

THE NARIVA SWAMP
A GENDERED CASE STUDY
(WITH SPECIAL REFERENCE TO KERNAHAN AND CASCADOUX)
COMPOSITE REPORT

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PREFACE

This composite report includes the major findings of four individual data sets which were gathered using participatory research methodologies and tools of gender within an interdisciplinary framework to study two communities in the Nariva Swamp: Kernahan and Cascadoux. The themes for the individual data sets are: Natural Resource Use; Socio-economic and Cultural factors and incorporates data livelihoods, social capital, gendered power relations and indigenous knowledge and discourse; State Policy, Governance and Power Relations. The research questions were developed within the framework of Livelihoods, Equity and Sustainability.

Section 1 gives an introduction to the report and the rationale for choosing the Nariva Swamp (an ecosystem, which was, which was, threatened by unsustainable livelihood activities) for the case study. It also includes a description of the biophysical features as well as a concise History of Trinidad and Tobago, which takes into account Governance, and Policy issues.

Section 2 focuses on a biophysical description of the Nariva Swamp, the history of the establishment of the two communities and gives data on Ethnicity, Religion, Education, Health and Governance issues.

Section 3 gives a description of the methodology and methods used to conduct the research.

Section 4 summaries the major findings of the research and their implications for sustainability of the ecosystem and the communities and gives some recommendations for future research and development.

It is hoped that this research project which involved the community members are active participants, assisted in empowering the communities to analyse their situation and take part in developing effective and sustainable development proposals. A secondary goal was the critical examination of the role scientific research in the study of environmental problems involving human beings and exploring ways in which social, political and economic concerns could infuse scientific research. This project represents an attempt to undertake such inter-disciplinary research.

ACKNOWLEDGEMENTS

The Centre for Gender and Development Studies acknowledges the support of a number of institutions, individuals and agencies for the successful completion of this research project – *The Nariva Swamp: A Gendered Case Study*. The initial idea for this project came out of the Centre's involvement in the Island Sustainability, Livelihood and Equity (ISLE) Project, coordinated out of the Lester Pearson Institute and Dalhousie University. This project brought together scholars from island universities including – the Hassanudin University, Indonesia, University of the Philippines in the Visayas, Nova Scotia Agricultural College, Dalhousie, Halifax and The University of the West Indies. Our participation in the ISLE network benefited the project from its inception and at other stages through training in participatory research methodologies, partial funding, consultation as well as collaboration in certain aspects of the project.

This project was a very innovative and in some ways an experimental one which challenged disciplinary boundaries as well as traditional ideas of what gender-related research should be. We would like to acknowledge the financial support of the CIDA-CARICOM Gender Equity Fund in particular to thank the Gender Fund Coordinator - Ms. Denise Noel-de Bique for having confidence in us and for providing the necessary support to make the project a reality.

The hard work of the researchers on the project also needs to be acknowledged, they became part of a dynamic and challenging process which was not always clearly defined as we were charting new waters with limited resources. We would like to acknowledge their commitment to the process and to the communities with which they worked over the extended period.

The women and men, girls and boys of the Kernahan and Cascadoux communities must also be thanked for the time they spared to participate in research activities, to speak to researchers and research coordinators, to attend workshops and meetings including the final reporting conferences. Many relationships were developed which we hope will not end with the end of this particular project.

The action component of the project required that a number of individuals and agencies be drawn into the process. These included the former - Ministry of Agriculture, Lands and Marine Resources, in particular the Extension Office of the Nariva/Mayaro area, the Soils Department in particular Mr. Persad and the Wildlife Division; the Environmental Management Authority, the Institute of Marine Affairs, the Community Development Division, The Manatee Conservation Trust, Mr. Dindial Sikumar – farmer, and Dr. Brinsley Samaroo, Senior Lecturer, UWI Department of History. The encouragement and support of persons from the environmental movement should also be acknowledged for example the Point-a-Pierre Wild Fowl Trust and the Caribbean Forest Conservation Association.

The limited human resources of the Centre for Gender and Development Studies were used to their fullest capacity. We would like to sincerely thank the temporary staff attached to the project as well as the Centre's full time staff for their contribution towards the success of the project. The staff of the UWI Bursary in particular Anisa Persad also helped us meet the required financial reporting requirements. The assistance of other departments such as Department of Agricultural Economics and Extension, the Department of Life Sciences and the Department of Surveying and Land Information must also be recognized.

We know that this list is not exhaustive so we apologize for any omissions which we may have made and hope that the final product justifies the effort which so many have made towards its completion.

Dr. Rhoda Reddock
Dr. Grace Sirju Charran

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List of Acronyms

BP AMOCO	-	British Petroleum (AMOCO)
CAREC	-	Caribbean Epidemiology Centre
CDF	-	Community Development Fund
CFCA	-	Caribbean Forest Conservation Association
CGDS	-	Centre for Gender and Development Studies
CIDA	-	Canadian International Development Agency
CITES	-	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CNIRD	-	Caribbean Network for Integrated Rural Development
EIA	-	Environmental Impact Assessment
EMA	-	Environmental Management Authority
FAO	-	Food and Agriculture Organisation
GEF	-	Global Environment Facility
GORTT	-	Government of the Republic of Trinidad and Tobago
IIED	-	International Institute for Environment and Development
IMA	-	Institute of Marine Affairs
ISLE	-	Island Sustainability, Livelihood and Equity Programme
JICA	-	Japanese International Corporation Agency
MALMR	-	Ministry of Agriculture, Land and Marine Resources
MCT	-	Manatee Conservation Trust
MOCD	-	Ministry of Community Development
NAVC	-	National Association of Village Councils
NCSH	-	National Commission for Self Help
NEDECO	-	Netherlands Engineering Consultants
NET	-	Nariva Eco-Tours
NEWS	-	Nariva Environmental Watch Society
NFM	-	National Flour Mills
NGO	-	Non-Governmental Organisation
NWC	-	National Wetlands Committee
OCTA	-	Overseas Technical Co-operation Agency
SEAGA	-	Socioeconomic and Gender Analysis
TIDCO	-	Tourism and Industrial Development Company
TRVL	-	Trinidad Regional Virus Lab
UWI	-	University of the West Indies
VC	-	Village Council
WLCC	-	MALMR Wildlife Conservation Act Committee
YTEPP	-	Youth Training and Employment Partnership Programme

Section I Introduction and Justification for the Study

1.1 Introduction to the Report

This research study was envisaged as an innovative one that challenged accepted traditions of research and action in environmental research. It brought together a team of young researchers trained in agriculture, ecology, economics and interdisciplinary gender studies who worked with more experienced scholars in natural sciences, social sciences and gender studies. The research was conducted over the period April/May 1999 to December 2000¹. The project was funded through the CIDA Gender Equity Fund and the ISLE Programme.

The primary project goals as laid out in the original project document were as follows:

- ☐ To empower communities and women of the Nariva Swamp through a greater awareness of the bio-physical environment and their relationship/knowledge of the natural resources;
- ☐ To generate research data that incorporates a gender analysis into an interdisciplinary frame;
- ☐ To critically examine 'The Scientific Method' to research and exploration.

In addition to the general aim of gathering data, the development of methodologies for carrying out this kind of interdisciplinary and action research was also an important goal.

This project was founded on a gendered and interdisciplinary examination of the socio-economic, cultural, political and ecological factors affecting the sustainable use of the Nariva Swamp. Using a multi-method approach, it aimed to generate data that would allow for an exploration of three major themes of equity, sustainability and livelihoods. Our vision was that this data could be used to facilitate the empowerment of women and

¹Fieldwork took place over the period May 1999 to June 2000

the broader communities living in the Nariva Swamp by increasing their awareness of the biophysical environment, and their relationship to and knowledge of the resource base.

The project was divided into three broad components. The first focused on the biophysical characteristics of the Nariva Swamp and sought to obtain an understanding of the gendered relationships between/within human communities and the resources of the Kernahan and Cascadoux communities. Its aims were to develop a database on the natural resources used by men, women and children of both sexes within these communities and the manner in which these resources were used and to utilise this information in proposals for sustainable development.

The second area examined power relations and governance at the community and national levels and specifically explored the history of state policy to this area during the 20th century and the culture of governance in the communities. It also explored the identification of the major stakeholders and their roles, the possibility of co-management and sustainable use and the role of men and women in governance issues. This study affords us a unique insight into the understanding of the Kernahan and Cascadoux communities and the manner in which their local administrative and control structures function to develop a community despite a volatile natural, political, economic and social environment.

The final component brought together data on gendered social relations, economic patterns, and cultural traditions and practices occurring within and affected by the natural eco-system where these communities are located. In examining gendered social relations, the research team focused on the gender differentials of access and control as they specifically applied to use of land and space, the negotiation of social networks and exchange of social capital and decision-making at a community level or among sub-groups.

1.2 Background to the Study

Interest in the Nariva Swamp was generated by the Centre for Gender and Development Studies' (CGDS) participation in the Island, Sustainability, Livelihood and Equity Programme (ISLE). This is an integrated programme with the sustainable development of island states as its' primary research focus and is funded by the Canadian International Development Agency (CIDA). This programme was started in 1995². Its principal objectives included:

- ☐ Promotion of sustainable development in small island jurisdictions
- ☐ Provision of a forum for collaboration and sharing information and experience among island and archipelagic states
- ☐ Improving the policy environment for sustainable development in islands via the promotion of links between policy makers, communities and other stakeholders and
- ☐ Development of the institutional capacity in ISLE partner universities in delivering programmes of teaching, research, policy analysis/advice and community service.

The Centre for Gender and Development Studies (CGDS), as part of the UWI involvement in the ISLE programme, hosted the first workshop on Gender and the Environment at The University of the West Indies (U.W.I) St. Augustine in 1997. One of the decisions that came out of this workshop was the need to conduct further research on the Nariva Swamp. It was agreed that there was need to build a comprehensive database on the villages within the Nariva area. The aim of this research was to obtain a gendered understanding of how the community co-existed with their environment. A holistic approach was utilised in an attempt to assess the potential for the sustainable use of the Nariva eco-system. It was further concluded that this case-study data could provide a gender sensitive database which could be used in curriculum development within the

² The programme included seven island universities – Dalhousie University, University of the Philippines, Hasanuddin University (Indonesia), Technology University of Nova Scotia, Nova Scotia Agricultural College, University of Prince Edward Island (Canada) and The University of the West Indies

ISLE framework, as well as, enhance the ISLE's programme on interdisciplinary and cross-cultural teaching.

1.3 Justification and Rationalisation for the Nariva Case Study

Arising out of the discussions from the ISLE workshop, the Nariva Swamp was chosen for the case study due to the national conflict surrounding the area and the fact that it was a prime site for several research projects. Projects were being conducted by those interested in exploring the environmental and economic possibilities for the sustainable use of the Swamp's resources. Greater focus was placed on the area for research and sustainable development due to its inclusion in the Ramsar Convention and its placement on the Montreaux Record. It was also a point of national concern due to the conflict and concerns arising from the damage to the Swamps' ecosystem from both legal and illegal activities. The impact of resource exploitation in the Nariva Swamp has been and continues to be addressed but primarily from a biophysical stand point.

From a review conducted by the Centre, however, none of these studies had incorporated a truly inter-disciplinary framework, which shows a cognisance of the gendered, ecological and socio-cultural complexities of the situation in Nariva. The primary objective of this project was therefore to explore possible collaborative research, with a view to minimising duplication of the large degree of research being done in the area. The aim of this research was to provide a more holistic and gendered understanding of how the community co-existed with their environment as a pre-requisite for developing an approach to sustainable utilisation of the Nariva eco-system. It is further hoped that this case study would provide a gender sensitive database, which would ensure that policy initiatives emanating would be empowering to women as well as the communities at large.

Increasing levels of population pressure and the expanding need for land for both commercial and subsistence cultivation continues to impact negatively on the natural

environment of the Nariva Swamp. The gradual establishment of small, resource - poor communities, such as Kernahan and Cascadoux, on the outer perimeter of the swamp over the past few decades has seen families develop a heavy dependence on the natural resources (land, wildlife, lumber etc.) for economic survival.

There is undoubtedly a need to find a balance between the needs of an expanding population and their use of natural resources for economic survival. The resource extractive nature of their livelihood activities can have detrimental effects on the tropical flora and fauna that characterise Nariva.

The Kernahan and Cascadoux communities were chosen because they exist within the environs of the Nariva Swamp, which is an ecologically sensitive area and the people who live there depend primarily on the resources of the swamp for their livelihood. These communities were chosen because of the need to widen the information on socio-economic and gender relations within these communities, since the majority of research conducted to date had been biological, with little or no emphasis on the people inhabiting these communities. Kernahan and Cascadoux are seen as the most resource - poor and marginalised of the Nariva communities. It was a concern of the CGDS therefore, to understand the dynamics of male and female realities, such that information would be generated with a view towards poverty alleviation, gender equity and sustainable development. However, the plethora of research projects has led to duplication of efforts, apathy and skepticism among the various swamp communities to any research conducted in these areas.

Project Goals and Indicators

This project faced several limitations of time, financial and human resources yet, it had projected indicators and outcomes, which were accomplished/achieved to varying degrees. These indicators and outputs are as follows:

Goal 1- To empower the communities and women of the Nariva Swamp through a greater awareness of the bio-physical environment and their relationship to/knowledge of their resource base.

Indicators

1. Increased awareness among women and the communities involved in the research on issues such as: resource availability; economic alternatives; resource use patterns; resource access/control; possibilities/opportunities for transforming gender relations; possibilities for networking and training opportunities.
2. Community participation at different levels in the research process re: implementation and use of a Participatory Research/Action Methodology;

Goal 2 - To generate research data which incorporates a gender analysis and is derived from an interdisciplinary frame

Indicators

3. A completed interdisciplinary and gendered case study document for use as instructional material;
4. Case Study for use in masters degree programmes e.g the M.Sc in Environmental Studies at the UWI, Mona campus as well as in other ISLE partner universities;
5. Documentation and evaluation of the research experience;
6. Presentation of research results to key stakeholders, community members and relevant policy makers;
- 4
7. Policy-makers equipped with tools and frames of analyses, which will facilitate more

gender sensitive policy and guidelines.

Goal 3 - To examine the scientific approach to research and explore the means and possibilities of incorporating social, historical, political and economic concerns into its research frame.

Indicator

8. Documentation and analysis of the research processes, debates and discussions as a means of developing a preliminary frame of reference for achieving interdisciplinary work between the social and natural sciences;

Expected Project Outputs

- A gendered and interdisciplinary Case Study Report;
- National Conference to present research findings;
- Workshop to present policy implications to policy makers;
- Research team with practical experience/modality in gender and interdisciplinary research regarding the Swamp as an ecosystem;
- Historical and contemporary mapping;
- A gender-sensitive geographic information systems database;
- Material for use in a graduate curriculum for teaching on gender and the environment;

- Material for use in developing policy and interventions in Kernahan, Cascadoux and the Nariva area.
- A community more aware of the value of its ecosystem.

A first draft of the Case Study Report has been produced along with reports on the individual components of the projects. All of these reports are being compiled for future publication. The national conference to present the research findings was completed in December 2000. The audience consisted of members of the Kernahan and Cascadoux communities and other individuals including gender specialists, economists, agriculturists, private institutions and environmentalists. The workshop to present policy implications to policymakers was also completed in December of 2000. The aim of this was to present key issues that were thought to be important for policy decisions. The reports for these meetings have also been completed.

One of the most significant accomplishments of this project was the production of a research team more aware of the benefits and problems that arise when one uses a participatory approach in community based projects. The knowledge and experience of the researchers in the use of PRA methodologies, gender and multidisciplinary research was enhanced after having worked on this project.

Historical mapping exercises were completed along with an attempt at a gender sensitive database on the study area. This was however, limited due to lack of the researcher's knowledge of and experience in using the GIS methods and software. The full potential of these exercises needs to be further explored. The methods used and the manner in which they were implemented, along with the data produced, can be further analysed and developed for use by policy makers and the development of curriculum for graduate teaching programmes. This information can be used not only for teaching programmes on gender and the environment, but also on gender and advocacy (at both a national and community level), and gender and power relations, perceptions of space and power relations as in programmes of gender and geography.

The involvement of community members over the course of the research varied, but the project did have an impact on all individuals who participated in the research. The awareness of their environment and the roles and responsibilities of men and women varied from one individual to another. It was however pointed out by some villagers that they were only now aware of how important the wetlands, which they occupy, are to the community and to the nation as a whole.

1.4 Background to Trinidad and Tobago - National Context-Bio-Physical, Socio-Political and Economic

1.4.1 History of Trinidad and Tobago (Pre - Colonial & Post-Colonial)³

The modern history of Trinidad and Tobago is usually identified with its sighting by Christopher Columbus in 1498 which heralded the decimation of the indigenous peoples. The histories of Trinidad and Tobago were separate until 1889 when Tobago was made a ward of Trinidad and in 1899 when Tobago was annexed to Trinidad.

In Trinidad, the Spanish claimed an exclusive monopoly of the region based upon two fundamental principles - the authorising and financing of the voyages of Columbus and papal authority sanctioning the right to possession. Before the end of the fifteenth century, there was the introduction of the repartimiento and encomienda systems of forced labour, which, combined with the harsh treatment of the indigenous people, massacres, infanticide, cruel beatings, starvation and diseases, managed to effectively decimate the indigenous population.

After years of limited Spanish settlement, in 1783 the Cedula of Population was issued allowing the French to settle in the colony. This led to a change in the representation within the Cabildo (town council) and the growth of French influence in the island. It was only at this point that Trinidad began to develop as a plantation economy.

The Cedula of Population linked the ownership of slaves with land grants, which meant that there would quite likely be a large influx of slaves, as the larger the settler's labour force, the more extensive the land grant. Interestingly, free coloured slave owners were also given land grants although of smaller size. Nevertheless, Trinidad was still a frontier colony, with forests that needed to be cleared to make way for plantation agriculture. As plantation agriculture - sugar, coffee, cocoa - emerged, there was a need for vast amounts

³ Dr. Halima Sa'adia Kassim - former graduate research assistant at the CGDS contributed significantly to this section of the report.

of labour. It was only during the 1780s and 1790s that African slaves formed the basis of the new society. Consequently, the island's population now encompassed the indigenous peoples, Europeans - Spanish and French, and Africans.

In 1797, Britain captured Trinidad, however, it was not until 1802 that Trinidad was ceded to Britain in the Treaty of Amiens. Trinidad continued to develop as a plantation colony under the British. Following several pieces of legislation regulating the importation of slaves, there was the Emancipation of slaves in 1833 and the beginning of Apprenticeship, which lasted until 1838. Tobago meanwhile had changed hands several times among the French, Dutch, Courlanders, and the British and had a well established slave plantation economy since the 18th Century.

After 1838, numerous ex-slaves resisted planter efforts to maintain slave-like conditions and in spite of their resistance began to establish free villages, often based on land ownership. Others moved to the towns to join other free persons already involved in petty trade, skilled occupations and personal service work. The only remedy, the planters argued was the import of labour. These labour migrants, it was believed, would provide a reliable and steady supply of labour and keep wages depressed as a consequence of competition. Emigrant labour included free Africans and others from France, Germany, Madeira and China under systems of indenture. But none provided the planters with the reliable and constant stream of labour they required. Thus, they sought an alternative supply. India became the most feasible prospect with a seemingly inexhaustible supply of labour as its population was large and the people were accustomed to agricultural labour in a tropical type climate. Additionally, many lived close to the poverty line. More importantly, much of the Indian subcontinent was under British control, thus there was no need for intricate negotiations between England and a foreign government. By 1845, Indian migrants began arriving in Trinidad.

All indentured immigrants were indentured for a fixed period of five years following the failure of several short-term contracts. In 1869, a scheme was introduced whereby Indians who were resident in the colony for ten years could be granted ten acres of Crown

Land in lieu of all claims to a free passage to India. This scheme lasted until 1880. Also in 1869, there was the opening up of Crown Lands for sale to small purchasers. Land was offered for sale at ten shillings an acre (Hosein, 1996.19). Lagoon land was also purchased but the price was somewhat lower, a consequence of differing quality.

The ability of the Indians to own land marked the beginnings of the Indian peasantry that resulted in the development of Indian settlements and the reconstruction of their culture. Most Indians acquired land not through the Land Commutation Scheme, but through purchases of Crown Land inclusive of lagoon land. Furthermore, Indians responded to the deteriorating conditions on the estates by fleeing the plantation and acquiring land. The 1880s and 1890s were a periods of depression in the sugar industry. The policy of the colonial government was to make lands easily available to the labouring classes and to encourage the development of the peasantry.

Additionally, from 1880s free Indians leased or rented lands from estate owners. With the introduction of cane farming in 1882, the Indians joined the African ex-slaves as independent cane farmers. Also after 1885, they, like the peons-Venezuelan migrants and African farmers, began cultivating cocoa either as contractors or freeholders. They also pioneered the cultivation of paddy (wet rice). Hill rice had been introduced earlier by Mandingo immigrants in the Montserrat Hills.

Post-1838 Trinidad was a divided and segmented society, hierarchally arranged with each segment perceiving themselves and being perceived by others as separate and distinct (Brereton, 1981.116). The majority of working class Africans lived mainly in the rural areas, although a significant and growing number of them resided in the urban centres. The rapid expanding city's population was partially the result of internal migration, and partially of intra-island migration from other British Caribbean Islands. Few Indians resided in Port of Spain, though by 1881 a more significant element lived in San Fernando. As the city's population expanded circa 1870, housing conditions worsened, unemployment, crime and vagrancy increased and the threat of endemic diseases (dysentery, malaria, smallpox and cholera) rose.

The rural working class blacks were small cultivators, field labourers or artisans on estates or in the villages. The opening up of Crown Lands for sale in 1869 to small cultivators enabled the rise of the black peasantry. Cocoa was the chief peasant crop for blacks, Indians and the peons in the century after 1838. However, the peasants in the interior were isolated, separated by miles of treacherous terrain from the nearest village, school, church, police station and market. Not surprisingly, the peasants' produce would perish because it could not be conveyed to the market. Despite the improvements made in the building and maintenance of roads, bridges and railways from 1870, much of the peasantry remained isolated well into the twentieth century.

Furthermore, the harsh conditions endured by the lower class bred crimes. The entire justice system was directed against the lower classes; corporal punishment was inflicted upon them for praedial larceny (theft of crops). These sparked feelings of resentment against the police, which was further compounded by the colonial government's deliberate policy of hiring 'small islanders' to staff the police force.

The Indians were able to construct aspects of their traditional religious and cultural practices (mainly Hinduism and Islam), which was given a boost with the establishment of village communities. Adherence to their culture and for a significant element in the community remained strong in the face of proselytising efforts by Christian denominations. The descendants of ex-indentureds received their education primarily in the Canadian Mission (Presbyterian) Schools, unlike the children of the ex-slaves who acquired their education in the government or state-aided Roman Catholic, Anglican or other protestant schools. However, with the acquisition of education, Indians began moving into the urban centres in the early twentieth century and competing with the Africans for jobs in the urban market.

The adherence to African cultural traditions was strengthened by the influx of liberated Africans into the colony between 1841 and 1861. Many elements of West African cultural and religious practices persisted well into the twentieth century in a re-interpreted and adaptive form (e.g. the Radas, Shango or Orisha Systems). But as a consequence of

socialisation, urbanisation and increased exposure, there was the development of syncretism among the working class blacks, which combined African cultural and religious practices with Christian theology e.g. the Shouters or Spiritual Baptists.

Upon becoming a British colony in the late eighteenth century, Trinidad came under more direct supervision from London in a system that was to be later known as Crown Colony (CC) government (Brereton, 1981.40). However, as the end of slavery approached, the Colonial Office decided that it was now possible to grant Trinidad a law-making body, i.e. a Legislative Council. Consequently, at the end of 1831 a purely nominated Legislative Council was established and was not changed until 1924. The Legislative Council was authorised to enact Ordinances, to which both the Governor and the Colonial Office in England had to assent. Brereton encapsulates the operation of CC governance in Trinidad, in these words:

As Crown Colony government actually operated in nineteenth century Trinidad, the large property interests were able to exercise considerable, even decisive influence over policy-making, and the Unofficial, representing those interests, were treated with deference by both the local authorities and the Colonial Office. (Brereton, 1981.141)

The intention behind establishing the Legislative Council was to gradually introduce the laws of England that would replace the still existing Spanish laws. However, it was not until 1842 after the completion of emancipation and apprenticeship that the revamping of the legal system began.

The beginning of the twentieth century saw the further drilling for oil and establishment of refineries, the Water Riots (1903) and the appointment of the first black man to the Legislative Council (1904). Coinciding with World War 1 was the rapid expansion of cocoa cultivation and production and the rapid expansion of the oil industry. Also, between 1914 and 1918, difficult economic conditions resulted in extreme hardships for the working class as merchants raised the prices of their goods and unemployment increased.

The immediate post-war (WWI) period was one of political activity and protest. The 1920s opened with protest in the sugar industry and depressed prices for both cocoa and sugar, which led to the abandonment of estates further worsening socio-economic conditions. To further compound the problems facing the agricultural industry, witchbroom disease attacked the cocoa industry. Socio-economic conditions were not to improve for Trinidad because it, like the rest of the world, was affected by the Great Depression (1929-1939).

The turbulent thirties was a time of political and cultural renaissance, "a literary and artistic movement that tried to create an authentic West Indian cultural expression" (Brereton, 1981.175). Social unrest particularly in the oil industry also characterised the 1930s. As a result of labour disturbances in Trinidad and elsewhere in the British West Indies (BWI), the British government, alarmed at the increasing levels of instability in the BWI, appointed a West Indian Royal Commission (WIRC) headed by Lord Moyne in 1939, to investigate the conditions in the BWI and make recommendations.

However, the work of the WIRC coincided with the start of World War II. Ironically, the war led to a hiatus in the adverse socio-economic conditions in the island. Prices of oil increased to facilitate a rise in the value and demand for the mineral. The British Prime Minister, Winston Churchill agreed to lease areas in the West Indies for naval and military quid pro quo fifty derelict United States (US) destroyers. As a result of this British wartime policy, Trinidad was chosen for major air and naval bases. The establishment of US naval and air bases and the US military presence in Trinidad effected a positive socio-economic impact - employment and wages rose. There was the increased circulation of money that created a boom-type atmosphere. Conversely, living costs increased, sugar, coffee and cocoa estates were abandoned and local food production increased, making the country self-sufficient in food for one of the only times in modern history. Prostitution and organised crime in a context of U.S military occupation flourished.

Arising out of the WIRC, was the recommendation for gradual constitutional advance in

the BWI. In 1941, the structure of the Legislative Council was altered to include more elected members. The other recommendation concerning governance was the widening of the franchise. By an Order-in-Council (1945) suffrage was extended to all adults over twenty-one. The first election with adult suffrage was held in 1946.

The colony witnessed major changes in the 1950s. A 'quasi-ministerial' system was introduced and headed by Albert Gomes. Trinidad experienced a postwar economic boom (1946-1962). Tax incentives were introduced for pioneer industries, heralding the start of what has been termed an "industrialisation by invitation" scheme. It was an effort to attract foreign investors to establish manufacturing industries by the granting of concessions. The aim was to increase employment so as to absorb the surplus rural labour, and "produce a local entrepreneurial class that would gradually involve itself in the manufacturing sector" (Brereton, 1981:216). Oil became a major export earner. There was the continuation of the amalgamation of sugar estates and concentration of ownership. With stable prices in the 1950s, sugar companies embarked upon mechanisation, new types of cane were planted effecting an expansion in production and exports between 1948 and 1962. The gains of cocoa were far more modest despite the Cocoa Rehabilitation Scheme, which began in 1940, that introduced high-bearing strains of cocoa. The war and the presence of the 'Americans' altered the perceptions of the people. The war acted as an impetus for socio-economic development. Opportunities for employment expanded, particularly between 1939 -1945. There was employment to be found in the light manufacturing industries, the educational system and civil service. This was especially significant for women as men got other wartime opportunities.

In 1956, a constitutional change established a Cabinet with a chief minister responsible to the Legislature. The West Indian Independence Party (W.I. I. P.) and Peoples Democratic Party had already been formed in 1952 and 1953. Also, in 1956 there was the establishment of the People's National Movement (PNM), which was the victor in the elections of that year. There was the inauguration of the British West Indian Federation in 1958, which was dissolved four years later in 1962. A fundamental constitutional change occurred in 1961 with full internal self-government, which established a

bicameral legislature. General elections were held and again the PNM emerged victorious. This set the scene for the achieving of full independence by 31st August 1962.

Slow economic growth and the change in the structure and systems of colonial administration marked the 1960s. Unemployment was growing, opportunities for occupational mobility were limited as the whites, particularly expatriates, occupied the most prestigious positions and dominated the private sector. This created perceptions of racial discrimination in both the private and public sectors. Wages remained low, which served to perpetuate social inequality. There was a lack of adequate social services. These issues coalesced to inspire feelings of nationalism and exclusion. Dissatisfaction mounted and demands for change grew louder. Consequently, these disenchanting socio-economic conditions and political distrust, particularly among the lower classes, evolved into a movement of unrest, massive rallies and demonstrations, known as the Black Power Movement (BPM) of February - April 1970.

The mid -1970s as a period of economic windfall to the island. The year 1970 was the year in which the Black Power Movement (BPM) occurred. The stakeholders involved in the Black Power Movement complained about "foreign dollar imperialism" and agitated for representation of the interests of the "little people", sparking the drive towards nationalisation of the utilities, banks and industry. From circa 1973 there was an increased standard of living that resulted from the petroleum boom.

Following the BPM, government's policies changed. The government now aimed to redress the colossal levels of foreign investment that served to only widen economic disparities in the population and to be more representative of the island's population. There was a change from governmental non-involvement to the government taking a more active role in promoting economic growth, in order to hasten the development process, rationalise the provision of public services and assist in the development of non-traditional sectors (Bissessar, 1998.260). There was also a significant expansion of the state-owned sector, including banks and the petroleum industry. Simultaneously, there

was an attempt to involve Africans and Indians in the economic growth of the island (Bissessar, 1998.260). Government, at this time embraced the notion of public ownership under the guise of localising the economy, thereby accelerating the developmental process and rationalising the provision of public services (Bissessar, 1998.260).

Government was also faced with the challenge to increase employment, encourage growth in agriculture, increase its allotment of school places for children of school age, maintain infrastructure and expand public utilities - electricity, water and health. With the rise in oil prices internationally there was rapid growth in revenues from the oil sector. This increased revenue propelled the government into expansion of state-owned enterprises, which it would attempt to divest under the Structural Adjustment Programmes (SAP) in the late 1980s and 1990s. Additionally, as oil prices rose and accounted for 70% of total revenues in Trinidad, government embarked on several public works projects (Bissessar, 1998.260). Trinidad and Tobago gained republican status in 1976 and under the Constitution became a Parliamentary democracy with a Senate and a House of Representatives. Legislation in 1980 gave Tobago considerable autonomy with the establishment of a separate House of Assembly with fifteen members. Tobago was finally granted limited internal self-government in 1987.

Although the period 1974 to 1982 for Trinidad and Tobago was one of unprecedented windfall, by 1983 there was the collapse of international oil prices effecting a long-term decline in revenues accrued from domestic oil production. The contraction of oil prices meant a coincident contraction in revenue earned by oil exporting countries. Trinidad and Tobago was no less affected. The public sector was incapacitated by this new and unexpected development. The government's fiscal adjustments to the economic vicissitudes resulted in the contraction of public sector investments, leading to the collapse of the construction sector and high unemployment. Such economic difficulties also impacted upon the private sector, leading to retrenchment and foreclosure of businesses. This encouraged domestic, then external borrowing by the government to meet and service the needs of the people. Additionally, there was declining export demand for primary products. As debts mounted, access to external borrowing was

denied. Furthermore, rising unemployment, high rates of inflation, fall in living standards, increasing poverty, deterioration of social conditions, and salary-freezing were the problems experienced by the populace in the 1980s as the government attempted to deal with its fiscal trials. Scholars have highlighted the negative effects on women in particular, resulting from their responsibilities for health, welfare and care of the elderly and on other vulnerable groups (Antrobus, 1993).

