

# **UCLA**

## **Electronic Green Journal**

### **Title**

Pursuing Development and Protecting the Environment: Dilemma of the Developing World

### **Permalink**

<https://escholarship.org/uc/item/6s3766kc>

### **Journal**

Electronic Green Journal, 1(22)

### **Authors**

Persadie, Natalie  
Ramlogan, Rajendra

### **Publication Date**

2005

### **DOI**

10.5070/G312210613

### **Copyright Information**

Copyright 2005 by the author(s). All rights reserved unless otherwise indicated. Contact the author(s) for any necessary permissions. Learn more at <https://escholarship.org/terms>

Peer reviewed

# **Pursuing Development and Protecting the Environment: Dilemma of the Developing World**

Natalie Persadie

University of Birmingham, England

Rajendra Ramlogan

University of the West Indies

.....  
Embracing the notion of sustainable development is easier said than done, particularly in developing economies. There is now increasing recognition that the battle to preserve the global village from environmental harm cannot be won without the support of the developing world. Yet, developing countries are confronting challenges rooted in poverty and despair and tend to sacrifice environmental ideals in favor of economic imperatives. This paper paints a grim picture of the North-South divide and provides a statistical viewpoint of the challenge facing proponents of the principle of sustainable development. A case analysis of Trinidad and Tobago identifies the illusory effort by successive governments to promote environmental wellbeing. Findings show that governmental investments tend to privilege development issues (trade, energy, infrastructure) while investment in the environment is derisory and natural resources are seen as either a barrier to development or the equivalent of money to be cashed with obscene haste.

## **1.0 Introduction**

The majority of developing countries are overwhelmed by poverty and the need for development. An analysis of key statistics pertaining to poverty and development reveals a somber picture of human misery in the developing world. It is, therefore, not surprising that much of the 20th century was spent in pursuit of developmental objectives primarily focused on economic wealth as the foundation of poverty eradication. It is generally accepted that all countries aspire to ameliorate the quality of life of their populations by improving living standards through economic growth prospects and development. The current dilemma deals with the desire of developing countries to attain a certain level of development using the status and model of developed countries as a standard, where development includes objectives such as the generation of wealth, the ultimate goal of which is the improvement in the quality of life. These countries seek to develop not only for the purposes of status, but for the more fundamental reason of the eradication of social ills. Developing countries are plagued with social inequalities and their defining features include poverty, inadequate social amenities, high rates of unemployment and a lack of proper infrastructure, among others. The chosen paths of development, though, are not always

suitable to developing countries since they base their development policy on the paradigm set by the market economy.

Equally, leading theories on development show consistency with the aspirations of nations to achieve economic wellbeing and, ultimately, social upliftment. Not surprisingly, therefore, the pursuit of developmental objectives by developing countries usually comes into conflict with the ideals of environmental protection<sup>1</sup>. The problem that exists is that the issue of the environment is a low priority one in developing countries as they have other "problems" to look after. On the one hand there is the need for environmental protection as advocated by the developed world and, on the other, there is the fundamental need for development, which is also prescribed by the developed world. Developing countries have generally felt compelled to follow patterns of development determined by the developed world and, in so doing, they have used the rate of growth in GNP as a yardstick by which to measure their progress (The South Commission, 1990). The relationship that exists between development issues and environmental protection is such that one tends to be achieved at the expense of the other and it is usually the environment that becomes the hapless victim.

It should be noted that the state has a primary role in eradicating social inequities. In the developed world, civil society is very much involved in the decision making process. Matters are not quite so organized in the developing world. There are, nevertheless, cases of civil society having influenced government regulations (Pargal & Mani, 2000). The fundamental problem that exists here is that the state is ultimately responsible for both allocating financial resources and ensuring environmental protection. The reasons for this may be threefold. Most environmental problems occur in public spaces, such as water or air, and it is therefore somewhat difficult to determine culpability. The state, as the custodian of public places and resources, is responsible for maintaining the integrity of public resources. Secondly, environmental problems are often transnational in nature and, as a result, fall under international law, which is the law between states and other actors on the international plane. This therefore implies that the obligation of protecting the environment lies at the level of the state. Finally, environmental degradation is largely the result of economic activity. It may be said that the private sector is generally concerned with capital gain and has no real incentive to protect the environment as this would cut into profit margins. Consequently, it falls to the state to protect the environment either by assuming direct responsibility or by instituting regulatory mechanisms to compel private sector contributions and 'green' corporate behavior.

The eradication of social ills and the protection of the environment, then,

both depend on the same limited source for funding. This inevitably leads to prioritization and, hence, conflict. The environmental aspect obviously ranks lower on the list of priorities since the more obvious social problems such as health, poverty and education seem more urgent because the manifestations – starvation, sickness, unemployment, crime and vagrancy – are so flagrant. This would probably explain why the priorities of many developing countries do not necessarily include environmental protection.

## 2.0 Poverty and Development

### 2.1 Poverty

There exists an inextricable link between poverty, development and the environment. With poverty and inequality being defining characteristics of developing countries, the inherent need for development is manifestly clear if the plight of the poor is to be addressed. The problem that crops up, however, is that, in the developmental process, there is a tendency to wreak wanton havoc on the environment. It will be shown that the developmental drive generally forces environmental issues to a position of low precedence as it is said environment which provides the natural resources for development.

The concept of poverty may differ from culture to culture; however, with the relatively rapid Westernization of the world's cultures, the notion of 'lack' or 'deficiency' is common to most perceptions of poverty. Poverty, in its most extreme form, is a lack of basic human needs, such as adequate and nutritious food, clothing, housing, clean water, and health services. It may be defined as the condition that is said to exist when people lack the means to satisfy their basic needs. In this context, the identification of poor people, then, first requires a determination of what constitutes basic needs. These may be narrowly defined as those necessary for survival or as broadly as those reflecting the prevailing standard of living of the developed world. The first criterion would include people suffering borderline starvation, while the second would cover those people whose basic needs, as outlined above, while adequate to sustain life, do not measure up to that of the developed world.

One of the basic indicators of poverty is food and the need for an adequate diet. Poverty has been recognized as one of the major causes of hunger and malnutrition (Kent, 1984). Nutrients are needed to build tissues, produce energy and keep healthy (King & Burgess, 1993). The position of the developing world with respect to one area of nutrients will be examined. In the human body, food is the unique source of energy and may be expressed as caloric intake, as energy is measured in terms of calories (Bursztein,

1989). The importance of energy cannot be understated especially with regard to the performance of physical activities. The amount of energy or calories people need to obtain from food in order to keep healthy and active varies. One study, performed by King, has estimated that the average active man between the ages of 18 and 60 and weighing around 65 kilograms needs about 2,944 calories per day (1993). The developing countries received an average of 2,414.7 calories per day and the least developed countries 2087.5 calories per day (UNDP, 1996)<sup>2</sup>. In relation to the study by King, this translates into developing countries receiving around 82% of the calories needed per day, and for the least developed countries about 70.1%. Extensive figures are not available for the developed countries but on available statistics, it would appear that people in these countries receive close to 103% of the calories needed per day (UNDP, 1996). With respect to the developing world, these figures are even more worrying especially as the statistics on per capita supply of calories do not reflect actual distribution. In some instances, on a general level, there may be enough food in a country but it is concentrated mainly in the top (richest) 20% of the population.

The consequence of food insecurity is often malnourishment, which primarily affects the destitute who are unable to produce or obtain required levels of nutrition. To make the situation worse, these people tend to inhabit unsanitary environments without access to basic services and clean water. Malnutrition also reduces the earning capacities and resources of households, so perpetuating their social and economic dependency, and reducing the effectiveness of governmental action to achieve developmental objectives (FAO, 1993). It was estimated in 1993 that 20% of the people in the developing world or approximately 848 million people were chronically undernourished (FAO, 1993)<sup>3</sup>. The 1996 UNDP *Human Development Report* indicated that nearly 800 million people do not obtain sufficient food with about 500 million people being chronically undernourished (1996). Further, according to the 2001 UNDP *Human Development Report*, 17.6% of the people from developing countries are malnourished with the figure being 38% for the least developed countries. The figure for undernourished people in the high-income countries is generally not available with statistics obtained from only two countries with an average of 3.5%. Concerning children underweight for age based on percentage under age 5, the average for the developing countries is 23.6% and the least developed countries is 41%. Statistics are available for four high-income countries and the average is 6.75% (UNDP, 2001)<sup>4</sup>.

Health is another basic indicator of poverty. Life expectancy is one of the primary indicators of health standards. It is true that today most people in the developing world are living longer than their ancestors. However, according to the 2001 UNDP *Human Development Report* the life expectancy

of people in the developing world was 64.1 years in contrast with the figure of 77.8 for the developed world. The figure is even more dismal for the least developed countries where the life expectancy figure was around 51.3 years (UNDP, 2001). An example of an area of concern is communicable diseases. Although great progress was made in the 1960s and 1970s in combating communicable diseases, such as malaria, tuberculosis and cholera, these have returned in the late 1980s and 1990s with renewed virulence. Tuberculosis and cholera have struck with a vengeance in Latin America, with at least 1300 people dying in 1991 of cholera in Peru (Bello, 1994). Needless to say, the poor in the developing world have had to bear the brunt of the attack.

Quite often the weight of declining or poor health standards is felt first by the most vulnerable element of human society, namely children. The impact of poor health standards on children can also be discerned in the statistics dealing with the under-five mortality rate. Statistics from the 2001 UNDP *Human Development Report* reveal that the under-five mortality rate and the infant mortality rate per 1000 live births are around 89 and 61 respectively for the developing world, with the corresponding figures being 159 and 100 for the least developed countries. The sheer magnitude of loss of infant life in the developing world is quite shocking when compared to the figures for infant mortality rate and under five mortality rate per 1000 live births in the developed world, which stands at around 6 and 6 respectively (UNDP, 2001).

Pregnant women constitute the other major vulnerable element of human society. The impact of low health standards on pregnant women is reflected in the low birth weight of babies (Dasgupta, 1993). According to the 2001 UNDP *Human Development Report*, an average of 7.6% of children born in the developing world had a low birth weight with 11.2% for the least developed countries. The corresponding figure for the developed world was 4.0% (UNDP, 2001). The implications of poor health are exacerbated by the lack of basic services, such as access to safe water and sanitation facilities. Statistics from the 2001 UNDP *Human Development Report* show that 70.1% of the people in the developing world had access to safe water and 64.9% access to sanitation facilities, with the figures worsening in the least developed countries to 57.2 and 47.2% respectively. Although data for the developed world are limited, current statistics show access to safe water and sanitation being in the vicinity of 99.7 and 99.4% respectively (UNDP, 2001). The lack of access to basic water and sanitation services fundamentally compromises the health of affected people.

