The importance of incorporating Education for Sustainable Development (ESD) into the Secondary Curriculum in order to minimise the problems of waste on South Tarawa.

By

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Abstract

Waste is an increasing problem in Small Island States (SIDs) such as Kiribati. In Kiribati the major concern is on the capital island, South Tarawa with more than 6,500 tons of solid waste generated each year. With only a tiny strip of land supporting a large population, it is no wonder it resulted as the highest population density compared to Tokyo. More than half of the Kiribati population lives on the capital, South Tarawa with an estimation of 150 people per/km².

Education for Sustainable Development (ESD)/Environmental Education (EE) are taught through Social Studies, Science and other disciplinary subjects only in primary up to junior secondary school. The missing link of this ESD/EE can be found at the secondary level. The main aim of this research is to find out ways of incorporating ESD/EE at secondary level in order to help minimise waste issues that are present on urbanised South Tarawa.

By formalising education for sustainable development/environmental education into the secondary school syllabus, it will help young citizens of Kiribati prepared as active members of society. As the Ministry of Education (NZ) states "Environmental education provides a relevant context for identifying, exploring, and developing values and attitudes that can ensure students' active participation in maintaining and improving the quality of the local, national, and global environment." (Education for Sustainability).

This thesis argues that it is important to include Education for Sustainable Development into secondary school syllabus in order to help minimise the waste issues that have been experienced by the people living on South Tarawa.

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Chapter One: Introduction

1.1 Chapter Overview

This chapter will give some background information about the location of Kiribati and the seriousness of waste issues that exists on South Tarawa, the capital island of Kiribati.

1.2 Kiribati in the Pacific

Kiribati spreads across the central Pacific, intersected by the Equator and formerly the International Date Line, with most other Commonwealth Pacific island countries lying to its south. Kiribati is a group of small islands in the Pacific scattered along the equator and it belongs to the Micronesian ethnic group. Since Kiribati is located on the equator, it has very hot weather.

Map 1: Map of Kiribati in the Pacific

Source: About.com

1.2.1 Kiribati

The Republic of Kiribati (pronounced Kiribas) lies in the South Pacific Ocean $1^{\circ} 25' \text{ N}$ and $173^{\circ} 00' \text{ E}$. There are three groups of islands: seventeen Gilbert Islands (including Banaba), eight Line Islands and eight Phoenix Islands. The north/south extent is 2,050km. Kiritimati (formerly Christmas Island) is the world's biggest coral atoll (388 sq km). Kiritimati in the east is about 3,780km from Banaba (formerly Ocean Island) in the west.

Map 2: Map of Kiribati

Source: World Atlas

Its 33 islands are scattered across 5.2 million sq km of ocean. Kiribati also boasts of having the largest Exclusive Economic Zone (EEZ) from all other islands within the Pacific hence allowing our government to utilise this for leasing fishing rights to other nations as a means of getting money, economy for our country.

1.3 Statement of the problem

The world is currently facing complex environmental problems, caused by increasing population together with increased development that have both resulted in environmental degradation. The consequences of environmental degradation are, global warming, depletion of ozone layer, increasing waste issues, air and noise pollution (Said, A. M., 2003).

While the islands differ in many respects such as topography (eg. Coral atoll islands to volcanic islands), population density, economic development, etc, the increasingly growing problems of waste are commonly recognised as a major concern for Pacific Island Countries (PICs). They have the potential to cause negative impacts on national development activities, including tourism and trade, food supplies, public health and the environment (A-N-D Consultant, 2001).

Kiribati is no different from these other PICs, where the concern for its municipal solid waste is evident. Table 1 showing PICs' population growth, average waste generation rate and biodegradable content.

Table 1: Waste Disposal Figures for selected Pacific Island Countries

Country	Population	Average Waste Generation rate (kg/capita/day)	Biodegradable content (%)	Total land area in km ²
Cook Islands (Rarotonga)	19600	0.19	35	237
FSM (Pohnpei)	134000	0.38	19	700
Fiji (Lautoka)	825000	0.92	68	18,270
Kiribati (South Tarawa)	76000	0.33	20	726
Marshall Islands (Majuro)	51000	0.38	46	181
Papua New Guinea	4400000	0.41	62	462,000
Samoa (Apia)	170000	1.05 0.52	61 59	2,934

Solomon Islands (Honiara)	385000	0.22 0.38	65 20	28,000
Tonga (Nuku'alofa)	97000	0.82 0.68	47 62	688
Tuvalu (Funafuti)	10000	0.43	52	26
Vanuatu (Port Vila)	175000	0.65	71	12,190
Average		0.55	49	

Source: JICA (2001)

On South Tarawa, the capital island, the problems of waste have increased over the past decades. Introducing Education for Sustainable Development into the secondary school syllabus can prevent the increasing waste issues on South Tarawa.

1.4 Overview of the study

South Tarawa is being investigated since it is the capital island where the majority of the population resides. Since South Tarawa is the capital island, people flow into the island in search of a better quality of life. The migration of people from one place to another is influenced by the push and pull factors. Pull factors like better education, jobs, health care, entertainment and push factors such as lack of jobs, education and so forth in the outer islands causes people to migrate to South Tarawa.

As a result of globalisation, there is evidence of an ever increasing environmental degradation worldwide. With globalisation, Kiribati is exposed to the rest of the world. Like in many other Pacific islands, the impact of globalisation can be positive and negative. One major effect of globalization that South Tarawa is experiencing together with other capital islands from the South Pacific, is an increase in imported goods.

Imported goods is one of the major problems South Tarawa is facing today. Nowadays, people on South Tarawa depend their livelihoods on these imported goods. Imported goods are easy to prepare and are ready to be eaten at any required time, therefore, local foods are left in the background. This increasing dependency on imported goods increases the waste on South Tarawa because of the packaging from these goods.

There is evidence that waste has been increased over the past 20 years, since the introduction of these imported goods, because many of the packaging of these goods does not decompose. This is where the problem of waste arises, multiplying until today, where waste can be seen scattered everywhere on the streets, near the road, on the beach and in the sea.

Extensive research has been done on South Tarawa or in Kiribati about this waste issue. The Environment Division, through the Ministry of Environment, Lands and Agriculture Development (MELAD), has done lots of community awareness activities to try and minimise the problems of waste. People are not responding to these activities, as the waste problems on South Tarawa still persist.

One way of conveying the message to the public is by introducing Education for Sustainable Development (ESD) into the secondary school syllabus. Education for Sustainable Development is the way forward in this technological world where countries will maintain their development and at the same time, try to sustain their environment.

Education for Sustainable Development is a complex concept but the list of definitions below illustrates why ESD should be a priority in the Kiribati government plans:

ESD is a dynamic and expansive undertaking that envisions a world where every person has the chance to benefit from educational opportunities and to learn the lifestyles, behaviours and values necessary to create a sustainable future (ESD, 2008)

Education for Sustainable Development (ESD) motivates, equips and involves individuals, and social groups in reflecting on how we currently live and work, in making informed decisions and creating ways to work towards a more sustainable world. ESD is about learning for change (ESD, 2008).

ESD "enables people to develop the knowledge, values and skills to participate in decisions about the way we do things, individually and collectively, locally and globally, that will improve the quality of life now without damaging the planet of the future" (UK Panel for Education for Sustainable Development, 1998)'

If education for Sustainable Development is incorporated into the secondary school syllabus, the waste problems on South Tarawa will reduce. This is because public awareness and education are keys to help people know and understand in order to decrease the overwhelming issues of urbanised South Tarawa, on its waste issue.

1.5 Aims

The aim of this research is

- To explore the relevance of incorporating Education for Sustainable Development into the curriculum in relation to the growing waste problems found on South Tarawa.
- To demonstrate that the waste issues in Kiribati will be improved if ESD/EE is compulsory at secondary level.

1.5.1 Objectives

The specific objectives of the research are to:

- Conduct a literature review about Education for Sustainable Development (ESD) and Kiribati's position regarding waste issues.
- Identify the advantages/disadvantages and challenges of incorporating ESD into the curriculum.
- Identify the main problem caused by waste disposal issues in Kiribati.
- Identify ways in which schools/public are trying to cope with waste issues.
- Identify legislation/activities of government that help promote sustainable waste disposal
- Identify participants' opinions/views about putting ESD into the curriculum.
- Summarise and discuss the key findings on what Ministries involved are doing about this waste issue and the public opinions/views on the crisis.

The purpose of the research is to discover reasons why Education for Sustainable Development is not yet put into the curriculum. It will determine the population preference of either incorporating or building ESD into a new subject. Then, concluding if ESD is relevant in minimising the growing waste issues on South Tarawa.

1.6 Summary and Outline of the Thesis

This section contains a short description of each chapter and appendix in the report.

- Chapter 1 contains an introduction of Kiribati background, statement of the problem, and an overview of the study. The aims and objectives are also discussed.
- Chapter 2 gives a short background information of Kiribati legislative, religious and educational system.

- Chapter 3 gives the reader an overview of the theoretical background of waste disposal issues and the literature review about Education for Sustainable Development (ESD) in Kiribati.
- Chapter 4 contains the procedure and methods that are undertaken when doing this research.
- Chapter 5 describes and explains the research results collected from the interviewees.
- Chapter 6 gives an overall discussion of the results.
- Chapter 7 includes the conclusion and recommendations.

Chapter Two:

Background Information

2.1 Chapter Overview

This chapter will give some background information on the legal system, religious and educational system in Kiribati. It also includes an explanation of some of the non-governmental organizations, like Aia Maea Ainen Kiribati (AMAK - National Women's Federation of Kiribati).

2.2 Government Background

The legal system in Kiribati is modeled on the British judicial system. However, the government of Kiribati is modeled on the American congressional system. The President, called Beretitenti in Kiribati, is both the head of government and chief of state. All I-Kiribati age 18 and over are eligible to vote. Voters elect the President from a choice of three or four candidates, who are nominated by the legislature from among its members. The President can serve up to three consecutive four-year terms. He/She then appoints the vice president and a cabinet of up to twelve members from the legislature.

Kiribati has a 41-member unicameral (single-chamber) legislature called the Maneaba ni Maungatabu (House of Assembly). Thirty-nine of its members are chosen by popular vote and serve for four-year terms. The attorney general, the speaker, and a representative nominated to represent Banaban people living on the island of Rabi in Fiji are also members of the legislature.

The judicial system of Kiribati is modeled after the British legal system and consists of a high court, a court of appeal, and lower-level magistrate courts. The president appoints the chief justice of the high court with the advice of the cabinet. The chief justice then advises the president in appointing the other justices.

Permanently inhabited atolls have local governing councils, which are particularly important due to the remoteness of some of the islands from the country's capital. Council members are elected to three-year terms.

There are local councils based on each of the 22 inhabited Outer Islands. These have very limited capacity and funding (local taxes and some central government funding). They deal mainly with matters concerning their own island and include their own elected Member of Parliaments (MPs). The Government of Kiribati (GoK), Asian Development Bank (ADB) and United Nations Development Programme (UNDP) are addressing local government capacity issues through a Strengthening Decentralised Government Programme started in early 2005 with a view to devolving more service delivery responsibility to Island Councils in the medium to long term.

2.2.1 What is Religion

Religion is at the forefront of many I-Kiribati peoples' minds. Most people belong to a congregation whether Catholic, Protestant, Mormon, Bah'ai, Seventh Day Adventist or other congregations. If they are not church goers, they still associate themselves with religion. Belonging to religion puts you in the norm therefore it is hard to find an atheist within the community. Even, if some people still call themselves believers, in the background they still exercise black magic.

However, "religions possess one or more of five sources of power. They shape people's worldviews, wield moral authority, have the ear of multitudes of adherents, often possess strong financial and institutional assets, and are strong generators of social capital, and assist in community building. All of these assets can be used to help build a socially just and environmentally sustainable world" (Gardner, 2002, p. 5)

What Gardner (2002) stated above is true in the case of most Pacific Islands and Kiribati as well. In Kiribati, there is a leadership and social shift paradigm from Unimane to Church leaders or Unimane System to Religious System. Therefore, religion should be embraced in setting up ESD syllabus as I-Kiribati respect their Church leaders more than the Unimane (old men). The following paragraphs will present how this shift is now apparent in Kiribati.

2.2.2 Christianity background in Kiribati

Religious and political forms of authority intertwine in many societies. Kiribati society is no different from these societies. Christianity plays a huge role in the Kiribati culture and does have a huge influence in the political arena too.

The following description of Kiribati's Christian background is drawn from Kirata (1985):

Christianity first arrived in Kiribati in the 1850s with the coming of the American Board of Commissioners for Foreign Missions (ABCFM) to Abaiang in 1857. This marked the arrival of Protestant Christians on the shores of Kiribati, including Reverend Hiram Bingham, Jr. from Hawaii. Later in 1888, the Roman Catholic Christians came to Kiribati, brought by Father Joseph Leray, Father Edouard Bontemps and Brother Conrad Weber, Missionaries of the Sacred Heart (MSC). These missionaries came as a request sent by a group of the islanders in Nonouti who had once served as labourers in Tahiti.

When Christianity first arrived, it encountered a lot of opposition from the islanders. With the hard work these missionaries did, gradually people began to appreciate the new concept and the majority of the islanders were converted. Christianity offered a God who is merciful and forgiving. The traditional gods had threatened punishment when taboos were violated, while the Christian god spoke about forgiveness through Jesus Christ.

As a religion, Christianity brought new meanings to traditional beliefs. It fulfilled a number of aspects which were lacking in the traditional beliefs. As a result, Christian practices became incorporated into the Kiribati culture. Christianity was viewed by the islanders' to have a central role in their lives, to the point where it was regarded as a new kind of authority. The words of the missionary came to be viewed at the same level as those of the old men (unimane).

The fact that the Christian God was believed by many to be superior to the traditional gods increased the position and authority of the missionaries, whether they were pastors or priests. Old age began to be viewed in a different way. Old men regardless of their position in society are always regarded as decision makers. I-Kiribati came to accept the missionaries, with little thought for their age, as an authoritative figure in community affairs. In some instances, the unimane were quite prepared to give up the respect due to them in favour of a younger missionary

2.3 Educational Background

Education in Kiribati is free and compulsory for ages 6 to 11. However some primary schools accept students from 5 years of age. Primary education includes the first six years of schooling from Class 1-6 and continuing on into Form 1-3 for ages 12 – 14 at Junior Secondary School. At the Senior Secondary School, students need to pay for their school fees unless they continue on into one of the government schools where it is free.