The collapse of international oil prices led to significant reversals in socio-economic development globally. The economic recession that set in so precipitously, abruptly halted the socio-economic programmes in developing countries. However, the economic crisis that befell the developing countries also had the effect of containing the level of industrial growth in the industrialised world. A decline in revenue meant a reduction in foreign exchange earnings, which limited developing countries' access to international credit, leading them to become financially strapped.

As domestic and external financing options became exhausted, Trinidad and Tobago, like other countries had no recourse but to approach The International Monetary Fund (IMF) and the World Bank (IRDB). These organisations attached conditionalities for loans - the IMF focused primarily on achieving stabilisation by having expenditure equivalent to income, while the World Bank emphasised restructuring of the economy, along neo-liberal lines, to attain sustainable growth through structural adjustment programmes (SAPs) (Gilbert, 1996.6).

The PNM continued to emerge victorious in general elections until 1986, when the National Alliance for Reconstruction (NAR), a coalition party, won that year's general election (33:3). This was a period of economic hardship for the country as stated earlier. The free circulation of money and the belief that "money is no problem" was reversed. The NAR government had to deal with the effects of the economic fallout and introduce the policies of the SAP. Just as unemployment, inflation and social disquiet was high, so too was dissatisfaction and disenchantment with the government. On July 27, 1990 there was an attempted coup d'état led by the Jamaat-al-Muslimeen. Following the surrender of

the leader of the Jamaat-al-Muslimeen and members of his group on August 1, 1990 the country then began the road to recovery. In 1991, general elections were held and the PNM emerged victorious, however industrial unrest and social unrest was high. Before the end of their term in office, a general election was held. For the second time in the history of the island the PNM did not form the government. Perhaps, as a consequence of the 150th anniversary of docking of the *Fatel Rozack*, which brought the first set of Indians to the island, Indian consciousness was unusually high. This favoured The United National Congress (UNC), led by Basdeo Panday, a lawyer, economist and labour leader. The election results were 17.17.2, both the UNC and PNM won 17 seats in Trinidad and NAR retaining its two seats in Tobago. There was an alliance between the UNC and NAR, which allowed the UNC to form the government of Trinidad and Tobago. For the first time the government was Indian dominated. Economically, the late 1990s and early 2000s has been a period of growth and increased foreign investment. Labour disquiet is not uncommon. Concerns over inadequate social services, health care, and crime are high. Politically, there have been some hiccoughs, breaches, alignments and realignments and crossing the floor. The UNC increased its support to win the 2000 election although complaints of electoral fraud for the first time have been widespread.

The differences in historical development are most evident in the contrast between the demographic population of the two islands. Trinidad is multiethnic, while Tobago is predominantly of African descent. Trinidad and increasingly Tobago are multi-religious.

TABLE 1: ETHNIC ORIGIN

Ethnic Origin	Trinidad	Tobago	Trinidad & Tobago
African	37.41%	91.93%	39.9%
Indian	37.5 %	2.4%	40.4%
Chinese	0.4%	0.1%	0.38%
Syrian/Lebanese	0.09%	0.03%	0.08%
White/Caucasian	0.66%	0.36%	0.6%
Mixed	19.01 %	4.48%	18.4%
Other	0.15%	0.24%	0.15%
Not Stated	0.42%	0.70%	0.43%
TOTAL	96.0%	4.0%	100.00 %

Source: *Trinidad and Tobago, 1990 Population and Housing Census, Demographic Report.* Central Statistical Office, Port of Spain.

TABLE 2: RELIGION

Religion	%
Anglican	10.9
Roman Catholic	29.39
Baptist (Orthodox)	2.99
Hindu (Sanathanist)	9.77
Hindu (Other)	13.97
Jehovah Witness	1.32
Methodist	1.2
Islam (Sunni)	2.13
Islam (Other)	3.71
Pentecostal	7.47
Presbyterian	3.44
Seventh Day Adventist	3.7
None	1.21
Other	7.84
Not Stated	0.95
TOTAL	100

Source: Trinidad and Tobago, 1990 Population and Housing Census, Demographic Report. Central Statistical Office, Port of Spain.

In 1990, the total population of Trinidad was 1, 169, 572. Of that number 585, 127 or 50.02% were female and 584, 445 or 49.97% were male (1990 Population Census). The sex ratio was almost 99.9 males to every 100 females (1990 Population Census, xiv). Almost one-third of the Trinidad and Tobago population is under 15 years of age. The fertility rate for the period 1980-85 was 3.10, while for the period 1990-95 the fertility rates fell to 2.70 (ECLAC, 1992). Between 1970 and 1980 the population under 15 years of age was less than 1%, while the population over 15 years of age was 2.3% (ECLAC, 1992). In the periods 1970-1980 and 1980-1990 the growth rates for the population

under 15 years of age and over 15 years of age were similar (1.6 and 1.7 respectively).

The overall growth rates for the population between 1970-1980 was 1.1 while for the period 1980-1990 the overall growth rates were 1.7 (ECLAC, 1992).

The ethos of migration continues to persist within the region as a means to relieve socio-economic stresses. Emigrants to the United States and Canada accounted for 14% (ECLAC, 1992.33). Given the downturn of the economy in the 1980s and the subsequent introduction of SAP's, migration to the United States and to a lesser extent to Canada increased. In many instances illegal migration to the United States occurred. A World Bank report in 1993 noted that the Caribbean region has the highest rates of migration in the world. Migration has ripple effects for the migrant, the migrant's family (at times) and the country. Although migration relieves the pressure on the labour market, it may help to raise the standard of living of the migrant. Further, it brings in foreign currency through the medium of remittances but effect a loss of skill to the private and public sectors owing to 'brain drain'. This creates a higher family dependency rate through remittances and has a positive/negative impact upon population growth rates.

1.4.2 Biophysical Features (topography, climate, population, biodiversity and natural resources)

Trinidad and Tobago are the southernmost islands of the Caribbean archipelago, situated just off the north-east coast of Venezuela. Trinidad is located 10 degrees North of the Equator and 60 degrees West latitude. Tobago lies a few miles north of Trinidad and is more similar in topography to the other islands north of it than it is to Trinidad. The islands lie in the tropical marine climate belt with temperature variations between 25 degree Celsius (minimum) and 36 degrees Celsius (maximum). Average relative humidity is 80% but extremes of 50% and 100% may be reached. In the absence of showers, maximum humidity is reached at nights and minimum during the day. The islands lying as they do in the humid tropics has a trade wind littoral climate with a distinct wet (June to December) and dry (January to May) season. Annual rainfall varies

from lows of 1, 200 mm to highs of 3, 500 mm. During the wet season, there is frequent local thunderstorm activity, a northward migration of the inter-tropical convergence zone and a progression of tropical waves moving to the west through mid-Atlantic latitudes. Although tropical depressions are not uncommon, tropical storms and hurricanes are infrequent. The natural geography of the region provides for an abundance of flora and fauna customarily found in tropical regions.

Trinidad's and even Tobago's relation to the South American mainland has impacted upon the island's biological diversity. Both islands have been connected and disconnected from the mainland at varying times in the past, and there have been significant lateral movements arising from tectonic activity in the past (Kenny et al; 1997). This ancient continental link has left the island with life forms crowded into a small geographical area. Mountainous rainforests, wetlands and rivers, seashore and tropical savannahs all lie in close proximity to each other. The savannah lands are an extension of the *llanos of central Venezuela*, while the *Northern Range in Trinidad* is a continuation of one branch of the great South American cordilleras, rising to over 3,000 feet into elfin woodland at El Tucuche (1, 072 feet) and El Cierro del Aripo (3, 085 feet). All this has contributed to a diversity of flora and fauna in the island.

The islands sitting as they do on the continental shelf of north eastern South America (Trinidad at its closest points in both the north and south by a distance of approximately 30 km. while Tobago is separated from Trinidad by approximately 30 km) is not an effective barrier to flying animals, nor to many terrestrial plants or animals (Kenny et al; 1997). Furthermore, the position of the islands, in particular Trinidad to the Orinoco Delta, means that the islands are influenced by the seasonal outflow of freshwater, which results in extreme sedimentation and salinity reduction at the points of entry of riverine discharge, these effects being gradually diluted as fresh and oceanic waters mix. Additionally, this presence of low salinity water and floating vegetation increases the movement of terrestrial and freshwater species from the mainland. Linked to the effects of the Orinoco discharge is the influence of prevailing oceanic currents, i.e. the South Equatorial Current. It is found that Trinidad and Tobago sits in an ocean stream. While

the waters of the Orinoco, which flood into the Atlantic, prevent major coral formations in Trinidad, they usually support nutrient-rich waters around Tobago, providing a diversity of marine life. Tobago is home to both hard and soft coral reef formations.

Local topography and soils impact upon the distribution of biota. The majority of biota of the islands are wider-ranging in neotropics and there are a few circumtropic species found locally. There is little evidence of uniqueness or development of island endemism as the separation of the islands from mainland has been far too recent to permit the evolution of species. Conversely, there have been introduced species. As shown below:

The terrestrial biota of the islands is clearly a relict biota, typical of the immediate delta region at the time of separation, to which have been added a few recent strays and colonising species, and a larger number of exotic species of both plants and animals associated with the process of development of human society. It is further suggested that the number of plant exotic species is significantly larger than that of animal exotic species. The marine biota is characteristic of the Caribbean bio-geographical province. Concerning the range of ecosystems, there is no doubt that there have been profound changes to the terrestrial environment, associated with the development of agriculture and plantation forestry. There is on the other hand no evidence of actual extinction of any terrestrial, estuarine or marine ecosystem. This does not suggest that all such fragments are in pristine states. Many are perturbed to one or more degrees. (Kenny et al; 1997)

Kenny estimates that in Trinidad and Tobago there are probably something in the order of 2,500 species of (flowering) plants and possibly, if one extrapolates from data of better known areas, about ten times that number of animals (Kenny et al; 1997.31).

Climatic ecosystems, whose distribution was primarily determined by moisture, temperature or elevation and wind, support the Evergreen Seasonal Forest, Semi-evergreen Seasonal Forest, Deciduous Seasonal Forest, Dry Evergreen Forest, Montane Forest, and Rainforest (in Tobago). Edaphic communities are those whose distribution are determined primarily by the soil type, the latter influencing natural vegetation. Soil type varies from being loams, mainly silts, sandy and marly clays. These soils sometimes intermingle with alluvial soils for a freer drainage. The edaphic communities in Trinidad and Tobago are: Mangrove Forest, Swamp Communities and Marsh Communities.

These communities support rich and diverse communities of flora and fauna. There are also various marine ecosystems (Coral Reefs, Sea Grass Beds, Beaches, Mud Flats, Sandy Bottoms, Mud Bottoms and Rocky Shores and Sub-littoral Zones) and freshwater aquatic ecosystems such as lakes, ponds, streams and rivers. Extensive human-induced alteration to the landscape has produced a variety of other semi-natural ecosystems, including vast areas of secondary and degraded forest, timber plantations and agricultural areas.

Biodiversity is a renewable natural resource, there has, however been immense threat to this as a result of habitat destruction, degradation and fragmentation, over-exploitation, threats from exotic species and cascading or domino effects in ecosystems (Kenny *et al.*, 1997).

Exotic species are species which do not historically occur in an area and, are especially common introductions on islands around the world, where they are brought directly or indirectly by human activities (Kenny *et al.*; 1997). For example, the mongoose, which was introduced to control rats and snakes in sugar cane fields. Many exotics have become naturalised, such as bamboo and elephant grass, and many of the plants commonly called weeds. Recently, pests such as the hibiscus mealy bug (also exotics) have been introduced to the island's, while wasps and the ladybug beetle have been introduced to control the impact of the mealy bug on the island's flora. Exotic species threaten biodiversity that was not adapted to deal with the ecological role which the exotic plays in the island's ecosystem (Kenny *et al.*, 1997). The current biota is a relict from its continental past, and thus has been exposed to a wider range of ecological challenges, thereby reducing its vulnerability to exotic species.

Nearly half the island is still under virgin forests, and as such is the home to a vast number of wildlife. There are over 430 different species of birds; 620 different species of butterflies; 2,300 different flowering shrubs and plants, 700 of them orchids; 108 mammals including 57 bats and 70 different reptiles (Discover, 1998:66).

1.4.3 Structure of Current Governance - National/Government, NGO's

Governance is linked to politics, state structure and capacity. Governance includes systemic, political and administrative levels, it incorporates the distribution of internal and external political and economic power relationships and rules by which the productive and distributive life of a society is governed (Lans, 1999.46). Governance therefore represents the mechanism through which island sustainability can be attained. There are three dimensions to governance - the administration and regulation of laws, human and natural resource capacity and the managerial capacity for implementing the laws. Governance involves not only the state, but non-state actors (or the informal sector), e.g. MNC's (multinational corporations), NGO's (non governmental organisations), private sector organisations, trade unions, co-operatives and religious groups. Recent dominant perspectives on governance are often based on minimal state involvement with an ideal type bureaucracy. This is characterised by respect for human rights, diverse civil society, political pluralism and distinct separation of economic and political life, but seeks to downplay social and gender issues, either privatising them and returning them to the community or leaving the issues to be attended by the invisible hand of the market (Lans, 1999.46). As a developing country where "bread and butter" issues are the issues of the day, politicians often tend to focus on how to promote, increase and promote 'economic development'. Furthermore, in societies where there are periodic multiparty elections, the political party that forms the government aims at retaining power. Consequently, they utilise strategies that would permit such and which would promote short-term growth rather than long-term policies aimed at conserving or rehabilitating the environment. In Trinidad and Tobago, where between 1986 and 1995 there were three different political parties holding office, a possible effect of SAP's. Legislation was generally not geared towards rehabilitating or conserving the environment. The work of environmentalists, individuals and organisations, has become increasingly significant, as well as international organisations in the drive towards conservation of the environment.

1.4.4 Environmental Policy and law (economic, socio-political and environmental)

Socio-political Considerations

The availability of basic health and social services improved consistently since World War II. Access to immunisation, pre and ante-natal care has been one of the hallmarks of improved health care facilities. A 1997 UNICEF Report on seven Caribbean countries, including Trinidad and Tobago note that:

Children and women living in the seven Caribbean countries have generally experienced good health status and have managed to eliminate many of the basic health problems normally associated with the developing world. Improvement in nutrition, access to immunisation, and family planning during the past few decades have contributed to lower mortality rates and increased life expectancy (UNICEF, 1997:51)

However, the introduction of neo-liberal economic policies as part of IMF (International Monetary Fund) and World Bank loan conditionalities and structural adjustment policies have affected these gains. Factors such as the loss of foreign exchange through debt repayments, privatisation of state agencies, including aspects of healthcare (the development of Regional Health Authority, RHA), removal of subsidies on basic food items and reductions in spending on education and health facilities and services, has led to a deterioration in the quality of services available in many instances or become economically accessible (Reddock, *et.al.*, 2000,22).

Increased urbanisation and consumerism combined with economic difficulties served to exacerbate the already inequitable distribution of wealth and increase poverty. A 1995 World Bank study suggests that:

The health status of the population still falls below that of many middle-income countries, largely due to preventative medical care and low quality of services offered both in the public and private sector. Nearly 50% of the population still dies before they have reached the age of 65 with many of these deaths avoidable (World Bank, 1995.49)

The main causes of death are cancer, diabetes, cardiovascular disease, cerebro-vascular disease and injuries. There is a renewed concern with communicable diseases like tuberculosis, as lately there has been a rise in the incidence of TB. Further, there is a high incidence of HIV/AIDS.

Trinidad and Tobago is seen as having high levels of educational attainment. A 1998 UNDP Report notes that 98% of the population had attained a primary level education and 72% secondary education in 1995. In both instances female enrolment as a percentage of male enrolment was substantially higher - in the case of primary education this was 112%, while for secondary education this was 120%. Recently, there has been an understanding that education does not equate with literacy. Consequently, the indicator "years of schooling" provides Trinidad and Tobago with a literacy rate of 97% for females and 98.8% for males (UNDP, 1998.113).

According to the 1990 Census, there were more females than males who had received no education, but this was in the higher age groups. Males exceeded females in the tertiary educated category.

TABLE 3: HIGHEST LEVEL OF EDUCATION ATTAINMENT - 1990

EDUCATION LEVEL	MALE	FEMALE	BOTH SEXES
None	10.5	11.5%	11.0%
Nursery/Kindergarten	3.0%	2.9%	2.9%
Primary	48.8%	46.9%	47.9%
Secondary	33.4%	34.9%	34.2%
University	2.2%	1.6%	1.9%
Other	0.8%	1.0%	0.9%
Not Stated	1.3%	1.1%	1.1%
TOTAL	560,934	564,194	1,125,128

Source: *Trinidad and Tobago Population and Housing Census, 1990.*

Labour force trends altered with the oil boom in the 1970s. The agricultural labour force declined, as employment opportunities became available directly and indirectly through the growth of the petroleum sector. This shift in the labour force coincided with a decrease in domestic food production and an increase in imported food. Conversely, with the decline in oil prices and the contraction of the petroleum sector, the domestic agricultural labour force increased by 2% between 1984 and 1989 and increased output of 22% for the same period (IICA, 1993:7). There has been an overall decline in unemployment during the period 1993 to 1995, however there continues to be a higher proportion of unemployed women than men as a percentage of the total labour force. Figures for 1993, 1994 and 1995 show that 23.4%, 22.3% and 20% of women in the labour force were unemployed, while for the same period there were 17.6%, 16.1% and 15.1% of males unemployed. Between 1994 and 1995, there has been an overall decline in unemployment of 5.9% in favour of females compared to 3.7% among males for the same period. However, it should not be discounted that women are often "hidden" in categories not accounted for in the labourforce, e.g. home duties. Nevertheless, unemployment is greater for women than for men. Unemployment among youth is a serious condition for both sexes, but for males unemployment persists until age 30, while

for females unemployment often continued until age 40 (Survey of Living Conditions, CSO, 1992). Consequently, there exists a "feminisation of poverty". Furthermore, the downturn in the economy followed as it was by the decline in the economy of the Asian NICs (New and Industrialised Countries) and the fall in oil prices has also impacted upon the employment statistics.

The employment statistics show that relative to their proportion in the population, women are over-represented in the clerical category but fewer are employed in management positions. Women have greater opportunity for advancement within the public service than within the private sector. Underemployment is not uncommon either for both sexes, but more so for females. Additionally, there exist wage differentials between men and women employed in the same occupational category and educational attainment, except when employed by the state.

National statistics show that the per capita income in 1991 was estimated at TT\$18, 287 and that the average monthly earning of employed men exceeded those of employed women by TT\$200 - TT\$300 (IICA, 1993.7). However, there has been an escalating level of poverty, which is attributed to participation in the labour force by underpaid employment. The 1990 Census indicated that there were income differentials between male and female workers, 42% of women as opposed to 40% of men received an income of less than \$1, 249.00 per month as compared to 9% of women and 10% of men receiving incomes of between \$3,000 to \$5,000 per month (MOCD, 1995.45). The average income for women in 1990 was \$1,400 compared with \$1,600 for men (MOCD, 1995.45). This income earning differential is related to their concentration in jobs of lower skills. Pensioners who receive incomes of less than \$5,000 per annum are provided with a means tested financial assistance from the government (National Report, 1995.45). Additionally, the physically and visually challenged are provided with some benefits. Free bus passes are provided to pensioners and public assistance recipients. Monthly food hampers financed by the government are distributed to the poverty-stricken by the NGO's. Women continue to outnumber men as recipients of both non-contributory means tested old age pensions and public assistance (MOCD, 1995.46).

In 1995 there was the Environmental Management Act. The 'environment' is defined as all land, area beneath the land surface, atmosphere, climate, surface water, groundwater, sea, marine and coastal areas, seabeds, wetlands and natural resources within the jurisdiction of Trinidad and Tobago (National Policy on Wetland Conservation, 1997.27). The title of the Act states that it provides for management of the environment within Trinidad and Tobago. The Act also aims to establish an effective regulatory regime, which will protect, enhance and conserve the environment. The functions of the Agency (Environmental Management Authority, EMA) are provided for in the Act. Generally, there has been a reliance on Common Law with little environmental case law being built up in Trinidad and Tobago (National Policy on Wetland Conservation, 1997.29).

payments, which assisted in supporting domestic food production.

In 1986, there was the regularisation of Tenure (State Lands) Act, which provided for regularisation of tenure of State Lands. Also, in the same year there was the Archipelagic Waters and Exclusive Economic Zone Act, which establishes the right of the State to manage the living resources of the EEZ, including scientific research other than nationals (National Policy on Wetland Conservation, Trinidad and Tobago, 1997.28).

As the 1980s progressed, a Draft Public Sector Investment Programme (1988) was laid in Parliament, which is said to have permitted the expansion of rice farming in Plum Mitan. In 1989, Bush Bush Wildlife Sanctuary was declared a Prohibited Area under the Forest Act. This Forest Act, first passed in 1915, was amended several times - 1922, 1925, 1933 - and most recently in 1995 (National Policy on Wetland Conservation, Trinidad and Tobago, 1997.24). The Forest Act defines forest produce as it relates to production forestry and the removal of timber *Balatum gum* from Forests Reserves and State lands. It also provides for the establishment of Forest Reserves on State Lands, and the preservation of trees for their size, rarity or beauty (National Policy on Wetland Conservation, 1997.24).

In 1991, a National Trust of Trinidad and Tobago Act was proposed. This Act establishes a National Trust whose functions include listing and acquiring property of interest. Property of interest is defined as any monument and any fossil, place or site of natural beauty or national, historic, scientific or archaeological interest.

In 1992, Trinidad became a Contracting Party to the Ramsar Convention, which became effective April 1993. This meant that the Nariva Swamp was listed as a Wetland of International Importance (especially as a waterfowl habitat). The total area of the Ramsar site is 6,234 ha, which is the same area of the Nariva Swamp Prohibited Area and proposed National Park (Lans, 1999.10). There was the subsequent appointment of a National Wetlands Committee in 1993.

Under the present government legislation detailing minimum wages and increased pensions have been introduced.

Environmental Policy Development

In 1765, the Main Ridge in Tobago was set aside as the first forest reserve in the New World. Although in 1891 the Society of Natural History was established, later becoming the Trinidad and Tobago Field Naturalists Club, it was not until 1901 that the Forestry Branch of the Crown Lands Department was established. In 1918 the Forestry Branch was renamed the Forestry Department, officers were appointed, new reserves were created and laws were revised. Following the establishment of the Forestry Department, several Ordinances were passed demarcating forest reserve areas, protection of wild animals, birds and turtles, and established agricultural schemes. In 1960, the Forestry Department was integrated into the Ministry of Agriculture, Land and Food Production. Several scientific studies were done on the Nariva Swamp area, leading to the declaration of the Bush Bush area as a Wildlife Sanctuary. In 1972, the Northern Range Reforestation Project was established.

During the 1970s, there were several attempts to revitalise or develop the Nariva Swamp area. In 1981, the Netherlands Engineering Consultants (NEDECO) published a summary and review of previous studies on the reclamation of the Nariva Swamp, while in 1983 NEDECO produced the Final Report Phase 1. - Investigations of the Nariva Swamp. Also in 1983, the National Physical Development Plan was introduced into Parliament and approved in 1984. The Plan allowed for the conversion of 9000 acres for intensive farming and 7500 acres for livestock rearing of undeveloped areas of the Nariva Swamp. It further permitted the cultivation of idle lands with good agricultural potential to form the basis of sizeable food processing and other agro-based industry. This was the period when Trinidad's economy was on the decline, and there was an emphasis on domestic food production. The agricultural industry once again became an area for employment as the oil industry contracted. There was the introduction of the "Negative List", as part of the SAP's in the late 1980s to relieve the deficit in the balance of

Section II The Nariva Swamp

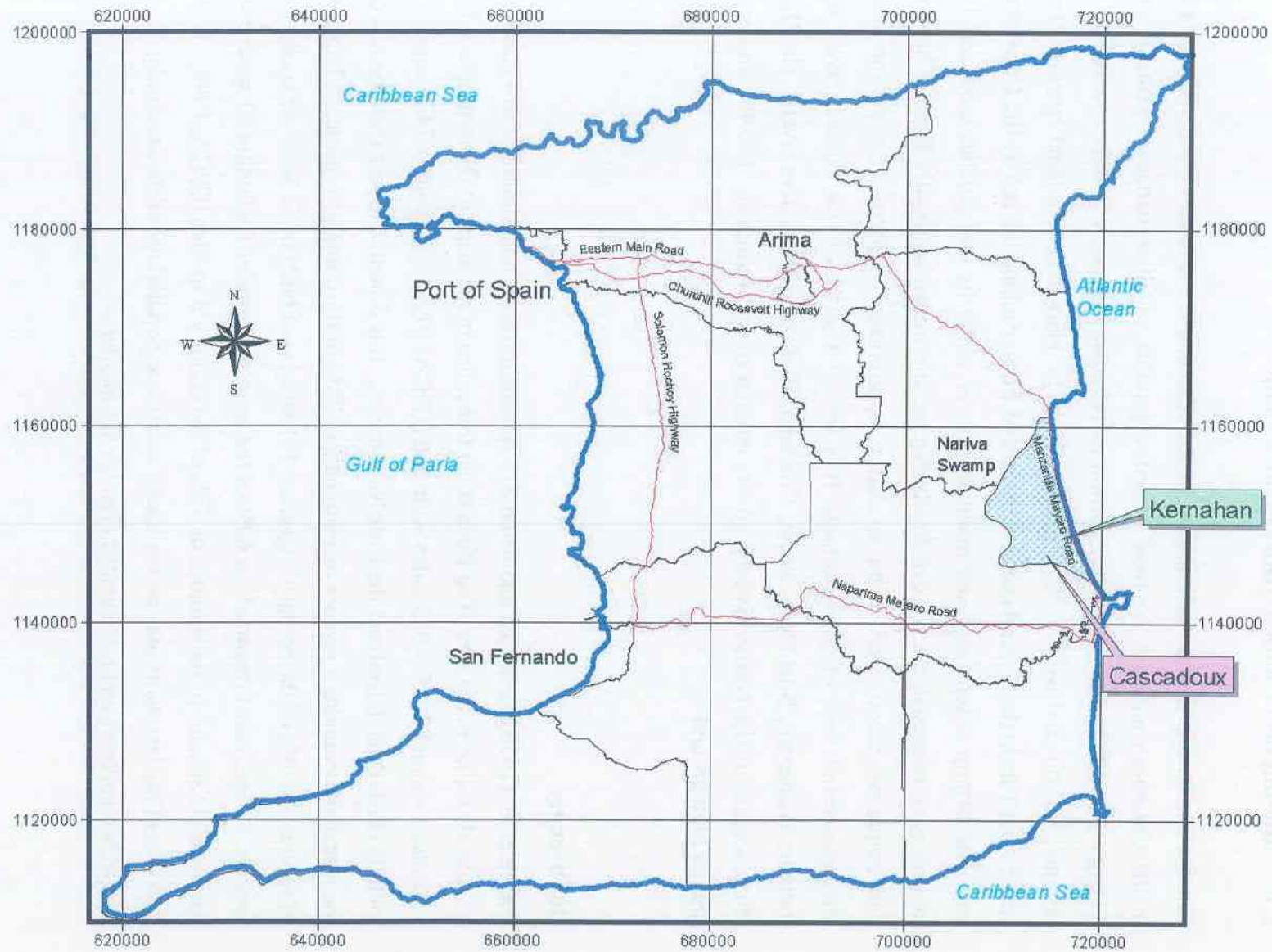
2.1 Bio-physical Characteristics of the Swamp

The Nariva Swamp lies in the Southeast of Trinidad and is the largest fresh water swamp in the Caribbean and has the most varied vegetation of all wetlands in Trinidad and Tobago. It is situated in the central portion of Trinidad between 10° 20'N and 10° 30' N latitude, 61° 00' and 61° 15' W longitude (Map 1). Nariva is a wetland because fresh water runoff from the Central range is prevented from reaching the sea by the Cocal sand bar. The swamp is separated and maintained as an entity by two parallel sandbars. The swamp is an extensive complex of freshwater swamp forest, seasonally flooded marshes and mangrove forest. The entire swamp is approximately 90km²; the swamp basin encompasses an area of 6234 hectares. It is fed by a series of east flowing rivers that include: Guatecare, Bois Neuf, Navet, Charuma, Biche and the Nariva rivers. The Bush Bush section of the Nariva Swamp covers an area of approximately 1,554ha and is an area of high ground

Biodiversity

Bacon et al. (1979), collected and listed 319 species of plants and identified 614 species of animals found in the area. The Bush Bush forest lies in the heart of the swamp and is 2 - 3 miles long and 0.25 - 0.5 miles wide and (CFCA, 1996). This site's 3480 acres include Bush Bush Island and the Bois Neuf forest. It is 3 metres higher than the rest of the forest and contains 7 species of mammals or 23% of the country's species; 37 species of reptiles or 33% of the country's species; 171 species of birds or 75 % of the country's species; 59 species of mammals or 60% of the country's species (including 32 species of bats) and 92 species of mosquitoes or 57% of the country's species (CFCA, 1996). It is also one of the last main sites on the island sustaining populations of the anaconda (*Eunectes murinus*) and the manatee (*Trichechus manatus*).

Map 1. Map of Trinidad showing location of Study Area



There are five main vegetative types in the swamp:

- Palm swamp forest with Palmiste *Roystonea olerarcae* and Moriche *Mauritia sp.*
- Swamp wood with Bloodwood (*Pterocarpus officinalis*, *Carapa sp.*, *Symphonia sp.*, *Erythrina sp.*, *Bactris sp.*, *Annona glabra*).
- Mangrove swamp with *Rhizophora* (red mangrove), *Avicennia* (Black mangrove), and *Uncularia* (White).
- Freshwater marsh with *Montrichardia arborescens*, *Cyperus giganteus* and *Phragmites australis*.
- There is also beach scrub with *Coccoloba sp.* and islands of humid tropical forest with *Mauritia setigera* and *Euterpe oleracea*.

2.1.1 Bio-physical features of Kernahan and Cascadoux

The Kernahan/Cascadoux communities are located on the south-eastern tip of the Swamp, on the edge of the Swamp Basin, or flooding regime of the Nariva Swamp (see Map 1). As a result of this location, these communities are subject to varying degrees of flooding and drying out according to the rainfall distribution during the year.

The Kernahan community consists primarily of freshwater marshland interspersed with small, elevated areas. An elevated area runs parallel to the coast through the centre of this community and is bounded on either side by lagoon land. The area is divided into blocks by the construction of roads, along which artificial channels flow towards the coast.

The local vegetation consists of wetland vegetation that includes:

- a) Palm swamps
- b) Mangrove swamps
- c) Freshwater marsh and
- d) Freshwater swamp wood.

The majority of these species have, however, been replaced by a variety of agricultural crops. They therefore only exist in scattered stands throughout the community.

The Cascadoux community, on the other hand, is situated on a mud volcano, which has an area of approximately 50 hectares, with small cones at the apex of a 30m hill (Bacon et. al., 1979). The presence of this volcano dominates the topography of the area, as well as the vegetation present. This community maintains a greater degree of forested areas, unlike Kernahan, which is primarily open lagoon. The entrance to Cascadoux Trace is fairly flat, marsh-type land, which is also subject to periods of flooding and drying. The roadway here extends from the Manzanilla/Mayaro road, to the apex of the hill and continues over the hill linking Cascadoux to the Kernahan community.

The area has a tropical climate, typical of the rest of Trinidad, with alternating wet and dry seasons from January to May and June to December respectively. Natural resources available within these communities range from various floral and faunal species to use of the land for agricultural purposes.

2.2 History of Policy and Governance in the Nariva Swamp⁴

Historically speaking, the Nariva Swamp was not seen as a conservation site but was seen in macro-economic terms as a potential energy site and as a non-conservation site that fell under structural land reform policy (Sutton, 1981).

The Nariva Swamp's 6234 hectares, was declared to be a forest reserve in 1954. The Bush Bush section of the Nariva Swamp (1554ha) is an area of high ground that was declared as a wildlife sanctuary in 1968 and a prohibited area in 1989. The site was thus reserved as a local and international research centre, and in theory no hunting or harvesting was allowed on the site. The Nariva Swamp is protected by 3 main pieces of

⁴ The information in this section came primarily from the State Policy and Governance component of the project by C. Lans.

legislation: the Forests Act, Chapter 66: 01; the Conservation of Wildlife Act, Chapter 67: 01; the State Lands Act, Chapter 57: 01. Offences taken to court are usually related to wildlife poaching and tree felling.

