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Facilitating Financing for Sustainable Forest Management in Small Islands Developing States and Low Forest Cover Countries

An analytical report prepared by Indufor
for the United Nations Forum on Forests

Country Case Study: Trinidad and Tobago

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**The views expressed herein are those of the author(s) and do not necessarily reflect the views
of the United Nations.**

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ABBREVIATIONS AND ACRONYMS

AWNC	Asa Wright Nature Centre
BG	British Gas
BUD	Beachfield Upgrade Development
CANARI	Caribbean Natural Resource Institute
CBO	Community-based Organization
CDA	Chaguaramas Development Authority
CDM	Clean Development Mechanism
CEDP	Comprehensive Economic Development Plan for Tobago
CEPEP	Community Environmental Protection Enhancement Programme
CFCA	Caribbean Forest Conservation Association
CIPP	Cross Island Pipeline Project
	Convention on the International Trade in Endangered Species of Wild Flora and Fauna
CITES	
COPE	Council of Presidents of the Environment
CSO	Central Statistical Office
DAME	Division of Agriculture, Marine Affairs and the Environment
EC	European Commission
ECIAF	Eastern Caribbean Institute of Forestry and Agriculture
EMA	Environmental Management Authority
ESA	Environmentally Sensitive Area
ESS	Environmentally Sensitive Species
FACRP	Fondes Amandes Community Reforestation Project
FAO	Food and Agricultural Organization of the United Nations
FRIM	Forest Resource Inventory Unit
GDP	Gross Domestic Product
GEF	Global Environment Facility
HDI	Human Development Index
HGW	Honorary Game Warden
IADB	Inter-American Development Bank
IMA	Institute of Marine Affairs
ITTO	International Tropical Timber Council
LFCC	Low Forest Cover Countries
LIFDC	Low-Income Food-Deficit country
MEAU	Multilateral Environmental Agreements Unit
NAP	National Action Programme
NBSAP	National Biodiversity Strategy and Action Plan
NEC	National Economic Council
NEMA	National Emergency Management Agency
NEP	National Environmental Policy
NFAP	Community-Based Forestry and Agroforestry Programme
NGC	National Gas Company
NGO	Non-governmental Organization
NRWRP	National Reforestation and Watershed Rehabilitation Programme
NTFP	Non-Timber Forest Products
NWFP	Non-Wood Forest Products
PA	protected area
PAWI	Pentecostal Assemblies of the West Indies
PES	Payment for Ecosystem Services
PNM	People's National Movement
PRIDE	Plum Mitán Residents in Developing Ecotourism
PSIP	Public Sector Investment Programme
SFM	Sustainable Forest Management
SIDS	Small Island Developing States
SMC	Stakeholder Management Committee
SSIP	Social Sector Investment Programme

TCP	Technical Cooperation Programmes
THA	Tobago House of Assembly
TTD	Trinidad and Tobago Dollar
UNCCD	United Nations Convention to Combat Desertification
URP	Unemployment Relief Programme
USD	United States dollar
UWI	University of the West Indies
WASA	Water and Sewage Authority

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1. EXECUTIVE SUMMARY

Trinidad and Tobago's economy has experienced considerable economic growth from 1995 to 2008. However, significant incidences of poverty and inequality still exist. The structure of the economy and government energy revenues have helped to alleviate possible pressures on forest resources, and have helped to maintain forest cover at substantial levels – close to 50 per cent of the land mass is still covered by forests. In contrast to the overall growth in the economy, the forests sector has been in decline, primarily due to the competitiveness and marginal productivity of labour between the different industrial sectors of the economy.

Although forests cover substantial proportions of land, insufficient funds have been spent on forest management. Forest financing is primarily provided from central government revenues, with little linkage to actual forest financing demand and sustainable forest practices. This is due primarily to incorrect price signals and incentives for forest management, including policy ignorance of the total economic values of the forest resources within Trinidad and Tobago. Illegal settlement and indiscriminate use of forest resources could in time provide downside risks to forest cover and conservation.

There is significant potential for forests to be self-financing and sustainably managed, if timber and non-timber products are sustainably harvested. However, sustainable financing of forests within Trinidad and Tobago needs to become a priority, particularly since current financing comes from the Government's consolidated fund. Since the majority of government revenues comes from the energy sector, if there are declines in energy revenues, forest financing from the government would also decline. Thus, in Trinidad and Tobago, there is an imperative to protect forest management from the vagaries of energy revenues and government austerity measures. Therefore, the priority for sustainable forestry financing in Trinidad and Tobago is to research the feasibility of new financing mechanisms such as payment for ecosystem services (PES). There is potential for a PES system to be coordinated by the Water and Sewage Authority of Trinidad and Tobago (WASA), with WASA paying upper watershed users for managing the watersheds and by extension the water supply for its customers. This report has provided some initial analysis of possible PES options and the demonstration of total economic values of Trinidad and Tobago forests. However, further research is required and should be a priority for initial sustainable financing.

Official data suggests that there is little employment related to forests. The reasons for this have been explained above. However, forest cover is threatened by illegal settlement and unregulated use of forest products. Sustainable forestry therefore has significant potential to provide jobs and alleviate poverty while becoming self-financing and leading to adequate conservation of forest cover within Trinidad and Tobago.

2. INTRODUCTION¹

2.1 Background

This project examines forest finance demand and its impediments in Trinidad and Tobago. In October 2009, the United Nations General Assembly adopted a landmark resolution on the Means of Implementation of Sustainable Forest Management (SFM), which launched a “facilitative process” on forest finance. This process is geared towards the mobilization and supporting of new forest financial resources for SFM.

As part of the facilitative process, the United Nations Forum on Forests (UNFF) commissioned a project to identify gaps, obstacles and opportunities in forest financing in Small Island Developing States (SIDS) and Low Forest Cover Countries (LFCCs). A study conducted in 2008 identified the importance of forest finance for these two groups of countries, as it found that both groups had suffered from particularly sharp declines in external financing for forests.

This paper is one of eleven papers on cross-cutting issues and case studies on forest financing in SIDS and LFCCs.

2.2 Objectives

The objectives of the study are as follows:

1. Provide an overview of forests in Trinidad and Tobago.
2. Examine forest ownership, policies and institutional arrangements in Trinidad and Tobago.
3. Examine major funding and investment flows to the forests of Trinidad and Tobago.
4. Examine the demand for SFM financing in Trinidad and Tobago.
5. Examine the key challenges and gaps to forest financing in Trinidad and Tobago.
6. Identify policy implications.
7. Provide policy recommendations to increase SFM finance in Trinidad and Tobago.

2.3 Methodology

The methodology for the project began with the collection of basic information on forests, such as forest cover, forest types and deforestation. Next came an examination of the current and potential uses of forest in Trinidad and Tobago. Information on forest production and forest protection was then examined, which shed light on the sale of forest outturn and protected areas (PAs) in Trinidad and Tobago. Also reviewed was information on forest products processing (specifically on sawn timber and the trade balance of certain forest products for 2002, 2003, 2004, 2005, and 2008), watershed services and biological diversity of Trinidad and Tobago. Furthermore, an examination of policies that either directly or indirectly have an impact on forests in Trinidad and Tobago was conducted. This was followed by research into the laws regulating the forest sector, plans affecting the sector development, and related organizations. The role and the functions of the Forestry Division were researched, followed by an examination of other ministries, key committees and civil society organizations relevant to the forest sector. Linkages to other main sectors relevant to forests such as the tourism sector, the energy sector, and the agriculture sector were also investigated. Main forest-related areas requiring financing were identified and analysed; this was followed by an assessment of current forest policies. Finally, a number of investment incentives were researched.

In terms of data collection, only secondary data were used, and the major source was the Forestry Division of Trinidad and Tobago. Other sources included websites of agencies that provide information on the forestry sector of Trinidad and Tobago, such as websites of the

¹ We would like to acknowledge the invaluable research assistance provided on this project by Ms. Joy Francis and Ms. Donna Ramjattan.

Caribbean Natural Resource Institute (CANARI), the Central Statistical Office (CSO), the Environmental Management Authority (EMA), Government ministries and international organizations.

2.4 Challenges in data collection

1. Reconciling the data provided by one agency with centrally provided data proved challenging. When one uses secondary data, details of the data collection process and problems in the data collection remain unknown (e.g., there might have been a low response rate or respondent misunderstanding of surveys, which could skew results). For example, the draft estimates were different from the actual expenditure provided by the Forestry Division.
2. There was a lack of information from the private sector and multilateral agencies.
3. During the data collection phase, location of sources as well as the reluctance of private organizations to provide financial information were issues. The Forestry Division stated that there were no formal partnerships with any multilateral groups in the last five years; however, many non-governmental organizations (NGOs) and Community-based Organization (CBOs) have been receiving funds from these multilateral organizations. Information was limited.
4. Bureaucratic procedures needed to be followed in order to obtain information. Some organizations indicated procedures to follow, which resulted in delays in writing the report. For example, this was a major problem in the case of Tobago, where bureaucratic procedures caused long delays in the data collection.
5. Data was often in other formats or units than as required by the researcher.
6. Format of the secondary information was not the same as that requested in the terms of reference; there were different categories, definitions and classifications. As a result, existing data had to be used.
7. Only limited information was available on specific topics; secondary information pertinent to the research topic was either unavailable or available only in insufficient quantities. More information would have been required concerning recent years for imports and exports as well as non-timber products.
8. Availability of updated information was also a challenge. A large share of the secondary data was several years old and may not reflect, for example, the current deforestation rate or incentive programmes.

3. CHAPTER 1: SOCIO-ECONOMIC OVERVIEW OF TRINIDAD AND TOBAGO

3.1 Background

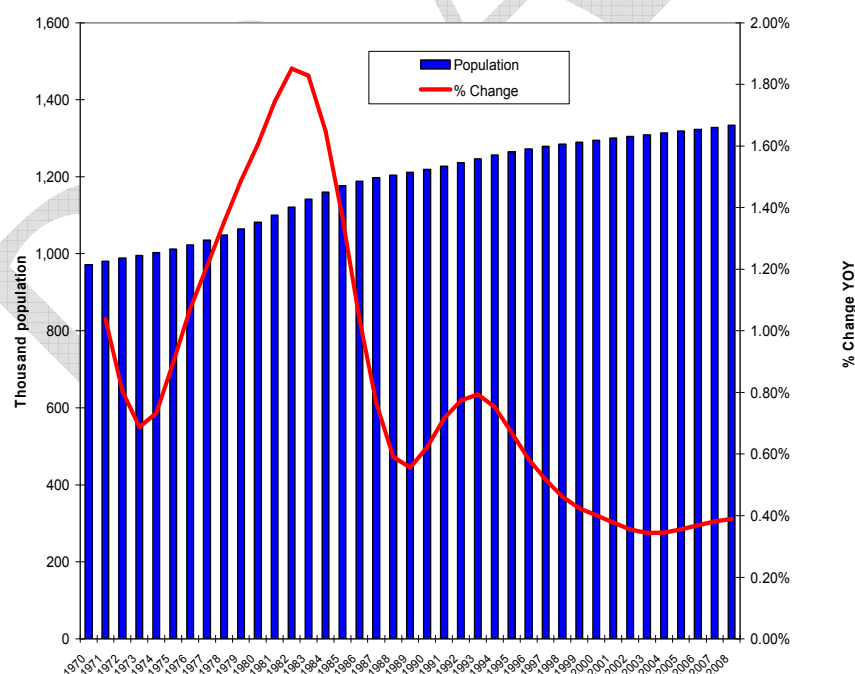
Trinidad and Tobago are Caribbean islands situated between the Caribbean Sea and the North Atlantic Ocean (10° – 11° north latitude and 60° – 61° west longitude), and approximately 18 km northeast of Venezuela.

The island of Trinidad is approximately 4,827 km² in area and is separated from Tobago by a 35 km channel. Tobago is approximately 303 km² in area. Together, both islands encompass a total land area of 512,835 hectares. Trinidad's northern range contains the highest elevated land, with the highest peak, El Cerro del Aripo, reaching 940 m above sea level. Tobago is characterized by the central Main Ridge, which is the oldest protected rain forest in the western hemisphere, being protected since 17 April 1776. The highest point in Tobago is Centre Hill, with an elevation of 573 m. At their nearest point, the islands are only 33.6 km apart and comprise in total 55,123 km², with a total coastline of 362 km. A physical summary of the islands reflects a topography characterized by high ranges, flat land, swamps and savannahs, which provide habitat for diverse flora and fauna (Ministry of Planning and Development, 2007).

3.2 Population

Trinidad and Tobago's population has grown by around 37 per cent between 1970 and 2008. This has resulted in population growth of about 363,000 per year over the 39-year period, at an average annual rate of 0.8 per cent. The fastest rates of population growth occurred during the decade 1976 to 1986, when the average annual growth rate was 1.5 per cent.

Figure 1 Population trends 1970–2008



3.3 Economy

Trinidad and Tobago's economy experienced about 13 years of real gross domestic product (GDP) growth from 1996 to 2008. These GDP growth rates are shown in Figure 2 and show

that the economy contracted in 2009 for the first time in 13 years. Trinidad and Tobago's economy is heavily dependent on the exploitation of natural resources, in particular oil and natural gas. Examining the share of total value added of the various sectors, one notes that the sector comprising mining, manufacturing and utilities, which is mainly made up of oil and natural gas exploitation, represents the biggest share of value added, at an average of 37 per cent over the period 1970 to 2008. In contrast, the forestry sector, which is bundled with agriculture, hunting and fishing, has declined from about 5 per cent of total value added in 1970 to less than 1 per cent in 2008. This is due primarily to changes in the industrial structure of the economy, with the energy sector driving wages throughout the economy to higher levels and subsequently making agriculture less attractive and competitive. Although the trend in value added within this aggregate sector has been undulating, in constant 1990 values, the sector's value added has declined from USD 119 million in 1970 to USD 74 million in 2008.

Figure 2 shows the trend in employment. Although disaggregated data on forest employment trends are not available, the trend in agriculture, the aggregate sector that includes forest sector jobs, has been in steady decline. Employment in the aggregate agriculture sector has declined from 10 per cent of the labour force in 1991 to 4 per cent of the labour force in 2008. However, estimates compiled by Food and Agricultural Organization of the United Nations (FAO) suggest that forestry employment remained constant over the period 1990 to 2000 at about 1,300 to 1,400 persons employed in the primary production of goods within the forest sector.

Figure 2 **Employment trends**

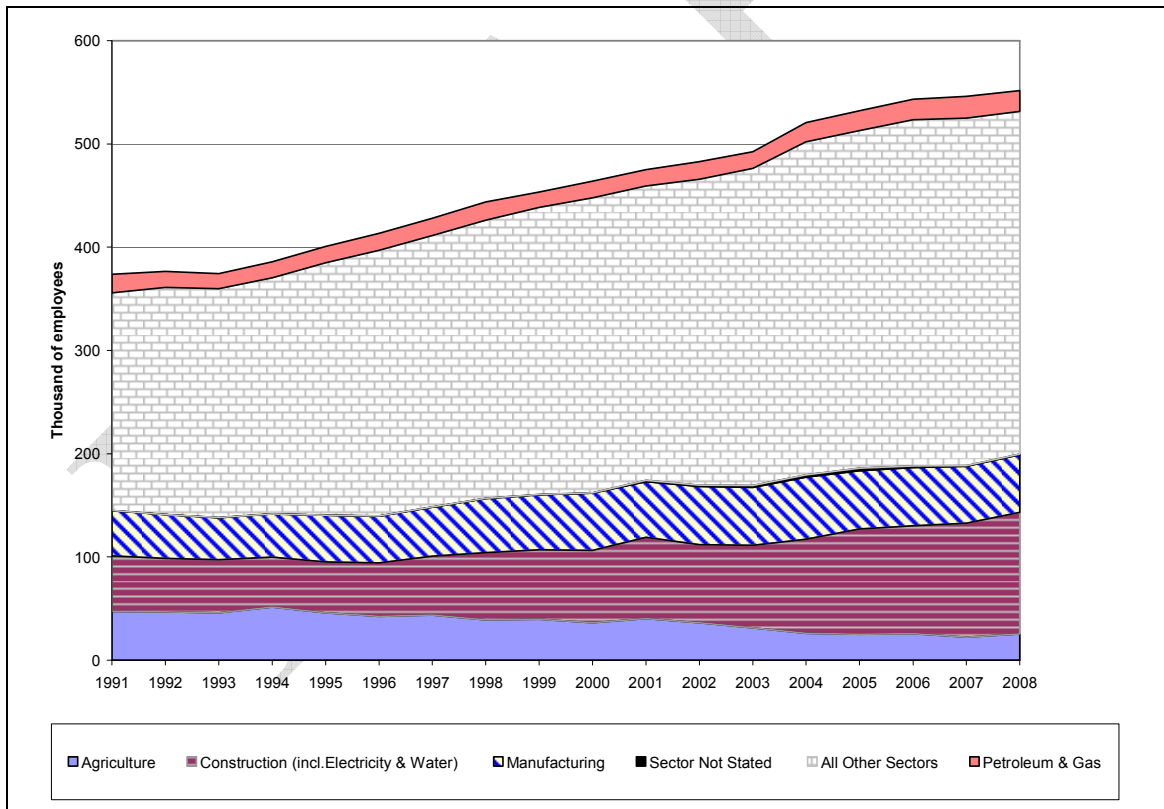


Figure 3 Trends in rate of growth of real GDP

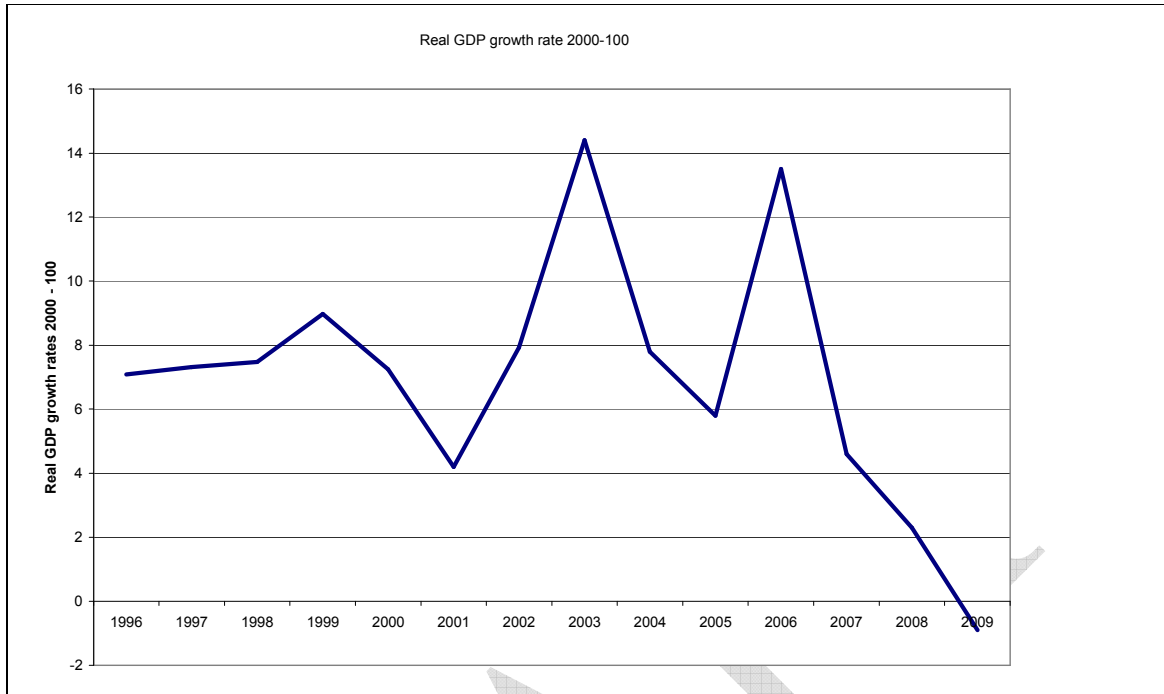


Figure 4 Trends in value added (constant 1990 US\$)