There are 110 government funded primary schools throughout the islands enrolling 17, 594 students (approximately 49 percent female) and employ 727 teachers (with approximately 62 percent female). This number has been increased now with the establishment of another 21 Junior Secondary Schools throughout the islands beside the Primary schools. Educational attainment in Kiribati is largely restricted to the primary level; this is principally the result of a lack of availability, and the cost of secondary and tertiary schools on the islands.

Senior Secondary placements are competitive and based on scores from the Junior Entrance Examination taken at the end of Form 3. The majority of students do not continue on into Senior Secondary School with less than 20 percent of students from junior secondary school entering senior secondary school.

According to the Ministry of Education, Training and Technology's *Annual Statistical Report for 2002*, there are 30,482 pupils/students, or 31 percent of the total population, undertaking studies at different levels. Forty eight percent (or 14,823) of the total number of students are in Primary schools, 13 percent (or 3888) in Pre schools, 10 percent (5035) in combined Junior and Senior Secondary Schools, 17 percent (5299) in Junior Secondary

Schools, and 5 percent (1447) at tertiary training institutions (Mackenzie, 2003).

Table 2: Percentage of students at different educational level in Kiribati.

Pre-Schools	Primary schools	Junior Secondary schools	Combined Junior & Senior Secondary schools	Tertiary training
13%	48%	17%	10%	5%

In 1973, the University of the South Pacific established an extension centre in Kiribati. This extension centre is connected to the main campus in Fiji via satellite and radio telephones. However, most students attend the main campus in Fiji on a scholarship funded by New Zealand, Australia or local government funding. Other institutes of higher learning include Tarawa Technical Institute (TTI), which offers technical and vocational courses; a Maritime Training School (MTC), which prepares students for careers at sea; a Kiribati Teachers College (KTC), which produces the majority of teachers on the islands; and a Nursing Training School (NTS), which trains most of the nurses in the country.

The Ministry of Education administers education in Kiribati. However, the Minister of Education has control over educational issues and they appoint a permanent secretary. Management is centralized with little authority given to individual schools. The government, churches, and parents provide funding for the educational system. In 1993, educational expenditures accounted for 25 percent of the national budget.

Curriculum development for the schools is conducted through the Ministry's Curriculum Development and Research Centre (CDRC) in Tarawa. Since April 2001, Kiribati has not participated in any international or local research studies to evaluate the effectiveness and provision of education in the country. However, it has been assessed that the literacy rate is about 90 percent.

2.3.1 Kiribati Secondary Schools

The secondary schools under research in this thesis are schools that are located on South Tarawa. There are six schools altogether, and five are Church schools from different denominations. Only one of them is a Government school; King George the Fifth & Elaine Bernacchi School (KGV&EBS). Two are Catholic schools Sacred Heart High School (SHHS) and Saint Louis High School (SLHS). The other is a Church of God school known as Church of God High School (CofGHS). Then Moroni High School (MHS), a

Mormon school, and last but not least is William Goward Memorial College (WGMC), a Protestant school.

These schools are located on South Tarawa and are under pressure from the growing youth population that constantly seeks out a place at a secondary level. However, only 25% of students reach Form 6, and 8% reach the final secondary school level, Form 7 (UNDAF, 2002). Then most of these entrants choose to continue their secondary school education on South Tarawa. Despite the government effort to relocate some of the services back to the Outer islands, for example like building Junior Secondary Schools for each Outer island, people still float into South Tarawa. The factors that attract people to continue migrating into South Tarawa are known as push and pull factors (CDRC, 2002).

2.3.2 Push/Pull Factors

The capital remains a magnet for people from the outer islands to migrate and settle. Push and pull factors are mainly factors that determine the reason for why people keep coming in. Push factors are negative things that push people from the Outer islands away from their islands, for example boring lifestyle, labour intensive work, lack of education, social and health services and many others. Pull factors are positive things that pull people from the Outer islands into South Tarawa, like job opportunities, entertainment, advanced social and health services, education prospects, and so forth.

The disproportionate allocation of infrastructure and social services makes South Tarawa a constant target for internal migration. However, a countrywide program to construct new Junior Secondary schools, funded under the Kiribati Education Sector Programme by Australian Aid (AusAID), has been completed. However, teacher training and inadequate curriculum are major challenges with significant disparity between the outer islands and Tarawa. AusAid is providing additional assistance for curriculum development, improvements in managing school maintenance funds, and teacher training. The New Zealand Agency for International Development (NZAID) is providing assistance for basic and tertiary education (ADB: January, 2006).

The Government plans to:

- (i) Improve the quality of education in Government and church schools,
- (ii) Strengthen systems for school maintenance and delivery of teaching materials, and
- (iii) Extend the outreach and scope of vocational training by building up to 12 rural skills training centers on the outer islands with support from the European Union (EU).

These centers will offer formal trade training for students who leave the junior secondary schools, as well as provide a venue for other non-formal and community education programs. If successful, these initiatives will have the twin effect of improving services in outer islands and relieving stresses in Tarawa. However, the effectiveness of past expenditures on improving social services in the outer islands has been monitored little or not at all (ADB: January, 2006).

In 2001, there were six academic secondary schools employing 192 teachers throughout the country, providing technical, professional and administrative training. Since then, some secondary schools have been upgraded and other secondary schools have been established. A total of 21 secondary schools have been instituted with six of them found on South Tarawa. These six secondary schools are SHHS, KGV&EBS, CoGHS, MHS, WGMC and SLHS.

2.4 Non-Governmental Organisations

Non-Governmental Organizations (NGOs) in Kiribati are rare because the bulk of these women and youth groups are Christianity related groups. Moreover, NGOs such as the AMAK group and Christianity groups overlap with each other. Therefore, what the office of NGO does is support these organizations in whatever they do because ESD is not always about waste issues. It involves a whole lot of issues like health and drinking problems, socialization, climate change and so forth. However, the underlying message is for people to live in a just and sustainable environment.

The paragraphs below are some of the works these NGOs are actively doing in attempting to minimize waste problems or teach people to live in a sustainable world.

2.4.1 AMAK Group

Despite education and social change, the role of women, their influence on the developmental process and their opportunities as individuals remain restricted. Traditional values and patterns of behaviour, such as land tenure, community politics, and household division of labour contribute to the perpetuation of a lower social, legal and economic status of women. Overall, Kiribati women constitute 47 percent of the labour force as compared to only 35 percent in the Federated States of Micronesia (FSM) (ADB, 1998).

Aia Maea Ainen Kiribati (AMAK) literally means National Women's Federation of Kiribati and was formed in 1977 when a conference was held in South Tarawa with representatives from all islands and principal churches. They wanted to establish this federation in order for women to stand on their own feet and to help each other to further women's interest in childcare, nutrition, family planning, sewing, cooking, and community leadership.

"The principal aim of AMAK is to promote the status of Kiribati Women, to meet the new developments and changes brought about by introduction of

Western cultures and to preserve as much as possible the Kiribati values that are the foundation of our own cultural identity” (Tira;1985,p.24-5).

AMAK used to be a non-governmental organization supported by women’s groups throughout the country, while still maintaining a close relationship with the Government of Kiribati (GoK). The GoK have taken control over it and it is now under the Ministry of Internal & Social Affairs (MISA). With the GoK taking over, the AMAK can expect financial support from the government with regards to women’s needs. As the head of the women’s organisation it embraces and gives solutions to the problems of all the women groups who come to AMAK for support.

AMAK have been actively involved in waste management activities. They participated in these activities of improved waste management because they see it as a key issue for improving the standard of living for women. Indeed, it was at the Foundations of the Peoples of the South Pacific Kiribati (FSPK) workshop with AMAK that the name Kaoki Mange (return rubbish) was first invented for the recycling system.

The coalition of AMAK, FSPK, Community Development and Sustainable Participation (CDSP) and IWPK worked closely in formulating the strategy to engage the various programmes into a coherent whole. This cooperative approach was to prove very fruitful in maximizing the effects of using the greenbags and banana circle was achieved with the available resources.

Using the greenbags and the banana circle was a project by the Environment Division in Kiribati to minimize waste entering the waste streams. People have to put all their biodegradable rubbish inside the banana circle (refer to Appendix 1: How to make a banana circle) and the non-biodegradable waste into the greenbags to be sent to the landfill.

In 2003, the coalition developed a slogan “Kiribati Te Boboto” (Make Kiribati Beautiful) to encourage people to improve the existing waste arrangements and clean up their surroundings. The slogan was printed on the biodegradable greenbags and collection trucks to advertise and keep reminding people of what to do with their waste.

AMAK have become more involved, as a project officer of the Kaoki Mange was employed under a separate funding arrangement with AMAK, in order to improve waste management in the home through the women’s movement. The project officer at CDSP was also President of the National Council of Women, and worked closely with AMAK. Through this mechanism, all 13 NGO members of the AMAK umbrella group also become onward distributors of the greenbags.

Also, AMAK appointed a community worker (CW) to work on South Tarawa. This CW goes around the villages and teaches people how to build and use the banana circle wisely. The promotion of this banana circle is crucial to

educate the community to save our water table/lens from pollution from the wastes we mismanaged. At the same time the people get vitamins and food from the banana fruit planted in the circle.

Chapter Three

Theoretical Background and Literature Review

3.1 Chapter overview

This chapter will give an overview of the literature concerning Environmental Degradation, Sustainable Development, and Education for Sustainable Development (ESD) along with Kiribati's position regarding waste issues on South Tarawa.

3.2 Environmental degradation (ED)

Environmental degradation is a global issue. It can occur naturally, or through human processes. Problems like global warming, destruction of old forests, especially in the Amazon area, ozone depletion and air pollution are all linked to poor use of our natural resources. Because of people's complacency, apathy and naivety, environmental degradation has grown dramatically over the past decades.

Environmental degradation is a result of the destruction of the environment through exhaustion of air, water and soil resources, and the annihilation of ecosystems and the extermination of wildlife. Environmental degradation is third on the list of ten threats identified and officially cautioned about by the High Level Threat Panel of the United Nations (Environmental Degradation, 2001). The ten threats are: poverty, infectious disease, environmental degradation, inter-state war, civil war, genocide, other atrocities (e.g. trade in women and children for sexual slavery, or kidnapping for body parts), proliferation of weapons of mass destruction, terrorism and transnational organised crime (Office of the Advocate: Earth Intelligence, 2008).

The actions of both affluent and less affluent countries are responsible, yet the poorest people suffer most. Floods and droughts that are a result of global warming are largely accelerated by pollution from wealthy countries. Unfortunately, the effects are felt most by the world's poorest people. The environment also suffers when poor people cut down trees for fuel.

Many people are unaware that the whole planet is interlinked, sometimes in very complex ways. We may not see the effect of environmental damage in our own surroundings, but the damage is causing problems in other places, even other countries. A notable effect of greenhouse gases, the rise in sea level, is evident in small island countries like Tuvalu, Kiribati and other small coral atoll islands.

3.2.1 Theoretical issues in ED

To explore the nature of environmental degradation, it is necessary to examine the term in a theoretical context.

Elliot (1997) in "Faking Nature" cites Passmore (1975) and Hill (1983) as each suggesting that preventing environmental degradation is associated with human virtue, values and obligation towards the environment. Sagoff (1991) likewise links concern for nature with the virtuous life.

His view seems to be that we should respect nature as an appropriate expression of gratitude to, and love for, that to which we owe our existence and our happiness (Elliot, 1997, p.54).

Leading a virtuous life is very important because at the rate we live our lives, we are destroying the environment without knowing it. If we incorporate Sagoff's belief into our daily life, environmental destruction will be minimised. People will become aware that we are one with the environment and if we destroy it, we are destroying our basic existence in this world too.

A holistic approach is what these theorists are advocating. Therefore, what better way to assist this theory than with support from the Bible: Numbers: Chapter 35, verses 33-34 where the underlying message is for people not to defile or pollute the land, for the land is God's property. We are just tenants and he is the landlord.

The Brundtland Report points out the strong link between poverty and environmental problems:

...poverty is a major cause and effect of global environmental problems. It is therefore futile to attempt to deal with environmental problems without a broader perspective that encompasses the factors underlying world poverty and international inequality (Court, 1990, p.12; Peng, 1992, p.15).

From Foster's (1999) point of view, environmental degradation is a product of three things: population, affluence and technology. In contemporary discourse, population growth is often to blame for ED (Kirkby et al., 1995, p.119). However, Foster's equation shows otherwise: environmental degradation is not the result of population itself, but a combination of the three events.

Environmental degradation: $I = P \times A \times T$

I – Environmental Degradation
P – Population
A – Affluence
T – Technology

North (2004) supports Foster's argument when he states that economic growth will lead to environmental problems. The idea that economic growth improves the environment is absurd because money by itself cannot solve our environmental problems. We need people who can wisely use this money for the betterment of the world. However, since we live in a technological world, business communities, politicians and economists favour this economic growth because it will be the answer to their muddled policies.

The Brundtland Report says that poverty and environmental degradation goes hand in hand. We do not need to be affluent or technologically advanced to be in a state of environmental degradation.

However, if we lead a virtuous life, we can maintain a sustainable, just environment because we know how to treat our environment with care and respect.

3.3 Finding solutions to ED internationally

Solutions to solve or minimise the global problems of environmental degradation depend collectively on co-operation between all countries. A consensus amongst countries is needed to agree on what actions should be taken to reduce escalating environmental issues.

The United Nations has observed this problem in developing countries. Therefore, the UN set up agreements that can benefit both developed and developing countries. For example, the Montreal Protocol (MP) and Kyoto Protocol (KP) are aimed at reducing the harmful emissions of greenhouse gases into the atmosphere. The Convention on Biological Diversity (CBD) has a goal of conserving the species on earth and their natural habitat.