The poor state of health care in the developing world can also be ascertained in the statistics dealing with health services. Between the period 1990

and 1995, 69.7% of the people in the developing world had access to health services, with the figure dropping to 54.1% for the least developed countries. Again the picture is different in the developed world with 99.5% of the people having access to health services (UNDP, 1996). A similar pattern is revealed when the data for physician per 100,000 people is examined. The 2001 UNDP *Human Development Report* shows that there was an average of 142.6 physicians per 100,000 people in the developing world and 66.1 physicians per 100,000 people in the least developed countries. The corresponding figure for the developed world was 251.8 (UNDP, 2001). Finally, the abysmal health record of the developing world is reflected in the statistics for the probability at birth of not surviving to age 40, the average of which, according to the 2001 UNDP *Human Development Report*, is 12.5% for developing countries and 33% for the least developed ones. In stark contrast, the corresponding figure for the developed world is a minimal 4.4% (UNDP, 2001). The probability at birth of not surviving to age 60 in selected developing countries is 19.9%, while it is 23.3% in selected least developed countries. In the developed world, the number stands at 10.3% (UNDP, 2001).

The need for adequate housing is fundamental as shelter is one of the most urgent necessities for human beings. The UN has recognized the tremendous problem of housing the poor and in 1976 hosted the UN Conference on Human Settlements (UNCHS) with the aim of addressing the issue. This led to the designation by the United Nations General Assembly (UNGA) of the year 1987 as the International Year of Shelter for the Homeless and the issuance of *The Global Strategy for Shelter to the Year 2000*. This document aimed at shelter for all by the year 2000 (Tolba & El-Kholy, 1993). Homelessness is a two dimensional concept. First, there are those that have no shelter, for example, those who live on the streets or in parks, and second, those whose shelter is inadequate, that is, improperly constructed, overcrowded and lacking in basic services, such as water and sanitation (Chege, 1995). Statistics on housing problems are not readily available on a global level. A press release in May 2002 from the United Nations Conference on Human Settlements states that there are some 100 million homeless people throughout the world, with women and children comprising the main victims. At least 600 million people, again mostly women and children, suffer from inadequate shelter (UNCHS, 2002). One study in India claims that there are about 700,000 pavement dwellers in Bombay and Calcutta, with over 5.5 million slum dwellers in Bombay alone (Bhaskara, 1989).

UNCHS has conducted the only major global housing survey and this was done between 1991-1992 among 35 cities in the developing world and 17 in the developed. This study found that an average of 1.0175 persons per 1000

were homeless in low income to mid-high income countries, with the figure for low income countries being 3.50. The corresponding figure for high-income countries was 0.97 (UNCHS & WB, 1993). In terms of the quality of housing, an analysis was performed on the percentage of houses built with permanent materials and not with temporary materials, such as straw, cardboard and cloth. The study revealed that an average of 13.5% of the housing in the low income to mid-high income countries were built with temporary materials, with the percentage figure rising to 33% for low income countries. It was found that in developed countries, for all intents and purposes, 100% of the houses were constructed from permanent materials (UNCHS & WB, 1993). In terms of unauthorized housing, which includes both squatting and houses constructed without required building, land use or land subdivision permits, the average percentage of such constructions was around 30% for the low income to mid-high income countries, with a high of 64% for low income countries (UNCHS & WB, 1993). The percentage of squatting alone was around an average 9.75% for low income to mid-high income countries, with around 17% for low-income countries (UNCHS & WB, 1993). The level of unauthorized buildings or squatting for the developed world was, for statistical purposes, insignificant (UNCHS & WB, 1993). While 2001 figures are admittedly scant for all categories, figures for squatting suggest an average of 4.7% for developing countries and 9.8% for least developed countries. In developed countries, the percentage was 3.5 (UNCHS, 1999a, 1999b) . While developed countries also grapple with the problems of homelessness and inadequate housing, it would appear that the real problem lies in the developing world, especially in the rapidly growing cities.

Education is another important area that is being compromised by poverty. Statistics for 2001 suggest that the adult literacy rate for the developing world stood at 74.8% with the figure for the least developed countries being 51.9%. While statistics were limited, the average adult literacy rate for developed countries was around 92% (UNDP, 2001). The dismal adult literacy rate is supported by the equally disturbing trend in mean years of schooling. At 1992, the average years of schooling for the over-25 year old segment of the population of the developing world was in the vicinity of 3.4 years and 1.5 for the least developed countries. The corresponding figure for mean years of schooling in the developed world was 9.67 years (UNDP, 1994). These alarming statistics on adult literacy and average years of schooling suggest that much needs to be done to eradicate illiteracy in the developing world.

Equally important in the struggle for adequate educational standards in the developing world is the status of primary education. 1996 figures show that 66.3% of the first-grade enrollment completed their primary education with



the figure dropping to 55.8% for the least developed countries. In developed countries, the percentage of children completing primary level education stands at around 96.3% (UNDP, 1994). The situation appears more calamitous when one considers that, for the same period, only 38.9% of the primary school entrants proceeded to secondary school with the figure being 18.95 for the least developed countries. The developed countries managed to ensure that 82.7% of primary school entrants proceeded to secondary schooling (UNDP, 1994). Statistics for 2001 for net primary and secondary school enrollment for developing countries stand at 54.6% and 29.9% respectively, while in the least developed countries the figures are a scant 29.1% and 7.3% respectively. For the developed world, the percentages were 73.8% and 59.6% respectively (UNDP, 2001). One positive improvement has been in the area of the number of pupils to teachers. For 1996 statistics show that this was at 33.6 and 21.6 for primary and secondary schools respectively for all developing countries. The corresponding figures for the least developed countries were 43.1 and 25 respectively. The industrial nations saw the number of pupils to teachers in the primary and secondary school institutions reach a satisfactory 18 and 14 respectively (UNDP, 1996). Notwithstanding the improvements in the developing world in the pupil-teacher ratios, there is still a long way to go, especially in the least developed countries, as the ideal ratio for primary school is probably in the vicinity of 23:1. Although large class sizes of an average of 45 is not the sole factor affecting school achievement, it increases the teaching load and reduces a student's access to the teacher. Very often, also, large classes are over-crowded and lacking in adequate furniture, a fact counter-productive to effective learning (Colclough, 1993).

Income levels have always been seen as important in the understanding of levels of poverty. Real income is often perceived as a measure of the command a person has over marketed goods and services, for example, food, clothing and shelter; although, it is now recognized that the income test, while useful, is a crude indicator of poverty. Real income does not indicate what goods are on offer or how much of each good on offer a person can and does procure. Nonetheless, changes in income levels generally point to movements in welfare levels (Dasgupta, 1993). The *World Development Report 2000/2001* puts the average GNP per capita income for the developing world at US\$2053.67, with the GNP per capita income for the least developed countries at around US\$420.76. The state of income levels must be compared to that of the developed world where the GNP per capita stood at US\$24,084.74 (World Bank, 2001b,). Yet, the decade of the 1980s saw spectacular growth among nearly 1.5 billion people mainly in East Asia, where per capita income growth exceeded 7% per annum. In contrast, however, around 1 billion people among some 70 countries, mainly the least developed countries, experienced a decline in per capita income for the

same decade (UNDP, 1996). Indeed, the proportion of the world's people blessed with per capita income growth declined from 54% to 37% between 1965-1980 and 1980-1993 (UNDP, 1996). The problems of income distribution are also well reflected in international income distribution. The 2001 *Human Development Report* shows that the developed world accounted for US\$23.9 trillion of the US\$30.4 trillion global GDP (2001), with the share of global income of the richest 20% of the world's people rising from 70% in 1960 to 85% in 1991 (1996).

In assessing income levels to illustrate the wide disparity in income share, it is necessary to review income share within the framework of how much the richest 20% to the poorest 20% of population receive respectively. The 2001 UNDP *Human Development Report* shows that the wide disparity in income share between the top 20% and lowest 20% of the population in the developing world contributes to the brutal poverty that is crippling developing countries. For the figures available for the developing world, the poorest 20% of the people get an average of 5.6% of total income, with the figure declining even more tragically in Latin America to 3% (UNDP, 2001). The highest 20% receive an astonishing 45% of all income (UNDP, 2001). In Brazil, 40% of the households in that country received only a paltry 8% of the total national income, while the highest 20% received an astronomical 63.8% of the national income (World Bank, 2001b). When broken down into deciles, these figures seem more exaggerated: the poorest 10% of developing countries receive a miserly 1.9% of all income while the richest 10% receive as much as 27% of all income (UNDP, 2001). Income share distribution for the developed world is actually not any more equitable than the situation that obtains in the developing world. The poorest 20% of the population receives some 6% of all income while the richest 20% of the population receive 33.3% (UNDP, 2001). In terms of deciles, the percentages are 2.6 and 33% for the poorest and richest sections respectively (UNDP, 2001).

Income levels have also been used to determine the poverty line that has been defined as, "that income level below which a minimum nutritionally adequate diet plus essential non-food requirements are not affordable" (UNDP, 1994). Based on this poverty test, it has been estimated that there are some 1.3 billion people living in absolute poverty in the developing world. Similarly, based on the poverty line GNP per capita test of US\$370 adopted by the World Bank, there are around 1 billion destitute worldwide. In some areas, the growth rate in number of the poor has been rapid. In Latin America, the number of people living in poverty rose from 130 million in 1980 to 180 million at the beginning of the 1990s (Bello, 1994).

Employment levels also play a part in the dilemma of poverty and it has

been asserted that unemployment is one of the prime causes of poverty. It should be noted that while developed countries have social welfare programs to take care of their unemployed this facility is not available in developing countries. Employment provides people with a source of income, contributes to the output of goods and services and provides workers with a sense of dignity as they are provided with the means to participate in community activities (Griffin & Mckinley, 1994). The destitute are often unemployed, a condition that further undermines their ability to rise above the barriers of poverty. Thus, trends in employment are often indicative of the ability of a society to deal with poverty. In the developing world, 51% of the population forms the labor force with the figure dropping to 45% for the least developed countries. With respect to the developed countries, the labor force comprises around 50% of the total population (World Bank, 2001a).