The Trinidad Regional Virus Lab (TRVL) (now CAREC) conducted research on arboviruses there in the 1950s and onwards.

The suggestion for development of the Nariva Swamp came from the Food and Agriculture Organisation (FAO) (1957) report when the GORTT decided in the 1950s to implement the Plum Mitan Rice Scheme. Other protected wetlands were converted into rice production as early as 1954 when the Colonial Government established the Plum Mitan rice scheme, and the Fishing Pond and Oropouche Lagoon schemes. In 1970, the OCTA⁵ plan for drainage and agricultural development of the Nariva Swamp recommended settlement of 640 new families in three new villages in the Swamp basin. Besides rice, the plan recommended corn and soya and grazing on the higher ground. In 1957, the *FAO Report to the GORTT on the Reclamation of the Caroni, Oropouche and Nariva areas* for rice and other agricultural production was completed. In 1959, the improvement of the 1200-acre Plum Mitan rice area was recommended by FAO, but there were cautions on possible soil deterioration in the Swamp basin. This decision was reinforced by the rehabilitation study of The Netherlands Engineering Consultants (NEDECO) (1983). The Plum Mitan Rice Scheme was meant to provide small land assignments (2 ha. to 5 ha.) to family farms (Keeler et. al., 1996).

Lack of regularised land-tenure, government support, as well as lack of employment and economic alternatives characterise the Nariva communities. By allowing several decades without land leasing assignments, the practice of squatting has developed strongly in the

⁵ The Overseas Technical Co-operation Agency (OCTA) of Japan conducted a reconnaissance survey in September 1967. A feasibility study in 1969 and a development plan for the Nariva Swamp followed this. The study claimed that reclamation of the entire Swamp for rice was feasible and economically viable. The OCTA agricultural development scheme is for rice in the wet season with such crops as soybeans and maize during the dry season.

area, to the point that it has almost perpetuated squatting as an accepted part of the culture (Ramsar, 1996).

In 1960, the initial Planning Ordinance was produced, but it was not until 1983 that the *National Physical Development Plan* was introduced into Parliament. This plan contained a recommendation for a growth pole in Guayaguayare-Galeota. As part of this growth pole the undeveloped Nariva Swamp was to be converted into 9000 acres for intensive farming, 7500 acres for livestock rearing. Cultivation of idle lands of good agricultural potential was to form the basis of sizeable food processing and other agro-based industry'. This Plan was debated and approved in 1984.

Even though sanctuaries had been established in the Nariva Swamp, other uses for the area were still being planned, as indicated by the various reports mentioned above. The 1972 Land and Surveys Division Maps for the *Land Capability Classification Studies* suggested that Nariva Swamp soils were unsuitable for agriculture and should be left under tree crops and forest. Despite the unsuitability of the soil it is claimed that in the mid-1970s, the GORTT assisted squatters in Kernahan and Cascadoux with access roads and channel maintenance. More access roads were planned for 1989 and the EEC was approached for funding (National Agricultural Development Plan 1988 - 1992). It was claimed that this road building would require "megadollars".

The report by Bacon et al, (1979), filled in some of the ecological gaps in the FAO and OCTA documents. The Department of Zoology, UWI St. Augustine, conducted a study in 1979 as a response to the OCTA (1967, 1970) plan. The original plan had not paid any attention to the ecology of the area or the environmental impacts. The report by Bacon et al, (1979), indicated that the Nariva Swamp was not considered as a major plant resource production area but largely as a wasteland. It was also noted that the GORTT saw an economic future for the Swamp only when reclaimed for agriculture, however the Nariva Swamp is not without plant resources and although these may be minor, the possibility exists for considerable resource improvement. In addition to direct exploitation, the value of the vegetation in its natural condition requires greater recognition (Bacon et.al,

1979:127). The recommendations of Bacon *et al.* (1979), included a maximisation of biological resources: 4000 acres for rice, 4000 for cattle, 8000 acres for fisheries, a Cocal Reservoir and the maintenance of the Wildlife Sanctuary, the revitalisation of the Plum Mitan rice project (800 ha.), together with the re-development of the Kernahan area (800 ha.) and the creation of a polder of 1600 ha. south of the Plum Mitan rice project.

In the late 1980s, the National Alliance for Reconstruction (NAR) came to power and instituted a guaranteed price for rice. This provided incentive for a new wave of migration to the swamp. A new study by NEDECO, which was a summary and review of previous studies on reclamation of Nariva Swamp, was commissioned and published in 1981. In 1983, NEDECO produced a *Final Report Phase 1. Investigations of the development of the Nariva Swamp*.

Funds were provided for another study on rice production. In 1991, the Agristudio⁶ Reconnaissance study for the extension of the Plum Mitan Scheme, Draft Final Report, was produced. One year later, in 1992, 14 applications for 1,045 acres in Nariva Swamp were made in 1 month. The State Lands Division of the Ministry of Agriculture was accepting applications for State Lands within the Plum Mitan area. However, squatters were then taking land in the Bush Bush Wildlife Sanctuary, Ortoire-Nariva Windbelt Reserve and the proposed National Parks area. The then Minister of Agriculture advised that no action could be taken against the squatters in the Bush Bush Wildlife Sanctuary because the boundaries were not clear.

The Nariva Swamp's legal status in Trinidad was insufficient to preserve its ecological status. The National Parks Section relied on the Forests Act provision for the declaration

⁶ Agristudio recommended the expansion of the Plum Mitan rice project to other areas of the Swamp suitable for irrigation development. These included areas already largely and illegally cultivated: 100 ha. in Petit Pool, 1200 ha. in Biche Bois Neuf (Block B) and 700 ha. in the Cocal-Kernahan area. They recommended the creation of a 200 ha. buffer zone between the Biche Bois Neuf reclamation area and the Bush Bush sanctuary (Agristudio, 1991). The Plum Mitan Rice Scheme Rehabilitation Feasibility Study was ambitious. The Project Area covered 420 hectares in Nariva Swamp. At full development, the project was supposed to produce an equivalent to 63% of current imports of rice and 25% of current imports of peas and beans - a total of \$7.5 million (Agristudio, 1991).

of eight wildlife sanctuaries and forest reserves as prohibited areas between 1987 and 1990 because no other legislation was available (Wildlife Section, 1993). The entire Nariva Swamp was declared a prohibited area under Section 2 of the Forests Act, Chapter 66:01 in 1992. Active lobbying and effort were expended to give the Swamp the status of an internationally recognised entity and therefore remove it from solely national political decisions. International recognition came when the area was designated a Wetland of International Importance (especially as a waterfowl habitat) under the Ramsar convention 21 April, 1993 in 1992 (CFCA, 1996) as mentioned previously.

The Nariva Swamp was also included on the Montreaux Record in 1993 in Kushiro, Japan (CFCA, 1996). This is a register of Ramsar sites where changes in ecological character have occurred, are occurring, or are likely to occur as a result of technological developments, pollution or other human interference.

As a result of the above decisions, in May 1993 the Forestry Division accomplished the following:

- i) Boundaries within Nariva Swamp were identified for the Sanctuary and Proposed National Park.
- ii) Habitat evaluations in the squatted areas of Bush Bush Wildlife Sanctuary were done.
- iii) Two comprehensive reports were written on the extent of squatting and its consequences to the environment of Nariva Swamp, and submitted to the Ministry of Agriculture, Land and Marine Resources.

The MALMR also announced its plans to evict all large rice farmers from Nariva Swamp and make it into a National Park. This came as a result of the programmes set out for the protection of the Nariva Swamp as dictated by the Ramsar Convention. On July 28th 1993, Justice Anthony Lucky ruled that the wildlife, flora and fauna in the Nariva Swamp must be protected in the public interest. Attorney Ramesh Lawrence Maharaj had claimed before Justice Anthony Lucky in the court case that the Jabars (illegal large rice farmers) could be considered as squatters or persons in possession of lands with knowledge that he

or she will be given the lands. Parbatie and Goolcharan Jabar, two of the large illegal rice farmers appealed against the Justice Lucky decision and conservatory order. Appeal Court Judge, Mme Justice Permanand, dismissed the Jabars' appeal on September 23, 1993. In February 1995, the Land and Surveys Division served 150 quit notices to farmers squatting on the Plum Mitan/Biche side of the swamp. Very few farmers left.

In 1994, Dr. Montserrat Carbonnel of the Ramsar Bureau visited to hold preliminary discussions regarding the implementation of the Monitoring Procedure at the Nariva Swamp Ramsar site. The Nariva site was designated by the Scientific and Technical Review Panel of the Bureau as one of their five priority projects for 1994, and field assessments were scheduled for March 1995. IUCN made offers of assistance for Nariva Swamp (Annual Report of the Forestry Division, 1994).

The Forestry Division continued the eviction of squatters in Nariva Swamp and reported the blossoming of the project on the conservation of the West Indian Manatee, and stimulated public interest for their successful involvement in this effort. Permits to enter Bush Bush Wildlife Sanctuary / Nariva Swamp Protected Area numbered 283 (Annual Report of the Forestry Division, 1994). In 1994, Thomas Peake and Co. Ltd. donated \$4000.00 for gasoline and oil towards patrols for the Nariva Swamp (Annual Report of the Forestry Division, 1994).

In 1994 the Nariva site was designated by the Scientific and Technical Review Panel of the Bureau as one of their five (5) priority projects for 1994, and field assessments were scheduled for March 1995. In July 1996, Ms. Molly Gaskin, president of the Council Of the Presidents for the Environment (COPE) presented a petition of 12,000+ signatures to the government demanding that the illegal rice farming taking place in the Swamp be stopped. Despite the legal decision and quit notices being served, the illegal farming continued until November 1996. In October 1996, the farmers were finally forced to leave the Swamp so that an environmental impact assessment (EIA) mandated by Ramsar could be conducted. Their status in the Swamp hung in the balance pending the EIA recommendations.

The Institute of Marine Affairs (IMA) was contracted by the Government of Trinidad and Tobago through the (MALMR) to conduct the EIA of activities within the Nariva Swamp area, particularly the area known as Block B. The EIA was officially launched on September 5, 1997 (IMA, 1998). In addition to the EIA, a management plan for the Nariva Swamp was to be prepared together with a monitoring plan to monitor the impacts of the recommended activities of the management plan. The EIA consisted of 10 components: i.) Wetlands ecology, ii.) Aquatic fauna, iii.) Geology, soils and hydrology, iv.) Machinery and roads, v.) Water and soil quality, vi.) Rice agronomy, vii.) Socio-economics, viii.) Economics, ix.) Legislature control, x.) Public education.

The environmental impact assessment (EIA) of activities within Block B began on August 25th, 1997. Data was collected from September 1997 to May 1998 on all aspects of the environment of Nariva Swamp; the impacts of large-scale rice farming in Block B were identified, and mitigatory recommendations were provided. Impacts were identified for three phases; namely (i) site modification (ii) agricultural operations and (iii) post-rice farming.

In May 1998, the GORTT agreed to fill in 15 channels illegally dug by the large rice farmers in Block B. Funding for this was provided by the Ramsar Bureau's Small Grants Emergency Fund (Wildfowl Trust, 1998b). The EIA was released for comment in 1999 and the Final Report of the Nariva Management Plan completed in August 1999.

There were repeated requests made for the release of the EIA for public comment including a group request that came out of the Panel Discussion on Nariva held on 14th October, 1998 at the Learning Resources Centre, UWI (Wildfowl Trust, 1998). A TV interviewer's query on the EIA made to then Minister of Agriculture Dr. Reeza Mohammed on 29th October, 1998 was met with the response that he had been mandated to come up with a policy for rice farming (Wildfowl Trust, 1998). The Cabinet discussed the Nariva issue on October 29th and November 5th, 1998 where a Cabinet Note consisting of a summary of the main findings of the EIA was presented. This Note was subsequently withdrawn by the then Minister of Agriculture. The then Minister also

delayed the filling in of 15 illegally dug channels that were draining off the swamp water too quickly resulting in fires during the dry season (Wildfowl Trust, 1998).

The EIA's economic analysis of rice production in the Nariva Swamp was negative, after all the justifications and studies (FAO, NEDECO, Agristudio, Planning Associates):

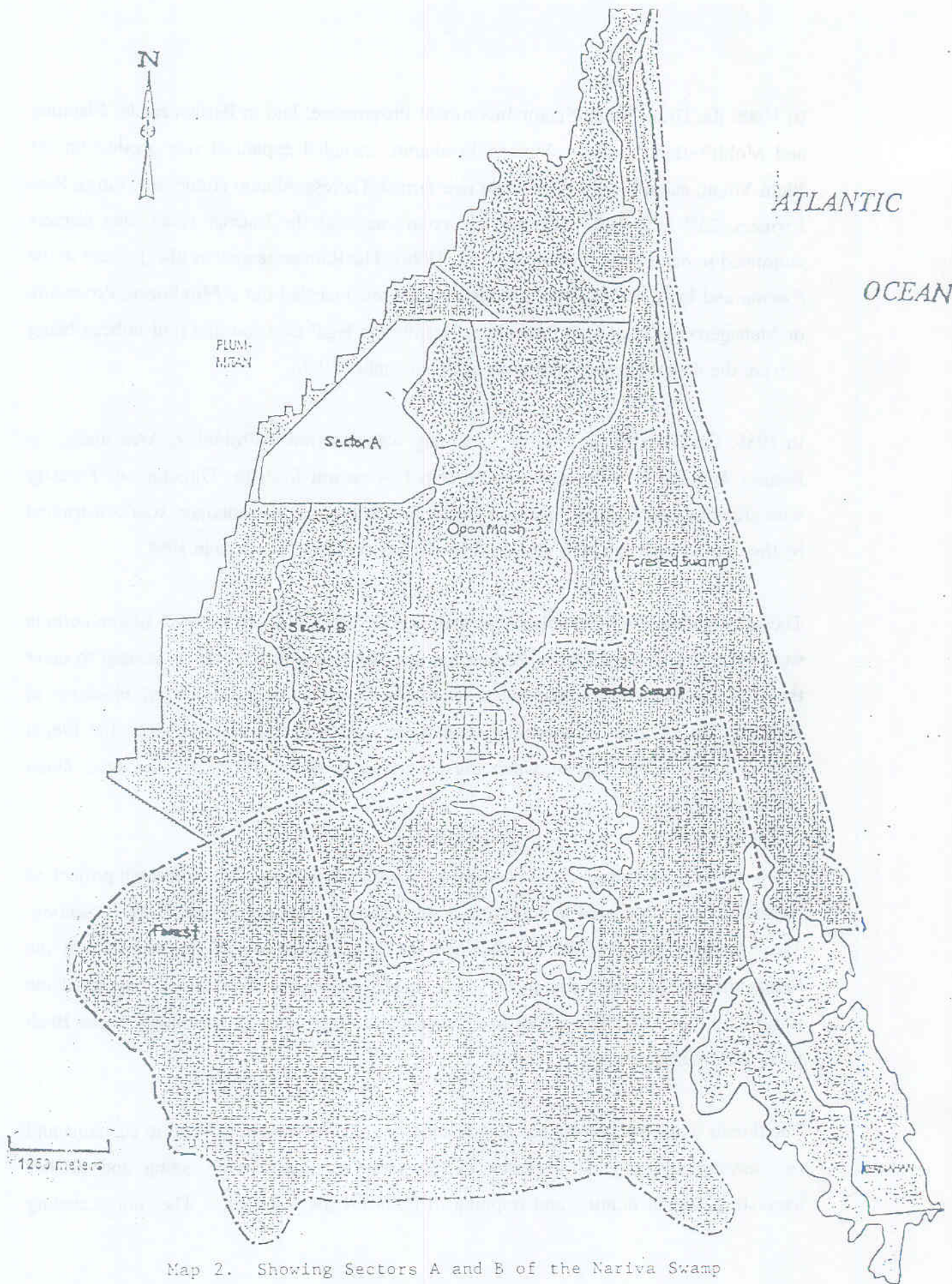
Therefore while large scale rice farming in Block B gave private returns (net revenue) of \$2,392,100 per year, the social value of this production was negative \$4,249,763 because of the actual and implied subsidies received by the rice farmers. The net revenue after overall subsidy (Social Value of Production) of agricultural activity prior to rice farming was $\$279,037 - \$1781 = \$277,256$, where, \$1781 represents the implied subsidy of using the land without payment of land rent to the State... 1090 ha. of Nariva Swamp were permanently modified by large-scale rice growing causing permanent damage of \$110.5 million. It may be concluded that rice growing was not socially desirable as the previous economic activity. Thus large-scale rice growing in Block B had an overall negative impact on the nation (emphasised in original) (Pemberton, 1999).

Ramsar's 'wise use' discourse was interpreted in economic terms in the EIA and the idea that the Nariva Swamp should not remain 'idle' is present in Pemberton's (1999) *Optimal Resource Use Determination for Nariva Swamp*. These uses include: Ochro, Bodie, Pumpkin, Melon 672 ha, Squash and Ecotourism 256 ha. (Pemberton, 1999); however, the approach to Ramsar and the resulting EIA shifted the balance of the economic development vs. environmental conservation discourse. The EIA forced an economic discussion of environmental impacts, an analysis of growth/development vs. environmental issues and quantification of the subsidy to the large scale rice farmers which amounted to TT\$4,249,763. The rice planting activity contributed only marginally to the macro-economy, amounting to about .07% of country GDP or about 2.37% of agriculture's contribution to GDP. The rice farming activities only marginally improved employment opportunities in the local Nariva communities (IMA, 1998).

2.3 The Swamp as a Contested Wetland

For decades the Swamp has been the centre of concern and controversy because of the real conflict between legal and illegal commercial use of its' resources (logging, illegal hunting, rice production, fishing) and its' ecological and physical sustainability. The controversy escalated when agricultural planners decided to provide a subsidy for rice growers in the mid-1980s, to stimulate rice production and achieve some level of national food self-sufficiency. The subsidy served as an incentive for large-scale producers to convert Sector B (see Map 2.) of the Swamp into commercial rice production. From 1987, Nathai-Gyan (1996) estimates that 80% of the Biche-Bois Neuf area (sector B) was converted to rice cultivation. In 1973 the area under rice cultivation in Trinidad was 10,840 acres, in 1980 it was 11,200 acres (Planning Associates, 1981), in the early 1990s four large farmers were occupying 3700 acres. Rice paddy production increased from 201,209 lbs. in 1986 to 1,435,408 lbs. in 1988. This large-scale cultivation had a negative impact on the Nariva flora and fauna and also on the livelihood of the small rice farmers.

The conflict could be seen clearly in 1989, when one of the first large-scale rice farmers (Jabar) to enter the Nariva Swamp bulldozed 40 ha. of Palm swamp forest. With a forest offence matter pending, he justified his actions stating that the Permanent Secretary in the Ministry of Agriculture had given him permission to be in the Swamp. The Forestry Officers had no authority to act against him under the State Lands Act. It was with full knowledge of the plans for rice production that the rice farmer /squatter Jury ignored quit notices for Bush Bush sanctuary in 1984. It was also in this context that large-scale rice farmers, the Akaloos, moved to squat and plant rice in the Nariva Swamp in 1986.



Map 2. Showing Sectors A and B of the Nariva Swamp

In 1988, the Draft Public Sector Investment Programme, laid in Parliament by Planning and Mobilisation Minister Winston Dookeran, included expanded rice production for Plum Mitan, according to large scale rice farmer Theresa Akaloo (Interview, Large Rice Farmers, 23rd July, 1996). Despite the court case and the Ramsar visits, rice farmers continued to occupy the Swamp (CFCA, 1996). The Ramsar team was also present in the Swamp and in April/May 1995, a three-person team carried out a Monitoring Procedure or Management Guidelines Procedure. Despite the legal decision and quit notices being served, the illegal farming continued until November 1996.

In 1989, the Bush Bush Wildlife Sanctuary was declared a Prohibited Area under the Forests Act. Entry to the area was regulated by permit from the Directory of Forestry with stipulated conditions. However, restricting access to this sanctuary was constrained by the limited funds given to the Wildlife Section for game wardens in 1991.

The squatters were not the only ones entering the Nariva Swamp. In 1993, fifteen permits were given to fishermen from the communities surrounding the Nariva Swamp to enter the Bush Bush Wildlife Sanctuary. There were reports that the illegal blocking of watercourses endangered manatees. Salt-water intrusion also resulted from the illegal widening and deepening of watercourses and agricultural chemicals damaged fauna (Ramsar, 1996).

The Trinidad and Tobago Field Naturalist Club therefore undertook a research project on the status of the Manatee in Nariva Swamp with the assistance of the Wildlife Section. The San Juan Rotary Club collaborated on the conservation of the manatee in the Manzanilla area of the Swamp. However, inadequate vehicular transport hampered the progress of the Wildlife Section and widespread illegal activity continued in the Bush Bush Wildlife Sanctuary.

The threats to the swamp include illegal squatting, the conversion of land to cannabis and rice farming, grazing of livestock in the game sanctuary, over-fishing and lumber harvesting, illegal hunting and trapping of birds for the pet trade. The finite carrying

capacity of the agricultural lands; the lack of government attention to promoting other economic development alternatives; and the lack of employment/economic opportunities for the younger men and women are some of the social issues that are impacting on the health of the Nariva Swamp and its communities (RAMSAR, 1996).

Understanding the linkages between the communities and their environment is critical to the preservation of the Nariva Swamp. Environmental organisations have suggested that *co - management* and *wise-use* are two options for the future management of the swamp. Any sustainable future for the Nariva Swamp will need to be based on a documentation of the existing relationships between the Nariva communities and their environment, as well as, the wider national community.

2.4 A Brief History of the development of Kernahan and Cascadoux⁷

2.4.1 Migration and settlement

The first migrants to the area were mainly men who settled in Cascadoux in the early forties. These men came to 'garden' or to work in the nearby coconut estates and the war gardens during World War II. There were about four original households; the Joseph family, the Charles, and a newly-wed couple who settled in Cascadoux. Cascadoux settlers came from northern areas of Trinidad such as Sangre Grande and Arima whereas settlers in Kernahan were initially men from villages in southern Trinidad such as Debe, Penal and Bonne Aventure.

In the beginning, the few residents lived in temporary camps constructed in the forest. Some also shared their camps with other settlers.

⁷ The information contained in this discussion was adapted from the Gender and Natural Resource Use, the Socio-Economic and Cultural and the Community Level Governance components of the Case Study.

These settlers would often come to cultivate land and would return home every few weeks to sell their produce and to see their families. The crops produced included rice and watermelon. The land was extremely fertile and there was easy access to species such as the guabine, cascadura, conchs, fruit and wild animals as sources of food. Rainwater and water from nearby channels was used for drinking, bathing and washing. Cooperation made settlement under harsh conditions easier. Residents had to confront anacondas, mappipire, scorpions, caiman, mosquitoes and the constant dampness of the wetland each day.

Access to Cascadoux was gained via a small dirt track, extending from the Manzanilla/Mayaro Road to the top of Cascadoux Hill. From this point onwards however, it was thick forest through which one had to cut one's way to get through to what eventually became known as Kernahan. The area was heavily forested with species, such as, Balata, Palms, Wild Cane and Roseau. A pathway was cut from the top of Cascadoux Hill over the hillside and into Kernahan. The road network existing today still maintains this basic route. The access road to Kernahan was a dirt track, thus villagers who used this route had to walk through forest thick with Roseau clumps and wade through chest-level water in the lagoon. Those who made the hard trek to the Manzanilla-Mayaro Road would carry their clothes on their heads and bathe and change on the beach. Villagers could leave their clothes in a spot on the beach without fear of them being stolen and change back into them on their return from market. It was very difficult to carry produce to market, as transport was a problem.

A few more people moved to the area in the 1950s and began to establish camps in the Kernahan area. The Nariva Swamp offered a familiar wetland environment in which people could use their experience of growing rice or watermelon gained from such cultivation in south Trinidad. However, with increasing migration, slash and burn methods were more frequently used to clear larger plots of land for houses and gardens. Agricultural activities were centred on watermelon and rice production. Few practiced short crop farming at the time except for those who produced for subsistence.

By 1962, two camps had been established in Kernahan. The area was still heavily forested at the time; however, there were now distinct, cleared areas for cultivation and more permanent dwelling areas. Over the next ten years, the number of permanent camps increased dramatically. Women and children began to migrate in larger numbers as families started moving in. With the increasing population in both Cascadoux and Kernahan, there were more activities in the area. Village men could find employment in the lumber industry using the surrounding forest resources. Camps and homes were constructed from local timber found in the area and covered with carat leaves.

It was during this period that the Jonas family, one of the largest family groups in Kernahan today, made their home in the area.

In 1974, Hurricane Alma devastated the vegetation in the villages, the surrounding Nariva/Ortoire windbelt area and the Bush Bush Wildlife Sanctuary. After this, villagers were able to clear larger tracks of land for agricultural activities. In 1974, the track to Kernahan Village was paved as a result of a scheme to revitalise 1500 acres of land in the Kernahan area for rice production by the GORTT. The Jonas, Cecil, Maharaj, Ramraje, Rupai and Persad families were established and the formation of a Kernahan community was in its nucleus stage. Although there was a shed where community meetings were held, there was no formal community organisation such as a “panchayat” or village council. Villagers in both communities were still planting crops such as, rice and watermelon and despite amenities like the paved road, life was still hard.

By the 1980s, there was a generation of children living in Cascadoux and Kernahan who had been born there. Though the villages were geographically close and villagers’ lives interconnected, the villagers saw each other differently. Those from Kernahan more often saw the two villages as one, whereas those from Cascadoux felt the communities were distinct. Despite these differences, Benjamin Joseph who was head of the Cascadoux Village Council extended it to include Kernahan and it became the Cascadoux-Kernahan Village Council. The Council did not function consistently after Joseph’s tenure. After a few years of dormancy, members of Cascadoux Village tried to revive the Council by

trying to get Cascadoux villagers together on issues related to infrastructure, water and electricity. This Council did not adequately function as a representative voice for both villages.

By the 1990s, the villages had been settled for nearly 50 years. Many of the villagers of Kernahan still saw themselves as temporary residents and maintained a sense of 'rootedness' to their place of origin and their original social and family networks. In contrast, villagers in Cascadoux developed emotional attachments to their village and put down 'roots' that mitigated against them feeling like displaced people and more like they were 'home'. As permanent settlements were established, larger areas of land were cleared for housing and agriculture. Fire was increasingly used to clear land for large-scale agricultural production.

It was also during this period that the Nariva Swamp received international attention. This attention generated an increase in environmental awareness locally and internationally, which led the state to prohibit the catching of conch and cascadura in Bush Bush Sanctuary as part of a national programme for the protection of the Swamps' resources and its 'wise-use'. Problems with environmental destruction of the Nariva Swamp due to large-scale rice farming made conservation in this area an especially important issue to policy-makers. Community members were influenced by these developments and environmental consciousness began to grow among villagers. The Caribbean Network for Integrated Rural Development (CNIRD), which is an NGO working on rural issues, funded and assisted in the building of an eco-tourism visitors' centre in Kernahan. They also ran courses in eco-tourism and business management.

2.4.2 Ethnicity

The early settlers to both Kernahan and Cascadoux consisted of Indo- and Afro-Trinidadians. Early Cascadoux settlers comprised one Indo-Trinidadian woman and her husband along with other families who were of Afro-Trinidadian descent. In the 1970s, the Ragbir family (Indo-Trinidadians) moved into Cascadoux Village and raised fourteen

children. Descendants of this family are the majority of the Indo-Trinidadian population. The ethnic divisions in Cascadoux can be differentiated geographically. Those currently residing at the top of the Cascadoux Hill area are of Indo-Trinidadian decent and those in the lower lying areas are "douglas"⁸. The numerous children of the Charles' family are 'douglas' as their father was African and their mother Indian. The Joseph family is Afro-Trinidadian.

The Kernahan area however, consists primarily of Indo-Trinidadians, with one Afro-Trinidadian residing in the area. Oddly enough, the ethnic proportions have remained unchanged over the years for there is still only one Afro-Trinidadian residing in the Kernahan area. Unlike Kernahan, Cascadoux Village was growing with a roughly equal ethnic balance.

2.4.3 Religion

Kernahan residents primarily came from areas such as Boodoo Trace and Mohase Road in Penal and Debe. They brought with them an Indo-Trinidadian religious and cultural heritage. A small Indo-Trinidadian settlement therefore developed whose members were mostly Hindu. Christianity entered the villages in the 1980s when a pastor Calpo, from Rio Claro, and women from the village established a small church in Kernahan. It is claimed that the conversion of some villagers from Hinduism to Christianity led to the creation of lasting religious factions in the village. In 1996, the Pentecostal community in Kernahan finally split into two distinct churches with separate buildings and pastors. This resulted from the building of a Texan-funded church to house the larger faction. The religious sects in existence today are Hindu, Sai Baba and Pentecostal.

The early Cascadoux community consisted of a mixture of Moslems, Hindus and Presbyterians. The present population however, is composed of Moslems, Hindus Pentecostals and Presbyterians. The majority of Hindus have converted to Pentecostalism

⁸ Douglas – A Caribbean person of mixed African and Indian (or sometimes Chinese) parentage, (Allsopp, 1996).

over the years. There is no established church or temple within the Cascadoux community. At one time however an ex-village council president (who lives in Cascadoux) held Presbyterian Church services in his yard. Today however, the Pentecostal faction attends church in Kernahan while the Presbyterians attend a church in the nearby village of Mafekin. The small Moslem faction attends a Mosque in the Mayaro area, but infrequently. Some of the young men who follow the Moslem faith also attend Pentecostal services in the Kernahan village but still value the knowledge they gained from Islamic classes.

2.4.4 Education

In the early 1950s children in Cascadoux began to attend the Ortoire Primary School, but this was yet to happen for the children from Kernahan. Parents of these children have had little exposure or opportunity to learn to read and write. Over the last 40 years the standard of education has not dramatically increased among both villagers. There is a pre-primary and two primary schools in neighboring areas, but not all children from Kernahan and Cascadoux of school age attend. Many fall out of the system after Common Entrance examinations.

One of the Pentecostal churches in Kernahan has a pre-primary school to which some of the residents send their children. The Youth Training and Employment Partnership Programme (YTEPP) conducted various courses in the early 1980s. These classes were run for the first time in Cascadoux due to the prompting of the village council at the time. The head of the Village Council also held Math and English classes in his yard. Other institutions such as the Caribbean Integrated Network for Rural Development (CNIRD) have also been involved in training and education of some villagers.

2.4.5 Health

Diseases or other health issues as a result of living in the swamp, did not plague early settlers. The hardship of daily life however, had an impact upon women's health. Many

women miscarried because their physical tasks included beating rice, picking up and carrying heavy loads well into their pregnancy. As the population grew, women who acted as midwives were available in the village.

The community health nurses from the Mayaro clinic began to visit both villages approximately twenty years ago. They visit both communities at least twice a month, but pay more frequent visits to Kernahan, which may be due to the larger population residing there. The major health problems, according to these nurses, are outbreaks of gastroenteritis during the rainy season, skin disorders which may result from bathing in channel water, diabetes, domestic violence and alcoholism. Women who need water to fulfil their gendered responsibilities consider the water quality in the community tanks and the channels to be a problem for their families, particularly for babies. The men in both communities also agree with this perception. As a result, they began to boil and add bleach (as a result of prompting from the nurses) to the water they collected in order to make it less a health hazard. The water collected from the community tanks is insufficient in terms of volume and, according to villagers, dirty because they have never been cleaned.

There was one case of dengue fever during the research period and two deaths attributed to scorpion bites. Kernahan residents spend much time standing in water fishing for conchs and cascadura, and therefore feel they are more prone to arthritis and joint pains than other residents who are not fulltime fishermen. Health workers report that HIV and STD's are not a problem, although men visit sex workers in Rio Claro, Marabella and Arima and may not always use condoms. A number of young men from the Cascadoux community are promiscuous and do not practice safe sex.

While many outsiders see the villages of Kernahan and Cascadoux as one community, the two groups of residents do not all perceive themselves to be the same. Sources of income, levels of wealth, gendered sanctions, youth sub-culture, community cooperation, family networks and ethnic composition of the villages are some factors differentiating

them from each other. These perceptions are often stumbling blocks to community cohesion.