What the Montreal Protocol, Kyoto Protocol and the CBD have in common is that they are all international agreements established to minimise the escalating environmental problems on a global scale. Developed countries are expected to support developing countries on the basis that:

- developing countries lack the resources, and
- most of the negative impacts are absorbed by the developing countries.

Most developed countries abide by these international agreements. The biggest polluter, the United States of America, is the only major country that does not want to persevere with the agreements. Although the United States did sign the Kyoto Protocol and the Convention on Biological Diversity it still has not ratified them. It has only ratified the Montreal Protocol. This is because the then President George Bush Sr and the current President George Bush Jr agreed that it would destroy the US economy if they conformed to the requirements of the two agreements.

However, since the establishment of these three international agreements, there has been a noticeable decrease in the use of chlorofluorocarbons (CFCs). Fewer CFCs and other related poisonous greenhouse gases are entering the atmosphere; for example, CFCs are no longer used in aerosol sprays. Moreover, people are also aware that there are certain places, endangered species, and habitats that need ecological preservation. The CBD enables people to conserve and sustain these specific species and their environments for future generations.

The Kyoto and Montreal Protocols were established to uphold pollution control while the Convention on Biological Diversity was set up to preserve endangered species and their environment. While these three international agreements focus on protecting the earth, none of them specifically examines the issues of waste accumulation on land (although they relate indirectly to waste issues).

Some of the regional policies regarding waste/packaging are stated by the South Pacific Regional Environment Programme (SPREP): Solid Waste Management Strategy for the Pacific Region. The strategy aims for Pacific island countries to adopt a cost-effective and self sustaining way to overcome the negative impacts of waste on the environment and the people (SPREP, 2006, p. 5).

3.4 Solutions to ED in developing countries

Small Island Developing States (SIDS) are vulnerable in the face of environmental degradation because they lack the resources or the technology to support their economy (Peng, 1992, p.15). They can become marginalised.

There is also considerable support for the view that growing environmental problems in developing countries are often caused by the disempowerment of local people: locals can no longer participate in resource management and are losing access to resources due to the widespread penetration of capitalism (Barrow, 2006, p. 315).

The effects of environmental degradation can be felt worldwide, but the negative effects of technological growth are particularly intense in developing countries. Moreover, the lack of policy coordination in Pacific countries including Kiribati cannot keep up with the advance of technological changes they are experiencing (Olowu, 2007, p.267).

Fiji, the Marshall Islands and Kiribati are the three Pacific islands that will be referred to in terms of the necessary steps they are taking to reduce environmental degradation in their countries. Fiji has been chosen because of its transportation relationship with Kiribati. Any I-Kiribati who wants to travel beyond Kiribati, must do a stopover in Fiji and get connecting flights to other

international countries. The Marshall Islands are another group of Micronesian islands that have the same physical features as Kiribati.

Therefore, whatever actions the Marshall Islands take are very likely to have the same effect in Kiribati, if the same steps are taken there.

Map 3: Map of the South Pacific.

Source: Fugitt, 2006.

3.4.1 Solutions to ED in Fiji

Fiji is a group of islands (an archipelago) in the South Pacific Ocean. There are 332 islands in the Fiji archipelago, the largest two being Viti Levu and Vanua Levu. People live on only 110 of the islands. The geographical coordinates describing the location of Fiji are 18 00 S, 175 00 E. The total land area of Fiji is 18,270 sq. km.

Fiji is fortunate to have the majority of the regional organisations' headquarters based there, including the Pacific Islands Applied Geoscience Commission (SOPAC), the South Pacific Regional Environment Programme (SPREP), and the University of the South Pacific (USP).

Amongst Fiji's many bills, acts and policies on the environment, only two bills to resolve environmental degradation in the country have been adopted: the Sustainable Development Bill 1998 and the Environment Management Bill 2004. These are described below.

3.4.1.1 Sustainable Development Bill 1998

This bill was drafted in 1998 for actions to be taken to achieve sustainable development in Fiji for the present as well as the future. It aimed to manage the serious environmental problems evident in Fiji.

"The draft Bill provides an integrated and consolidated legal framework for environmental and natural resource management in Fiji that is consistent with the objectives of the 1992 Earth Summit in Rio de Janeiro and the United Nations Conference on Sustainable Development for small island states held recently in Barbados (Parliament of Fiji)".

Though this Bill was first considered in Cabinet in 1995, the task of outlining the Bill was given to the Asian Development Bank, which was to set up the legal framework of the Bill. It took two years to complete the consultation process, which involved conferring with the private and public sectors.

It was hoped that: "...the new legislation will establish many of the necessary legislative and administrative mechanisms to ensure that Fiji achieves sustainable development in the future" (Tadulala, 1998, p. 6).

The legislation would have been adequate, with a wide application for protection and control of the environment, compelling proper, suitable and adequate management of solid waste. But the Bill was never passed in parliament because it was deemed unrealistic.

However, the Sustainable Development Bill was amended and came back to the Fiji House of Assembly as the Environment Management Bill.

3.4.1.2 Environment Management Act 2005

The Environment Management Bill was signed in 2004 and became an Act in 2005 for the purpose of applying the principles of sustainable use and development of natural resources and identifying matters of national importance for the Fiji Islands.

The Bill established an extensive justification for prescribed roles to be set up in the Act. For each job, it described what that position was expected to accomplish. Positions like Environmental Auditors and Environmental Inspectors were broadly explained in the Bill, with the aims of maintaining sustainable development and lessening environmental degradation. Improvements and restriction notices were included too, for those people who disobeyed the Act. It has been said that

The Act is the slimmed down version of the Sustainable Development Bill, Fiji's previous attempt to introduce environmental legislation, which was eventually rejected as being too ambitious and costly (Environment Management Act, 2004).

3.4.2 Solutions to ED in the Marshall Islands

The Marshall Islands is a group of coral atoll islands that are flat and are easily affected by such global warming effects as rising sea levels.

Like Kiribati, environmental issues in the Marshall Islands do not end at global warming but extend to other problems of environmental degradation like waste management, coastal erosion, water pollution, marine resource management and deforestation.

The Marshall Islands government is carrying out a number of activities in order to safeguard and protect the environment sustainably. These activities are:

- Establishing the Office of Environmental Planning and Policy Coordination (OEPPC) to protect human health and the Marshall Islands natural environment.
- Calling for the OEPPC to strengthen the government's focus on climate change issues linking with the Rio Conventions: United Nations Convention on Biological Diversity (UNCBD).
- Creating the Marshall Islands Marine Resources Authority (MIMRA) for the management, conservation and development of fisheries resources.
- Through the Marine Science Program at the College of Marshall Islands (MSP-CMI), studying the status of marine resources to help manage and plan fishing activities in a sustainable manner (US All Islands Coral Reef Committee).
- Preparing the Strategic Development Plan (SDP) 2003-2018 to address the ten major challenges the country has had to face in the past, with extensive national goals and objectives seeking to promote sustainable economic development (ADB: 2005).

3.5 Waste problems in Kiribati

In the Pacific islands there was a time when rubbish did not exist. Everything Pacific island people produced could be recycled back into the earth. Food materials can be recycled because they are all organic. Some can be used as livestock feed or left to rot (Peteru, 2004, p.23). Peteru's claim about the non-existence of rubbish in the Pacific is very true, since all the rubbish these islanders produced are all organics and are decomposable.

However, globalization came and it changed the way these islanders' view and trading patterns. It began to open up doors of trading with the outside world, for example, western goods were introduced to these people.

The wrapping packages of these western goods (imported goods) become waste, a problem in Kiribati that has steadily increased over the past decades. Envision-New Zealand (2004) reaffirms that "packaging is the largest single contributor to one of our nation's most troubling environmental problems: the municipal solid waste crisis (p.26)." Most affected from this waste crisis in Kiribati is the capital island, urbanised South Tarawa.

Waste problems are also common in other urbanised Pacific islands. The situation in Tonga is similar to that in Kiribati. Peteru (2004) found:

There is solid waste on the streets, in the ocean and everywhere. Diapers are dumped on the roadsides to be eaten by stray dogs and old cars are left to rust in home gardens and on roadsides. Some beachfronts are turning into unofficial rubbish dumps for diapers, plastic bags, refrigerators, old oil, car batteries, electric transformers and more.

Image 1: Rubbish at the hospital beach forefront in South Tarawa

Taken: 25/10/07

These wastes are called municipal solid waste (MSW) and are very common everywhere on South Tarawa.

3.5.1 Issue of Municipal Solid Waste (MSW)

Municipal solid waste (MSW) is a serious problem for the world today. Magrinho et al., (2006) suggest that during the past decades MSW management became a major concern and it is presently one of the main public subjects under discussion. With economic growth and the demand for efficient management solutions, the amount of MSW produced increases.

In Kiribati, municipal solid waste is a problem and should be of major concern to the Government of Kiribati (GoK). However, as one participant stressed, the GoK do not give waste the attention it deserves (Interview, 2007).

Court (1990, p. 71) explains that waste generation is not only a problem of industrialised countries but also of newly industrialised and developing countries. He suggests that we can reduce waste generation if we reduce waste at its source. Envision-New Zealand (2004), on the other hand suggested that producers should be held responsible for the products they produced, because it will successfully reduce waste. They suggest activities as for example, "deposit refunds to encourage container return and to finance recovery systems used in Australia, Canada, USA, Israel, Europe and Asia (p.29)". The same idea of making producers responsible for the products they produced was made by Woods (2004).

The system of deposit refunds is now running smoothly in Kiribati for the plastic and glass bottles, aluminum cans and batteries. However, the growing concern now is the other kinds of items made of plastic like the noodle wrapping, disposable nappies and so forth.

Plastics are a concern because in Kiribati MSW poses a major threat to the environment. Previous reports such as the Kiribati State of the Environment Report (1994) and the Kiribati UNCED Report (1991) emphasise the seriousness and increasing concern about waste in Kiribati. Solid waste disposal (SWD) is a major problem, exacerbated by the change of I-Kiribati from a traditional to a western lifestyle (Sinclair Knight Merz Ltd, 2000).

3.5.2 Current waste issue on South Tarawa

Waste is a problem in Kiribati and legislating environmental education (EE)/ ESD into formal education is a must. EE is a "multi-disciplinary approach to learning that develops the knowledge, awareness, attitudes, values and skills that will enable individuals and the community to contribute towards maintaining and improving the quality of the environment" (Hargreaves.et.al.1997, p.110).

Several studies and reports (Sinclair Knight Merz, 1999; A-N-D Consultants, 2000; Dowell, 2006; Cotton, 2006; Truman, 1999) explore the challenges and ways to minimize waste problems in Kiribati.

A-N-D (2000) and Sinclair Knight Merz (1999) Consultancy Agents found that emphasis on legislation and enforcement was prioritized by their respondents. However, their reports specifically indicated a need also for curriculum writers to develop a resource material on waste management for teachers and for classroom teaching.

However, Olowu (2007) found out that legislation and enforcement in Kiribati have still not put into effect by the Kiribati government. Some of the reasons he stated included “the lack of the political will required to confront the economic players in areas of concerns, the complicity of a ruling government through its cronies and patrons, and sometimes failure to prioritise budgetary commitments (p.267)”.

Truman (1999) suggested for school curriculum to include hands on experience of waste management principles and practice. For example, after a waste audit done by one school he investigated, students became very vocal and created a lot of reaction concerning waste issues in their environment. This activity of hands on experience is also supported by Ms Tofinga from the Environment Unit in Kiribati. Dowells’ (2006) result, reinforce that garbage exercise leaves a lasting impression on students with the interactive hands-on assignments. He also illustrates how sociology works and further enhances conceptual understanding in viewing the world through a sociological lens.

However, Cotton (2006) suggested that unless curriculum developers take into account teachers’ beliefs in designing new curriculum materials, those materials are unlikely to be implemented in their intended format. Moreover, Chapman and Sharma (2001) also suggested that before considering any environmental education programme, it is essential to investigate the existing environmental attitudes and knowledge of the relevant population (p.270).

While enforcement of law on waste, hands-on curriculum activities and teachers’ beliefs should be included through education, awareness, and participation, such education must be complemented by direct incentives targeting the participating groups (Bolaane, 2006). The targeted participating groups in this research are the senior secondary students from Forms 4-7 (Years 10-13) because EE/ESD is not enlisted in their syllabus.

Problems associated with waste are increasing dramatically on South Tarawa because of population growth together with urbanisation and development. With people’s dependence on imported packaged goods, waste generation has increased over the past years.

3.5.2.1 Imported goods

Increasing consumption of imported goods by locals is evident in the Pacific islands. In Kiribati the use of disposable nappies, plastics, batteries, bottles, cans and pollutants is cited as a serious problem. Women do not dispose of their babies’ nappies properly, so fishermen end up hauling nappies in their fishing nets. Even when people are swimming in the lagoon, nappies can be seen floating in the sea (A-N-D Consultancy, 2000).

Other products are dangerous and pose a great threat to health. On the outer islands, batteries are a serious problem. The islands do not have any electrical power. Because they rely on torches for lighting and on radios, batteries are a necessity. At present there is no system to deal with used batteries properly. In 2009, Kiribati is expected to import more than 1 million small batteries. In addition there are millions of batteries that have already been spent and discarded all over the country (A-N-D Consultancy, 2000).

3.5.2.2 Amount of waste generated

The amount of waste generated has increased in both quantity and diversity without adequate investment in collection, transport, treatment and disposal facilities. These problems are further complicated by political, economic and social factors (Imam, et al., 2007). The amount of waste produced on South Tarawa is approximately 6500 tonnes per year (Sinclair Knight Merz, 2000, p. 19). Eighty per cent of waste is domestic and can be sorted, composted and recycled, with only 20 per cent left to be disposed of in the landfill (Kiribati International Waters Project).

3.5.2.3 Waste composition

Wastes are mostly composed of plastics, paper, food scraps, leaves, bottles, and metals. Waste of mixed composition, containing non-biodegradable and biodegradable substances is collected without sorting. The bulk of the non-biodegradable waste can be sorted, reused and recycled, while the biodegradable waste could be composted. Plastic comes mainly from ice-block bags, noodle plastics and plastic shopping bags.