Generally, figures on unemployment levels in the developing world are often unavailable or incomplete. However, for the few statistics available, an analysis for 1998 revealed a relatively high level of unemployment in the developing world. Bearing in mind that employment levels are generally understated due to poor data acquisition techniques and the absence of formal unemployment centers, the level of unemployment for 1998, the most recent figures available, was 8.6% for the developing world<sup>5</sup>. In the developed world, the unemployment level was 7% (World Bank, 2001a). Figures for the least developed countries were available for only 6 countries and from these the unemployment level is at 9.3%. While it would appear that the global village is generally experiencing similar levels of unemployment, two important differences must be noted. First, developing countries' unemployment levels are not as accurate as that of the developed world and unemployment percentages are not available for most of Africa, a region with major economic problems. Second, the social safety net present in most developed countries to assist the unemployed is generally absent in the developing world, partly accounting for the lack of enthusiasm in registering the unemployed, as no tangible benefits are available. Indeed, it has been argued that the concept of unemployment is not applicable to developing countries as, in the absence of a social net that allows people to spend time unemployed, people in the developing world must work regardless of how badly paid or how unproductive (UNDP, 1996).

It is clear from available evidence that poverty continues to stalk the developing world with devastating effects. Today, the issue of poverty is still as strong as in 1972 when the international community met for the first time to discuss poverty. At the United Nations Conference on Environment and Development (UNCED) in 1992, the second major international conference on the environment held 20 years after UNCHE, poverty once again assumed a dominant role. A joint report submitted by the Asian and Pacific Regions

states "that the need for poverty alleviation is most urgent. The interaction between poverty and the environment sets off a downward spiral of ecological deterioration that threatens the physical security, well-being and health of many of the region's poorest people" (Economic and Social Commission, 1992).

## 2.2 Development

"The debate over the word 'development' is not merely a question of words. Whether one likes it or not, one can't make development different from what is has been. Development has been and still is the *Westernization of the world.*" (Pieterse, 2000, p.178).

Development is one of the most critical issues facing the developing world and has been described as "one of the most powerful of all Western ideas" (Freiburg & Hettne, 1985). Many authors have argued that the key to improving socio-economic conditions in the developing world is through development, where socio-economic issues include the ideals of environmental protection. This begs the question now as to the definition of the term development and the manner in which it is applied to these particular economies. While a holistic definition remains somewhat elusive, it is generally agreed that "the ultimate goal of a country's development process is an improvement in the well-being of its residents" (Yarbrough & Yarbrough, 1994) where both "improvement" and "well-being" are necessarily relative terms depending on the country's stage of development. For a developed country it may mean assuring its population a clean environment; while in a low income country it may mean providing the inhabitants with the basic necessities such as food, shelter, clothing, education and health and sanitation facilities.

Having regard to the challenges facing developing countries in pursuing developmental goals, it is necessary to assess the task that lies ahead especially as the common understanding that pervades developing countries is that the root cause of poverty is said to lie in the realm of economic backwardness or stagnation (Patel, 1991). For low income countries, economic growth is imperative in the battle against poverty. This perception has influenced the manner of development of human society and over the last two decades the concept of development has converged with that of poverty. Both are being seen as essentially responsive to the other with developmental objectives being tailored to the attainment of anti-poverty objectives. Yet, developmental objectives of developing countries extend beyond the alleviation of poverty to include modernization goals, embracing

areas such as communication and infrastructure.

With respect to communication, in 1998, there were 598 radios per 1,000 people in the developing world and 338 per 1,000 in the least developed countries in 1999. The corresponding figure for the developed nations was 813 (World Bank, 2001a)<sup>6</sup>. Similarly, there were 155 televisions per 1,000 people in developing countries and 48 per 1,000 in the least developed ones. As expected, the frequency of television ownership was far greater among the developed nations, standing at 313 per 1,000 people (World Bank, 2001a). With respect to telephone linkages, there were approximately 150 telephone lines per 1000 people in the developing world, with the corresponding figure in the least developed world being 23 per 1000 people. The number of main telephone lines per 1000 people in the developed world was 436 (World Bank, 2001a). On the level of infrastructure, one example of a developmental objective is roads. The percentage of roads in good condition (paved) amounts to 54.6% of the roads in the developing world, with the figure for the least developed countries being a close 51%. In the developed world, some 86.5% of the roads are similarly classified (World Bank, 2001a)<sup>7</sup>.

### 3.0 Poverty, Development and the Environment

Having seen the justifiable preoccupation with poverty and development in the developing world, there is a need to understand the undeniable link with the environment. Poverty and development have contributed to environmental degradation in several ways. For the poorest in the world, the environment is the means to survival, that is, the forests, rivers and land are relied upon to provide basic needs. For example, trees provide food crops, timber for building, fuel for cooking, fodder for animals and fibers for weaving (Davidson, 1992). The World Bank has asserted that the poor are both victims and perpetrators of environmental abuse. Lacking in resources and technology, impoverished farmers often engage in faulty agriculture practices such as 'slash and burn' agriculture, cultivation of erosion-prone hillsides or movement into tropical forests where crop yields often decline quickly after a few years. The needs of poor families are often short-term and this prompts the fast utilization of natural resources, such as excessive cutting of trees and failure to replace soil nutrients (World Bank, 1992).

The rapid deterioration of the environment has made the daily struggle to maintain one's existence even more monumental. This has led to the harvest of nature's bounties beyond sustainable levels in a manner deleterious to the continuing integrity of the environment. The result has been environmental problems such as massive deforestation and growing desertification in some areas like the Sahel region (Smith, 1994). The result is often the migration

of poor families into forested areas in search of new lands. It has been estimated that 13% of the people in the developing world are landless and almost 60% of the households lack adequate land for subsistence (Davidson, 1992). Constantly pushed by economic forces, these landless people quite often move into marginal environments that tend to be more ecologically fragile, such as arid lands, tropical forest, savannahs, steep mountain slopes and mangroves (Gupta, 1988).

Davidson has asserted that 60% of the world's poorest citizens live in ecologically vulnerable areas with the pressures of settlement and cultivation in these areas leading to further and more rapid environmental degradation (1992). More so, developing countries appear to suffer more at the hands of so-called "natural" disasters. Inevitably, this occurrence seems more prevalent in the poorer developing nations like Bangladesh. It would appear that the world's poor, by intensifying their use of natural resources by improper environmental practices such as deforestation, significantly contribute to the intensification of the impact of natural disasters (Pearce & Warford, 1993). The result of their actions ensures that the damage caused by natural occurrences is rendered much greater than what would have prevailed had the environment not been abused.

Developmental projects have also been undertaken without regard to the environmental ramifications. The frequent failure to assess the impact of projects like dam construction, road building and railways has added to the many environmental disasters unfolding in the developing world. One example of such a disaster is the Projeto Grande Carajas in north-east Brazil. It occupies 900,000 square kilometers; more than 10% of the land area of the state of Para, whose topography and ecology are being irreversibly altered by the project. In 1986, 890 kilometers of railroad track were laid for Carajas' sole use, and the project currently sends three 160-car trains per day, each one carrying 15,000 tons of iron ore, to the Atlantic port of Sao Luis. The ironworks are powered by charcoal, for which 200,000 hectares of virgin forest are cut down each year; eucalyptus trees are mainly used for "reforestation" because they grow rapidly. Rio Tocantins, one of the largest rivers in the Amazon basin, has been dammed at Tucuruí for hydroelectric power, and at the same time 2,400 square kilometers of forest have been submerged. Waterways are already being clogged by soil from cleared land areas causing flooding. The failure to clear the land before flooding means that dams are polluted with rotting vegetation enabling the breeding of disease-carrying insects. The makeshift towns that have sprung up along the development have added to the environmental catastrophe that is the Projeto Grande Carajas (Davidson, 1992). The 23,000 workers in the region, some of whom have lost their jobs and have settled there permanently, have come into the usual problems experienced by other

Brazilian "pioneer" areas in the past: slash-and-burn, over-settlement, garbage, prostitution, crime and poverty (Carajas, 1998).

Very often, economic growth is based on the unsustainable exploitation of natural resources and pollution of the environment. Indonesia is frequently cited as a nation that has achieved economic growth together with human development. However, in the 1980s, it had an annual deforestation rate of 1% leading to a loss of 1.2 million hectares of forest per year. Similarly, Thailand, with its spectacular economic growth in the 1980s, saw its forest cover reduced from 55% to 28% between 1961 and 1988. Nature appears to be paying the price for the economic rejuvenation of many societies. Pollution has risen in many developing countries with high economic growth, as the quality of the environment is ignored in favor of economic successes. In Taiwan, less than 1% of human waste is treated and this has led to one of the highest rates of hepatitis-B in the world. In South Korea, much of the tap water available for drinking purposes is contaminated, and the capital Seoul is further rated as one of the five worst cities in the world with regard to air pollution (UNDP, 1996).

Finally, and perhaps most importantly, poverty and development affect the ability of developing countries to pursue environmental objectives by diverting national income. Government must take measures to combat poverty and hasten development. As the lead spender with regard to environmental objectives, the environment quite often slips down the ladder of government fiscal priorities. The price for the failure to address poverty and development can be a high one, as poverty has the ability to adversely affect peace and stability. Poverty is capable of breeding social and political conflicts and undermining fundamental human values (Jazairy, 1992). Thus, there is emerging recognition of the dynamic interactions of poverty, development, stability and the environment. Yet, nations are expected to pursue economic development in order to provide basic needs and achieve modernization goals. The pursuit of these objectives is paramount and until developing countries can sufficiently reduce poverty to manageable proportions, environmental goals will remain peripheral and concepts such as sustainable development will remain as high sounding rhetoric bereft of substance (UNCED, 1992). In echoing the words of Indira Gandhi, Robert Mugabe, the former President of Zimbabwe, stated that, "preventable poverty is one of the major causes of environmental degradation today. Poverty pollutes our environment. Those who are poor and hungry will often destroy their immediate environment in order to survive. Their livestock will overgraze the grasslands and in growing numbers will crowd congested cities. They will overuse marginal lands. This explains why the greatest environmental change is occurring in developing countries. These countries

are poor" (1991, p. 11).

#### 4.0 Development and the Environment: A Case Analysis of Trinidad and Tobago

The state is the critical player in ensuring effective environmental management. The fact that the state is the primary financier of environmental investment makes it imperative that the state embraces the desire to deal with environmental issues at both the policy and implementation level. It has been argued that developing countries have not yet attained that stage of development where they can afford to give priority to environmental management. It is true that developing states sometimes attempt to introduce measures to deal with the problem of environmental degradation; however, the problem is that rapid population growth generally unhinges the efforts of the state. Developing countries would only be able to pursue environmental protection policies when they have achieved certain developmental objectives and can afford to divert some of their financial resources for 'lower' priority issues.