2.4.6 History of Policy and Governance in Kernahan and Cascadoux

In 1962, the Ministry of Agriculture began to take a greater interest in the Kernahan/Cascadoux area due to the proposal by a Japanese company for a watershed management project for the Nariva Swamp. There was also a growing interest in the development of rice production in the area (discussed in section 2.2), which also contributed to increased migration to the area. In addition to this, the country was slowly coming to the realisation that conservation of Trinidad's biodiversity was of importance, hence the declaration of the Bush Bush area as a wildlife sanctuary in 1968. This increased attention to, and activity in, the area propelled the then Ministry of Agriculture to construct a road into the Kernahan community. Entrances to both Cascadoux and Kernahan were further developed by the construction of pitch and oilsand roads. These roads were part of an infrastructural programme to facilitate the development of rice production in the area.

Migration to Kernahan in the late 1970s and early 1980s was also stimulated by a failed government drainage and irrigation project in the Oropouche area (where Debe and Penal are located). Families who were practicing agriculture in the Oropouche area began to face landlessness due to overcrowding and lack of available fertile land and thus looked to other areas for cultivable land.

In the 1970s and early 1980s, the granting of a guaranteed price for rice stimulated the increase of rice production in the area. However, prior to this, agricultural production of rice occurred unofficially by temporary farmers (initial settlers). Another wave of migration to the Swamp occurred in the late 1980s, when the National Alliance for Reconstruction (NAR) implemented the guaranteed price for rice as discussed earlier.

State and NGO involvement in the area increased dramatically in the 1990s. For decades the community has benefited from charitable donations and in many ways has become dependent on these. Donations have increased in the past decade with contributions by BP Amoco and other organisations. While both education and health are subsidised some villagers have difficulties affording this. Public assistance is also given to those villagers who cannot access it. The then Ministry of Community Development, Culture and Women's Affairs ran several courses ranging from literacy to craft to leadership sensitization. The declaration of the Nariva Swamp as a RAMSAR site and an internationally important wetland for conservation stimulated greater conservation efforts by the state and other agencies, which included attempts to educate villagers about the environment. Volunteer and paid positions were available to villagers as fire and game wardens and environmental courses were offered.

In 1994, the introduction of a grading system for rice led to a decline in rice production in the villages. Farmers could no longer support a profitable rice production system as the rice they produced was considered either second or third grade, thus little or no profit could be attained. Consequently, watermelon production rose during this period. To supplement incomes that may have dropped due to decreased rice production, the Ministry of Agriculture initiated agricultural and livestock projects which were funded by the Community Development Fund. Under the United National Congress (U.N.C.) government's first term, roads were repaired and both villages were allocated communal water tanks in 1996.

Income generation in these communities relies heavily upon agricultural activity, notably fishing, conch catching and crop production. There has been a shift to large-scale, commercial watermelon production. Lagoon lands previously used by farmers have been abandoned in favour of hill/forested lands that are less susceptible to flooding. The clearing of these new lands for agricultural activity contradicts the Wildlife Conservation and Forestry Acts and has been limited by the MOA.

The villages of Kernahan and Cascadoux are both situated on state lands. At the time of the study, the Ministry of Agriculture was in the process of providing standard agricultural leases for farmers occupying selected areas.

The declaration of forested areas around the communities as Forest Reserves and Wildlife Sanctuaries has restricted the availability and use of state lands for income generation by families. As a result of these policies, there have been high levels of conflict between representatives of the MALMR who have been mandated to conserve the forest reserves, and members of the community seeking to earn a livelihood from the same terrain. Partly to address this conflict and also to promote development in the area, the Ministry of Agriculture, Land and Marine Resources (MALMR) has been promoting projects for alternative sources of livelihood. Villagers are limited by poor infrastructure (electricity, water, access road and communication facilities) from initiating cottage industries and micro-businesses.

Section III Research Methodologies and Techniques of Data Collection

The study of the villages of Kernahan and Cascadoux was intended to be 'participatory' and 'empowering'. These objectives shaped our methodological foundation and our methods and were important and evolving aspects of fieldwork. Heaven Crawley (1998) writes that participatory methods are intended to enable "a group of people to analyse their condition, giving them confidence to state and assert their priorities, to present proposals, to make demands and to take action, leading to sustainable and effective development proposals. This concept of participation as 'empowerment' is closely linked to the ideas of Paulo Freire (1972). It was also suggested that a process of 'awareness-training' and 'conscientisation' occurs through the limited intervention of outsiders who interact with people by posing problems and generating discussions, thereby awakening them to structural causes (Freire, 1972)". Crawley goes on to write that empowerment is greater than simply participation or access to decision making. Empowerment "implies enabling people to understand the reality of their situation, reflect on the factors shaping that situation and, most critically, take steps to affect changes to improve it." With specific regard to women, empowerment necessitates acknowledging women's oppression and addressing women's strategic needs.

3.1 Philosophy and Approach to the Research

Central to the epistemological framework of this project was a critical examination of the scientific approach to research and exploration of the means and possibilities for incorporating social, historical, political and economic concerns into an ecological assessment to facilitate the primary goal of empowerment. Crucial to this research process was the use of participatory methodologies founded on empowering communities such that they were involved in the collection and analysis of information about themselves, which would assist in transforming their resource-value/perceptual

knowledge base; and aid them in creating/developing socio-economically and sustainable/viable alternatives for themselves.

The methodologies informing the research process were also influenced by the interdisciplinary nature of the project. Our methods of gathering and validating data were based in both the natural and social sciences and determined by feminist methodological concerns.

3.2 Research Methods Used

Component 1a - State Policy and Governance

- Open-ended interviews with stakeholders involved in the Nariva issue
- Review of secondary data on the Nariva Swamp
- Interviews with agricultural, economic, political and environmental consultants

Component 1b - Community Level Governance

- Work sharing (participating in community activities);
- Villager and shared presentations;
- Development of social maps;
- Semi-structured interviewing;
- Direct observation;
- Focus groups;
- Key informants;
- Local stories/oral testimonies;
- Interviews with governmental officials past and present;
- Analysis of government documents and reports.

Component 3 -Natural Resource Use

- Gendered resource use maps;
- Historical mapping;
- Seasonal charts;
- Transect walks;
- Lectures and field trips with representatives of key stakeholders and institutions
eg. UWI, EMA, Caribbean Chemicals, retired game warden;
- unstructured interviews;
- questionnaires;
- water testing;
- resource access profile and benefits flow analysis;
- Participant observation;
- Local stories.

Component 4 - Socio-Cultural, Economic and Gender Analysis

- Qualitative approaches e.g. unstructured interviews, participant observations, historical mapping;
- Quantitative approaches e.g. Questionnaires, population counts;
- Action Research e.g. lectures by and collaborative work with representatives of various institutions and stakeholders in the community;
- Ethnographic methods;
- Genealogies

3.3 Research Field

3.3.1 Size of Sample

Kernahan has 78 households with 288 residents. Cascadoux has 33 households with approximately 88 individuals residing there, thus bringing the total population of both communities to 376 individuals. Every household in both Kernahan and Cascadoux was visited and at least one member of each household was interviewed. Different sample sizes were used to determine information on the areas being researched.

3.3.2 Unit of Analysis

The physical household was used as the primary unit of analysis for all components of the project as well as individuals within the communities. The natural resource use and community level governance components also investigated group dynamics and their perceptions of the environment e.g. the church, fishermen, farmers etc. Despite the household being the unit of analysis, inter-household relations exist to varying degrees in each village. The household is an integral part of the complex whole - the community.

3.4 Summary Of Researchers Reflexive Experience and Limitations of the Research

This section presents the researchers collective reflection of their experience in this project. It examines the way that factors such as race, class and gender affected the process of gathering data and highlights how our experience in the field evolved as we developed a greater familiarity with the villagers. It also seeks to highlight our experiments with different methods and how we negotiated ethical issues that arise in participatory projects. Our discussions and debates always brought us back to our understandings of and critical ideas about the initial project objectives of interdisciplinary research and community empowerment. There was also constant debate as to our capacity to meet the projects' objectives within set deadlines. We believe that we gained immensely as researchers through this project because we were not only collecting information from the communities of Kernahan and Cascadoux but in the process of data-gathering we became involved with the lives, politics, conflicts and everyday decisions of the villagers. In this way we became part of the web of stakeholders negotiating issues of sustainable development in the Swamp. Thus, our experiences in the field are part of the data. They help us contextualise our methods and results, and understand how our relationships to and with the community and each other changed over time.

Data collection and analysis was affected by our politics and our individual reflexive experiences. The researchers in the group were university educated and in our late twenties. We shared a commitment to ethical research, empowerment and equity. We dedicated more energy and time to the empowerment component of the project. Sharing this foundation often enabled us to come to a consensus on our approach to the villages and to sustainable development. We came from varied academic backgrounds and brought together training in agriculture, ecology, gender studies and economics. This was extremely useful in the project as our discussions were full of different perspectives about the information and we learned from each others' analyses. While we were not from the same class backgrounds, our university training was a bond we shared which also cemented the way villagers homogenised us as people from the university. Generally, we

were perceived as upper to middle class and some villagers thought that we had a big job making easy money going around and talking to people in the community. We had access to a rented car and a house, which were signs of wealth in the eyes of the villagers. For example, unlike most villagers, we never had to wait the long hours at the side of the road for a taxi. In fact, some villagers seemed to think that we had nothing to do but drive around all day. They sometimes asked us to take them places they wanted to go, with the perception that we had nothing important to do. We usually offered a lift to men and women who were travelling in our direction, but sometimes had to remind the younger males with whom we were friendly that the car was not a taxi to take them cruising. Generally, we often had to emphasise that we were not rich, didn't have our own cars (except for one researcher) and did not engage in a lot of spending for leisure or luxuries.

Having a rented house located ten minutes away by car from the villages was extremely valuable. At first, we were interested in living in the village but could not find appropriate accommodations for the four of us. The data we gathered could have been very different had we lived in the village, but we benefited from having a space outside of the research setting. It was a relief to be able to leave the village after a whole day. We also needed the privacy to discuss the project, gossip about villagers' lives and compare our data. We gathered a lot of very personal information about the villagers, which they may not have wanted others in the village to know. We took down the detailed charts on the walls of our house when we invited villagers over to conduct various activities related to the project. Having a place to live so close to the research site enabled us to spend a lot of time in the communities. This also resulted in us having little time for ourselves when we could talk freely, wear shorts and take brief breaks from the many long hours we worked collecting and writing up the data. As both communities lived without electricity and pipe-bourne water at the time of our fieldwork, having the house also gave us the chance to work late into the night and freedom from the task of the villagers of having to collect water for domestic purposes. Our 'big' house and 'big' car clearly set us apart from the villagers and contributed to the perception that we were wealthier and more upwardly mobile.

There was some difference in terms of race and gender among the researchers. Three of us were Indo-Trinidadian and shared the ethnicity of many villagers in Kernahan and Cascadoux. This could have aided the ease with which we were able to form relations with the villagers who may have felt that we understood their history more intimately and shared their religiously- and culturally-based values. Some even knew our family members who had originated from a similar part of Trinidad. Villagers perceived one of the researchers, who was of mixed race (from Caucasian and Afro-Trinidadian parents) as 'dougla' (from black and Indian parents) and insisted on maintaining this view during the fieldwork. This, however, did not impact upon her acceptance and relations with the villagers.

There was one male among the four researchers and his experiences were sometimes different from ours. We found that men confided in him more easily and discussed 'male' topics such as arms trading and marijuana cultivation, which they seemed to think were less appropriate to discuss with women. The male researcher received an instant invitation to the male community that the female researchers did not receive. Men often had certain ideas about 'respect' and some believed that it was disrespectful to smoke cigarettes in front of women. Others may have thought that there was certain information more suited to discussions among men. The female researchers also felt uncomfortable about sitting to talk with groups of men drinking alcohol on a weekend. On more than one occasion, outside academics told us that we had to have alcohol-drinking sessions with the villagers to get 'real information' and to make them trust us. Of course, we were very unwilling to interact with drunken men who often told us they loved us or that we needed husbands and could be their wives. Fights also broke out among villagers while drinking and we did not want to be involved in such a scene.

Women tended to treat us similarly and willingly discussed aspects of their lives with the male researcher. Female researchers generally asked intimate questions about birth control or reproduction and many women seemed to respond openly. As women, the female researchers felt that we were under greater behavioural constraints. The way we dressed, how we carried ourselves and the way we interacted with different villagers

affected how we were perceived. We were very careful to follow village women's custom of covering their legs and we always wore long skirts or pants. Some of the younger or more 'modern' girls wore shorts, but generally older women and females from religious families dressed conservatively. We followed their example so that disapproval of our dress or behaviour would not be a factor excluding us from various groups. For us, as women, these considerations applied to the drinking sessions with men where we felt it was not appropriate for us to be seen.

While we adhered to certain gender rules in the community, we also transgressed many because of our privileges. We were university educated, unmarried, living away from our families (with the male researcher) and working at a job some villagers may have considered less appropriate for women. We all drove the car leased to us for the project. Additionally, we associated with men, talked informally with groups of men late into the evening and gained an 'honorary male' status.

In comparison, while some people were taking classes, teaching trade skills, typing or math and english, no one in the village was university educated. Women, in particular, usually became absorbed with common-law relationships, marriage and reproductive responsibilities by their late teens. On occasion, a young girl may be sent to live with family in another area or to work for some months at a retail store or grocery. However, other than on market days, virtually no women worked outside of the village. We met only a handful of women who could drive and often they were living independently or as single parents. Finally, very few women, and usually the most outspoken and educated in the villages, were involved in public affairs. Most women did not stand around talking in all-male groups; the majority of them usually left during or immediately after a meeting to prepare dinner or for childcare.

In general, the female researchers represented an image of how independently women can live. Our lives and privileges contrasted greatly to those of the women in the village and, for younger females, we may have been role models exemplifying the options that being educated, unmarried and childless can bring. This was actually pointed out by one

mother who informed us that her daughter told her she would like to be like us, she said she does not want to get married soon like other girls in Kernahan her age. It was the general village perception that we seemed extremely self-reliant and did not have to account to anyone for how or where we spent our time. A number of villagers also remarked on how education can enable women to choose a career. This was an important consideration for females who often mentioned having a career as an aspiration almost out of their reach, but possible for their children, particularly the girls.

3.4.1 Evolving experience in the field

When we first entered the field, a specialist in PRA methods accompanied us. The young Filipina woman stayed with us for two weeks, helped set up the first workshop to which the village was invited and gave invaluable advice about introducing ourselves to and interacting with villagers. When we arrived, we went house to house introducing the project and ourselves and inviting villagers to the workshop. The workshop was attended by more than 100 villagers who led focus groups and worked together on PRA methods such as maps, gender-based needs assessments, time lines and wealth rankings. The researchers had attended a week-long orientation where PRA was discussed, but had no practical experience with the methodology. Having the specialist in the field gave us time to become familiar with the methods and gain some confidence about applying them. A young man employed at the CGDS, who conducted the preliminary study of the community for the project was also with us in the first weeks. His familiarity with the villagers, perspectives on ethical issues in research and his personal approach to villagers and their lives also provided examples of techniques that work in the field.

After both these facilitators left, we continued to follow their example by waving at villagers when we drove by, making concerted efforts to know everyone's name (including children) and maintaining a relaxed and casual approach to villagers. We also shared information about our own lives and agreed to answer our own questions if villagers inquired. By helping farmers in their fields, going conch-catching with

fishermen, telling stories to children in the village school and visiting the market where many villagers take leisure time while selling, we took the time to build familiarity and trust with the villagers. We were also careful to interact with everyone so that no one would perceive that we favoured some villagers e.g. whenever we needed food cooked for a workshop, we gave different families an opportunity to earn some income so as to avoid conflict and any show of favouritism.

For the first few months, we struggled with the task of operationalising the project goals of participatory, multi-disciplinary research and empowerment. Sometimes, project objectives were unclear and, for example, the outputs required from the bio-diversity section kept shifting for months into the project. We were also nervous about descending onto the community with a pre-planned project whose goals the villagers may not have shared or thought important. In one experience, one villager argued that there was no such thing as community in the villages and angrily tore up our invitation to the community workshop. Villagers also asked us how they would benefit from the project in terms of jobs or money and tended to lose some interest when they realised that we could provide neither. From our own perspective, we struggled with the task of getting the villagers involved in the research and in community activities. We felt we were taking so much of their time to meet our own ends and were unable to provide anything concrete and relevant to their daily needs and lives.

As fieldwork progressed, we moved from developing a general familiarity and began concentrating on answering our research questions. We began by keeping journals as our main source of information, but over the course of the fieldwork began to use cue cards, charts and maps. In conversations with villagers, we conducted unstructured and semi-structured interviews with groups wherever we met them, in their gardens and homes or by the side of the road. We used a multi-method approach that included individual interviews, participant observation, community maps, focus groups, group activities, life histories, transect walks, water and soil sampling and questionnaires. We also recorded community meetings or group walks in the forest and took many pictures of flora, fauna and community practices. Different methods worked better according to our different

sections. For example, questionnaires worked effectively for collecting information about resource use and management. However, we found that it was better to not write down in front of villagers, personal information about issues such as reproduction, wealth, domestic relations and educational levels. Many also felt uncomfortable with a tape recorder. Instead, we conducted interviews with a casual, conversational style and recorded the interview by memory immediately after we left the villager or family.

Gender issues also arose in our interviews and we tried to talk to husbands and wives separately because women often talked more openly when their husbands were not around. Two researchers would either interview each partner at the same time in different places in the house or we would try to talk to women during the day when their husbands were not home. When we thought that talking to a married woman might cause problems between her husband and herself, we would mention in her husband's presence that we wanted to talk with her and would gauge his reaction or secure his permission.

It was easier to meet groups of men with whom we could talk at night as they often relaxed together late into the night in groups along the road. Women did not have the same amount of leisure time as men. Very few women gather in groups in public spaces for leisure. They can however be found gathering water, taking care of children, selling along the road or walking home in groups. However, these were not always the best times for interviews and usually we arranged to meet women at home. We developed strong ties with many of the youth in the village. In both villages, there are more male than female youth and as males roam freely throughout the area we more often encountered male youth. When we increased our focus on the empowerment goals of the project, we often ended up working with more boys than girls. Time was a constraint in this regard as well. Going house to house to organise girls for an activity and then reminding them or picking them up was very time consuming. We were not always able to implement planned activities due to people's busy schedules and the time constraints encountered.

Girls usually had less leisure time and many had to help with reproductive duties or in the garden. Young wives and mothers rarely came to events we organised and often said they

were too busy or not allowed to come. While we were aware of the importance of working more with girls, we were rushing to meet both the research and empowerment goals and simply did not have enough time to do many of the activities that we had planned. We did organise workshops for two groups of girls who saw the event as an outing and came dressed up, some even wearing lipstick and new shoes. Parents felt confident that their daughters were safe with us and the girls enjoyed themselves.

3.4.2 Workshops

We were able to organise several workshops that targeted different groups and dealt with a variety of issues. We told villagers to let us know if there was information or networks that they wanted us to help them access. Several farmers asked for more information about pesticides and accessing agricultural loans. We invited experts to come to speak to the villagers and went house to house inviting everyone. Despite the fact that there were requests for the information, turnout to these workshops was usually small. Turnout was consistently smaller than we anticipated. Villagers told us that they were too busy or sometimes forgot. Some wanted us to pick them up in our car, others refused to attend community events and even the location of the workshop could prevent some villagers who took issue with the owner of a parlour or the members of the church. Even the ecotourism centre, which was built for the community, fell to disfavour among some people, partially because some villagers felt that the ecotourist group was dominating the space and partially because Cascadoux villagers felt alienated.

Two of the most important workshops during our fieldwork phase were the Data Give Back sessions when we tried to return the data to the villagers for validation, to explain how the information could benefit their lives and to thank them for the generosity with which they shared their stories. The first session was held in the middle of the fieldwork period and the second occurred just before we left the field. The last workshop was better attended as villagers knew we were leaving the area and it was also a time to say goodbye. We talked about our time in the area and showed diagrams and charts to

illustrate the information that we had collected. At the session where we updated villagers on the project and the information which we were collecting, some people came in time for lunch, took extra lunchboxes for those who could not make it and left. We provided refreshments or food at our workshops and even these incentives could not always encourage people to attend meetings. However, the villagers that stayed left with a clearer idea of our purpose in the village and the ways we analysed the information they gave to us. Interestingly, workshops were a great place for parents to send their kids for a few hours and there were always many children present. In general, it was not easy to get villagers to turn out to workshops and so we also kept focus groups to a minimum when we realised that time was a constraint in villagers' lives.

Despite our constant efforts in every discussion with villagers to explain the purpose of our questions, it was only after the Data Give Back session that some villagers began to grasp the nature of the project. Other villagers were drawn to the list of medicinal plants that formed part of their indigenous knowledge and to the family trees that charted genealogies for four generations.

Our most successful and well-attended activities were the walks in the forest with community members of all ages and university academics; few women however, attended these walks. Villagers who were interested in the environment came out in pouring rain at times to walk in the forest and share knowledge about flora and fauna. We also brought the village youth together to put on a Christmas play. Young leaders in the village took responsibility for the younger 'actors' over the days of rehearsal. The entire village attended their performance. It was a great opportunity for many shy girls and boys to stand up in front of others to perform. It also gave the young leaders an opportunity to practice some drama skills that actors from the Arts in Action programme of the university had taught them a few days earlier.

We considered these some of our successes in terms of working with youth and empowerment. The youth were the group most interested in working with us and we worked with them to produce a photo essay and stories that were printed in a daily

newspaper. We considered these successes because we were also struggling with the project's goal of empowerment. We had no standards by which to measure the impact of our work encouraging and working with youth, community organisations and groups like the farmers or women. When we first entered the community, we were not even sure what empowerment meant in practice. We knew that participatory research methods were supposed to be empowering, but there were components of the project that also involved facilitating networks, raising environmental consciousness and promoting equity in gendered power relations. This seemed like NGO activity that we were not sure we could handle on our own.

At first we tried to maintain a neutral position on various issues in the village, but our reading introduced the possibility of 'action research'. This enabled us to be more watchful of our biases, honestly discuss our own perspectives with villagers and become more aware of the importance of reciprocity and emotion in our interactions. We believed that these helped us form stronger relations with the villagers who could feel that we wanted to contribute to their community because we were there and involved everyday.

When we felt that we had a basic understanding of the needs of both communities and began to know those villagers interested in starting projects or getting involved in eco-tourism or craft activities, we assessed what initiatives we could start or support. We were learning by trial and error and constantly debated and disagreed about our approach while we sought consensus.

We were faced with the task of facilitating, mobilising and organising in a community divided by religion, class and physical location. Family networks, age and gender also contributed to the difficulty of these tasks. Existing community groups provided an opportunity to more easily organise youth for eco-tourism activities. However, these groups were not really active. Largely, they were constrained by the lack of initiative and the disinterest exhibited by many villagers toward community organisations and activities. We also faced many villagers' disinterest in our efforts at facilitating

empowerment, but this may have happened because we arrived in the community uninvited and without a project that could offer tangible or immediate benefits.

At one desperate point when few villagers turned out to our first Data Give Back session, we went back to our initial deliberations about how to facilitate empowerment.

“Should we be pushing people into organising or starting projects and rallying villagers to get involved?”

“Should we take a more passive role of offering support or help whenever we saw groups taking initiative?”

“What if the community groups fell into dormancy while we were in the field?”

“Would we have failed to meet project goals?”

We did not know if we had adequate experience or skills to determine if we were taking the ‘right’ approach. We were unsure whether we should be aiming to see results in the short term or be satisfied knowing that we had some (unmeasured) impact. If we did see developmental change in terms of community spirit and active participation in groups in the village, how much could we attribute to our activities? We fiercely debated these questions because we felt a strong responsibility to our jobs, the research process and to the community.

In an attempt to answer these questions, we met with development and community specialists who directed us to different readings on development and helped us put our experience in the community into perspective. We came to terms with the fact that we could only facilitate development processes that were already in motion and if they were not, it would be best to take a more passive role. Recognising that we had very limited funds and would only be in the community for a very short period of time, we decided not to push community groups. Where we would have worked with youth to set dates for the next meeting, organise the meetings properly and consider projects they were interested in starting, we reduced our involvement to asking when the next meetings would be, encouraging them to organise and to meet without our help. We wanted them

to know that we were interested, but would wait to see them take initiative. We came to terms with the fact that we might never know if our time in the communities had instigated or facilitated change and if any change would be sustained over the long term. It was disheartening, but more realistic for us as we did not want to be another batch of researchers who came to take and leave. However, coming to terms with this approach relieved our anxiety that we could not meet the project's or our own standards of 'empowerment'.

After we left the field, we were able to say that the personal relationships, which we built with villagers and especially the youth, did make a difference in their lives. Sometimes young people sought our advice about relationships, sex and contraception and resolving conflict. Who knows what impact we made on their own sense of options? Some youth became more outspoken and confident, some felt more encouraged and others took up our suggestion of furthering their education. Our greatest impact may have been opening the minds of some youths by giving them ideas based on their aspirations, encouraging them and providing examples through our own lives as independent and motivated young people. We also later learnt that many villagers were now more cognisant of the importance of the land which they occupy and its importance to the nation as a whole. As young researchers, we felt that we benefited from a powerful learning experience about facilitating empowerment and becoming involved in others' lives.

Our time in the field and our approach also brought up issues of trust and conflict that made us especially aware of how we interacted with villagers. Getting people to participate in gathering information about their lives calls for an awareness of how their perceptions of the research and researchers can affect the fieldwork phase. Our interaction with farmers in Kernahan and Cascadoux exemplifies how much work needs to go into building clear communication with those being researched and giving them a sense of reciprocity and ownership over outside involvement in their lives.

As part of our efforts at the empowerment component of the project and our need to develop trust with community members, we often told them that if they needed

information, networks or advice which we could provide, that we would facilitate as much as we could. Within three months of the fieldwork, the farmers in Kernahan asked us for help with an ongoing land conflict, which they were negotiating with the government. Alternately, they wanted to meet their representative, go to the press and protest in the road. Mostly, they were concerned that they would lose the land they were currently planting with cash crops such as watermelon and were willing to fight to keep their independent livelihoods. The problem was that, according to the state, the farmers were illegally planting on land within the buffer zone of Bush Bush Sanctuary. According to MALMR extension officers, the farmers had repeatedly been warned and knowingly cleared land protected by RAMSAR - right up to the Bush Bush Sanctuary prohibition sign itself.

We advised the farmers to get as much information as possible, before taking action about their legal rights, their status as squatters, the MALMR plans to protect the Sanctuary's buffer zone, and the numbers of families that would be affected by the loss of this land. As facilitators, we felt that our advice gave the farmers some greater capacity to better represent their claims when they spoke to their parliamentary representative and extension officers. However, as facilitators, we made great efforts to be seen as neutral and to avoid taking sides. Soon after getting involved, we left the community for a few weeks.

Problems began on our return. Officers from the MALMR, Forestry Division and representatives of an environmental NGO (Ducks International) had visited the Sanctuary soon after we left and renewed their efforts to stake out the perimeter of the buffer zone. The farmers thought that we had given the extension officers information that they had shared with us and then disappeared. The visit by the extension officers left the farmers feeling exposed, betrayed and vulnerable. Unfortunately, there was no possibility of remaining 'neutral' in such a contentious situation; the farmers wanted to know who we supported and our unwillingness to either support their illegal action or to alienate them by aligning ourselves with the government made them feel we were playing both sides. It took months for us to realise that the trust we had begun to build with villagers was never

without the suspicions that stemmed from this conflict over land. When we returned to the field, we immediately began damage control by assuring them that we were not 'government spies' and that we were sincere when we said we would help, but it did not make much difference. One of the researchers once said that it was likely the farmers would have to leave the buffer zone to plant elsewhere. Months later, that statement was repeated to us as a sign that we never really had the farmers' interest at heart.

How was the research affected? Our relations with some villagers remained tense. Some villagers became very antagonistic and tried to turn other villagers against us. Despite our efforts, we became grouped with the villagers and state officials who farmers felt wanted to protect the natural ecosystem more than their livelihood. Even when they were very friendly with us, this particular group of farmers became very suspicious of the entire research process and project. Rumours began to circulate about our attempts to undermine the farmers e.g. we were once accused of calling the police to stop the villagers from protesting although we were not even in the field at the time. Alternately, we heard on the radio that we were part organisers of the protest. Despite our repeated efforts to explain our purpose in the villages, people thought we were sent to take their land and all the information that we were seeking to gather became circumspect.

Months after our initial involvement, the issue embroiled us in village politics without us even realising it. A leader among the farmers was running for village council president and we were accused of organising villagers to vote for his rival. We had in fact formed a good relationship with his rival, but more importantly, we spent a lot of time working with the youth from Cascadoux that were his family and main supporters. Our work with the youth was again seen as favouring one group over another, supporting rival political (and class) factions, and encouraging villagers to consider environmental issues a high priority for the community. As researchers, we became involved in minor altercations with irate villagers who told us that they did not want us in the village asking questions.

Despite villagers' friendliness and their willingness to talk to us about many aspects of their lives, the entire research process became fraught with a subterranean tension. This

resulted in an avoidance by some that we could not directly identify, antagonism that confused and wearied us, false rumours of which we only caught glimpses, and suspicions that were at the heart of some villagers' challenge to us to defend our presence in the community. Although by the end of the fieldwork period, many villagers understood and supported the need for the data we had tried to gather, the unresolved conflict over land and resources affected the research process and experience throughout the rest of our time in the villages.

3.4.3 Reflections

When we left the field, we sometimes missed community members and the area where we were working. We went house to house saying goodbye to villagers and promising to return. It felt insincere in a way because we knew that we would not be able to return often. We also felt as if we said that we cared and could be trusted, took the information that this 'involved' approach enabled us to access and then left the communities. Two researchers did return regularly for some weeks, but our time there was finished and, essentially, we were moving on.

It was a very intense period when we buried our lives into working long hours and late into the night. We worked usually incessantly putting in twelve-hour days for most of the week. We discussed the community constantly and had little recreation when we were not working. Our house was extremely comfortable, but we lacked a telephone and a computer and this seriously affected communication with the Centre for Gender and Development Studies and the progress of the project. Originally, the plan was that the researchers would work two weeks in the field and two weeks out of the field, but there was too much information to collect on this schedule and we could not leave the field as often as anticipated. These scheduled periods of field work were also unrealistic due to the needs of the research process and because important events which we had to attend in the community obeyed a schedule of their own. The empowerment component was also very time consuming and the process did not always fit into our time schedule or proceed efficiently. Lacking a computer until the last few weeks of the project was difficult for us

and left us feeling that we could not adequately represent the research findings under the given time and resource constraints. Presentation of the findings also suffered from our unfamiliarity with the relevant literature because we were always so rushed to collect all of our information in the field and to do our empowerment work. The time allotted for the write-up and analysis of the data was insufficient.

Communication difficulties with the managers of the project also often left us feeling like we were floundering on our own without academic guidance from a variety of disciplines. The project was inter-disciplinary and multi-disciplinary and we would have greatly benefited from guidance about merging our data and analyses from an advisory body of various disciplines. Attending a workshop on gender and resource management was very useful. However, we essentially proceeded using educated guesswork and references that we already knew.

In retrospect, we could have used our time differently. At some point in the project, we should have set limits to the data we could realistically gather and set about preparing to analyse the information. We could have sacrificed some of the extreme detail of the data and our time in the field to read more literature covering the wide spectrum of areas that we had to weave together. Finally, we could have become less consumed with the job and the responsibility that we felt we owed to the community and perhaps, been able to let go sooner or not 'gone native' in the way we may have presented some data. The innovative character of this project and the resource limitations of the CGDS meant that communication, financial, administrative and academic difficulties began early in the project. Better management of these issues could have made the experience more co-operative and enriching to everyone.

Section 4 Research Findings

4.1 State Policy and Governance aspects of the Nariva Swamp case study

4.1 Governance

Good governance includes systemic, political and administrative levels. Governance has three dimensions: the political dimension includes the way in which state affairs are administered and regulated (laws), the technical includes the natural and human resource capacities, while the ability to accomplish the task (e.g. managerial capacity) represents the institutional dimension. Leftwich (1994) claims that good governance is a function of state character and capacity, which is in turn a function of politics. A sound definition of governance must also include the history, practice and theory of the state as an agent in the development process (Leftwich, 1994).