Image 2: Typical waste characteristics

Figure 1: A typical rubbish pile in Kiribati. The rubbish is been collected and separated otherwise the resource is not used and pollutes the environment.

Source: Leney & Koneteti (n.d)

3.5.3. Waste storage

A key aspect of effective waste management is proper waste storage on the premises where the waste is generated (Oluwande, 1984). On South Tarawa, the two councils (TUC and BTC) are responsible for collecting waste from villages and towns. Forty-four-gallon drums were distributed to public places, some households, government houses and private companies but are not available to every household. As a result kerbside rubbish is evident everywhere.

3.5.4. Waste collection and transport

Collection and transportation are a major cost in the waste management process. On South Tarawa, TUC is responsible for collecting wastes from Bairiki to Tanaea, while BTC is responsible for Betio's waste only. Collection is house to house but with inadequate town planning, some houses are left out because the trucks can't pass through a multitude of unplanned houses. Less than three quarters of the population is covered by the municipal collection services (Sinclair Knight Merz, 2000).

Waste collection and transportation are both labour and capital intensive. A flat fee is charged to individuals under different categories. For TUC charges are: Government Ministries \$600/year; private businesses \$400/year; stores \$50/year, and civil servants living in government households \$1.85/fortnightly. There is \$300,000 in income annually. Yet only 25 per cent of TUC's annual income goes to waste management services (Sinclair Knight Merz, 2000).

Waste alongside roads is a common sight in villages. This suggests the need to increase the 25 per cent waste management services expenditure from TUC's annual income, or to amend the current fee system to cover at least the operation and maintenance cost, especially considering that the flat fee system does not create incentives to minimise waste.

Sinclair Knight Merz (2000) found there were inadequate resources and insufficient vehicles to provide a satisfactory service to the public. Waste collectors complain of the same problems still (Anonymous interview, 2007). Lack of funds and inadequate maintenance is common in developing countries, as they depend heavily on aid donors.

Approximately half Kiribati's income comes from aid. Aid donors play an important role in education in Kiribati. According to the Sector Review (1992), estimated donor spending during 1993-1994, a one-year period totaled up to AUS\$3.8 million. Fifty-two per cent of that aid went on training, 15.9 per cent on technical assistance, 8.5 per cent on instructional materials and 23.2 per cent on buildings and equipment (Kiribati Country Reports, 2000).

3.5.5 Waste treatment and disposal

Solid waste from the formal collection system in various villages on South Tarawa goes to two dump sites. BTC rubbish ends up at the Red Beach landfill at Betio and TUC rubbish goes to Nanikaai landfill. However, piles of rubbish are often found alongside roads, in open spaces and as 'fly-tipping' – the illegal deposit of rubbish in unauthorised places.

The landfills are not up to the standards of modern sanitary landfills. Most of the dump sites are unprotected; they are often on fire; and refuse is washed on to the lagoon beaches and out to sea. At Red Beach landfill there are already signs of leachate seeping beneath the dump wall onto the seafront (Sinclair Knight Merz, 2000). An expert has stated that there is a crack in the wall of the Nanikaai landfill (Anonymous interview, 2007). If this is the case, leachate will contaminate the lagoon side where the landfill is situated.

3.6 Public awareness and attitudes to waste

Public awareness and attitudes to waste can affect all stages in the solid waste management process. Individual attitudes will have a great impact on recycling, separation and sorting of waste, littering, household waste storage, collection frequency, willingness to pay for waste management services, and the level and type of opposition to waste treatment and disposal facilities. Imam's et al. (2007) research found out the same attitudes that Abuja residents are experiencing was used to be the same attitudes of the Kiribati people too. However, there is a positive changed of attitudes of the Kiribati people that can be observed today.

3.7 Private sector participation

At the moment there is only one private company operating in Betio that deals with recycling of waste materials returned by locals. An important factor in the success of the private sector is the ability of the state government to support, enforce and sustain written contracts (Imam, A. et al., 2007). The award of contracts and the monitoring and enforcement of the contracts is at the moment the responsibility of the Ministry of Commerce, Industry and Co-operatives.

3.8 Solutions to ED in Kiribati

Small Island Developing States (SIDS) are located among the most vulnerable regions in the world in relation to the intensity and frequency of natural and environmental disasters and their increasing impact, and face disproportionately high economic, social and environmental consequences.

Environmental degradation is worldwide but those most affected by ED are small island nations, of which Kiribati is one. The most pressing

environmental issues in Kiribati are the effect of global warming (sea-level rise) and the effect of globalisation (waste). With its emphasis on waste management, the laws, rules and regulations in this work are to do with the management of waste and water.

3.8.1 Law compliance and enforcement

The Kiribati national legislation, regulations and by-laws described below are linked to the management of waste and water. They are adapted from a report titled "Preliminary socio-economic baseline survey and waste stream analysis for Bikenibeu West, South Tarawa, Kiribati", prepared by Teiwaki and Associates (2004).

3.8.1.1 Public Health Ordinance (local law) 1926

This law is outdated but is applicable to employ in the case of public and household cleanliness in order to maintain healthy living conditions. The public are advised what to do by following the law. For example, the use of unsafe wells is prohibited and the Sanitary Inspector has the power to close such wells down.

3.8.1.2 Public Health Regulations (national law) 1926

The national law specifies that every household in Kiribati should have a proper toilet that has been inspected by the Sanitary Inspector and approved for use.

3.8.1.3 Land Planning Ordinance 1973

The ordinance requires people to apply through specific bodies for a building permit if they want to build a house, for example, on South Tarawa. People need to follow this land use planning, zoning ordinance that provides regulations for the conservation of the natural environment.

3.8.1.4 TUC Public Health By-law 1975

This by-law prohibits people from disposing of rubbish wherever they want; wells must be lined with concrete and covered to avoid contamination; wells must not be built within 100 yards of a graveyard to avoid water lens contamination; and it is an offence to defecate on the beach.

3.8.1.5 TUC Control of Animals By-law 1975

This by-law aims to prevent dogs and pigs straying into the community and helps minimise the contamination of community water resources.

3.8.1.6 Local Government Act 1984

The Act provides for the establishment of Island Councils on each inhabited island of Kiribati, and empowers each Island Council to undertake a variety of tasks, some of which are related to management of wastes and water. Island Councils can pass by-laws to give legal effect to some of these responsibilities (Sections 50-53 Local Government Act, 1984).

The following TUC by-laws have environmental implications pertinent to the management of wastes and water in Bikenibeu West and the project.

3.8.1.7 TUC Building By-law 1986

This by-law stipulates the conditions for the building of houses with sites and services agreed with the appropriate providers, such as the Lands and Survey and landowners, the Ministry of Works and Utilities, and the Public Utilities Board. The TUC Building By-law stipulates also that new buildings must have provision for toilet and water catchments.

The Building Inspectors provided for in the by-law have never been appointed and compliance is virtually non-existent.

3.8.1.8 The Environment Act 1999

The Act provides the general functions of the Minister, the conditions for development proposals, and the prevention and control of pollution. Section 31 of the Act bans the release of wastes in any position, beach, sea, lagoon or foreshore that will result in pollution or interference with the health, convenience, comfort or amenity of any person. Section 33 imposes the penalty of a fine not exceeding \$1000.00 or imprisonment of up to six months or both for the discharge of human or animal excreta. This provision is not enforced.

3.8.1.9 The Environment Regulations 2001

The regulations expand the pollution terms and incorporate contamination of land, water, air and noise. It also includes household waste, demolition waste, hazardous waste, clinical waste, quarantine waste, ballast waste, and oil waste. The Environment Act and the regulations provide for the appointment of Environment Inspectors (EI).

3.8.2 Island Councils

The two councils, BTC¹ and TUC, operating on South Tarawa, have quite similar by-laws with regard to waste. The by-laws control the way people dispose of their rubbish in the council area in order to reduce the amount of

¹ BTC – Betio Town Council

rubbish in that area. In order to improve the waste disposal system and maintain cleanliness, with the aim of further safeguarding public health the public should follow the by-laws (Local Government Ordinance, 1966).

3.9 Sustainable development (SD)

3.9.1 What is SD?

There are at least 100 definitions of this term. The concept was first popularised in 1987 with the publication of the "Brundtland Report" – the Report of the World Commission on Environment and Development. The definition from the Brundtland Report, known worldwide, and stated by Gro Harlem Brundtland, former Prime Minister of Norway, now Director General of the World Health Organisation says that "sustainable development is conceptualised by meeting the needs of the present without compromising the needs of future generations" (Green Developments in the 1990s, 1990, p.19). The report highlights theoretically what sustainable development aims to achieve in order to maintain its significance globally.

Lumley (2002, pp. 3-4) gave a definition of sustainable development:

Sustainable development is about the way we use, conserve and enhance the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, is secured.

There is also recognition that achieving sustainable development requires far reaching policy and institutional reforms and the involvement of all sectors at all levels. Sustainable development is not the responsibility of only government or one or two sectors of society. It is the responsibility of collective efforts from everyone in the country.

In 1992 in Rio de Janeiro during the United Nations Conference on Environment and Development (UNCED), the Earth Summit, the members discussed the global problem of diminishing resources caused by economic growth. The failure of humanity to prevent this escalating problem is caused by countries' polarisation in terms of their wealth and technology. During the Earth Summit, participating countries agreed with the 27 doctrines for achieving sustainable development in the Rio Declaration and complemented this with the signing of Agenda 21.

Generally, to achieve sustainable development, countries involved agreed that the quest for increasing development and quality of life, along with considerations to balance environmental, societal, and economic activity, is essential. A number of suggestions and proposals regarding sustainability were identified, such as environmental conservation and restoration, poverty reduction and natural resource preservation.

3.9.2 Linking SD with ED

Achieving economic development is often at the expense of ecological losses like deforestation, environmental pollution, biodiversity loss, desertification, and coastal and marine pollution. These environmental problems can be prevented by using the concept of sustainable development.

Sustainable development is widely held to have three goals:

.....economic growth, environmental protection, and the health and happiness of people. Plenty of academics have noted the conflict within the concept of sustainable development - between wishing to remain within environmental limits and seeking growth or development. But it can be argued that it is better to pursue survivability rather than sustainability (for instance, a development approach which does not risk human survival).

(Barrow, 2006, p. 30)

Barrow is saying that countries always find it difficult to establish goals between minimising environmental degradation and/or attaining economic development. However, he suggests that countries should proceed on a path where human survival is a priority rather than maintaining sustainability.

Examples of sustainable development methods taken to decrease environmental degradation can be local, national (details in Section 3.8.1 and 3.8.2), regional or international.

3.9.3 Theoretical issues in SD

To examine the nature of sustainable development it is necessary to explore the term in a theoretical context.

Atkinson et al. (1997) identified the main components of sustainable development as economic, social and environmental.

According to Krapivin & Varotsos (2007, p.27), sustainable development is "used more and more as a label denoting the regimes of existence which are neither stable nor reflect socio-economic development." They emphasise the priority of two aspects of the problem of sustainable development:

- natural resource consumption and
- emission of pollutants and waste to the environment.

Kirkby et al. (1995) showed that the loss of biodiversity has been viewed as a threat to sustainable development. Jorgenson and Kick (2006) refer to sustainable development as "ecological modernisation" because growing affluence and advancing technology worldwide will always have either positive or negative effects on the environment in which humans reside.

But not all people approve of the notion of sustainable development, as explained by Kirkby (2001). Some say that the term has become a catchphrase of the 1990s, repeated parrot fashion by environmental policy makers and that the value of the concept is vastly overrated (Reid, 1995, p. xiii; Krapivin and Varotsos, 2007, p.21)

3.9.4 Agenda 21

Agenda 21 is a broad plan of action for member countries to use at a global, regional or national level. Agenda 21 is a plan about the environmental problems that exist today. The plan is also known as the "Earth Summit" and was signed by 178 countries. It was signed in June, 1992, in Rio, Brazil during the United Nations Conference on Environment (UNCED).

A follow up meeting to reaffirm Agenda 21 was carried out in 2002 in Johannesburg during the World Summit on Sustainable Development (WSSD). The summit urged member countries to reorient their curricula and address the environmental problems the world is now facing. These environmental problems could be addressed through incorporating Education for Sustainable Development into countries curriculum. For example, the Decade of Education for Sustainable Development (DESD) was set up during the 2002 conference.

The aim of implementing DESD is to help and encourage member countries to rethink their curricula. The 2002 summit persuaded member countries to reorient their curricula from preschool through to tertiary level.

Agenda 21 is very important because Education for Sustainable Development is a priority and considered to be the way forward in this technological world. Countries can maintain their sustainability if people are well versed in the notion of ESD. Education for Sustainable Development will motivate, and change people's behaviour and attitudes towards environmentally positive actions (UNESCO Bangkok).

Chapter 36 of Agenda 21 viewed education as a vital tool for achieving sustainable development, with four main areas of action for education identified. These are to:

- Improve the quality of basic education
- Reorient existing education programmes to address sustainable development
- Develop public awareness and understanding and
- Provide training for all sectors of private and civil society.

(UNESCO Bangkok)

In the 2002 review, reports that were prepared by countries for the World Summit of Sustainable Development (WSSD) disclosed that amid countries' efforts to fulfill sustainability principles, goals were far from reached. This is a

clear indication that it is essential to rethink the course of education today. Education for Sustainable Development is a key to this “rethinking” scenario.

Following sustainable development discussions and formulations, it became apparent that education is the key to sustainability. People were realising the importance of education to achieve a sustainable future. However, little progress was being made under the name of ESD, since education was left out of the Earth Summit agenda in 1992.

By 2002, during the World Summit, the significance of ESD could be seen when the United Nations declared the “Decade of Education for Sustainable Development: 2005-2014”. Now many educational organisations around the world are reorienting their curriculum and programmes to address sustainability issues.

3.10 Introduction to Education for Sustainable Development (ESD)

Education is “the knowledge or abilities gained through being educated” (Encarta Dictionary). What is “Sustainable Development”? Education for Sustainable Development is currently a new concept being embraced globally as a means of resolving the growing social, economic and political problems surrounding waste concerns, global warming and population issues. However, its vast range of issues, such as health, poverty, tolerance, and democracy, call for a paradigm shift in formal and non-formal education, along with changes in policies and teaching pedagogy.