Currently, there is still an inherent need to develop the economic and social infrastructural bases of these countries, as it has been persuasively argued that the application of appropriate developmental policies is the only way to eliminate social inequalities. The intrinsic problem that exists is that it is the state that is ultimately responsible for allocating the finite financial resources available to it. This is not to say that civil society, in the form of community groups, does not help in the decision making process. While it would appear to be less organized than the groups mobilized in the developed world, this type of collective action can supplement formal governmental regulations (Pargal & Mani, 2000). At the end of the day, this entity is responsible for the economic and social development of the country; it is, however, also responsible for the protection of the environment. This is where the inherent conflict lies, as the state must now decide which is more important and allocate the resources accordingly.

The fact of financial prioritization shall comprise the general trend of thought in the following section. Investments into an institutional framework for environmental management will be examined for one local environmental agency and the environment generally in Trinidad and Tobago, which will certainly be compared to the funding budgeted for trade and investment to clearly illustrate financial prioritization.

#### 4.1 The Statistics: Government Allocation Compared – Environment Versus



## Trade and Development

It is obvious that, as a developing country, government expenditure is geared toward facilitating developmental objectives and is not necessarily as concerned with issues of an environmental nature. In the review of the *Public Sector Investment Programme* for the year 1998/1999, the Overview states,

The Public Sector Investment Programme (PSIP) 1998/1999 focused continuing and advancing programmes and projects for the development and enhancement of the economic and social infrastructure [sic] base of the economy. The aim of the 1998/1999 PSIP was to increase as well as sustain the level of economic growth by strengthening the base for facilitating economic activity. To this end, resources were allocated to priority sectors identified as agriculture, roads and bridges, education, health, housing and settlements, water and sewerage, social and community services and public administration, as well as for strengthening the capacity to protect and conserve the natural environment. (Ministry of Planning and Development, 1999, p. 1).

While the objectives of the PSIP are rather commendable, it is interesting to note just exactly when mention is made of the need for environmental protection and conservation. While it is true that housing and agricultural policies could be environmentally friendly, they generally tend to concentrate on infrastructural development. Equally interesting is the fact that 1998/1999 is the first and only fiscal year in which environmental concerns are actually stated in the PSIP objectives. The PSIP 1999/2000 makes no explicit reference to environmental management in its objectives, but seeks to enhance "the social well being of the people, having laid the economic fundamentals on a solid footing" (Ministry of Planning and Development, 1999, p. 26). The objectives for previous years emphasize the importance for developing economic and social infrastructure that could ultimately provide "a platform for sustained economic growth while improving the quality of life through the enhancement of social services" (Ministry of Planning and Development, 1996, p. 1).

This priority given to development and growth is reiterated in the Government of the Republic of Trinidad and Tobago's *Medium Term Policy Framework 1998-2000*. The medium term goals and objectives state:

Government's main objectives over the medium term are to accelerate the growth and development of the economy;

facilitate the diversification of the country's productive base; and ensure an improved standard of living for all. The broad policy goals over the medium term are identified as follows:

- Promote strong economic growth;
- Reduce unemployment;
- Contain the inflation;
- Ensure equity within the society; and
- Protect and preserve the environment (Ministry of Finance, 1997, p. 4)

For the fiscal year 1999/2000, allocation for all sectors amounts to TT\$Mn1567.5 (US\$249)<sup>8</sup>. Given past trends, total investment expenditure usually amounts to a percentage of planned investment. For 1998/1999 planned investment was TT\$Mn1097.1 (US\$174), but actual expenditure stood at TT\$Mn667.5 (US\$106), or 61% of planned investment (Ministry of Planning and Development, 1999, p. 1). For 1997, expenditure amounted to 70.9% of planned expenditure (Ministry of Planning and Development, 1997, p. 1). Of the \$1567.5 million allocated for the PSIP for fiscal year 1999/2000, a total of 68.459% is derived from domestic sources.

**Table 4-1 Financing the Public Sector Investment Programme - 1999/2000**

<b>Sources of Financing</b>	<b>\$Mn</b>	<b>%</b>
<b>Central Government Programme</b>	<b>1552.485</b>	<b>99.043</b>
<b>External Sources</b>	<b>479.397</b>	<b>30.584</b>
<b>Loans</b>	<b>435.044</b>	<b>27.754</b>
Inter-American Development Bank	282.753	18.039
International Bank for Reconstruction	103.641	6.612
Caribbean Development Bank	48.65	3.104
European Investment Bank	0.00	0.000
<b>Grants</b>	<b>44.353</b>	<b>2.830</b>
Inter-American Development Bank	3.928	0.251
International Bank for Reconstruction	3.090	0.197
European Community	35.095	2.239
Other External Financing Agencies	2.240	0.143
<b>Domestic Sources</b>	<b>1073.088</b>	<b>68.459</b>
<b>Loans</b>	<b>131.890</b>	<b>8.400</b>

Republic Finance and Merchant Bank	131.890	8.400
<b>General Revenues</b>	<b>916.198</b>	<b>58.450</b>
Government of Trinidad and Tobago	916.198	58.450
<b>Road Funds</b>	<b>25.000</b>	<b>1.595</b>
Government of Trinidad and Tobago	25.000	1.595
<b>State Enterprises Programme</b>	<b>15.000</b>	<b>0.957</b>
<b>Domestic Sources</b>	<b>15.000</b>	<b>0.957</b>
<b>General Revenues</b>	<b>15.000</b>	<b>0.957</b>
Government of Trinidad and Tobago	15.000	0.957
<b>GRAND TOTAL</b>	<b>1567.485</b>	<b>100.000</b>

Source: Ministry of Planning and Development, 1999, p. 28

While it is true that domestic sources provide 68.5% of all funding, there is still a relatively heavy dependence on funding from external sources. More importantly, is the actual sectoral allocation of planned investment.

**Table 4-2 Public Sector Investment Program (PSIP) 1999/2000  
Analysis of Sectoral Allocations**

	TT\$m	%
<b>PRODUCTIVE SECTORS</b>	<b>22.20</b>	<b>1.42</b>
Agriculture	22.20	1.42
<b>ECONOMIC INFRASTRUCTURE</b>	<b>531.90</b>	<b>33.93</b>
Agriculture, Fisheries, Forestry	76.42	4.88
Manufacturing	17.45	1.11
Drainage	26.65	1.70
Electricity	2.39	0.15
Environment	8.30	0.53
Land Acquisition	11.00	0.70
Roads and Bridges	260.15	16.60
Tourism	15.11	0.96
Transport and Communication	2.10	0.13
Water and Sewerage	13.75	0.88
Other Economic Services	93.60	5.97
Urban and Regional Development	5.00	0.32
<b>SOCIAL INFRASTRUCTURE</b>	<b>716.34</b>	<b>45.70</b>
Education	235.20	15.00

Health	157.21	10.03
Housing	75.92	4.84
Social and Community Services	229.37	14.63
Human Resource Development	16.65	1.06
Training and Support for Employment	2.00	0.13
<b>PUBLIC ADMINISTRATION</b>	<b>268.89</b>	<b>17.15</b>
Administration	175.32	11.18
Public Order and Safety	93.57	5.97
<b>PLANNING / PROJECT PROGRAMME</b>	<b>28.17</b>	<b>1.80</b>
<b>DEVELOPMENT</b>		
Planning and Project Development	28.17	1.80
<b>GRAND TOTAL</b>	<b>1567.5</b>	<b>100.00</b>

Source: Ministry of Planning and Development, 1999,  
p. 80

One can immediately see that development is not solely focused on economic infrastructure, but even more so on social infrastructure. Nevertheless, within the breakdown for economic infrastructure there is obvious prioritization. One must take into account that allocation to environmental issues cannot be checked singly since allocation to all agencies with environmental responsibilities must also be included<sup>9</sup>. Even in this table, there is overlap. While allocation to the environment is separately considered, environment related issues can also be found under agriculture, fisheries and forestry; manufacturing, which includes environmental impact assessment specifications and the development of a computerized environmental system; and planning and project development, which includes a natural resource and environmental management program. That aside, it is evident from the table that development is given great importance. The development of roads and bridges alone has been allocated 16.6% of all planned expenditure. Tourism and manufacturing account for 2.07% of all investment. The environment, however, has only been budgeted TT\$Mn 8.3 (US\$1.3), or little over ½% of total investment. Compare this to the \$76 (US\$12) million estimated to support business expansion and industrial development in the sectors of agriculture, fisheries and forestry, which is a significant 4.8% of all expenditure.

For 1998/1999, more emphasis was placed on economic infrastructure with 52.15% allotted to economic development. An enormous 21.18% was granted for roads and bridges alone; 3.03% to manufacturing and tourism; and 1.38% only to the environment. Of the \$6.7 (US\$1) million allocated to the environment, namely the continued capacity development of the Environmental Management Authority ("EMA"), only \$4.1 million (US\$0.65) was expended. Resources totaling \$20.4 million (US\$3.2) funded from general revenues were allocated to the Tourism and Industrial Development

Company (TIDCO) of Trinidad and Tobago in 1998/1999 for facilitating and promoting the development of the industrial base of the economy (Ministry of Planning and Development, 1999).

TIDCO was incorporated in 1993 as the principal marketing, promotion and development agency in the non-oil, non-energy sector in Trinidad and Tobago. While the company commenced operations in mid-1994, (only half year before the institutionalization of the Environmental Management Authority), it has already assumed great importance. For operational purposes, the company has been subdivided into seven divisions: the Office of the President, the Division of Trade and Industry, the Division of Tourism, the Division of Government Policy and Special Projects, the Division of Finance and Administration, and the Property and Industrial Development Company of Trinidad and Tobago (PIDCOTT) (TIDCO, 1999).

One look at the Consolidated budget for the Company will illustrate the importance placed on development. As a whole, the company had a budget projection of TT\$150 756 313.00 (US\$23 929 574) (TIDCO, 1998) for the year 2000 and obvious emphasis was placed on the divisions dealing with industrial development, trade and tourism. These sections accounted for 58.5% of all of TIDCO's expenditure. The Government of this country is obviously concerned with developing the economic base of the country. Based on the allocations to the respective sectors, it affords little attention to environmental issues as its limited financial resources force it to prioritize.

What this data illustrates simply and clearly is that priority is definitely given to developmental objectives. The emphasis of developing countries is to develop their economic and social infrastructural bases. This generally means that the environment is not prioritized and is put on the back burner as resources are shared according to the importance afforded to the respective issues. The environment is clearly not treated as being very important.

#### 4.2 Investment in an Institutional Framework for Environmental Management in Trinidad and Tobago among Enforcement Agencies

This section will look at the development of the Wildlife Division, an important agency with responsibility for protection of the environment as a microcosm of the problems facing enforcement agencies in Trinidad and Tobago. This will be used to highlight problems affecting its efficiency (in its capacity as an environmental related agency), such as the resources (human, technical, financial and research) available to it and its enforcement

reflect financial prioritization as evidenced by the myriad inadequacies with which it must deal as a direct result of the poor financing they receive.

