific statutes dealing with national parks (for example, in Dominica, the National Parks and Protected Areas Act) or there is legislation dealing with both national and marine parks (for example, in Antigua and Barbuda, the National Parks Act, 1984 and the Marine Parks Act, 1972). In the British Virgin Islands, there are the National Parks Ordinance, 1961, and the Marine Parks and Protected Areas (Preservation and Enhancement) Act, 1972. There are variations to this legislative framework, as in St. Lucia where natural and historic sites are protected through the Wildlife Protection Act and the St. Lucia National Trust Act. In Barbados, the Barbados Marine Reserve is established under the Marine Parks (Preservation and Enhancement) Act, 1976.

Most recently, Jamaica enacted the Natural Resources Conservation Authority Act, 1990. The act provides for the management, conservation, and protection of the natural resources of Jamaica and the establishment of a Natural Resources Conservation Authority. One of the functions of the authority will be to manage such national parks, marine parks, protected areas, and public recreational facilities as may be prescribed.

EXISTING NATIONAL LEGISLATION

There is presently no legislation in Trinidad and Tobago that provides the necessary authority to establish and manage national parks. Various legislative acts do, however, treat certain aspects of the administration of state terrestrial and marine areas for conservation and protection.

Terrestrial areas. The laws most directly related to terrestrial conservation and protection are the following:

- (a) The State Lands Act, Chapter 57:01 (1980 Laws), and the Land Regulations and State Lands Forest Produce Rules made thereunder

It is clear on the face of the legislation that it is premised upon the existence of an intimate administrative relationship between the management of state lands and the management of forests on state lands. The power to declare a forest reserve is provided for in the "Land Regulations" under the State Lands Act. Forest reserves remain vested in the Commissioner of State Lands so that the forestry administration has no property in these lands. A forest officer can prosecute a squatter for felling, burning, or removing any tree in a forest reserve, or on state land not included in a forest reserve, but has no powers to evict a squatter from such lands.

- (b) The Forests Act, Chapter 66:01 (1980 Laws), and the subordinate legislation made thereunder

This act relates to production forestry and is primarily concerned with the regulations pertaining to the removal of timber from forest reserves and state lands. The only part of the act which remotely relates to conservation is Section 8(0), which states that it is an offense to enter a "prohibited area," defined as "a specified area being part of a Forest Reserve or State Land declared by the President by proclamation to be a prohibited area." No provisions are made for management in prohibited areas.

- (c) The Conservation of Wildlife Act, Chapter 67:01 (1980 Laws)

The protected areas that can be established under Section 3 of the act are described as "Game Sanctuaries," which are nothing more than areas where it is unlawful to hunt, and in general the act is directed to regulation of hunting. No provisions are made for the protection and management of wildlife habitat whose loss due to squatting, quarrying, oil exploration, and the like poses a major threat to wildlife. This is a particularly significant problem since the existing game sanctuaries are believed to be too small to offer any genuine protection to the intended species.

- (d) The Town and Country Planning Act, Chapter 35:01 (1980 Laws)

Under Part II of this act, provision is made for the preparation of statutory development plans, wherein the minister proposes the manner in which land in Trinidad and Tobago may be used. In the second schedule to the act, the matters for which provision may be made in the development plan are stated. These include under IV, Amenities:

- Item 3: Allocation of lands for:
 - a) Communal parks
 - b) Game and bird sanctuaries

c) Protection of marine life

Item 4: Preservation of buildings, caves, sites and objects of architectural or historic interest.

Item 5: Preservation or protection of forests, woods, trees, shrubs, plants, and flowers.

Item 8: Prohibiting, regulating, and controlling the deposit or disposal of waste materials and refuse, the disposal of sewage, and the pollution of rivers, lakes, ponds, gullies, and the seashore.

Under Part III of the act pertaining to the control of development of land, Section 20 empowers the minister to make provision for the preservation of any tree, trees, or woodlands in any area through tree preservation orders, which prohibit the cutting down, topping, lopping, or willful destruction of trees except with the consent of the minister.

The Town and Country Planning Act, while providing tools for planning, is not intended for management and does not treat this aspect nor specifically mentions national parks.

(e) The Land Acquisition Act, Chapter 58:01 (1980 Laws)

This act authorizes the acquisition of land for public purposes and sets out the procedures and laws governing the acquisition.

(0 The National Trust of Trinidad and Tobago Act (1991)

This act establishes a national trust, whose functions include listing and acquiring property of interest and permanently preserving lands that are property of interest. Property of interest is defined as any monument and any fossil, place, or site of natural beauty or national, historic, scientific or archeological interest.

Marine areas. The protection of the living resources of the internal waters and the territorial sea is restricted to the provisions of two acts as follows:

(a) The Marine Areas (Preservation and Enhancement) Act, Chapter 37:02 (1980 Laws)

This act provides machinery for the management of living resources in the territorial sea. It provides that the minister with responsibility for marine exploitation may, by order published in the *Gazette*, designate any portion of the marine area of Trinidad and Tobago as a restricted area to preserve natural beauty, protect flora and fauna, promote the enjoyment of the area, and promote scientific research. Flora and fauna within the meaning of this act include "any part of a coral reef or other deposit existing in its natural conditions" while the

marine areas to which it applies are confined to "the submarine areas within the Territorial Seas, including any adjoining land or swamp areas which form with certain submarine areas a single ecological entity." Under this legislation Buccoo reef was declared a restricted area in 1973. Regulations for its management were made by legal notice in 1974. The regulations to the act prohibit the operation of a boat or other vessel within the restricted area except with the written permission of the minister.

This legislation at its original enactment fell under the aegis of the minister with responsibility for fisheries. It is now said to fall under the portfolio of the Minister of the Environment and National Security. Section 5 of the act provides that the minister may assign any board, committee, or similar body which he or she considers competent to control and manage any restricted area. While the Tobago House of Assembly (THA) has administrative control of the restricted area at Buccoo reef, no specific assignment of responsibility to the THA appears to have been made by the minister. This presents difficulties for the administration of the area by the THA, since various types of permits for activities in the area must be granted in writing by the minister or a person duly authorized by the minister, and anchoring areas and walkways within the restricted area must be designated by the minister by legal notice.

(b) The Fisheries Act, Chapter 67:51 (1980 Laws)

This act regulates the exploitation of fish, which under the act include "oysters, crabs, shrimps, turtles, turtle eggs, corals and any species of other marine fauna." The act, which applies to all rivers as well as the territorial sea, does not offer a framework for the management of marine flora (for example, sea moss).

Regulations made under Section 4 of this act specify the classes of net which may be employed for fishing, the length of the fish which may be taken, and prohibited areas within which no fish, shellfish, crabs, or shrimp shall be taken. However, the act does not provide a framework for the protection or management of the habitat of these species (for example, mangroves that are colonized by oysters).

The Protection of Turtles and Turtle Eggs Regulations made under this act outlaw the killing of *any female* turtle in the sea within any reef or within 1,000 yards from the high-water mark of the foreshore where there is no reef, the taking of any turtle eggs after they have been laid and buried by a female turtle or any person, and the sale of turtle eggs. Additionally, the regulations set a closed season, from March 1st to September 30th, during which it is unlawful to kill, catch, purchase, or sell any turtle or turtle meat.

Section 5 of the act vests responsibility for enforcement primarily in fisheries officers, who have jurisdiction up to the low-water mark on the beach. Above the low-water mark, jurisdiction over the amphibious turtles is exercised by game wardens from the Wildlife Section of the Forestry Division under the Conservation of Wildlife Act. Problems of jurisdiction are evident. Turtles are completely protected under the Conservation of Wildlife Act, but it has been reported that under this act, people prosecuted by game wardens have

been set free by magistrates because the turtles were legally caught at sea under the regulations of the Fisheries Act, the latter enacted with ruling legislation.

Besides problems of jurisdiction, there are other deficiencies in the legislation protecting turtles. One weakness has to do with the difficulty of determining the sex of a turtle. Another has to do with the certainty of calculating whether a particular point is within 1,000 yards from the shore. Additionally, the failure to protect male turtles, in the absence of any research to show what ratio of males is necessary to ensure normal reproduction, also poses problems. Also it should also be noted that the near-shore waters in which turtle protection is most critical now lie within archipelagic waters, to which the Fisheries Act, under which the relevant regulations were made, does not now apply.

DRAFT LEGISLATION

The intervention of governments in environmental matters arose largely from the public health problems of the nineteenth century. Prior to 1986, the Trinidad and Tobago government's involvement in environmental matters was through the Ministry of Health and Environment. As far back as 1975, an environmental protection act was drafted but never came into law. The thrust of this act related to the prevention, abatement, and control of pollution under which an environmental protection council was to be created.

A change of government in December 1986 brought a realignment of ministerial portfolios. Environment was considered to be more appropriate under a natural resources ministry. The assignment of environmental matters to the new Ministry of Food Production, Marine Exploitation, Forestry, and the Environment in 1986 propelled this ministry into defining its environmental mission and the enactment of appropriate legislation. In 1987, with the help of UNEP, a draft environmental protection act was prepared. This act sought to create a national environmental authority, to protect the natural resources of Trinidad and Tobago, to promote the wise use of these resources, and to prevent and control pollution in all its forms from whatever source. The act also enunciated the cumbersome environmental policy referred to earlier. The act, which was largely directed to the management of the built environment, was never introduced in Parliament in the form of a bill.

In 1989, with the creation of the new Ministry of the Environment and National Service, a revised environmental protection bill was laid in Parliament and given first reading. The bill largely followed the main themes of the earlier draft environmental protection act, except that a definitive policy statement was expunged from the draft act and provision was made for the establishment of an environmental protection court to which aggrieved persons might appeal. The bill was withdrawn by the minister concerned sometime after its first reading following a recommendation by an administrative reform program team that a separate ministry of the environment made the establishment of a national environmental authority superfluous. The legal adviser in the Ministry of the Environment and National Service has indicated that work is in progress on drafting yet newer legislation purportedly to give clear jurisdiction to the Minister of the Environment.

The latest piece of relevant legislation to be prepared is the 1990 "Draft Forest Resource and National Park Conservation Act." This act will supersede the existing Forests Act, which dates from 1915 and is considered too old and inadequate to capture the elements that have been included in the new forest policy drafted in 1980 and presented as part of the National Forest Resources Plan of 1989.

The draft act provides that the forest estate will be composed of three categories of land, namely, forest reserves, conservation areas, and protected forests. The new act provides for forest reserves in much the same manner that the 1915 Forests Act did. Conservation areas are primarily areas, either state or privately held, where special attention is needed because of degradation of the land resources. The protected forests category is designed to assist the Director of Forestry (formerly Conservator of Forests) in placing private lands under management.

The draft act also provides for the creation of national parks or areas of scenic, geologic, scientific, or cultural importance which can be declared natural landmarks. The national park provisions contain two major management tools. The first of these is the power of the minister to declare national parks or natural landmarks. The second tool is the preparation of a national parks management plan which will provide details of the activities to be undertaken in the national parks.

A critical issue which remains very unclear on a reading of the draft act is the administrative relationship between the agencies responsible for forests and for state lands. The draft act empowers the minister with responsibility for forests to declare state lands as forest reserves, a power which is presently held by the minister responsible for state lands. Moreover, the provisions of Section 39(2) allow the minister with responsibility for forests to amend leases of state land in a conservation area in collaboration with the minister responsible for Town and Country Planning. These provisions are completely incompatible with the State Lands Act, whereunder all rights in lands vested in the state are exercisable by the president through the Commissioner of State Lands. The draft act makes no provision for the amendment of the State Lands Act.

Furthermore, the draft act steers clear of the necessary reforms regarding wildlife. The scheme of state lands, forestry, and wildlife legislation is so intimately related that it is difficult to conceive of it as being adequately revised on a piecemeal basis, particularly where provision is to be made for a system of national parks and protected areas for the first time. It must be remembered that, underlying all the other inadequacies of the existing provisions, the existing legal measures do not offer an organized framework of interrelated protective categories, which are necessary in dealing systematically with the natural environment, nor do they provide for coherent machinery for the management of these areas.

Nevertheless, mindful of the inadequacies of the existing legislation, the Forestry Division, with the technical assistance of the OAS, prepared a plan in 1980 for a system of national parks and other protected areas. Implementing this system without the appropriate

legal framework has proved to be extremely difficult. The plan specifies six categories of protected areas to be included in the system, namely:

- (a) scientific reserves;
- (b) national parks;
- (c) natural landmarks;
- (d) nature conservation reserves;
- (e) scenic landscapes; and
- (f) recreation parks.

The "Draft Forest Resources and National Park Conservation Act" attempts to address the need for legislation in this field, but provides machinery only for the creation of two classes of protected areas, namely, national parks and natural landmarks.

The inadequacy of the proposed legislation with respect to national parks and protected areas probably derives from the inclusion of provisions for this purpose in an act intended to revise the law relating to forests. Mention has already been made of the deficiencies of the approach adopted in the draft act as it relates to state lands and wildlife. There is clearly an intimate interrelationship between the four subject areas (state lands, forests, wildlife, protected areas) which needs to be addressed by legislative activity.