Globalisation has resulted in the increased trading of goods, many of which have packaging that has to be managed as waste in countries receiving a growing range of products. Trading schemes, coupled with the escalating global population, has resulted in new government policies and regulations. If individual consumption of goods exceeds the capacity one person can afford to consume, waste is produced—the result of unwanted and of used goods.

There is increasing concern for the rapid accumulation of waste, nationwide, in small island states such as Kiribati. Lack of space, capital, technology and resources to address the waste problem needs to be confronted by small island states. The teaching of ESD at all levels of the school system, and in non-formal education, will prove essential to resolving this mounting waste issue. Moreover, ESD will provide opportunities for learning and acting to achieve a more sustainable environment.

Further support for the importance of education is found in this ancient Chinese proverb:

Ancient Chinese wisdom:

If you are thinking a year ahead, sow seed,

If you are thinking ten years ahead, plant a tree.

If you are thinking one hundred years ahead, educate the people.

Kuan Tzu Chinese Poet, c. 500 B.C.

(Australian Government: Department of the Environment, Water, Heritage and Arts, p.1)

The terms Education for Sustainable Development (ESD) and Environmental Education (EE) are used interchangeably in this chapter.

3.10.1 What is Education for Sustainable Development?

Education for Sustainable Development (ESD) is a complex and evolving term that changes its meaning from time to time to suit the situation. To fully understand the term we must define separately “education” and “sustainable development”. This will explain why ESD is very important and should be recognised globally as a path to reduce environmental degradation, which exists today worldwide.

The United Nations Conference, by implementing the UN Decade of Education for Sustainable Development (DESD) acknowledges the importance of teaching ESD globally. Education for Sustainable Development is an educational process by which people can improve their capacity to achieve human development - for instance in economic growth, social development, and environmental protection - in an inclusive, equitable and secure manner:

The vision of education for sustainable development is a world where everyone has the opportunity to benefit from quality education and learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation: every world citizen must learn to contribute to a sustainable future for all humankind (Globalisation and Education for Sustainable Development).

3.10.2 ESD Internationally

Sustainable development and education for sustainable development are widely represented in policy documents, action plans, and frameworks established by governments and other bodies in many countries. Canada is one of the countries in the world that is active in promoting Education for Sustainable Development. The government is employing many activities to support the on-going programme of ESD at a local, national, and

international level. The Canadian government, through the Canadian International Development Agency (CIDA), also has programmes set up to help establish ESD in developing countries.

Learning for a Sustainable Future (LSF) is a Canadian non-profit organisation founded in 1991 by a diverse group of youth educators, businesses, community members and the government, to implement education for sustainable development (ESD) in the formal school systems in Canada. It was established in response to the Rio Conference on Sustainable Development and the acknowledgement that education is a key element to achieving a sustainable future. In Canada, LSF is playing a key role in the UN Decade and it is well positioned to take the lead on ESD in Canada.

Another action to execute the requirement set by the UNDESD was taken by the Council of Ministers of Education, Canada (CMEC)². They circulated a questionnaire to all ministries and departments of education in their 13 jurisdictions to obtain a snapshot of ESD activities in Canada and established all jurisdictions are active with ESD matters (Canadian Commission for UNESCO, 1).

3.11 ESD in the Pacific

In the South Pacific, Education for Sustainable Development is a low priority for individual Pacific island governments (Bryant, 1987). However, some Pacific islands are moving towards and taking action on ESD, with New Zealand, Fiji and Kiribati the three Pacific islands taking it into consideration. New Zealand is involved because of the connection it has with Kiribati, through its funding of NZAid. Fiji is discussed because it is the base for most regional organisations involved in education in the Pacific.

3.11.1 ESD in New Zealand

In New Zealand, the Treaty of Waitangi and the Tbilisi Declaration (including other international agreements) have been the foundation for developing the New Zealand Guidelines for Environmental Education (1999). These Ministry of Education Guidelines give direction for schools that want to adopt environmental education into the curriculum. However, there is currently no mandatory requirement for New Zealand schools to teach environmental education (Eames, 1999).

² The Council of Ministers of Education, Canada (CMEC) was formed in 1967 by the provincial and territorial ministers responsible for education to provide a forum in which they could discuss matters of mutual interest, undertake educational initiatives cooperatively, and represent the interests of the provinces and territories with national educational organisations, the federal government, foreign governments, and international organisations. CMEC is the national voice for education in Canada and, through CMEC, the provinces and territories work collectively on common objectives in a broad range of activities at the elementary, secondary, and postsecondary levels (Canadian Commission for UNESCO, p.25).

The Guidelines reflect the influences on New Zealand's environmental education policy development with a rationale that:

- Its focus on environmental education being "in" and "about" the environment, as well as "for" the environment.
- Its specific emphasis on interdependence, sustainability, biodiversity, and personal and social responsibility for action and
- The significance given to Maori knowledge and the Treaty of Waitangi. (Bolstad et al., 2004, p.25)

The Guidelines, together with the New Zealand Curriculum Framework, stress the importance of linking environmental education to the mandated subjects. The Ministry of Education funds two professional programmes supporting the Guidelines. They are:

- Environmental Education Professional Development – managed by the Christchurch College of Education and
- Professional Development for Sustainable School Organic Gardens – managed by Massey University.
-

The 2007 New Zealand Curriculum (NZC) also states that opportunities for Education for Sustainability (EFS) have been improved, due to the many references to sustainability in the vision, values, key competencies, learning areas and principles of the 2007 NZC.

New Zealand is also involved in the Asia-Pacific projects on environmental education across the region. The projects involve initiatives in environmental education across the region with two major aims:

- To strengthen teacher environmental education and
- A research project investigating young people's views of the environment and environmental issues.

Although New Zealand is not a member of the Environment and School Initiatives (ENSI)³ programme, both the ENSI and Asia-Pacific networks have produced a huge amount of material about environmental education policy, curriculum, and practice throughout the European and Asia-Pacific region. The two networks have great potential for improving environmental issues in Pacific countries such as Kiribati. New Zealand supports Pacific island countries in pursuing ESD, and is working in the Pacific through NZAid programmes.

³ The Environment and Schools Initiative (ENSI) is an international network that has supported educational developments, environmental understanding, and active approaches to teaching and learning through research and the exchange of experiences internationally since 1986.

3.11.2 ESD in Fiji

Fiji took several steps to try to meet the requirements of the Tbilisi Declaration⁴ and to be part of the agreement of other international organisations concerning Environmental Education. The steps include:

- The National Environment Strategy, which was established in 1993 to put Fiji on a path towards sustainable development.
- The Fiji Sustainable Development Bill (1996), which, when it becomes an Act, will improve environmental planning and management policies and legislation, and provide a framework for the country's future development.
- The National Environment Management Project (NEMP), which was instituted to identify the absence of environmental education and suggest a plan to rectify that.
- The Ministry of Education has put forward a plan, Education Fiji 2020, to concentrate education on enhancing the quality of life in Fiji, and conserving and building a just and sustainable environment.

The Ministry of Education in Fiji considers environmental education to be a high priority. The following description states Fiji's position:

Like other subjects in the curriculum the environmental education component in the Fiji curriculum aims at providing basic knowledge, skills and values which pupils will need in order to function to some degree in compatibility in a physical and social environment that is not static and which may pose problems of varying natures and degrees. In particular, Fiji curriculum developers have included studies of the environment appropriately across the curriculum in the hope that pupils and eventually society at large will become more aware of, and be more concerned about, actual or potential problems in their own environment. Given this initial necessary sensitivity towards environmental issues in the physical and social context, the latter especially mentioned bearing in mind the multiracialism of Fiji society, it is hoped that pupils will develop a lifelong set of values that will form the basis for responsible actions in matters relating to the environment (Yencken, et.al., 2000, p. 176).

Environmental Education (EE) has a complex status and a simple way to put EE into Fiji's curriculum is to incorporate it into existing subjects. But there is a wide gap between the Ministry of Education's expectation of ongoing EE programmes in Fiji, and teaching EE in the classroom.

⁴ The Tbilisi Declaration is from the first intergovernmental conference on environmental education in Tbilisi, Georgia (USSR) from October 14-26, 1977. It was organized by the United Nations Education, Scientific, and Cultural Organization (UNESCO) in cooperation with the U.N. Environment Programme (UNEP) (Palmer, 1998, pp. 8-11).

Even-though Fiji is quite different to Kiribati in terms of its size, demographics, levels of industry and developments, Fiji is located in the Pacific and so is Kiribati. The baseline here is that both countries are in the Pacific region. Therefore, Kiribati could follow Fiji's lead in developing ESD in the curriculum but could adapt the Fiji's ESD curriculum to suit the Kiribati context.

3.12 ESD in Kiribati

Education for Sustainable Development (ESD) is a vital issue that Kiribati needs to examine closely. A review of the literature found extensive mention of the growing environmental problem in Kiribati, but nothing specifically on environmental education issues. However, availability of funding affects what progress Kiribati can make in any ESD programmes.

3.13 Role of international and regional aid/fund in Kiribati

Kiribati received developmental aid a lot from overseas countries like Australia, New Zealand, Japan and the EU. Just recently, they received aid too, from Taiwan and Cuba their newly established partners from Asia and the Caribbean.

According to Teiwaki (1998, p.153) these overseas aids could be called tight-aids because most of the time the donors will give aid so that they can have some influence in the national politics.

According to Bertram's model (1985), Kiribati fast became a MIRAB⁵ country after the closure of the Banaban phosphate mines. With its vast exclusive economic zone, Kiribati is the target of metropolitan states for its marine resources.

3.13.1 International funding

Aid or donations coming from different regional and international organisations are vital to support the Government of Kiribati (GOK) and the development of Kiribati. One participant said, "Funding problems are a real issue in Kiribati because if funding of a project ceased, most probably the project would come to a halt too (Anonymous interview, 2007)."

As Fraenkel (2006) stated:

These countries nevertheless fully financed their current accounts through aid receipts, various service or trust incomes and remittance

⁵ The MIRAB economy - Migration, Remittances, Aid, and Bureaucracy, and signifying an economic situation in which exist current-account transfer payments (remittances, dividends, interest earnings, social welfare payments, government budgetary subventions, and a wide variety of other official transfers generically categorized as "aid") (Bertram, 1985).

inflows from migrants working overseas, without recourse to unsustainable borrowing on the capital account (p.15).

For these reasons, the waste programmes of developing countries like Kiribati will be affected.

3.13.2 Regional funding

The GOK relationship with the outside world, whether through international or regional policies, gives Kiribati a chance to experience, learn and be supported by other countries concerning its waste issue. On a regional scale, USP, SOPAC, FFA and SPREP are some of the regional organisations that support Pacific islands like Kiribati with their problems they face, whether social, political, environmental or economic.

Following the UNGAs' declaration of the Decade of Education for Sustainable Development, PICs are still in the process of developing their ESD programmes. Bryant (1987) pointed out the main dilemma concerning EE is the low priority that EE has in the plans of individual Pacific island governments. This is the case in Kiribati because even-though there are various policies and strategies currently being developed and implemented by the government in order to ensure the nation's sustainable development, EE is still not yet implemented. Moreover, the problem with waste management still exists at the local and national level. Comprehensive reports (A-N-D Consultancy (2001), Kamho-Binoka, Kiribati Report to the Sustainable Development (2002) World Summit) recommended that public awareness campaigns and education are the keys to promoting awareness and helping decrease the overwhelming problems of urbanised South Tarawa, one of which is the problem of waste.

Interestingly, the Kiribati Report to the Sustainable Development (2002) World Summit mentioned that progressive actions are being taken in the development of the national curriculum to encourage the teaching of environmental subjects in primary as well as in secondary schools. These actions are less observable at secondary level.

Students are future decision makers and major contributors to the community after finishing secondary school; EE should be compulsory at this level. The study of upper primary, junior secondary and senior secondary students in Brisbane by Kwan and Miles (1998) suggests that older students have a stronger and deeper interest in the environment than do the younger ones (Yeung, 2004, p.102).

Studies by various researchers have found that people's behaviours, attitudes, values, knowledge and practices will significantly affect the quality of the environment (Said, 2003, p. 306). A study by a local researcher in Kiribati found the same. MacKenzie (Unpublished) reaffirmed this by saying: "The real challenge is to shake people out of their complacency. You can only

empower and build their capacity with knowledge and heightened awareness, but you cannot get them to act, if they don't want to (p.7)."

There is substantial literature examining the waste issue in general in Kiribati. Given the limited in-depth relevant literature concerning the implementation of ESD on waste issues into the curriculum, and with the progression of the Curriculum Reform, the second major reform since colonial rule, it seems timely to research the application of ESD to waste issues.

Figure 1: Development timeline of EE

1948	IUCN Conference – Paris – first use of term 'Environmental Education'
1949	Founding of IUCN
1965	First use of term 'Environmental Education' in UK
1968	UNESCO Biosphere Conference, Paris
1970	Founding of CEE (UK)
	IUCN meeting, Nevada, USA. Definition of Environmental Education
1972	UN Conference on the Human Environment, Stockholm, Sweden
1975	Founding of UNEP and IEEP
	UNESCO/UNEP international workshop on Environmental Education, Belgrade
	The Belgrade Charter
1977	UNESCO – First Inter-governmental Conference on Environmental Education, Tbilisi, USSR
1980	<i>World Conservation Strategy</i> (IUCN, UNEP, WWF)
1987	UNESCO/UNEP Educational Congress on Environmental Education and Training, Moscow
	European Year of the Environment
	World Commission on Environment and Development – <i>Our Common Future</i> – The Brundtland Report
1988	European Resolution on Environmental Education
1990	Publication of National Curriculum Documentation for Environmental Education in England
1991	Publication of <i>Caring for the Earth: A Strategy for Sustainable Living</i> (IUCN <i>et al.</i>)
1992	UN Conference on Environment and Development – 'The Earth Summit'
1996	Publication of <i>Government Strategy for Environmental Education in England</i>

Source: Palmer (1998).

The development timeline of Environmental Education summarises the first 50 years (1940s to the 1990s) of important dates of EE.