The Wildlife Section is part of the Forestry Division which falls under the Ministry of Public Utilities and the Environment<sup>10</sup>. The issue of wildlife protection first came under the Forests Act which dates as far back as 1915 and wildlife management constituted part of the functions of the Forestry Division. The Conservation of Wild Life Act was passed as Act No. 16 of 1958 and provided for the establishment of a Wildlife Conservation Committee. As the name of the Act implies, the purpose of the Wildlife Section (separate from the Committee) is to "discharge its responsibility for the research and management of the wildlife resources of Trinidad" (Ministry of Agriculture, 1999a).

The major constraints of the Wildlife Section are a lack of staff and funds. A Senior Ministry official complained about the quality of the staff; he stated that there was an inherent need for more trained staff. In addition, the Wildlife Section is always under-funded as the releases (money allocated by the government) are always less than the allocations (what the division requests). For 1997, out of a total of TT\$3 877 745.13 (US\$ 615 515) spent on the development program for the Forestry Division as a whole, only TT\$150 000.00 (US\$ 23 810) was spent on wildlife (Ministry of Agriculture, 1999b). For the 1999/2000 Fiscal year TT\$76.42 million (US\$12.13), or 4.88% of total budgetary allocation, was allocated to agriculture, fisheries and forestry (Ministry of Planning and Development, 1999, p. 80). Of this, only TT\$2.4 million (US\$ 0.38) was allocated to the Forestry Division (Ministry of Planning and Development, 1999). It would be out of this amount then that the Wildlife Section would be allocated funding.

In 1998, there were nine vacancies for the position of Game Warden I and one vacancy for the position of Game Warden II. The Game Wardens are required to increase the capacity of the Wildlife Section. However, the Service Commission appointed only the Game Warden II (the Director of Forestry); the other nine positions remain unfilled. Eight years ago, Cabinet agreed to appoint 280 honorary Game Wardens to assist the regular Game Wardens. Although the appointments were made, the impact on the effectiveness of the Wildlife Section has been barely noticeable. This is compounded by the inability to supervise all the honorary Game Wardens properly.

There is a definite inadequacy with the enforcement capabilities of the Wildlife Section, which are also to be attributed to staffing constraints. Although Trinidad and Tobago is a signatory to the Convention on the International Trade in Endangered Species of Wild Flora and Fauna

("CITES"), which regulates the import and export of species on the negative list, it is often difficult to control the illegal trade of protected and endangered species. The Cedros Peninsula, at the southwestern tip of Trinidad (mere kilometers away from Venezuela), has been cited as a major point that facilitates this trade. While the police and defense force assists them, this is often not enough.

Another huge problem facing the Wildlife Section is illegal hunting. However, a major constraint to the Wildlife Section is the inadequate and unsuitable weapons available to the Game Wardens. The weapons are outdated and are no match for the poachers who are equipped with modern, sophisticated weapons. Therefore, even though the Wildlife Section can call on 280 honorary Game Wardens, their ability to act effectively is hindered by the lack of modern technology<sup>11</sup>. The Wildlife Section, which operates largely in remote localities, is particularly hampered by an inadequate fleet of vehicles. The efficiency of the Wildlife Section has been compromised and, as a result of the financial constraints, it is ineffective. The stark reality, therefore, is that the Wildlife Section lacks an appropriate enforcement capability and the legislation is breached with impunity.

## 5.0 Natural Resources and Development: Friend or Foe to the Environment?

The other dimension to state support of the environment lies in the polemic relationship with development and natural resources. While natural resources are certainly a significant platform for achieving development within economic parameters, it can suffer immensely during the monetization process. It can be cogently argued that the natural resource base of developing countries is perceived either as commodities to be harvested for the purposes of financial gain, or as obstacles to the development process.

### 5.1 Natural Resources: Commodities

#### **5.1.1 The Economic Development of Trinidad and Tobago and the Energy Sector**

Trinidad and Tobago provides a prime example of a natural resource based developing economy. Its economic development is driven largely by the exploitation of its natural resources, as illustrated by its dependence on sugar in an earlier era, and then on oil and natural gas. However, in the country's quest for development, it is interesting to note its stance on environmental protection as concerns its largest foreign exchange earning sector – the energy sector.

In 1998, total domestic oil production was 44.7 million barrels at an average rate of 122 627 barrels of oil per day ("bopd"), a decline of less than one percent from 1997. However, average daily oil production rose to over 130 000 bopd towards the end of the year (MOEEI, 2000). As the statistics show, crude and refined petroleum accounted for as much as 88.6% of total exports in 1980 and generally accounted for more than 70% of all exports for the period. Current statistics gleaned over the years attest to the fact that the energy sector remains the largest single contributing sector to the country's economy as indicated in foreign earnings, gross domestic product and Government revenues. The following statistics illustrate the sector's continuing contribution to key economic indicators in 1997.

Gross Domestic Product:	\$9.7 Billion or 26.6% of the total GDP of \$36.4 Billion
Government Revenues:	\$2.1 Billion or 21.2% of total Government Revenue of \$9.9 Billion
Foreign Exchange Earnings:	\$11.2 Billion or 71% of foreign exchange earnings of 15.9 Billion (MOEEI, 1998, pp. 7-8).

For 1998 "excluding the petrochemical industries, the energy sector was expected to contribute 23% to GDP and 76% to exports..." (MOEEI, 2000).

The peak in oil production in 1978 (of 12 million tons per year [MOEEI, 1994, p. 2]) encouraged exploration that resulted in a shift in the ratio of gas to oil reserves. In the face of declining oil reserves, these exploration activities revealed the existence of significant reserves of natural gas. Natural gas, which had been hitherto treated as a nuisance product and flared, began to assume an economic significance of its own (MOEEI, 1998). It is also used as the petrochemical feed stock in the production of ammonia, methanol and urea. It provides an energy source for non-energy products such as steel, iron carbide and other minor manufactured products (MOEEI, 1998).

A major development of the natural gas industry is the liquefaction of natural gas for export. This is projected to be the fastest growing sub-sector of the national hydrocarbon industry. By the year 2000, natural gas consumption was expected to reach 1400 million cubic feet per day ("MMcfd") from the then current level of 900 MMcfd. Some 450 MMcfd of this additional gas will be Liquefied Natural Gas ("LNG") exports, while additional supplies will be consumed as fuel for power generation, feed stock to new petrochemical plants, and fuel for additional metal furnace plants (MOEEI, 1998).



### 5.1.2 The Energy Sector and the Environment

Given the extreme importance of the hydrocarbon sector to the economy, it is now relevant to examine the attitude of the (energy) policy makers to environmental protection. While both pre- and post-independent budget speeches were significantly shaped by the obvious dependence on the then oil industry, there was little attempt to formulate a policy concerning the energy sector. Even despite the passing of the Petroleum Act of 1969, the first policy paper only appeared some twenty years afterwards. It was only with the change of government in 1986, when the National Alliance for Reconstruction ("NAR") came into power, that the policy paper was written. As the 1986 Energy Policy states,

This Paper is a first step towards documenting a comprehensive Energy Policy for Trinidad and Tobago. It involves consolidation of previous and existing policies, updated and articulated into a more fully integrated energy policy document. (Ministry of Energy, 1986, p. 4)

Given the political party's concerns of environmental issues, the policy includes a theoretical commitment to safeguard the environment. However, the policy states no actual prescriptive measures on sustainability or pollution prevention, nor does it set any deadlines for the implementation of any such measures. Nevertheless, it does acknowledge that "the disposal of wastes from energy will continue to degrade the environment..." (Ministry of Energy, 1986, p. 71). The policy vaguely states that its two main goals are to:

- Provide adequate energy for the country's needs...in the most efficient and economical way, while ensuring that...the long term quality of the environment is maintained at an acceptable level, and
- Enable Trinidad and Tobago to fulfill its obligation to several UN organizations to which it has pledged to contribute to the solution of environmental problems... (Ministry of Energy, 1986)

An "acceptable level" needs to be clearly defined. There need to be specific measures to ensure efficiency. There is also need for precision in terms of the country's ability to fulfill its international environmental obligations. This first policy left much to be desired for environmental concerns.

The 1992 Energy Policy offers no more commitment than does the first. This particular policy states that,

The Government will place further emphasis on environmental

considerations and the promotion of the use of environmentally friendly energy substitutes as alternative transportation fuels (MOEEI, 1992, p. 27).

Again, this is imprecise and offers no suggestions as to how to achieve such considerations. In detailing the parameters for formulating an energy policy, of eleven concerns expressed, environmental concerns were the tenth mentioned. Although it was not expressly stated that the measures appeared in order of priority, it is feared that the order in which the measures were presented reflected the importance attached to environmental policy. The situation remains largely unchanged for the 1994 Energy Policy.

The government in office in 2000 (the United National Congress) was allegedly also concerned with the phenomenon of environmental degradation and as such, endeavored to include environmentally friendly practices in its policies. The most recent Energy Policy (1998) during their reign also makes sweeping statements. "The national drive for efficiency, effective management, environmental preservation, sustainable development and a total quality nation must be reflected in the country's energy policy" (MOEEI, 1998). This policy takes a slightly different outlook: it looks at environmentally cleaner fuels. Given the shift to natural gas utilization, it mentions the use of compressed natural gas (CNG) as a vehicular fuel. While this has been introduced, there are very few stations that dispense CNG, and the number of vehicles equipped to use CNG is also minimal. This policy makes mention of sustainable development, yet there are no practical measures in place to support this. Interesting to note also is that the section on environmental matters is always the last section of each policy. All the policies clearly illustrate the lack of commitment to environmental protection in the interest of development.

Equally fascinating is the declaration made by the then Minister of Energy himself. He claimed that "the Ministry's policy was zero tolerance for environmental damage caused by energy sector companies"; but in the same breath, he admitted that while "the sector was the major contributor to the nation's development and to the national economy, it was also the biggest contributor to environment degradation" (De Coteau, 2000).

The attitude towards the environment in the management of the energy sector reiterates the fact that as a developing one-commodity country economy, the government is not prepared to compromise the petroleum industry, given its significance to the economic development of the country, for the sake of the environment.

## 5.2 Natural Resources: Obstacles in the Way of Development

The destruction of the environment for the purposes of development is the sometimes necessary alternative to the actual direct utilization of natural resources for economic gain. This is particularly true of the developing world where "the sheer interests of survival outweigh environmental concerns in the minds of many" (Ramlogan, 1999). There are many often more pressing (social) issues to be dealt with, especially *la mis ère*. This disregard for the environment assumes an international character, especially where the construction of large dams and hydro-projects is concerned, with a view to improving agriculture and providing energy.