There are a variety of legislative options open in this respect, ranging from the enactment of four separate but interrelated statutes to the enactment of one compendium statute covering the entire range of issues. The preparation of separate pieces of legislation offers the advantage of flexibility in the allocation of administrative responsibility for these subjects beyond existing arrangements. The enactment of specialized legislation for protected areas is therefore advocated.

RECOMMENDED LEGISLATION

It is recommended that government follow the excellent "Guidelines for Protected Areas Legislation," prepared by the IUCN in 1980 for the use of legal drafters involved in the review, revision, or creation of protected areas legislation. The elements identified in the IUCN Guidelines as most important for legislation on protected areas are as follows:

(a) A statement of protected areas policy will set out the official policy behind the law. Where necessary for constitutional or other reasons (for example, where domestic protected areas legislation is enacted in implementing an existing international obligation), these policy provisions should be made in the legislation.

(b) The legislation should include a clearly defined statement of the objectives and purposes of the scheme of protected areas being created.

(c) Definitions of the different kinds of protected areas to be established should be included in the legislation.

(d) The legislation should deal with the status of land in protected areas, illuminating what use, occupation, ownership, or other characteristics of land are compatible with the inclusion of land in different categories of protected areas.

(e) Detailed provision must be made concerning the machinery for establishment of protected areas. These provisions must include the creation of powers to establish, amend, and abolish protected areas as well as procedures whereby these powers are exercised. The IUCN recommends that the power to establish and abolish protected areas should be vested in the highest law-making body in the country because of the requirement for permanence and stability in the system. The procedures for the exercise of this power should detail how the procedure is initiated and the role of public and other governmental agencies in the process. It should detail the manner in which the boundaries of protected areas are to be established in law and demarcated on the ground. The provisions concerning establishment of the system of protected areas should also define both management categories and protection, enforcement, and administrative measures required for these types of areas. Because vesting the powers of establishment in the highest law-making body may cause some delay in taking protective action, the legislation should also provide some means for immediate interim protection of an area until more permanent status is available. The establishment provisions of the legislation should also deal with potential areas of jurisdictional conflict, clarifying the involvement of relevant agencies in the process of establishment (for example, land-use planning agencies), institutions dealing with interests that will arise inside designated areas (such as wildlife, forestry, archeology, culture, and so forth), agencies which have jurisdiction over external activities that bear upon their management (for example, highways and utility authorities and local government).

(f) The legislation should require that a management plan be prepared for each protected area unit established pursuant to the legislation. The constituent elements and essential considerations for any plan should also be provided in the legislation, as should the period within which the plan must be operational. The legislation must also designate and identify the particular executing institution or individual who will have responsibility for preparing, elaborating, and implementing any plan in order to ensure accountability for implementation. Additionally, the law should provide for the review and approval of management plans at a level above the authority administering the protected areas program.

(g) Most modern legislation of this type provides for the creation of peripheral buffer zones outside of protected areas and authorizes the regulation in those buffer zones of certain activities which may be inimical to the management objectives of the adjacent protected areas. Without specific legislative authority to empower the agency responsible for the protected areas to regulate activities in these peripheral belts, protected areas could suffer serious encroachment as well as damage from surrounding activities and development.

(h) It is recommended that the legislation which creates a protected area unit or program must identify and, where necessary, establish institutional mechanisms responsible for the management and administration of the unit or program. In the IUCN's view, "if legislation is vague or incomplete, particularly regarding the institutional needs, the basic

purposes and benefits of the protected area unit or program may never be realized for lack of delegated responsibility, accountability, and capacity." In particular, it is recommended that the coordinating executive functionary be clearly designated, whether this responsibility is assigned to the Head of State or delegated to the Minister for the Environment or another official of equivalent ministerial rank. Most importantly, the legislation must grant the responsible institution power to adopt such protective measures as may be necessary for each area in order to adequately ensure the long-term preservation of its ecosystem habitat and species (for example, the power to make various forms of regulations and provisions regarding its financial powers).

(i) The legislation must deal with prohibited and regulated activities in protected areas (for example, prohibiting destruction or alteration of natural systems, killing or otherwise exploiting any resource, damage to ecosystems from pollution, and the introduction of alien or exotic species). Additionally, it must enable the regulation of access to the area and the conduct of people in the area, paying specific attention to recreational use and matters such as concessions, permits, and the like. Provisions also ought to be made for matters such as emergencies within or outside the area which threaten its integrity (for example, bush fires).

(j) The legislation must make provisions for enforcement which cover three primary considerations. First, the type of operatives to be vested with enforcement duties and powers. Second, the kinds of enforcement powers which may be granted to these persons. Third, public involvement in the enforcement process. This can range from provision for supplementary volunteer personnel to granting public powers of enforcement recognized by the courts on environmental matters.

(k) The legislation should specify the manner in which legal proceedings shall be pursued in enforcement of the law. Questions such as the burden of proof, penalties, forfeitures, and the applicability of other laws must be made clear.

(l) Measures for public participation in the process of designation and management of the protected areas may also be provided for (for example, public representation on advisory committees at appropriate levels).

(m) Since not all matters can or should be settled in the act, it is necessary to include enabling provisions and the power to make regulations to build flexibility into the system and provide for changing circumstances.

(n) Savings, transitional and repealing provisions must be given due attention on the basis of a thorough study of the existing legal scheme and institutional framework.

INSTITUTIONAL IMPLICATIONS

While law reform in the area of nature conservation may and perhaps should be effected through the preparation of separate pieces of legislation dealing, respectively, with

state lands, wildlife, forests, and protected areas, it is imperative that the preparation of this legislation be informed by a clear perception of appropriate institutional relationships between the agencies which will be responsible for its administration. In this connection the present institutional arrangements, which involve the responsibility for state lands isolate from the management of forests, wildlife, and protected areas as well as subordinate the administration of national parks within the Forestry Division, are issues which must be addressed.

INSTITUTIONAL FRAMEWORK

In 1986, the new government found in place a Cabinet-appointed Standing Committee on the Environment currently chaired by the head of the Wildlife Section of the Forestry Division. This committee has examined the functions and objectives of institutions within the environmental sector and was astounded by the discovery that there were fourteen government ministries in which twenty-six divisions/departments and nine statutory agencies undertook activities related to the environment. It also discovered that these units operated under more than forty-two individual pieces of legislation that addressed various environmental objectives. The committee claimed that all of the agencies administering this plethora of laws do so independently, or more frequently do nothing under the assumption that some other agency which has responsibility for the same activity will enforce the law.

The committee reported serious areas of duplication of effort and of gaps in management resulting from lack of coordination so that agencies were unaware of the others' efforts, roles, and responsibilities. They pointed out that linkages between agencies were undertaken at unofficial levels, where concerned or enlightened individuals working in a particular sector made contacts with colleagues in other sectors to coordinate activities and to attempt to minimize environmental conflicts.

This chapter does not attempt to analyze the plethora of institutions that have an environmental connection. It rather concentrates on those government agencies which have some involvement in the management of protected areas, be they terrestrial or marine.

MINISTRY OF THE ENVIRONMENT AND NATIONAL SERVICE

The Ministry of the Environment and National Service was created in March 1989 in the same Cabinet reshuffle in which the incumbent Minister of Food Production, Marine Exploitation, Forestry, and the Environment lost the portfolios of food production and marine exploitation to a new minister. Forestry was subsumed in the title "environment" and a new portfolio of national service was added. The statutory body, the Institute of Marine Affairs, went over to the new ministry. The odd combination of environment and national service was explained by the zeal of the minister to involve the youth of the nation in the enhancement and protection of the environment through a system of national service.

Forestry Division. The Forestry Division is the lead agency, government or otherwise, handling protected area activity in Trinidad and Tobago. It conducts protected area operations through its national parks and wildlife sections, whose heads report directly to the Director of Forestry, the functionary in charge of the Forestry Division. Other heads reporting directly to the Director of Forestry and their responsibilities are:

- (a) Deputy Director of: Conservancies, Watershed Management, Forest Engineering;
- (b) Deputy Director of Forest Resource Inventory and Management, Utilization, Research; and
- (c) Administrative Assistant for Administration.

The Conservancies Section is headed by a conservancies coordinator who supervises the work of the five assistant conservators of forests in charge of the geographic areas northeast, northwest, southeast, south central, and southwest. The state forest estate over which the Forestry Division has jurisdiction is spread over these five geographic areas in legally constituted forest reserves. Activity by conservancy personnel is largely confined to patrolling the forest reserves to prevent forest offenses, sales of timber, silvicultural management of natural forests, and establishment and maintenance of plantations of timber species. They engage in no pro-active protected area activity as such, even though all the established game sanctuaries and some of the protected areas designated by the OAS plan fall within the forest reserves of the conservancies. The Conservancies Section is the only section that interacts, in the limited manner described, with the protected area operators in the national parks and wildlife sections.

NATIONAL PARKS SECTION. A detailed description of the management and operations of the National Parks Section is contained in chapter 5 which follows.

WILDLIFE SECTION. The Wildlife Section operates under a policy of managing wildlife and wildlife habitat to protect appropriate wildlife species while permitting and encouraging regulated harvesting of game animals and other recreational use of wildlife. It executes this policy principally through a strategy of protecting and managing habitats not only to support optimal wildlife population levels, but also to sustain endemic, endangered, threatened, and migratory species. Management of wildlife itself is achieved through a system of hunting licenses in the open season and the enforcement of a total ban on hunting in game sanctuaries and prohibited areas and other forest regions during the closed season. Patrols for wildlife offenses are conducted by game wardens and forest rangers attached to the Wildlife Section.

Institute of Marine Affairs. The Institute of Marine Affairs (IMA) was created under Chapter 37:01 (1980) of the Laws of the Republic of Trinidad and Tobago which were amended by Act 13 of 1990. It is mandated, inter alia, to collect, analyze, and disseminate data relating to the economic, technological, environmental, social, and legal developments in marine affairs generally.

IMA is not an implementing agency but rather is an advisory body, making recommendations based on the results of research. In executing its mandate it works closely with government ministries and agencies and other interested parties, including UWI.

IMA's research programs are designed to provide data and information relevant to the conservation and management of Trinidad and Tobago's marine resources so as to ensure the sustainable development of such resources.

At the request of the Tobago House of Assembly, IMA has undertaken an ecological survey of the coral reef systems of Tobago with a view to formulating recommendations for the management of these resources. This constituted Phase I of the project. Phase II, now in progress, has been designed to assist THA in implementing these recommendations, primarily through a multidisciplinary, management-oriented approach, and will culminate in the formulation of a comprehensive management plan. IMA has submitted recommendations in the area of policy, management, education, tourism, and research.

One set of recommendation was that the Buccoo Reef Restricted Area be given priority with respect to its development as a marine park; that interpretive and management plans for the Buccoo Reef National Park be formulated and implemented in the shortest possible time; and that the provisions stipulated in the Marine Areas (Preservation and Enhancement) Act and subsidiary legislation be enforced by THA in the shortest possible time.

National Service and the Environment. It has been reported that national service came under the same ministry as the environment because of the incumbent minister's views on harnessing the resources of the nation's unemployed youth in environmental enhancement. After initial political setbacks, the National Youth and Training Service got under way with a number of community-based projects. Those with an environmental flavor included the refurbishing and reopening of Knolly's tunnel near Tabaquite as a tourist attraction and assisting the Wildlife Section in its patrolling of turtle-nesting areas at Matura. The linkages between the national service projects and the Forestry Division tend to be ad hoc, and often last minute requests put undue strain on the already stretched resources of the division.

The use of youth in worthwhile environmental projects is praiseworthy, but the need for consultation with the established technical divisions of the ministry cannot be overstressed.

MINISTRY OF PLANNING AND MOBILIZATION

State Lands Department. The State Lands Act, Chapter 57:01, Section 6(1), empowers the Commissioner of State Lands with responsibilities, inter alia, for the management of all lands of the state. The commissioner is charged with the prevention of squatting upon the state lands and of spoil and injury to the woods and forests of such lands. Formerly, the person responsible for this function was called the Sub-Intendant of State Lands, and was accountable to the Governor General, the forerunner to the President under the current republican constitution. By this placement in the hierarchy, the person responsible for the administration of state lands enjoyed a certain immunity from political interference.

Today, however, the duties of the Commissioner of State Lands are performed by the Director of Surveys, head of the Lands and Surveys Division of the Ministry of Planning and Mobilization. As such, the Commissioner of State Lands is now subject to the political direction of a government minister.

With respect to protected areas activity, the commissioner, with the assistance of the Director of Forestry, is supposed to prevent squatting and encroachment upon protected areas and to remove squatters when this occurs. On submission of information by the Director of Forestry with respect to squatters on protected areas, quit notices are served on the squatters. The squatter is given notice to quit and deliver up possession of the lands immediately and, in default of doing so, is advised that legal proceedings of ejection will be instituted.

In practice, evictions have not been taking place for a considerable amount of time because of a government position to stay its hand pending the adoption of a policy on the regularization of squatters on state lands. A policy has been finalized for residential squatters, but the one for agricultural squatters is yet to be adopted.