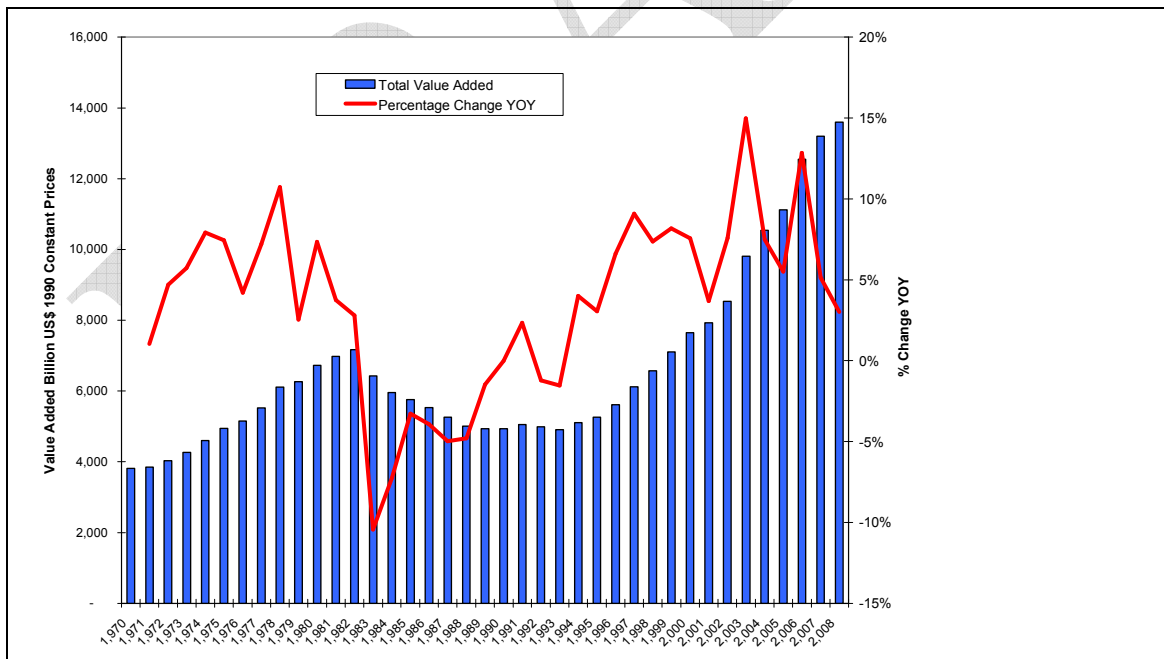
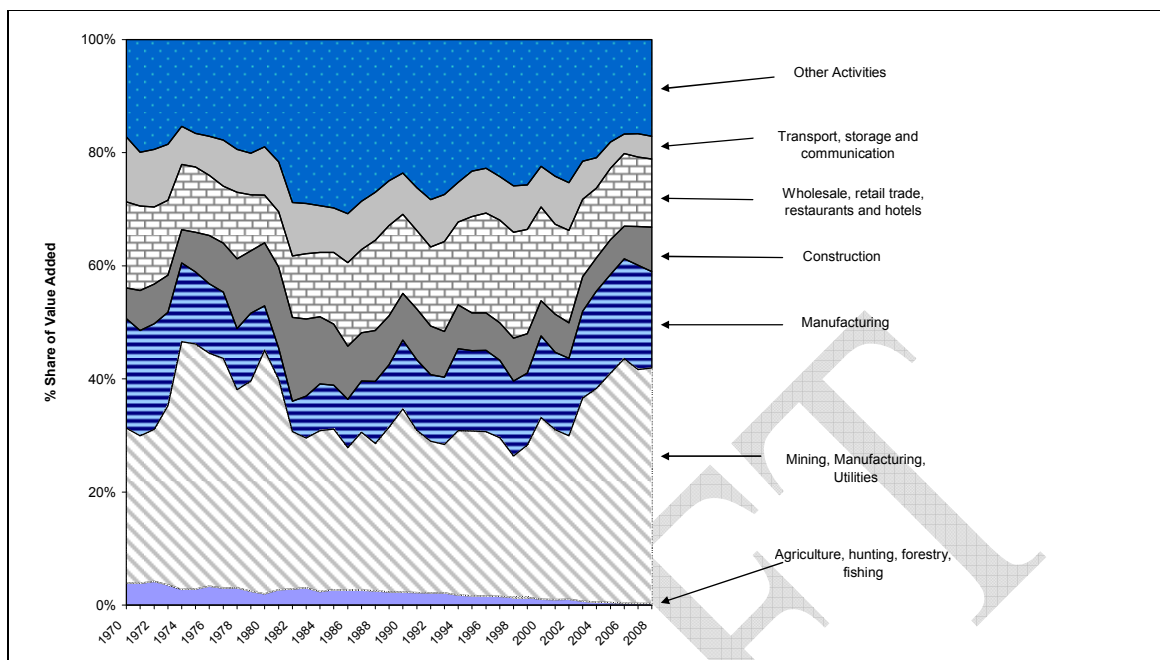


Figure 5 Share of value added



3.4 Socio-economic and poverty reduction

Trinidad and Tobago has the second highest per capita income in Latin America and the Caribbean. Most of this income comes from the exploitation of oil and natural gas resources. The current population is about 1.3 million, which means that the country is the second most populous Anglophone Caribbean State after Jamaica. 45 per cent of the population is under 24 years of age, and this age cohort is the most vulnerable to unemployment, although in recent years, the unemployment rate has fallen to about 5 per cent. The country has universal primary and secondary education, which is mainly provided by the State and aided by the denominational private education sector. Free tertiary undergraduate education was introduced in 2005. This, along with growing demand by employers and employees for higher education skills, has led to rapid expansion of the tertiary education sector.

It has been reported that the health profile of the islands has changed significantly over the last 20–25 years, and the country now has the highest incidence of HIV/AIDS within the Caribbean, with an official rate of about 3.2 per cent. Recent data suggests that incidence of new HIV infections has decreased, and the annual mortality rates have fallen by 50 per cent from 2001 to 2006. These improvements in the HIV/AIDS indicators have come about primarily due to the government's policy of providing free anti-retroviral drugs and effective prevention campaigns. However, there has been a disturbing rise in the number of women and females affected with the virus, e.g., more females than males were infected in 2004 in the 15–34 age cohort.

The labour force participation rate stood at 60 per cent in 2005, with the largest participation rates within the 25–44 age group. During the recent buoyant economy, most employment has been found in the expanding construction and finance sectors. There has also been substantial employment created by the Government make-work schemes, such as the Unemployment Relief Programme (URP) and the Community Environmental Protection Enhancement Programme (CEPEP).

Despite rising income per capita and low unemployment rates, there is a growing imbalance in the way income is distributed. There has been a visibly wealthy elite, together with a growing middle class that has been increasingly under pressure from rising inflation in recent years,

and a growing underclass of unskilled and unemployed poor who have increasingly been alienated from the consumer-driven society that Trinidad and Tobago has become. 17 to 25 per cent of households are considered poor, according to official and unofficial estimates respectively. Studies have indicated that poverty is strongly correlated with low education levels, domestic violence and high levels of crime, which are all major problems for the society, EC (2007).

The relatively high income per capita rates (USD 23,000 PPP in 2007) and UN Human Development Index (HDI) score of 0.837 in 2007 would imply that poverty should be limited in Trinidad and Tobago. However, official figures of poverty in 2004 suggested that the poverty rate was as high as 24 per cent, and that 11 per cent of the population were consuming less than the recommended minimum daily dietary consumption. 2005 data suggests that children and unemployed youth in rural areas are the most vulnerable groups. Governmental and NGO efforts to reduce poverty via many developmental programmes have contributed to some improvement in the welfare of vulnerable groups, but the overall impact on the incidence of poverty has been limited. The relative inequality of wages for women in employment has contributed to gender being a factor for the overall incidence of poverty. Overall inequality of income and high inflation have contributed to high incidence of poverty.

Table 1 Summary of socio-economic indicators

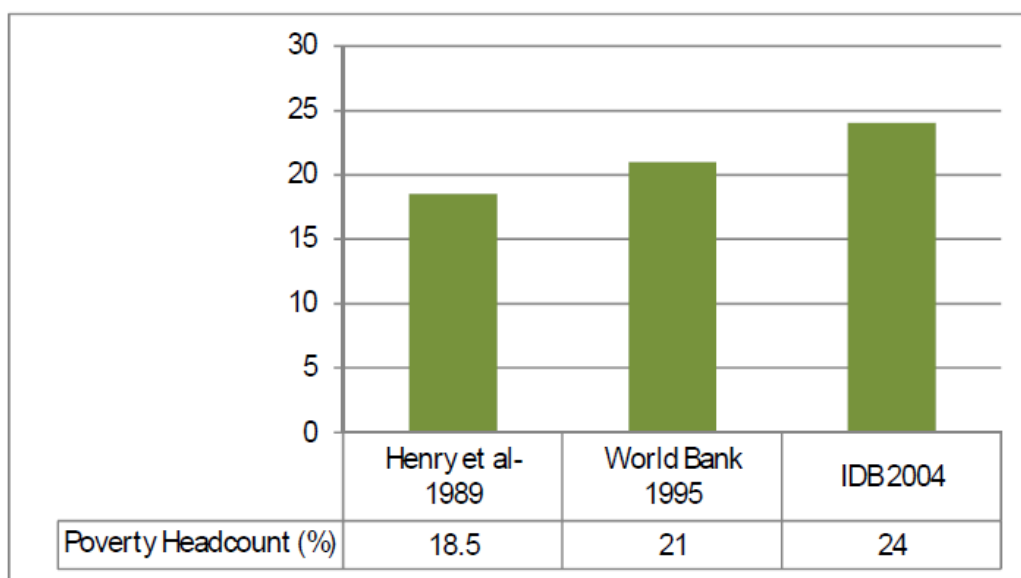
Life expectancy at birth (years) 2007	Female	72.8
Life expectancy at birth (years) 2007	Male	65.6
Adult literacy rate (% aged 15 and above)1999–2007	Female	98.3
Adult literacy rate (% aged 15 and above)1999–2007	Male	99.1
Combined gross enrolment ratio in education (%) 2007	Female	62.2
Combined gross enrolment ratio in education (%) 2007	Male	59.9
Estimated earned income (PPP US\$) 2007	Female	16,686
Estimated earned income (PPP US\$) 2007	Male	30,554
Population below income poverty line (%)		
\$1.25 a day	2000-2007	4.2
\$2 a day	2000-2007	13.5
National poverty line	2000-2006	21
Share of income or expenditure (%)		
Poorest 10%	2.1	
Richest 10%	29.9	
Inequality measures		
Richest 10% to poorest 10% ^c	14.4	
Gini index ^d	40.3	
Human development index (value)	2007	0.837
Life expectancy at birth (years)	2007	69.2
Adult literacy rate (%aged 15 and over)	1999–2007	98.7
Combined gross enrolment ratio in education (%)	2007	61.1
GDP per capita (PPP US\$)	2007	23,507

3.5 Poverty in Trinidad and Tobago

The poverty headcount for Trinidad and Tobago can be examined from studies for the period 1989 to present. The Survey of Living Conditions (2005) illustrates that the poverty headcount

in 1989 was estimated at 18.5 per cent and had increased in 1995 and 2004 to 21 per cent and 24 per cent respectively (shown as 21 per cent in the table). However, it should be noted that different methodologies were employed in these calculations, as the 1989 study focused on households, with data from the Household Budgetary Survey; the 1995 study focused on individuals, with data from the Survey of Living Conditions; and the 2004 Inter-American Development Bank (IADB) study focused again on households, with data from a Household Budgetary Survey. Figure 6 illustrates these findings.

Figure 6 Poverty headcount, Trinidad and Tobago, 1989–2004



Source: Ministry of Social Development (2007).

With respect to the most recent study on the socioeconomic status of the population of Trinidad and Tobago, the population can be classified according to the following categories: indigent, poor, vulnerable and non-vulnerable.

Table 2 Population of Trinidad and Tobago according to socio-economic status

Population		Percentage of individuals		Trinidad and Tobago total, %
		Trinidad %	Tobago %	
Socio-economic status	Indigent	1.2	-	1.2
	Poor	15.4	19.0	15.5
	Vulnerable	9.2	3.2	9.0
	Non-vulnerable	74.1	77.7	74.3
Total (%)		100.0	100.0	100.0
Total (n)		14 524.0	694.0	15 218.0

Source: Ministry of Social Development (2007)

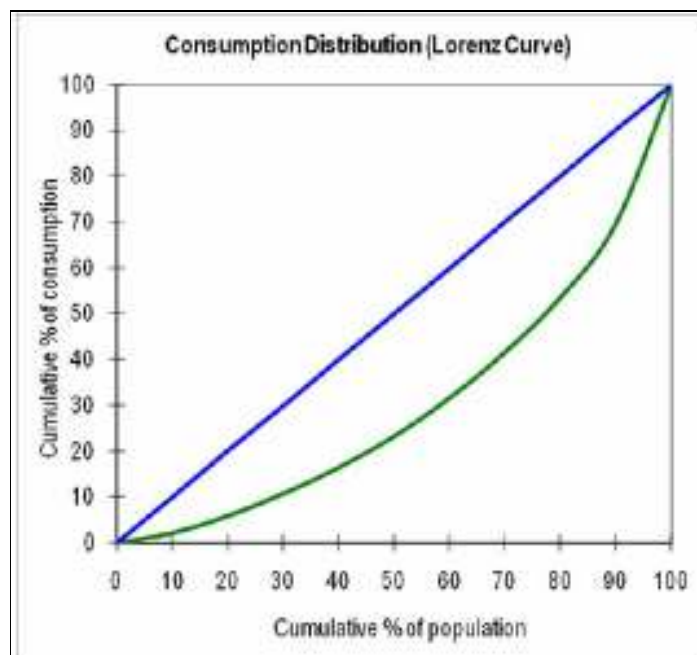
3.6 Inequality in Trinidad and Tobago

For the periods 1957/58 to 1971/72, the Gini coefficient increased from 0.43 to 0.51. However, in more recent times, the coefficient has steadily decreased up to 1997/98 and has remained constant for the most recent period to 2005. This indicates that the level of inequality in Trinidad and Tobago has decreased. Table 3 shows the Gini coefficient for Trinidad and Tobago, and the Lorenz Curve, which is a graphical representation of the Gini coefficient, is shown in Figure 7.

Table 3 Gini coefficient for Trinidad and Tobago

1957/58	1971/72	1975/76	1981/82	1992	1997/98	2005
0.43	0.51	0.46	0.45	0.42	0.39	0.39

Source: HBS and Surveys of Living Conditions (for selected years) as cited in Ministry of Social Development (2007)

Figure 7 Lorenz Curve for Trinidad and Tobago, 2005

Source: Ministry of Social Development (2007)

3.7 Gender

With respect to the head of households, it can be seen that 62.3 per cent of the poorest households are male headed, while 37.7 per cent of the poorest households are female headed. This is illustrated in Table 4 from the Ministry of Social Development (2007), which shows the distribution of heads of households by sex and per capita consumption quintiles.

Table 4 Distribution of heads of households by sex and per capita consumption quintiles

Sex	Per capita consumption quintiles					Total
	Poorest	II	III	IV	Richest	
	%					
Male	62.3	67.2	69	70.8	66.8	67.5
Female	37.7	32.8	31	29.2	33.2	32.5
Total	100.0	100.0	100	100.0	100.0	100.0

Source: Ministry of Social Development (2007)

3.8 Geographical distribution of poverty

Map 1.1 below shows the geographical distribution of poverty in Trinidad and Tobago by Regional Corporation. The source report (Ministry of Social Development (2007)- Analysis of the Trinidad and Tobago Survey of Living Conditions) highlights that in 2007, the country's poor were primarily located in Siparia (15.1 per cent), Princes Town (11.2 per cent), San Juan/Laventille (11.0 per cent) and Tunapuna/Piarco (10.1 per cent). The smallest proportion of the poor were located in the Borough of Arima, where 0.8 per cent of the residents are considered poor. The following map highlights the geographical location of the nation's poor.

Figure 8 Population share living below the poverty line by Regional Corporation



Source: Ministry of Social Development (2007) Analysis of the Trinidad and Tobago Survey of Living Conditions

3.9 Poverty strategies in Trinidad & Tobago relating to forests

3.9.1 Forestry Development Programme

Under the Public Sector Investment Programme (PSIP) 2010, the forestry sector, under the Forestry Development Programme, was allocated TTD 12.8 million for activities such as²:

- Rehabilitation of 180 hectares of natural forest in the North and South Conservancies
- Rehabilitation of 4.9 km at Gadjaram Road, Rio Claro and reconstruction of a timber bridge under the Forestry Access Roads Programme
- Publication of brochures and posters on forest fire prevention and the conduct of fire patrols under the improvement of forest fire protection capabilities
- Upgrade of facilities at protected national parks in Aripo, Cleaver Woods, Caroni Swamp and Fort George

Further elements of this Programme relating to poverty reduction include the continuation of community-based forestry and agroforestry programmes, community empowerment, production of pine seedlings, addition of a teak nursery, a wetlands management project and the reforestation of the Northern Range.

In an interview with Mr. Kenny Singh, Deputy Conservator of Forests, Forestry Division, Ministry of Agriculture, Land and Marine Resources, it was identified that with respect to poverty, the forestry sector provides employment for communities in rural areas in terms of clearing and preparing lands, planting of seedlings and maintenance of planted areas under the reforestation programme. He identified that approximately 600 persons were employed on a regular and continuous basis, and 500 persons on a part time basis. He also declared that under the Turtle Protection Project, there is a formalized arrangement with communities on several beaches in north-east Trinidad, and people have been employed as guides and collectors of basic data in terms of tagging of turtles.

3.9.2 Environmental Conservation and Management Programme

In the 2010 fiscal year, under the PSIP, approximately TTD 18 million was allocated towards the implementation of projects based on preserving and sustaining the natural environment. Several projects are planned for implementation under the Environmental Management Authority, with an allocation of TTD 4.0 million, namely for³:

- Development of a numerical model of air quality in Trinidad and Tobago
- Implementation of the Aripo Savanna Management Plan
- Completion of a contract with the Trinidad and Tobago Orchid Society to conduct floral research in the Aripo Savanna Environmentally Sensitive Area
- Completion of remediation of two lead contaminated sites in Guayaguayare and Demerara Road
- Completion of phase III of the research project on the PAWI by UWI
- Review of the Environmentally Sensitive Areas and Species Rules 2001
- Continuation of the Nariva Reforestation Initiative, including the acquisition and planting of seedlings in the areas identified for reforestation

The Tobago House of Assembly allocated TTD 3 million for⁴ improvement in reefs at Buccoo and Speyside, monitoring of water quality, conduction of a Waste Oil Management Feasibility Study and related Oil Spill Contingency Management, assessment of wetlands and development of Bon Accord Lagoon Nature Area.

² PSIP (2010)

³ PSIP (2010)

⁴ PSIP (2010)

3.10 Poverty Reduction Programme

The Poverty Reduction Programme has been allocated TTD 2.6 million for the “facilitation of projects through grants to community groups in an effort to alleviate poverty in communities in Trinidad and Tobago and to foster sustained development.”⁵ With high incidence of poverty within regions of Trinidad and Tobago where forest reserves are situated, these programmes have the potential to reduce incentives for forest destruction, by reducing the need for slash and burn agriculture, for instance.

3.11 Community Development Fund

The Community Development Fund under the PSIP (2010) has been allocated TTD 14 million with a view to continuation of the Community Enhancement and Regeneration Programme, assistance to the Basket of Funding Initiatives and implementation of infrastructure projects for poverty alleviation.

3.12 Chapter summary

Although Trinidad and Tobago’s national income has risen within recent years, propelling the nation to middle income status, inequality of income and deep pockets of poverty and the incidence of poverty still exist. The revolving structure of the economy to one dependent on energy revenues has precipitated the decline in the agriculture and forestry sectors through wage inflation. However, with high incidence of poverty still existing, particularly within regions where forest cover and national parks are dominant, there are risks to forest cover from indiscriminate use of forest products. Sustainable forest management, which provides sufficient incentives and allows higher marginal productivity of labour within the forest sector, has the potential to alleviate poverty and provide employment opportunities beyond the energy and service sectors.

⁵ PSIP (2010)

4. CHAPTER 2: OVERVIEW OF TRINIDAD AND TOBAGO'S FOREST SECTOR

4.1 Forest cover

Forest land covers approximately 50 per cent of the total land mass of Trinidad and Tobago. Of this, the State owns 85.2 per cent; the remaining 14.8 per cent are private lands. 50 per cent of the land mass is allotted to infrastructure, industries, housing and agriculture. The utilization of the land is divided between productive and protected forests. Total forested area of Trinidad and Tobago comprises 241,100 hectares. Of this, 86,900 hectares constitute productive forest (see Table 5), and the remaining 154.4 thousand hectares are protected forest (see Table 6).