3.14 Why it is important to teach ESD in secondary schools

Teaching Education for Sustainable Development at secondary schools can have both advantages and disadvantages.

3.14.1 Advantages of teaching ESD

The advantages of teaching ESD at secondary level are described in detail below. The advantages include teachers working well in teams, increasing their knowledge and improving their attitudes. The knowledge and attitudes

of students will also improve and whole school participation is necessary to facilitate and enhance ESD in schools. Advantages include:

- Teamwork – working together and involving the community in the school will help ESD programmes to prosper.
- ESD provides knowledge and develops values of teachers and students because both are educated in ESD
- Involving everyone at the school is essential for the continuation and the smooth running of ESD programmes.

3.14.2. Disadvantages of teaching ESD

Incorporating ESD provides challenges too. These challenges are:

- The practical challenges of teaching, like the shortage of teaching materials and the lack of professional development in ESD
- System and or policy based factors such as curriculum overcrowding, the non-mandatory status of ESD, and the teachers' and students' concepts of ESD.

3.14.3 What needs to be done

The advantages and challenges of incorporating ESD into the secondary curriculum have been summarised in this chapter. Hopefully stakeholders involved in implementing ESD into the curriculum will have some ideas and find ways to counteract the challenges. The advantages mentioned above are real, but amending and modifying to improve the situation is essential for sustainability to progress.

Education for the environment is invariably considered to be the fundamental element in education "in, about, and for" the environment (Barker, 2004). EE/ESD provides a relevant context for identifying, exploring, and developing values and attitudes that can ensure students' active participation in maintaining and improving the quality of the local, national, and global environment.

In New Zealand, environmental education programmes are available at all levels. However, the incorporation of EE/ESD will depend on the school and teachers' decision whether to accept or reject teaching of EE/ESD inside the classroom.

The New Zealand Curriculum Framework states that "all young people in New Zealand have the right to gain, through the state schooling system, a broad, balanced education that prepares them for effective participation in society" (Bolstad; 2003, p.25). "The Tbilisi declaration maintained that environmental education should be provided for people of all ages, at all levels, and in both formal and non-formal education" (Bolstad; 2004, p.218).

Senior secondary students in Kiribati are young people on their way to join society and with their EE/ESD background, they can help educate about the consequences of waste and be active members of society. Therefore, this research will help in solving some of the problems concerning waste in Kiribati through formalizing it into secondary school syllabus.

Chapter Four:

Procedure and Method

4.1 Chapter Overview:

This chapter will describe the procedure and methods taken during the research data collection.

4.2 Procedure and Research Environment

This study features data gained through research into the formal and informal sectors conducted as part of a Masters programme with the Geography Department of Victoria University of Wellington. The study was funded by New Zealand Aid.

The specific objectives of the research are to:

- Conduct a literature review about Education for Sustainable Development (ESD) and Kiribati's position regarding waste issues.
- Identify the advantages/disadvantages and challenges of incorporating ESD into curriculum.
- Identify the main problem caused by waste disposal issues in Kiribati.
- Identify ways in which schools/public are trying to cope with waste issues.
- Identify legislation/activities of government that help promote sustainable waste disposal
- Identify participant opinions/views about putting ESD into curriculum.
- Summarise and discuss the key findings on what Ministries involved are doing about these waste issues and the public opinions/views on the crisis.

Sixty five interviews were conducted with secondary school students, teachers, government officials, environmentalists, academics, the business sector and the general public used for almost three months. These participants can all be categorised into one name: stakeholder. The study concentrated on both quantitative and qualitative data with the purpose of gaining insights into stakeholders' view on the waste issue on South Tarawa.

Introducing Education for Sustainable Development will certainly transform stakeholders' values, attitudes and behaviours towards a positive environmental impact.

4.3 Positionality and Disciplinary Context

I used to be a secondary teacher for Geography and Economics for Forms 4-7 (Years 10-12, New Zealand equivalent) with four years' teaching experience. In all those years, I have queried and been unhappy about the secondary school syllabus. I have lots of ideas that I want to put forward to try and improve the syllabus. One of those ideas includes incorporating ESD into the syllabus. I am most interested in matters that question the sustainability of Kiribati's future, like waste issues, global warming, and water shortage. However, in this thesis, I am concentrating on waste issues, the destruction they cause to the environment and ESD as the ideal solution to the problem.

The research has the potential to put the educational system on the right track to providing secondary school students with a comprehensive environmental education program. It will also give me a voice to try and influence the writing of the new Geography syllabus which is now in progress. I am aware that my personal views might interfere with the research about ESD. However, I cannot dissociate my personal views during the course of writing this thesis because I want to highlight that ESD will and can help decrease the problems of waste issues on South Tarawa.

ESD is a multi-disciplinary educational concept covering three main disciplines: environmental, socio-economic and political issues. Education for Sustainable Development covers a wide range of issues such as waste problems. Waste is an environmental concern the Environment Division is trying to resolve since waste problems can pose a high threat to the environment.

However, the social issues included are people's behaviour and attitudes towards rubbish or cleaning, and their views on what the government should do about this dilemma. Finally, the political issue draws on matters of the government's responsibility towards ESD and what they are doing at the moment about the crisis.

4.4 Types of Research

Walliman (2005) suggested ten types of research which a researcher can use to answer different kinds of questions to instigate research approaches which are distinguished by their theoretical background and methodologies. However, a descriptive type of research will be closely looked at in this thesis.

The descriptive and evaluation type of research were employed. The descriptive research relies on observation as a means of collecting data. It attempts to examine situations in order to establish the norm, for instance what can be predicted to happen again under the same circumstances (Walliman, 2005, p. 119).

An evaluation research aims to move beyond the facts in order to make sense of the multitude human, political, social, cultural and contextual elements involved. This research is another type of descriptive research (Walliman, 2005, p. 119).

However, the descriptive type of research is influenced by two major factors:

- the complexity of the survey and
- the scope of the survey.

4.4.1 The complexity of the survey

There are certain difficulties involved when carrying out the survey research. These are:

- Setting an appointment with students and teachers: this is often hard for I have to find times that are suitable for them even if it meant I have to do my interview after school hours.
- Expensive because I have to commute to and from between schools who are available to be interviewed at that day.
- Some interviews are taken inside a school Maneaba⁶. Therefore I have to make sure the interviews finish before morning tea or lunch time because this is the place students get together at eat their meals.

4.4.2 The Scope of the Survey

This research concentrates on finding ways to incorporate ESD (particularly waste issues) into the secondary curriculum. It is specific in its focus on a particular location in order to provide specific recommendations regarding waste issues to the Ministries involved. The six secondary schools on urban South Tarawa were chosen because I am familiar with the secondary school system and the island. Moreover, this is where the majority of waste problems are first generated, on urban South Tarawa.

Primary schools were excluded with the understanding that their Environmental Education syllabus has been well managed. Further research can evaluate and determine how effective these syllabi are for primary and secondary schools.

The survey covers a wide range of participants starting from secondary school students, teachers, government officials, environmentalists, academics, the business sector and the general public. These participants can all be categorised into one name: stakeholder.

⁶ Maneaba is a big open meeting house.

4.5. Research Relationships:

As a researcher, I viewed students as the most challenging participants of all the participants I would interview. Therefore, the first step I did as a researcher to relax these students was talking about their day at school. Establishing a rapport with students or even participants is critical. Maxwell (2005) supported the idea by stating that:

A participant can be very engaged intellectually in an interview, but not be revealing anything deeply personal, and for some studies this kind of relationship may be ideal. Conversely, someone may be very open about personal matters to a stranger whom they never expect to see again, but not be willing to engage in any critical reflection on this material.

The relationship I establish with my participants can facilitate or hinder other components of the research design, such as participant selection and data collection.

4.6 Site and participation selection:

Interview site is selected on the availability of space at that time and or participants choice of venue. All of the schools that I went to do my interviews at, each site they chose for me were the classrooms that were not in use during that day. Some interviews took place inside the staffroom, and I noticed that students were not comfortable when they came in to do the interview.

Participation selections were purposeful selection. Purposeful selection was applied because I wanted to get accurate opinions of the participants who have been involved with waste activities, have the knowledge of waste issues on South Tarawa.

- Secondary school students were interviewed in order to get an insight of student's knowledge of ESD and the waste issues on South Tarawa.
- Teachers were asked about their job in educating these students and what are their opinions of putting ESD into the curriculum.
- Government officials on the other hand were questioned about the government's role with waste issues and find out if ESD will be given a priority in their plans.
- Environmentalists were invited to talk about the activities they have done in relation with waste issues and what needs to be done more on the matter.
- Conversing with academics was designed to lead me into the more theoretical side of what the problem is and how to resolve it.
- The business sectors were interviewed to determine if businesses have policies in place for the goods imported by them. (I discovered that

most participants blamed imported goods as the cause of this waste problem that exists on the island).

- The public were asked about their opinions on the waste issues, whether the government is effective on this problem and what the general public should do to help minimize the matter.

4.7 Data Collection:

Prior to the actual data collection in Kiribati, ethical approval was sought granted from the Human Ethics Committee, Victoria University of Wellington. Two amendments were made after the review by the Human Ethics Committee. One is using my student email on the Information Sheet instead of the hotmail email address. The other correction is by replacing "Office of Research" with "Human Ethics Committee" on the Information Sheet and the Consent Form. Approval was granted on the 1st of May 2007, but by that time I was already in Kiribati setting up appointments and dates for interview.

All the six secondary schools located on urban South Tarawa were selected. Secondary school consists of students aged 12 years to 18 years old. Prior to data collection, permission was sought from the Ministry of Education, for the government school involved. The other five secondary schools were Church schools. Therefore the Principal's permission for each school was required. Out of the 59 participants, 33 were students and 14 teachers.

Students are selected using a scientific calculator and employing a random formula by pressing **[Shift. Random multiply by the No of Population]**. The students were randomly selected from the form lists that I was given to work with. This method was applied to four of the six secondary schools. However at the other two church secondary schools. I had to rely on the teachers and staff to send me the six students for interviewing. I interviewed students during morning break, lunch times and after schools between 3:30pm till 5pm.

I wanted to interview teachers involved in or having a passion towards waste management but because of time constraints, I had to interview any available teacher I could interview during that day on their free time.

The collection of data employs an interview, and using primary and secondary materials.

4.7.1 Interviews:

The interview questions consisted of 24 questions listed in Appendix 1. Q1-6 elicit basic information about the participant. Q7-10 explore participants' opinions and actions to minimize waste. Q11-13 investigate activities which help promote sustainable waste disposal. Q14-18 address issues on

improving waste management by school/household/village and government. The last section Q19-24 is participants' opinions/views on education for sustainable development (ESD). All of the 65 interviews were face to face. Interviews were recorded using note taking and a tape recorder to ensure an accurate recording of each participant's response. Permission was sought from each participant before actual interview proceeded.

The interview questions were piloted before the final version was released for field work. The interview questions are in English but were translated to Kiribati occasionally for interviewees' benefit. The Kiribati language is very limited in terms of its vocabulary. Therefore, I often found myself in the predicament of having to translate from English to Kiribati, the interview questions. But I tried to translate the question exactly or closest to English as the meaning could and would get lost in the translation. The same obstacles were experienced by A-N-D Consultancy (2000) when doing a Waste Survey on South Tarawa. Such words like "environment" cannot be translated into local language easily. Different people used different comments. Even English words are used with different connotations, quite different from standard English (A-N-D Consultant: 2001, pp.131).

Interviews were in a semi-structured format. There are some open-ended questions and the interviewer has to record it for further analysis. Sometimes a strategy of prompting and probing the interviewee was taken to explore the issue in greater depth (Moore, 2006, pp.150).

There were several reasons why this method was utilized. Firstly, it is flexible for participants to comment on issues they deemed important to elaborate on. For example, discussions with people who criticized the government's lack of participation on waste issues thus diverge off into other philosophies over sustainability and ethics. It was through these discussions that I gained a better insight into participants' views and their positions on the issue.

Secondly, participants can comment freely on other subjects they think vital on the matter. For instance, cultural value was questioned with regards to land ownership for I-Kiribati. How do the I-Kiribati conserve their land today. Do they have a sense of respect and care towards their land like Maori do towards their environment?

In New Zealand, Maori value their land greatly. Like human beings born into this world, the land and the forests have their place in the sun and deserve the same care and respect (Yencken, et.al., 2000, pp. 171-172). That is why Maori do and use things that are less destructive to their lands.

When summarising these interviews I tried to present participants' views impartially, based on their comments during the interview. I tried to make a fair representation of participants' remarks without putting forward my own prejudiced views to their statement. The quotes used in the thesis have been

used with full ethical approval. The content of what participants said, as written in this thesis, is precisely what they said during the interview.

A digital recorder to record interviews and obtain information from participants was used. Some participants were not enthusiastic to be tape-recorded, but after explaining the situation and how their privacy would not be compromised, all participants agreed to do it.

4.8 The strengths and weaknesses of interview

Interviewing is a very common way of collecting data from people. Interviews have two factors: unstructured interviews and structured interviews. However, this section will describe the strengths and weaknesses of utilizing an interview when doing my research.

4.8.1 Strengths

- The interview is appropriate for complex situations. For example, the interviewer will have time to prepare the interviewee before asking sensitive questions.
- Interviews are flexible and are useful of obtaining information and opinions from experts during the research project.
- Questions can be explained. The interviewer can always repeat or rephrase the question into a simpler way so the interviewee will understand.
- It is useful for collecting in-depth information. In this case the interviewer can probe the interviewee into getting a deeper insight of the issue.
- Interviewing has a wider application because you can use it on any participant you want, either the old, the young, the professionals and so forth.

(Kumar, 2005, pp.131-132)

4.8.2 Weakness

- Interviewing is time consuming and expensive. The interviewer has to travel from place to place to interview his/her participants at the required setting by the participant.
- The quality of data depends on the quality of interaction with interviewee. If the researcher has a great rapport with the interviewee, the researcher will get good information. Also the setting can disadvantage participant making them awkward to participate.
- The quality of data depends on the quality of the interviewee. It depends on whether the interviewee has knowledge, skills, and experience on the subject.
- The quality of the data may vary when many interviewers are used.