The Commissioner of State Lands is assisted by a number of land surveyors, inspectors of state lands, assistant inspectors of state lands, and patrollers.

Town and Country Planning Division. The influence of the Town and Country Planning Division in protected areas is exercised through development planning and development control.

In preparing statutory development plans in accordance with the provisions of the Town and Country Planning Act, the division, through the amenities provisions, takes cognizance of the protection of the environment for the good of the whole community. Thus, the National Physical Development Plan, which was approved by Parliament in 1984, reflects the provisions of the 1980 System Plan for National Parks and Other Protected Areas. As a matter of fact, the division was represented on the team designing the system plan.

More detailed draft development plans have been prepared for areas within the National Physical Development Plan, but these have little reference to protected areas since they pertain mainly to urban areas.

The development control function is heavily urban-oriented. Section 8 of the relevant act requires that planning permission be sought and obtained prior to the carrying out any development of land. The division establishes effective control of urban growth by adherence to approved national and regional strategic planning and other land use policies, and, where necessary, introducing special restraining controls.

Chaguaramas Development Authority. In 1972, the Chaguaramas Development Authority (CDA) was created by an act of Parliament to manage the development of the area. It reports through the Minister of Planning and Mobilization. As a somewhat independent authority, it is not subject to the direction of the ministry with responsibility for national

parks. Thus, although Chaguaramas is designated as a national park in the system plan, it is outside the jurisdiction of the National Parks Section of the Forestry Division. Nevertheless, there exists a cordial working relationship between both institutions.

The activities of the authority have in the past been limited to the leasing of property, maintenance, and relatively minor development works. With the publication of a new Chaguaramas Development Plan in 1988 by the Town and Country Planning Division, an action-oriented approach to the development of Chaguaramas is currently under way. The plan proposes that the general functions of the authority be management of the development process through private initiative and through its own development program and more general estate management and maintenance. One of the specific functions listed is management of the national park.

While the authority will require specialist personnel for the performance of many of its functions, a large staff structure is not envisaged. It is proposed that staffing for the authority be largely managerial and supervisory, and that certain functions be carried out on a contractual basis as the need arises.

At present, the establishment of the CDA makes provision for a national park planner, a senior park assistant, five park assistants, and two trainees who work under the direction of an operations manager, who in turn is responsible to the general manager.

MINISTRY OF FOOD PRODUCTION AND MARINE EXPLOITATION

The Marine Exploitation Division of this ministry is the only department remotely connected with protected areas. Activity in the protection of marine areas is currently confined to Tobago and handled by the Tobago House of Assembly without reference to the Marine Exploitation Division. As the name of the division implies, it is concerned primarily with regulating the extent to which the waters of Trinidad and Tobago are exploited for commercial catches of fish and other living marine resources. However, the fisheries officers of this division are empowered under the Fisheries Act to police those marine areas declared by the minister to be prohibited areas. This is the only type of protected area activity that the division might be called upon to do and in practice it does not take place.

Fisheries officers prefer to see themselves as extension officers rather than marine police and hold the view that extension services should not be mixed with policing. No separate staff has ever been provided for policing, and representations have been made to the Organization and Management Division of the Prime Minister's office for a separate policing unit to be created. This unit will police not merely prohibited areas, but also, in conjunction with the Coast Guard, the vast expanse of the Exclusive Economic Zone.

THE TOBAGO HOUSE OF ASSEMBLY

Like the CDA, the THA is empowered by act of Parliament to be responsible for its own national park activity without direction from the government ministry responsible for national parks. A good working relationship exists between THA and the National Parks Section, however. Any development proposals for national parks in Tobago arising out of this study will be executed by the THA.

The legal authority of THA over protected areas is found in Section 21(1) b and c of the Tobago House of Assembly Act. The Assembly is charged with the responsibility of implementing government policy in Tobago relating to:

- (a) economic planning, programming, and development of Tobago with special emphasis on agriculture, fisheries, forestry, industrial development and tourism; and
- (b) conservation and improvement of the environment.

THA is also responsible for state lands, soil, and coastal areas. The Assembly is responsible for formulating and implementing policy for the protected areas of Tobago.

Areas under the control of the forestry staff that can be considered protected are:

- (a) the Bloody Bay Forest Reserve, established in 1975, which is protected from exploitation of its flora and is managed as a perpetual forest resource;
- (b) Little Tobago Game Sanctuary, established as a general wildlife reserve and specific sanctuary for birds of paradise; and
- (c) St. Giles and associated islands, designated as restricted areas with the intent of protecting nesting sites for frigate birds and other sea birds.

Little Tobago and St. Giles are patrolled by two forestry officers using a patrol boat, while the forest reserve area is patrolled by four officers.

The only area controlled by the Marine Affairs Section is the Buccoo reef complex, which in strict legal terms is the only protected area in Tobago. Management of Buccoo reef is handled by four patrollers who use a speedboat to police the restricted area with backup service from the harbor master's inspector. These officers report to the fisheries officer in Tobago, who in turn reports to the technical officer for agriculture.

In 1984, THA commissioned the Institute of Marine Affairs to study all the reefs around Tobago. The institute was again contracted in 1990 to formulate a management plan for Buccoo reef. This is an ongoing project at present. The Marine Affairs Section has also worked with the Crusoe Reef Society on projects related to the management and conservation of the Buccoo reef.

Land-based and marine beacons have been established in order to demarcate the restricted area. Extension efforts have attempted to create a greater awareness of the need for preservation and conservation of the reef's resources among reef operators.

NONGOVERNMENTAL ORGANIZATIONS

Nongovernmental organizations (NGOs) have displayed an active interest in environmental matters generally and protected areas specifically. The environmental NGOs are loosely associated through the Council of Presidents of the Environment (COPE). The following NGOs are represented on the council:

- (a) Asa Wright Nature Center;
- (b) Caribbean Forest Conservation Association;
- (c) Trinidad and Tobago Biological Society;
- (d) UWI Biological Society;
- (e) Game Fishing Association;
- (f) Pointe-A-Pierre Wildfowl Trust;
- (g) Trinidad and Tobago Field Naturalists' Club;
- (h) Zoological Society;
- (i) Horticultural Society; and
- (j) Citizens for Conservation.

In its 100-year history, the Trinidad and Tobago Field Naturalists' Club has been a constant factor in promoting the concept of protected areas in respect of pressure groups, active recreational use, research and study activities, publication of data, and public awareness programs. The club participated in stopping of the Blue River Project, which threatened damage to the Caroni swamp area. The club also participated in establishing the Asa Wright Nature Center and the Pointe-A-Pierre Wildfowl Trust.

The Asa Wright Nature Center forms part of the system plan. It is an area partly of abandoned estate land with some natural forest and an oilbird cave in the northern range. It is run by a trust as a nature reserve and center. The lodge and trails are successfully utilized for local and international tourism.

The Pointe-A-Pierre Wildfowl Trust is centered on an artificial lake area within an oil company compound which has been turned into a wildlife preserve, particularly for migrant birds, and a breeding center for the restocking of local wildfowl.

The Crusoe Reef Society has concentrated its activities in Tobago, studying and rendering practical assistance to THA for the protection of the Buccoo reef and potentially other reefs in Tobago. The society was responsible for producing a critically acclaimed documentary film on the degradation of the Buccoo reef.

The UWI Biological Society has been involved in rehabilitation activities at the Melajo Forest Reserve.

All the COPE member NGOs have actively participated in national committees and forums, as well as lobbying, education, and public awareness programs.

CURRENT PROPOSALS FOR INSTITUTIONAL REFORM

Reform for total environmental administration. In September 1988, Cabinet agreed on an Administrative Reform Program (ARP) and on modalities for its implementation, including the preparation of a master plan. The master plan proposed that teams examine the operations of each ministry or department and make recommendations on their functioning. The Ministry of the Environment and National Service, created with effect from 1 March 1989, was identified for priority consideration under the administrative reform exercise.

The ARP team looking at the Ministry of the Environment and National Service recommended in March 1991 that the ministry be structured along functional lines corresponding to ten divisions and units, the two relevant to this study being the Environmental Management and Control Division and the Forestry Division.

In November 1988, prior to the creation of a Ministry of the Environment, Cabinet had decided on the establishment of a National Environmental Authority (NEA). The ARP team concluded that the ministry alone could satisfy all requirements and purposes for which a controlling environmental agency would be established. Accordingly, it recommended rescinding the Cabinet's decision to establish the NEA.

The ARP team saw the responsibility of the Environmental Management and Control Division to be analyzing, reviewing, and formulating environmental policies, standards, and management procedures. The division was not seen to have any involvement in protected areas, which were left in the domain of the Forestry Division.

Forestry Division. The ARP team has recommended an organizational structure which essentially involves a regrouping of the more closely related and interdependent primary functional areas into three subdivisions (field operations, management planning and research, wildlife and national parks) and providing each directorate with a manageable span of control in terms of both number of functional areas and linkages between them.

The National Parks Branch is shown to have three sections, namely, park development/management, historic sites management, and park interpretation/education. Thirty-nine professional and technical posts are proposed to expand the current number of nineteen. The branch is to be headed by a very senior officer at the level of Assistant Director of Forestry. The functions of the branch are envisaged to include developing—and in some cases managing—national parks to facilitate outdoor recreation; protect sensitive ecological and unique areas; provide protection in areas of watershed and nature conservation reserves; facilitate environmental education, research, and tourism; and manage historic sites.

In its 1990 National Forest Resources Plan, the Forestry Division has expressed reservations on the idea of a functional branch such as national parks having operational

responsibility over the same territory as the other branches of the Forestry Division. The division has proposed a new structure that eliminates this overlap and allows for decentralized operations. Under its scheme, each branch would conduct the required research and planning in its area of discipline and the conservancy staff would then be responsible for all programs of implementation through a district or conservancy manager.

The district manager would be responsible for all activities that occur within his or her district, and would oversee a specialized staff consistent with the management objectives. The activities of the specialized branches would be national in scope, but may be concentrated within management units whose objectives would demand that branch's particular expertise. This would apply mainly to wildlife and national parks. For example, the Trinity Hills Wildlife Sanctuary may be deemed a management unit within the South-Eastern Conservancy, with the wildlife and national parks branches providing the expertise for the preparation of the management plans.

Specialized branches would therefore be support service-oriented. These sections would be responsible for research, training, and planning. They would be generators and disseminators of information as an input into the management decision-making process. As a further input, they would monitor the implementation of plans.

This restructuring proposal will need the blessing of the ARP team as it relates to protected areas because of the implications for staffing at both the Conservancy and the National Parks Branch.

Lands and Surveys Division. The Lands and Surveys Division was the subject of a recent restructuring study. The review indicated that a basic and uniform skill was required to perform the surveying and mapping function as against land resource management. These two separate and distinct functions require different specialist skills. The department was currently seen to be staffed at the managerial level with technical skills essentially required for surveying and mapping. It was therefore recommended that the land administration function be transferred out of the Lands and Surveys Division and grouped with other land resources management functions performed on an ad hoc basis by other agencies of government.

It has been recommended that the administrative functions involved in the Land Administration and Acquisition Unit of the Lands and Surveys Division and the functions of the Property Management Unit of the Prime Minister's office be transferred to a new unit, called the Land Resources Management Division, not under the control of the Director of Surveys. It is not clear to which ministry this new division will belong.

It has been recommended that the major functions of this Land Resources Management Division should include:

- (a) conserve and manage state lands;
- (b) ensure the state's interest in land is preserved and maintained;

- (c) manage all state property;
- (d) facilitate the accommodation needs of all agencies of government;
- (e) advise the state and implement decisions on matters relevant to land and property policy, including disposal into private ownership, acquisition of private land or property, reclamation, resumption, and conservation;
- (f) allocate land as required to community needs; and
- (g) land taxation.

The treatment of all state land as real estate to be administered in accordance with real estate principles has not been favored in certain quarters. The view is held that nature conservation efforts could be compromised if land were seen purely in terms of real estate.

INSTITUTIONAL RECOMMENDATIONS

This report is concerned primarily with the institutional arrangements for management of national parks and protected areas. Firm recommendations are submitted hereunder for this narrow aspect of the institutional picture. However, recommendations are also being made for the larger institutional context within which protected areas management will take place.

This report will not pronounce upon the suggestion advanced elsewhere that state lands administration, particularly in the context of nature conservation, should be insulated from political manipulation and be given constitutional protection in the form of a State Lands Commission enjoying an independence similar to the Service Commissions and the Elections and Boundaries Commission. Such an arrangement would undoubtedly contribute toward a greater preservation of the integrity of protected areas, but given the current momentum toward bringing the administration of state lands under stricter political control, drastic constitutional amendments to nullify this thrust are not expected in the foreseeable future.

Assuming that the administration of state lands remains under political control and that the Land Resources Management Division comes into being, there is still need to reconcile the respective authorities of the Commissioner of State Lands and the Director of Forestry with respect to control over the land allocated to forest reserves and protected areas. This can be achieved by amendments to the existing laws.