According to the ISLE concept paper on Governance: it is the culture of a society that informs its behaviour and perceptions. There are links between culture and governance that represent the way in which stakeholders in an institution, government, community, business or family exercise their power, rights and responsibilities (Hardjoeno et al., 1996). This has implications for Trinidad and Tobago when considering the culture of rice production, and the attitudes to development and the environment inherited from colonial times. The culture of the society is one that tends to be overly conscious of how the outside world views Trinidad and Tobago and uncritically receptive to external policies that have specific gendered impacts. The push for rice production may be legitimised by ideology and doxa but the original and primary impetus is perhaps culture (Jolly, 1945).

4.1.2 Gender analysis

The World Bank Participation Sourcebook, Appendix I: Methods and Tools suggests that women's needs are better understood when viewed in relation to men's needs and roles and to their social, cultural, political, and economic context. Gender analysis thus takes into account women's roles in production, reproduction, and management of community and other activities. Changes in one of these roles may produce beneficial or detrimental effects in others.

At the ISLE Gender Steering Committee held in Halifax (11 -12 January, 1999) (Anon, 1999) eight theoretical constructs of gender were identified:

1. access to and control of resources and benefits;
2. control of decision making;
3. productive and reproductive labour;
4. social and capital networks;
5. power, resistance and negotiation;
6. P/politics and collective action;
7. indigenous knowledge and discourse;
8. culture, ideologies, values and behaviours.

The most relevant of these theoretical constructs of gender are incorporated into the analysis.

Also relevant is gender bias within institutions, and the work values and work practices through which gender and social inequalities are reproduced (UNDP, 2000). The Gender analysis also highlights the different roles and learned behaviour of men and women based on gender attributes. These vary across cultures, class, ethnicity, income, education, and time (*The World Bank Participation Sourcebook, Appendix I: Methods and Tools*).

4.1.3 Gendered analysis of the development context

Food self-sufficiency and the legitimacy of large scale mechanised production can be seen as a doxa or perhaps an ideology - where ideology is a set of beliefs, a viewpoint that legitimises a particular kind of arrangement and makes it natural and morally acceptable (Anon, 1999). One agricultural economist interviewed, claimed that self-sufficiency was an FAO term that became a major economic theory (Interview, Agricultural consultant, 7th September, 1999). Governmental Five Year plans produced by Planning Departments in many Third World countries are strongly influenced by the development theories of the day and are overtly determined by foreign aid goals. Researchers and policy makers agree that these plan objectives are rarely met. The Doxa of food self-sufficiency was enshrined in post-Independence policy in the *Draft Second Five - Year Plan 1964 - 1968. National Planning Commission*.

Once a macro-economic policy like the one above is in place, it becomes part of the environment and overall conditions that shape a country's economic development and determines allocation of resources (FAO-SEAGA). In 1972/1973 there were serious shortages in the supply of rice and GORTT implemented the rice programme with the justification of reducing the country's susceptibility to external trade fluctuations (Cuevas-Perez, Barrow and Ganpat, 1984). The rice policy may have influenced the provision of resources for rural roads in rice producing areas and the lack of funding for game wardens.

The question is not whether root crops are grown or can be grown in the Nariva Swamp but why a policy decision was made to give more funding and infrastructural support to rice than root crop production. It is unclear whether ground provisions are considered "women's crops" and are marginalised because of this, or whether rice production produces more prestige for male farmers and agricultural planners because it is easier than ground provisions to grow on a large-scale and in a highly mechanised manner.

4.1.4 The social capital networks linking politicians and the Swamp

Social capital refers to the ways in which exchange networks are mobilised to allow people to gain access to various resources necessary to their survival (Anon, 1999). Social capital networks are usually gendered in that there may be complementary and or contradictory practices between the social capital practices of men and women, even within the same households (Anon, 1999).

The National Wetlands Committee⁹(NWC) was one important social network involved in the management of the Nariva Swamp. Social capital in this case refers to the mobilisation of social relationships in order to obtain access to things which people could not otherwise access. What the Wildlife Section could not access was the management of Nariva Swamp under their section. The activities of the Wildlife Section were limited to the 1958 Conservation of Wildlife Act and they had no formal control over any lands or waters, whether State or private (Pritchard, 1997). Environmentalists also had little formal say in the management of wetlands since government controlled the WLCC. The WLCC was established under the 1958 Wildlife Conservation Ordinance no. 16 and served as an advisory Committee to the Minister of Agriculture, Lands and Fisheries. The Government appointed the National Wetlands Committee (NWC) in 1995 to make policy for wetlands three years after Ramsar was signed in 1992. This network was formed as a result of the Ramsar signing and did not arise from any Government commitment to environmental policy. Environmentalists wanted to look for international support and remove the Swamp from solely local political considerations (see section 2.2).

In the Nariva rice farming situation, access to free land, water, village labour, mechanised technologies, subsidies for rice production, a refurbished mill and access to government policy and plans were exchanged by the large rice farmers through their social capital network. In this case the social capital network was based on the common Muslim religion and ethnic Indian community. Since the exchanges crossed class lines, in that Government Ministers were involved and the large farmers were of an unequal social

9 The National Wetland Committee (NWC) was formed in January 1995.

position, this was vertical social capital. The social capital networks linked to rice farming provided certain farmers with social safety nets, since according to one of the interviewees (a well-known member of the poultry industry) one large scale rice farmer (and perhaps others) used the rice subsidy¹⁰ to pay off poultry production debts.

Social capital networks were, in the case of the large rice farmers, a vehicle for negative use patterns. Privatisation and mechanised agriculture resulted in greater demands on the natural resource in order to sell rice in the market place. Environmentalists saw this large-scale rice production as rapidly becoming unsustainable. Some environmentalists and Wildlife Officials claimed that the same rice farmers who damaged Fishing Pond and South Oropouche with saltwater intrusions linked to rice production and from pesticide use then moved into Nariva (Wildlife Section, 1993). In situations of environmental degradation, social networks may appear to people to be a more worthwhile 'investment', than their environment. For example, when people use destructive fishing technologies and give away part of the catch rather than risk a smaller catch, which provides nothing to share (Anon, 1999), and when rice farmers offer politicians goodies like scotch and rum as inducements to gain access to Swamp lands (Interview, former Minister of Agriculture 1986-1991).

4.1.5 Gender and Forestry

Gender analysis looks at the rules and practices through which institutions control the distribution of resources and the way that they reproduce differential (dis)advantages between and among men and women. This section provides examples of the

10 The large rice farmers received an implied land subsidy of \$TT \$16,107.00 ($950 / 1.22 * \$21.46$) because they did not pay rent for the land they used in Block B. In addition, an implied subsidy for water of \$TT 914.48 / ha. or \$TT 868,756.00 for the 950 ha farmed were obtained by farmers. The price support payment (subsidy) for rice paddy was \$1.01 /kg of paddy. The price subsidy per crop of rice in Block B therefore would be \$TT 2,878,500 ($3000 * \$1.01 * 950$) for the 2 crops per year, the total price subsidy was \$5,757,000. The overall subsidy for land rent, water and price of paddy was calculated at \$TT 6,641,863 (\$TT 16,107 + \$TT 868,756 + \$TT 5,757,000) (Pemberton, 1999).

reinforcement of gender biases within institutions, and the work values and work practices through which gender and social inequalities are reproduced.

In Trinidad, gender and forestry were linked in terms of prestige. Female officers revealed that there was a perception that Forestry was a male bastion (Interview, MALMR staff, 10th August, 1999). On the other hand, national Parks and Wildlife was seen as a 'softer' area best left to women with Biology as opposed to Forestry degrees. Advocacy in the Nariva Swamp issue was undertaken mainly by the women employed in the Wildlife Section. Perhaps their training in Biology gave them a more holistic view of the Swamp's value.

Interviewees expressed the view that male leadership in the Forestry Division was not as effective as it could have been. It was said that "troublemakers" (Interview, MALMR employee, August 10th, 1999) were assigned to the Wildlife Section, and that the latest World Bank National Parks plan was not popular with Forestry, since male Forestry officers thought that the Plan would result in a loss of professional territory for them. Due to the under-funding of the Wildlife Section the decision was made to pursue international funding and projects which also resulted in higher status. Changed global circumstances were giving greater status to environmental issues over production forestry issues. These changed opportunities meant that the female staff of the Wildlife Section, who were seen as the "poor relatives" were getting professional opportunities, while Forestry officers were seeing the erosion of their male bastion.

There is a debate in the Forestry Division between the male 'office foresters' steeped in traditional production forestry attitudes learnt in temperate countries versus the 'co-management-biased biologists' in the Wildlife Section who used community based organisations and international funding to achieve their environmental objectives.

4.1.6 Gender and advocacy

Interviewees were of the opinion that more women in Trinidad than men were involved in advocacy and that Molly Gaskin's writings in the paper made the Nariva issue reach as far as it did. At the Kushiro conference several female officers represented Trinidad and Tobago, Carol James, Head of the Wildlife Section, Nadra Nathai-Gyan, Wildlife Section; Molly Gaskin and Karilyn Sheppard, NGO representatives. It was not a coincidence that only women attended the conference since "women with Biology degrees" were put into the Wildlife Section and "women activists and volunteers" were running the Pointe à Pierre Wildlife Trust. According to the interviewees there are more women in the Environmental and Conservation groups.

The Wildlife Section's legal mandate was limited to matters covered by the 1958 Conservation of Wildlife Act. The Section had no formal control over any lands or waters, whether State or private (Pritchard, 1997). They therefore needed to employ a number of strategies that would supplement their limited legislative powers. The WLCC committee was called "just a talk shop", so that Molly Gaskin was called by a member of the Wildlife Section and asked to accompany Minister Rowley when he was making an official visit (possibly March 31, 1993) to the Nariva Swamp. The Wildlife Section claimed that this was a last ditch effort to convince international environmentalists about the issues that were being raised at the WLCC. This shows how alliances are necessary with organisations or influential individuals operating at the national and international level in order to bring a local issue to national attention and to exert pressure on policy makers (Utting, 1994). The Wildlife Section also wrote correspondence to the Ministry trying to get the issue resolved. Another strategy was to collect the evidence needed for a court case to remove the large farmers. This evidence can be found in the Wildlife Section's *Historical Issues Document* (1993). Additionally, the Wildlife Section held a series of meetings with judges Stewart Best and Nolan Bereaux to discuss this document and the potential case. It was claimed that the Forestry Division did not know where the boundaries of the Sanctuary were and needed to know in order to have a legal case.

The approach to shift the policy environment for Nariva Swamp away from local politics into the international arena was done to meet the 'wise use' policy set by the Ramsar Commission. The approach to Ramsar took place in a context of constrained finances for the Forestry Division. International bodies urge nation states to put their ecological house in order, while at the same time they pressure them to cut government expenditure. Public sector workers are often demoralised and ineffective under these conditions (Utting, 1994). Budget cutting was a reality for the Forestry Division as indicated by statements in the 1993 and 1994 *Annual Reports* of the Forestry Division on their financial constraints.

4.1.7 Ecotourism, Community participation and community management as discourses

As head of the Wildlife Section, Dr. C. James facilitated the development of community-based ecotourism including the Matura-based turtle protection group *Nature Seekers Incorporated*. Dr. James also introduced the honorary game warden system. These co-management approaches were part of the new international thinking and additionally fit the culture and socio-economic conditions of Trinidad and Tobago in which policing resources has proved impossible. These initiatives were undertaken despite the reality that the Wildlife Section is not formally authorised to undertake a comprehensive wildlife conservation programme (Pritchard, 1997). Therefore, the Matura project resulted from personal initiatives of the staff of the Wildlife Section (Pritchard, 1997). One interviewee claimed that the former Head of the Wildlife Section used her personal funds for some of the community action projects. Women and men working with environmental issues in Trinidad and Tobago have accepted the current discourse on community management understanding that some of the very communities they speak of are responsible for some of the environmental damage being addressed.

4.1.8 Governance as discourse

Leftwich (1994) claims that good governance is a function of state character and capacity, which is in turn a function of politics. Most authorities agree on some of the parameters that constitute good governance:

1. Facilitating economic growth by providing an 'enabling environment' encompassing competent public agencies, clear laws which are predictably enforced and reliable information and communication systems;
2. Bureaucratic accountability and transparency;
3. Ability to resist capture by powerful interest groups;
4. Moderate corruption, and
5. A commitment to reducing poverty, providing basic social services, and ensuring development well-being, which incorporates equality of opportunities, freedom from fear of arbitrary arrest, free speech and free association (Hardjoeno et al., 1996).

The Ministry of Agriculture had its own policy for food self-sufficiency and it was through this policy that the Ministry was obviously captured by the powerful rice lobby through three administrations, PNM, NAR and then PNM again. The term 'capture' is used because the intermediate level institution of TIRGA or the large rice farmers, played a mediating role in linking agricultural policy to their direct benefit without any alternatives being considered in public. In Trinidad and Tobago, it is not always the case that periodic multi-party elections encourage political leaders to favour development strategies that promote short-term economic growth rather than long-term investments aimed at conserving or rehabilitating the environment (Utting, 1994). It seems more the case that each successive government follows the plans laid down by the last, which in turn is often part of loan conditionalities. Trinidad and Tobago's policies are determined by adherence to the guidelines laid down by external lending agencies.

International bodies also often dictate environmental policies. One difference being that environmentalist rather than planners are linked to these projects as consultants. The National Parks Section started in 1978 from an OAS funded study and the OAS provided

funding for the Section during the 1980s to implement this project (Pritchard, 1997). This is one indication of how international bodies and policies share environmental decisions in Trinidad and Tobago. The extent to which environmental policies were dictated by International bodies is evident in the interview extracts below:

“The Tropical Forestry Action Plan¹¹ gave some direction for protected areas. Nariva was suggested as one of the priority areas. Nothing ever happened but it gave policy directions for the World Bank National Parks proposal. The World Bank plan dovetailed with the Tourism Master Plan 1994 ” (Interview, MALMR staff, 10th August, 1999).

“The Land Rationalisation study¹² was funded by the IDB. The IDB-funded project was to set up a computerised Land Registration system, and bring the system into the modern era. Since most large projects now have environmental components built in, Sylvia Kacal and Floyd Homer were asked to do a survey in Kernahan. Now there is another project, a quickie, to look at Speyside, Nariva, Caroni, the money comes from GEF” (Interview, Environmentalist, 2nd September, 1999).

The National Policy on Wetland Conservation prepared by the National Wetland Committee gives an indication of the lack of clarity of Government policy towards wetlands. A quote from this policy is presented below:

‘There is no written Government policy with regard to wetlands in Trinidad and Tobago. The only clear statements of policy are the facts that Trinidad and Tobago became a Contracting Party to the Ramsar Convention and the appointment of the National Wetland Committee in 1995. Otherwise policy and intentions must be inferred from political manifestos, draft legislation, Ministerial speeches, and recent

11 FAO/Caricom Tropical Forestry Action Programme. 1993. Trinidad and Tobago National Forestry Action Programme (Supplement to the Report of the Country Mission Team - Project Profiles). FAO Investment Centre. March 1993.

12 The IDB 1992 study was supposed to improve agriculture by removing land tenure constraints. It was accepted by Cabinet at the end of 1992. It provided a series of projects which were written into the IDB-funded Investment Sector Reform Programme/ISRP and the Agricultural Sector Investment Programme/ASRP (Dulin, 1999).

Government actions. There is however no policy statement on wetlands or any other aspect of Forestry Division's mandate. Other indications of policy on wetlands are to be found in current draft Forest Resources and National Parks legislation, and the Buccoo Reef Management Plan, which incorporates management of the reef and part of the wetland and sea grass area. However these have not yet become firm reality'.

Conclusion

The following can be concluded:

- There are environmental ideologies and discourses that affect the Nariva Swamp.
- There is a perceived crisis in leadership and governance in Trinidad and Tobago on environmental issues that environmental organisations are seeking to fill through links to international organisations and funding agencies.
- The environmental struggles of the women in the Wildlife Section and the Pointe à Pierre Wildfowl Trust are linked to the relations of power and authority in GORTT, negotiation and bargaining between the various sections of the MALMR, the rice lobby, and the NGOs and the wider social relations, including international relationships in which 'decisions' about macro policy and environmental policy are embedded.
- The granting of international recognition to Nariva Swamp as a Ramsar site affected the ecological status of the swamp, the political status of the swamp and the livelihood of the Nariva-based communities.

There has been a historical predisposition to favour commercial use of the swamp rather than ecologically sustainable use. There are indications that this predisposition is a gendered one.

As a Ramsar site, Nariva Swamp is no longer being discussed in economic terms as solely a rice producing area, but in the new economic terms of 'wise use'. The question of whether the Nariva Swamp has a right to exist 'unused' as an entity in itself awaits an ecofeminist analysis.

4.2 Gender and Natural Resource Use in Kernahan and Cascadoux

4.2.1 Soil Classification

Kernahan and Cascadoux comprise two topographic units: Cocal Kernahan Swamp and Cascadoux Hills. The Cocal Kernahan area is dominated by three major soil series:

- ◇ Bois Neuf clay
- ◇ Macaw Peaty clay
- ◇ Navet clay

The Cascadoux Hills consists of three soil series with marked differences in soil characteristics and fertility:

- ◇ 177 Talparo clay
- ◇ 63 Mayaro fine sandy loam
- ◇ 278/L Tarouba clay.

This variation in soil types affects productivity in both communities as they determine soil fertility and cropping schemes. The Kernahan area is dominated by soils that have low permeability and are difficult to cultivate as they are either inundated in the wet season. The dry season exposes fertile soils in the lagoon area, which are exploited for watermelon production. These soils require careful attention to drainage and irrigation when used for agriculture. In Cascadoux, however, the dominance of clay soils creates severe problems for farmers in the dry season. The soil becomes extremely difficult to cultivate due to the formation of huge cracks caused by drying out of the land. This renders the land near impossible to cultivate in the dry season. The soil types therefore limit the areas that can be cultivated and the types of crops, that can be planted in them. This may be why Cascadoux residents tend to plant more long term crops like coconuts or even ground provisions as opposed to Kernahan farmers who plant short-term crops. Cascadoux residents also tend to look for external employment, as the amount of available, fertile and accessible land for crop production is limited.

This lack of availability of fertile land has been and still is the cause of many of the conflicts within the communities and between the communities and state agencies. Many farmers have been involved in disputes due to encroachment on their land by other farmers and also with state agencies due to encroachment by farmers on the boundaries of the wildlife sanctuary. Lack of adequate land and unemployment has also resulted in an increase in the occurrence of praedial larceny within both communities by individuals residing in the area. Many people have lost watermelon crops and ducks due to praedial larceny.

4.2.2 Resource Use and Livelihood Practices

Resource use in Kernahan and Cascadoux is centered on the use of land and water for agriculture and domestic purposes. The land is used for crop and livestock production and the watercourses for fishing as a source of income. Crop production is primarily focused on large-scale watermelon production for wholesale and retail and the production of short-crops such as bodi and ochro for retail. A variety of other crops are also grown for both subsistence and marketing (Appendix 1). Agricultural activities are seasonal due to the topography and soil types in the area, which in turn affects productivity. Maps 3 & 4 indicated the differing land use patterns with the changes in seasons. The lagoons in Kernahan are not cultivable in the wet season as the land becomes inundated thus production is limited to available land on the elevated areas within the community.

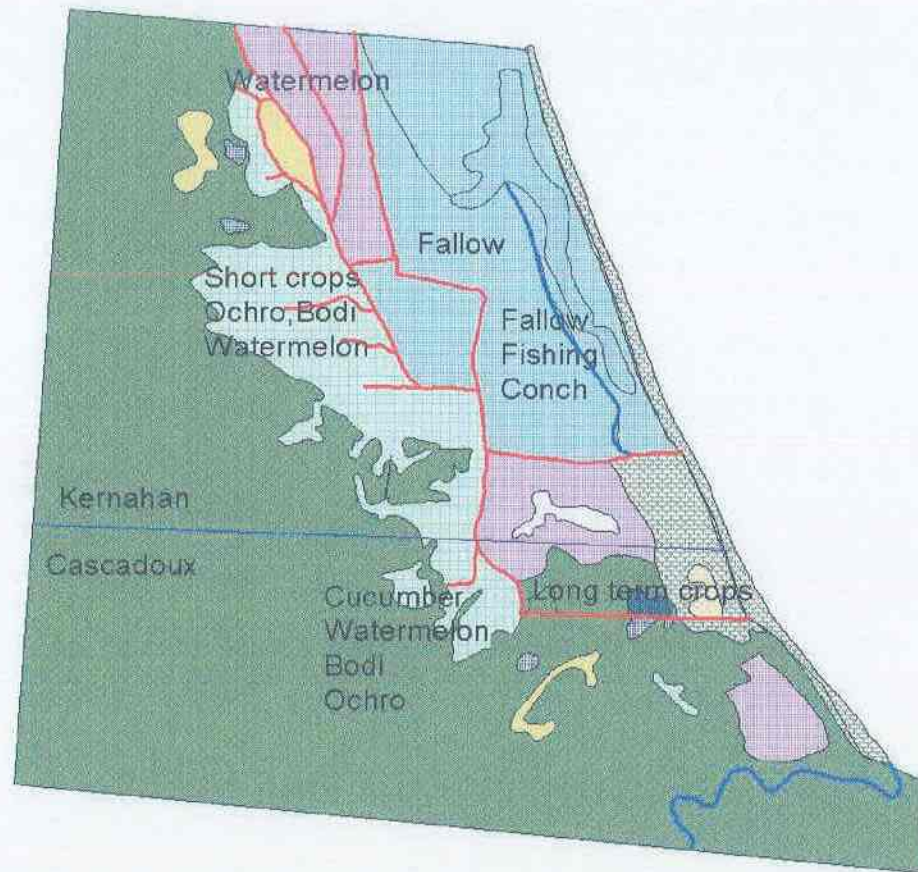
Fishing is also seasonal and centered on harvesting of the cascadura (*Hoplosternm littorale*) and conch (*Pomacea urceus*). Cascadura harvesting occurs during the months January to June and conch harvesting from June to December. Both species are retailed at local markets such as Chaguanas and Sangre Grande on the roadside outside of the Kernahan community. Fishing is a primary source of income for most of the Kernahan community as opposed to Cascadoux residents who are more dependent on crop production and external employment such as fabrication and carpentry.

There are gender divisions of labour and access to resources in agricultural production, fishing and marketing. The higher value cash crops such as watermelon are under the control and responsibility of men whereas women tend to have a greater responsibility for crops considered to be of lesser value such as bodi and ochro. The use of available resources and agricultural problems are usually discussed between men and women prior to final decision making. Marketing of these crops also exhibits differences in gender roles and responsibilities, which in turn reflects on access to and control of resources such as money. Men usually wholesale watermelon crops at the farm and thus have primary access to the funds generated from this activity. Women on the other hand market all other crops at local markets and tend to use the income generated to purchase household needs such as food and other requirements. The utilisation of income is usually discussed between men and women (if married) but the final decision normally rests with the male head of the household, unless the house is female dominated (single female or female controlled), of which there are few.

Labour requirements also show differences in gender roles. Women are more involved in crop maintenance and harvesting, whereas men are primarily involved in land preparation and chemical activities such as spraying.

Wet Season Land use in Kernahan and Cascadoux

Map 3



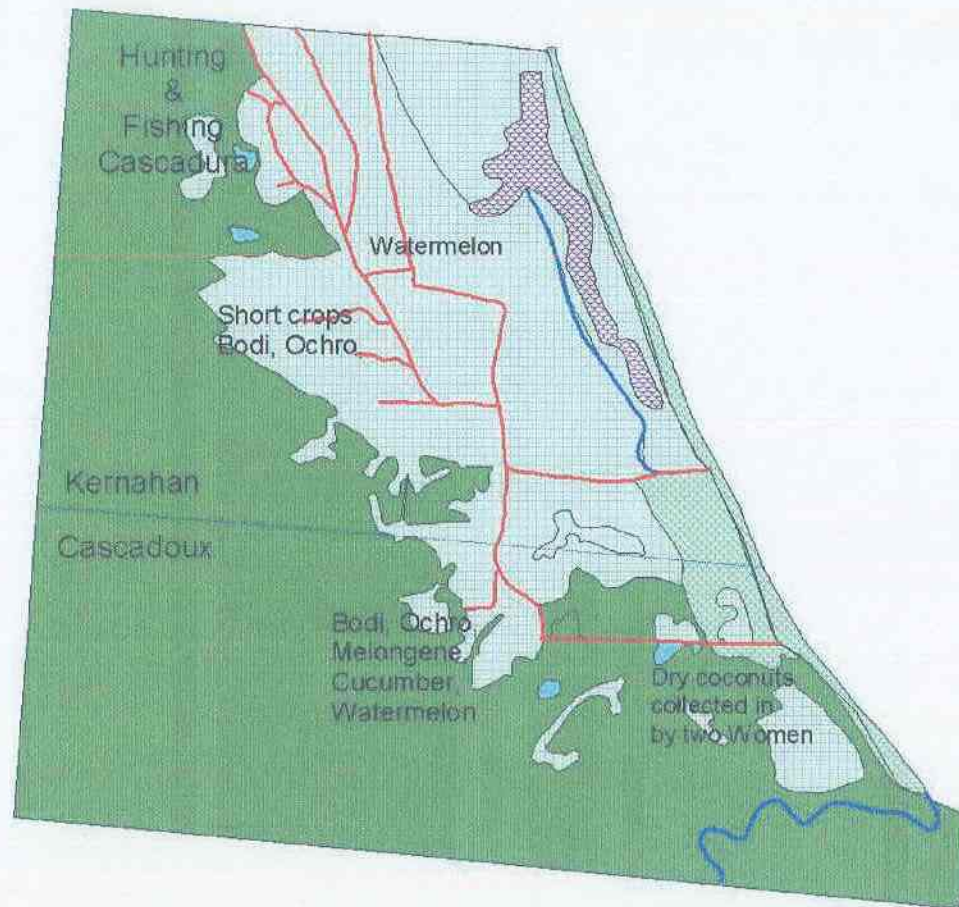
Legend

- Road
- River
- Wet Season Land Use**
 - Coconut
 - Fallow
 - Crab catching
 - Fallow/Fishing
 - Forest
 - Long term crops
 - Mangrove
 - Palm
 - Short crops
 - Water
 - Watermelon

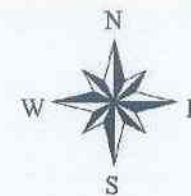
Map compiled from photo-interpretation of Aerial Photographs (1994) obtained from the Lands and Surveys Division. Prepared by Sharda Durbal and Dr. Bheshem Ramlal May 2000.



Dry Season Land use in Kernahan & Cascadoux



Map 4



Legend

-  Road
-  River
- Land use**
-  Coconut
-  Cultivated
-  Forest
-  Mangrove
-  Palm
-  Water

Map compiled from photo-interpretation of Aerial Photographs (1942) obtained from the Lands and Surveys Division. Prepared by Sharda Durbal and Dr. Bhesham Ramlal May 2000

Livestock care is also relegated to women and girls. This is not a primary source of income thus men pay little attention to it unless the animals are used for transport and land preparation. Men and women do however collaborate on severe livestock health issues and decisions on the use of their livestock e.g. whether to sell it or not. The duck project implemented by the Community Development Fund (CDF) and the MALMR exhibits definite differences in gendered responsibility and control of resources. The men were the ones who registered for the project and attended all the training courses for duck production. However, it is the women who have the responsibility for their care and maintenance. Duck production was seen as a high value activity, which may be why men assumed control over this activity. Women may not have registered due to reproductive responsibilities. A similar type project was also implemented for bodi production. More women registered for this project and were very successful. The number of women registering may be a reflection of the perception that bodi, being considered a low-income crop, was the responsibility of the women.

Fishing activities reflect differences in gendered space and access to natural resources. Cascadura fishing occurs from January to June and is primarily done in the deeper forests such as Bush Bush and Anho. Fishing is a male dominated activity with only three women who venture into the deeper forests of Bush Bush to harvest the cascadura. Cascadura fishing is also done in the channels surrounding the Kernahan community. Men, women, boys and girls perform this activity for marketing, recreation and as a source of food for the household. Women do not generally enter the forest, as it is not considered a safe place for them. Both men and women are of the opinion that if they venture into the forest unaccompanied by at least one man and something happens to them, then they deserve it as they had no right to be there in the first place.

Conch catching is also another male dominated activity. Many men go into the deeper forest to harvest conch, however, some tend to stay within the environs of the community and search the flooded lagoons for conch during the wet season where they are abundant. The same women who venture into the forest for cascadura also go into the lagoons to look for conch.

Marketing of the cascadura and conch is another male dominated area reflecting control and access to resources. Men usually transport these commodities to local markets and retail them, whereas women within the community market smaller quantities on the roadside. These women usually walk to Manzanilla/Mayaro to market these commodities whereas men are frequently seen riding bicycles, bull carts or driving cars to transport their conch and cascadura to the roadside.

Resource use in the area, other than for agriculture and fishing, has not been developed to any large extent. There is only now a small group, Nariva Eco Tours (NET) which has started the development of eco-tourism within the community due to the collaboration and support of the Caribbean Integrated Network for Rural Development (CNIRD). This group has been trained in business development, tour guiding and flora and fauna identification due to the efforts of the CNIRD team. NET is headed by a woman and most of its active members are female. The initial group consisted of more men than women but many have since ceased to be active due to livelihood activities that occupy the majority of their time.

The use of the areas' natural resources for the production of local craft items is also a small and infrequently exploited sector for income generation. The Youth Training and Employment Partnership Programme (YTEPP) offered a course in craft production but the skills learnt by many of those who attended are not utilised today. Some young boys and girls have produced baskets, dry floral arrangement and plaques using local flora and fauna. No market survey has been done however to develop this venture into a lucrative enterprise.

Other sources of income for a few include the sale of birds and snakes by men to tourists and scientists. The natural resources are also used as sources of food, recreation, and pets and for medicinal purposes. Sources of food include wildlife such as deer, agouti, tattoo and manicou which are usually caught on hunting expeditions by men for the community. Hunting is a major form of recreation in the area but men too dominate this. Very few women hunt for the thrill of overcoming the wild animals as men do but some do

accompany their husbands on camping trips as they enjoy the atmosphere in the forest. Other sources of food include wild eddoes, wild tannia, cocorite and coconuts that are found in abundance in the forest. These foods are however more frequently used by Cascadoux residents than people in Kernahan. Men in Kernahan use them when camping in the forest for the harvesting of cascadura and conch or when hunting.

Species kept as pets include various parrots, squirrels and agouti. Myriads of plants are also used for medicinal purposes (Appendix 2). Medicinal knowledge can be differentiated between men and women. Men tend to have a larger degree of knowledge of the medicinal benefits of many of the plants found in the deeper forests. Women on the other hand possess a fairly extensive knowledge base of the plants found in home gardens and on the outskirts of the forest. The actual use of medicinal plants is not a frequent practice, particularly by young men and women.

Traditional ecological knowledge (TEK) is a cumulative body of knowledge and beliefs handed down through generations by cultural transmission, about the relationship of living beings with one another and with their environment (Berkes, 1993). According to Doubleday (1993), it represents a collective understanding attained over long periods of time, in particular places, of the relationship between communities and the Earth and encompasses spiritual, cultural and social aspects as well as substantive and procedural ecological knowledge. This knowledge has in the past gone unrecognised. During this study, a wide array of beliefs, practices and medicinal and environmental knowledge was gathered from older men and women and young men in the area. This knowledge is not what one would call traditional indigenous knowledge for two reasons:

1. The communities are fairly young and have not developed an extensive link with the environment to generate any in-depth indigenous knowledge base.
2. The beliefs and practices discussed have their origins in the areas where these men and women originated and take into account their cultural, religious and ethnic backgrounds.

A listing of many of the practices and beliefs gathered over the course of the study is provided in Appendix 3.

4.2.3 Impact of Human Settlement and Livelihood Activities on the Kernahan/Cascadoux Communities

The large degree of migration to and subsequent agricultural activities in the Kernahan/Cascadoux area has resulted in the destruction of large portions of vegetation. This in turn has affected the type and quantity of vegetation found within these communities, as well as, the quantity of wildlife. Vegetation has been removed and the natural drainage patterns of waterways have been changed for the construction of homes and the cultivation of agricultural crops. The landscape has changed from being one of dense forest to sparse vegetation. From the Geographic Information Systems (GIS) conducted it was found that a total of 1393 hectares of forest has been cleared since the first settlers in 1942.