Governments of developing countries often ignore environmental issues for the purposes of development. The construction of the Tehri dam in the Garhwal region of Uttar Pradesh (India) readily illustrates the attitude of governments in the developing world. The Tehri dam project was conceived as far back as 1949 but due to numerous controversies surrounding its construction, the completion deadline was pushed to 1996. The projected cost of the Tehri Dam has gone up from \$612 million in 1994 to \$1.2 billion in 1999. With a height of 260 meters (855 feet), the dam will be the fifth tallest in the world. Its reservoir will completely submerge Tehri Town and 40 villages, and partially submerge 72 villages. Thousands of families will be displaced with no apparent scheme for rehabilitation. According to the 2002 Status Report of the Public Works Department of Tehri, the Dam will displace 12,547 families. This estimate excludes a large number of people who will lose their lands but have not been officially recognized as project-affected. This dam has been opposed by a wide cross section of the society, including high profile protestors such as Arundhati Roy. It is being built in an ecologically fragile area, which also happens to be located on an active geological fault line. Despite widespread protest, the Indian government has continued the construction process with a typical "business as usual attitude" (Hassan, 1991). Under construction since 1978, the final phase of reservoir filling was scheduled to start by December 2002. Power production was planned to begin in August 2003. The two lower tunnels of the dam were closed in December 2001 submerging the main bridge leading to Tehri town and nearby areas. The last two tunnels, which are at a higher level, were scheduled to be closed by December 2002 (IRN, 2002).

In Trinidad, on a much less exaggerated scale, there also exists the development/environment trade off, as illustrated by the controversial port development project at Invader's Bay, Port of Spain. The Port Authority of Trinidad and Tobago (PATT), the Project Manager, embarked in an historic undertaking to deepen the Port of Spain harbour, from its draft of 9.75 metres to 12 metres (Port Authority, 2000b) which would involve reclaiming much of a nearby mangrove. In order to facilitate the growth of the city "much of the marshland was claimed or reclaimed in the name of

development" (Port Authority, 2000a). This particular project involves the reclamation of 28 hectares of land at Invader's Bay. "This land reclamation project is a critical component in government's overall plan for the development of the West Coast of Trinidad" (Port Authority, 2000a), much to the disappointment of the local environmentalists.

In an Environmental Impact Assessment (EIA) for the proposed port expansion prepared in 1998, it was recommended that "the dumping of the dredge spoil [be] at approved sea sites...as it is more economic than onshore disposal" (Meredith, 2000b)<sup>12</sup>. This has, however, since changed. "The dredge spoils from the channel deepening are now to be used to reclaim Invader's Bay instead of being dumped at sea as proposed originally" (Chackhan, 2000). One of the conditions of the EIA was the restoration of the mangrove. This will not be affected despite the fact that the *National Environmental Policy (NEP)* specifically discourages any form of development in wetland areas (Meredith, 2000a). The *NEP* states that the government will:

(a) pursue a policy in its development projects of no net loss of wetlands;

(c) institute mechanisms for the restoration of degraded wetlands, as far as possible, to their original state;

(e) discourage dredging, filling and other forms of development in wetland areas... (EMA, 1998, p. 11).

The port expansion was obviously in direct contravention of the *NEP*. While the then government claims to have followed all the correct procedures, it is manifestly clear that practice proves otherwise. Further aggravating the situation is that the project began without the approval from the relevant authorities at that time – the Town and Country Planning Division. To some, this project is an apt example of the Government's blatant disregard for the environment. As Mark Meredith aptly put it, "Money and master plans clash with a mangrove in the city. Is this the cost of economic growth?" (2000a). Fishermen and Friends of the Sea, a local environmental non-governmental organization (NGO), fought the project through an aggressive campaign in the vicinity of the development to attract public sympathy and to force a reversal of the decision to develop the port. Although the NGO was able to increase public awareness about the issues at hand, unfortunately, not much success was achieved in halting the project.

An interesting point that can be made was a recent incident in 2002 where a Canadian oil company, Talisman (Trinidad) Petroleum Limited, sought to explore for oil in the Nariva Swamp, a Ramsar listed site. What was

interesting was that the local environmental enforcement agency sought to prohibit any oil exploration work in the Nariva Swamp while Talisman argued for wise use and sustainable development. The Environmental Commission of Trinidad and Tobago, in delivering its first judgment on December 16th, 2002, dismissed the notion of prohibition and indicated that the local environmental agency had to assess the application and allow Talisman to make its proposal for wise use<sup>13</sup>. This decision, in our opinion, however, did not reflect a policy shift to primacy of environmental policy but local politics. From the date on which the appeal from the decision of the local environmental agency was filed by Talisman in the Environmental Commission, the company faced a barrage of public criticism, including comments attributed to senior officials of the local environmental agency. One member of the Board of Directors was cited in a newspaper article as a party submitting comments on the application by Talisman to explore for oil in the Nariva Swamp on behalf of a local environmental NGO (Meredith, 2002). Therefore, much cannot be read into the actions of the local environmental agency as signaling that development based primarily on economic considerations is being transformed in favor of environmental sustainability.

A recent issue arose in Trinidad and Tobago with respect to the production of liquefied natural gas. A multinational consortium, known as Atlantic LNG Company of Trinidad and Tobago, whose shareholders include British Petroleum and British Gas, established three facilities known as "trains" for the production of liquefied natural gas between 1995 and 2002. The consortium proposed doubling the capacity of the first three trains in a single train (known as Train IV). Many locals living in the vicinity of the existing trains have opposed Train IV on the basis of allegations of environmental disturbance caused by factors such as air, noise, dust, light and vibration and resulting health concerns. These locals have called for the establishment of a buffer zone and relocation of affected residents. It is interesting to note that the Government of Trinidad and Tobago announced the approval of the project even in the face of such concerns and made it clear that environmental approval would be forthcoming. The government made the announcement of the approval of Train IV on June 5th, 2003 after a meeting of Cabinet. Interestingly, the Chairman of the local environmental agency, with responsibility for approving the project, responded to the announcement by the government that it would not be pressured into granting environmental clearance for Train IV. The comments of the Chairman were contained in a newspaper article of June 7th, 2003 (Quash, 2003). What was even more significant is that the local environmental agency had in fact already granted environmental clearance on June 6th, 2003, a mere day after the announcement of the Cabinet decision to approve Train IV. This environmental clearance has been the subject of

great controversy as the locals who are claiming to be affected by the activities of Atlantic LNG are alleging that none of their concerns was addressed in the terms and conditions of the environmental clearance.

## 6.0 Environmental Protection and Economic Development: Prospects of Reconciliation

Having seen the great chasm that exists between the developed and developing world, it is not surprising that the underlying force for poverty alleviation and modernization was seen as economic development, loosely defined as the process of growth and change aimed at raising people's living standards (Smith, 1994). It soon became apparent that growth in a nation's wealth did not translate into substantial benefits for the poor. This realization led to the emergence of a new definition of development which emphasized poverty alleviation and inequality reduction (Jazairy, 1992). Economic growth was not supplanted but rather placed within a framework of social objectives (George, 1988). At the time of the emergence of this definition of development, a third was also being postulated. This definition included the satisfaction of the basic needs dimension of the second definition but went on to include elements of emotional, spiritual and political needs. Todaro, in articulating one of the most concise summaries of this wider perception of development, sees it as encompassing three core values: first, the satisfaction of basic physiological needs; second, self-esteem; and third, freedom from the social servitudes of men to nature, ignorance, other men, misery, institutions and dogmatic beliefs (1992). Today the notion of human development is increasingly being seen as the ultimate goal of economic development, with the objective of development not being to produce more goods but rather to improve the capabilities of people to lead full, productive and satisfying lives (Griffin & Mckinley, 1994). The human development approach has numerous advantages. It contributes directly to the well-being of people; it builds from a foundation of equality of opportunity; it creates a more equitable distribution of the benefits of development; it enables the linkages between the various types of investment in people to be fully exploited; and it takes advantage of the complementarities between human and physical capital (Griffin & Mckinley, 1994). Development is seen to be about people and not roads, machines and infrastructure. Poverty alleviation demands full participation by people in the developmental process. This participation must grow out of respect for human life, dignity and democratic values (Jazairy, 1992). In spite of the movement towards developmental objectives that would reflect the state of people and the concern with poverty in the developing world, there have been certain trends commencing in the 1980s that have forced a change in outlook.

Reviews of the different perspectives on development (Persadie, 2002) illustrate that they completely ignore environmental considerations in their developmental objectives, largely because countries "had not yet recognized their capacity to degrade [the environment] irreversibly on a large scale" (Weiss, 1992). This is not to say that widespread environmental destruction has not continued after having learnt of the deleterious effects of this type of behavior. Development in most countries is based on natural resource exploitation and, according to the major theoretical offerings on development, environmental degradation, as manifested by deforestation, pollution, and unmeasured exploitation, equals economic progress *à la* West. This type of development occurs despite the recognition that "population growth and rising production and consumption cannot be sustained forever in a finite world" (Ekins, 1996).

Countries in the initial stages of economic development cause severe environmental degradation "up to the point at which they acquire sufficient wealth to generate both a demand to protect the environment and the resources with which to do it. At this point, free trade practices promote environmental protection" (Weiss, 1992). This, however, reiterates the modernist approach to development and ultimately justifies development at the inevitable risk of environmental degradation. A shift away from the modernist impersonal aspect of development toward one based on "direct human connections can help create the notion of sustainable development as a fundamental human value." (Banuri, 1990).

Green development thinking offers an alternative, non-deterministic view to traditional development models. As mentioned above, the current development process is the cause of many of the problems faced by society today. The green view proposes that "the concept of development must be defined in human terms if it is to have any relevance at all" (Freiburg & Hettne, 1985). This developmental strategy views the relationship between man and nature as integrally interdependent, and does not view the environment simply as resources to be exploited for capital gains. They have replaced the concept of human mastery over nature with the idea of partnership, an idea alien to current development paradigms. The goal, however, "...is not to preserve nature while forgetting men, but rather to manage nature in such a way that the men of our generation and all future generations will be ensured of the possibility of developing" (Freiburg & Hettne, 1985). This, of course, mirrors the basic tenet of sustainable development, which does not espouse the need to do away with the 'traditional' aspects of society, but rather seeks to incorporate them into a new development model.