With reference to responsibility for the environment generally, care must be taken to distinguish between regulating the environment and operating within the environment. It is recommended that the ministry with responsibility for the environment concern itself with the broad function of regulation and oversee divisions that manipulate the environment and that would, therefore, be subject to policing by another unit of the same ministry. The minister could enter in situations of conflicting interest. The Forestry Division is largely concerned with manipulating the environment for the production of goods and services. For this reason, it should be moved out of a Ministry of the Environment with a regulatory function. It is recommended that this division revert to its former placement in a Ministry of Agriculture,

Forestry, and Fisheries, which in the Japanese model is clearly identified as a production ministry dedicated to the provision of food, flowers, forest products, and fish.

With the Forestry Division out, the Ministry of the Environment and National Service would be practically devoid of staff. It would then be opportune to move the National Service Section to where it rightfully belongs: the ministry with responsibility for youth. What is left of the environment ministry could then be absorbed into the Ministry of Planning and Mobilization, as is the case in Jamaica, where the planning function is closely associated with the environmental protection function. A new draft "Town and Country Planning Act" has detailed a larger, more specific responsibility of the Town and Country Planning Division in the supervision of environmental impact assessments. It therefore makes good sense for the embryonic Environmental Protection Agency, as proposed in draft acts, to be closely associated with the Town and Country Planning Division under the same ministry.

It is recommended that the Forestry Division, regardless of where it is placed, continue to have a National Parks Section, certainly in the short term. Although the division was set up primarily as a production division, there are advantages to keeping the conservation function in close proximity to the production function, if only to transmit the message that conservation goes hand-in-hand with production since conservation really means wise use.

Moreover, the National Parks Section is still somewhat embryonic and not yet ready to branch out as an independent National Parks Authority. Although this is a proper medium-to long-term goal which will be facilitated by the enactment of specific parks and protected areas legislation, it is recommended that the National Parks Section continue to operate under the aegis of the Forestry Division until such time as the system plan is so sufficiently implemented that parks and protected areas require a distinct authority. In the interim it is recommended that the National Parks Section be significantly upgraded and strengthened at least along the lines of the ARP scheme cited above.

CURRENT STATUS IN PROTECTED AREAS PLANNING AND MANAGEMENT

HISTORICAL DEVELOPMENT

The current situation in protected areas activity grew out of a tradition of forest reservation in Trinidad and Tobago. Reportedly the oldest forest reserve in the Western Hemisphere, the Tobago Main Ridge Reserve was established in 1765 as "woods for the protection of the rains."

More than 100 years later, in 1899, a report on "Conservation in Trinidad and Tobago," by F. Lodge of the Indian Forest Service, recommended that 18 percent of land in Trinidad and 12 percent in Tobago remain under permanent forest cover and that forest

guardians be appointed to protect such. With the appointment of the first forest officer in 1901, the demarcation of the proposed reserves began in 1902 and continued to 1919.

In 1920, a paper on "Forest Conservation in Trinidad and Tobago," outlining the forest policy of the government and the conservation measures to be adopted, was laid before the Legislative Council. This set the basis for forest conservation in Trinidad and Tobago, and in the 1920s the proclamation of these forest reserves began in earnest. In 1922, eleven forest reserves were proclaimed, with five more decreed during the rest of the 1920s, nine in the 1930s, five in the 1940s, seventeen in the 1950s, and four in the 1960s.

With the enactment of legislation for the conservation of wildlife, a new category of protected area called the wildlife sanctuary came into being, the first in 1934. Thirteen wildlife sanctuaries were declared between 1934 and 1968. They were often located totally within the forest reserves, but sometimes they extended into surrounding state lands.

During the 1940s, increasing timber exploitation in the natural forest reserves, and their conversion to teak and pine plantations, led to an interest in preserving the natural flora and fauna in specific areas within the reserves. These small areas, called nature reserves, were usually set aside along roadways within plantations. Altogether, eleven were established by internal arrangement within the Forestry Division with no additional or special legislation enacted to govern their status or management.

Systematic planning for national parks and other protected areas began in the 1970s. As a project of the National Technical Cooperation Program (NTCP) for the 1978-79 biennium, the Government of Trinidad and Tobago requested technical assistance from the OAS in establishing a national parks system. This request was formulated by a review of material from two previous OAS missions to Trinidad, in 1973 and 1976, a report of a subcommittee on national parks of the National Environment and Conservation Council of Trinidad and Tobago, and previous NTCP proposals.

The government proposed several areas to be developed as national parks, with emphasis on Chaguaramas, Caroni swamp, Navet dam, Buccoo reef, and Hollis reservoir; other areas would also be recommended for addition to the national parks system.

In 1978, OAS provided a technical adviser to the Trinidad and Tobago government to establish a national parks system. The project began with the Caroni swamp, with management, development, and interpretive plans produced and circulated in 1979. A comprehensive plan for a system of national parks and other protected areas was prepared in collaboration with relevant government agencies and nongovernmental organizations and circulated in May 1980. A policy document setting the basis for the enactment of legislation for the management and administration of national parks and other protected areas was prepared and submitted to the Attorney General's office in 1981. Cabinet, by Minute no. 2785 of 18 September 1981, accepted in principle both the policy and the plan for a system of national parks and other protected areas.

Legislation for national parks and other protected areas was never enacted so that protected area activity by the Forestry Division of necessity had to be pursued under the existing legislation. The Forests Act provides for the declaration of prohibited areas, and this device has been used to afford protection to certain critical areas pending the enactment of legislation. Between 1987 and 1990, eight of the then existing wildlife sanctuaries and forest reserves were legally declared to be prohibited areas. Four of them (Aripo Savannas, Caroni Swamp, Matura Beach, and Fishing Pond) are listed in the 1980 System Plan.

Management of so-called protected areas, such as it is, is carried out by the Wildlife and National Parks Branches of the Forestry Division in areas not properly designated as protected areas even though they form part of a detailed system plan.

PLANNING

The system plan. The basic concept in the preparation of the plan was systematically to identify and select sites which could best provide for the protection of the natural heritage. Attention was given to identification of marine and terrestrial ecosystems, vegetative communities, flora and fauna species, wildlife habitats, and geomorphological and geological features. In addition, consideration was given to education, scientific, and tourist potential for which the resources could be used.

The plan does not include the total range of areas which require special resource management practices to meet the variety of related conservation, watershed, or land-use management objectives which are also of critical environmental importance. Therefore, the plan is to be considered as a sectorial plan for national parks and protected areas and only partially as a plan of general conservation for the country.

A total of sixty-one areas are recommended for inclusion within the national park system. This represents approximately 69,000 hectares or about 14 percent of the total land surface of the country. In addition, several marine areas are proposed for inclusion. Of the lands within the proposed system, 31 percent are presently forest reserves while 12 percent are classified as wildlife sanctuaries and 33 percent as state lands. About 24 percent (representing approximately 17,000 hectares) is privately owned.

The sixty-one areas identified (shown in maps 9.1 and 9.2) fall within six categories of protected areas, namely:

- (a) scientific reserves (13 areas): certain relatively fragile ecosystems or natural features of importance to science;
- (b) national parks (8 areas): relatively large land or water areas containing a complex of ecosystems, including the most outstanding natural areas of the country under strict national government control and conforming to international standards;
- (c) natural landmarks (8 areas): small areas, rather than ecosystems, with distinctive features in a natural or near-natural state;

- (d) nature conservation reserves (13 areas): areas incorporating representative habitats for plants and animal species or associations;
- (e) scenic landscapes (6 areas): areas adjacent to roads, trails, or waterways where the scenic integrity and related resources offer opportunities for recreation and educational activities; and
- (f) recreation parks (13 areas): areas containing natural features that provide opportunities for swimming, hiking, picnicking, and related resource-based recreational activities, serving regional as well as national needs.

The eight areas designated as national parks occupy about one-half of the total area under the system. Four of these parks are located in mountainous topography of the northern range of Trinidad; one is in the main ridge of Tobago; two are swamps; and one is essentially a marine ecosystem.

Sectorial planning. The Forestry Division has produced its own sectorial plan for the 1990-99 period. With annual revisions it will operate as a rolling ten-year plan.

Under the rubric of national parks, the plan earmarks the proposed Madamas, Nariva, Matura, and Buccoo Reef National Parks for immediate attention. The plan states that by encouraging community-based national park projects, the integration of conservation and development of natural resources on a sustainable basis could be pursued, as well as creating employment opportunities for local communities.

The plan also short-lists for attention:

- 10 recreation parks: Oropouche, Palmiste, Pine Hill, Arena, Granville, Mayaro, Los Iros, Mt. Irvine, Little Rockly Bay, Castara Bay;
- 3 nature conservation reserves: Todds Road, Melajo, Point Radix; and
- 3 natural landmarks: Blue Basin, Tamana Hill, Cumberland Hill.

The emphasis in these three categories will be community involvement in the provision of facilities for recreational pursuits. Such facilities will include picnic sites, shelters, trails, and visitor centers.

Finally, the plan promotes the reclamation of abandoned quarried areas for landscaping and recreation, most specifically, quarries in protected areas like the Aripo Savannas and the Valencia Wildlife Sanctuary. It is envisaged that restoration with wildlife feed trees would encourage wildlife repopulation.

Park management planning. The National Parks Branch draws up management and development plans for the areas under its control, usually with technical assistance from OAS. Since the completion of the system plan, management and development plans have been drawn up for the Caroni Swamp National Park, Aripo Savannas Scientific Reserve, Cleaver

Woods Recreation Park, Caura Recreation Park, Quinam Bay Recreation Park, and San Fernando Hill Natural Landmark.

Management and development plans were completed in 1989 and 1990 for the Madamas and Matura National Parks. These were done by OAS short-term consultants as part of the Eastern Northern Range Project (ENRP), which commenced in 1988. The objective of the ENRP was to prepare integrated management and development plans for the Eastern Northern Range Region. The integrated nature of the project demanded a multidisciplinary approach to development with forestry, agriculture, fisheries, community and social development, educational tourism, and national parks integrated into the development of the region.

Tropical forestry action planning. The Tropical Forestry Action Program (TFAP) is an FAO-coordinated international initiative aimed at arresting and ultimately reversing the destruction of tropical forests through the harmonizing and strengthening of cooperation in tropical forestry. Most FAO member countries in the tropical belt have subscribed to the program. Trinidad and Tobago commenced preparation of an action plan under the TFAP in 1990.

One of the most important priority areas of the TFAP is the conservation of forest ecosystems. Under this priority area, the Trinidad and Tobago TFAP proposes an ambitious five-year project aimed at the development of thirty-two of the sixty-one areas of the system plan as functioning protected areas. Funding for this project, estimated to cost TT\$11.6 million, is expected to flow from an international round table of prospective donors to be held at the conclusion of action plan formulation.

ADMINISTRATION AND STAFFING

The titular head of the National Parks Section is an assistant conservator of forests, but a graduate trainee is acting in this post. This officer, who reports directly to the Director of Forestry, has overall responsibility for all park areas and historic sites under the control of the section as well as for the Forestry Information and Education Unit. Exclusive of this latter unit, this officer supervises the work of nineteen technical staff and seventy-four daily paid employees.

A Forester I or forest ranger is in charge of the day-to-day operations in each park area. Sometimes this person is in charge of more than one area. Responsibilities of this office include managing daily paid personnel such as foresters, sanitation workers, and guards as well as conducting interpretive tours. Junior officers often have to cover for senior officers because of shortages to staff the shift system for the park areas, which are open seven days a week from 6 a. m. to 6 p.m. or later, including public holidays except Christmas Day. Daily paid labor is staggered to assist the officers in maintaining a presence in the parks in addition to their actual duties.

The National Parks Section has always had to "borrow" staff from other sections of the division to maintain the areas under its management. However, there has been no recruitment to the division for the past six or seven years. Natural attrition, retirement, and the voluntary termination of employment program have seriously affected staffing within the whole division, and presently staff is stretched to a maximum with little hope of replacements during vacation periods or training exercises. The situation deteriorated rapidly over the past two to three years and is further exacerbated by the nonappointment of officers, who continue to act in positions much higher than their remuneration would indicate.

PRESENT MANAGEMENT STATUS

The National Parks Section of the Forestry Division is currently managing some of the units within the proposed system. The areas presently under management are:

- (a) Cleaver Woods Recreation Park;
- (b) Aripo Savannas Scientific Reserve (prohibited area);
- (c) Quinam Recreation Park; and
- (d) San Fernando Hill Natural Landmark (developed with assistance from IDB).

Day-to-day management of these areas generally involves upkeep of sheds and buildings, maintaining grass verges and pathways, removal of garbage, planting and landscaping, patrolling and talking to visitors, interpretive tours, recordkeeping, and purchasing of materials for park maintenance. Little development work has been carried out due to severe financial constraints.

Preliminary work has been started in Matura National Park, one of the new park areas for which management and development plans have been recently prepared. This involved the upgrading of an existing trail to the most accessible waterfall in the area. Organizing a community program to involve villagers in future planning and co-management of the park is currently under way.