- The researcher can be biased in a way of leading the interviewee into what information he/she wants to acquire from the participant.
(Maxwell, 2005; Kumar, 2005, pp.131-132)

4.9 Primary and Secondary Sources:

Primary sources refer to information that is gained through direct contact with a participant, for example, observation, questionnaire and interviewing. Secondary sources are the most common sources used when researching and this comes in the form of books, newspapers, articles and other publications. A digital recorder in this case is categorized as a secondary material, too.

4.9.1 Advantages:

- ❖ A digital recorder will keep information in its memory which the researcher can always refer back to when needed.
- ❖ Extensive secondary materials are available for the researcher to get information from.
- ❖ Secondary materials such as diaries will provide honest and factual information.

4.9.2 Disadvantages:

- ❖ A digital recorder can upset the consistency of a discussion if you have a low memory in it.
- ❖ Some participants were uncomfortable when tape-recorded. This can lead to false information given because they are too eager to finish with the interview rather than contemplating and giving factual information.
- ❖ Validity and reliability of secondary materials will vary from source to source. For example, information from statistics is more valid and reliable compared to diaries.
- ❖ Availability of data is common with first time researchers where they assumed that there is plenty information out there for researchers to do research on.
- ❖ Personal bias is evident in sources such as diaries, magazines and newspapers because the writer is less objective compared with academic research articles.

(Kumar, 2005, p.141)

Chapter Five: Research Result

5.1 Chapter Overview

This chapter will discuss the research results after the data collection which has been done through interviewing participants.

5.2 Interviews

There were 65 interviewees but from the lot, 33 were students, 14 were teachers, four were government officials, two were categorized as academics, one stand for the business sector, two were viewed as environmentalists and nine is the general public.

Figure 2: Types of Respondents

Source: Fieldwork, 2007.

The gender of participants depends on the respondents that I got and as a result, there were 40 males and 25 females.

5.2.1 Gender of participants:

Figure 3: Participant's gender

Source: Fieldwork, 2007.

However, because of time constraints and participants' availability, the research ended up interviewing more males than female. Furthermore, the researcher interviewed 18 male students and 15 female students, from the six secondary schools. Fewer females were available at the time of the interview.

5.2.2 Participant's usual residence:

At the time of interview, the usual place of residence for the interviewees was either South Tarawa or other. "Other", refers to all of the other islands of Kiribati including North Tarawa. The "usual place of residence" meaning the place they call home, but are residing on South Tarawa because of work, school, visiting families, holiday and so forth.

Figure 4: Participants place of residence

Source: Fieldwork, 2007.

Initially, the research intended to have a balanced number of participants both calling "South Tarawa" and "Other" as a place of residence. However, as the research progress, there is an intention to interview people calling "South Tarawa" as their usual home. The reason behind this was that:

- * Firstly, because this study is base on South Tarawa, they are crucial candidates to be interviewed because they know the place very well.
- * Secondly, they can give a valid and more reliable answer on the waste problems on South Tarawa because they have lived and seen the changes happening on the island.

5.2.3 Religious affiliation:

Looking at each respondent's religious affiliation, the results are as follows. There were 28 Catholics, 24 belong to the Kiribati Protestant Church and the other 13 are associated with the other religions, such as the Mormon, Church of God, B'ahai and the Seventh Day Adventist.

Figure 5: Participant's religious affiliation

Source: Fieldwork, 2007.

The Catholic and Protestant churches are the two major religious affiliations found in Kiribati. Even though there were 13 participants relating to the other religions mentioned above, this number is not valid to present the views of all the related religious affiliations. Four church leaders from each of the two denominations were interviewed. In retrospect, interviewing a greater number of this group of respondents is desirable. This is because most participants referred to church leaders as influential people that can change people's negative attitudes and behaviours to life into a positive one.

5.2.4 Age of Respondents:

The large number of secondary school students involved in this research accounts for the age groupings shown in Figure 6. There are more respondents from secondary students because at least five students are interviewed from the six secondary schools. However, more secondary students are interviewed because I want to compare their opinions with the older respondents.

Figure 6: Age Structure of Respondents

Source: Fieldwork, 2007.

The unbalanced number of respondents shown above will not impact the result as there are 31 respondents who have gained tertiary education. Therefore, the quality of answers will be obtained from these 31 respondents with an accurate overview of the problems of waste for the past 20 years is acquired. The age groups of 35-49 and 50+ are the ones who can give more accurate accounts of the problems relating to waste 20 years ago compared with today. They are old enough to understand and talk about the problem in that context.

5.2.5 Level of Education:

The levels of education possessed by the respondents are as follows: only one participant reached only primary level, 33 are still at secondary level, and 31 respondents have completed their tertiary education.

Figure 7: Participants level of education

Source: Fieldwork, 2007.

The data result accounted for more than half of the participants from secondary level. Students are vital decision makers therefore they needed to be included in every decision making. Since, the research looks at the importance of incorporating Education for Sustainable Development (e.g: waste issues) into secondary level. It is crucial to take into account these student's views and ideas about this matter.

The next section looks at how participants rate the problem of waste on South Tarawa and the reasons as to why this waste issue as grown for the past 20 years.

5.3 Municipal Solid Waste:

Municipal solid waste is a huge problem in Kiribati. In response to the question of MSW topic, the research found that 56 of respondents view waste disposal issue as a serious problem in Kiribati. Only seven said it is a medium problem, two as a small problem with no-one considering waste issue as not a problem.

Table 3: Seriousness of Waste Disposal issue for South Tarawa

Research data	Not a problem	Small problem	Medium Problem	Serious problem	Total (%)
South Tarawa	0	4	10	86	100

Source: Fieldwork, 2007.

5.3.1 Causes of Waste issues on South Tarawa.

Participants were asked why has the problem of waste disposal apparently got worse in Kiribati for the last 20 years? Out of the 65 participants, 53 said it was increased because of an increase in imported goods and so forth. Seven said it is obviously decreasing because of the government activities like recycling of aluminium cans and other activities. The other five respondents have no idea whether it has increased or decreased for the past 20 years.

Figure 8: Has the problem of Waste increased for the last 20 years.

Source: Fieldwork, 2007.

The six respondents who said that the problem of waste is decreasing over the past 20 years have a very good reason to support their answers; for example:

- *"this is because the government, council and other organizations involved have been very active in their role to try and minimize waste from entering the landfill. One scheme is by using the green bag to put non-decomposable waste only into it".*
- *"because the council is active in its role of waste minimization".*

The answers to (Q8 & Q9) [See Appendix 1: Interview Questions]; which is asking of what is the main problem caused by waste disposal issues in Kiribati and the reason why the problem of waste disposal apparently got worse in Kiribati for the past 20 years, are shown in Table 4. The top four reasons participants agree upon are:

- Increasing imported goods,
- People do not care and
- Lack awareness/lack education
- Increasing population

Table 4: Comparing answers for Q.8 and Q.9

Problem	Q.8. No of Responds	Q.9. No of Responds
Increase consumption of imported goods	15 *	15 *
People don't care	10 *	6 *
Lack awareness/lack of education	7 *	1
Increasing population	5	12 *
Lots of plastics	5	-
Ineffective law enforcement	3	2
Lack of space	3	-
Not enough resources	3	-
Human activities	2	3
Not enough greenbag	1	-
Waste can't decompose	1	-
Lack of technology	1	-
Increase of motor-vehicles	1	-
Town planning problem	1	-
Unreliable waste collection system	1	-
Battery liquid leak to water lens	1	-
Increasing development/modern technology	-	5
Lack of support from schools/community	-	2

Source: Fieldwork, 2007.

5.4 Participants actions:

Then participants are asked about what each does with waste either at school or at home if they are a teacher or student. If they work in the office, they are asked of their actions at their work-place and at home. The common answers are represented in Table 5.

Table 5: Participants response on what do they do with their waste at home, school and work-place

Home	School	Work-place
Sort rubbish	Classroom cleanup	Use greenbag
Throw rubbish into landfill	Throwing rubbish into bins	Reuse paper
Greenbag	Talk and encourage students to clean	
Gardening	Reminding students to put rubbish into bins	
Bury organics		
Burn rubbish		
Banana circle		
Education and awareness		
Clean house area		

Source: Fieldwork, 2007.

5.5 Other Activities:

Some Education for Sustainable Development activities that participants are aware of which help solve waste disposal issues are:

- Geography class
- The use of greenbags
- Banana circle
- Activities by FSPK/KEEP/CDSP
- Councils waste collection programmes
- World Clean Up Day
- Drama group visits to schools

5.6 Legislation/Activities of government that promote effective treatment/disposal of waste right:

The participants' answers about the government legislation and activities that aim to reduce waste problems were based mainly on the government activities. The only laws/legislations that participant are aware of, are the Environment Act "99" and the Councils By-laws. The rest of the answers are all the actions done by the government to try and minimise waste problems on South Tarawa. These actions include:

- Banana circle
- Landfill
- World Clean Up Day
- Village competition
- Greenbag usage
- Kaoki Mange/Recycling site at Betio
- The Environment Act "99"
- Councils By-laws
- Media awareness through radio/newspaper/posters/notices

5.7 Primary responsibility for waste disposal:

Participants recognised that this waste issue is not the job only for the government but everyone's responsibility too. Of the 65 participants, three said that the government has the primary responsibility of waste disposal, zero for the school, seven for the household, one for the community/village, 54 for all of them and none for others.

Figure 9: Primary responsibility of waste disposal

Source: Fieldwork, 2007.

Categorising Figure 9 into the students, schools, household, government and community/village to provide actions these different bodies are utilising to improve waste management on South Tarawa.

5.7.1 School and Student actions to improve waste management

There are lots of answers participants agree the school and students should do to improve waste management for the school compound. Some of the common answers participants stated are:

- School/form competition to motivate students to do the work.
- Enforce school rules with punishment attached to it.
- Provide more rubbish bins.
- Building a banana circle at the school compound.
- Invite guest speakers e.g. someone from the Environment and Conservation Division to talk about waste issues on South Tarawa.
- Work parades.
- Follow school rules and punishment for breaking the rules.
- Gardening to make use of the organic wastes found at school.

5.7.2 Household actions to improve waste management

Furthermore, participants' responses to what households should do to improve waste management issues are:

- Household competition so members of the household are encouraged to clean.
- Sort rubbish at home and bury decomposable rubbish.
- Use greenbags for non-decomposable rubbish.
- Set up banana circle.
- Dump household waste at appropriate places.

5.7.3 Government actions to improve waste management

Participants understand the huge nature of this waste issue but still expect the government to execute some activities that can improve waste management problems. These actions are:

- Offer incentives to the public e.g. village competition
- Government to give waste the attention it deserves
- Formalised ESD into the syllabus
- Increase resources for waste collection and increase the number of waste collectors
- No price for greenbags
- Enforce laws and punishment
- More campaigns and awareness on waste issue

5.7.4 Communities/Villages actions to improve waste management

The range of answers participants articulated about what the community/village should do are to include:

- Community/Village competition to inspire people to work.
- Team work e.g. Youths to establish programs of house inspection at their villages.
- Use banana circle to deposit decomposable rubbish in it.
- Use greenbag and sort rubbish.
- Appoint community/village leaders to enforce village laws.

5.8 Formalising ESD into syllabus

The participants knew that waste is an escalating problem on South Tarawa that is why they all agree that Education for Sustainable Development should be formalised into the syllabus.

Figure 10: Formalising ESD into the syllabus

Source: Fieldwork, 2007.

The following comments illustrate participants' attitudes if ESD is formalised:

"Kiribati is a tiny islet and with its large population density, it is evident that there is a lack of space for living let alone for dumping these wastes on land. As a result they throw their rubbish onto the beach or into the sea".

"The waste problem in Kiribati is huge and we can learn from this new subject ESD, on how best to minimize the waste problem".

"Students are future leaders and if they are well informed about waste issues they will know what to do or what not to do when they become leaders".

"By studying ESD, we can improve and maintain our environment and resources if we know how to use them sustainably and know how to sort recyclable rubbish from non-recyclables".

"This is a way of decreasing the waste problem and a way for people to know how to use their waste properly by distinguishing between rubbish as a waste and rubbish as a resource".

"Education is the key to solving this waste issue but it should be formalized from pre-school up to secondary level".

"The school is the only place that you can mould peoples' characters and behaviours and continue the effort from primary through JSS and also compliment the effort of what is being done in the community".

However, from the 65 participants, 43 of them said that a new subject on ESD, including learning about waste issues should be established. 18 of the participants, on the other hand, said that ESD should be incorporated into existing subjects and 4 participants resolve to a "no answer".

Figure 11: Status of ESD

Source: Fieldwork, 2007

Most of the participants, not including students, recognized that there is a problem of overcrowding of the curriculum. However, from the 14 teachers interviewed, eight teachers want ESD to be built as a new subject and six wanted it to be incorporated with existing subjects. This result went against my opinion because an excellent way of introducing ESD into the syllabus is by incorporating ESD into existing subjects.

In order to develop ESD as a new subject, only two amongst the 65 participants answered. Their answers are consistent more or less to the two answers stated below:

- Consultation between stakeholders is vital to the development of ESD if built as a new subject. Stakeholders like the teachers, ministries (Min of Education and Min of Environment), academics, environmentalists, businesses, students, communities, the local council, church and youth groups should be consulted. A feedback

from these stakeholders will satisfy and benefit everyone as they have a say in what they want to be included in ESD.

- An expert on this subject is essential for this new ESD subject to be formed. Many in Kiribati will find this ESD new. Therefore, consulting an expert on the matter is necessary to establish the framework of the issue.

5.8.1 Mandating of ESD as a new subject:

From the 43 participants who agreed for ESD to be built as a new subject, 41 of them also wanted ESD to be compulsory so students can not escape the teachings and learning offered by ESD. The other two are the students, who said that it should be optional because already they have a lot of subjects to learn so it is up to the student to decide if he/she wanted to take the ESD subject.