Table 5 Utilization of forested land in Trinidad and Tobago 2005 to 2007

<i>Productive forest (in thousand ha)</i>				
<i>Year</i>	<i>Total forested area</i>	<i>Productive forest</i>		
		<i>Total</i>	<i>Forest reserve</i>	<i>Unreserved state land</i>
2005 to 2007	241.4	86.9	74.9	12.0

Source: Forestry Division, cited in the First Compendium of Environmental Statistics, pg 113

Table 6 Utilization of forested land in Trinidad and Tobago 2005 to 2007

<i>Protected forest (in thousand ha)</i>							
<i>Year</i>	<i>Total forested area</i>	<i>Protected forest</i>					
		<i>Total</i>	<i>Wildlife sanctuary</i>	<i>Nature reserve</i>	<i>Statelands over 300 ft ASL⁶</i>	<i>National parks</i>	<i>Other areas (catchment windbelt)</i>
2005 to 2007	241.4	154.5	17.5	0.6	64.1	61.3	11.0

Source: Forestry Division cited in First Compendium of Environmental Statistics, pg 113

The total forested area of Trinidad and Tobago comprises 35 per cent productive type forest and 65 per cent protected type forest. Of the area of productive forest, 86 per cent constitutes forest reserve, while the remainder comprises unreserved state land. Additional areas of forest reserve are also included in protected forests under the categories 'wildlife sanctuary', 'national parks' and 'other areas (catchment and windbelt)'. 41 per cent of the protected forest area comprises State lands higher than 300 feet above sea level, and 41 per cent is national parks, which consist of 19.5 hectares of forest reserve, 7.9 hectares of wildlife sanctuary and 21.5 hectares of private lands. In Table 6, the wildlife sanctuary comprises 11 per cent of the protected forest. This area does not include those 7.9 hectares of wildlife sanctuary that are classified under national parks.

4.2 Forest types and wildlife resources

The forests of Trinidad and Tobago can be described as diverse in nature. According to CSO (2005), "There are nine different forest types including evergreen seasonal forest, semi-green seasonal forest, deciduous seasonal forest, dry evergreen forest, montane forest, mangrove forest, herbaceous swamp, palm marsh and marsh forest." The main type of forest in Trinidad is the evergreen seasonal forest, which accounts for 40 per cent or 98,180 hectares of land. The International Tropical Timber Council (2005) states that "the semi-ever green seasonal forests are located in the lowlands and are characterized by two main canopy species; the

⁶ Above sea level

Carapa guianensis (crappo) and Eschweilera subglabulosa (guatercare). In addition, tropical evergreen submontane and montane forests occur in the mountains of the Northern Range. Some swamp land forest remains, as well as mangrove relicts around the coast.” In Tobago, there are three forest types; the most common is the swamp forest type, which occupies 60.5 per cent or 6,015 hectares of the land. See Table 7 for types, amount of hectares and locations of forests in Trinidad and Tobago.

Table 7 Forest types in Trinidad and Tobago

Indigenous forest types	Trinidad % cover	Tobago % cover	Trinidad area (hectares)	Tobago area (hectares)	Tobago location	Trinidad location
Evergreen seasonal	40.0	-	98 180	-	-	North-east and south-east
Semi-green seasonal	5.7	-	13 928	-	-	Southern extremes
Deciduous seasonal	1.5	-	3 617	-	-	Western Northern Range
Dry evergreen	0.2	-	495	-	-	East Coast
Seasonal montane	0.4	-	926	-	-	Northern Range
Montane	8.8	0.6	21 619	58	Main Ridge	Northern Range
Swamp	6.8	60.5	16 731	6 019	Coastal	Coastal
Secondary	6.8	6.5	16 631	646	Main Ridge	Widely distributed
Plantation ⁷	8.4	-	20 735	-	-	Widely distributed
Other areas	21.5	32.4	52 859	3 226	-	-
Total	100.0	100.0	245 721	9 949	-	-

Source: Forestry Division, Trinidad and Tobago

The forests provide habitat to many plant and animal species, including an estimated number of 600 different types of butterflies, 400 species of birds, over 95 mammals, 85 different reptiles, 54 species of freshwater fishes, 30 amphibians and 2,100 flowering plants. The Draft National Forest Policy (2008)⁸ states that “approximately two per cent of these flowering plants are thought to be endemic.” It is difficult to measure wildlife in monetary terms, since a value cannot be placed on a person’s satisfaction of the aesthetic nature of the environment, but CSO (2005) reports “royalties are collected from the sale of permits to hunt certain wildlife species such as agouti, deer, waterfowls and many others.” Between 2005 to 2007, the total number of permits increased by 18 per cent to 17,635, while the number of hunters increased by 4 per cent to 9,446. Revenue collected also increased over three years from TTD 298,000 in 2005 to TTD 352,700 in 2007. Agouti, Deer and Lappe are the main game species hunted in Trinidad. In Tobago, the wildlife population is on a smaller scale, but hunting takes place. The Forestry Division reports that “the largest number of permits was issued for agouti, followed by lizards and tattoo.” The total number of hunters and permits has increased during the period examined.

However, these forests and the wildlife that resides in these forests are being threatened by several deforestation activities.

⁷ Teak, pines, mixed hardwood

⁸ More information on the Draft National Forest Policy is in Annex A.

4.3 Deforestation and its causes

According to the (FAO) (2005), the annual deforestation rate between 1990 and 2000 in Trinidad and Tobago was an estimated 2,000 hectares, or 0.8 per cent of the forest area. Further, the National Wetlands 2002 Policy indicated that over 50 per cent of the original wetlands of Trinidad and Tobago have disappeared.

There are several causes of deforestation and forest degradation in Trinidad and Tobago, including forest fires, illegal logging, non-legal settlement (squatting) and natural disasters such as hurricanes. The International Tropical Timber Council (ITTO) (2003) investigated the causes of forest destruction in Trinidad and Tobago and identified that non-legal settlement was a major issue. ITTO (2003) reports that “several forest reserves have lost a significant proportion of their forest to squatters, the problem is especially serious on the hills of the Northern Range where watershed protection functions are likely to be seriously comprised by squatters who clear land on steep slopes. Non-legal settlement may be the most serious threat to the sustainable development of the forests of Trinidad and needs urgent government attention. However, the issue has apparently become political. Effective measures to address this problem would require coordinated action by a number of different government agencies and such inter-agency collaboration has been difficult to achieve.”

Another factor that has resulted in forest degradation is strip mining of sand and gravel. This activity has degraded forests in large areas of the forest reserves, especially along the southern foothills of the Northern Range. One prime example is the Valencia Forest Reserve in the North-West Forest Conservancy, where mining has degraded the forests in this Reserve. Regarding this, ITTO's 2003 report states that “mined areas are never rehabilitated and are abandoned to grasslands and scrub. They appear to be maintained in this state by fire. Further, the Ministry of Energy awards leases without adequate consultation with the Forest department – in addition – many mines are illegal. But the capacity and political will to bring this situation under control appears to be lacking.”

Additionally, infrastructural development and the secondary effects of the development are also challenges for forests in Trinidad; many forested areas are criss-crossed by oil and gas extraction infrastructure. In order to retrieve oil and gas from wells located in the forests, pipelines are constructed, which creates a network within the forests. With these pipelines, roads are built to ensure access to wells and the forests. Access allows recreational visitors and forestry staff to enter the forest, but hunters, squatters, illegal loggers and marijuana planters also have easier access to forest, which results in the practice of unsustainable activities that eventually result in forest degradation. According to ITTO (2003), “The actual area occupied by the oil and gas infrastructure does not constitute the major problem –rather it is the secondary impacts of the ready access that this infrastructure provides.”

Fires are identified as a major threat to the forests in Trinidad and Tobago. The National Emergency Management Agency (NEMA) (2002) states that “each dry season, numerous fires occur on the hillsides, along roadways and throughout the country biological landscape.” There are many negative impacts of fires, such as destruction of plants, trees and young regeneration. In addition, damaged watersheds develop a ghastly appearance, the atmosphere becomes polluted, wildlife may be killed as a direct result of the heat, and habitats and catchment areas are destroyed.

Forests in Trinidad and Tobago are managed following several variations of the open range system, including the block management system, the tropical shelterwood system and the periodic block system. The open range selection system has caused problems for the sustainability of forest management. In this system, felling permits are allotted to persons who are not regulated under a forest management plan. This has resulted in the reduction of the number of valuable timber trees. Concerning this, ITTO (2003) states that “as a result of the system, these forests now have very little commercial timber and in addition they are said to have been more susceptible to other illegal activities, in that there are frequent incursions or encroachments.”

4.4 Forest plantations

Forest plantations have been established since the mid-1920s, mainly through the monocultures of teak (*Tectona grandis*) and pine (*Pinus caribaea*). According to ITTO (2005), “The total planted forest is estimated to be about 15,400 hectares, comprising 900 hectares of *Tectona grandis* (teak), 4,200 hectares of *Pinus caribaea* (Caribbean pine) and other pine species, and 2,100 hectares of mixed hardwoods. All plantations are owned by the State, although it has been reported that some 1,240 hectares of teak and mixed species have been raised by farmers in private farmlands.” However, in recent times, mixed hardwood plantations have been established using Cedar, Tectona, Cypré (*Cordia alliodora*), Mahogany (*Swietenia macrophylla*) and Apamate (*Tabebuia pentaphylla*).

The Forestry Division was able to provide information on areas planted between the periods 2004 to 2008. Table 8 shows that more mixed hardwood plantations have been established in recent times, followed by pine and teak. In addition, the total number of plantations fluctuated between 2004 and 2006, but there was a steady increase in the areas planted. The area felled decreased in 2007 and 2008.

Table 8 Areas planted 2004–2008

Year	Pine	Teak	Mixed hardwood ha	Total
2008	39.3	20.0	111.0	170.8
2007	40.0	18.0	115.0	173.0
2006	60.0	18.0	124.0	202.0
2005	35.0	18.0	137.0	190.0
2004	42.5	6.0	111.0	165.0

Source: Forestry Division

4.5 Agroforestry

There are several farms producing timber; however, trees on farms are also main sources of fruits, nuts, fuelwood, fodder and non-timber crops. ITTO (2003) reports that the many agricultural lands are underutilized and the land is gradually being reverted naturally to forest, especially with the abandonment of cocoa estates. Further, the government system of subsidies for plantation establishment is contributing to the growing trend of the agroforestry industry.

4.6 Functions and economic values of forests

Forests provide a wide range of economic and social benefits to the national community. These include contributions to the overall economy, for example, through employment, processing and trade of forest products and energy, and investments in the forest sector. They also comprise the hosting and protection of sites and landscapes of high cultural, spiritual or recreational value. The preservation and enhancement of forests are integral parts of sustainable forest management. In addition, the Tourism Master Plan (ARA Consulting Group, 1994) aims to make Trinidad and Tobago the foremost destination in the Caribbean, and this will involve ecotourism, in which forests will play undoubtedly a substantial role. The following goes into detail concerning the extractive and non-extractive uses of the forest ecosystems in Trinidad and Tobago.

4.7 Extractive/non-extractive uses

The services of the forests allow for both extractive and non-extractive uses. In terms of extractive uses, the most significant forest product is timber. Extractive uses are further divided into timber and non-timber products. In terms of extractive uses for timber products,

according to the Draft National Forest Policy (2008), “in 2000, domestic log production was 71,994 m³, while sawn timber was 28,900 m³, and exports were approximately 1000 m³.” Trinidad and Tobago produces modest quantities of industrial timber, and one of the main sources of industrial timber comes from private forests (ITTO (2003)).

In Trinidad and Tobago, forests provide also non-timber products. Non-timber products can be categorized into two major groups: (1) wood products and (2) non-wood products. Wood products include items such as stakes, charcoal, wood for sculpting and raw materials for handicraft, while non-wood products include items such as food and food additives (mushrooms, fruits, herbs, edible nuts, spices and condiments, game animals, aromatic plants, etc.). This is followed by fibres, which are used in construction, clothing, utensils and furniture. Other non-wood products include resins, gums and plant and animal products utilized for medicinal, cosmetic or cultural purposes (such as bee-keeping) and plants for the purposes of landscaping and horticultural utilization. ITTO (2005) states that “in terms of non-wood forest products, bamboo is also grown as a commercial crop” and that “some non-wood forest products (NWFPs) are imported from Venezuela and the countries of the Guyana Shield. Edible products such as wild tubers, wild meat, honey, beeswax and thatching grass are used extensively by rural communities. The value of forest products used for subsistence in 2000 was estimated to be about USD 825,000.”

4.8 Sale of forest outturn

The sale of “forest outturn” refers to the sale of forest trees to the public. ITTO (2005) states that “the sale of these trees comprises trees from plantation forests and also trees from natural forests. Forest outturn is reflected by saw log production from sawmills” (see Table 9). Initially, forest outturn from the plantations was divided into two groups: forest trees sold by Conservancy and those sold by Tanteak. However, with the closing of Tanteak⁹ in 2001, the production of forest outturn from plantations only comes from the Conservancies.

Table 9 Forest outturn for 2005–2008¹⁰

Year	Saw logs				Poles Teak
	Total ¹¹	Natural forests	Plantations sold by conservancy		
			Teak	Pine	
			Cubic meters		
2005	64 513	45 330	2 259	14 597	-
2006	52 244	40 494	6 368	4 333	-
2007	44 949	37 405	5 802	676	-
2008	46 781	38 606	3 632	2 420	-

Source: Forestry Division

N.B. From 2000, the sawlog outturn included 66 species from private lands

The 2007 figures do not include the South-West Conservancy.

4.9 Minor forest produce/ non-timber forest products

Interest in non-timber forest products (NTFPs) is increasing rapidly in Trinidad and Tobago; however, there are many challenges in the production of non-timber forest products. At present, there are numerous efforts to increase awareness of these products, their management and market potential. See Annex 1 for details on the NTFP products and their

⁹ ITTO (2003) reported that “Tanteak (Trinidad and Tobago Forest Products Company) was a state company established in 1976, with a monopoly over the harvesting, processing and marketing of both teak and pine from state-owned plantations but went out of business in 2001. It allegedly failed because of corruption, lack of management skills, overstaffing, poor logistics and unsuitable marketing abilities.”

¹⁰ From 2000, the sawlog outturn (Natural Forests) included 66 species from private lands.

¹¹ Total includes teak and pine sold from private lands

volumes. Some of the minor forest produce include balata berries, Camwell vines, Cocorite leaves, firewood, Rods & Pickets, Mamoo Vines, Teak Stakes, firewood and many others.

4.10 Protected areas (PAs)

In Trinidad and Tobago, there are various categories of legally protected areas (PAs) including forest reserves, wildlife sanctuaries, prohibited areas, national parks, protected marine areas, ESAs, and cultural and heritage “properties of interest”. Other categories of protected areas include un-proclaimed forest reserves, natural landmarks, historic sites, recreational parks and national heritage parks. The importance of PAs has been highlighted through the Draft National Protected Areas Policy 2009.¹² This Policy intends to provide guidelines for the management of all protected areas designed for the preservation of natural heritage. The Policy’s main focus is to show that protected areas have features with important cultural, historical, and archaeological heritage and will therefore require particular management of them. The vision of the Policy, as stated by the Draft National Protected Areas Policy (2009), is to ensure that the “people of Trinidad and Tobago have equitable access to opportunities for recreation, education, research, and livelihoods through the establishment of an integrated system of protected areas that ensures sustainable use and conservation of ecosystems to provide benefits and services for present and future generations.” The goal of the policy is to establish a framework for the selection, legal designation and management of a national system of protected areas.

The Draft National Protected Areas Policy (2009) states the need to establish PAs for reasons such as the protection of genetic diversity, species, ecosystems and natural habitats. PAs are a tool for the maintenance and recovery of viable populations and provide for the protection of ecosystems. Furthermore, PAs can provide significant ecosystem services that can contribute to climate change adaptation and mitigation. They act as buffers in the face of changing weather patterns and function as greenhouse gas sinks, particularly for protected forests and wetlands.

4.11 Forest products processing

Forest products processing includes the production of forest products such as sawn timber, poles, wood –based panels, charcoal and other types of forest products. Trinidad and Tobago produces modest quantities of industrial timber and depends mainly on imports to cover its needs for sawnwood, plywood and paper products. Plantation areas to be thinned or clearfelled are allocated to sawmillers and woodworkers on a quota system.

In terms of the number of sawmills, there is an estimated number of over 80 licensed sawmills (see Table 10). These range in size from typical family enterprises to large companies, and they process both the domestic supply of timber and imports of round logs and squares from neighbouring Guyana and Suriname. There are many registered and unregistered furniture factories that process the lumber into finished products for domestic use and exports. However, rising wage costs and lack of economies of scale compared to other hardwood suppliers have meant the overall international competitiveness of the industry might be in decline.

The Forestry Division reported that total log input into sawmill production is estimated based on actual data from respondents added to estimates made for cases of non-response. Table 11 shows that in terms of customers, there has been an increase in the number of sawnlogs owned by woodworkers or other members of the public from 2005 (32,400 cubic metres) to 2008 (96,600 cubic metres). However, the number of sawnlogs owned and processed by the sawmill at the sawmill have decreased during the selected period. In 2005, a recorded number of 48,000 cubic metres of sawnlogs were owned by sawmillers; however, by 2008, the number of sawnlogs owned by millers had decreased by 50 per cent or more to 20,900 cubic metres. Lumber outturn is also highlighted in the table. Lumber outturn increased from 2005 to

¹² More information on the Draft National Protected Areas Policy is found in annex A.

2007; however, it fell slightly in 2008 (see Annex 2 for sawnlog prices). Further analysis of timber trade and other forest products is provided in Annex 2.

Table 10 Sawmills: Number of licensed operations by major divisions 2004–2008

Year	County									
	Total	St. George	St. David	St. Andrew	Caroni	Nariva	Victoria	Mayaro	St. Patrick	Tobago
2004	84	21	0	6	11	8	17	2	18	1
2005	79	15	0	8	6	8	17	2	22	1
2006	82	14	0	9	10	5	17	2	24	1
2007	88	15	0	6	7	9	20	3	28	1
2008	85	13	0	5	9	8	20	1	28	1

Source: Forestry Division 2009

Table 11 Sawmills production 2005–2008

Year	Log input in cubic metres (thousands)			Lumber out-turn in cubic metres (thousands)
	Total	Customers ¹³	Millers ¹⁴	
2005 ¹⁵	80.4	32.4	48.0	37.7
2006 ¹⁶	83.4	33.7	49.7	39.5
2007 ¹⁷	116.6	88.1	28.5	45.7
2008 ¹⁸	117.5	96.6	20.9	44.4

Source: Forestry Division 2009

4.12 Chapter summary

Trinidad and Tobago still has considerable forest cover. In many ways, the structure of the economy has preserved the forest cover, since the government revenues and most livelihoods are not directly related to forest use. However, forest cover is at risk from indirect forest uses such as quarrying and residential development. Sustainable management of these resources could provide incentives to maintain forest cover and at the same time provide employment within the sector. However, economic structure and ad hoc management of the forests could pose a threat to sustainable management, and this will be discussed in the next chapter.

¹³ Customer Log Input refers to sawnlogs owned by woodworkers and /or other members of the public and processed by the sawmiller at the sawmill

¹⁴ Millers' Log Input refers to sawnlogs owned and processed by the sawmiller at the sawmill.

¹⁵ Estimate for 79 sawmills based on actual submission from 35

¹⁶ Estimate for 82 sawmills based on actual submission from 34

¹⁷ Estimate for 88 sawmills based on actual submission from 64

¹⁸ Estimate for 85 sawmills based on actual submission from 68

5. CHAPTER 3: FOREST OWNERSHIP AND RELATED POLICIES AND MANAGEMENT

5.1 Main policies, plans and legislation concerning the forestry sector in Trinidad & Tobago

Within Trinidad and Tobago, policies such as the Draft National Forest Policy and the National Tourism Policy are relevant and significant policies to the forest sector. However, there are many other policies, plans and laws that are important to the development of the forest sector. This chapter provides details of these policies, laws and plans. A brief summary of relevant policies in Trinidad and Tobago is provided next.