Since January 1990, four historic sites divested from the Tourism Development Authority also came under the management of the National Parks Section. They are:

- (a) Waterwheel Estate, Diego Martin (near Blue Basin Natural Landmark);
- (b) Fort George (in Cumberland Hill Natural Landmark);
- (c) Fort Picton-Laventille; and
- (d) Lopinot Historic Site (development work in this area was limited to the restoration of a cocoa house).

These sites were divested complete with their staffing complement. All workers at these locations were daily paid personnel performing supervisory, laboring, and tour-guiding functions.

Other areas with existing management and development plans but not managed by the National Parks Section are:

(a) Caroni Swamp National Park (prohibited area)

This area, where the national bird, the scarlet ibis, roosts, is patrolled by the staff of the Wildlife Section. Implementation of the proposals for this area has commenced with financing from the IDB. Tenders were recently invited for the provision of design services for the park headquarters and visitors center complex at the entrance to the swamp.

(b) Manzanilla Nature Conservation Reserve (Matura and Fishing Pond Prohibited Area)

This is a prime nesting site for the leatherback turtle. The area is managed by the Wildlife Section which grants permits to nature-loving individuals and groups that who to witness the nesting activity under controlled conditions. The Wildlife Section has succeeded in organizing such individuals and groups as assistants to the game wardens, who are responsible for protecting the turtle from poachers. Neighboring communities have also been enlisted in these protection activities, which have now been extended to include tour guiding. Such community involvement in nature conservation and ecotourism will be the basis for introducing similar activities in the neighboring Matura National Park.

(c) Caura River Recreation Park

This park is managed under the Northern Range Reforestation Project, now the Watershed Management Section.

(d) Chaguaramas National Park

This national park falls under the administrative control of the Chaguaramas Development Authority. The park is unique among the areas proposed for inclusion in the national system in that it was designated as a national park in the 1974 Chaguaramas Development Plan, which was approved by Parliamentary Resolution (Legal Notice 99 of 1974).

(e) Laurier Road Recreation Park

This park is managed by the Southwest Conservancy of the Forestry Division.

(f) Buccoo Reef

This park is managed by the Tobago House of Assembly.

THREATS TO NATURE CONSERVATION

Of the protected areas listed in the system plan, only those with difficult access (for example, Saut d'Eau, Soldado Rock, and the St. Giles Islands) remain relatively undisturbed. The causes of environmental degradation vary from area to area, although certain problems such as poaching and squatting threaten almost every protected area.

Pressing problems in the northern range include the slash-and-burn practices of shifting cultivators working on steep slopes and the cyclical bush fires. The extraction of inorganic minerals, both the blue limestone of the northern range and the sands and gravels of the northern basin, poses a severe threat to certain areas (for example, the Aripo Savannas, a prohibited area, and the Valencia Forest Reserve and Game Sanctuary; the latter area has been devastated by quarrying notwithstanding its protected status). Quarry operators often remain in operation long after their leases expire and abandon lands without any rehabilitation, as happened, for example, at the San Fernando Hill Natural Landmark. In addition to eliminating the forest and wildlife resources of this area, quarrying activities have also polluted the North Oropouche River from the Valencia bridge to the sea. The heavy discharge of silt from the North Oropouche River may have a detrimental long-term effect on the habits of the endangered leatherback turtle, which nests in the prohibited area at Matura Beach, immediately to the north of the river's mouth.

Mineral exploitation also poses a major threat to the integrity of protected areas in southern Trinidad. Here the problem is posed by petroleum operations through routine and accidental oil spills and the intrusion of oil exploration and production operations into protected areas. Wide corridors are often bulldozed through virgin forests for the construction of all-weather roads serving isolated wellheads. Exploration activity has affected such areas as Morne l'Enfer, Trinity Hills, and the Southern Watershed Reserve, and may now threaten Bush.

Apart from quarrying and oil production activities, the most serious threat of irreversible damage in the short-to-medium term is posed by squatting. Much of the Southern Watershed Game Sanctuary has been destroyed by squatters over the past thirty years. Squatting now poses a serious threat to the Bush Wildlife Sanctuary in the proposed Nariva National Park. It is not unknown for the destruction of these protected areas to be perpetrated by large operators instead of the landless peasantry. These large operators use bulldozers and herbicidal and pesticidal spraying equipment in creating their large clearings.

An ongoing exercise has been undertaken in the National Parks Section to ascertain the present condition and extent of damage in proposed park areas in the central and southern areas of Trinidad since the 1980 Systems Plan was drawn up. The extent of damage could be such that the removal of some areas from the proposed system might be warranted. Such

* Much of the information in this section is attributable to the work of the national parks consultant on the TFAP team, Ms. Christine Toppin-Allahar.

is the case in the Kronstadt Island Wildlife Sanctuary, Morne l'Enfer, and a sizable portion of Valencia, where application to redefine boundaries or de-reserve the areas entirely is proceeding.

TENURE PROBLEMS

Some areas in the system plan include considerable amounts of private lands within the proposed areas. In drawing the boundaries for these areas, natural features were often used, such as watersheds, coasts, roads, and natural vegetation types, which naturally led to the inclusion of private lands.

Approximately 17,000 hectares, or 24 percent of the total area under the system, are privately owned. In the absence of legislation which provides for the incorporation of private lands within a national park, implementation of the system will require the allocation of appreciable financial resources to cover compensation for land acquisition.

A great challenge exists in involving private landowners in the planning and management of national parks. As yet, no serious, concerted effort has been made to involve private landowners in the protection of lands and natural resources or to control their exploitation of renewable resources to sustainable levels through discussion or incentives. Dialogue in this area should be a major component for the future planning of protected areas and for the drafting of legislation.

PROSPECTS FOR PILOT NATIONAL PARKS

RATIONALE FOR PILOT PARK DEVELOPMENT

The absence of a legal framework and human and financial resources have frustrated all attempts to implement the 1980 System Plan. Now that there is renewed governmental and international interest in the establishment of protected areas, it is important that this energy be properly harnessed and usefully channeled into activity of lasting value. It would be unwise to spread resources too thinly and attempt to establish all sixty-one sites in the system plan within the same limited time frame. The recommendation by the TFAP team to develop thirty-two parks over a five-year period is overly ambitious. This IDB project recommends instead that intensive park action be concentrated in no more than three areas in Trinidad and Tobago, leaving basic operations only (for example, boundary demarcation and patrols) for as many of the other areas as resources permit. Such areas where orderly pioneering ventures are taking place would then be regarded as the first true pilot national parks.

The establishment of pilot national parks boasts other advantages. Firstly, they can serve as models to demonstrate how different types of problems are solved for the benefit of succeeding projects. Secondly, successful implementation serves as a spur to further

successes and to the generation of public support and interest in park development. Finally, successful implementation will give funding agencies confidence in allocating resources to the development of other areas in the system.

Pilot park development at this time offers an opportunity to subscribe to the current concept of local community involvement in park planning and management. In practical terms this would mean:

- (a) determination of how any changes in land use would affect the local residents and what kind of privileges could be offered if compensation is indicated;
- (b) determination of the ways in which the park would benefit the local residents, particularly financially;
- (c) establishment of community participation in the management of the park; and
- (d) promotion of community good will by demonstrating that the existence of the parks and related ecotourism enterprises could upgrade the economic base of the region.

SFI.FCTION OF PILOT NATIONAL PARKS

The three areas selected for pilot park development naturally had to come from the master list contained in the system plan. All sixty-one areas in the plan had already been selected with regard to their biological, economic, and social values as well as their vulnerability to degradation. Final selection of the three areas was guided by Forestry Division prioritization of areas for park development as contained in their forest resources plan. This plan short-listed four areas: Madamas, Matura, and Nariva in Trinidad; and Buccoo reef in Tobago.

In order to reduce the short list to three and in the interest of balanced development in the twin-island state, it was decided to eliminate one of the Trinidad areas and to have Tobago represented in the pilot park thrust. Madamas was eliminated because of its relative inaccessibility and hence reduced vulnerability. Matura, moreover, is also located in the Eastern Northern Range and largely duplicates the ecological principles and processes operating in Madamas. The selection of Matura offers a fine opportunity to pay serious attention to the concept of community involvement in park development and management. Significant community activity in conservation ecotourism, based on turtle nesting at the neighboring Matura beach, already exists. The Matura National Park is ideally located to benefit from this experience.

Final selection of the site in Tobago was done in consultation with THA. Given the thrust of a project seeking to establish national parks where tenurial problems are an important constraint, the Assembly agreed that northeast Tobago was a more appropriate site than Buccoo reef. The area designated for a national park indeed displays an interesting

diversity of tenurial systems. Northeast Tobago is unique, moreover, in that it boasts a variety of ecosystems, both marine and terrestrial, on the mainland and on coastal islets.

DATA COLLECTION IN PILOT NATIONAL PARKS

As a background to the project proposals and in order to update and supplement the information in the system plan, the field study team collected data from the three pilot national parks.

The team designed a questionnaire relevant to the study areas but included the most important sections from the agricultural sector questionnaire. The relevance of particular questions was field tested in the study areas through informal and unstructured interviews, which ultimately allowed various directions to be taken when advising revisions to the final questionnaire.

The questionnaire was used to elicit information from a total of one hundred land users who lived within or adjacent to the three study areas (each area contributing approximately one-third of the total). The list of names for the sample was worked out carefully during fieldwork to eliminate some of the snags and time-wasting met in the agricultural sector survey. Names were then picked at random from the list.

Personal interviews were held with people who represented a broad cross section of the communities and included greater differences in age group, gender, and occupation than was possible in the questionnaire survey. The interviews were conducted singly or in small groups, which stimulated cross-reactions.

Further interviews were held with professional and technical staff from governmental and other agencies operating in the relevant areas as well as with members of village councils and other organizations. The information that follows, therefore, is a compilation from all of these sources.

Site-specific information on each area is summarized in the following sections.

MATURA NATIONAL PARK

Management objectives. To protect and maintain in a natural state the watershed and habitats of the area; to provide for extensive recreational, educational, and research activities in the forest area while providing for intensive recreational activities along the coastal areas of the park; to involve adjacent communities in management programs.

Summary description. The area, containing approximately 3,500 acres, rises from Saline bay and incorporates the watersheds of the Rio Seco and Saline River. Its vegetation is dominated by crappo-guatecare-mora forest with wild debasse on the higher slopes. The area retains the only large forest of this type remaining in the country. The rivers within the watershed form many cascades and falls that provide outstanding scenic attractions. Faunal

representation is good. The mouth of the river allows excellent freshwater bathing and is one of the best accessible areas in the country for a combination of river- and seawater bathing. Land use in the area is mainly forest related, though there is an official moratorium on timber extraction. Land capability calls for predominantly natural forest cover with only a small area of sustainable tree cropping.

The area, easily accessible from the Toco main road, is about 1-3/4 hours' driving time from Port of Spain. The main entrance to the forest area winds up the rugged Salybia/Matura trace. The principal ecotourism track to the most popular waterfall is fairly well-known and has recently been improved. It is part of an old benched trail heading westward over the hill to Platanal, but has not been used for produce for many years.

Buffer zones on the ridge to mark the western boundary are not essential since this border is shared with the forest reserve. Land acquisition will be necessary, however, to establish buffer zones in the north and south. Some of the land in question is abandoned private land, and some is state land. Future expansion of the buffer zone is possible.

User activities

(a) RESIDENT USE

(i) Animals. At least nine game animals are regularly hunted in season, and a number of other threatened or endangered species, including the ocelot, are occasionally glimpsed. Iguana and matte are hunted. Manatee have been reported in the river-mouth area in recent years. The usual hunting method is the shotgun, but trap guns are frequently set by game poachers, often out of the hunting season and sometimes to protect illegal marijuana fields—an electricity line worker within the potential buffer zone was injured by one this year. Reported snakes include the poisonous coral and mapepire.

(ii) Birds. Birds caught for food include the scale pigeon, parrot, toucan, and the endangered Pawi, which is becoming scarcer since hunters use it as food on their hunting expeditions. Several seed eaters and the parrot are caught to be sold as caged birds, but this trade decreases as the seed eaters lessen in number. The birds are caught in cage traps or with bird lime.

(iii) River resources. There is a small amount of river fishing, and some crayfish are caught by netting or by hand.

(iv) Marine resources. Crabs are caught by hand on the beach and in the mangroves to be sold at market. The park's beach is outside the restricted turtle-nesting area, so turtles have less protection and turtle hatchlings are sometimes used as bait by fishermen. There is a fishing industry, mainly trolling from pirogues, with some line fishing from the rocks and a small amount of spear fishing.

(v) Plants. No timber logs are being stamped at present on state lands, but a few private lands inside or near the park are being cleared. There are reports of some illegal extraction on state and abandoned private lands.

The main fruit plants used for food are balata, cocorite, and penny-piece. Other fruit trees are used by wildlife.

Only a small amount of fuel wood in the area is used, usually including any dry wood found on the forest floor. Plants for bush medicine are present but are typically gathered from gardens. There are also plants that are used as handicraft materials, such as territe and mamoo. Other potential commercial species include some vanilla and the natural insecticide ryania, but none of these is being exploited to any extent. There is some use of saplings for tool handles.