The cultivation of marijuana as a primary source of income in the early years of settlement resulted in the destruction of large areas of vegetation in the deeper forest. The nature of cultivation resulted in a reduction in and loss of habitat for many wildlife species. Further damage to the forest occurred as a consequence of police raids since marijuana fields were usually burnt to destroy the crop.

Agricultural activities have had a significant impact on the natural environment. Slash and burn agriculture has resulted in the loss of large numbers of wildlife due to uncontrolled fires and soil deterioration. Unsustainable fishing practices has resulted in, according to fishermen, a decline in the cascadura population, as well as, a decrease in their size. Cascadoux residents have complained that the fishermen in Kernahan are careless and unconcerned for the environment and the resources from which they earn a living. Their wanton use of fish traps, the capture of fish guarding nests and cascadura eggs, as well as, the dumping of unwanted fish on the riverbanks have resulted in a decline in the quantity of large cascadura available today. Their uncontrolled use of fires has also affected the wildlife population and the survival on the river conch. When the lagoons are set on fire in the dry season to clear the land many of the young conch are destroyed. The presence of young men and women who have been trained as fire

wardens by the Forestry Division of the MALMR has contributed to some extent to the reduction in the damages caused by uncontrolled fires. These individuals, however, still require a great deal of training and confidence building to battle the older farmers who pay them no attention because they are young and, as they see it, have no authority over their activities.

Since agricultural production has increased in the area there has also been widespread use and abuse of agricultural chemicals. Due to the monocultural nature of production in Kernahan and Cascadoux, there has been an increase in the incidence of pest and disease problems. This has resulted in the overuse of chemicals that may have long term effects on the fragile ecosystem in the area. Pesticide testing in both communities is necessary to determine the effect, if any, that these chemicals have had on both the environment and the individuals using them. No safety precautions are adhered to by individuals using chemicals except for the few women who wear long sleeved shirts when spraying, although this is done more to protect their skin from the sun than from chemicals.

Lead poisoning is also a potential cause for concern in the area due to lead smelting practised by some men. Lead from old batteries is removed and melted to make home-made sinkers for cast nets. The rest of the battery is usually discarded in or near watercourses. Garbage disposal in and around watercourses is also cause for concern as many plastic bottles and bags can be found floating in rivers.

4.2.4 Networking and Capacity Building in the Communities

Networking was a significant factor in this research, as such, various activities were encouraged and implemented over the course of the research process which directly involved community participation. A series of lectures and discussions were arranged based on identification of the communities' needs and areas of interest to both communities such as access to agricultural loans, the use of chemical and different methods of crop production. In order to increase environmental awareness other

discourses were arranged on issues such as the importance of wetlands, lead poisoning and visits to a wildlife exposition and a zoology museum. Assistance was provided to the Nariva Environment Watch Society (NEWS) and the Nariva Eco-Tours (NET) for planned activities and implementing a management team for NEWS. Contacts were also established with various state and environmental groups such as the Environmental Management Authority and the Manatee Conservation Trust to create external awareness of the groups activities and needs.

Conclusion

The use of natural resources in Kernahan and Cascadoux is concentrated around agricultural activities. Both communities exhibit definite gender roles and relationships with the environment and the use of available resources. Men and women generally work together towards a common goal of income generation and economic stability for their households. All activities and decisions are thus focused on the attainment of these goals. Their relationship with the environment is therefore based on extraction to meet nutritional and economic needs.

The natural resources have been and still are being exploited with no significant degree of concern for sustainability. Education and training are therefore required at different levels and for different target groups to achieve any level of sustainability and 'wise use' of the available resources. The development of sustainable agricultural practices and a sense of ownership of the natural environment must be developed in order to strike a balance between use of the environment for livelihood activities and conservation of the resources for future generations. There is a greater need for state, community and NGO collaboration at the community level if any sustained development is to be achieved.

4.3 Community Level Governance in Kernahan and Cascadoux

Defining Governance

Bedano (1996) defines governance as “systems of shared authority, planning, direction and control among the political leadership, non governmental organisations and other sectors of the society over internal and external events which affect welfare and equity.” The study of governance clearly identifies the key players as being the state, civil society and the private sector. Leftwich (1994) indicates that governance is based on the belief that there are forms of administrative control in human societies, which are heavily influenced by internal and external, political and economic power and control relationships existing in the society.

At the national level, projects and policies are often developed or proposed by state agencies and/or Non Governmental Organisations (NGOs) for areas such as the Nariva Swamp. There is however, seldom any analysis and understanding of local level governance and power relations, which may impact on the success of any project/plan being implemented in the area. This study affords us a unique insight into the understanding of the Kernahan/Cascadoux community and the manner in which the local administrative and control structures function to develop and operate in a community existing in a volatile natural, political, economic and social environment.

The key areas of focus for this study embodied:

- an understanding of the culture of governance in the community
- the identification of major stakeholders and their roles
- community involvement in co-management and sustainable natural resource use.

4.3.1 Decision Making and Levels of Influence in Kernahan and Cascadoux

In Kernahan/Cascadoux three distinct levels of influence can be identified which significantly impact on governance related issues. These levels are represented diagrammatically below:

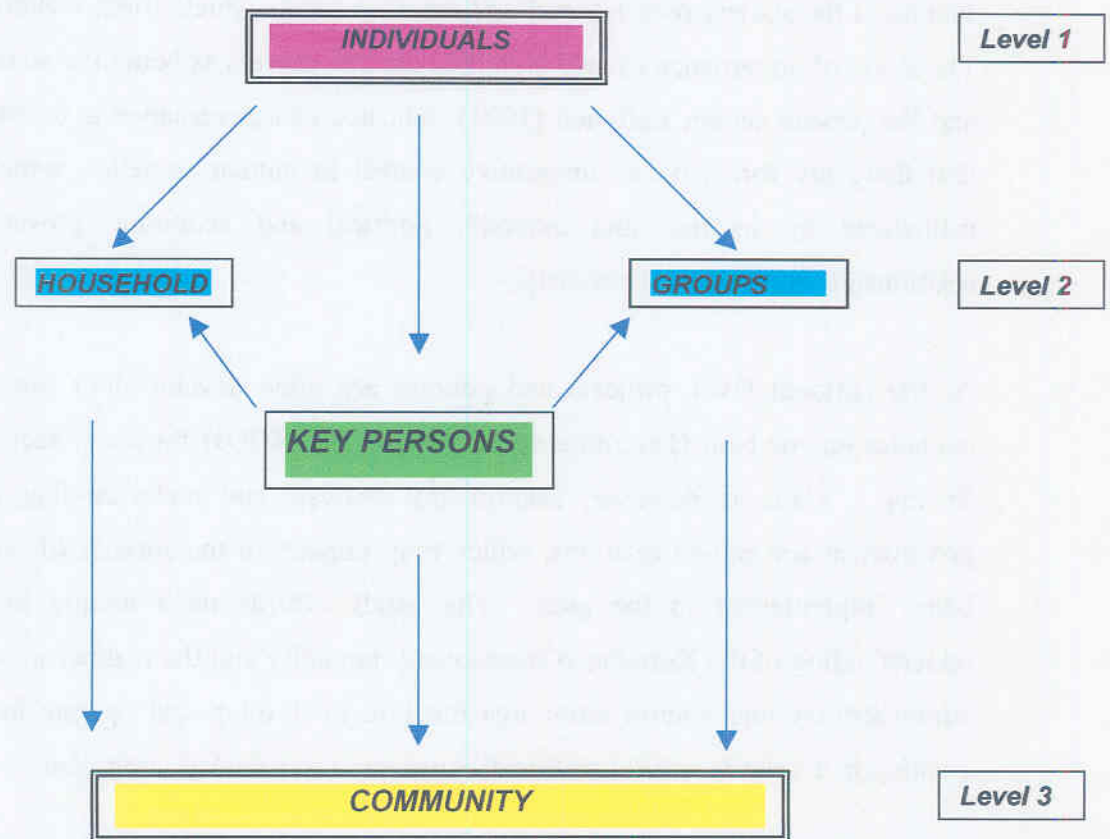


Diagram 1. Levels of Decision Making in Kernahan and Cascadoux

Level 1, although individuals constitute the core of decision-makers, they seldom exert this influence directly at the community level. Rather, individuals can be linked to households and groups (formal and informal) which are used as mechanisms for influencing community based decision making. There are obviously some individuals whose opinions and views are more heavily weighed than others. These individuals are considered key persons of influence and derive their power from education, wealth and linkages to external bodies/ parties that play valuable roles in the community e.g.

religion. These key persons are primarily male. In almost all cases where women are considered influential, this influence is derived from their association with groups and the external linkages which they have developed.

All of the parties identified at level 2 interact to determine the outcome of decisions made at the community level (level 3). The most significant contributors to these decisions however are the various groups which are found within the community. These groups can either be of a formal or informal nature.

4.3.2 Household Decisions

Household decision-making is indicated at level two of diagram 1. While this topic is covered in greater detail under the socio-economic component of the project, it is necessary to introduce it at this stage because it has implications for the role of men and women in community decision making.

A household may comprise a single individual or several family members. The highest incidences of single or single parent households are found in Cascadoux. In these instances – the single parents are primarily females who are widowed or separated from their spouses.

It is also common to have several families residing in a single physical dwelling with individual sources of income and maintenance. There is however some level of social capital transferred between these families. Jordens (1999) defines social capital as “the network of social connections upon which people, organizations and communities can draw to accomplish a goal of mutual benefit and/or the shared conduct and beliefs that facilitate co-operation for mutual benefit.” It was found that social capital transfers and shared decisions in multiple household settings and between households in a family network related primarily to the access and control of shared resources, particularly land. In cases of conflict between individuals and households in a family network, the matriarch or patriarch of the family makes the final decision.

Male and female roles are differentiated at the household level. In independent household settings it was found that while most activities and decisions appear and are said to be discussed jointly, by both the male and female, the male often makes the final decision. The culture in the community is one which clearly promotes the male as the “head” of the household and as such makes the decisions on issues which their culture dictates as more important – particularly related to control of resources such as finance and land. Decisions related to activities perceived as less important to males, e.g. childcare are commonly left to the females in the household.

There are however exceptions to this community accepted cultural protocol, as there is evidence of some female dominated households in the community comprised of both men and women.

4.3.3 Stakeholders/Groups and Governance

Micro level governance allows for a greater level of insight into the sources of power, control and conflict management in the community. In the Kernahan/Cascadoux community there are a large number of stakeholders who can be characterised into groups and who exert varying levels of influence on community based affairs. These groups can be both formal and informal in terms of structure and organisation and are either internal or external to the community. See Digram 2. – Stakeholder/Group Classification below.

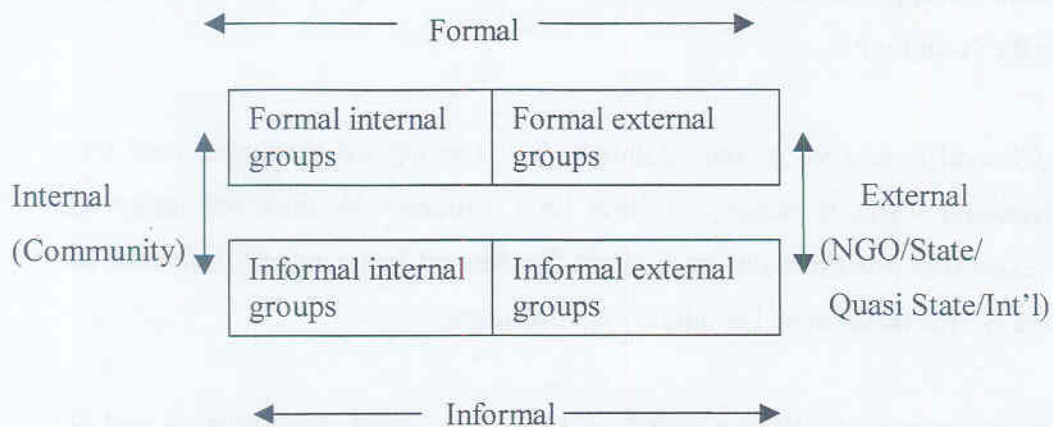


Diagram 2. Stakeholder/Group Classification

Regardless of the nature or source of these stakeholders, their interaction with others creates a unique mix of affairs, which characterises the governance issues associated with the community.

4.3.4 Formal/Internal Groups

Formal/internal groups encompass those bodies, which are officially recognised within the community and have association with an affiliated national system/group. The key formal community groups include the Village Council, environmental groups (NEWS and NET) and religious groups. Involvement in these groups by members of the community directly characterises the roles of males/females and youth in the villages and is a clear indicator of what issues are important to whom.

The Village Council is associated with the political/economic affairs of the community. It is not a true representation of all the community issues because of a skewed membership. In fact, in the recent past, accusations have been made by members of the community, of the Village Council being used to satisfy selective/specific needs of

members. There are approximately 80 registered members voting on behalf of 400 plus individuals in the community.

The Village Council executive is male dominated. The highest post ever held by a female was treasurer – this however may have been a token one, since her father and brother held executive positions on the council for several years prior. A female has never contested for the position of President/Vice President.

The environmental groups (NEWS and NET) and religious groups (Pentecostals and Sai Baba Sects) have heavy levels of external influence and support. Within the community however, their membership and base of support lay with the women and youth (male and female). The key religious groups consist primarily of a female executive with the “leaders” being from outside. Most members of the community however associate these female executives as heads of the various religious groups.

The two environmental groups consist primarily of youth who have undergone various forms of training with NGO’s and State and Quasi State Agencies. Nariva Environmental Watch Society (NEWS) and Nariva Eco Tours (NET) have cross-over members. While NEWS has as its primary aim conservation/sustainability of resource use, NET has as its focus the use of Eco Tours (Sustainable) as an alternative form of employment for the community. They often work together and collaborate on issues. It is important to note that NEWS is headed by a 17-year-old male and NET by a housewife/mother.

These leadership roles in religious and environmental groups, supported by an analysis of the members, clearly shows that issues related to these two areas are closer to youth/females and these groups allow for a legitimate avenue by which they can influence the community.

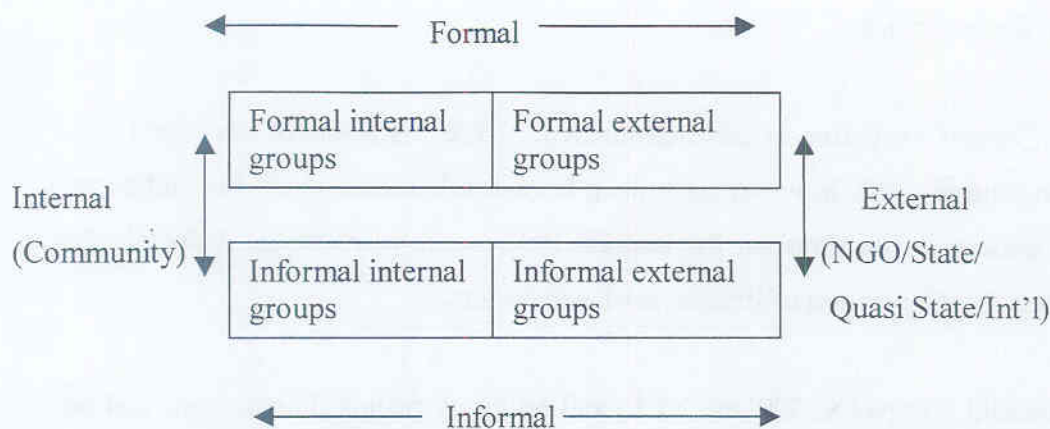


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4.3.5 Internal/Informal Groups

While formal/registered groups play an important role in the community, it is important to recognise the significance of very powerful pressure groups, which exist in Kernahan and Cascadoux. There are three key informal/pressure groups, which have been identified.

-Economic Bloc

It is clear that the economic activity with which an individual is involved (legal or illegal) and the level of wealth, which that individual possesses, undoubtedly characterises his/her position and importance in the community.

Firstly, income generation is perceived to be male activity. In reality however, women play an important role – particularly in the cultivation of short term cash crops and the sale of conch/cascadura at the roadside. In fact the few independent women in the community are financially better off than most males. Because of community culture of associating males with economic activities, females are generally removed from any community-level, political and economic decisions e.g. removal of farmers squatting on lands considered part of the Bush Bush Wildlife Sanctuary.

Secondly, among the males in the community it was found that men engaged in a particular activity e.g. commercial watermelon farming vs. fishing /conch catching, commanded different levels of respect and status. Watermelon farmers would often socialise together and generally consider fishermen/conch catchers to be lower in the community status quo. This lower level may also be attributed to the fact that the commercial farmers hire fisher folk/conch catchers to work their fields on a seasonal basis.

- Social/Recreational Groups

Social/Recreation groups are derived from the interaction of other key groups i.e.

Economic, Family, Social support. While there are no “organised” sporting or

recreational activities associated with the community internally, there are important considerations:

1. Most male youth in the area consider hunting and fishing to be recreational activities. There is a small level of sporting activities e.g. football among male youth in Cascadoux and cricket among young females in Kernahan. More often, one would find young women engaging in recreational activity related to family occasions or the church/temple e.g. singing and dancing.
2. Female recreational activity is commonly carried out within the community. Men and male youth would more often venture outside to participate in social/recreational events. Males are commonly afforded a greater level of mobility for social activities.

Some activities that are considered recreational by both young male and female members of the community can contribute to their economic well being. Hunting for instance is predominant among the males in the community and often serves to supplement their incomes either through home consumption or via sales of wildlife meats. While this contribution may be infrequent, it is one that must not be overlooked when linking recreation to income generation.

- Family and Social Networks

There are two dominant family systems/networks in Kernahan and three in Cascadoux. Although providing an intensive social network, this does not automatically translate into a support system. Many older residents consider themselves temporary dwellers entertaining a conscious hope of returning to the Indo-Trinidadian villages in Southwest Trinidad from which they originally came. The present generation is the first whose primary experiences and loyalties are centred around Kernahan and Cascadoux – because of this, one can see the gradual development of social and family support networks which are unique to their social, economic, political and natural environment.

4.3.6 Informal/External Groups

Informal groups that originate from outside the community can exert significant levels of influence on affairs of the community. Undoubtedly these informal groups have impacted on the social, cultural and economic factors that characterise the community. But the question remains – who are these groups and how do they influence Kernahan and Cascadoux?

Three key informal groups can be identified as:

- Private sector/commercial
- Charity groups/bodies
- Researchers

These groups generally tend to operate selectively within the community i.e. their interactions are limited to specific individuals or community groups who derive perceived community status and power because of the relationships which have been developed with the external party. Very often these relationships translate into “Value/Wealth” inflows into the community either through direct commercial trade e.g. between watermelon buyers and farmers or through gifts e.g. donations to households and religious groups from charity organisations and private individuals including researchers.

Importantly, a clear gender differentiation of roles can be identified between male/female interactors in the community and these external informal groups. Simply stated, private sector (wholesale) interaction is primarily a male function within the community. Females tend to have a larger role at the roadside/retail level for crops and fish/conch. With charity bodies/groups however females, in the community dominate the relationship with these external parties. Researchers generally interact with males and females in the community depending on the nature of the research.

4.3.7 Community Participation and Co-management of Natural Resources

Due to the limited alternative employment options available to residents of Kernahan/Cascadoux and the historical relationship with land and agriculture as a means of economic survival over the generations, a strong dependence on the Nariva ecosystem has evolved. While the intensification of commercial cropping systems has promoted the destruction of forested areas on the perimeter of the populated areas, there has been a new thrust for income generation through the eco-tourism initiatives of state agencies and NGOs. Thus there are two differing views among groups in the community with regard to the utilisation of environmental resources.

Increasing international pressure for protection of the Nariva Swamp (a direct result of being party to the Ramsar Convention) on the GORTT has seen the relevant state agencies initiating action at the community level. One of the primary initiatives undertaken is the re-introduction of a ½ mile “buffer zone” around the Bush Bush Wildlife Sanctuary. This, however, means the removal of squatter farmers engaged in commercial cropping. A distinct divergence of consensus has originated among community based environmental groups, selected community members and affected farmers. This conflict has forced the MALMR to severely limit the level of participation in this decision making process.

Oldfield (1998) indicated that few buffer zone strategies have succeeded in merging conservation with land use systems of local people. Members of these communities often have these strategies imposed on them by external agencies rather than developing them through a participatory process. This is exactly the case occurring with the buffer zone around the Bush Bush Wildlife Sanctuary.

Undoubtedly, there is a need for more community level participation in affairs that affect their social, political, economic and cultural well being. The community has to be empowered to mobilise themselves, seeking their own interests rather than simply being dictated to by other sectors of society albeit civil, state or private sector. Of course, there

are different types of participation – from passive to active participation in decision-making and control which characterises Kernahan and Cascadoux at different points in time and under different circumstances.

Community level participation in Kernahan and Cascadoux has traditionally been low. Several reasons have been identified for this -:

- projects developed externally without consultation
- selective participation by external stakeholders
- conflicting internal interest groups
- gatekeeping by prominent community members
- expectation of immediate results.

State agencies and external parties need to take these factors into consideration when developing projects directed to Nariva Swamp and more so the areas around the Kernahan/Cascadoux community.

Conclusion

The Nariva Swamp will continue to be of significant importance as long as the debate on sustainability and conservation prevails. While the Kernahan and Cascadoux communities on the outer perimeter of the swamp do not constitute part of the Natural ecosystem of the area, it undoubtedly adds to the political, social/cultural and economic climate which characterises the area.

4.4 Socio-economic, cultural and gender issues in Kernahan and Cascadoux

4.4.1 Introduction

The Nariva Case Study examined the relationship between people and the environment and focused specifically on three themes: sustainability, livelihoods and equity. This component of the project highlights some of the connections between these three research areas. Four domains identified by the ISLE project set the goals and structure for the fieldwork in this component. The domain questions determined the kind of data that we sought to gather and the methods used.

4.4.2 Livelihoods, Occupations and Lifestyles

The first domain generally looked at livelihoods, occupations and lifestyles. Among others questions, it specifically asked about the household gender and age division of productive and reproductive work. It also looked at how household wealth was obtained, by whom and the ways in which control of household resources was negotiated. Statistical data on educational levels of family members, household size and composition, and household resources was also emphasised.

Data on production and reproduction came from semi-structured and unstructured interviews, and participant observation. We found that women and girls did far more reproductive work than men. This included cleaning the house and yard, cooking, collecting water and childcare. Schooled in reproductive skills, girls became proud of their ability to cook and clean and developed ideals of being a good mother and wife. This is especially true for girls with little formal education. Men primarily did productive work (fishing or farming), but couples would share responsibilities when one partner was sick or when the work was too much to do alone. We interviewed couples separately and this helped us triangulate our information. For example, men would tell us that they

helped cook and clean at home and, when we asked women, they would tell us that in fact their husbands usually came home from the garden and relaxed in the hammock until dinner was prepared.

Children who stayed home from school helped out either in the home or in the garden, sometimes going out to catch cascadox for meals. However, they mostly played together in the road. Children of poor or sick parents were often the ones that were never sent to school. During interviews, parents often said that they planned to send them, but often we saw no change.

In Cascadox, we found two households where household responsibilities were shared e.g. the two partners would cook and wash clothes together. One of these households was Afro-Trinidadian and the other was 'Dougla'. There was also a very equitable sharing of power and decision-making in the relationships. These women had a great deal of freedom in comparison to those in Kernahan. One mother in Cascadox went against her husband's wishes and worked to send her son to school with her own money. This exemplifies the power that women use when they are mobile and make an independent livelihood.

Among the Indo-Trinidadian households in Kernahan, women made the daily decisions about the house and groceries. However, final decision about spending and saving, childrens' education, women's roles, freedoms and mobility and crops rested with men. Men often discussed decisions about the household with women, but there was little room for negotiation if women disagreed. Women told us that they compromised many times when decisions were made 'jointly'. We found examples where husbands reacted violently when women would not give them money to spend on alcohol and although women often 'quarrelled back', many were fearful of inciting open conflict. Essentially, men are considered the head of the household and final decision-makers. Cultural traditions and religious norms buttress their position. Educated Indo-Trinidadian women or those from wealthier families in Kernahan were an exception. These women tended to be more outspoken and dominant in their households.

Further research is needed on the impact of race and educational levels on the way that gender roles are established in a household. In general, we found that women had more livelihood options in ethnically diverse Cascadoux than predominantly Indo-Trinidadian Kernahan. Many earned an independent income and more often, they also controlled the household finances and in a greater proportion than in Kernahan, they were equal or primary decision-makers in the household.

Data on sources of income were combined with the information from the bio-diversity component as most villagers made their livelihoods from natural resources. The two villages of Kernahan and Cascadoux differed in resource use and Cascadoux villagers tended to have more livelihood options outside of the village because of their education or skills in trades such as upholstery. Cascadoux villagers tended to have greater consciousness of environmental issues than Kernahan residents. Residents in Cascadoux claimed that this was because they were more educated, had livelihood options that did not depend on direct exploitation of the surrounding natural resources, were more literate and less poor.

For many households in Kernahan, public assistance, pensions, widow's allowances and disability allowances are also considered sources of regular income. Those who earn their entire income, look down upon this dependency. For example, residents in Cascadoux have commented that Kernahan people all want charity and public assistance. Young men who do not migrate, face few employment opportunities and many aspire to get a government job cleaning the channels or working as labourers for a few days a month with the state-sponsored Unemployment Relief Programme (URP). Young men in Cascadoux explained that access to loans would help them start their own gardens and small businesses, but loans are very difficult for most villagers to access because many lack a land lease, collateral or a co-signatory for the loan. This is particularly true for Kernahan. However, a few wealthier villagers have been able to secure loans for lucrative cash crop farming.

In documenting aspects of household wealth such as a car, bull cart, tank or concrete house, we compared our data with people's perceptions of wealth and class, based on the PRA method wealth ranking. Interestingly, those with larger houses or more material goods were considered wealthier, but through the wealth ranking other criteria such as education, political contacts and the ability to hire labour were added. Even if children also worked for their family's livelihood, children were not intrinsically valued as a household resource and a large number of children were not a sign of wealth or status. Of the two villages, there were more cars, concrete houses and a larger proportion of comparatively wealthy villagers in Cascadoux. As well, the teenage and young adult males earned more money and spent more of it on non-essentials and recreation.

Statistical data on educational levels was sometimes difficult to obtain. Some villagers did not want to discuss their level of schooling in front of others or have such information written down and were very suspicious of such questions even when we explained how such data could benefit them. Those with even a year of secondary education often felt that they had more status than less educated villagers and were very willing to tell us about who never went to school or who could barely read. Educational levels were also difficult to assess because villagers attended primary school at different ages and sometimes a seven year old and an eleven year old would be in the same class. Age was not an indicator of the standard at which a child left school and conversely class standard did not correlate with age. Those adult villagers who had attended primary school often remembered the age and not the standard at which they left school. Even in these cases, many did not attend regularly and statistics on educational levels were qualified by these factors.

In Kernahan, people aspire to educate their children so they may have better opportunities, easier lives and be more able to break the poverty cycle. In reality, there is a gap between aspirations and achievement. In both villages, all the upper income groups send their children to school. School attendance, particularly in Kernahan, is less regular for middle and low income groups. There is a trend for children of these villages to fall out of the education system after having failed the Common Entrance examination. There

is no disparity in the educational opportunities open to girls and boys and parents aspire to see both educated. In both villages, few adults finished primary school. In Kernahan, only six women ever attended secondary school and in Cascadoux seven women have attended secondary school. One teenage girl in Kernahan is currently in secondary school and there are four girls in Kernahan who have been to secondary school or are still attending. In Cascadoux six men have attended secondary school while only five attended secondary school in Kernahan.

An individual's level of education determined the skills he or she went on to gain. This and gender norms decide the job opportunities open to youth and their aspirations. Youth with less education and more gardening experience tend to become farmers. Those who are male and have spent more time at school are more likely to become employed outside of the communities. Girls, including those who have attended school, still tend to take on a primarily reproductive role and to pursue fewer employment opportunities than men with equivalent education or skills. This is changing for younger girls who increasingly talk of challenging stereotypical gender roles, leaving violent relationships and deferring marriage to work or have a career.

The data summarised in this domain highlights the way that gender and class affects villagers' ability to generate wealth, provide better opportunities for themselves and their children, control household resources and establish equity in household responsibilities and decisions.

4.4.3 Livelihoods in Relation to Social Capital

The second domain focused on livelihoods in relation to social capital. What networks did women and men (separately) have and how did they or their families benefit? Who was involved in community organisations and how? These questions inquired into how and why villagers co-operated, helped each other with credit, savings or labour and

exchanged social and material resources. Interesting information about class and gender relations came out of the data in this section.

Villagers' lives are made easier through the use of social networks to supplement resources such as water and crops, and to provide childcare or job opportunities. People's primary networks are with members of their own sex or household groups. Social networks in these villages rely on trust, reciprocity and compromise. Women's networks are primarily with other women and men's networks primarily with other men. Adult villagers of different sexes do not spend leisure time together on their own. In both communities, married women are not part of networks with men for fear of conflict with their husbands. This is a result of gendered sanctions and patriarchal control.

Networks offer women opportunities to meet potential marriage partners, share information on reproductive and health issues, and get help to meet demands on their labour. It particularly offers young women opportunities to work or benefit from training, live in another town or village with relatives, enjoy leisure for extended periods with family living out of the village and to access technology and urban styles of living.

Women's leisure is primarily with extended family or with those with whom they shared reciprocal relations such as sharing or lending household goods. Sharing childcare legitimises women's leisure time. It offers women a space to have conversations about intimate topics and secrets without their husbands' knowing while they shop together for their families or to the beach with their children. This may help women cope with isolation, oppression, violence and an unsatisfactory marriage.

There is a positive correlation between networks and mobility. Women have fewer networks than men do because they are less mobile. One of the reasons that women's networks are limited is the inequity that exists between men and women at the household level. Women's mobility, freedom to organise and ability to challenge the status quo are thus limited. Also, their subordination limits their participation in community issues and

actions. Women either have too much to do and their responsibilities require that they stay at home or, out of fear, they obey partners who want them to stay at home. In contrast, men are free to participate in public and community activities. It is therefore more difficult for women to build networks to represent their interests and a consensus among women on community issues.

Few women (usually the educated or wealthy) play an active role at the community level and those involved are supported by their husbands. Women's leadership at the community level is not taken seriously by most men and women who defend this view. Women have not organised to contest this lack of equity at the community level and largely, their networks have not addressed their strategic needs or increased their leadership and participation in community affairs. Religion offers women a legitimate source of leisure and an opportunity to reduce their isolation.

It should be noted that women's networks offer support to women dealing with intra-household conflict as villagers' loyalties are relied upon. These networks are less supportive of women during intra-household conflict as villagers are unwilling to come between a woman and her husband. This unwillingness is founded upon notions that domestic difficulties are a private matter, that women should not question their husbands' authority and that violence against women is often deserved.

Intergenerational networks play a part in leisure, guidance, production, childcare, safety and community building. There are no places or activities where inter-generational groups of women gather similar to the fishermen at their camps in the forest. Women's inter-generational networks are therefore limited. Groups of women do gather while selling on the road or collecting water, but the time and opportunity for leisure is limited in these situations.

In Cascadoux, male youth have access to the influence and companionship of older, often single men. They meet together in the evenings for leisure and sports. Young men benefit from these networks because older men offer reproductive advice, guidance, credit and

short term employment. In both communities, men have strong personal networks, both peer and intergenerational, possibly because of men's greater freedom of mobility and leisure. Elderly villagers who cannot support themselves depend heavily on their intergenerational networks. Usually, they live in their children's homes or are visited on a daily or weekly basis by relatives. Siblings often share responsibility for their elderly parents.

People in positions of leadership in village churches or in the Village Council tend to cement their power by distributing benefits through their own social network. Young people and poorer villagers benefit from their networks with wealthier villagers because they can get help accessing loans and credit. This can be a crucial aid for many villagers who do not earn enough to save. Networks are also important to the running of small businesses. For example, village seamstresses get business from friends and family to make clothes and school uniforms. As well, local parlours and taxis often offer credit, especially to family members. This can be detrimental if people do not pay their debts and extended family relations can be strained if the problem occurs among family members.