5.1.1 Policies

The Draft National Forest Policy (June 2008)

The Draft National Forest Policy of 2008 states that “the purpose of the National Forest Policy is to guide the sustainable management of the forest resources of Trinidad and Tobago, including the use of these resources, and the impacts and consequences of that use.” The forest policy context entails all laws, policies, budgets, plans, programmes and practices relevant to forest preservation, utilization and management.

Historically, forest management has been practiced in Trinidad and Tobago since 1765, when the first forest reserve, the Tobago Main Ridge Forest Reserve, was established in the Western hemisphere. In 1942, the first National Forest Policy of Trinidad and Tobago was developed. This was followed by a review in 1979 by the Conservator of Forests, which led to a Draft Forest Resources Policy in 1981. Another Draft Forest Policy was prepared by the Conservator of Forests, the Revised Forest Policy of 1998, which was presented to the Cabinet in 1999. The Cabinet agreed, inter alia, that this Forest Policy would be published as a Green Paper for public comment. Due to the fact that subsequent forest policy documents have not been formally approved, the country's forest resources are still officially governed by the outdated 1942 Forest Policy. As a result, the Government has advocated for revision and reformulation of the Forest Policy.

Other policies include:

- The National Tourism Policy (2007)
- The National Wetlands Policy (2002)
- The National Water Resources Management Policy (2005)
- The National Environmental Policy (NEP) (2005)
- Towards a Wildlife Policy for Trinidad and Tobago (Draft September 2007)
- Draft Quarry Policy (2005)
- The National Protected Areas Policy (2009)

5.1.2 Laws, legislations and regulations

In addition to the policies above, numerous laws, legislations and regulations are pertinent to the forest sector of Trinidad and Tobago. These include:

- The Forest Act, Chapter 66:01 (Act 42 of 1915, amended 1922, 1925, 1933, 1955, 1999)
- Forest (Prohibited Areas) Order; amendments made under Chapter 66:01
- Conservation of Wild Life Act, Chapter 67:01 (Act 16 of 1958, amended 1963)
- Marine Areas (Preservation and Enhancement) Act, Chapter 37:02 (1970, amended 1996)
- Plant Protection Act
- Sawmills Act, Chapter 66:02
- The Environmental Management Act, 2000

- Environmentally Sensitive Areas Rules (2001)
- Environmentally Sensitive Species Rules (2001)
- Tobago House of Assembly Act
- Agricultural Fires Act, Chapter 63:02 (Act 20 of 1965)
- Chaguaramas Development Authority Act, Chapter 35:02
- Land Acquisition Act, Chapter 58:01
- State Lands Act, Chapter 57:01 (1969)
- Town and Country Planning Act, Chapter 35:01
- State Lands (Regularization of Tenure) Act, No. 25 of (1998)
- Land Regulations (1917 and amended 1921)
- National Heritage Trust Act, Chapter 40:35 (2000)
- Three Chains (Tobago) Act (1865)
- Litter Act, Chapter 30:53
- Public Health Ordinance CAP. 12/4 (1950 Rev. (and its amendments)
- Animal (Diseases and Importation) Act-Infected area, Infected place
- Certificate for Environmental Clearance Rules (2001)
- Water and Sewerage Act 1965
- The Petroleum Act Chapter 62:01 (Rev 1980)
- Occupational Safety and Health Act 2004

Summaries of some laws and legislation are provided in Annex 3.

5.2 Plans

The forestry sector of Trinidad and Tobago is also linked to a number of Governmental plans. A list of these is provided, followed by summaries of some of these plans:

- Plan for a system of national parks and other protected areas
- Forestry Division Strategic Plan (2001)
- National Reforestation and Watershed Rehabilitation Programme Strategic Plan (2004–2009)
- The National Action Programme to Combat Land Degradation in Trinidad and Tobago 2006–2020. (2006)
- Trinidad and Tobago Vision 2020 Operational Plan 2007–2010
- The National Biodiversity Strategy and Action Plan (NBSAP) (2001)
- A Comprehensive Economic Development Plan for Tobago (2006–2010) (2005), Capital of Paradise: Clean, Green Safe and Serene.
- Tobago House of Assembly (THA) North East Tobago Management Plan (Draft Final Report December 2002)
- Final Report on the National Parks Draft Management and Physical Plan and Additional Studies (1996)
- National Forestry Action Plan (1992)
- Trinidad and Tobago Tourism Master Plan (1995)

Forestry Division Strategic Plan (2001): In 2001, the staff of the Forestry Division developed a draft strategic plan. The Cabinet agreed the Plan could be published as a Green Paper subject to public consultations. The Plan provides information on the forest sector and visionary proposals in alignment with International Tropical Timber Council Guidelines. Some of the areas of focus for improvement stated in the plan include taking a broader ecosystem approach to forestry, developing collaborative management approaches with communities, examining biodiversity conservation requirements, strengthening the protected area management capacity, improving information on forest resources, working with NGOs, expanding the role of the private sector and addressing the changing needs of stakeholders.

The National Forestry Action Plan (1992): This Plan was produced with support from international consultants in 1992. Challenges to the achievement of sustainable forestry goals were highlighted, including the lack of an integrated approach to forest resources

management, the imbalance between production forestry and forest conservation, and the lack of long-term vision for the forest sector. For example, how future timber need will be met from imports, private plantations, natural forest management, etc. must be closely considered, according to this Plan.

The National Biodiversity Strategy and Action Plan (NBSAP) (2001): This Plan entails a framework for the conservation and sustainable use of the country's biodiversity, within the context of its socio-economic development programmes. The Plan states the need for the development of legislation to facilitate the establishment of protected areas for biodiversity preservation.

The National Action Programme to Combat Land Degradation in Trinidad and Tobago 2006–2020 (2006): The Draft National Action Programme (NAP) to Combat Land Degradation in Trinidad and Tobago is an integrated framework for mitigating the physical, biological and socio-economic impacts of land degradation. According to the Draft National Protected Areas Policy (2009), "the Draft NAP provides a comprehensive framework for implementing the country's obligations under the United Nations Convention to Combat Desertification (UNCCD) which it acceded to on August 6, 2000." It also "proposes sustainable spatial planning through the use of National Physical Development Plans at the regional, local and ecosystem levels."

The Plan for a System of National Parks and Other Protected Areas (1980): In this plan, a classification system was developed with six categories of management, including national parks, scientific reserves, natural landmarks, scenic landscapes, nature conservation reserves and recreational parks. The Plan also states 61 sites for protection in a National Park System that comprises sites of natural, historic and cultural value.

Final Report on the National Parks Draft Management and Physical Plan and Additional Studies (1996): Produced in 1996 by the Caribbean Forest Conservation Association under the World Bank Project, and approved in 2001 by the Cabinet, the report provides information on the prioritized areas for designation.

National Reforestation and Watershed Rehabilitation Programme (NRWRP) Strategic Plan (2004-2009). The Plan showcases programmes, strategies and guidelines for the protection and conservation of watershed through community initiatives. The Plan highlights the importance of stakeholders (e.g., workers, contractors, NGOs, community councils, church groups, youth groups and other community groups) and other service providers (e.g., caterers and seedling suppliers) to be drawn from the areas that are threatened. The Ministry of Agriculture, Land and Marine Resources states that "the Plan also provides an opportunity for the identification and development of eco-tourism initiatives at the local level through the enhancement of natural fauna (e.g., wildlife) and floral, including hiking trails, waterfalls, caves and monuments. These opportunities, wherever identified, will be explored through promotion at the local level and transmitted to the tourism sector for further development." The central government funds the NRWRP.

The Trinidad and Tobago Vision 2020 Operational Plan 2002–2010: In the Government's aim to transform the country into a developed society by 2020, it seeks to implement policies and programmes that would promote sustainable development and enhance the quality of life for all citizens. Two plans supporting this aim are the Vision 2020 Draft National Strategic Plan and the subsequent Trinidad and Tobago Vision 2020 Operational Plan 2002–2010. The latter plan represents the first step in the formal and deliberate operationalization of the Vision 2020 Draft National Strategic Plan. It is revised annually to track the development of the country. However, with the recent change in the Government in May 2010, it is unclear whether the recommendations of Vision 2020 will be retained, since it was politically and closely associated with the previous People's National Movement (PNM) administration.

A Comprehensive Economic Development Plan for Tobago (CEDP) (2006–2010): This Plan ensures that environmental considerations are fundamentally part of the policy design and decision-making processes. The implications of all policies for the environment must be

carefully analysed prior to implementation. Inspired by the natural resources and environment of Tobago, a major goal of the CEDP is the branding of Tobago as 'Clean, Green, Safe and Serene'. The National Protected Areas Policy states that "some of the initiatives of the [P]lan include improving infrastructural development in key areas like: roads and transport, water, the telecommunication and communications infrastructure as well as social infrastructure; improving health, education and other social services; promoting sustainable economic growth; and ensuring food security, and sustainable environmental management."

Trinidad and Tobago Tourism Master Plan (1995) This comprehensive Plan addressed a national tourism vision and policy, market potential, marketing strategies, preparation for tourism, environmental considerations, product development and economic feasibility. Another IADB project emerged out of this Plan: the Short Term Programme of Support for the Development of the Tourism Industry.

5.3 Key Government ministries and public agencies involved in the forest sector (with or without legal mandates for the protection and preservation of forests in Trinidad and Tobago)

5.3.1 Government agencies with legal mandates

This section begins with a description of the ministries and other public bodies whose mandate may wholly or partially address forestry and related issues.

Ministry of Agriculture, Land and Marine Resources

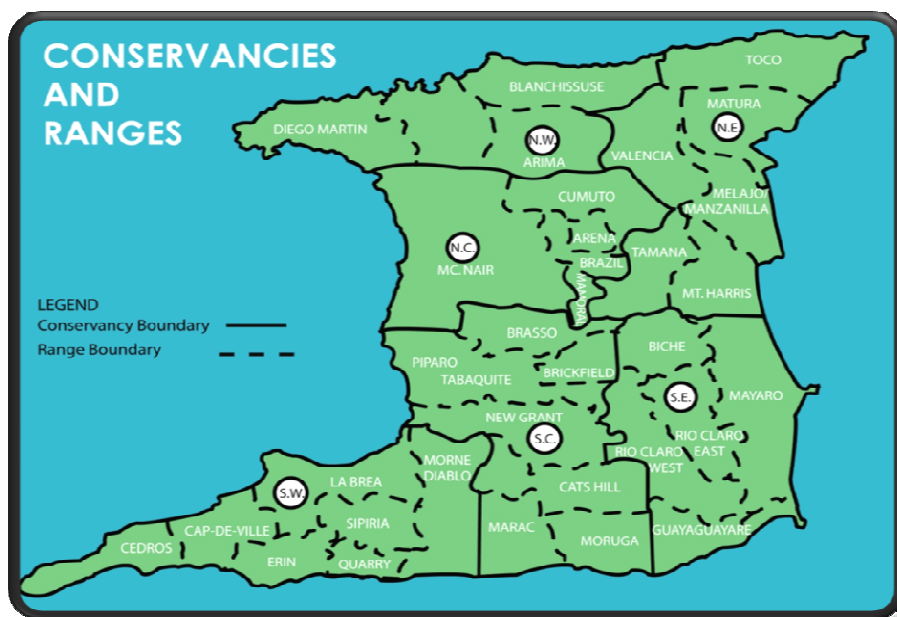
This Ministry is primarily responsible for the conservation and protection of forest resources through its main agency – the Forestry Division. The core areas of focus for the Division include:

- Timber production
- Wildlife conservation
- Recreation and ecotourism
- Watershed management
- Environmental services
- Biodiversity conservation
- Environmental education
- Non-timber forest products
- Community forestry
- Control of climate change
- Enhanced food production

Forestry Division: Established in 1901, the Forestry Division is the main agency responsible for forest management in forest reserves in Trinidad. The Division utilizes an administrative system that segments the island into six geographic areas referred to as Conservancies. In addition, the Draft National Protected Areas Policy states that "the organization is directly responsible for also managing wildlife sanctuaries, [which are] Prohibited Areas designated under the Forests Act." International obligations for conservation and management of biodiversity also fall under the purview of the Forestry Division. These include the Ramsar Convention on Wetlands and the Convention on the International Trade in Endangered Species of Wild Flora and Fauna (CITES). The Department also manages historical sites, national parks and recreational parks.

The Forestry Division is divided into the following main sections: Six Conservancies; The Wildlife Unit; National Parks Unit; Private and Community Forest Unit; Management Information Unit; Forestry Information Unit; and The Forest Resource Inventory Unit (FRIM). See Annex 4 for the organizational structure of the Division.

Figure 9 Conservancies and ranges



5.4 Other governmental agencies with legal mandates

Ministry of Public Utilities and the Environment

The Ministry of Public Utilities and the Environment is responsible for developing a modern, customer-oriented and technologically-enabled utility sector that will provide efficient, cost-effective and quality services to all citizens. In addition, the Ministry will promote that the environment be viewed as a national asset and therefore be preserved for the benefit of future generations and society at large. There are several projects related to the forest sector in this Ministry. For example, under the development programme, some projects include the Sustainable Forest Project, National Reforestation Project, Community-Based Forestry and Agroforestry Programme, and Northern Range Watershed Protection Research and Planning

Project.¹⁹ In terms of the Recurrent Programmes, there are several divisions of the Ministry that address forestry issues, including the Forestry Division, and Horticulture Division.

Tobago House of Assembly (THA)

The Tobago House of Assembly is responsible for developing and implementing plans, policies and programmes in regard to issues related to the conservation and protection of forest resources in Tobago. Further, the THA is responsible for preservation of biological resources and conservation of land and marine protected areas. Within the Tobago House of Assembly, there are several departments, which include the Division of Agriculture, Marine Affairs and the Environment (DAME); Division of Tourism and Transportation; and Department of Marine Resources and Fisheries. The major department that addresses matters related to the forestry sector is the Division of Agriculture, Marine and the Environment. The mission of DAME is stated as this: "To effect the sustainable management of all our natural resources, the skilled development of our human resources and increased use of relevant technology to facilitate trade and a dynamic agro-business sector."²⁰ DAME is further divided into three departments, including the Agricultural Unit, the Marine Resources and Fisheries Unit and the Department of Natural Resources and the Environment Unit.

Department of Natural Resources and the Environment (Tobago)

The Department of Natural Resources and the Environment is committed to protecting and preserving Tobago's natural resources, environment and biodiversity. This Department is also the arm of the Environmental Management Authority (EMA) in Tobago, monitoring and enforcing the laws pertaining to inter alia noise pollution and Certificate of Environmental Clearance. The Department is responsible for environment management, watershed management and forest industries, wildlife management, and parks and protected areas.

Environmental Management Authority (EMA)

The Environmental Management Authority provides several services with respect to issues related to the forest sector. According to the Draft National Protected Areas Policy, "The Authority is responsible for designating and coordinating the management of ESAs by the legally designated management authorities such as the Forestry Division and the Tobago House of Assembly." Further, the EMA also assists in the development and establishment of Stakeholder Management Committees for ESAs. This is to ensure that NGOs, CBOs and communities participate in management planning and providing advice. In addition, the Draft National Protected Areas Policy also states that one role of the EMA is to "ensure that physical development is done in a manner that does not damage or degrade the environment (including ESAs) under the Certificate for Environmental Clearance Rules (2001)."

Chaguaramas Development Authority (CDA)

The Chaguaramas Development Authority, a statutory agency, primarily accounts for administering and coordinating the development of the north-west peninsula of Trinidad, including the offshore islands of Gaspar Grande, Gasparillo, Monos, Huevos and Chacachacare. This area is home to the Chaguaramas National Park. Under Section 14 of the CDA Act, the prime role of the CDA is to determine the order of the development of the north-west peninsula and to ensure that development conforms with the requirements of the Town and Country Planning Act (Chap 35:01).

Water and Sewerage Authority (WASA)

The Water and Sewerage Authority is mandated by the Water and Sewerage Act to manage the water and sewerage sector. This entails regulating activities for the purpose of protecting any water source, whether groundwater or surface, against pollution. In accordance with the Water and Sewerage Act, WASA is required to protect watersheds and the services these

¹⁹ It should be mentioned that the changes of government administrations over the years has led to the transfer of certain divisions, departments and programmes from one ministry to another. For example, the Forestry Division can be identified as being under either the Ministry of Agriculture, Land and Marine Resources or the Ministry of Public Utilities and the Environment, depending on the government in office.

²⁰ Source: Tobago House of Assembly (THA) at <http://www.tha.gov.tt/agriculture.html>

provide to communities. This will assist in the delivery of a reliable, safe and efficient water supply to satisfy the demands of both industrial and domestic customers.

National Heritage Trust of Trinidad and Tobago, Ministry of Community Development, Culture and Gender Affairs

This agency is responsible for preparing inventories, for granting the approval of properties of interest as heritage sites and for developing a register of these properties.

Town and Country Planning Division, Ministry of Planning, Housing and the Environment

The Draft Protected Areas Policy states that “this division is engaged in the direct control of physical development on land, and ensures that development on land does not adversely affect coastal and marine areas. It is empowered to allocate funds for communal parks, game and bird sanctuaries, protection of marine life and preservation or protection of vegetation under a tree preservation order. Further, they collaborate with other agencies in the preparation of spatial strategic plans and all proposals for PAs are included in their plans.”

5.5 Government agencies without legal mandates for forestry management

The Multilateral Environmental Agreements Unit, Ministry of Planning, Housing and Environment.

The Multilateral Environmental Agreements Unit (MEAU) was established as a part of the Environmental Policy Planning Division and is situated within the Ministry of Planning, Housing and the Environment. The Unit coordinates and implements the many multilateral agreements to which Trinidad and Tobago is a signatory, including climate change agreements, the Convention on Biological Diversity and the Convention on Desertification. In addition, “integral to the execution of this Unit’s mandate is the on-going involvement of all sectors within society.”²¹

Institute of Marine Affairs (IMA)

“The Institute is mandated to collect, analyse and disseminate data relating to the economic, technological, environmental, social and legal development in marine affairs generally, and to formulate and implement specific programmes and projects to achieve the overall objectives.” However, the research organization plays an indirect role in providing advisory in issues related to the forest sector. According to the Draft National Protected Areas Policy (2009), “They have been actively involved in management planning for wetland areas including Buccoo Reef, Nariva Swamp and Speyside.”

National Reforestation and Watershed Rehabilitation Project, Ministry of Agriculture, Land and Marine Resources

The National Reforestation and Watershed Rehabilitation Project is designed to provide an alternative strategy for watershed protection and management, while providing ways in which community members can improve their livelihoods. The Project is expected to operate over 10 years and has a target to replant 13,212 hectares of forest, of which 440 hectares will be devoted to watershed rehabilitation. The goal is to restore forests and rehabilitate watersheds that are sustainably managed for the equitable benefit of our citizens.

Regional corporations

The Draft National Protected Areas Policy states that “the regional corporations have the responsibility of managing heritage parks primarily intended for recreation within their boundaries.” For example, at the Devil’s Woodyard, picnic and small scale recreational facilities are administered and managed by the Princes Town Regional Corporation.

²¹ Source: Address by Senator the Honourable Tina Groolund-Nunez Minister of State on behalf of The Minister at <http://www.news.gov.tt/index.php?news=2520>

The above analysis has shown that there are numerous agencies and organizations involved in the management and rehabilitation of forests in Trinidad and Tobago. Partly overlapping mandates and possible lack of coordination means that overall management of forests in the islands may be ad hoc. Effective coordination of these organizations and policy must become a priority for forest management in Trinidad and Tobago.

5.6 Key multi-sectoral committees and civil society organizations involved in the forest sector and heritage conservation

5.6.1 Multi-sectoral committees

There are a number of multi-sectoral committees comprised of representatives from government and civil society organizations that provide advice and help in the protection and preservation of forests in Trinidad and Tobago. Some are mandated by enabling legislation or by the Cabinet, or they may be ad hoc in nature. The extent of their relative effectiveness in forest management is unknown, since no official benchmarks or monitoring have been implemented. These committees include:

Wildlife Conservation Committee: This Committee primarily advises the relevant line Minister on issues related to the conservation of wildlife in Trinidad and Tobago.

Interim Management Committee of the San Fernando Hill Natural Landmark: This Committee develops policy guidelines and recommendations for facility management services, establishes an appropriate fee structure, and advises on rental and lease fees for lands and facilities acquired by the State.