(vi) Agriculture. Agriculture both inside and outside the proposed area is primarily a mixed cultivation of tree crops, including cocoa, coffee, citrus, and banana, with provisions and vegetable gardens, pineapple, and Chinese coconuts, also. Some vegetable gardens are a front for marijuana cultivation. There are small patches of marijuana within the area, especially in an area called Saigon, south of the park margin, but almost certainly in the potential buffer zone area. The limited amount of bee keeping that takes place has made honey into a specialty of the area, though the main flower food source, Mora, has become scarce due to forest fires and conversion to pine plantations to the south of the park area. Livestock is not an important factor.

Many large estates apparently were abandoned after government programs began to provide easier incomes. The youth of the area seem uninterested in agriculture.

(b) NONRESIDENT USE

(i) Wildlife resources. Nonresidents of the surrounding villages and from farther afield use the area mainly for hunting game, capturing birds, and gathering horticultural plants.

(ii) Recreational uses. The main nonresident use is ecotourism in the form of hiking, bird watching, and beach activities.

There is no tourist accommodation in the area, except the few beach rental houses. Few of these latter could be considered as part of a flourishing tourist industry.

(iii) Praedial larceny is largely a nonresident activity.

- (iv) Quarrying and illegal logging pose no real problem in the proposed protected area, despite being difficulties in nearby areas.

Tenure considerations

(a) **WITHIN THE PARK BOUNDARIES.** There are private lands inside the Salybia--Matura trace, near to the starting point of the hiking trail, which date back to when this was the main village area, that is, before government settlement areas were established along the Toco main road. Some of these lands are being cultivated, some are unused, while others are being reactivated after having been stripped of lumber (the removal of which has degraded trails).

There are residential squatters at the beginning of the trace near the main road, including some elderly people and one very diligent farmer, and some leased land.

(b) **THE POTENTIAL BUFFER ZONE AREA.** On nearby traces such as Knaggs, Langousta, and Grey, very little land is being formally used, though there is some private land. There are reports of marijuana planting here, too, but this has lessened now due to a decreasing market price. There is a small amount of both agricultural and residential squatting but not enough to constitute a serious problem.

(c) **SURROUNDING AREAS.** These acreages fall into a similar pattern of abandoned agricultural land, with some being reactivated on a small scale and some with a small amount of squatting.

(d) **LARGE LANDOWNERS.** There are a few big estates, mainly cocoa, and still fewer being actively worked. Some estate land has been bought by peasant farmers. One large landowner at Matura Point employs labor on a citrus estate, but he is the exception.

(e) **VILLAGE TENURE.** Many villagers own houses on rented land, though there is some private ownership. Salybia village is largely a government settlement area. Residential squatting is rare, except for an enclave east of Matura village.

(f) **OTHERS.** Beach houses are on government leasehold lands in the Salybia area and on private lands further north. As part of park preparation, the Tourism Development Authority has been clearing brush on the banks of the Salybia River.

Needed actions. The major needs of this area that the establishment of a park could help to address directly or indirectly are: (a) employment, especially for younger people and women; and (b) improvement of agricultural access roads for private lands, utilities and services, telephones, public transport, daily supply of reliable clean pipe-borne water, resurfacing of the Toco main road, and guest accommodation other than beach houses.

The major conditions for establishing the proposed park include necessary legislation, interim measures, and implementation of the current park plan.

NARIVA SWAMP NATIONAL PARK

Management objectives. To protect the swamp forest; to preserve fresh- and saltwater ecosystems within the area; to provide opportunities for environmental education, research, interpretation, and recreation; and to involve the adjacent communities in the management strategy.

Summary description. The area covers approximately 5,200 hectares. The herbaceous section of the swamp comprises large pure patches of *Cyperus giganteus*, *Montricharda aborescens*, *Gynerium sagittatum*, and "water bamboo," species which do not intermingle and cannot be found in such abundance in other swamps of the country. The predominant forest type is crappo-guatecare; however, the dominance and variety of species, especially those of bloodwood and moriche palm, are unique to the area. The fauna of the area is extremely rich and varied and includes threatened and endangered species. The Bush Bush Wildlife Sanctuary falls within the area. Cascadoux fishing is common to the area. Over 150 species of birds have been recorded in the region. Although the land capability survey indicates that approximately 50 percent of the area is suitable for agriculture, periodic flooding is a limitation.

Access to the area is provided primarily by the main road from Port of Spain through Sangre Grande. There is a less well-maintained road between Biche and Rio Claro and a road through Rio Claro that links Mayaro with San Fernando. The main access route into the Nariva Swamp itself is obtained via Kernaham trace on the southeast. There is a boat channel running from the coastal area into the sanctuary and an approach through Caltoo trace from Plum Mitán; this used to be passable only during the dry season but, by way of the rice fields, is now open right through to Bois Neuf, the western part of the sanctuary. The hunters' paths from other villages pass through forest reserves, especially along their demarcation lines, but are difficult in the wet season, when water may be at shoulder height in places. A recent line cut for an oil survey also serves as a convenient pathway.

User activities

(a) RESIDENT USE

(i) Game. At least four kinds of game animal are hunted in quantity for food; also stalked are the red howler and capuchin monkeys that are found in the swamp forest. The iguana is commonly caught. The endangered manatee is occasionally seen in the lagoon area and is sometimes eaten. Area hunters usually use shotguns, but trap guns are common as well. Such animals as the otter are occasionally seen.

(ii) Freshwater resources. This is a major resource of the area. Cascadoo is the main catch, together with coscorob, guabine, and grand escaille. The methods of fishing include cast nets, fillet nets, pots, and hooks. Conch are harvested by hand, and there is a danger of overharvesting.

(iii) Plant resources. Timber extraction of about eleven different hardwood lumber types occurs in the surrounding forest reserves. These as well as mangrove are also taken from the proposed park area by residents for their personal use.

Food from the balata, cocorite, and palmiste are harvested.

Some thatching is done with carat leaves, and a small amount of fuel wood is gathered, often just using any dry wood.

(iv) Agriculture. The major crop of the area is rice, which uses both natural water flow and irrigation. The same land parcels are often planted in the dry season with watermelon or vegetables. This watermelon and rice farming, however, encroaches on the buffer zone and the sanctuary. Marijuana plots are also found in both sections. Rice-farming encroachment is done by large-scale squatters, and most of the marijuana plots are reputedly financed by a central figure. Vegetables suitable for export are becoming more common. There is some cocoa, banana, and citrus outside the park area.

There is little livestock except for immediate use. Earlier problems with feral cows within the sanctuary seems to have been stopped.

(v) Birds. Seed eaters are caught in traps using bird lime and mist nets to sell as caged birds. The blue and yellow macaw was once a breeding resident of the swamp but is no longer. Species of wild duck, local and migratory, and heron are caught for food.

(vi) Other uses. Stripped terite is used to make cascadoo strings. Hindu weddings and other religious ceremonies use palmiste hearts and calathea/-cathebo leaves for wrapping the food. There is little extraction of handicraft materials or plants for medicines. Any available wood is used for tool handles.

(b) NONRESIDENT USE. Nonresidents of the area exploit the natural resources such as game, freshwater fish, occasional timber, and caged birds. Reports indicate that nonresidents are more likely to use these resources commercially. Mangrove bark for the tanning industry is being overharvested.

Ecotourists use the sanctuary for nature studies and bird watching. Bird watchers, often entering the general area from the Plum Mitán side, are attracted by waterfowl which are directly dependent on the well-being of the swamp.

The area is also used for scientific study.

Tenure considerations. The land tenure situation is simple in that there are no private lands included in either the sanctuary or the total proposed park area. In fact, there is little private land in the whole Nariva swamp area. Those questioned in the survey stated that they had moved onto unused land.

The tenure situation is one of the greatest complications, since lack of tenure has been a main hindrance to agricultural development and financial stability in the area. Lands in the Cascadoo trace area have been held on a temporary basis since they were first allowed to be used as vegetable allotments ("war gardens") during World War II, and regularization of tenure is still pending. Other lands are leased by verbal agreement on a month-by-month basis. Some rice plots of 3 or 5 acres have been given out in the Plum Mitan area on temporary leases. Although this is outside the study area, impacts can be expected through the economic instability of the users.

Other large holdings—without proper leases, apparently without restriction, and without considering the claims of earlier residents—have passed into the use of rice growers from central Trinidad. Many residents in surrounding villages such as Plum Mitan own houses on rented land, and farmers in the Biche area may own 5 or 10 acres of cocoa land.

The tenure situation is further complicated by the (former) Dominion Oil Company ownership of oil leases in the southern part of the area.

Regularization of tenure problems would not automatically relieve the proposed park area of problems, but since farmers in the area are effectively squatters, it could help them to bring stability to their lives in the form of collateral for development loans and the right to demand government utilities.

Needed actions. The main needs and problems of the surrounding area are: regularization of land tenure in the surrounding area; employment (unemployment, for example, is 85 percent in Plum Mitan; village council members reported that residents pay rents as low as \$12 for residential plots, that many families could cater to their basic needs on TT\$200 per week but that many families do not earn so much, and that government food parcels were distributed to the neediest in this and surrounding villages); proper infrastructure and services (such as access roads suitable for heavy equipment, pipe-borne water, electricity supplies in most areas, and schools); new agricultural settlement areas; regulation of exploitation of natural resources by outsiders; funding and training for small business opportunities; and training and help in forming a small rice growers' and farmers' cooperative.

The main needs of the proposed protected area include: legislation for establishment of the park, with interim measures put in place until that can be done; design and implementation of a park plan; drawing up of new boundaries and visible demarcation; training of community groups as guides, wardens, and the like; research programs into tourism carrying capacity; quota limits for wildlife, especially cascadoo and wild ducks; research programs to design projects for greater protection of rare and endangered species

such as monkeys, manatee, macaws; drainage patterns; acceptable levels of agricultural chemicals among the wildlife; quota limits and regeneration time for mangrove species used in the tanning industry plus use of alternate methods of vegetative tanning when available; funding for small business opportunities in the area, with preference to those with ecotourism connections; funding and technical assistance for regeneration of tourist accommodations in the adjacent area of Manzanilla and Cocos Bay; and, more than anything else, political will both for the creation of the proposed park and for the regularization of the whole area.

Some of the difficulties in establishing the proposed park will be: the poverty of the farmers; the peoples' need for farming land; the local custom of defying the law; and public opinion—which believes that this is only a swamp and that a swamp has no uses.

NORTHEAST TOBAGO NATIONAL PARK

Management objectives. To protect the variety of habitats represented in the area while providing opportunities for environmental education, research, interpretation, indigenous cultural expression, recreation, and employment; to integrate the residents in the management program.

Summary description. The area defined in the 1980 National Park Systems Plan as the East Tobago National Park comprises most of northeast Tobago, approximately the area seen on OS 1:25 000 sheet 3 for Tobago. The recommended park area of 5,700 hectares includes most of the lands north and east of the Roxborough-Parlatuvier road, the marine areas of Man-of-War and Tyrell's bays, and the islands of Little Tobago and the Giles, but excludes a section between the Louis d'Or Valley, Roxborough, and the Main Ridge Reserve boundary. Prime agricultural and developed areas were excluded. There was a separate listing for the scenic route between Roxborough and Parlatuvier.

The study team proposes, however, that the whole area from the Roxborough-Parlatuvier road become a world biosphere park with a central development plan zoning the area for various uses.

Although this area contains no grandiose features, it claims an outstanding number of unspoiled, small ecosystems within one area, including the oldest watershed reserve in the Western Hemisphere, streams and waterfalls, beaches and scenic views, varied agricultural areas, quiet villages, two bird sanctuary islands, and living coral reefs. The wildlife habitat comprises littoral woodland, deciduous seasonal forest, rainforest, shore, and islets, sheltering many rare species. It also ranks as accessible and politically stable. The roads provide driving through an area of outstanding scenic landscapes of ridges and valleys and panoramic views.

The proposed park area includes the agricultural and fishing villages of Charlotteville, Speyside, Bloody Bay, Betsy's Hope, L'Anse Fourmi, and Delaford. Louis d'Or is outside the area mentioned in the 1980 System Plan, but is a suitable area for ecotourism. It is therefore proposed that the plan include both Louis d'Or and the town of Roxborough at the

junction of the Windward road and the Roxborough-Parlatuvier road. Roxborough is a center for the region and has correspondingly more public facilities than the other villages.

BUFFER ZONES. Since the whole region would be the protected area, the buffer zones would be included inside that region. They would comprise forest/agroforestry/agricultural buffers around the forest reserve, nature reserves, and privately owned lodges on unused private lands; monitored zones in the villages are the main buffers for the reefs.

ACCESS ROADS. The junction in Roxborough is about an hour's driving time from Scarborough and, when driving at the legal speed limit of 30 mph (50 kph), is within about 1-1/2 to 2 hours of any major hotel.