Outside networks can provide remittances, opportunities for children to be educated or find work outside of the village, referees for job applications and advice. During the period of our fieldwork, we often brought people from environmental organisations, tour groups, funding agencies, successful farms and the University of the West Indies to share information with and give advice to villagers. We hoped that the villagers would pursue these links. However, this rarely happened and can perhaps be explained by villagers' lack of confidence, communication difficulties or the absence of any pressing need.

Historically, migrants to Kernahan sustained their loyalty and ties to their original networks as their primary reference group. To some extent, this mitigated against the formation of social networks, unity and cohesion inside the village. A disjointed, temporary, migratory character typified community relations in Kernahan. This was found to a lesser extent in Cascadoux partially because people intending to establish a

permanent residence had settled in this village longer. Common history and social ties are more greatly shared among the present generation whose primary reference point is based on village life in Kernahan or Cascadoux where many have been born. This is important as the present generation may not see the village as just a place to make money, but as their home and an environment they may want to protect.

In conclusion, women primarily use networks for assistance with their practical needs whereas men use their networks primarily for leisure and production. Women have not been able to use their networks to increase their control of, participation in or access to community space. However, family connections and friendships prevent women from being entirely isolated in or around their homes. In general, wealthy villagers are less dependent on community networks than poor villagers. Life becomes particularly hard for women from poor families when networks are broken because of conflict and they lose sources of help and charity. As women and poorer villagers are more reliant on networks to fulfil their practical needs, the challenge is to help empower these groups to address their strategic needs¹³ in the community. Currently networks are underutilized in this regard.

4.4.4 Gendered Power Relations

Gendered power relations is the theme of the third domain. Questions here inquired into how men and women negotiate conflict and power struggles in the household and in the community. Reproductive control and health issues were interrogated. Some of these

13 "Strategic gender needs are the needs women identify because of their subordinate position to men in their society. Strategic gender needs vary according to particular contexts. They relate to gender divisions of labour, power and control and may include such issues as legal rights, domestic violence, equal wages and women's control over their bodies. Meeting strategic gender needs helps women to achieve greater equality. It also changes existing roles and therefore challenges women's subordinate position... Practical gender needs are the needs women identify in their socially accepted roles in society. Practical gender needs do not challenge the gender divisions of labour or women's subordinate position in society, although rising out of them. Practical gender needs are a response to immediate perceived necessity, identified within a specific context. They are practical in nature and often are concerned with inadequacies in living conditions such as water provision, health care, and employment." (Moser: 1993: 39-40)

issues of power and control overlapped with data being gathered for the governance component of the project. The governance component also looked at decision-making at household and community levels. Thus, for this section we were able to share and compare our findings. Issues of negotiation and power also came up in questions about household decision-making from the first domain which asked, "Who decides what?" Themes in this third domain also overlap with the fourth domain focusing on indigenous practices. Questions raised there asked about the gendered sanctions constraining men's and women's lives and mobility. Examining negotiation and conflict resolution allowed us to look more deeply into the ways that gender norms and gendered sanctions affect decisions made about children's education, women's mobility, women's and men's leisure time, contraception and family size, crops, money, religion and domestic violence.

Although life in the villages of Kernahan and Cascadoux is harmonious, latent conflicts flare up over time between family members and neighbours. These conflicts occur for various reasons. At times, inter-household conflicts among family members or neighbours sometimes take place when men have been drinking alcohol. In cases where the families exchange food or childcare, such altercations can threaten the relations that women depend upon for help with reproductive work.

Theft of tools, pet agoutis, chickens, ducks, watermelons or coconuts and 'parlour'¹⁴, goods also occurs in both villages. If someone is caught or suspected, this may lead to violence (such as chopping) between men. Violence can also occur if the person's family feels they have been wrongly accused. Women negotiate the security of their property by staying home to guard their ducks or parlour and by looking out for each other's interests. Having to guard their homes keeps many women from straying too far or for too long thus affecting their mobility. This task has fallen primarily to women.

Gossip is a common method for expressing social censure, debating views and choosing sides on an issue. For example, people used gossip to make disparaging remarks about a married man rumoured to be gay and to have sexual relations with other men in the

¹⁴ Parlour – small shop

village. The gossip reached his wife and discussions about the issue led to domestic violence. We identified only one family in Kernahan that supported a woman experiencing domestic violence by threatening to sever ties with the family. This was a very supportive gesture especially as the families were unrelated. People are aware of the households where violence takes place and largely, disapproval of such behaviour is only expressed in gossip. Gossip also causes conflict and may put women at danger if their husbands hear a rumour they perceive to be true. It may also contribute to family conflict if parents believe false information about their children's, especially their daughters', activities. Women's extra-marital affairs are a particular source for continuous gossip. These women usually face disparagement and are considered sexually loose. Women who form relationships with nephews and cousins are also targets for decades of disdain and gossip. Indo-Trinidadian residents do not condone inter-racial relationships because they think the clash of cultures will make the marriage unsuccessful. Indian women who have sexual relations with non-Indian men lose the respect of many Indian men and women.

While we were conducting research, one woman was beaten by her husband because of a rumour that she was seen with a man (her husband's cousin) with whom she had an affair twenty years before. She was beaten and forbidden from interacting with him. When violence occurs women rarely go to the community police to report their husbands. In one of the few incidents that we heard, one woman went to ask the police to talk to her husband to 'frighten' him. Women also negotiate with abusive partners by leaving to spend a few days at their families' home or running away to start a relationship with someone else. We heard of only one case of rape and one of attempted rape by men in Cascadoux. Neither of these was reported.

Sexual relations can additionally lead to inter-family conflict. It is not uncommon for teenagers to elope and for the girl to move into the boys' house without parental consent. In Kernahan and Cascadoux, honour is an important part of a girl's identity. These are examples of young women challenging gendered sanctions based in religion and culture. In one instance, two teenagers who are first cousins began a relationship and their

families were very fearful that it would be consummated or become permanent. The boy's family blamed the girl's parents for letting her out of the house and giving her the freedom to mingle with male and female youth in the road. The girl's family argued that the boy was taking advantage of the girl. Verbal abuse and violent conflict arose between the parents of the families and between the parents and their own children. At one point, the girl's father even got into a physical fight with the boy. The two teenagers eventually began to live together at the boy's house. However, animosity continues between the families as it often does in such cases where the families blame each other. The girl's mother continues to ask her to leave the relationship and says she is always welcome at home. She has also found her employment with family members in the United States, but the girl refuses to go. The negotiation of gendered power relations can most easily be seen in intra-household and inter-household conflict. Violence mainly occurs in intra-household conflict and women are the primary victims.

Conflict at a community level does take place when there is theft or vandalism of communal property such as the water tank and eco-tourism centre. Illegal farming, fishing and marijuana planting can also cause tension or conflict among community members or community groups. Although the villagers are not united, physical conflict among villagers is almost non-existent. However, conflict can arise in the villages over leadership of the shared village council as each community feels the other neglects them. Allocation of charity and government projects can also become an issue. On one occasion, young boys in the village also physically fought over 'territory', but adults did not take these incidents seriously.

The gendered nature of power relations is also exhibited in women's reproductive control. In Kernahan, young couples have an average of two to three children. These young families may yet increase in size, but several young, married women expressed the desire to have smaller families. This is less of an issue for men, but some recognise that they can better provide for a small family. Both men and women view family planning very much as women's business and girls, more than boys, who are schooled about the responsibilities of sex and contraception. Gender norms in the villages reinforce the

belief that reproduction is women's responsibility because women give birth. Pervasive religious beliefs that see childbirth and child care as a woman's duties also contribute to maintaining this gender ideology. Thus, the onus of planning family size is on women who want smaller families.

Unfortunately, many women are not in control of their reproductive health. Two young married women who stated a desire to wait to have children both became pregnant while we were in the field. Women's plans to save, move out of the community or work become compromised when they cannot plan their families. Other young women told us that they were afraid that their partners would ignore their feelings or quarrel if they disagreed and said that they did not want more children. By not discussing how they felt with their partners, these women were attempting to cope with a situation that denied them choice. Thus, a range of forms of negotiation may be the means by which women cope with their situations¹⁵.

In Cascadoux the situation differs somewhat but the sample size makes it hard to generalise. Both men and women want smaller families. One Cascadoux villager told us that she and her husband are happy with just two children, but the nurses would not tie her tubes because she is in her early twenties. She indicated that she wished to use contraception and felt that she could when ready. We were sceptical about whether the women who wished to use contraception would end up doing so.

The most popular method of birth control is withdrawal. Several women used the pill for a short period, but did not like having side effects such as weight gain and nausea. Abortions seemed to be very uncommon. Usually, girls are persuaded to marry to avoid a pregnancy coming to term out of wedlock. We heard of one case where a teenage girl twice used what seemed to be the morning after pill to avert an unwanted pregnancy. Though believing that she was pregnant, the girl never visited the clinic. Her boyfriend

15 'Negotiation' can involve "collusions, compromise and accommodation, resistance and subversion." (Mohammed, 1994: 31)

bought the pills from the local pharmacist on two occasions. Some men use condoms, but they are a minority and use is inconsistent.

In both villages, breast-feeding for extended periods of time is the norm and women believe that breast-feeding prevents pregnancy. In Kernahan, few mothers teach their daughters about menstruation, sex and contraception. Usually, elder sisters or cousins talk with girls when they become teenagers as part of the general topic of boys. Mothers in Cascadoux discussed issues of hygiene, safety and reproductive health with their daughters. Parental advice in both communities is to stay away from boys. Sexual reproduction is almost never discussed with sons. Most young people cannot access adequate information about sexuality and reproduction. Teenage girls who go to high school attend health and reproduction classes but there are only four such girls in the two villages. Having to hide a relationship, especially when there is sexual activity, can prevent young women from accessing health care and exacerbate their isolation.

Women's sexual health is also threatened by male promiscuity. Young and older men have affairs and visit sex workers. The majority of them do not practice safe sex with their partners or in casual encounters. This is only one aspect of women's powerlessness over their bodies and health. Many women have few options regarding sexuality and childbirth after they have committed to a relationship. Additionally, few pursue options like the pill, which can give them more control.

Still, gendered sanctions have been and will continue to change over generations as education, modernity, urbanisation and media influence women's ideas and aspirations. In the past, women were obligated by custom and religion to marry an arranged partner. Even in unhappy situations, there was little separation and divorce. In both villages, we met several women who had left their husbands and established new relationships, sometimes with younger men.

In Kernahan and Cascadoux, custom no longer dictates that Indian women cover their heads. However, women and girls maintain this practice for Hindu religious gatherings.

There were noticeable differences in the dress of women in Kernahan and Cascadoux. Women in Kernahan rarely wore pants and never wore shorts or short skirts in public. This was changing for younger women and girls who wear jeans and, on occasion, shorts. In Cascadoux, many of the women and girls wore shorts, pants and shorter skirts in public. This is an aspect of the many freedoms that women in Cascadoux were more able to exercise than women in Kernahan. Some women in Kernahan were determined to see their daughters live differently. One woman told us that her husband forbid her from wearing face powder and caring about her appearance because she was already married. She confided to us that when her daughters were older, she would ensure that no one could prevent them from wearing makeup.

Women's isolation and constraints to their mobility may also change as younger women encroach on the borders of these sanctions. On occasion, groups of young women go to the movies or shopping in nearby towns and have options for leisure that were denied to older women. Particularly for older women, there was and continues to be a strict divide between public and private space. Some women must ask their husband's permission to leave the community for recreational purposes and will not beg or go if he says no. One older woman in Kernahan told us that if her husband told her not to go and something bad happened if she went anyway, she would be held responsible for her own misfortune. There is the possibility of danger or sin in public space and women are expected to regulate their own activities keeping this in mind.

Young married women also meet some of these constraints. Men in the villages are aware that women who work, live in public, see 'brightness' of large towns such as Rio Claro and Sangre Grande and meet other men are more likely to challenge their power and control. Most men in the villages have little formal education and can offer few material luxuries to women. As a result, many are afraid that exposure to options, opportunities and a wider range of experiences will tempt women to see them as deficient. This accounts for many males' approach to the possible activities of their wives in the public sphere. Some younger men from Cascadoux said that they would support their wives if they wanted to work outside of the community. They thought the couple would benefit

from the extra income and that, women should be able to work. However, this is not a commonly held perspective.

Traditionally, the forest was also seen as a dangerous place for women to venture. However, younger girls are developing greater familiarity with the terrain, flora and fauna through training offered in eco-tourism. Change is slow and presently only boys use the forest for leisure time hunting, fishing or camping. Thus, women, men, boys and girls can access different spaces at different times. They may also use these spaces in different ways or for a variety of purposes such as leisure, production, reproduction and building networks. Factors such as livelihood activities, reproductive responsibilities, age, wealth and gender affect how villagers use space. The gendered separation of tasks, and freedoms influences how boys and girls see their relationship to the space around them and leads them to develop a different knowledge of the environment from each other.

Gendered sanctions are maintained through gossip, threats, disapproving comments and violence. Gendered norms and sanctions prevailing in the villages particularly constrain women's behaviour, dress, sexual choice, mobility, leisure and community participation. Equity between men and women does not exist at a village or household level and women lose opportunities for education, experience and personal growth because of the constraints they face. Women do not challenge these norms and sanctions, but the younger generation has fewer limitations than women (and men) in the past. The 'doula' and Afro-Trinidadian women (who live in Cascadoux) tend to be more independent and assertive, and there is greater equity in the sharing of tasks and decisions in their homes. Educational and economic opportunities most significantly enable women to gain the confidence to pursue options and challenge beliefs about women's 'proper' place in the home and in society.

4.4.5 Indigenous Knowledge and Discourses

Tradition and change were the main themes in the fourth domain, which examined indigenous knowledge and discourses. Researchers were in the field during the important period when electricity was being introduced. Villagers were expecting to change their consumption patterns and to acquire technology such as washing machines, refrigerators and televisions. Villagers were looking forward to finally having electricity after years of lobbying. They felt that it would bring them 'up to the standard in Trinidad' and mitigate against outsiders seeing them as 'backward'. Women, in particular, wished to have washing machines. Some mentioned sewing machines. Men said that access to electricity would allow them to open small businesses as mechanics or welders. Residents were also looking forward to acquiring refrigerators because they could store food instead of cooking or harvesting it each day. These aspirations indicate that food consumption patterns are also likely to change.

Many villagers owned black and white televisions that they powered by battery. The few residents who had cars could run their television on their car battery. Those who did not own a car travelled to a nearby town every few days to have their battery recharged. This was expensive and time consuming. The villagers expected that electricity would lower these costs and those for paraffin lamps and torchlights. Within two weeks of installation of the electricity lines, the wealthiest villagers connected their houses. Soon after, many bought new televisions and the appliances that they had wanted for so long. Some poorer villagers still do not have electricity. The introduction of electricity has exposed class divisions that lay unstated when material consumption was low. Increasingly, wealth will be defined by new appliances and access to new technologies. It is possible that investment patterns will also change as disposable income is spent more on material goods and less on property or long-term savings. The introduction of technology may also lead to debt as villagers buy goods on payment plans. We were not in the community long enough to assess the impact of television, and particularly cable television, on villagers' aspirations, perceptions and knowledge.

When people spoke of the past, their stories were often dominated by recollections of settling in the area, of abundant flora and fauna, and of the difficulties of transportation to markets and family homes in other areas. They described how their relationship to the land changed according to markets and settlement. Women particularly spoke of how hard life was and of miscarriages caused by working late into their pregnancy. Our data for this domain is woven into the data from the biophysical component, which documented the history of the community through their relationship to the natural resources. Over the years, as the villages grew from a few scattered families into more formal communities, many members converted from Hinduism to Christianity hoping that it would make their lives easier.

Former Hindus argue that drinking alcohol, smoking and violence are tolerated by the religion. Time and again, Pentecostals explained that they left Hinduism to stop smoking and drinking. Other reasons mentioned were that people found Hinduism difficult to follow because the scriptures were not in English, fasting was arduous and pundits rarely visited the villages because of the distance and expense. They may also have lost touch with their relatives of a similar faith and one Kernahan woman associated Hinduism with unprogressive rules for women.

Women, in particular, abandoned their traditional beliefs on the birth of a child or at the time of marriage. One young, married woman in Kernahan said she was brought up as a Hindu and decided to keep her religion when she married a Pentecostal. She believes that when parents practice two different religions, it splits the family in two. Consequently, when her first child was born, she converted to Pentecostalism.

A visiting Jehovah's Witness preacher, who has been involved with the community for ten years, described residents as trying one religion after another because none met their expectations. This adds to the pace at which traditional beliefs are lost. He teaches people to read so they are able to read "the Lord's word" themselves. In his view, his interactions have improved the standards of living of community members. In his opinion, one of the

indicators of his success is that his supporters spend more money on material goods like curtains and sofas to beautify their homes.

With conversion to Christianity, some traditional Hindu practices have been retained and some lost. In Cascadoux, two mothers who converted from Hinduism to Christianity still marked their children's foreheads with a 'tika'¹⁶ (a black mark) against 'mal yeux'¹⁷ (evil eye). In this Hindu practice, a mixture of garlic, onion peel and curry is burnt over the child so that the smoke wards off malicious energy, which can cause sickness or harm. Pretty children are seen to be especially vulnerable. Some women also 'jahray' their children by reciting Hindu prayers and sweeping over the child with a 'cocoyea' broom made from the leaves of coconut branches. Additionally, Pentecostal parents still plan celebrations six to twelve days after a child is born. This practice has Hindu origins and is not synonymous with a baptism. It is a celebratory time for blessings and thanksgiving. Baptism may still take place when the child gets older.

However, other Hindu practices have been lost. This has affected how people view land and their relationship to nature, even when traditional practices were not based in religion. For example, some farmers who converted to Pentecostalism stopped planting in accordance with the moon since they had been 'saved'. Few others retain the practice of a 'D Puja' where a small shrine with candles, food and flowers is tended for a week in the hope that the fertility of the land continues for the year. In other ways, beliefs have been maintained, but in a different form. Members of both Pentecostal churches practice faith healing and several villagers told stories of how praying over someone healed their fevers, sicknesses and scorpion bites. The majorities of Hindu residents have converted to Pentecostalism and have relinquished many aspects of their traditional belief systems.

In this domain, another important area of focus was local perceptions of wealth and class. It was very difficult to get accurate and honest information on villagers' perceptions of

16 Tika – a black dot placed in the middle of a young child's forehead and meant to ward off evil (Allsopp, 1996).

17 Mal yeux – 'evil eye' or 'bad eye' which can cause illness or a strange fever especially in babies and children and can be healed by boiling special leaves and plants into a drink (Allsopp, 1996).

themselves or others along a wealth ranking. People were very hesitant to reveal their true incomes and sometimes frightened of being exposed for discussing others' affairs. Wealth rankings may not have revealed true income levels, but showed people's perceptions of each other and the importance they place on presenting themselves as wealthier or poorer than others. For this reason, we do not have an accurate assessment of the range of incomes that residents earn. Using information from the bio-diversity component's data, we could estimate how much farmers, fisherfolk and others earned in a year by comparing costs of planting or harvesting to the selling price. In Cascadoux and in Kernahan, the wealthiest residents are watermelon farmers. Some villagers speculate that farmers can earn up to \$80,000.00 per year. In Kernahan, we estimated that about five farmers earned over \$50,000.00 a year and were able to save \$20,000.00 - 25,000.00. Almost half of the residents earned \$20,000.00 to \$50,000.00 and could save about \$10,000.00. Close to half of the village then earned \$10,000.00 to \$20,000.00 and were not likely to be able to save anything. We felt that a few of the poorest villagers earned between \$10,000.00 and \$5,000.00, but that none earned below \$5,000.00 a year.

Information about wealth in Cascadoux was not as difficult to acquire as in Kernahan. Villagers here were more willing to discuss their incomes, but most willing to discuss other people's incomes. We estimated in Cascadoux that two villagers made more than \$50,000.00 a year and were able to save about \$25,000.00. Four villagers made \$20,000.00 to \$50,000.00 a year. The majority of residents in this village earned between \$10,000.00 to \$20,000.00 and savings rates varied widely. About five people earned \$5,000.00 to \$10,000.00 and none earned less than \$5,000.00. Profits vary according to the success of the crop and the types of crops planted. Costs vary according to family size and health, men's spending habits, the amount of food that is grown, caught, exchanged or bought, number of children who may be in school and material goods such as a car or tractor which a family may own. More research needs to be done on the economic aspects of villagers' lives.

The introduction of electricity will bring great changes to the way that villagers spend, save and socialise. Women hope that electricity will help ease their reproductive burden

while men hope to use this new facility to open businesses and expand their livelihood options. Consumption of food and material goods has already begun to change and cultural change is expected in the future with the growing number of televisions and access to cable. While villagers converted to Pentecostalism to ease their family difficulties in their lives, domestic violence and alcoholism continue to be a problem. Particularly with regard to health and ceremonies marking births and marriages, many converts have retained some indigenous Hindu practices. However, loss of traditional practices has affected villagers' perception of the environment. While wealthy farmers earn enough to save, poorer villagers live at a subsistence level. In general, economic statistics were difficult to obtain and our perceptions are largely based on qualitative methods.

Data from this section is closely woven with data from the other components on governance and resource use and management. It provides the context for understanding women, men, girls and boys practices at the household and community level by highlighting the beliefs, rules, aspirations, socialised roles and patterns of negotiation that run as undercurrents organising the behaviour of community members. Factors such as age, wealth, education, gender and race impact upon participation and co-operation in any collective endeavour which households or community groups undertake.

Section 5 Summary, Conclusions and Recommendation

5.1 Summary of major findings of the research process

State Policy and Governance

As a Ramsar site, the Nariva Swamp is no longer being discussed in economic terms as solely a rice producing area, but in the new sustainable economic terms of 'wise use'. The question of whether the Nariva Swamp has a right to exist 'unused' as an entity in itself awaits an eco-feminist and other analytical findings. To date, the historical predisposition favours commercial use of the Swamp rather than sustainable use, both of which have gendered implications. There is a perceived crisis in leadership and governance in Trinidad and Tobago on environmental issues that environmental organisations are seeking to fill through links to international organisations and funding agencies. The granting of international recognition to Nariva Swamp as a Ramsar site has affected the ecological status of the Swamp, its political status and the livelihoods of the Nariva-based communities.

Natural Resource

The natural resource use component of this study sought to create an understanding of the use of available resources in Kernahan and Cascadoux by men and women. In order to do so, a combination of quantitative and qualitative methods grounded in ethnography and PRA methodologies were used. These methods allowed for the documentation of the history of development based on descriptions and maps by early male and female settlers. The historical background has allowed for an understanding of why people settled there and why they have changed from rice production to watermelon and short cash crop production.

Natural resource use in both communities is centred on agricultural production. The primary aim of both men and women is that of economic stability so that they can adequately provide for their families. The land is primarily used for the cultivation of watermelon and a few other short, cash crops such as bodi and ochro. Fishing also predominates as another major source of income but more so in Kernahan than Cascadoux. Both activities indicated definite divisions in gender roles, responsibilities, control and access to resources. The high value cash crops (watermelon and cucumbers) are the primary responsibility of men whereas women tend to have a greater input in crops considered to be of lesser value such as bodi and ochro. Control over resources such as land is usually male dominated thus limiting women's access to other resources such as loans and new technologies, since most projects and techniques are frequently developed with men in mind. Involvement in livelihood activities also exhibits gendered space and mobility. The deeper forest areas are considered a male domain whereas women are confined to areas in and around the home. They are however the primary marketing agents for many of the short crops and in some cases even the cascadura. Men, however, usually control the marketing and finances for the higher value cash crops such as watermelon. Women are thus limited in what they can achieve if given the opportunity and responsibility for the higher value crops. They remain confined to reproductive and domestic activities but still have the added burden of productive activities. In many cases, they do not control the resources even though they make a significant contribution to the completion of these activities.

Many other resources are used in a non-commercial way for either food or recreation. Alternative employment is now germinating in the minds of many villagers as a result of the intervention of state, NGO's, UWI and other organisations such as CNIRD. These organisations have promoted the development of alternative sources of income and also the use of the villagers' knowledge in the development of eco-tourism as a livelihood.

"Indigenous knowledge" within these communities is also gendered. Men tend to have a greater understanding of the resources found in the deeper forests whereas women

possess knowledge gained from ancestors and tradition about plants generally found in and around the community.

Community Governance

Many projects/programmes identified for the area have seldom integrated the views and active participation of the community. Traditionally projects placed emphasis on the natural environment and seldom ever on the human/social issues. More recent research by state agencies e.g. the IMA, have considered the social and economic implications of proposed action by indicating the necessity of community involvement to ensure the success of projects.

After more than five decades of settlement in the Kernahan/Cascadoux area, it is clear that the community plays an important role in the development and/or conservation of the area. It can be argued that the community has now become an accepted component of the “natural landscape” and consideration is increasingly being given to the potential influence of external stakeholder intervention on the affairs of the community.

The extent of the community’s ability to influence such external interventions, particularly state policies, depends on the community’s ability to have consensus and mobilise themselves. Importantly, state agencies and NGOs need to understand the manner in which community level dynamics can influence policy/project development, implementation and overall success.

Wealth and power relations play a significant role in the influence a community has on their surrounding environment. People with less wealth tend to have a greater impact on the environment, as opposed to wealthier individuals due to their need to achieve some level of economic stability. Individuals with more power at both the household and community levels, however, are more capable of influencing the community’s perception and impact upon the environment. The need to earn an income to provide for one’s

family overrides any genuine concern for the preservation of the natural ecosystem, particularly for low-income individuals. Environmental influence and impact also varies with male/female productive and reproductive roles. This affects how resources are used, by whom and for what purposes.

Conflicting state policies and the conflict between state agencies e.g. Forestry, State Lands and Wildlife Divisions of the MALMR, continue to affect how people perceive and deal with environmental issues. In the case of the Nariva Swamp, NGOs have had to step in when state policies overlooked the environmental/ecological and social impact of certain proposed development projects. Programmes to promote sustainable living were late in coming and there is still a need to create a balance between conservation and consumption/extraction of the natural resources. The success of programmes implemented so far has been affected by the relationship of villagers with the state. It also reflects the value of the information transferred to them. There is need for more networking as present networks are insufficient to meet the needs of all the stakeholders.

There is a greater need for programmes which are aware of men and women's use of time and space the gendered nature of mobility as this affects their use of the natural resources, their notions of ownership of these resources and their access to and knowledge of the resource base. Land and space are usually perceived as a male domain, which in turn affects decision making and prioritisation of the use of available resources.

Socio-economic and Cultural

The socio-economic and cultural component of the Nariva Swamp Study examined a wide range of villagers' beliefs, feelings and practices. We tried to understand the ways in which men, women, boys and girls' lives, aspirations and perspectives differed. Residents in Kernahan and Cascadoux generally have similar aspirations. These surround issues of education, marriage, gaining experience outside of the community, being able to continue living in their village, improving their houses, having children, accessing

income opportunities and “bettering themselves”. While very simple things seem unattainable to male Kernahan youth, young males in Cascadoux felt more confident that they could achieve their aspirations. Most young women aspire to marry a man from outside of the community and to have an easier life. Those who have schooling, more often wish to work or have some independence before getting married. Many older women, whose options are more limited, plan to provide greater freedoms for their girls. In general, men aspire to be able to support their families, save some money and to make enough to spend on alcohol, cigarettes or leisure.

Also important, was finding the ways in which men, women and children cooperated so that the basic needs of household members could be met. To this end, we focused on themes of production and reproduction to document the working hours of family members, their spheres of work and responsibility and the impact that this had on their mobility, health, leisure, access to and control of household resources, and participation in decision-making. Women are responsible for reproductive duties in the household and many also help in the garden. They tend to have longer work hours than men whose primary responsibility is productive work for income. Lack of equity between men and women detrimentally affects women’s health, mobility, opportunities and time for leisure. As well, we found that the majority of women do not share joint ownership of the family’s land, property or bank account. While men and women generally live together harmoniously, many women experience powerlessness over their lives and bodies in the face of violence, patriarchal dominance and gendered sanctions. Nonetheless, when examining the causes and character of household conflicts, we found that women use a myriad of resources to negotiate for themselves and their children.

While looking at the inner workings of the family unit, we also looked at how household and family groups functioned in the community and the role that gender plays in determining who participates in leading community affairs. Women have not organised to play a more formal role in community affairs, but show great leadership in the religious community. In general, wealthier villagers who build and keep alliances through the exercise of patronage dominate community affairs. Social networks are an integral aspect

5.2 Implications for Sustainability and Community Viability

There are five main issues to be considered for community sustainability and viability:

1. Lack of consensus –

- This occurs between villages and among villagers and creates conflict with respect to resource use. This leaves room for conflicting priorities that can cause violence between groups or individuals or break social networks, which affects the development of and sustainability of ~~community spirit~~.
- This occurs between the villages and the state leading to conflicts over use of resources and conservation measures

2. Educational and employment opportunities

- Lack of educational and employment opportunities limits villagers' ability to expand their livelihood options. This has resulted in a greater dependence on the natural resources, which as the population grows will place a greater strain on the surrounding environment. Sustainable use of natural resources is therefore hampered by the inability of villagers to understand and access information due to the low literacy level that pervades the community.
- The impact that lack of educational options has upon family size is exacerbated by women's lack of reproductive control. Large family size, particularly for poor villagers, affects their ability to attain an adequate standard of living.

3. Lack of female representation in the village council affects how decisions are made and the range of perspectives taken into account. The wealthier/larger farmers also dominate the village council. Thus decisions are usually made based on their perspectives. The lack of an equal say by poorer villagers and women thus affects community decision-making.

various components. On the one hand this complicated the independence of individual reports, while adding to their richness. This also facilitated the integration of the components and the compilation of this composite report. The use of PRA methods as outlined in the ECOGEN manual needed to be adapted to suit the projects' goals and the environment in which the research was conducted. These tools were found to be insufficient to gather the depth and detail required by the projects' aims and objectives. Hence from the start it was combined with an ethnographic approach.

Problems were also encountered with the integration of the initial biodiversity (later adjusted to Natural Resource Use) component of the study with social and PRA methodology. Adequate quantitative data were not available to support the initial requirements of this component that would meet the criteria of both the natural and social science academic community.

The project's dual aim of research and empowerment resulted in inefficient time management with respect to data collection. Issues regarding empowerment differed between the research team and the project's co-ordinators and financiers. What they saw as empowerment activities were not always viewed in a similar manner by the researchers. No common definition of empowerment was agreed upon to suit the needs of the research. The ideas of facilitation and networking were part of the empowerment process. In light of this, the researchers felt that the forest walks taken were the most effective method of integrating PRA, data collection and empowerment for all participants. Conflict arose between negotiating time and resources among conducting empowering research and building networks and empowerment through facilitation.

of villagers' lives and women and poorer villagers particularly benefit with food, childcare, companionship and protection from the networks that they maintain with extended family both inside and outside of the village, neighbours, police, health workers and religious leaders. However, conflict among community members prevents many individuals and families from working together and helping each other. In fact, conflict among villagers commonly leads to violence and protracted antagonism. Divisiveness affects how willing community members are to work together on issues that may benefit them socially or environmentally.

Quality of life and living conditions have changed significantly in the fifty years since migrants began to settle in the area. Many residents have converted to Christianity and although indigenous knowledge forms part of the worldview of the elderly, it is significantly less important to younger members of the present generation. The quality of life has particularly improved for young women and girls who now attend school, can choose their marriage partners and envision the possibility of earning an independent income. However, changes in gender norms and sanctions come slowly and women must still obey many rules of propriety and honour in their dress, behaviour and social interaction. Girls would benefit from more information about their bodies, health and sexuality, their rights and options, and the immense possibilities that can be open to them. Women in Cascadoux and Kernahan who have been educated and earn their own livelihoods are more self-reliant and willing to break sanctions. They live in less fear and have more control over the quality of their lives. When examining how best to achieve sustainable development, equitable relations and secure livelihoods for male and female villagers, this information can help us understand the underlying factors that should inform policy and project planning.