Honorary Game Wardens' (HGW) Administrative Committee: This Committee provides advice and reports to the relevant line minister, develops and manages programmes, activities, funding and staff of the Honorary Game Warden (HGW) Programme. The programme supports the Forestry Division in the protection and conservation of wildlife in Trinidad and Tobago by patrolling and detecting forest offences. CANARI (2007) notes in its Draft Working Paper on the Forest Policy that "persons are financially compensated for a minimum of four patrols per month. A number of HGWs are selected from CBOs and hunters' organizations, thereby strengthening support for the [Forestry] Division."

National Wetlands Committee: The National Wetland Committee was established in January 1995, with representatives of relevant government ministries and non-government organizations. This Committee is currently engaged in preparing management plans and projects for Nariva and Caroni Swamps and in responding to other issues impacting wetlands in T&T. In addition, it plans to create Local Wetlands Committees. The Committee advises and develops activities for the implementation of the Ramsar Convention to formulate and review development proposals, management plans and awareness programmes.

Caroni Swamp National Park and Bird Sanctuary Management Committee: This Committee is responsible for the management and affairs of the protected area, which entails financing planning, fee collection, advertising and promotion, and education awareness programmes.

ESA Stakeholder Management Committees (SMCs): The Draft National Protected Areas Policy states that "these committees were established by the EMA's Board of Directors under the Environmental Management Act (2000) and the Environmentally Sensitive Areas (ESAs) Rules (2001) for each ESA. They are jointly chaired by the EMA, legal management authority, and include representatives from key government agencies, NGOs, community based organizations and academic institutions." Their role is primarily advisory in nature.

5.6.2 Civil Society Organizations

In addition to governmental organizations, NGOs also play a key role in forest management. Some civil society organizations own and maintain certain protected areas. These include the **Asa Wright Nature Centre (AWNC)**, which protects some parts of Arima. AWNC is owned by a non-profit trust established in 1967 to protect and keep part of the Arima Valley in a natural state and to create a conservation and research area for the protection of wildlife and for the enjoyment of all. It was one of the first nature centres to be established in the Caribbean. Comprising nearly 1,500 acres of mainly forested land in the Arima and Aripo Valleys of the Northern Range, the AWNC's properties will be retained under forest cover in perpetuity, to protect the community watershed and provide important wildlife habitat. Another civil society group is the **Pointe-a-Pierre Wildfowl Trust**, which protects a section of the Ponte-a-Pierre Refinery. It is a wildlife reserve that encompasses two lakes and about 25 hectares of land within a major petrochemical and oil refining complex, Petrotrin. Unique to the Caribbean region, the Trust has been able to successfully link environment and development, offering a model of wise use.

Some civil society organizations informally manage State lands. These include the **Fondes Amandes Community Reforestation Group**. The **Fondes Amandes Community Reforestation Project (FACRP)** is a community-based agroforestry project that began in 1982 by a group of farmers living in the Fondes Amandes Watershed. The group manages and conserves a portion of forest in the St. Anns Valley, protecting it from deforestation and forest fires.

Some protected areas are privately owned and managed by civil society groups, including the Grafton Caledonia Wildlife Sanctuary, Vega De Oropouche, Le Vega, Englishman's Bay Estate, Charlotteville Estate, Arnos Vale and others.

The Caribbean Forest Conservation Association (CFCA) is a membership, environmental non-governmental organization. It is a non-profit organization and operates under a constitution and set of rules. The Caribbean Forest Conservation Association (CFCA) came into being out of concern for issues of deforestation as a result of the devastating forest fires in Trinidad in 1987. CFCA was created by a citizen-based action-oriented group to advocate and lobby for conservation of forest ecosystems, biodiversity and the sustainable use of forest resources by all stakeholders.

CANARI-The Caribbean Natural Resources Institute (CANARI) is an independent technical and research organization, which analyses and promotes the participatory management of natural resources in the islands of the Caribbean. CANARI's programme, which spans the entire insular Caribbean, comprises three main elements: research, analysis and advocacy on the methods and institutions required for participatory management. Themes include approaches to protected area management, capacity building for participatory management, collaborative natural resource monitoring and locating livelihood strategies in natural resource management. CANARI has also been involved in the consultation exercises for the draft forest policy, as the lead coordinator of consultation meetings throughout Trinidad and Tobago²².

Additional NGOs involved to some extent in the forest sector include the **Council of Presidents of the Environment (COPE)** (a grouping of autonomous, not-for-profit, NGOs and CBOs representing specialist interests in environmental concerns); **Environment Tobago** (environmental education, protecting of local flora and fauna, re-introduction of extirpated wildlife, beach and river mining, lobbying for protective legislation, establishment of protected areas and promoting sustainable tourism development); **Trinidad and Tobago Field Naturalists Club** (a society for the study of natural history); **Trust for Sustainable Livelihoods** (causes of natural resources degradation in the Caribbean, promotion of the sustainable management in the context of improved livelihoods); **Buccoo Reef Trust** (Tobago's marine environment, sustainable development of marine tourism, fishing and

²² Source: www.canari.org

aquaculture in the Caribbean region); and **Plum Mitan Residents in Developing Ecotourism (PRIDE)** (awareness-raising and education on wetlands).

5.7 Main industrial sectors involved in the forest sector

It is important to note the key sectors involved in sustainable forest management in Trinidad and Tobago will assist in the development of harmonized policies for the forests' development and conservation. As shown previously, forest conservation, use and management in Trinidad and Tobago is a highly complex issue and includes numerous policies, laws and plans; therefore examining the key sectors involved in the forest sector is important. In addition to highlighting the sectors, it is important to note any linkages in terms of monetary transactions between the sectors. With regard to this issue and for the period under investigation, there are no direct records of monetary transaction, and as a result, this poses a challenge as harmonizing of policies becomes less seamless. However, data for the year 2000 using input-output tables for that year shows the kind of indicative transactions related to the forestry sector. This data is shown later in the chapter. The key sectors with linkages to forests are described below.

Land use sector

The main policy instrument for land use is the legal and policy framework. "In Trinidad and Tobago, planning law enforcement and continual reform is highlighted as a significant means of preserving and safeguarding the environment. The need for planning law, as one of our major tools for environment management to accommodate concerns such as the adverse effects of development and deforestation, has been recognized" (CSO (2005)). However, both the Draft National Forest and the Draft Protected Areas Policy state that the legal and policy instrument is insignificant or weak, in that plans are not updated. The last National Physical Development Plan was passed by Parliament in 1984, and even though the law mandates the updating of the Plan every three years, this has not occurred. Therefore, there is a need to link the land use sector with the forest sector, as this can act as a safeguard for the protection of the environment.

Energy sector

The Government of Trinidad and Tobago has indicated that there is a need to incorporate or integrate sustainable development in the energy sector. The sector, in its aim to pursue sustainable development, has identified that energy produced and used in activities that support human development in all its social, economic and environmental dimensions is the overarching driver of a sustainable energy strategy. Various activities such as exploration, production, refining, and marketing of petroleum and its by-products can be pursued in collaboration with sustainable development goals.

Quarrying

The Quarry Policy (2005) states that "the quarry industry in Trinidad and Tobago is deluged with environmental problems." Uncontrolled quarrying can have catastrophic effects or impacts on the environment, including loss of soil cover, loss of habitat for animals and plants, air pollution, degraded vegetation, more flash flooding if quarrying activities take place on hilly slopes, and many other adverse effects. As a result, the Government of Trinidad and Tobago is addressing the effects of uncontrolled quarrying as a matter of urgency. The policy, which is a major step in dealing with the environmental issues, takes note of the environmental and health effects of uncontrolled quarrying and develops policy guidelines to address these issues and the utilization of tools to predict impacts or effects on the environment. Blasting of rocks is also a major issue. Therefore, alternative and sustainable methods are being proposed to quarry operators.

Land-Based Transportation infrastructure

The Draft National Protected Areas Policy states that "plans for developing the land-based transportation infrastructure have included developing major roads within forest areas, protected areas or alongside protected areas. These include the long proposed connecting road between Matelot and Blanchisseuse that would pass near the Matura National Park, alternatively called Eco-Roadway." Transportation thus plays a vital role in forest management

and production forestry. Without an efficient transportation network, the cost to procure raw material for mills would be higher and the margin of profit lower. Also, if no mills are located in close proximity to roads or ports, then transportation costs are increased. Forest-based operations can lead to road building and the development of other essential infrastructure works such as ports.

Agriculture sector

Since the agricultural sector hinges on the exploitation of land resource (soil and vegetation), it has direct and indirect influences on the indigenous forest resources in terms of their exploitation and conservation. The direct effects result from the competition for land between forests and agriculture, while the indirect effects result from the exploitation of the forest resources either for subsistence purposes (food, energy, building material) and/or for income. Maly, Turuka, Kowero and Kachule (2000) state that “Wanton deforestation and land degradation are a reflection of unsustainable land use emanating from poor agricultural and poverty related policies. Therefore, there is need to address the link between the agricultural sector and the forest sector.” The Government of Trinidad and Tobago has stated that more research is required to develop more sustainable land use practices that will result in the preservation and protection of forests in Trinidad and Tobago.

Tourism sector

The tourism sector is an industry that can be utilized to protect and conserve the forests of Trinidad and Tobago through various sub-tourism sectors, including ecotourism, heritage tourism, nature tourism, green tourism and cruise ship tourism. FAO (1999)²³ has investigated the link between the tourism sector and the forest sector and states, “Tourism is one of the most important income-earning industries in many SIDS, and interest in eco- or nature-based tourism is increasing. Although forests on these islands are rarely the primary attraction for visitors, they have a great potential to complement dive sites and other primary attractions. Some Caribbean islands such as Dominica, Jamaica and St. Lucia are among the island States that have made efforts to develop the tourist potential of their forest areas. By maintaining the health of coral reefs, which, in turn, protect beaches from sand erosion, coastal forests play an indirect but critical role in the tourism industry in some island nations.” Shand (2001) also provided information on the link between tourism and biodiversity conservation, stating “major tourism developments can protect the biodiversity resources of a country through the assistance of local communities.”

In Tobago, tourism is the main sector, absorbing about 60 per cent of the workforce. Tobago's unique environment, which includes the Western hemisphere's oldest forest reserve, provides Tobago with a unique opportunity to forge greater linkages between sustainable forest management and the tourism sector. The tourism sector has the potential, if managed properly, to help provide the required financing for the adequate maintenance of forest cover on the island.

Social sector

At the national level, most states lack the financial and human capacity to maintain surveillance and enforcement for the state managed forests, which are generally easily accessible to the public. According to John and Firth (2005), “They have traditionally relied on a range of tools for sustainable forest management, including regulation and enforcement, state management of critical areas, education, and encouragement of stakeholder participation. While all of these have had some successes, they have not been able to reverse the loss of tree cover and deterioration of watershed services.” Regional research has established that the rural poor of the Caribbean have traditionally relied upon forest-based livelihood activities for some measure of income. These activities typically provide for necessities such as foods, medicinal products, and raw materials for craft products for vending. Because of this, due to the close association, the poor are frequently blamed for the destruction of public forest reserves. However, while deforestation may be driven by poverty-related issues, it has rarely proven to be the single and direct result of poverty. Rather,

²³ From the FAO article entitled “Particular Forestry Issues and Activities of Interest to Small Island Developing States”.

deforestation may actually result from many factors, even in times of national affluence. There is a need to help the poor in promoting sustainable practices that will protect the forests. There are many benefits of this, including sustainable livelihoods and the conservation and protection of forests. Scherr, White and Kaimowitz (2003) argue that forest market development can help reduce poverty. Scherr et. al (2003) state that “forest markets can contribute to employment and cash income streams for all major groups of the rural poor, and function as capital assets for forest owners enabling them to utilize underutilized resources and leverage other types of capital.” Commercial forestry can stimulate employment and economic growth through multiplier effects. Economically, forests can offer incentives for local people to protect environmental services. All of these potentials enhance the economic value of standing forests resources and reduce the threat of forest clearing and extreme degradation. The forest sector, if managed sustainably, could help reduce the high incidence of poverty that still exists alongside relatively high income per capita.

5.8 Input-output analysis of related sector transactions

Table 12 shows the major intermediate and final demands for domestic wood (proxy for forestry timber products) within Trinidad and Tobago during the year 2000. Recent data is not available; however, if we assume that the structure of the economy has not altered significantly since the year 2000, the proportions of intermediate demand and final demand may be assumed to remain constant. This was also confirmed by interviews within the CSO, where figures in the National Accounts Division confirmed that the structure of the economy has not altered significantly since 2000. Table 12 shows that wood production has purchased mainly refined petroleum products, in the form of vehicle fuels for distribution and transport. The major sectors within the economy demanding wood products have been the wood processing industry with TTD 59 million or 13 per cent of total intermediate demand and construction with TTD 327 million or 75 per cent of total intermediate demand. Of the final demand, households accounted for TTD 27 million or 26 per cent, while exports accounted for TTD 72 million or 70 per cent in the year 2000 (Table 13).

Table 12 Intermediate demand of forestry (TTD million)

	Forestry intermediate demand
Refined petroleum products	0.30
TOTAL intermediate inputs	0.30
Compensation	38.81
Taxes on Production	0.02
Subsidies	-
Consumption of Fixed Capital	0.43
Operating Surplus	6.24
Value added	45.50
Total outputs	45.80

Table 13 Major intermediate and final demand for domestic wood (2000) (TTD million)

		Wood
Intermediate Demand	Wood	59.0
	Household Appliances	6.6
	Iron & Steel	3.3
	Petrochemicals	6.8
	Construction	327.2
	Finance	5.4
	Business Services	11.5
	TOTAL INTERMEDIATE DEMAND	439.0
Final Demand	Households	27.1
	GFCF	-
	Change in inventories	1.6
	Government	-
	Exports	72.0
	Re-exports	1.9
	TOTAL FINAL DEMAND	102.6

5.9 Chapter summary

Although the forest sector is primarily managed by the Forestry Division, there are many laws, strategies and plans within Trinidad and Tobago that have an impact on the use of forest resources. Other industrial sectors within the economy, including construction, also have indirect impacts on both timber and non-timber products from forests. If Trinidad and Tobago is to succeed in having a sustainable forest sector and in attracting sustainable forest financing, the overall management of forests needs to be effectively coordinated and based on scientific evidence and sustainable economic principles and values. These will be discussed within the next chapter.

6. CHAPTER 4: MAJOR FUNDING AND INVESTMENT FLOWS TO THE FORESTRY SECTOR

6.1 Present financial flows for SFM: Public sources in Trinidad and Tobago

6.1.1 Methodology

The methodology informing this chapter on fiscal expenditure on services commences with the list of projects responsible for forest management and then, extraction of relevant expenditure data from the Draft Estimates of both the Development Programme²⁴ and the Recurrent Programme expenditure of the Trinidad and Tobago National Budget for the selected years 2005, 2008 and 2009. This will allow comparison between the years. All amounts have been converted to US dollars using the appropriate exchange rate.

All forest management programmes and projects were included. In addition, for all programmes directed to the forest sector but where the expenditure was not explicitly stated, an estimate was made of the value of expenditure. In order to identify those projects that were not visible but were still related to the forest sector, information has been sought from government officials to provide detailed accounts of projects and therefore, this provides information on whether or not the projects are forestry related. Documents utilized included websites of different ministries, the 2009 Public Sector Investment Programme (PSIP) and the 2009 Social Sector Investment Programme (SSIP).

6.1.2 Basic assumptions

It is a difficult task to accurately gauge the expenditure of the Government of Trinidad and Tobago on the forest sector as captured in the Estimates of Expenditure prepared by the Ministry of Finance. Some projects such as Community-Based Forestry and Agroforestry Programme and Forestry Conservancy in different constituencies are clearly designed exclusively for the forest sector, while others are not catering for forest management. There are also other projects where forest management is intertwined and is not clearly visible, such as the Wetlands Management Project.

6.1.3 Analysis of expenditure on the forest sector

Table 14 shows a summary for 2005, 2008 and 2009 fiscal operations of forest expenditure by development and recurrent programme. It is evident that more money is spent in the Recurrent Programme, compared to the Development Programme. In terms of the Development Programme, expenditure has increased steadily, with an increase of 88.6 per cent from 2005 to 2008 and an increase of 25 per cent from 2008 to 2009. In comparison to the Recurrent Programme, expenditure fell slightly by 0.7 per cent from 2005 to 2008, but increased by 16 per cent between 2008 and 2009 (see Figure 10). Table 15 also shows that the highest amount of expenditure was spent in 2009, while the lowest expenditure was spent in 2005.

²⁴ The Development Programme or the Capital Programme shows financial estimates of both ongoing and new projects and programmes under different ministries and public bodies, while the Recurrent Programme shows financial estimates for continuing projects by main divisions under a ministry.

Table 14 Summary of fiscal operations of forest expenditure by Development and Recurrent Programme

Year	Development Programme	Recurrent Programme
	current million USD	
2005	1.06	10.78
2008	2.00	10.71
2009	2.50	12.43

Exchange rate: \$1TT to \$6.3US dollars

Figure 10 Development programme and recurrent programme expenditures (current prices in millions of USD)

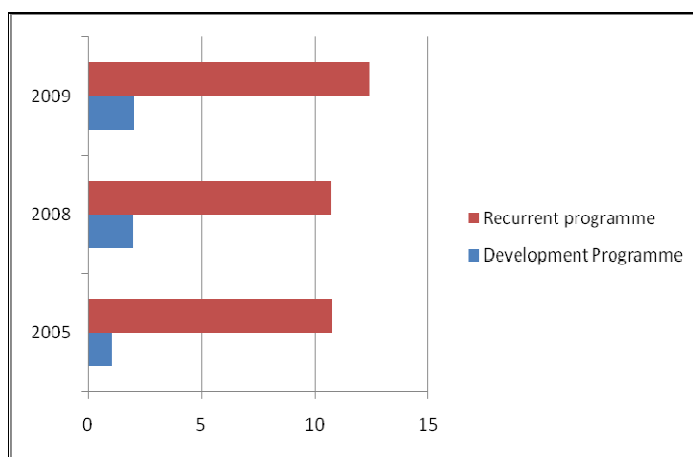


Table 15 Summary of forest sector fiscal operations of forest expenditure-Recurrent Programme by major categories

Year	2005	2008	2009
	current million USD		
Personnel expenditure	8.63	8.2	10
Goods and services	1.6	2.05	2
Minor equipment purchases	0.14	0.06	0.03
Current transfers and subsidies	0.41	0.4	0.4

Exchange rate: USD 1 to TTD 6.3

Table 15 shows that recurrent expenditure comprises personnel expenditure, goods and services, minor equipment and current transfers and subsidies. Further, most funds were spent in personnel expenditure, followed by goods and services and current transfers and subsidies. For example, in 2008, out of USD 10.7 million spent on the Recurrent Programme, approximately 76 per cent was expended in personnel expenditure²⁵, followed by 19.1 per cent in goods and services, 3.7 per cent in current transfers and subsidies and 0.5 per cent in the purchase of minor equipment. This was also similar for 2005, where out of USD 10.7 million, 80 per cent of the recurrent expenditure was spent in personnel expenditure, followed by 14.8 per cent in goods and services, 3.8 per cent in current transfers and subsidies and 1.2

²⁵ Personnel expenditure entails salaries, allowances, wages, overtime, payment of increments, Government's contribution to N.IS. Remuneration to board members, and other salary-type payments.

per cent in the purchase of minor equipment (see Figure 11). Further, in terms of years, the highest amount of expenditure was spent in 2009, a total of USD 12.43 million, while the lowest amount of money was spent in 2008, a total of USD 10.7 million.