Given its fairly radical perspective, the Green view has no models to

emulate. According to Freiburg and Hettne,

"A 'backward' country should not look for the image of its own future in the 'advanced' country, but in its own ecology and culture. ***There is no universal path to development. Each society must find its own strategy***" (1985, p. 220). (Emphasis added).

The success of any green development model is, therefore, dependent on the integration of the cultural identity of the country involved and the (cultural) appropriateness of technologies introduced. It calls for alternative technology, which is "small scale and compatible with the local culture and the local eco-system..." (Freiburg & Hettne, 1985).

Like any other theory, there must be a theoretical construction based on structural and historical conditions for the formulation of the Green perspective; the world-system approach offers a good framework from which to work, but it must assume a more voluntaristic and less deterministic direction. Further, the unit of analysis is radically different to those of the dominant perspectives. From a Green view, human beings or small communities of human beings are the ultimate actors. As Freiburg and Hettne offer, "The tribes and nations of the world are much more basic units of development, because they allow for the forging of a genuine consensus between their members" (1985).

This course of development lends itself to criticism, as it would appear to be a "utopian form of anti-modernism – utopian in the double sense of being a visionary panacea and unrealizable" (Freiburg & Hettne, 1985). However, Freiburg and Hettne suggest that there is need for realistic utopianism – radical solutions founded on critical analysis of the strength of various anti-systemic forces (1985).

It has already been illustrated that economic growth has not eradicated poverty from the developing world nor improved the health of the environment (Davidson, 1992). Harrison has pointed out that while many developing countries achieved rapid economic growth in the 1960s, the poorest 30 to 60% of the population experienced unchanging living conditions (1980). Therefore, growth at any price cannot provide a solution to the human and environmental problems of the developing world. Even the World Bank has belatedly embraced the concept of sustainable development. Barber Conable, President of the World Bank, has admitted "that developing nations and development institutions have learned that sound ecology is not only good economics; it is essential for survival. It can be compatible with growth" (1991). Thus, the World Bank has claimed that up to 1991, more



than 1,500 environmental components were added to power, transportation, industry and agriculture projects, with a few projects being implemented to improve soil conservation, to manage forests and rangelands, to prevent desertification, protect biological diversity and conserve water resources and fisheries (Conable, 1991).

Today there are numerous warnings of the need to ensure sound environmental protection in the developing world, yet the issue is afforded low priority. The low priority can be arguably ascribed to the presence of the dominant concern in developing nations of using economic development as a means to eradicating the social inequities that characterize these countries. The ultimate goal always seems to return to the alleviation of poverty. It is becoming clearer that the goals of economic development as the mechanism for poverty alleviation are in conflict with the aspirations of sound environmental management.

The major revolution in economic thinking emerged in the 1980s with the postulation of the economic development theory of sustainable development. Sustainable development received its most famous endorsement by the World Commission on Environment and Development (WCED) under the chairmanship of Gro Harlem Brundtland. Sustainable development recognizes that development must be geared towards meeting the basic needs of the vast numbers of poor in the developing world. It sees this happening by a process of change in which " the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations" (WCED, 1987). In June 1992, the Rio Earth Summit declared that "the right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations." The notion of sustainable development was significantly modified in Johannesburg in 2002. To paraphrase:

We commit ourselves to undertaking concrete actions and measures at all levels and to enhancing international cooperation, taking into account the Rio principles, including inter alia, the principle of common but differentiated responsibilities as set out in principle 7 of the Rio Declaration on Environment and Development. These efforts will also promote the integration of the three components of sustainable development, economic development, social development and environmental protection as interdependent and mutually reinforcing pillars. Poverty eradication, changing unsustainable patterns of production and consumption and protecting and

managing the natural resource base of economic and social development are overarching objectives of, and essential requirements for, sustainable development... The gap between developed and developing countries points to the continued need for a dynamic and enabling international economic environment supportive of international cooperation, particularly in the areas of finance, technology transfer, debt and trade and full and effective participation of developing countries global decision-making, if the momentum for global progress towards sustainable development is to be maintained and increased... (UN, 2002, pp. 8-9).

Despite the heady words contained in the evolving definition of sustainable development, the case analysis of Trinidad and Tobago paints a picture of "business as usual" with the environment continuing to be treated as political "window dressing". The environment receives public accolades in speeches both nationally and internationally and private abuse during the exercise of the executive decision making apparatus.

The major manifestation of the conflict between development and the environment can be found in the allocation of financial resources. Having regard to the reality that the state is, by and large, the driver of sound environmental policies, it stands to reason that the state would be required to bear the brunt of the financial investment in a sound and sustainable environment. However, the reality is that the state has limited resources and various priorities, and it is hardly surprising that the environment is of low or limited priority. The other significant dimension to the conflict between the environment and development can be found in the attitude towards natural resources. A key part of the environment is natural resources. What emerges without much contradiction is the trend that suggests that not only is the attitude to the environment manifested in the allocation of financial resources but it is also present in the approach to natural resources which are viewed in one of two ways: either as commodities to be exploited in a manner designed to maximize income or as hindrances to income earning activities. The sad reality is that the perception in developing countries is often that the environment is just capital waiting to be banked or obstacles to be summarily dismissed. Current models of development in developing economies will not allow for the development of sound international environmental management. Developing countries now have to adopt a different economic development paradigm that will seek to include the environment. It should assume a more holistic approach, seeking to achieve the Chinese principle of *feng shui*. In addition to self-sufficiency, there would also be an inherent appreciation for the value of nature, culture and the environment. There would also be the political empowerment of

marginalized groups in society, such as women and indigenous groups. This would lead to a fully integrated society where there would be sustainability in the social, cultural, political economic and environmental realms.

## Endnotes

1 Classification of economies. For operational and analytical purposes, the World Bank's main criterion for classifying economies is gross national income (GNI) per capita. Every economy is classified as low income, middle income (subdivided into lower middle and upper middle), or high income. The use of the term is convenient; it is not intended to imply that all economies in the group are experiencing similar development or that other economies have reached a preferred or final stage of development. Classification by income does not necessarily reflect development status. A short history- in general discussions in Bank reports, the term "developing economies" has been used to denote the set of low and middle-income economies. Bank publications with notes on the classification of economies state that the term "developing economies... does not imply either that all the economies belonging to the group are actually in the process of developing, nor that those not in the group have necessarily reached some preferred or final stage of development." Economies are divided according to 1999 GNI per capita, calculated using the World Bank Atlas method. The groups are: low income, \$755 or less; lower middle income, \$756-\$2,995; upper middle income, \$2,996-\$9,265; and high income, \$9,266 or more. For purposes of this paper, references to developing countries are deemed to be references to low and middle income countries and references to developed countries shall be construed as references to high-income countries. (World Bank, 2001). Figures are quoted in US dollars.

2 Figures were available for only four developed countries.

3 Chronically undernourished people are defined as those people whose estimated daily energy intake over a year falls below that required maintaining body weight and support light activity.

4 The survey years for countries for which data was obtained were not uniform.

5 Unemployment figures were derived from the World Bank, 2001. The ILO defines the unemployed as persons above a certain age (generally taken to be 15 years) available for work, not in paid employment or self-employed and seeking work. (ILO, 1995). "Unemployment is defined as follows in the Resolution concerning statistics of the economically active population, employment, unemployment and underemployment, adopted by the

Thirteenth International Conference of Labour Statisticians (Geneva, 1982):

(1) The "unemployed" comprise all persons above a specified age who during the reference period were:

(a) "without work", i.e. were not in paid employment or self-employment, as defined in paragraph 9;

(b) "currently available for work", i.e. were available for paid employment or self-employment during the reference period; and

- "seeking work", i.e. had taken specific steps in a specified reference period to seek paid employment or self-employment". (ILO).

6 It should be noted that figures for radio ownership were few.

7 The figures for percentage of paved roads for developing and least developed countries were limited.

8 The foreign exchange rate used is US\$1.00 = TT\$6.30.

9 For such a thorough examination one would have to collate and calculate information from the PSIP as well as data on current expenditure, not simply for monies allocated to the environment *per se*, but for agencies with environmental responsibilities

10 Unless otherwise stated, the information from this section is derived from a personal interview with Mr. Narine Lackhan, the Director of Forestry, the Forestry Division, the Ministry of Agriculture, Land and Marine Resources, conducted on 25 July 2000 at the Forestry Division.

11 The irony of this, though, is that these honorary Game Wardens are themselves hunters and may not necessarily enforce the law as is required.

12 While an EIA was undertaken, it was superficial and did not take into account several basic repercussions that would result from such a project, such as the downstream effects. Nor did it even include an oceanographic study to determine the feasibility of this project.

13 In the Matter of the Environmental Management Act, 2000 and the Certificate of Environmental Clearance Rules, 2001 Between Talisman (Trinidad) Petroleum Limited [Appellant] and the Environmental Management Authority [Respondent] No. EA3 of 2002.

## References

Banuri, T. (1990). Development and the politics of knowledge: A critical interpretation of the social role of modernization. In F. Marglin & S. Marglin (Eds.), *Dominating knowledge: Development, culture, and resistance* (pp. 29-72). Oxford: Clarendon Press.

Bhaskara, H. (1989). *Against all odds: Breaking the poverty trap*. London: Panos.

Bello, W., Cunningham, S., & Rau, B. (Eds.). (1994). *Dark victory: The United States, structural adjustment and global poverty*. London: Pluto Press.

Bursztein, S. (1989). *Energy metabolism, indirect calorimetry and nutrition*. Maryland: Williams & Wilkins.

*Carajas: Overview enough iron ore for the next five hundred years*. (1998). Retrieved 31 July 2003, from [http://www.southamericavacationguide.com/Carajas2527\\_Overview.html](http://www.southamericavacationguide.com/Carajas2527_Overview.html).

Chackhan, G. (2000, May 13). Don't destroy our natural assets. *Saturday Express*.

Chege, N. (1995). Homelessness remains a problem. In L. Brown, N. Lenssen & H. Kane (Eds.), *Vital signs: The trends that are shaping our future 1995-1996* (pp. 142-143). London: Earthscan.

Colclough, C. (1993). *Educating all the children: Strategies for primary schooling in the south*. Oxford: Clarendon Press.

Conable, B. (1991). Ushering in the era of sustainable development. In M.K. Tolba & A.K. Biswas (Eds.), *Earth and us: Population-resources-environment and development* (pp. 32-36). Oxford: Butterworth-Heinemann.

Dasgupta, P. (1993). *An inquiry into well-being and destitution*. Oxford: Clarendon Press.

Davidson, J., Myers, D. & Chakraborty, M. (1992). *No time to waste: Poverty and the global environment*. Oxford: Oxfam.