Methodological Considerations

Due to the interdisciplinary and multidisciplinary nature of the project, data collection was affected by the overlap of the three components as data was often duplicated in the

4. Health

- Reproductive health is of particular concern for the viability of these villages because it affects the quality of life, the stability of relations within households and the networks built between family units. Villagers tend to rely heavily on networks and violence in households strains and threatens these reciprocal relations. Access to potable water and water for domestic purposes is a necessity for continued good health of the growing population. Villagers use the water in the channels for very few household needs and rely on the communal tank. Particularly in the dry season, their water resources do not always meet their needs.

5. Unsustainable resource use practices such as overfishing and unsustainable agricultural practices can eventually contribute to the decline of scarce resources.

5.3 Recommendations for further work

Education and Training

- Education of farmers on sustainable agricultural practices and Integrated Pest Management.
- Training and education of women on nutrition, health, agriculture and the use of renewable resources. Women are primarily responsible for family health and nutrition. They should therefore be trained in the methods that can be used to adequately meet these needs, e.g. planting of fruit crops, mixed cropping, and livestock production. Training in the management and care of livestock is important, as women are generally responsible for the care of animals, which is mainly at a subsistence level. Their skills can be enhanced to create a market for livestock and livestock products. This training will have the dual role of providing for the family and enhancing their

economic/marketable skills in terms of agricultural practices. Training such as this can also empower women to venture into other income generating activities.

- Leadership training of NEWS and NET to enhance their capabilities in achieving their goals and objectives. Development and education of NEWS to act as a force for environmental change within the community. The lack of leadership training and limited access to information by groups has severely limited their ability to function. This is an area which should be addressed prior to using groups as participants in community based projects. This is particularly important for projects related to co-management and those, which require a high level of community participation.
- Consciousness-raising on gender issues and exposure of women to relevant resources – Rape Crisis Centre, Domestic Violence Unit etc.

Environmental Sustainability

- In order to work towards sustainable development and conservation of the environment, a project disaggregated by age and gender is needed for the education of villagers about deleterious practices that affect the environment and what can be done to alleviate the situation.
- There is need for a greater degree of sustainable development work with respect to community needs as opposed to only research. This work should start at the community level to determine their needs and problems in the context of the overall national interests. The communities should have an input, proposing what they want to achieve and how it could be done. Regular meetings of all stakeholders with the community in the area are necessary to increase awareness and work together for sustainable development.

- Closing of the hunting season for a period of at least 5 years to allow species to repopulate the forests. This is a recommendation of both the community members and this project. Villagers also recommended that hunting areas should be restricted.
- Impact assessment of pesticides within the communities and the current use of pesticides by households need to be determined. Pesticide testing to determine the impact of agricultural chemicals on the environment and the villagers.

Community

- Development of kitchen gardens to supplement household incomes and support the nutritional balance for families.
- Developing community spirit and responsibility for the environment among the people of Kernahan and Cascadoux. The members of Kernahan and Cascadoux need to start taking responsibility for their actions, and for the area in which they live and work. People need to start working together for the good of the communities as a unit and not only as individuals.
- The Village Council and the community in general tend to be highly reactive rather than pro-active in their efforts to address community needs. This should be the opposite.
- Village organisation needs to be strengthened. Within the community this could be done on an individual village level, with both villages coming together, or at the level of interest groups such as women, youth or environment. Interested individuals could also come together on projects e.g. cleaning the communal water tanks, clean-up campaigns, wildlife patrols and storytelling for children. To

gain support and to increase their capacity, organisations should make use of the village council as well as other groups in the community.

- Villagers must seek information on relevant issues like reproductive health, nutrition and water quality using existing linkages with institutions or organisations as well as establishing new ones.
- One way of increasing children's opportunities is to educate them. Thus, regular attendance at school is essential and parents could form a support group to address their children's educational needs e.g. encouraging literate people to contribute to improving children's literacy.
- Villagers need to reach a consensus within their interest groups on their perspective on the issues that affect them.

State Agencies/ NGO's and Other Institutions

- Greater degree of collaboration between state agencies and the community groups for policy and community development that is directly relevant to the community's needs.
- Greater degree of collaboration within state agencies to reduce conflict of interests and management of the area.
- There are many projects in the area which are developed by state agencies and NGOs but managed independently of each other. A process of amalgamation and rationalisation of projects may enhance the efficiency of resource use.
- The villages of Kernahan and Cascadoux need a trained teacher and a pre-school in the community as some families will not send their children to

school out of the village. Failing this, children need to have access to schools outside the villages perhaps through a regular and subsidised school transport system and a bus shelter. Post primary education and skills opportunities for men, women, boys and girls also need to be addressed so there are greater employment opportunities available.

- A recreation centre in this area would probably help to build community relations and unity. The installation of a public telephone at such a centre would also be useful to villagers.
- Residents should be involved at all stages in project development, from conception to implementation and afterwards. A self-help attitude needs to be encouraged to instil a sense of pride and accomplishment and projects might focus on women and youth involvement, e.g. fruit tree planting and to nutrition education and an aquaculture project for youth of both sexes.
- Ministries must co-operate and integrate programmes with other agencies in order to optimise successful interventions. State agencies and NGOs repeatedly expressed the need for this research data in order to design programmes relevant to communities.
- There exists a high level of conflict among/between groups and individuals in the community. This will hinder rather than promote any infrastructural and community development, effort in the area, whether originating from state agencies, NGOs or the community itself. A mechanism for conflict management and resolution at the community level should be established.
- Involve the formal groups in the community in the development process. It is important to recognise that the Village Council is not the final representative community body but rather that other groups exist with conflicting interests. They are also stakeholders to be considered.

- Creation of an accessible database on all research and development in the Nariva Swamp and the communities surrounding it. This database should be made available to anyone wishing to pursue research and development projects in the area so that they can utilise and build on what has already been done and reduce the duplication of work.

Further research is also required on the economic activities of villagers to determine their income levels, spending and saving habits. Research is also needed on the ethnic differences and their impact on social practice and gender relations in both communities. The nutrition and reproductive health of men, women and children also needs investigation. The information from this case study can also be further analysed and used for the sustainable development of the Kernahan/Cascadoux communities.

Section 6 References

- Agristudio, 1991. *Reconnaissance Study for Rehabilitation of the Plum Mitan Rice Scheme. Interim Report. Annex N4 - Climate and Hydrological Report.*
- Ahmad, N. 1991. *IDB Basic Agricultural Sector Studies - Research and Technology Transfer Rice Sub-sector*, Ministry of Food Production and Marine Exploitation.
- Anon, 1999. *Gender Comparative Case Study Proposal*. ISLE-GAD workshop, UPV, February, 1999.
- Bacon, P.R., Kenny, J.S., Alkins, M. E., Mootoosingh, S. N., Ramcharan, E. K., and Seebaran, G.B.S. 1979. *Studies on the Biological Resources of Nariva Swamp, Trinidad*. Occasional papers No. 4, Zoology Dept., University of the West Indies, Trinidad.
- Bacon, P.R., Ramnarine, I. 1996. Water management for sustainable development in the Nariva Swamp. In: CFCA, 1997. *Nariva Swamp Seminar*. Caribbean Forest Conservation Association, Trinidad and Tobago.
- Berkes, F. (1993) Traditional Ecological knowledge in Perspectives. In *Traditional Ecological Knowledge Concepts and cases*. Ed. J. T. Inglis. IPRC Pub. p3 .
- Bissessar, Ann-Marie. "Personnel Administration and Administrative Reform in Trinidad and Tobago." Ph. D. dissertation. U.W.I., St. Augustine, 1998. Bonadie, Wayne
- Botes, L. and Rensburg, D.(2000) "Community Participation in development: Nine plagues and twelve commandments". *Community Development Journal, Volume 35 No1 January 2000 pp 41-58*.
- Brereton, Bridget. *A History of Modern Trinidad, 1783-1962*. Kingston: Heinemann, 1981.
- Brown, Deryck. *History of Money and Banking in Trinidad and Tobago from 1789 – 1989*. Port of Spain: Paria Publishing Co. Ltd., 1989.
- CFCA, 1997. *Nariva Swamp Seminar*. Caribbean Forest Conservation Association, Trinidad and Tobago
- CGDS (1999) "Progress Report 1: *Building Gender Approaches. Towards. Sustainable livelihoods: A case study of the Nariva Swamp*". September 1999.
- Chatterjee, Sumita 'Cane and Cutlass in Immigrant Indian Women's Lives: Sexuality, Social Class and the Colonial State in Trinidad and Guyana, 1845-1917" Unpublished Paper. Paper presented at Lunchtime Seminar Series, Centre for Gender and Development Studies, October 1995.
- Cornwall, A. 1998. Gender, Participation and the Politics of Difference. In: Guijt, I., Shah, M.K. 1998 (Eds.). *The Myth of Community: Gender Issues in Participatory Development*. Intermediate Technology Publications.
- Crawley, H. (1998) Living Up to the Empowerment Clam? The potential of PRA. *The Myth of Community Gender Issues in Participatory Development*, Guijt, I & Kaul Shah, M (Eds.) 1998.
- Cuevas Perez, F., Barrow, Ronald, M., and Ganpat, Roop. 1984. *Trinidad and Tobago status of the Rice Industry*. A joint paper prepared by Centre internacional de

agricultura tropical (CIAT. Ministry of Agriculture, Lands and Food Production.
Central Experiment Station, Centeno, Trinidad and Tobago.

Doubleday, N.C. (1993) Finding Common Ground: Natural Law and Collective Wisdom,
In *Traditional Ecological knowledge Concepts and Cases*. Ed. J T. Inglis IDRC
p41.

Dove, M.R., and Kammen, D.M. (1997). The epistemology of sustainable resource use:
managing forest products, swiddens, and high-yielding variety crops. *Human
Organisation* 56 (1), 91 - 101.

MALMR (1984) Draft estimate 1984 *Recurrent Expenditure Rice Maintenance
Programme, 1983*. Agricultural engineering and development division, Ministry of
Agriculture, Lands and Food Production, Trinidad.

Republic of Trinidad and Tobago (1993) *Draft National Policy for Food and Agriculture,
1993*.

Draft Second Five - Year Plan 1964 - 1968. National Planning Commission: Dr. Eric
Williams, Mr. Arthur, N. Robinson, Mr. John O'Halloran, Mr. Robert Wallace, Mr.
Lionel Robinson, Mr. Louis Alan Reece, Mr. Jack Harewood, Mrs. Patricia
Robinson, Mr. David Weintraub, Mr. William Demas. Government Printery,
Trinidad and Tobago, 1963. Chapter XIV pgs. 173, 179, 201..203

Dulin, P. *Agricultural Sector Investment Program -ASIP, Environmental and Social Impact
Report*. Port of Spain, Trinidad and Tobago.

ECLAC, (1992) Social Equality and Changing Production Patterns: An Integrated
Approach, Chile, United Nations ECLAC, 1992

FAO, 1957. *Report to the Government of Trinidad and Tobago on the Reclamation of the
Caroni, Oropouche and Nariva areas*. Report No. 636. Food and Agriculture
Organisation, Rome. 111 pp.

Forestry Division, 1978. *Annual Report of the Forestry Division, 1978*, MALMR, Trinidad
and Tobago.

Forestry Division, 1987. *Annual report of the Forestry Division for the year 1987*. Trinidad
and Tobago.

Forestry Division, 1993. *Annual Report of the Forestry Division, 1993*. MALMR, Trinidad
and Tobago.

Forestry Division, 1994. *Annual Report of the Forestry Division, 1994*. MALMR, Trinidad
and Tobago.

Freire, P. (1972) *Pedagogy of the Oppressed*, Harmondswerth:Penguin.

Ghany, H. (1996). (Editor). *Kamal: A Lifetime of Politics, Religion and Culture*. Dr.
Kamaluddin Mohammed Publisher, San Juan, Trinidad and Tobago.

Gibbins, W. (1998). Environment: making the choice between rice, flora and fauna. *Wolrd
News*, 12 February, 1998.

Gilbert, R. V.(1998) "*The Relation Between Construction Output, Economic Cycles and
Structural Adjustment in Trinidad and Tobago; 1974-1994*." M.Phil., South bank

- Univ., 1998.
- Gosine, Mahin. (1996) *East Indians and Black Power in the Caribbean* New York: Africana Research Publications, 1986.
- Hardjoeno, Vanderzwaag, D., Shaw, T., Bedeno, J.A.S., Sirju-Charran, G. (1996). Governance. Position paper. *Workshop on core-course of Island Sustainability, Livelihood and Equity*. Ujung Padang, 1 - 6 December 1996. Indonesia.
- Hosein, Shaheeda "Towards A Re-examination of the Indian Woman in Trinidad, 1870-1945" A Paper presented to Dept. of History, March 1996.
<http://users.carib-link.net/~wildfowl/nariva98.htm>.
- IDB, (1992). *Land Rationalisation and Development Programme*. Land Tenure Centre, University of Wisconsin, Madison, Wisconsin, USA, for the Inter-American Development Bank. Non-Reimbursable Technical Co-operation Agreement No. ATN/SF-3159-TT for Trinidad and Tobago. February 1992.
- IIED (1994) "Whose Eden"? : *An Overview of Community Approaches to Wildlife Management*" Russell PresS, U.K. July 1994.
- IMA, (1998) *Final Report for the Environmental Impact Assessment of the Nariva Swamp (Biche Bois Neuf Area)*. IMA/MALMR, Institute of Marine Affairs Trinidad and Tobago.
- IMA, (1999) *Final Report: formulation of the Nariva Swamp Management Plan*. IMA/MALMR, Institute of Marine Affairs, Trinidad and Tobago.
- Jackson, C. (1993) Environmentalisms and Gender Interests in the Third World. *Development and Change* 24, 649 - 677.
- James, K. (1994). *The Potential of Bush Bush Wildlife Sanctuary, Trinidad for Ecotourism*. Undergraduate thesis, B.Sc., Zoology/Chemistry. University of the West Indies. 97 pp.
- Joekes, S., Heyzer, N., Oniang'o, R, Salles, Y. (1994). Gender Environment and Population. *Development and Change* 25, 137 - 165.
- Kacal, S. 2000. *Social assessment and community action plan of Nariva managed resource area*. Final Report prepared for the Ministry of Agriculture, Land and Marine Resources, Government of Trinidad and Tobago and World Bank. Unpublished.
- Kacal, S., Homer, F. 1993. *Recommendations for 3 National Parks; Matura, Nariva and North East Tobago*, unpublished.
- Kassim, Halima-Sa'adia. (2000) "RHAND Credit Union Cooperative Society Limited, 1947-1999: Their Story Through The Years", January 2000.
- Kenny, J., Comeau, P., Katwaru, L. (1997) Environmental Management Authority of Trinidad and Tobago *Extensive Extracts from A Survey of Biological Diversity Trinidad and Tobago. A Study Commissioned by the United Nation Development Programme*, Port of Spain, February 1997.
- Lans, C. (1996). *The price of rice*. Express. Monday July 15, 1996. pp. 15.
- Lans, C. (1999) *Governance Component of the Nariva Swamp: A Gendered Case Study*, September 1999.

- Lee, M. and Jacque, A. (1993) *The Rice Sub-sector. Agricultural Planning Division Working paper no. 3.* (revised).
- Leftwich, A. (1994). Governance, the State and the Politics of Development. *Development and Change* 25, 363 - 386.
- Locke, C. (1999). Constructing a Dender Policy for Joint Forest Management in India. *Development and Change* 30, 265 - 285.
- MacMillan, A. (1967) *Aranjuez: Agricultural Development in a Suburban Setting.* University of the West Indies, St. Augustine, Trinidad.
- MALMR, (1994). *Draft. White Paper. Food and Agriculture Policy.*
- MALMR. (1993) *Review of the Agriculture Sector* (1993), 1995. Prepared by the Agricultural Planning Division, Ministry of Agriculture, Land and Marine Resources.
- MALMR, (1983) *Draft Estimate 1984 Recurrent Expenditure Rice Maintenance Programme.* Agricultural engineering and development division, Ministry of Agriculture, Lands and Marine Resources, Trinidad and Tobago.
- Melville, C. J. (1996) "Measuring the Social Impact of Adjustment: The Trinidad and Tobago Experience." M.Sc. U. of the West Indies, St. Augustine, 1996.
- Mohammed, Patricia (1994) *A Social History of Post-Migrant Indians in Trinidad from 1917 to 1947: A Gender Perspective.* Ph. D Thesis: Institute of Social Studies, The Hague
- Mootoosingh, S.N. (1979). *The Growth of Conservation Awareness in Trinidad and Tobago (1765 - 1979). Occasional papers no. 3.* Department of Zoology, UWI, Trinidad and Tobago.
- Mosse, D. (1997) The Symbolic Making of a Common Property Resource: History, Ecology and Locality in a Tank-irrigated Landscape in South India. *Development and Change* 28, 467 - 504.
- Nathai-Gyan, N. (1996). Conservation status of the Nariva Swamp, In: CFCA, 1997. *Nariva Swamp Seminar.* Caribbean Forest Conservation Association, Trinidad and Tobago.
- National Wetland Committee. (1996) *National Policy on Wetland Conservation. Trinidad and Tobago.* Draft prepared by the. January 16, 1996.
- National Wetlands Committee. (1996) *National Policy on Wetland Conservation, Trinidad and Tobago, (Final Report).* 1997
- NEDECO. (1981). *A summary and review of previous studies of the Nariva Swamp. Technical Note No. 4.* Netherlands Engineering Consultants. 40 pp.
- NEDECO. (1983) *Phase I - Investigations on the Development of the Nariva Swamp. Vol. 1. Main Report.* Final Report. Ministry of Agriculture, Lands and Fisheries, Port of Spain. 36 pp.
- OCTA. (1970). *Nariva Swamp Development Project. Feasibility Report.* Overseas Technical Co-operation Agency of Japan. 212 pp.

- Pemberton, C. (1999). *Economic Aspects, Draft Technical Report for the Nariva Management Plan/EAI activity 2. Estimation of the non-user value of the Nariva Swamp.*
- Planning Associates. (1981) *Operational Review of the Trinidad and Tobago Rice Mill Complex.* Draft working document. Data collection, analysis and recommendations. Prepared for the Food and Agriculture Corporation of Trinidad and Tobago. Unpublished. Port of Spain, Trinidad and Tobago.
- Pritchard, D. (1997) *Implementation of the Ramsar Convention in Trinidad and Tobago.* Web site <http://www.geocities.com/RainForest/Canopy/8466>
- Quesnel, V.C. (1972). *Should We Farm the Nariva Swamp ?* Unpublished.
- Ramsar Convention. (1995). *Monitoring Procedure, Nariva Swamp, Trinidad and Tobago.* Gland, Switzerland.
- Ramsar Convention. (1996). *Final Report, Monitoring Procedure, Nariva Swamp, Trinidad and Tobago.* Ramsar Convention. Gland, Switzerland.
- Ramsar Convention. (1996). *Management Guidance Procedure Report Issued for Nariva Swamp.* 16th Oct. 1996.
<Http://www.geocities.com/RainForest/Canopy/8466/procedure.html>.
- Republic of Trinidad and Tobago (1990) Central Statistical Office, *Trinidad and Tobago Population and Housing Census, A Demographic Report, 1990.*
- Republic of Trinidad and Tobago (1997) Central Statistical Office *Continuous Sample Survey of Population: Labour Force Report 1996.* Published by the Ministry of Planning and Development, Trinidad and Tobago.
- Republic of Trinidad and Tobago (1998) Central Statistical Office *Annual Statistical Digest 1996.*
- Rocheleau, D., Thomas-Slayter, B., Wangari, E. (1996). Gender and environment: a feminist political ecology perspective. In: Rocheleau, D., Thomas-Slayter, B., Wangari, E. 1996 (eds.). *Feminist political ecology: global issues and local experiences.* Routledge, London and New York, pp. 1-23.
- Schrijvers, J. (1991) *Dialectics of a Dialogical Ideal: Studying Down, Studying Sideways and Studying Up.* In: Lorraine Nencel and Peter Pels: *Constructing Knowledge, Authority and Critique in Social Science.* London, Sage. pp. 162-179.
- SEAGA- Socio-Economic and Gender Analysis, contact: SEAGA/SDWW, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, 00100 Rome, Italy. E-mail: SEAGA@fao.org.
- Seereeram, A., Luke, E., Seales, J., Ramdeen, P., Indalsingh, T. (1991). *Final Report 91.04.03. Integrated Rice Mechanisation Project Proposal.* Technical assistance project between the Government of the Republic of Trinidad and Tobago and the Japanese Government. Ministry of Food Production and Marine Exploitation.
- Skeggs, B. (1994) *Sensuous Spheres: A Study of the Social Construction of Black Female Sexuality.* In: M. Maynard and J. Purvis: *Researching Women's Lives*

- from a Feminist Perspective*. Taylor and Francis, pp 106-124.
- Steer, H.J., Benson, E.G. (1953) *A Survey of the Rice Industry. Statistical Studies and Papers no. 2*. Rice division of the Department of Agriculture and the CSO.
- Sunkind, L. (2000) "Super - Optimization : A New Approach to National Environmental Policy - Making". *Journal of Policy Evaluation, Volume 6, Issue 1, Spring 2000*. Illinois.
- Sutton, P.K. 1981. *Forged from the love of liberty. Selected speeches of Dr. Eric Williams*. Compilation. Longman Caribbean.
- Thelen, K.D., Faizool, S. (1980). *Plan for a System of National Parks and Other Protected Areas in Trinidad and Tobago*. Forestry Division, Ministry of Agriculture Lands and Fisheries, POS, Trinidad. 106 pp.
- Tourism and Industrial Development Company. (1998) *Discover Trinidad and Tobago*, 1998.
- UNDP. (2000) *Gender in Development. Gender Analysis: Alternative paradigms*. <http://www.undp.org/gender/resources/mono6a.html>.
- UNICEF (1998) *The State of Eastern Caribbean Children: Child Survival, Protection and Development in Seven Caribbean Countries*.
- Utting, P. (1994). Social and Political Dimensions of Environmental Protection in Central America. *Development and Change* 25, 231 - 259.
- Wahab, A.S. (1997) *Stakeholders' Perceptions of Natural Resource Conflict - The Case of the Nariva Wetland, Trinidad and Tobago*. Unpublished M.Sc. Thesis, Shimane University, Japan.
- White paper on Agriculture, 1979*. Ministry of Agriculture, Lands and Fisheries. Government printery, Trinidad and Tobago.
- Wildlife Section, 1993. *Historical perspectives on habitat destruction in the Nariva Swamp Trinidad: A Wildlife Section Issues Paper*. Wildlife Section, Forestry Division, Ministry of Agriculture, Land and Marine Resources, St. Joseph, Trinidad and Tobago.
- Wildlife Trust (1998). *Nariva Now*. Website:
- Wildlife Trust. (1998b). *Big Rice Farmers Move In On Nariva Again*. Website: <http://users.carib-link.net/~wildfowl/wft/ricefarm.htm>.
- Williams, R.A. (1976) *Trinidad Naturalist* Vol. 1. No. 6, 1976, pg. 24. Cover Story. What are we doing about National Parks?
- IICA. (1993) *Women in Small-Scale Agricultural Production in Trinidad Survey Report*, POS.
- Women's Affairs Division, Ministry of Community Development, Culture and Women's Affairs. (1995) *National Report on the Status of Women in Trinidad and Tobago. Fourth World Conference on Women, Beijing, China. April 1995*.
- World Bank (1995) *Trinidad and Tobago: Poverty and Unemployment in an Oil-Based Economy Report No. 14382 - TR, Latin America and Caribbean Region*.

APPENDICES

Appendix 1

Crops cultivated in Cascadoux are:

Avocado
Bananas
Bodi
Carallie
Cassava
Cherries
Chive
Coconuts
Cucumbers

Dasheen
Eddoes
Hot peppers
Limes
Mangoes
Watermelon
Ochro
Papaw
Pigeon peas

Plums
Pimentos
Plantain
Sapodillas
Sorrel
Squash
Sweet peppers
Sweet potatoes
Tomatoes

Crops cultivated in Kernahan are:

Bodi
Mangoes
Ochro
Pomarac
Rice

Corn
Watermelon
Patchoy
Pommecythere
Seim

Cucumber
Melongene (eggplant)
Peppers
Pumpkin
Thyme

Appendix 2 Medicinal Plants used in Kernahan and Cascadoux

✂Plant Name	✂Use
Fever grass	To reduce fevers
Vervine	Stop upset stomach and bladder problems
Wild Senna	Blood Cleanser. When mixed with salt this can cause abortions
Sweet Broom	Diarrhea, relieves rashes in babies
Congolalla Grass	Heals cuts and bruises
Sour Cherry	Good source of calcium and vitamin c. Good for colds.
Te Marie	Good for scorpion bites and kidney stones
Aloe Vera	Builds resistance, good for cuts, bruises rashes.
Chandilay Bush	Good for coughs and colds
Lime leaf/Lime bud	Good for coughs, soothes gripe in young babies
Bois Canot	Soothes gripe in young babies. Good for asthma, colds and cough. Chew for snake bites, earache and is good for washing hair and cleans scalp.
Carallie Bush	Good for rashes, stops itchy skin, good for exemas when mixed with sweet broom, soursop, vervine and senna. Kills worms
Coopa Hoop	Soothes coughs and colds. Drunk as a tea.
Tamarind Seed	Draws out poisons for stings. (Scorpions)
Oocou Leaf(Roucou)	Jaunders, food colouring
Coconut Root	Soothes toothaches and strengthens gums
Ratchet	Cooling for body. Heals rashes. Reduces dandruff
Young Guava Leaves	Diarrhea
White Periwinkle	Reduces sugar (diabetes)
Bachelor Button	Bladder problems
Corn Hair	Bladder problems
Tulsi leaves	Good for coughs when boiled with ginger. Good for coughs. When mixed with ginger it soothes toothaches.
Noni Fruit	Good for everything
Wild Onion	Wheezing
Bois Bande	Aphrodisiac for men
Bois mulatre (fine leaf)	Bark good for snake bites
Majook chappelle	Stomach pains
Orange Peel	Gas pains
Jigger bush	Cooling for body
Pudiua (Thyme)	Asthma
Spanish Thyme	Stomach pains/ulcers and babies sour stomach
Cashew bark	Diarrhoea

Appendix 2 (contd.) Medicinal Plants used in Kernahan and Cascadoux

✕PLANT NAME	✕USE
Marijuana root	Colds and asthma
Shadow Beni Root	Blood cleanser
Black Sage	Colds & fever
Hibiscus Flowers (double)	Asthma
Young bamboo leaves	Colds
Minnie root	Cooling for body
Coconut Water	Good for eyes and diarrhea
Pumpkin flowers	Measles
Sour sop leaves	Helps with sleeplessness
Madhar	Puja, toothache- uses milk from flowers.
Lime & baking powder	Snake bites
Wild Avocado	Good for bladder problems
Milk Bush	Heals rashes and ringworm
Karakeet	Relieves fevers and colds
Pepper leaves with tumeric and cow dung	Removes boils
Lovevine	Jaunders
Physic Nut	Jaunders
Christmas Bush	Relieves coughs and colds
Lime bud	Coughs
Male pawpaw flowers	Coughs
Coconut Oil	Strengthens hair
Neem	Measles, scabies, fowl lice, insecticide and a de-wormer for livestock
Datur flowers	Puja (prayers), stimulant

Appendix 3 Other Natural Resources Utilised in Kernahan and Cascadoux

1. *Monkey Bone* - the earlier settlers used trees to construct houses. Fallen hog plum, guatecare, cedar and lasinet trees were also used.
2. *Coconut Branches*- used by male and female roadside vendors for building small shelters along the roadside to provide protection from the sun and rain. Male vendors construct these shelters and use them both for selling and recreation. Other villagers usually men gather around these shelters to relax. Women and other villagers share these shelters for vending. The branches are also laid on the ground to place produce, such as watermelons and bodi on for sale. Women generally just place their goods on the grass near the roadside for sale. One woman in Cascadoux uses coconut branches for making brooms as a source of income. The branches are also used to enclose and decorate areas for functions such as weddings.
3. *The Mamoo and Sidgen Vines* -- these are used for making bag straps for carrying conch. The men usually cut these vines in the forest to make bag straps as they are fairly strong. Sidgen is also used to tie crabs and cascadura together for sale. Young girls also make these vines into skipping ropes. The early settlers also used these vines to construct baskets in which to transport their cascadura and crops to the market.
4. *Coconut tree trunks* - are used as posts for tents/sheds. There are some men who leave them to rot to produce manure.
5. *Carat leaves* - are cut by men and used to cover pens for pigs and poultry. They are also used to build camps in the forest or in one case it was used to build a shed where men gather to cook, drink and relax. They can also be tied together with a rope to make a "drag" or palette for animals to pull loads on.
6. *Roseau branches* - are cut by men to make "garapachas". This branch is used as it is strong and does not rot easily in the water and goes into ground with little effort. The branches are plaited together using the Roseau leaves. The sidgen vine is also used to tie the trap together. Roseau branches were also used to make bow and arrows for hunting long ago.
7. *Birdseed grass* - used for covering houses, building huts and making sheeting.
8. *Bamboo* - used to make crab traps and fishing poles and tents for various functions such as weddings and prayer meetings.
9. *Any available flowers* - are used in Hindu/Sai Baba religious ceremonies and for decorating churches and houses. Flowers such as lilies and periwinkles are planted outside of homes and religious areas for decoration and to offer during religious ceremonies.
10. *All hardwood trees* -- these were once cut down for timber to build houses. This is no longer done, as the trees present in the forest today are too young.
11. *Cooper hoop* - the bark of this tree was used to make strings to tie barrels together.
12. *Bois canot* -- made into cricket bats. Bois canot leaves are rolled for smoking and can also be used to colour hair temporarily.
13. *Sandbox trees* - in Cascadoux the area between two sandbox trees has been developed as the centre for recreational activities. Benches were built between the trees from old pieces of lumber, and flowers were planted around the area for

decoration by the young men in the community. The boys use this area for playing football, cooking and relaxing. The milk from this tree causes blindness and can kill fishes.

14. *Milk vine* – used to tie crabs for sale.
15. *Juniper fruit* - used to stain things purple.
16. *Tapia grass* - used to set traps for conch and other small animals.
17. *Mushrooms* - one young male in Cascadoux goes scouting in the forest for items to decorate his home with. He has collected several species of large mushrooms and decorated his walls with them.
18. *Boislet tree* - milk from this tree is mixed with moss and used to set traps for birds.
19. *Laylay tree* - the gum from this tree is chewed and used to set bird traps.
20. *Pesi vine* - used to clean kerosene lamps. Male hunters also believe that bathing hunting dogs with this vine will stop them from “backtrailing” or going round in circles.
21. *Coconut shells* - are burned by women and some men to smoke out the area for mosquitoes in Cascadoux. Men usually light fires on the roadsides in both communities for this purpose. There is the risk that these fires will spread, but many men and women do not seem too bothered by this possibility, although some do take the necessary precautions to prevent this.
22. *Soap vine* - used as a toothbrush by men.
23. *Mango leaves* – used as a substitute for a spoon by men in the forest.
24. *Balbark vine* – the milk from this vine is put in water to drunken fish in order to make them easier to catch. It is believed that if one spits in the water this reverses the effect of the milk. This vine is used in areas where rivers are difficult to bale.
25. *Pot Bush* – used to clean mucus from the nostrils of hunting dogs.
26. *Tulsi Leaves* – used in Hindu prayers (puja) as an offering. It is also used as a tea for the relief of colds and nasal congestion.
27. *Sweet Broom* – used in a process practised by people of East-Indian decent (mainly Hindus) called “jaaray” to remove sickness, evil spirits and bad luck.
28. *Watervine* – used as a source of water in the dry season, particularly by men who enter the forest.
29. *Water lilies* – the purple and white water lilies are blocked off in the channels for their aesthetic value and beauty.
30. *Kudzu* – this vine is ploughed into the soil during land preparation, as it is a good source of nitrogen for crops.
31. *Chip-chip shells* – are used to create footpaths and for casting areas in concrete. There are some that crush the shells and use them as a source of calcium for ducks.
32. *Corbeau* – the blood of the young corbeau is believed to cure asthma if drunk fresh.
33. *Conch water* – the blue water from the river conch, according to many men can be used as an aphrodisiac for women and strengthens their back. It can also be used as a cure for asthma. The same is done with chip-chip water.