Figure 11 Recurrent expenditure by categories (by percentages)

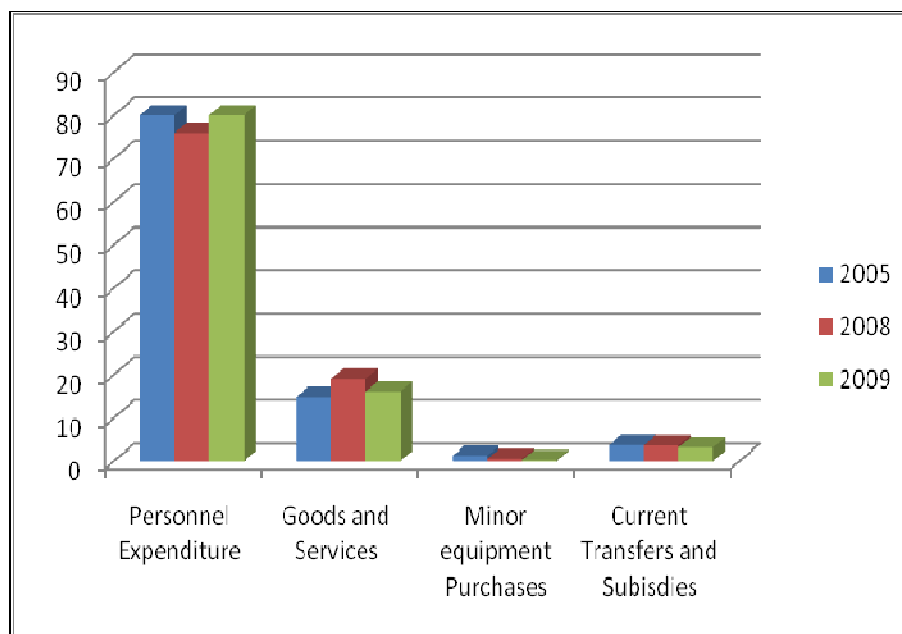


Table 16 shows that total fiscal expenditure fluctuated over the period reviewed in both current and constant dollars. The majority of total fiscal expenditure was spent in the Recurrent Programme rather than in the Development Programme. In addition, Table 17 also shows a steady increase in forest expenditure in both current and constant dollars.

Table 16 Summary of fiscal operations including total fiscal expenditure and total estimated forest expenditure

Year	Total fiscal expenditure	Total fiscal expenditure	Total expenditure on capital/dev programme	Total expenditure on recurrent programmes	Total estimated forest fiscal expenditure (capital and recurrent programmes)	Total estimated forest expenditure (capital and recurrent programmes)
	current USD millions	constant 2003 USD millions	%		current USD millions	constant 2003 USD millions
2005	4 375.6	4 813.4	6.8	93.2	11.89	11.1
2008	9 650.0	13 510.04	15.8	84.2	12.70	11.8
2009	7 988.5	12 781.6	17.9	82.1	15.03	14.1

Exchange rate: USD 1 to TTD 6.3

Table 17 Summary of fiscal operations (current and constant estimated forest expenditure)

	Total fiscal expenditure (current USD millions)	Total estimated current forest expenditure as a % of total current expenditure	Total fiscal expenditure (constant 2003 USD millions)	Total estimated constant forest expenditure as a % of total constant expenditure.
2005	4 375.60	0.3%	4 813.40	0.23%
2008	9 650.00	0.1%	13 510.04	0.08%
2009	7 988.50	0.1%	12 781.60	0.10%

Exchange rate: USD 1 to TTD 6.3

Table 17 shows total forest fiscal expenditure in current and constant dollars and total estimated current and constant forest expenditure as a percentage of total current and constant expenditure. The table shows that for both current and constant dollars, the percentage of forest expenditure is minute for the years selected. For example, in 2005, total estimated current forest expenditure accounted for 0.3 per cent of the total current fiscal expenditure. In that same year, total estimated constant forest expenditure accounted for 0.2 per cent of the total constant fiscal expenditure. This pattern was also the same in 2008, when total estimated current forest expenditure accounted for 0.1 per cent of the total current fiscal expenditure, while total estimated constant forest expenditure accounted for 0.08 per cent of the total constant fiscal expenditure. It should be mentioned that total estimated constant forest expenditure as a percentage of total constant expenditure in 2005 and 2008 was lower than the total estimated current forest expenditure as a percentage of total current expenditure.

Table 18 clearly identifies that more funds are spent in the Recurrent Programme. In addition, in the Recurrent Programme, forest expenditure as a percentage of GDP ranges from 0.07 per cent to 0.08 per cent, while in the Development Programme, forest expenditure as a percentage of GDP ranges from 0.01 per cent to 0.02 per cent. Therefore, forest expenditure as a percentage of GDP in both the Recurrent and Development Programmes is very small. Further, there were hardly any increases between the years selected.

Table 18 Capital and recurrent expenditure as a % of GDP

	2005	2008	2009
GDP Of Trinidad and Tobago at constant (2000) prices/USD millions	12 324	14 615	14 488
(Development Programme) current (USD)	1.1	2.01	2.5
(Development Programme) as a % of GDP	0.01%	0.01%	0.02%
(Recurrent Programme) current (USD) millions	10.81	10.69	12.52
Recurrent forest expenditure as a % of GDP (current USD millions)	0.08%	0.07%	0.08%
Recurrent and capital forest expenditure as % of GDP (current USD millions)	0.09%	0.08%	0.1%

Exchange rate: USD 1 to TTD 6.3

The distribution of forestry projects can be identified under the following government departments and ministries: the Tobago House of Assembly (THA), Ministry of Public Utilities, Ministry of Agriculture, Land and Marine Resources, Ministry of Tourism, and Ministry of

Planning, Housing and Environment. In most cases, the bulk of the estimated forest expenditure fell under the Ministries of Public Utilities and Environment and the Ministry of Agriculture, Land and Marine Resources compared to the other ministries, such as the Ministry of Planning, Housing the Environment and THA.²⁶

Some of the projects identified for funding under the Forestry Division include the following:

- Forest regeneration in the different conservancies
- Production of pine seedlings and teak nursery
- Improvement of forest fire protection capability
- Improvement of management of the natural forest
- National Parks and Watershed Management Project
- National forestry inventory of Trinidad and Tobago
- Reforestation of denuded Northern Range Hillside
- Forest access roads
- Community-Based Forestry and Agroforestry Programme (NFAP)
- Wetlands Management Project
- Outreach and community empowerment and mobilization
- Sustainable forestry
- Sustainable management of wildlife resources in Trinidad and Tobago

Some additional projects identified under THA include the following

- Forest fire protection
- Wildlife research and education
- Forest plantation inventory study

6.2 Private investments

Financial Information was limited on the role of the private sector in providing funds to the forestry sector. However, the Forestry Division revealed that many NGOs and CBOs that are involved in forest-related projects receive funding from both local private companies and international agencies. For example, on the Fondes Amandes Community Reforestation project website, the community group states that a main sponsor has been British Gas (BG) Trinidad and Tobago. Another funding organization is the Guardian Life Wildlife Trust Fund. The Global Environment Facility (GEF) Small Grants Programme has also supported a number of CBOs involved in forestry and forestry-related projects, including the Caura Valley Community Based Integrated Management Initiative, the Community Management of Seamount Harvest at Blanchisseuse, the Bon Air Forest Nursery Project and the Brickfield Shore Bird Sanctuary, among others.

The forestry division provides a subsidy to private land owners for reforestation exercises. Currently the subsidy is TTD 2,500 per hectare. The total private sector demand for reforestation financing ranges from TTD 7,500 to TTD 10,000 per hectare (Forestry Division (2010)).

6.2.1 Other types of Investments

National Gas Company (NGC)

²⁶ It should be mentioned that the different Governments in Parliament over the years has led to the transfer of some divisions, departments and programmes from one ministry to another. For example, the Forestry Division can either be situated under the Ministry of Agriculture, Land and Marine Resources or under the Ministry of Public Utilities and the Environment, depending on the government in office or on the portfolio of the ministry. However, as of the date of this report, the same Government has been in office for more than five years.

The Forestry Division has stated that the majority of forestry projects are funded by government. However, there are some projects funded by national organizations and individuals, including one project funded and implemented by the State-owned National Gas Company (NGC). The NGC has developed the NGC Reforestation Programme, which supports or promotes reforestation in Trinidad and Tobago. The Programme was developed in accordance with a Certificate of Environmental Clearance Reforestation stipulation that the NGC reforest, at the very least, the equivalent of the area permanently cleared for the Cross Island Pipeline Project and Beachfield Upstream Development Projects. The company has cleared 105 hectares for the two projects. However, the NGC went further and developed a “no-net loss of forest resource” policy and has embarked on a programme to reforest an additional 210 hectares in the Morne L’Enfer Forest Reserve, which is close to the Union Industrial Estate where NEC cleared about 200 hectares. The locations were selected by the Forestry Division and listed as critically degraded areas with secondary type forests. These six areas lie adjacent to the 75 km 56 inch pipeline corridor, and altogether 315 hectares of degraded forest are to be reforested in this community-based Programme. Audits have proved that reforestation activities in NGC programs have been successful and exceed the 80 per cent benchmark for survival rate set by the Forestry Division. In 2009, the company was expected to reforest 85 hectares (210 acres) and maintain and re-supply seedlings to the existing 50 hectares previously established in Phase I. In the past two years, the National Gas Company has reforested approximately 50 hectares. Community involvement is very important for the NGC, in that residents of the communities affected by the CIPP, BUD and Union Industrial Estate projects have formed community relief groups and have become actively involved in all aspects of the Reforestation Programme.

6.3 Multilateral funding (grants and loans)

There are several multilateral organizations that provide funding to many forestry projects, whether directly or indirectly. Direct funding means that the multilateral agency has been the executing agency from the beginning of the project, and indirect funding means that the multilateral organization may not be the executing agency but provides technical or financial assistance. This section only examines the main multilateral organizations, including the FAO, Inter-American Development Bank (IADB) and the World Bank.

6.3.1 Food and Agriculture Organization (FAO) of the United Nations

FAO primarily focuses on the agricultural and food sectors; however, these sectors are related or linked to the forest sector. In addition, FAO is also a source of knowledge and information. Table 19 provides information on projects funded by FAO in Trinidad from 2003 onwards. In the table, the majority of projects are agricultural or food-based rather than forestry-based, but there are linkages from the agricultural sector to the forestry sector, in that the agricultural sector also utilizes forest resources. In terms of expenditure, the table shows that FAO has spent an estimated amount of USD 459,830 from 2003 to 2006.

Table 19 **FAO projects by programme areas in Trinidad and Tobago**

<i>Project</i>	<i>Time duration of the project</i>	<i>Budget (USD)</i>
Food production in support of food security in LIFDCS²⁷		
Promoting CARIFORUM/CARICOM Food Security	2003–2010	8 900 901
Organic Gardening in Primary Schools in Tobago ²⁸	2004–2006	20 000
Grow-box Production in Schools in Victoria	2005–2006	10 000
Food and agricultural information		
Promoting CARIFORUM/CARICOM Food Security	2003–2010	8 900 901
Food and agricultural policy		
TCP ²⁹ Facility	2006–2009	217 935
Food security, poverty reduction and other development cooperation programmes		
Regional Special Programme for Food Security (RSPFS) at Country Level –Phase II	2008–2009	21 240
Morvant-Laventille Youth Agricultural Network (MYLAN Grow BOX Project)	2007–2008	9 907
Support to National Agricultural Health and Food Safety	2008–2009	33 000
Excellence in Agricultural Extension Service Delivery System	2008–2009	147 748

Source: FAO website

6.3.2 Inter-American Development Bank (IADB)

In Trinidad and Tobago, IADB has developed a country strategy. Table 20 shows projects funded partially or wholly by IADB in the forestry sector. IADB provides both grants and loans. The Environmental Protection and Rehabilitation Programme, listed as the first project in the table, entails tree planting, beach cleaning, construction of visitor centres & drainage works. The other project, the Implementation of Sustainable Farming Practices by Communities in the Northern Range, is “to develop a community based model for sustainable hillside farming which will deliver greater economic gain to small scale hillside farmers while alleviating current environmental threats caused by current practices and sustaining the natural resource base of the Northern Range.” (IADB)

²⁷ LIFDCs- refers to an FAO list of Low-Income Food-Deficit countries.

²⁸ It should be mentioned that two sub-projects were funded by FAO under this main project.

²⁹ TCP means Technical Cooperation Programmes. FAO states on its website that “the TCP Facility (TCPF) enables FAO Representatives to respond to government requests for urgent small-scale technical assistance activities and to strengthen field programme development process.” There were two sub-projects for the period 2006-2009 under the TCP facility project.

Table 20 Projects by programme areas in Trinidad and Tobago

<i>Project</i>	<i>Time duration of project</i>	<i>Budget (USD)</i>	<i>Financing type</i>
Environmental Protection and Rehabilitation Programme	1991–2001	5 070 000	Reimbursable Technical Cooperation-Loan
Implementation of Sustainable Farming Practices by Communities in the Northern Range	2009–ongoing	Total cost: 294 500 (of which the IADB amount was 150 000 and the Gov't amount was 144 500)	Non-Reimbursable Technical Cooperation Grant

Source: IADB

6.3.3 The World Bank

The World Bank has provided technical and financial assistance to Trinidad and Tobago in many areas, such as health, the environment and poverty (among others). In terms of the forestry sector, the World Bank is currently providing financial support to the Trinidad and Tobago: Nariva Ecosystem Restoration and Carbon Sequestration Project. It is an investment loan between the Government of Trinidad and Tobago and the World Bank. “The first component of the project is the carbon sequestration through afforestation and reforestation of selected areas of the Nariva wetland ecosystem. The afforestation and reforestation component of the project aims at promoting carbon sequestration by increasing the carbon stocks of the entire wetland and the second component is the methane mitigation through restoration of surface hydrology at Nariva. This component will be achieved through the restoration of the natural drainage regime” (the World Bank (2008)). The total cost of the Project is USD 4.6 million, and the World Bank has pledged USD 2.6 million. The rest of the cost will be provided by the Government of Trinidad and Tobago.³⁰

In addition to the above initiatives, consultation exercises have also revealed that there is a demand for financing for forest management and awareness. These additional financing needs are discussed in chapter 6.

6.4 Chapter summary

Although Trinidad and Tobago's Government generates considerable tax and non-tax revenues, primarily from the energy sector, and although there is considerable land mass covered by forests, insufficient funds have been provided for forest management and conservation, primarily due to incorrect price signals and insufficient recognition of economic values of forest services and products. The recent reduction in Government revenues from decreasing fuel prices and proposed austerity measures may also pose a risk to domestic forest finance. For there to be sustainable forest management, financing for forest management needs to be immune to the vagaries of domestic government funding and to be self-financing. There is potential to attract international sustainable forest financing, first through the demonstration of total economic values of forests and secondly through the setting up of capturing mechanisms for these forests values.

³⁰ It should be mentioned that this project is in the initial stages; loan agreement has not been finalized.

7. CHAPTER 5: DEMAND FOR FINANCING FOR SUSTAINABLE FOREST MANAGEMENT (SFM)

This chapter addresses many issues related to financing sustainable forest management, including forest regeneration, watershed and wetland management, national parks and forest recreation, wildlife management, management of natural forests and forest protection, among others. These issues are usually the most topical areas in the forestry sector in Trinidad and Tobago; therefore, there is always a demand for development of projects or programmes under these areas. This will be followed by an assessment of current forest policies and investment incentives.

Table 21 provides information on financial requests from the Forestry Division concerning sustainable forest management. The table shows that the Forestry Division requested funds in many areas. However, the majority of requests are identified under infrastructure development and management, followed by watershed and wetland management and then by outreach and awareness areas. Officials at the Forestry Division have stated that the effects of the financial and economic crisis between the fiscal years 2007/08 and 2008/09 led to the reprioritization of projects and the need to cut or reduce the amount of request allocations in 2009/10.

Table 21 Requests for financing for Sustainable Forest Management

Categories	Years				
	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010
Development Programme (USD millions)					
Forest regeneration	1.31	0.5	0.3	0.4	0.3
Watershed and wetland management	0.7	3.7	1.7	2.0	1.3
National parks and forest recreation	-	0.9	0.5	0.2	0.2
Wildlife management	-	0.6	0.1	1.4	0.4
Management of natural forests	0.7	0.5	0.3	0.2	0.1
Forest protection	0.3	0.3	0.2	0.2	0.1
Infrastructure development and management	1.1	3.0	5.0	6.2	3.0
Private and community forestry	0.1	0.05	0.1	0.1	0.04
Outreach and awareness	0.8	0.8	1.2	1.0	0.3
Total	5.0	10.4	9.4	11.7	5.7

Source: Forestry Division (Exchange rate: USD 1 to TTD 6.3)

7.1 Assessment of current forest policies and investment incentives

Table 22 shows that there are several policies that have an impact on the Forestry sector in Trinidad and Tobago. For example, the Draft National Forest Policy (2008) affirms that its goal is to guide the sustainable management of the forest resources of Trinidad and Tobago. There has been a need to develop a revised policy since the first official forest policy was developed in 1942. Even though reviews and proposed drafts have been developed, official approval to date has not been given. The Draft National Forest Policy (2008) states that “the Government advocated for revision and reformulation of the Forest Policy. In addition, other factors such as changes in the policy environment and the national legal framework and Government’s goal to reach 2020 status resulted [in] the demand for revisions to be made to the Forest Policy.”

Table 22 Main policies

Policies	Brief synopsis of policy
1. The Draft National Forest Policy (06/2008)	Addresses the designation and management of areas for the conservation of forest biological diversity and sustainable use of forests. The Draft National Forest Policy (2008) states that "the purpose of the National Forest Policy is to guide the sustainable management of the forest resources of Trinidad and Tobago, including the use of these resources, and the impacts and consequences of that use."
2. The National Tourism Policy (2007)	The policy provides broad guidelines under which Trinidad and Tobago's tourism sector will be developed to be significant contributor to the country's economy and a source of sustainable employment.
3. The National Wetlands Policy(2002)	The National Wetland Policy for Trinidad and Tobago provides a rational framework or plan in which the appropriate and wise utilization of the wetlands can be accomplished.
4. The National Water Resources Management Policy (2005)	This Policy is expected to support the socio-economic development of Trinidad and Tobago through the integrated management of the water resources and water environment.
5. The National Environmental Policy (NEP) (2005)	Overall, this Policy seeks a balance of economic growth and environmentally sound practices with the aim to promote the quality of life and meet the needs of the present and future generations.
6. Towards a WildLife Policy for Trinidad and Tobago (Draft September 2007)	This Policy is intended to highlight the diversity of wildlife in Trinidad and Tobago as well as the proposal and strategies to preserve and protect the wildlife.
7. Draft Quarry Policy (2005)	The major policy goal is to promote sustainable development of the quarry industry of Trinidad and Tobago for the benefit of its people in an environmentally sound manner and consistent with the Government's macroeconomic policy.
8. The National Protected Areas Policy (2009)	This Policy will provide guidelines for the selection, designation and management of all protected areas designated for the conservation of natural heritage.

When reviewing the existing Forest Policy of 1942, one sees it is clear that several key issues need to be addressed, especially when drafting of a new policy. One is simply whether or not the policy is feasible. The policy should also include provisions for monitoring and feedback mechanisms to determine effectiveness in accomplishing policy goals and objectives. Further, the institutional framework, which entails laws and legislations that impact the forests and the forestry sector, especially in light of sustainable forest management, should be referred to in the forest policy, as this can aid in changing the attitudes and perceptions of stakeholders towards sustainable forest management. Another key issue to address is the regulatory capabilities of the Forestry Division. The Forestry Division is the main agency that addresses all matters related to the management of forest resources in Trinidad and Tobago, and as law enforcement by the Division is weak, it is not taken seriously by the public. The forest policy must seek to ensure that adequate authority has been provided to the Forestry Division to enable it to discharge the functions with which it has been mandated and the necessary resources be provided to enhance the law enforcement capabilities of the Division. In addition, the Policy should indicate the need for adequate funding of the Forestry Division, so that it can implement the strategies in the Policy, as well as the need for sufficient staff with the right mix of skills within the Forestry Division in order to effectively implement the Forest Policy.

Additionally, a critical issue affecting sustainable forestry is the challenge of non-legal settlement on state lands. CANARI (2007) states that "illegal squatting on State land and forests impairs the work needed to be done by the Forestry Division and the effective

implementation of a forest policy.” Non-legal settlement is not only a law and order challenge, but also a social problem. It is the opinion of the author that if land tenure were regularized and appropriate anti-erosion measures were utilized, the land occupied by squatters could add to the agricultural prosperity (if lands are of agricultural potential and SFM practices are developed and linked to “squatting management”). The development of a new forest inventory is also important, as this will indicate the state of forests and allow for any improvement in forest management planning and practices. Squatting has the potential to be a serious impediment to sustainable forest management, since it was last estimated that 15 per cent of the population is living in non-legal settlement communities (Trinidad and Tobago Experience in Informal Settlement). There are many factors contributing to this, including the large proportion of land owned by the State (51 per cent), inadequate land markets, poverty and uneven historical distribution of land tenure, to name a few. Current Housing Policy has also contributed to the problem, where squatters are able to apply for “certificates of comfort” to help regularize their land tenure status after occupying the land for a number of years. It has been suggested that the current laws provide incentives for non-legal land settlement, and these laws may also need to be examined if there is to be sustainable forest management.