Windward road enters the area at Roxborough and continues through the area to Charlotteville. The northside road joins the other end of the Roxborough-Parlatuvier road at Bloody Bay and continues a few miles further to L'Anse Fourmi; an unpaved section goes through to Charlotteville. There are few other roads in the area, most being local access roads to agricultural lands.

Transport by sea from the leeward coast is possible, and moderate-sized ocean-going craft can anchor in Man-of-War bay. There is a heliport at Louis d'Or with no attached services.

User activities

(a) RESIDENT USE

(i) **Game.** Four main game animals and iguana are hunted for food and other animals are occasionally found. They are hunted mainly with shotguns but sometimes with dogs. The deer have died out.

(ii) **Plants.** Some timber is still used, such as cedar, mahogany, laurier, angeline, and cypre from large estates and other private lands. Harvesting of timber from forest reserves is no longer in practice. The Shelterwood system had been used for a while in 1,000 hectares of the Main Ridge Reserve. The main forest fruit harvested is balata. Other plant uses, whether for thatch, fuel, baskets, or medicine, are uncommon.

(iii) **River and beach resources.** River fish are hardly used, except crayfish, stocks of which are reported to be severely diminished, as are those of beach crabs. Hawksbill and leatherback turtles are slaughtered on the beach for both meat and eggs. The carcasses are often disposed of by burial at sea. Pachro is used, especially at harvest festival time. Crayfish, which were formerly caught by net and used for bait, are now harvested by people wearing mask and snorkel and using wire and hook.

(iv) Marine resources. There is extensive fishing from the ocean, with the 1986 count of registered fishing boats within the area at 129. All kinds of fish are caught, including reef fish, occasionally turtle, lobster, crab, and conch. The methods of catching are mainly beach seine, banking, and trolling. There is some line fishing from rocks and some spear fishing on the reefs. Some fish pots are also used. Black coral and turtleshell are harvested.

(v) Agriculture. The major crops are cocoa, banana/plantain, ground provisions or cassava, some vegetables, citrus, and the like. Livestock include cows, some pigs, domestic chickens, goats, donkeys, and sheep, but only a few farmers rear livestock. There are a few (less than a dozen) wildlife farms. Some hunting dogs are bred for sale in Trinidad. Marijuana is grown but reportedly not in quantity.

(vi) Birds. The number of birds caught for caging has declined due to the decline in the population of the once-common semp, robin, picoplat, bullfinch, and ringneck, often exported to Trinidad. The sale of the parrot as a caged bird is increasing. Birds used for food are parrot, cocrico, pigeon, pelican, frigatebird, booby, and other shore birds. The method of capture is mainly cage, trap, or bird lime. Birds' eggs are also eaten, especially those of seabirds.

(vii) Other forest products. There are few other regular uses of forest products; materials formerly exploited for fish pots, baskets, and so forth are rarely used now. A few beehives are worked; forestlands are pastured; some fuel wood is gathered.

(b) NONRESIDENT USE

(i) Marine, river, and land wildlife resources are harvested by nonresidents. Fish, crabs, lobster, and black coral are collected, often for sale in Scarborough or Port of Spain.

(ii) There is a small amount of timber extraction, some of which goes to the Scarborough sawmill.

(iii) Forest recreational uses are hiking, nature tours and waterfall sighting, bird watching, scenic views, picnic areas, and sea bathing.

(iv) Marine activities are scuba diving, snorkeling, and deep sea fishing. Two glass-bottomed boats are available.

(v) The small hospitality industry includes a hotel, some guest cottages, and restaurants. Blue Waters Inn is the only hotel in the region. There are a number of cottage or apartment accommodations, of which Man of War

Cottages is the best known. These self-contained units exist in Charlotteville, Speyside, Delaford, and Cambleton. The quality varies greatly. There are restaurants at Speyside and Charlotteville, and small food outlets also at these villages and in Roxborough. Bars with drinks only are common.

(vi) Scientific studies of the area.

Tenure considerations

(a) LARGE TRADITIONAL ESTATES

(i) Charlotteville estate has been in the family for over 100 years. Only a small proportion of the land is still worked, some by small farmers under lease arrangement or verbal agreement. The estate also still owns part of the village land and gives residential leases from \$12 up. A part of the estate, 240 acres, has been offered for sale to the Tobago House of Assembly for village homes and agriculture.

(ii) Speyside estate is not worked except by squatters. A former hotel burned down, and a small hotel site has been sold.

(iii) Trois Rivieres, Speyside, is tied up in a tenure dispute.

(iv) Merchiston estate: Some small agricultural parcels have been sold, with one now being under cultivation. The owner lives on the property cultivating some old cocoa and coconuts, but the land is largely unworked, except for some cow pastures, coconuts, and bananas. A nature lodge hotel has applied for planning permission.

(v) King's Bay estate had an American owner, who recently died. The heirs are unsure about future plans. The crops are mainly cocoa and coconut, but not much work is being done at present except on some squatter lands used by verbal agreement.

(vi) Louis d'Or: The Edwards estate is largely unworked.

(vii) There are government estate demonstration stations as well as nursery, teak, and pine plantations. Squatters occupy government lands in a swamp area which is supposed to be communal pasture.

(viii) Bloody Bay estate belongs to the government, supposedly for peasant farmers, but there is little evidence of planting. There is some squatting in this area.

(ix) L'Anse Fourmi estate is in private hands.

(x) Hermitage estate is owned by a foreign consortium which wishes to develop it. Once famous for its produce, it is largely unused.

(xi) Cambleton estate, owned by a labor union, is not a working estate.

(b) OTHER PRIVATE LANDS

(i) The residential villages are squeezed between the hills and the sea and historically housed the estate workers. The land may be rented or owned by the resident. There are few agricultural plots within the immediate villages.

(ii) Many agricultural lands are in sections around old estates, largely on the hills, which were divided up and sold to villagers. Not all are being worked, and few owners hold title deeds.

(iii) There are few foreign-owned properties.

(iv) Each village area has some government land leased out for housing, and there are some agricultural leaseholds.

(v) There is little squatting in this area, that which takes place being mainly on unused estate land. The pastureland on the former swamp in Louis d'Or has residential squatters. Few have title deeds.

Social conditions. The major social needs of this area are: employment opportunities, particularly for youth and women; better utilities and infrastructure, including some agricultural access roads, better water supply, telephones, and public transport; regulation of the exploitation of natural areas by outsiders and regularization of land tenure.

The residents are unusually aware of the forest as a water reserve and an asset to be protected. They also feel that it belongs to them. They are most interested in the three areas of tourism, having been more directly exposed to it already. Residents tend to see tourism as a means to uplift their lifestyle, but many express the fear that large hotels will change the area.

The people are friendly and visitors are safe, but there is an increasing element of hustling, sometimes with drugs involved. An increase in economic independence in the area might be one small step toward reducing the latter. It is significant from the questionnaire survey that many of the land users envisaged future employment from tourism, and some had plans in mind (though few of these included actual hotel employment).

There is no network of guest houses, partly because the present system brings in some income and partly through a fear of extra taxation and regularization. There are embryonic small businesses which could blossom in a more open-ended economic climate, and a number

of private dreams which could become realities with help in planning and financing. None, however, is yet at a stage for project proposals.

Few persons participate in organizations other than sports clubs, but there is the beginning of a tour guide group in Charlotteville/Speyside.

Special recommendations. The National Park Systems Plan drawn up by Forestry Division and the OAS in 1980 was not put into action. The House of Assembly became responsible for most aspects dealing with the environment, but it has also been unable to implement the plan as a whole, and some officials are still unaware of the comprehensiveness of the plan.

Nevertheless, within the region there have been a number of small projects aimed at either bettering the lot of the people or enhancing the ecotourism or conservation of the area. However, since the basics of an overall management plan for the area seem to be missing, these outer points are being tackled in isolation by various government agencies and others without cohesiveness. Although there may be overall plans in terms of tourism, agriculture, or other disciplines, the points addressed so far appear unconnected.

It is recommended that this whole region be planned as a unit, so that individual projects will then be part of a wider multidisciplinary plan for the area and will fit into a rational place in the scheme. The feasibility of the plan should be verified by extensive interaction with the community of the area and by cross-checking with other national plans past and present.

A precedent for this is being set by the wide-ranging plans for the Eastern Northern Range in Trinidad, and much can be extrapolated from this approach for use in the northeast Tobago situation.

The main theme for development would be that of a biosphere park. This term may be most fitting under the nomenclature of the IUCN. Justification for this designation lies in the necessity to conserve the many natural assets of the region, which are contained in a compact, tranquil area easily accessible to local or foreign visitors in a politically stable environment.

It is not always the grandiose or the most spectacular that merits the world's attention. This self-contained package on a smaller scale may hold an equal number of assets to make it worthy of attention. Its value as a gene pool, for scenic beauty, as an outstanding ecotourism attraction, for scientific study, for recreation, and for environmental education underline its valuable assets. A major reason for declaring the area a reserve is the as yet unquantified value of watershed protection.

There is a strong case for preserving the integrity of the main ridge forest, not only for its intrinsic natural worth both as a watershed and as an ecotourism income earner, but also for its value as heritage real estate for the future.

To accomplish this, it is recommended that one management unit coordinate development plans, conservation, resource management, park infrastructure and management, and other projects in the area. The whole area should come under zoned national park regulations as Northeast Tobago Biosphere Reserve.

PROPOSED MANAGEMENT MODELS

The success of management depends on the degree of support and respect awarded to the protected areas by the neighboring communities as well as the attitude of those trusted with its day-to-day management. Inherent in this is the resolution of conflicts over resource use by the protected area managers and other resource users.

Designing policies that benefit both the protected areas and nearby communities is a crucial issue. In many cases effective protection will require changing current patterns of behavior to limit or prevent uses that endanger the resources of the areas.

Threats to protected areas by human encroachment are motivated by poverty, land hunger, and development processes, all of which are compounded by rapid population increase.

Preceding sections described how the resources in and around the proposed national parks were used by the communities. This provides the basis for developing management models to minimize resource depletion. Alternative management models are described below. Recommendations for management of the problems of the specific reserves are also suggested.

Permissible uses. There is usually a need to decide whether to allow use at all or to restrict it to some acceptable level. If use is completely banned, it may be easier to manage and enforce. However, this may not be the best policy where there are many traditional resource users. If a certain degree of use would not damage the resource, then a total ban would deprive users of traditional benefits and increase conflicts. The procedures used in the Royal Chitwan National Park in Nepal and Matobo National Park in Zimbabwe have been described elsewhere. Both parks permit grass harvesting for thatching houses and have found that controlled harvesting provides some compensation to local citizens for the loss of resources.

Minimizing dependence on resources. High demands for certain wildlife and plant species would require limits to their harvest. However, as a regulatory measure either the supply of the source species could be increased or the demand for it could be reduced.

Increasing the supply would require the creation of an alternative supply usually outside the park boundary or perhaps within the buffer zone. This has been the case on the southeast coast of St. Lucia where a community woodlot was established to minimize the cutting of the mankote mangrove for fuel wood.

Usually the main reason for extracting a resource is to supplement income; therefore, a viable alternative that generates income will reduce the demand for that target resource. Another strategy for reducing demand would be to relocate people who are using the resources from within or near the park boundaries. Forced relocation should only be used as a last resort. Incentives for voluntary relocation would be the tactic of choice. Provision of employment or parcels of land are useful incentives that benefit both the relocated people and the protected area. Matura/Salybia is an area where this could work. Educating the community on the damage they cause may persuade the residents to reduce their use of the resource. However, if residents believe that their survival is absolutely dependent on this use, no amount of education will change their habits.

Control in community use. A community can be allowed to regulate its own use of the resource, especially where a single cohesive community can be given sole access to the resource even within the protected area. If local people act in the best interest of the community, they can be given control over harvesting, subject to outside monitoring to ensure that their use stays at an acceptable level. The need for enforcement then is greatly reduced; the community can police itself and also prevent nonresidents from harvesting. This situation was demonstrated on the southeast coast area of St. Lucia where a licensing program allowed sea egg (urchin) divers in the area exclusive rights to extract sea eggs in the open season. These divers then determined when the season should be closed, based on the removal of the last sea egg of regulation size. They also discouraged unauthorized sea egg collection in their area. A more related example is the involvement of the Matura people in controlling the turtle-nesting beaches.

Penalties and monitoring are necessary to ensure effective regulation, which in turn depends on the chance and the penalty of being caught. Penalties and enforcement are often necessary though not always desirable for controlling illegal resource use. They lead to hostility between local residents and enforcement personnel that sometimes leads to violent confrontations, as with elephant poachers in Africa or the scenario when the game warden in Tobago made an arrest and "the whole village took off after me like a pack of dogs after an agouti." Removing the desire of communities to poach protected areas in order to maintain their livelihood is by far more desirable.

Alternative employment. The creation of income-generating projects that minimize degradation of the protected area is a useful incentive for resident communities. Involving the communities in park protection services and as guides is sometimes preferable since they usually have a great deal of local knowledge of the resource and the area, as in Nepal and Kenya.

The provision of other business or agricultural opportunities also helps to reduce resource degradation, as has been done at Ban Sap Tai, a village near Khao Yai National Park in Thailand.