De Coteau & Gangar, A. (2000, May 16). Energy sector to blame for pollution. *Trinidad Express Politics*. Retrieved 17 May 2001, from <http://209.94.197.2/may00/may16/politics.htm>.

Economic and Social Commission for Asia and the Pacific. (1992). *The Asian and Pacific input to the United Nations Conference on Environment and Development Brazil, 1992*. New York: United Nations.

Ekins, P. (1996). Limits to growth and sustainable development: Grappling with ecological realities. In K. Jameson and C. Wilber (Eds.), *The political economy of development and underdevelopment* (pp. 53-69). New York: McGraw-Hill Inc.

Environmental Management Authority (EMA). (1998). *National Environmental Policy*. Port of Spain, Trinidad: Government Printery.

*Environmental Problems of Afghanistan* . (1972). Report submitted to the United Nations Conference on the Human Environment.

Freiberg, M. & Hettne, B. (1985). The greening of the world: Towards a non-deterministic model of global processes. In *Development as social transformation: Reflections on the global problematique* (pp. 204-270). London: Hodder and Stoughton.

George, V. (1988). *Wealth, poverty and starvation: A world perspective*. Hamel Hempstead: Wheatsheaf Books.

Griffin, K. & Mckinley, T. (1994). *Implementing a human development strategy*. Basingstoke: MacMillan.

Grindle, J. (1992). *Bread and freedom: Basic human needs and human rights*. Dublin: Trocaire & Gill-McMillan.

Gupta, A. (1988). *Ecology and development in the Third World*. London: Routledge.

Harrison, P. (1980). *The Third World tomorrow*. Harmondsworth: Penguin.

Hassan, S. (1991). *Environmental issues and security in South Asia*. Oxford: Nuffield Press.

International Labour Organisation (ILO). (1995). *1995 Yearbook of labour statistics*. Geneva, ILO.

International Labour Organization. *Unemployment*. Retrieved 17 July 2002, from <http://laborsta.ilo.org/applv8/data/c3e.html>.

International Rivers Network (IRN). (2002, October). *Tehri Dam*. Retrieved

31 July 2003, from  
<http://www.irn.org/programs/india/021022.tehrifactsheet.pdf>

Jazairy, I., Alamgir, M., & Panuccio, T. (1992). *The state of world rural poverty*. London: Intermediate Technology Publications.

Kent, G. (1984). *The political economy of hunger: The silent holocaust*. New York: Praeger.

King, F. S. & Burgess, A. (1993). *Nutrition for developing countries*. Oxford: Oxford University Press.

Meredith, M. (2000a, May 29). Big buck\$ invade the bay. *Daily Express*.

Meredith, M. (2000b, May 29). Government breaks own rules: Mangrove makes way for \$m waterfront. *Daily Express*.

Meredith, M. (2002, November 10). Talisman's tour: An explosive issue. *Sunday Express*, p.15.

Ministry of Agriculture, Land and Marine Resources, Trinidad and Tobago. (1999a). *1998 Annual Administrative Report of the Forestry Division*. Port of Spain, Trinidad: Government Printery.

Ministry of Agriculture, Land and Marine Resources, Trinidad and Tobago. (1999b). *1997 Annual Report of the Forestry Division*. Port of Spain, Trinidad: Government Printery.

Ministry of Energy and Energy Industries (MOEEI), Trinidad and Tobago. (1992). *A Draft Energy Policy for Trinidad and Tobago: A Green Paper* (Vols. 1 & 2). Port of Spain, Trinidad: Government Printery.

Ministry of Energy and Energy Industries (MOEEI), Trinidad and Tobago. (1994). *Draft Policy on Energy* (Vols. 1 and 2). Port of Spain, Trinidad: Ministry of Energy.

Ministry of Energy and Energy Industries (MOEEI), Trinidad and Tobago. (1998). *Green Paper for Proposed Energy Policy for the Republic of Trinidad and Tobago*. Port of Spain, Trinidad: Government Printery.

Ministry of Energy and Energy Industries (MOEEI), Trinidad and Tobago. (2000, May 28). Overview: T&T oil production. *Sunday Express*.

Ministry of Energy and Natural Resources, Trinidad and Tobago. (1986).

*Draft. An Energy Policy for Trinidad and Tobago.* Port of Spain, Trinidad: Ministry of Energy.

Ministry of Finance, Trinidad and Tobago. (1997). *Medium Term Policy Framework 1998-2000.* Port of Spain, Trinidad: Government Printery.

Ministry of Planning and Development, Trinidad and Tobago. (1999). *Public Sector Investment Programme 1999 / 2000.* Port of Spain, Trinidad: Government Printery.

Ministry of Planning and Development, Trinidad and Tobago. (1997). *Public Sector Investment Programme 1998.* Port of Spain, Trinidad: Government Printery.

Ministry of Planning and Development, Trinidad and Tobago. (1996) *Public Sector Investment Programme 1997.* Port of Spain, Trinidad: Government Printery.

Mugabe, R. (1991). Environmental concerns in the Third World. In M.K. Tolba & A.K. Biswas (Eds.), *Earth and Us: Population-Resources-Environment and Development* (pp. 10-13). Oxford: Butterworth-Heinemann.

Pargal, S. & Mani, M. (2000). Citizen activism, environmental regulation, and the location of industrial plants: Evidence from India. *Economic Development and Cultural Change*, 18(4), 829-847.

Patel, A.S. (1991). Evaluation of development plans and strategies for the reduction of poverty: The case of India. In P. Henry (Ed.), *Poverty, Progress and Development* (pp. 203-227). London: Kegan Paul International.

Pearce, D.W. & Warford, J.J. (1993). *World without End: Economics, Environment, and Sustainable Development.* Oxford: Oxford University Press.

Persadie, N. (2002). Environmental protection and economic development: Prospects for the building of an international environmental legal regime. Unpublished master's thesis, University of the West Indies, St. Augustine, Trinidad.

Pieterse, J. (2000). After post-development. *Third World Quarterly*, 21(2), 175-191.

Port Authority of Trinidad and Tobago (PATT), Portside News Weekly.



(2000a, May 3). Port of Spain continues to grow...from the sea. *Daily Express*.

Port Authority of Trinidad and Tobago (PATT), Portside News Weekly. (2000b, May 21). Status Report: Dredging of the Port of Spain Harbour. (21 May 2000b). *Sunday Express*.

Quash, C. (2003, June 7). Atlantic LNG Train IV must meet EMA standards. *Saturday Express*, p. 4.

Smith, C. (1994). *Economic development, growth and welfare*. Basingstoke: MacMillan.

*Some aspects of environmental degradation and its control in India*. (1972). Report submitted to the United Nations Conference on the Human Environment.

The South Commission. (1990). *The Challenge to the South: The Report of the South Commission*. New York: Oxford University Press.

Todaro, M.P. (1992). *Economics for a developing world*. London: Longman.

Tourism Industrial Development Company (TIDCO). (1998). *Strategic plan 1998-2000*. Port of Spain, Trinidad: TIDCO.

Tourism Industrial Development Company (TIDCO). (1999). *Trinidad and Tobago export directory*. Port of Spain, Trinidad: Government.

Tolba, M. & El-Kholy, O. A. (Eds.). (1993). *United Nations Environment Programme, The world environment 1972-1992: Two decades of challenge*. London: Chapman & Hall.

United Nations. (2002). *Report of the World Summit on Sustainable Development*. A/CONF.199/20.

United Nations Conference on Environment and Development (UNCED). (1992). *Overview of national reports*. Items 23 & 27. A/CONF.151/PC.98.

United Nations Development Programme. (1994). *Human development report 1994*. New York: Oxford University Press.

United Nations Development Programme. (1996). *Human development report 1996*. Oxford: Oxford University Press.

United Nations Development Programme. (2001). *Human development report 2001: Making new technologies work for human development*. New York: Oxford University Press.

United Nations Centre for Human Settlements. *100 million homeless in world: Most are women and dependent children*. Retrieved 17 July 2002 from <http://www.un.org/Conferences/habitat/unchs/press/women.htm>.

United Nations Centre for Human Settlements and The World Bank. (1993). *The Housing Indicators Programme, Volume III: Preliminary findings*. Nairobi: United Nations Centre for Human Settlements.

United Nations Centre on Human Settlements. (1999a). *Statistical annexes to the global report on human settlements 2001*, Table A-4. Retrieved 17 July 2002 from [http://www.unchs.org/habrdd/Table%20A\\_4.doc](http://www.unchs.org/habrdd/Table%20A_4.doc).

United Nations Centre on Human Settlements. (1999b). *Statistical annexes to the global report on human settlements 2001*, Table B-3. Retrieved 17 July 2002 from [http://www.unchs.org/habrdd/TABLE%20B\\_3%20.doc](http://www.unchs.org/habrdd/TABLE%20B_3%20.doc).

Weiss, E. (1992). Environment and trade as partners in sustainable development: A commentary. *The American Journal of International Law*, 86, 718-735.

World Bank. (2001a). *World development indicators 2001*. (CD-ROM).

World Bank. (1992). *World development report 1992: Development and the environment*. New York: Oxford University Press.

World Bank. (1995). *World development report 1995: Workers in an integrating world*. New York: Oxford University Press.

World Bank. (2000). *World development report 1999/2000: Entering the 21st century*. New York: Oxford University Press.

World Bank. (2001b). *World development report 2000/2001: Attacking poverty*. New York: Oxford University Press.

World Commission on Environment and Development (WCED). (1987). *Our common future*. Oxford: Oxford University Press.

Yarbrough, B. & Yarbrough, R. (1994). *The world economy: Trade and finance*. Fort Worth, Texas: The Dryden Press.

.....

Natalie Persadie <[npersadie@ecolegal2001.com](mailto:npersadie@ecolegal2001.com)>, is a graduate of the University of the West Indies, St. Augustine, where she completed a BA in French and Portuguese, a Post-Graduate Diploma in International Relations, as well as a Master of Philosophy in International Relations with a thesis on Development and Environmental Protection in Trinidad and Tobago. Ms. Persadie is currently pursuing doctoral studies at the University of Birmingham, England. TEL: (868) 740 7127, FAX:(868) 662 2031.

Dr. Rajendra Ramlogan <[rramlogan@ecolegal2001.com](mailto:rramlogan@ecolegal2001.com)> is a graduate of the University of Cambridge, England, where he obtained his doctorate in international environmental law and a graduate of the New York University School of Law where he obtained his LL.M. in International Legal Studies. Dr. Ramlogan did his Bachelor of Laws degree and Bachelor of Arts degree in English Literature at the University of the West Indies where he is currently lecturing. TEL: (868) 645 3106, FAX: (868) 662 2031.