CANARI (2007) also emphasizes the need to address the capabilities of the two major departments under the Forestry Division, which are the Wildlife Section and the National Parks Section. They argue that there is a need to make provisions for these sections by developing specific policy statements that address them in the forest policy. This is because the Wildlife Section examines all aspects of wildlife in Trinidad and Tobago, while the National Parks Section monitors all parks. The National Parks Section also provides recreational opportunities from the different parks and research opportunities provided by the scientific reserves, such as the Aripo Savannas Scientific Reserve. The areas of study under the Wildlife Section and the National Parks Section are significant in forest management; thus, special attention or focus given to them should be required in the Forest Policy.

The harmonizing of different sectors with links to the forest sector should be another key part of forest policy. The different sectors that have linkages to the forest sector are reflected in the policies listed in Table 22. These include the energy, water, tourism, social, land use, agricultural and transportation sectors. The role of forests should be identified in each sector, as harmonization is possible among the forestry and other sectors, especially agricultural and tourism sectors.

7.2 Estimated annual demand for financing

Table 23 gives the authors’ estimates of the demand for forest finance based on the project consultations and secondary data assessments. It is estimated that total basic annual funding requirements for sustainable forestry in Trinidad and Tobago is USD 42.4 million.

Table 23 **Summary of assessed finance demand per annum**

<i>Forest management priority</i>	<i>Estimated funding demand per annum USD millions</i>
Watershed and wetland management	0.6
National parks and forest recreation	1.9
Wildlife management	0.5
Management of natural forests	0.6
Forest protection	0.4
Infrastructure development and management	0.2
Private and community forestry	3.7
Outreach and awareness	0.1
Personnel expenditure	10.0
Goods and services	5.0
Minor equipment purchases	1.5
Current transfers and subsidies	0.7
Education or forest management awareness	0.3
Research and development on localized forest management and marketing of NTFPs	0.2
Training for forest managers in negotiating for external and internal finance	0.2
Advanced project management and financial training for forest managers.	0.2
Education initiatives to support the merits of PES	2.0
Financing for pilot PES schemes to raise awareness of scheme	2.5
Research on the economic values of forest direct and indirect uses	0.5
Develop unit within Forestry division to access international financing	0.3
Private funding for replacement of annual forest cover loss	0.5
Funding for community based forest management	2.5
Funds to implement correct incentives for private sector to invest in sustainable forestry	0.5
Institutional strengthening of local forest management educational/training institution; Eastern Caribbean Institute of Forestry and Agriculture (ECIAF).	3.0
Research on the impacts or consequences of squatting and land settlements for sustainable forestry.	0.5
Forest inventory	2.0
Forest cover map	2.0

The estimates provided in Table 23 have been made from average funding requests from the Forestry Division and estimates of funding requirements for the other areas identified as important for forest management in Trinidad and Tobago. The challenges to forest financing and possible remedies are discussed in Chapter 6.

8. CHAPTER 6: CRITICAL FACTORS AND CHALLENGES TO FOREST SECTOR FINANCING

8.1 Critical factors affecting forest financing in Trinidad and Tobago

Financing of the forest sector in Trinidad and Tobago is comprised mainly of local public funds via the Government's consolidated fund and financing of the Forestry Division. It is now widely accepted that forests provide a portfolio of benefits to human welfare. Each of these benefits can be classified within the Total Economic Value scheme³¹ of:

- Direct Use Values
- Indirect Use Values
- Option Values
- Bequest Values

Although it is common knowledge that these values exist, the current financing mechanisms within Trinidad and Tobago are primarily focused on the direct use values of forests, such as timber production and hunting. By ignoring other potential values associated with forests, possible financing mechanisms may be ignored to the detriment of the forest sector and to the livelihoods that are directly and indirectly dependent on forests

Although there have been attempts to modernize the forest policy of Trinidad and Tobago since 1979, the Forest sector in Trinidad and Tobago is still governed by an outdated 1942 Forest Policy. Attempts to modernize the Forest Policy in 1981, 1998 and 1999 failed, leaving the country to be governed by the outdated mid-twentieth-century policy.

The lack of updated official forestry inventory data can also be seen as an obstacle to forest policy reform and financing. The last official forest inventory was carried out in 1969, which estimated at the time that there was over 50 per cent of forest cover. Unofficial estimates in 1996 and 2000 put forest cover at 44 to 46 per cent.

Forest management is provided by a mix of agencies, with the Forestry Division being the primary agency responsible for management in Trinidad and the Department of Natural Resources and the Environment in Tobago. The Commissioner of State Lands also has responsibility for forests on other State lands, while other governmental agencies and other civil society stakeholders are also involved, such as the Chaguaramas Development Authority, National Reforestation and Watershed Rehabilitation Project, Town and Country Planning Division and the Environmental Management Authority (EMA). These separate entities that have partial management responsibilities for forests with disparate objectives may also be a hindrance to effective management and access to various sources of forest financing.

Together with the obstacle to effective forest financing alluded to above, the Draft National Forest Policy has stated that the specific policy framework for forest conservation, use and management in Trinidad and Tobago is highly complex, and therefore there are many challenges to the policy framework including:

- A lack of approved revisions to the 1942 Forest Policy
- Some policies and laws are overlapping or in direct conflict
- Areas where policy statements and legal instruments are required or in need of amendment
- There is a need to enhance and support the role of civil society and the private sector in forest management
- National laws and policies do not take full cognizance of specific management issues in Tobago

³¹ See Appendix A for further explanation of the Total Economic Value framework.

8.2 Rectifying the challenges and gaps for sustainable forest financing

The above hindrances to sustainable forest financing must be rectified within the overall stated policy goals and objectives of the revised Draft Forest Policy, which has been consulted upon in early 2010. The goal of the Draft National Forest Policy “is the sustainable management of the forest resources of Trinidad and Tobago to provide for the social, economic, ecological, cultural and spiritual needs of present and future generations; contribute to the sustainable development of the country; enhance the quality of human life, while at the same time protecting biological diversity and ecological processes.”

Three objectives have been identified:

- Optimize the contribution of forest resources to livelihoods while ensuring sustainable use of forests, including extraction of timber and wildlife
- Preserve native genetic, species and ecosystem diversity
- Retain and enhance the natural productivity of forest ecosystems and ecological processes (watershed functions, and others) to provide important ecosystem services

The draft explicitly mentions development of mechanisms for sustainable forest financing. Strategies recommended include:

- Implementing the green fund, which is a fund established in 2004 and is capitalized by taxes levied on gross sales and receipts of companies operating in Trinidad and Tobago. Funds are disbursed to CBOs for environmental remediation, reforestation and environmental conservation.
- Developing schemes for payments for ecosystem services that can provide incentives to private landowners
- Facilitating revenue collection through taxes, caution fees, charges for penalties and offences
- Payment for ecosystem services, carbon trading and providing fiscal incentives to private and community owners and managers of forests

Since these possible portfolio sources of financing have been identified within the draft strategy, it may be worthwhile to let these be the foundation of sustainable financing policy, with implementation ‘tweaks’ to ensure their effectiveness in raising finance for forests.

In addition to the issues already discussed, financing for the following key areas requiring additional financing and supporting SFM have also been identified during consultation. These include the following:

- Education or forest management awareness
- Research and development on localized forest management and marketing of NTFPs
- Training for forest managers in negotiating for external and internal finance
- Advanced project management and financial training for forest managers
- Educate population about the merits of PES
- Financing for pilot PES schemes to raise awareness of scheme
- Research on the economic values of forest direct and indirect uses
- Develop unit within Forestry Division to access international financing
- Funding for replacement of annual forest cover loss
- Funding for community-based forest management
- Funds to implement correct incentives for the private sector to invest in sustainable forestry
- Institutional strengthening of local forest management educational/training institution; Eastern Caribbean Institute of Forestry and Agriculture (ECIAF)
- Funds required to support community-based /or co-management of forest resources
- Research on the impacts or consequences of squatting and land settlements for sustainable forestry

It should be noted that although PES schemes are acknowledged to be important areas of raising finance for sustainable forestry, discussions with forestry stakeholders have suggested that there needs to be a preparatory stage before PES can be implemented. This preparatory stage would include education and awareness of the merits of PES and pilot PES initiatives throughout Trinidad and Tobago.

8.3 Recommendations for forest financing

As shown earlier, the management of Trinidad and Tobago's forests is incoherent and dispersed, meaning that tapping additional sources of forest financing may be a challenge. Recently the shift in paradigms suggests that there is recognition of community participation in forest management as being vital to the sustainability of forests, together with innovative methods of finance for sustainable forests. However, neither of these approaches is going to be successful unless there is continuous monitoring of forest trends, through continuous forest inventories, coordination of the agencies responsible for forest management via a council of forest managers, research on the long term productivity of forests and biodiversity and greater understanding of the socio-cultural and economic value of the country's forests.

As mentioned earlier, the strategies for sustainable forest finance under consideration in the draft forest policy should be the foundation upon which innovative solutions of forest finance should be constructed. However, if these are to be successful, property rights in which property and utilization rights are created must be a clear objective.

The managers and policy makers responsible for the management of Trinidad and Tobago's forests must be cognizant of the values embedded within forests in order to attract the right type of financing from both domestic and international agencies. Until alternative sources of funding are identified and the revised policies implemented to ensure that these funds are utilized effectively, it is clear that domestic funds from the Government's consolidated fund will be the most important in the immediate future. The short-term question therefore becomes, how best to ensure that Government funds are used for sustainable forest management.

The overall strategy for accessing sustainable finance for forests must be time delineated in terms of short-term, medium-term and long-term strategies, with each clearly containing their own objectives, complimentary policies and time lines for success.

Table 24, adopted from Verweij (2002), shows the institutional set-up for financing mechanisms, classified under institutional arrangements and valued environmental services.

Table 24 Forest services and finance options

	<i>Combination of services</i>	<i>Biodiversity conservation</i>	<i>Carbon sequestration</i>	<i>Water services</i>	<i>Bio-prospecting</i>	<i>Ecotourism</i>	<i>Sustainable timber and NTFPs</i>
International transfer Payments							
Multilateral donors	Multilateral forest investment funds	Global Environmental Fund	GEF Adaptation Funds				
International Financial Institutions	<ul style="list-style-type: none"> – Debt-for-nature swaps. – Green venture capital funds. 						
Bilateral mechanisms	Debt-for-nature swaps		CDM projects				Timber trade taxes
International NGOs	<ul style="list-style-type: none"> – Trust funds for nature. – Tradable development rights. 						
Private	Environmental shares		<ul style="list-style-type: none"> – Certified emission reductions. – Prototype carbon fund. 	<ul style="list-style-type: none"> – Water taxes/water funds. – Reforestation incentives. – Payments to land owners. – Purchase of forest land. 			Certification labelling
Private/public	Micro-finance facilities			Voluntary agreements. Trading schemes.	Material transfer agreements (MTAs)/ Information transfer agreements (ITAs)		Micro finance facilities
Public	<ul style="list-style-type: none"> – Reforestation subsidies. – National forest finance funds. – Environmental taxes. – Land use taxes. 		Tax on fossil fuels	<ul style="list-style-type: none"> – Water taxes. – Compensation payments. – Redistribution mechanisms. 		Entry fees/ Ecotourism charges	Facilitation mechanisms

Source: adopted from Verweij (2002)

Each of the financing mechanisms can be classified as either, short-, medium- or long-term strategies, with their consequent complimentary policies required to ensure the success of the strategy.

Table 25 Time line for strategies

Short-term strategy (1–5 years for implementation)	Medium-term strategy (5–10 years for implementation)	Long-term strategy (more than 10 years for implementation)
<ul style="list-style-type: none"> – Reforestation subsidies – National forest finance funds – Environmental taxes – Land use taxes 	Micro-finance facilities	CDM projects
Tax on fossil fuels	<ul style="list-style-type: none"> – Voluntary agreements – Trading schemes 	Multilateral forest investment revolving funds
<ul style="list-style-type: none"> – Water taxes – Compensation payments – Redistribution mechanisms 	<ul style="list-style-type: none"> – Material transfer agreements/ – Information transfer agreements 	Green venture capital
Entry fees/ Ecotourism charges	Timber trade taxes	<ul style="list-style-type: none"> – Trust funds for nature – Tradable development rights
Facilitation mechanisms		Environmental Shares
Certification labelling		

8.4 Inter-sectoral linkages

Data on intermediate demand between industrial sectors suggest that other sectors such as wood processing, construction and business services have significant linkages with the forest sector. If benefits are derived from the use of forest products within these sectors, then there may also be financing opportunities related to the payment for forest products, such as direct taxes or transfers.

8.4.1 The special case of the Water and Sewerage Authority (WASA)

The Water and Sewerage Authority (WASA) is currently in the process of having its charges reassessed by the domestic regulator, the Regulated Industries Commission (RIC). There is also speculation that WASA is contemplating introducing marginal pricing, i.e. water meters that allow customers to pay for the water they use instead of the flat rate tariff that is currently in effect. WASA abstracts and harvests water for domestic and industrial consumption; it is therefore an institution that relies on water services from forests. A water tax, with revenues “ring-fenced” for financing of sustainable forests management within the watersheds that contribute to WASA water intake would be a sensible short-term financing option. Marginal pricing via water metering would also provide the perfect platform to collect these taxes, since it would be based on direct use of water resources from forests.

8.4.2 Joined- up Government policies and coordination

There is also a need for joined-up Government policies and coordination between ministries and agencies, whereby departments and ministries responsible for various sectors such as tourism, energy, transport and construction must be cognizant of their role in SFM. Cross-ministerial policy and therefore the pooling of resources for SFM financing could also bring medium- and long-term solutions to the financing gap for SFM.

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Annex 1 Timber and non-timber products

The proportion of natural timber from private land is increasing. In terms of production from tree plantations, timber is sourced mainly from State lands. The Draft National Forest Policy (2008) describes the timber industry as “a dispersed small industry including small scale processing, furniture making and use of timber for construction. There are also over 80 sawmills (at least two of which are in Tobago) but many are operated intermittently and most are old and inefficient.”

The consumption of wood products is complemented by significant imports of sawn timber, paper products and wood-based panels, largely from the United States of America and Canada. Almost all the production of industrial roundwood is converted into sawn timber, supplying about half of national consumption. ITTO (2003) reports that “the difference (30,000 metric tons in the year 2000) is imported. The consumption of wood-based panels (7,000 metric tons in the year 2000), pulp (8,000 metric tons) and paper (70,000 metric tons in the year 2000) [is] supplied by imports. In the year 2000, Trinidad and Tobago registered a deficit of nearly 70 million US dollars in its international trade of wood products.”

The Draft National Forest Policy (2008) reveals that “forests play a critical role in supporting socio-economic development thorough the extraction of these products, including the hunting of wildlife. Hunting of game animals is popular in Trinidad and Tobago and is done for sport, subsistence and commercial sale.” However, it remains a challenge to measure wildlife in monetary terms, since a value cannot be placed on a person’s satisfaction from the aesthetic nature of the environment. CSO (2005) reports that “royalties are collected from the sale of permits to hunt certain wildlife species such as agouti, deer, waterfowls and many others.” The Forestry Division was able to provide information on State Game Licences Permits sold in Trinidad and Tobago for the period 2005 to 2007. Revenue collected also increased in the three-year period 2005-2007 from 298,000 to 352,700. The Forestry Division reports that “the cost of a permit did not change and therefore the difference in growth of the two variables (number of permits and number of hunters) is attributed to the fact that hunters are allowed to purchase more than one state game licence permit at any given time.” In Tobago, the wildlife population is on a smaller scale, but hunting takes place. According to the Forestry Division, “The largest number of permits was issued for agouti, followed by lizards and tattoo.” Total number of hunters and permits have also increased during the period selected. It should be mentioned of the development of the local and international pet trade is an important factor affecting forests, and the impact of this trade on forest biodiversity remains unknown.

‘Non-extractive uses’ centres on the development of the social and cultural functions of the forests. Additionally, forests are important to developing a healthy environment and to providing a means of recreation, relaxation and spiritual enhancement. In Trinidad and Tobago, the Draft National Forest Policy (2008) states that “forests are the focal points for several of the religions practiced in Trinidad and Tobago in that forests provide the venue for many cultural events”. Forest areas and specific trees are protected and valued for particular cultural occasions and as historic symbols. Forests provide a range of products for traditional ceremonies, from food and beverages to costumes and musical instruments. While some of these products are perhaps less often used on a day-to-day basis, they still form essential elements of a variety of cultural traditions. Moreover, forests play a major role for rural communities and persons residing within or near forests. “Forests are also landscapes that have contributed to shaping national identity and national heritage, as illustrated by the tradition of ‘Papa Bois’ and other cultural practices” (The Draft National Forest Policy (2008)). The Government of Trinidad and Tobago, through the Forestry Division, has developed initiatives to ensure forests are protected. Some of these initiatives are being implemented by the National Parks Unit and the Wildlife Section of the Forestry Division.

CSO (2005) states that “9 sites are managed by the National Park Section, 13 are managed by the Conservancies Section and 16 are managed by the Wildlife Section. However, these areas can be further broken down into 61 sections or areas. The Organization of American State survey in collaboration with the Forestry Division has proposed protected areas for scientific reserves, national parks, natural landmarks, scenic landscapes, recreation parks and natural conservation reserves.” Visiting these national parks areas has become a major activity. The Forestry Division was able to provide a summary of visitors to some selected national park areas (see table A1). The highest number of visitors was in 2005; the number of visitors fell in 2006, but then increased again in 2007. The most visited sites were the Quinam Bay Recreation Park, San Fernando Hill and the Lopinot Historical Complex.

Table A1 Summary of visitors of some selected national park areas 2005-2007

Site	Years		
	2005	2006	2007
1.Clever Woods Recreation Park	35 000	35 000	36 000
2. Quinam Bay Recreational Park	150 000	150 000	150 000
3.Matura Nature Park (Proposed)	13 000	16 700	15 000
4.Aripo Savannas Scientific Reserve	3 200	1 031	760
5. River Estate Museum and Waterwheel	6 800	5 000	750
6.Lopinot Historical Complex	80 000	55 000	60 000
7.Fort George	32 000	6 000	18 000
8.Caroni Swamp	30 429	20 013	22 131
9. San Fernando Hill	130 000	140 000	150 000
Total	480 429	428 744	452 641

Source: Forestry Division, National Parks Section

The Draft National Forest Policy (2008) states also that “forests are important to the nature tourism industry, with lush tropical rainforest being a direct attraction, contributing to scenic beauty, and playing a vital role in maintaining healthy near shore coral reefs, a key attraction in Tobago.” Tourism is major contributor to Tobago’s GDP. Its contribution to GDP grew from 46 per cent in 2005 to 56 per cent for 2006. Both the coral reefs and turtle watching are major tourist attractions Trinidad. The Forestry Division was able to provide both information on the number of visitors to turtle viewing and revenue figures. (See Table A2.)

Table A2 Number of visitors to turtle viewing sites and revenue collected for the period from 2005 to 2007

Year	Number of visitors				No. of issued permits	Revenue collected (TTD)
	Matura Beach	Grande Riviere	Fishing Pond Beach	Total no. of visitors		
2005	7 708	6 507	50	14 265	5 310	65 773
2006	7 057	6 027	118	13 202	4 271	68 783
2007	11 903	10 357	573	22 833	5 960	96 195

Source: Wildlife Forestry Division

ITTO (2003) states that “teak was first introduced in 1913 in the Central Range Reserve and in the Southern Watershed (Quarry Road Plantation) using Tenasserim seeds from Myanmar (former Burma). In 2001, there were over 9,100 ha; similarly in 2005, 9,100 ha were identified. Most have been established in areas originally under natural forests.” On the other hand, pine

plantations have been established since 1956. By the year 2000, there were an estimated 4,200 hectares of Caribbean pine plantations in the country. This has not changed. According to ITTO (2005), "Of the 15,400 hectares of planted forest, 4,200 hectares of *Pinus Caribaea* were estimated in the country."