**STRATEGIES FOR SUCCESS IN ECOTOURISM AND
COMMUNITY CO-MANAGEMENT OF NATIONAL PARKS**

The national park system has a greater chance of success if it involves the surrounding communities. The very fact that a land area is still in a fit state for conservation is often because the surrounding area is depressed economically. Add to this the fact that several generations of villagers have considered that they hold common rights to the land. Although it may have been restricted forest reserve, they still had some access. And even new residents claim the same resident privileges.

The land is now to be used as national park area, which will restrict resident use and will bring in visitors from the city or overseas to share it as well. This situation is clearly neither fair nor a likely ingredient for success. Measures have to be found to allow the area's residents to benefit from the new use of the land, which they have effectively held in trust, and allowed to be preserved. The park land is not merely a national asset in abstract concept.

Park plans should therefore be regarded in the light of holistic local planning. One of the first aims should be the creation of a national park as a serious means of upgrading the surrounding area without detracting too seriously from its rural charm, quiet, and culture. A park is not merely a means of lining the pockets of big investors and not simply an abstract concept of preservation.

Elements of the strategy are discussed below.

Infrastructure. In most such areas the infrastructure, utilities, and services vary in quality between below average and very poor. Something will have to be done unless the tourists who use the area are very hardy. In each of the study areas, the field team was wistfully asked when something would seriously be done for the neighborhood. The park planning exercise is an ideal time for basic things like water supplies, transportation, and telephones to be put in place. Such utilities will clearly be needed for the tourists and, though it is neither part of the park infrastructure nor its responsibility, strong representation together with the village people can be made for these improvements. After all, increased national revenue from the tourists, including taxes, should quickly repay the outlay.

Economic base. Among the problems of park management, as mentioned above, are poaching and agricultural squatting. The provision of adequate enforcement on a sustained basis is as unlikely as it is expensive. The best enforcement method is providing alternatives, and these three areas are indeed ready for the choices. This is particularly the case in northeast Tobago. Having been less exposed to tourism, the residents of the other two areas are much more vague about what benefits they can expect from ecotourism.

The study team went into the areas expecting to find community business projects ready for funding very quickly, but this expectation had to be revised when it was realized that such undertakings cannot be hothoused into instant life.

Certain conditions need to be met before rural small-business enterprises can begin. First of all, such businesses have little chance for success until the economic base of the area can be strengthened overall. Examination of cases over nine countries documented in *Development of Rural Small Enterprise*¹ shows that when this can be done, small businesses will appear spontaneously to meet growing demands. This is the wisdom also of some of the field officers met during the survey. They were confident, for example, that if enough tourists came regularly through the Kernaham trace to visit the swamp, the residents would find some way of capitalizing on this influx without benefit of small business loans. However, a small grant or loan capital can make a small, scratch enterprise sustainable and viable.

This strengthening of the economic base is normally done by expanding the agricultural sector. In the study areas this may be part of the answer. One such idea is the encouragement of a strong small (rice) farmers' cooperative in the Nariva area. A second possibility is a new marketing cooperative in Tobago, in addition to an increase in agricultural training and pest control activities. However, the most obvious answer is that a greater influx of tourists should itself strengthen the economic base at least mildly, so that a firm foundation can be built up for further earnings. Initially, improvements to local infrastructure will provide some temporary extra jobs.

It is not necessary that small businesses in the area should be based on forest products and the like, though promoting these enterprises could be another form of protecting the forest. Any business that provides an alternative income to those who would normally make money or supplement their diet by exploiting now banned natural resources will help the park, and participation in any such income-earning activity will help the region to be friendly to the idea of a park. Sustained community work will facilitate setting up a program of community participation in and co-management of the resources, community involvement in ecotourism job opportunities, the establishment of cooperatives, and the preparation of small business proposals. One such step is a community worker who would work with the local population to help define projects, meet with community groups, organize training programs, and provide other similar opportunities for sustained groundwork for economic growth and cooperation. At the same time, a financial expert should be available to advise on the organization and management of small businesses, the examination of the feasibility of businesses and tourist traffic in the park, the practicality of business plans, the formulation of fiscal incentives, and the reduction of loss and failure.

One of the most obvious opportunities is participation in the park activities as guides, concessionaires, rangers, maintenance personnel, and so on. Before more people become involved than the traffic can bear, however, a study of likely tourist traffic and likely rates of return should be made.

1. ILO/Government of the Netherlands/UNDP/UNIDO, *Development of Rural Small Industrial Enterprises* (Vienna: ILO, 1988).

Marketing is a skill needed by any enterprise, and it will be a factor in ecotourism as well as in the small businesses. Opportunities for small business can be assisted by setting up a loan fund, with international support, to be administered only for these park areas. A number of agricultural, forestry, or agroforestry-based products are possible. Small restaurants and other food outlets as well as the sale of attractive products are all fairly obvious. Expansion of retail outlets and increased taxi trade will also follow. There is even the beginnings of an entertainment business in northeast Tobago.

The guest house/bed-and-breakfast industry is hardly tapped into as yet, though certain tourists—often, in fact, the ecotourists—ask for it. A network could be built up in each area through loans and advice. However, both community-level advice and economic studies would be an asset to ensure that the right projects are attempted in the right way, a principle which should be extended across the whole range of possible businesses. Guidance is helpful in the development of ideas and in projecting, implementing, and marketing the prospects. Design criteria are often lacking.

The ingredients for the economic success of small business development in the surroundings of these park areas can be built up more gradually than the time allotted for the study, but can be acquired within a relatively short time if some help and guidance are given.

Charlotteville/Speyside has the seeds of a number of enterprises ranging from a cinema to a furniture shop. However, they all need working out. The guest house industry is incipient, but exists with a feeling of suspicion that the government will impose taxes if it becomes too involved.

One small business that is to be avoided in these areas is male prostitution. This is a very common practice in Barbados and is by no means unheard of in southwest Tobago, where it goes under various euphemisms. The emphasis on ecotourism might help to avoid this demand, as well as that for marijuana, since the type of tourist involved will be different. New tour guides in northeast Tobago are now expected to obtain a police record of good character. Unfortunately, tourists do not have to do so.

Land use zoning and related fiscal measures are necessary for the management of the park. The main strategies, however, are involvement and participation.

The other new factor is user fees. Operator licenses and concessions fees will all have to be paid. They should contribute directly toward the day-to-day running of the park and its patrols.

Nature lodges on the successful Asa Wright model are another strategy to preserve some of the partly wooded land. There are at least two such plans in northeast Tobago, but Matura/Salybia could lend itself to the idea. Such centers are built on old estates and have their own nature trails. Visitors normally do bird-watching or other studies on the lodge land or visit the surrounding areas. A user fee is charged to nonresident guests.

Tourism officials are also looking into possibilities for strengthening ecotourism and developing the guest house idea.

PROPOSALS FOR PROTECTED AREAS MANAGEMENT

As a result of the foregoing analysis, it is clear that priority action is needed in selected areas if the system of national parks and protected areas is to become an operational reality. Action is needed in the areas of legislation, institution building, public awareness, community development, and establishment of model national parks. Proposals for future action are presented in the project format. Brief summary descriptions of each project follow.

DRAFTING PROTECTED AREAS LEGISLATION

The objective of this project is to prepare the legislative framework for the establishment of a protected areas system.

Although the system plan has been in existence since 1980, very little of it has been implemented, and what little has been done is based on inadequate existing legislation. The absence of modern legislation in this regard is seen as a serious limiting factor to the implementation of the system plan. It is envisaged that the enactment of specific protected areas legislation will facilitate the creation of an independent, specialized, protected areas agency at some time in the future.

The end-of-project situation will see an Act of Parliament passed in both Houses and duly authorized by the president of the republic.

STRENGTHENING OF THE NATIONAL PARKS SECTION OF THE FORESTRY DIVISION

The objective of this project is to strengthen the National Parks Section so that it will be capable of implementing the system plan.

Apart from absence of legislation, the institutional weakness of the National Parks Section has been the other major limiting factor to implementing the system plan. The section has suffered from chronic financial and human resource shortages ever since its inception. It needs to be strengthened not only to execute the overall system plan but also to develop a capability to handle the new investment proposals being generated by this IDB project.

A detailed action plan for staff recruitment and training will be generated and implemented by this project.

MODEL NATIONAL PARK FOR AN ECOLOGICALLY FRAGILE AREA (NARIVA SWAMP)

The objective of this project is to design and implement a management and development plan for the Nariva Swamp National Park.

The Nariva swamp embodies the largest freshwater ecosystem within Trinidad and Tobago and provides habitat for a large number of wildlife species including 171 species of birds and 55 species of mammals. It also represents the best remaining examples of bloodwood and crappo-guatecare forests within the country. The swamp is well-known to naturalists as an important study and collecting site and is frequented by ecotourists for bird watching. Squatting and other illegal activities (for example, marijuana cultivation) have given the area a certain notoriety, and the pressure of surrounding communities on the area has led increasingly to the disappearance of the unique ecosystem.

The project hopefully will halt the degradation of the area and will regulate resource use by rationalizing the land tenure situation and organizing the local communities in farming cooperatives and small businesses.

MODEL NATIONAL PARK FOR A HILLSIDE FOREST PROTECTED AREA (MATURA)

This project proposes to implement the existing park plan partly by way of community-managed ecotourism serving as a basis for improving locally based income generation.

Matura contains the most outstanding representation of mora forest remaining in Trinidad and Tobago. It has scenic rivers and terrain in a pristine condition on the east-facing slopes of the Eastern Northern Range. The coastal area at the mouth of the Salybia River provides outstanding recreational resources of fresh- and seawater bathing. Lush vegetative growth has made the region a prime game habitat and the traditional hunting ground for six adjacent villages. The area is close to and associated with the Matura beaches, now a prohibited area during turtle nesting. The embryo of community involvement is already being nurtured through turtle watches, and this augurs well for community involvement in the park project. The area has intrinsic value as a watershed reserve and as an ecotourism area. A management plan was prepared as part of a wider overall plan for the Eastern Northern Range; its implementation would be timely.

The completed project will serve as a model for park management with community involvement and the use of a buffer zone, in this case where new hunting regulations involving bag limits will be tried.

**MODEL BIOSPHERE RESERVE FOR COMMUNITY CO-MANAGEMENT
OF ECOTOURISM STRATEGY (NORTHEAST TOBAGO)**

The objective of the project is to develop and implement an integrated land use plan for a world biosphere reserve in northeast Tobago, including the provision for community co-management and the promotion of conservation-sensitive development activities.

The area possesses an outstanding number of diverse, unspoiled, small ecosystems, including the oldest watershed reserve in the Western Hemisphere, streams and waterfalls, beaches and scenic views, varied agricultural areas, quiet villages, two bird sanctuary islands, and living coral reefs. The wildlife habitat comprises littoral woodland, deciduous seasonal forest, rain forest, shores, and islets, sheltering many rare species. The roads provide driving through an area of outstanding scenic landscapes of ridges and valleys and panoramic views. Because of the diversity of natural assets and human settlements in an easily accessible, compact, tranquil area, northeast Tobago merits a regional planning approach and consideration as a biosphere reserve. Special consideration will be given to improving income-generation opportunities within the communities.

The completed project will represent the first biosphere reserve in the country wherein local communities live in harmony with integrated rural and park development.

**ECOTOURISM-BASED SMALL BUSINESS DEVELOPMENT
IN BORDER REGIONS OF PROTECTED AREAS**

This project, which is applicable to the three pilot park areas, aims at resource conservation through the provision of alternative economic opportunities for communities adjacent to national parks by encouraging small business.

The project is predicated on the theory that natural resources are extracted because of the imperative of income generation, and that resources could be spared, therefore, if alternative means of providing earnings were promoted. Alternative means of income generation will be fostered by strengthening of the economic base of rural areas, especially the agricultural sector. A greater influx of ecotourists could also reinforce the economic base and lay the foundations for community business development in such areas as tour guiding, small restaurants, craft production and marketing, taxi transport, guest houses, and entertainment.

The conclusion of the project should see a number of vibrant, economically sound, community small businesses and cooperative projects in the vicinity of the pilot national parks. Their presence will reduce threats to the integrity of the park area.

COMMUNITY SENSITIZATION FOR CO-MANAGEMENT OF PROTECTED AREAS

This project intends to utilize and document the process of establishing three model national parks, especially with regard to community sensitization and co-management, for the benefit of the wider community.

The process of setting up three model national parks in Trinidad and Tobago will be a first, especially with regard to the kind of community work and involvement that is expected to occur in these areas. Varying strategies for community mobilization are to be tried and developed. The use of cultural art forms for sensitization and training and the utilization of resource personnel from various disciplines will be involved in the exercise. Recording the growth and development of this process will be an exciting project in itself, and the resulting analyses will be shown and used in other communities to encourage popular involvement in conserving natural resources. The use of TV and radio could highlight the successes and problems of the approaches used and assist in the evolution of strategies for the conservation of protected areas.

The educational material generated by this project should go a long way toward building national-park awareness in the country.

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