In terms of livelihoods, forests do not generally provide the living area of the poor, but they do provide significant subsistence products for many persons. ITTO (2005) states that "there is no direct conflict between timber harvesting and livelihood interests, but the forest is still being cleared for agricultural and other purposes." Another issue is the social aspect. In terms of social issues, there are no major social conflicts related to the management of the country's forests, but there are conflicting demands of different groups. For example, those who are described as 'middle class' tend to lobby against monoculture plantations and support the regeneration of natural forests, while entrepreneurs are exerting political pressure to prevent any limitations on their encroachment on forestland for real estate development. ITTO (2003) also discusses other groups who squat on forestland and clear the land for agriculture, utilizing poor agricultural farming practices such as the slash and burn method. They also clear the land for construction of homes. Further, owners of sawmills and timber merchants are lobbying for independent management of State forests away from the Forest Division regulations. ITTO (2003) also reveals that the forestry division lacks the authority and in some instances the training to deal with these conflicting demands of different groups.

Functions of forests

As indicated previously, forests provide many goods and services to mankind; however, currently, ecological services and added value and downstream industries are not recognized in national accounting. This is because many important forest functions have no markets and hence no apparent economic value. Pearce (2001) states that "imputing economic values to non-marketed benefit has the potential to change radically the way one looks at all forests and to make the pendulum swing back from a presumption in favour of forest conservation to more conservation and sustainable use." The measure of economic value is related to individuals' willingness to pay for those benefits. Values can be classified as:

- Direct Use Values (consumptive and non-consumptive uses of forests), which include timber and fuel, extraction of genetic material and tourism
- Indirect Use Values, which include such forest services as watershed protection and carbon storage
- Option Values, which refer to a willingness to pay in order to conserve the option of making use of forest, even though no current use is made of it
- Non-Use Values (or Existence Values), which refers to a willingness to pay for the forest in a conserved or sustainable use state, but this willingness to pay is unrelated to current or planned utilization of the forest.

Annex 2 Analysis of timber trade and other forest products

Table A3 Log prices (L)³² per sawmill cube (S)³³, at roadside and sawn lumber price (TTD) per board foot from 2004–2008

<i>Year</i>	<i>Mahogany Saaman Cypre Apamate</i>	<i>Caribbean Cedar</i>	<i>Crappo Laurier</i>	<i>Mora Tapaná</i>	<i>Boxing Board</i>
2004 L	45.00	40.00	12.00	15.00	5.00
S	8.00	8.00	6.00	5.00	3.00
2005 L	45.00	42.00	13.00	15.00	7.00
S	11.00	10.00	6.00	4.00	3.00
2006 L	42.00	38.00	12.00	15.00	8.00
S	8.00	8.00	5.00	3.00	3.00
2007 L	45.00	40.00	13.00	16.00	8.00
S	10.00	9.00	7.00	3.00	3.00
2008 L	44.00	40.00	12.00	15.00	8.00
S	9.00	9.00	6.00	3.00	3.00

Source: Forestry Division 2009

Timber and forest products exports, imports and trade balance

Trinidad and Tobago exports timber and several forest products including roundwood, sawnwood, wood-based panels, plywood, fireboard, paper and paperboard, sanitary and household papers, packaging materials and many others. Exports of industrial timber are modest; therefore, Trinidad and Tobago depends on imports to cover its needs for items such as sawnwood, plywood and paper products. The following tables provide information on the quantity and value of both imports and exports of timber and other forest products over a selected period (see tables A4, A5 and A6).

The Forestry Division also provided information on sources of imports and main countries where forest products are exported. Trinidad imports timber and forest products from Asian countries such as China and Indonesia; European countries such as Germany, Belgium, Latvia, United Kingdom; and North American countries such as the United States of America, Honduras and Canada. In terms of South American countries, Trinidad imports mainly from Brazil, Guyana and Venezuela. The main destinations for exports include African countries such as Cameroon and Egypt; and Asian countries such as Malaysia, Pakistan, Turkey, and China. In terms of European countries, Trinidad and Tobago exports to Belgium, Austria, Czech Republic, Estonia, Germany and others; in terms of North American countries, Trinidad and Tobago exports to the United States of America, Antigua and Barbuda, Barbados, Canada, Dominica, Grenada, and Saint Vincent and the Grenadines; and in terms of South American countries, Trinidad and Tobago exports to Chile, Guyana, Suriname and the Bolivarian Republic of Venezuela.

Table A4 provides information on the quantity and value of timber and forest products that were imported and exported in 2002 and 2003. In 2002, the main imports included paper and paperboards followed by sawnwood and wood based panels. Similarly, in 2003, the main

³² Log and sawn lumber prices are based on averages obtained by canvassing among loggers and millers.

³³ A sawmill cube equals the square inscribed in the circumference at the small end of the log by the length of the log.

imports were paper and paperboards followed by sawnwood and wood-based panels. In terms of exports, in 2002, Trinidad and Tobago exported mainly recovered paper and paperboards. Information was unavailable for 2003 in terms of exports. In terms of trade balance, in 2002, Trinidad and Tobago imported more timber and forest products than exported timber and non-timber products.

Table A5 provides information on quantity and value of timber and forest products that were imported and exported in 2004 and 2005. Concerning imports, in 2004, Trinidad and Tobago imported mainly paper and paperboards, followed by wood-based panels, sawnwood and wood pulp. These goods were also the main imports in 2005, in that Trinidad and Tobago imported paper and paperboards, followed by wood-based panels, sawn wood and wood pulp. Concerning exports, the main forest products exported in 2004 were paper and paperboards, recovered paper and wood-based panels. In 2005, the main exports were paper and paperboards, followed by wood-based panels and recovered paper. In terms of the import-export balance, for both years, Trinidad and Tobago imported more forest products than exported forest products.

Obtaining information on 2006 and 2007 data proved to be futile; as a result, the latest data provided is from 2008. Table A4 shows that in terms of 2008 imports, the main goods imported included paper and paperboards, followed by wood-based panels, sawnwood and recovered paper. In terms of exports, Trinidad and Tobago exported mainly paper and paper board, recovered paper and sawnwood.



Indufor

Annex 2

Table A4 Imports and exports of timber and forest products (USD) 2002-2003

Product	Unit of Quantity	Imports 2002		Imports 2003		Exports 2002		Exports 2003	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Roundwood	1000m ³	7	6 895 274	2	5,293,363	0	257,727	-	-
Wood charcoal	1000m ³	0	47 474	0	68,027	-	-	-	-
Wood chips and particles	1000m ³	0	57 907	0	55,699	-	-	-	-
Wood residues	1000m ³	2	841 888	0	54 834	-	-	-	-
Sawnwood	1000m ³	54	87 878 509	45	74 848 804	0	1 250 850	-	-
Wood-based panels (veneer sheets, plywood, particle board and fireboard)	1000m ³	41	74 236 400	35	72 508 582	0	346 880	-	-
Wood pulp	1000m ³	3	13 757 715	69	14 676 894	-	-	-	-
Other pulp	1000m ³	0	214 706	0	580 562	-	-	-	-
Recovered paper	1000m ³	0	300 336	0	609 983	10	3 002 266	-	-
Paper and paperboard	1000m ³	230	324 556 639	92	467 437 732	0	5 049 803	-	-

Source: Forestry Division



Indufor

Annex 2

Table A5 Imports and exports of timber and forest products (USD) 2004-2005

Product	Unit of quantity	Imports 2004		Imports 2005		Export 2004		Export 2005	
		Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Roundwood	1000m ³	1, 254000	3 993 975	3,79000	6 682 205	0,025800	132 759	0,030720	243 896
Wood Charcoal	1000m ³	0,583000	187 415	-	-	-	-	0,001430	2 771
Wood Chips and Particles	1000m ³	0,003000	11 828	0,017000	75 632	-	-	0,000300	160
Wood Residues	1000m ³	0,002000	9 030	0,005000	71 284	-	-	0,000140	605
Sawnwood	1000m ³	40,042000	82 911 961	59,900000	97 480 362	0,402200	1 918 473	0,438920	2 910 673
Wood-Based Panels (Veneer Sheets, Plywood, Particle Board and Fireboard)	1000m ³	40,919188	116 212 482	38,674000	109 094 818	0,970150	3 485 532	0,949142	7 707 981
Wood Pulp	1000m ³	3,201200	14 508 024	3,274001	16 922 113	-	-	-	-
Other Pulp	1000m ³	-	-	-	-	0,000160	1 600	-	-
Recovered Paper	1000m ³	0,130535	869 031	0,127000	962 738	9,836000	4 059 528	9,630000	3 723 400
Paper and Paperboard	1000m ³	70,124000	356 725 431	63,116000	341 732 372	0,564397	4 826 253	1,161101	8 731 226

Source: Forestry Division



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Annex 2

Table A6 Imports and exports of timber and forest products (USD) 2008

<i>Product</i>	<i>Unit of quantity</i>	<i>Imports 2008</i>		<i>Export 2008</i>	
		<i>Quantity</i>	<i>Value</i>	<i>Quantity</i>	<i>Value</i>
Roundwood	1000m ³	1	5 378 529	0	126 556
Wood Charcoal	1000m ³	0	0	0	7 467
Wood Chips and Particles	1000m ³	0	171 868	-	-
Wood Residues	1000m ³	0	79 647	0	12 697
Sawnwood	1000m ³	9	106 483 476	2	928 742
Wood-Based Panels (Veneer Sheets, Plywood, Particle Board and Fireboard)	1000m ³	15	130 803 236	0	844 974
Wood Pulp	1000m ³	0	154 991	-	-
Other Pulp	1000m ³	0	841 870	0	442 838
Recovered Paper	1000m ³	3	96 822 519	2	1 927 267
Paper and Paperboard	1000m ³	116	225 006 337	10	72 985 462

Source: Forestry Division

Annex 3 Summaries of laws and legislation

Forest Act Chapter 66:01 focuses on regulations of the sale of forest products and identifies forest reserves. These reserves are then managed for timber extraction. The Forest Act relates to production forestry and the removal of timber and Balata gum from forest reserves and State lands. It provides for establishing forest reserves on State lands, and forest officers are authorized to arrest and bring charges against offenders.

Conservation of Wild Life Act Chapter 67:01 (Act 16 of 1958) addresses issues related to wildlife conservation. Issues such as regulation of game species and the management of these game species are dealt in the Act. Regulation of game species is usually approached through several methods, including permitting systems, gaming seasons, and wildlife refuges. The Act promotes fields such as biodiversity management, endangered species populations and the conservation of wildlife habitats. These fields require adaptive management and research for species and ecosystem protection. The Environmental and Management Authority (EMA) (1999) states that “there is a need for a revision of the present Act to address management issues comprehensively and to increase fines which currently provide limited incentive to reduce illegal hunting.”

State Lands Act Ch 57:01 (1969): In this legislation, State Lands, including all kinds of forests and protected areas, are administratively connected. The power to declare a forest reserve is in the hands of the Commissioner for State Lands (Lands Regulations made under the State Lands Act), whose office has been moved to the Ministry of Agriculture, Land and Marine Resources. The National Wetlands Committee also states in its document National Policy and Programmes on Wetland Conservation for Trinidad and Tobago (2002) “that Forest Officers have the power to prosecute squatters for forest offences on the reserves, but not on other State Lands.”

The State Land (Regularization of Tenure) Act of 1998 provides protection to those who are found squatting on State lands; in other words, it protects squatters from being evicted from State lands. The schedules of the Act involve the addition of areas of Trinidad and Tobago, where regularization of tenure will not be granted by State authorities. These areas are described or designated as Environmentally Sensitive Areas (ESAs), which are areas that are important for the provision and protection of water resources and green belts, like forestry conservation areas.

The Environmental Management Act 2000 aims to provide guidelines on the designation and protection of “environmentally sensitive species” and “environmentally sensitive areas.” This will assist in dealing with issues of biodiversity loss and protection. The purpose of designating an ESA under the Rules of 2001 is for the preservation and conservation of areas representative of the different ecosystems of the country and their species diversity. This entails the avoidance of actions that will harmfully impact the biological, physical and the socio-economic integrity of the ESA.

The Agricultural Fires Act, Chapter 63:02 (Act 20 of 1965) is an act to make better provisions for the prevention and control of agricultural fires. The National Wetlands Committee (2002) states that “this Act provides comprehensive regulations regarding agricultural fires between 1st December and 30th June the following year. It concerns fires which may cause danger to life, property or any crop of forest.” Section 20 (1) states that a person who plants or caused to be planted any annual crop on any land upon which an illegal fire has been set is guilty of an offence.

Marine Areas (Preservation and Enhancement) Act (1970 amended 1996) Ch 37:02 “provides for protection of the marine environment, which includes the submarine areas within the Territorial Seas and includes any adjoining land or swamp areas which form with certain

submarine areas a single ecological entity" (The National Wetlands Committee (2002)). In addition, Section 3 (1) states that the line minister may by Order designate any portion of the marine areas as a restricted area where he considers that special steps are necessary for: (a) preserving and enhancing the natural beauty, (b) protecting the flora and fauna in respect of such areas, (c) promoting the enjoyment of the public, and (d) promoting scientific study and research.

Town and Country Planning Act Chapter 35:01 stipulates the procedures for the proper development of land and the granting of permission to develop land. For example, the National Wetlands Committee (2002) states that "Part III pertains to the control of the development of land. Section 20 provides for the consent of the line minister. In this regard, the line minister may make a "tree preservation order" with respect to any such tree, trees or woodlands." Further, Part IV of the Second Schedule to the Act list amenities for which provision may be made, as in "Item 3: Allocation of lands for (a) communal parks (b) game and bird sanctuaries (c) protection of marine life; Item 5: Preservation or protection of forests, woods, trees, shrubs, plants and flowers; and Item 8: Prohibiting, regulating, and controlling the deposit or disposal of waste material and refuse, the disposal of sewage and the pollution of rivers, lakes, ponds, gullies and the seashore."

Water and Sewerage Act 1965 addresses the development and control of water supply and sewerage facilities in Trinidad and Tobago as well as issues and matters related to sanitation. Further, the Act also focuses on the promotion of the conservation, the proper use of water resources and the establishment of an authority to administer and manage the development of the water supply.

The Occupational Safety and Health Act 2004: The Ministry of Labour and Small and Micro Enterprises states on its website that "the intention of the OSHA Act is to assure the safety and health of all workers at risk in Trinidad and Tobago by providing the regulatory and legal framework for setting and enforcing standards as described in the Act." In terms of the relationship between this legislation and the forest sector, activities of both the logging and manufacturing sectors of the forestry industry can have a very high rate of occupational injury incidences. The felling of trees, lifting and extraction of logs and repair and maintenance work carry high accident risks. It is thus necessary to give serious attention to the training of the workers on skills and safety awareness. This in the long term will assist in increasing productivity, which could result in higher wages, reduce accident rates and decrease the high turnover rate in the forest sector workforce.

Litter Act, Chapter 30:53 provides the legal framework for controlling littering of public places. The Act makes it an offence for any person, without reasonable excuse, to deposit any litter in any public place, other than in a receptacle placed for the purpose of collecting it or in and on any approved site. The fine for this offence on summary conviction, where the offender is an individual, is TTD 1000 and in the case of a body corporate, is TTD 2000.

Environmentally Sensitive Areas Rules (ESA) (2001) and Environmentally Sensitive Species Rules (ESS) (2001): The Environmental Management Authority 1999 State of Environment Report reveals that the ESA focuses on the designation of sensitive areas, while the ESS examines the designation of sensitive species. According to Section 42 of the EM Act, the notice of declaration of an ESS or ESA should include (a) a detailed description of the area or species to be designated; (b) the reasons for such designation; and (c) the specific, restricted actions within such areas or with regards to such species which are required to adequately protect the identified environmental issues. One of the main goals of the ESS strategic plan as stated in the EMA 1999 State of Environment Report is to increase the protection of endangered species via a declaration.

The Petroleum Act Ch 62:01 (Rev 1980) by means of Section 16 states that all land subject to petroleum activities must be restored as near as possible to the original condition after the determination of an Exploration and Production Licence (Public Petroleum Rights). The Central Statistical Office (CSO) (2005) states in their document entitled "Environmental legislations, International Conventions and Protocols" that "The Act ... provide[s] for the making of regulations that will prevent land pollution and offer compensation. These regulations offer an obligation on licence holders to avoid the pollution of seas, beaches or tidal rivers."

Plant Protection Act and the Animal (Diseases and Importation) Act: The Plant Protection Act, CSO (2005) states that "the Act makes provision for the control of diseases and pests injurious to plants by regulation of importation of plants." On the other hand, the Animal (Diseases and Importation) Act stipulates that the importation of any alien species that would negatively affect the presence of indigenous species is strictly prohibited without the permission of the Chief Technical officer of the Ministry of Agriculture, Land and Marine Resources. In implementing this Act, the delicate balance which perhaps would have otherwise been disrupted will be preserved.

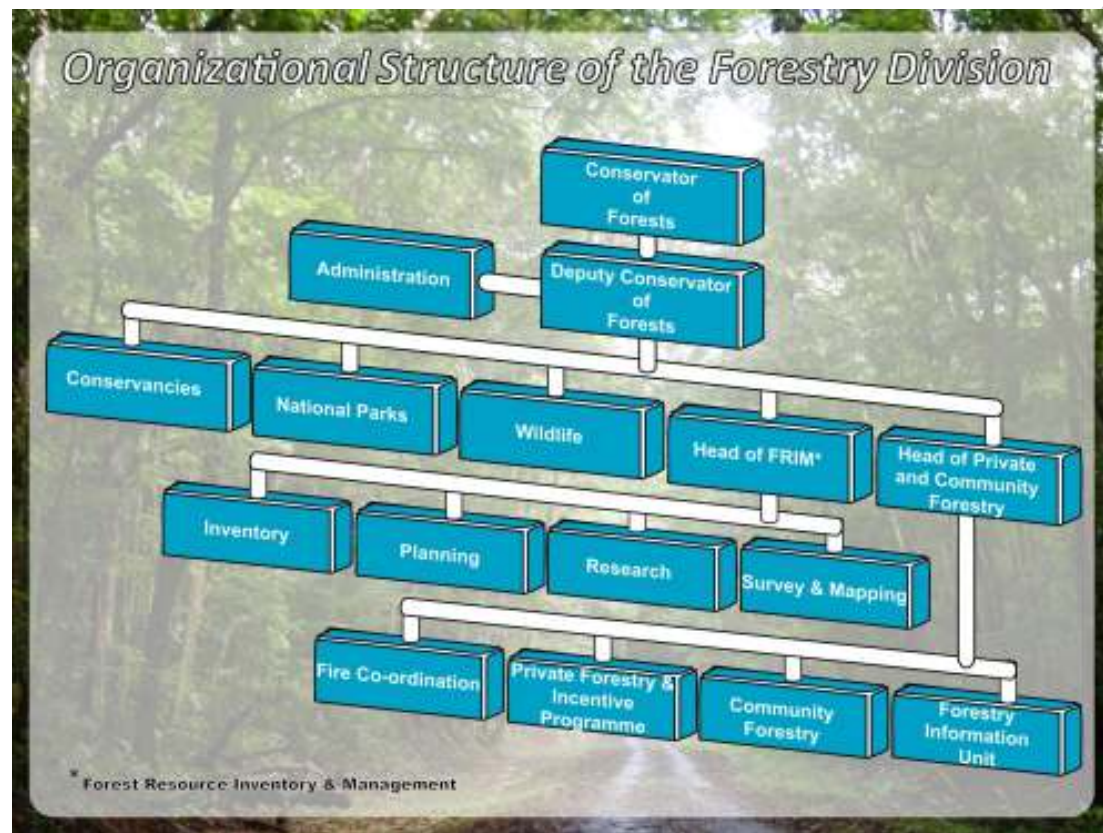
Land Acquisition Act (1994 amended 2000) and Chaguaramas Development Authority Act (1972): The Land Acquisition Act primarily authorizes the acquisition of land for public purposes and sets out procedures and laws governing the acquisition, while the Chaguaramas Development Authority Act gives the authority a wide jurisdiction over the peninsula. "Section 24 (1) states that the Authority shall ensure that development is carried out in conformity with the Town and Country Planning Act. Otherwise, the land is vested in the Authority (Section 16) and Section 28 states that the Minister may make restrictions on use of any land" (The National Wetlands Committee (2002)).



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Annex 4

Annex 4 Organizational structure of the forestry division





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