Figure 12: Status of ESD as a new subject

Source: Fieldwork, 2007

5.9 Activities at school to understand the waste problems:

There are lots of activities that can be developed to understand the problems of waste. The participants' suggestions of specific activities for ESD syllabus are stated below:

- to set up a school poem competition,
- set up recycling place for each school,
- form interest groups on waste issues,
- fieldtrip,
- practical exercises,

- environmental awareness week,
- involve missionaries/bible teaching
- science demonstration
- reduce/recycle/reuse
- research and many others.

Nevertheless, if categorized into the main subjects taught at senior secondary school level, these are a few of the activities participants came up with, for each of the mandatory subjects at secondary schools. The examples are stated below

5.9.1 Incorporating ESD into subjects:

English: *"students can write a poem or essay on the effects of waste towards people. They can even draw a poster illustrating the problems associated with waste".*

Math: *"under the statistics section, students can collect rubbish found at the school compound then sort it between decomposable and non-decomposable. From the results found, they can draw up a graph from the information they get".*

Geography: *"field-trip to the landfill or illegal waste disposal sites to witness first hand the effects of waste to people living close to these disposal areas. Students can interview people living near those areas to find out the effect of the rubbish to them".*

History: *"writing an essay on the effects of waste to people in the past and compare it with what is happening today".*

Science: *"Most of the wastes found in the school compound are paper and ice-block plastics. Find out what are the chemicals inside the rubbish found in the school compound. Distinguish between the two main rubbish: paper and plastic and find out which one will have the greatest impact on the environment".*

Accounting: *"an activity on looking at how the government spend money on waste management activities and find out whether the government spends less or more on waste activities".*

Economics: *"an activity on the demand/supply of imported goods that contribute to waste".*

5.10 Positive outcomes:

Education for Sustainable Development will promote better attitudes, knowledge and values towards the environment. Hargreaves, et.al.(1997) support it by stating that:

Environmental Education is a multi-disciplinary approach to learning that develops the knowledge, awareness, attitudes, values and skills that will enable individuals and the community to contribute towards maintaining and improving the quality of the environment.

This thesis looks at how the implementation of ESD will have an effect on the problems of waste issue on South Tarawa. The participants were very optimistic about ESD, if formalized into the curriculum. The following comments illustrate participants' attitudes if ESD is formalized:

"formalizing ESD will increase awareness on the waste problem"

"people will become more responsible e.g. students will not scatter rubbish anywhere".

"students will be educated about waste management and they can teach their relatives and friends"

"ESD will help decrease waste problems around schools and we can find ways to help promote waste management"

"awareness increased and initiatives like planting of trees, digging a hole to put organic waste into it because they should know that organic waste is a resource but not waste".

"with ESD the country will become clean and give a good name for the country and economy will boost from tourism"

"people will lead a healthy life because they have a clean house and surrounding environment"

Participant responses to the question were constructive showing that they understand the concept and importance of incorporating ESD into the syllabus. Nevertheless, a lot of these participants gave more than one answer. Their most frequent answers they gave was on the increase awareness on waste and the need for cleanliness of the schools, villages and the island as a whole will improve if ESD is formalized into the curriculum.

The answers participants offered about the positive outcomes anticipated from incorporating waste issues into the school are:

- Increased awareness of the waste problem
- Increased awareness of cleanliness and as a result houses, school compounds, and villages will be well maintained.
- Positive attitudes and behaviours towards waste
- Improve health/increase healthy living conditions of people
- Decrease the amount of physical waste lying everywhere on the island
- Know the adverse effects of rubbish to the environment therefore people are disposing their waste at appropriate places

Figure 13: Participants' response regarding the positive outcomes of incorporating ESD into the curriculum.

Source: Fieldwork, 2007.

The highest positive outcome from participants was the "increase awareness". This response from participants is consistent with a survey made by Bolstad (2002) where she found out that the majority of her respondents have increased student knowledge, understanding, and awareness of the environment and environmental issues. Bolstads' (2002) result confirmed participants' answers that if ESD is put into the syllabus, peoples' knowledge, understanding, awareness, behaviours and values will change for the better.

Chapter Six:

Discussion of Result

6.1 Chapter Overview

This chapter will discuss in detail the major components found after the data collection on South Tarawa. With the help of the flow chart below, seven main components namely: funding, cultural values, religion, government, the public, media and school will be explored in detail. There are some activities and actions that have been undertaken under these seven factors to help ESD incorporated into secondary schools syllabus. If ESD is incorporated, waste will certainly decrease overtime as people are becoming educated with the notion of ESD in their lives.

Figure 14: Flow chart of ESD at secondary school

6.2 ESD in Kiribati

Education for Sustainable Development (ESD) is a vital issue that Kiribati needs to examine closely. A literature review found extensive mention of the growing environmental problem in Kiribati, but nothing specifically on environmental education issues. Although all participants agree that formalising ESD into the syllabus is critical, actions to do so have not been seriously undertaken by the government. Moreover, schools do not have enough initiative to tackle the problem.

Unless government, schools and other stakeholders organised suitable programmes, Kiribati is unlikely to become a sustainable nation.

Sustainable is a new term to the Kiribati people, which does not exist in their vocabulary. Therefore their opinions about sustainability, especially those of students, show lack of understanding. Even though they know that waste disposal issues is a serious problem in Kiribati, when they are asked about the extent of the problems presented by waste, a very common answer is: "I don't know." The students' answers show that they need more awareness about waste issues. So ESD should be made compulsory at schools in Kiribati, to promote and encourage positive attitudes and behaviours of such students with regard to waste.

6.3 The School:

The school is one site the research and the participants identified as a place for the successful incorporation of Education for Sustainable Development. Incorporating ESD at secondary schools will certainly reduce the waste problems found at these schools. However, the schools' effort to try and minimise waste are explored at each of the six research secondary schools found on South Tarawa (See Appendix 2).

6.3.1 Six Secondary Schools:

The coping mechanisms the six researched schools took to try and minimise the problems and presence of waste at their schools is summarised in Table 6.

Table 6: Coping mechanisms the six secondary schools adopted to minimise waste at their schools.

	KGV & EBS	MHS	SLHS	SHHS	WGMC	CoGHS
Wheelie/rubbish bins		√			√	
Foreshore rubbish			√			√
Banana circle			√	√		√
Trench (hole in the ground)			√		√	√
School competition				√		
School assemblies		√				
Banned Ice-blocks	√					
Work parade	√					
Staff & student attitudes	√	√	√	√	√	√

Source: Fieldwork, 2007

The last coping mechanisms: "staff and student attitudes" is presented in every school. The staff and student attitudes will certainly lead to either the growth or decrease of waste depending on the positive or negative attitudes of these staff and student to waste in that school.

The first secondary school to be explored is the government school called King George the Fifth and Elaine Bernacchi Secondary School (KGV & EBS).

6.3.2 Government school.

There is only government school found on South Tarawa. The other government schools are located in the other islands of Kiribati. This government school is known as King George the Fifth and Elaine Bernacchi Secondary School (KGV & EBS).

6.3.2.1 KGV & EBS.

King George the Fifth and Elaine Bernacchi School (KGV&EBS) was the only government school and the first secondary school established on South Tarawa. It is a co-educational school which caters for at least 500 students

from Form 4-7. The school offers facilities for boarding and day students. As a government school, the school adhered to the National program where Form 5 sits the Kiribati National Certificate (KNC) entrance exam into Form 6. Form 6 will sit the Pacific Senior Secondary Certificate (PSSC) to gain a place in Form 7 and Form 7 will sit an exam known as South Pacific Form Seven Certificate (SPFSC) for an overseas scholarship or local scholarship can be continued at University of the South Pacific (USP) extension in Teoraereke, South Tarawa.

KGV and EBS is a government school and therefore it gets benefits and assistance from the government. For example, their rubbish is being taken care of by the Council. This pile of rubbish is just outside the school compound and the composition of rubbish varies from organic to non-organic materials. Paper rubbish stands out as its whiteness distinctively covers almost the pile of rubbish. This is a very common sight of schools' rubbish composition where paper or plastics are very evident.

Image 3: Pile of rubbish outside KGV and EBS school

Taken: 25/10/07

As we have learned before from the previous chapter, this pile of rubbish is collected once a week. Since the rubbish is not contained, dogs and cats can roam freely onto the pile, scattering the rubbish all over the place. It is an unwelcome sight to the public, but the school has not taken measures to prevent these problems.

However, some activities are being taken by the school to try and clean their compound. These activities as the participants (students) mentioned, include the work parade, and the school has banned ice-blocks into the school compound.

6.3.2.1.1 Work Parade

At KGV&EBS a work parade happens every Wednesday and Saturday to clean up the compound. This is effective but the problem is that allocated places to throw rubbish will always become messy before the council collects the rubbish. The organic waste needs to be buried or managed more effectively because it is only placed in a pile during the work parade.

6.3.2.1.2 Banned ice-blocks into the compound

Ice-block plastic wrappers are everyday persistent rubbish that present at every school. KGV&EBS saw this as one of their problems because it is non-decomposable and very easily transported from place to place. Hence, they banned students from entering the school compound with ice-blocks. With students' attitudes about waste, it did not help the problem because they just discarded their ice-block plastic wrapping anywhere within the compound.

Even if they have a rubbish bin around the compound and in their classrooms, ice-block plastics still end up lying around the school ground. The students and teachers interviewed admitted that very little support can be found amongst the students and teachers about waste. As a result it reflects on the school compound and students and teachers' attitudes towards rubbish.

All these schools offer a lucrative educational background for students to prosper in this world. However, the main subject ESD that can help them live sustainably in this developmental and technological world is not included in the school curriculum.

6.3.2.1.3 Staff and student attitudes

Overall, the staff and students' attitudes towards rubbish in this school are ignorant. They are unaware that the rubbish at their school is not the Council's job but it includes everyone inside the compound. Judging by the answers these participants gave, it looks like they put the pressure on the Council and do not take any responsibilities for their actions.

Participants' admitted that they have reported to the senior staff about the problems of waste in the school. When nothing was done about it, they did not persevere anymore. Even students said that their job is to throw their rubbish at allocated places and for the Council to do the rest.

6.3.3 Public schools.

From the six schools that I did my research with, five of the schools are public schools belonging to a Catholic, Protestant, Mormon and a Church of God churches. These schools are:

6.3.3.1 SHHS

Sacred Heart High School (SHHS), is one of the Catholic schools based on South Tarawa, is a co-educational senior secondary school. It has at least 400 students from Form 4-7 and it is a day school. Their school program abides by the National program. Therefore students sit a KNC paper at the end of Form 5. At Form 6, students will sit the PSSC to gain a place at Form 7 at SHHS, KGV&EBS or any other secondary school. Students are free to pursue their education at any secondary school that welcomes them. This is the same case too, with students from the other secondary schools. There is no restriction except meeting the minimum grades on a national scale.

The essence of waste and or ESD regarded in this school is poor. The presence of piles of rubbish in these schools is common. However, this school is making attempts to rectify the waste management problems.

6.3.3.1.1 Banana circle

As you can see, Image 4 shows a banana circle surrounded with all sorts of rubbish. In a real scenario, this banana circle should only have organic waste thrown into the embodied circle of the planted banana trees (See Appendix 1). Surprisingly not one student interviewed mentioned about the banana circle but stressed that a school competition should be on-going. A competition may be one way to encourage students to put only organic wastes into the banana circle.

Image 4: Banana circle

Taken: 25/10/07

6.3.3.1.2 School competition

The school is trying to minimize waste lying around the compound and inside the classrooms through form competition. The competition has prizes installed for the 1st, 2nd and 3rd forms. At the time of interview the competition was still in progress but participants revealed that this waste management competition would not work if there is no prize attached to it. Participants believe that cleaning will not continue on when the competition ends. Therefore, maintaining the competition will enhance cleanliness in the school compound.

6.3.3.1.3 Staff and Student attitudes

The careless manner of these students is un-forgivable. Firstly, the student action by dumping any kinds of rubbish inside the banana circle is a nuisance. Secondly, on the competition part, it would only motivate these students to do the job only if there is a prize. This illustrates that incentive is an important part of motivating these students to attain what needs to be done by them. However, if ESD is placed in the curriculum, this may change these students' view on how the world manages waste.

In this case, their views will be broadened outside the incentive value of the task by acting on factors that will personally benefit them as a whole rather than acting to give back to the community. Moreover, they act in-order to get incentives out of the duty they perform. Therefore to change this view is to employ ESD since ESD offers:

"a multi-disciplinary approach to learning that develops the knowledge, awareness, attitudes, values, and skills, that will enable individuals and the community to contribute towards maintaining and improving the quality of the environment" (Hargreaves, et.al; 1997, p.110).

The point is for students to become competent and active citizens now and in the future. Their actions need to contribute to the solution or prevention of environmental problems.

6.3.3.2 SLHS

Saint Louis High School (SLHS), like the other secondary schools is a co-educational school with about 500 students. It offers schooling for Form 4-7. Like the other two secondary schools of KGV&EBS and MHS, their program is the same. At the end of Form 5 pupils will sit the KNC to pass into Form 6. At Form 6 students will sit the PSSC to gain a place at Form and at Form 7 students sit the SPFSC either for scholarship purposes or continue on to tertiary level at the USP branch on South Tarawa to get a degree.

The activities below describe how SLHS is involved in ESD issues.

6.3.3.2.1 Banana circle

As part of their project, International Waters Programme (IWP) built a banana circle at SLHS to encourage students to recycle organic waste. Initially, the banana circle worked smoothly during the time of the project. However, after a few months when there was no monitoring the students did the same thing as SHHS students. A mixture of organics, plastic and paper became evident inside the banana circle.

6.3.3.2.2 Digging a hole in the ground

SLHS has dug holes in the ground so students and staff can throw organic waste into them. The idea is that if this hole is full of these organic wastes, they will bury it and that would add nutrients to the soil. This will also be an ideal place to plant a coconut tree later or do gardening on it.

Image 5: Rubbish in a hole in the ground

Taken: 25/10/07

6.3.3.2.3 Foreshore rubbish

Since SLHS's rubbish is not taken away by the Local Council, they need to find a way to dispose of it within their school compound. As a result, they resort to foreshore dumping. One reason is that they have to pay the council to take their rubbish. The most common problem that arises with these church schools is their limited budget. Therefore, rubbish is not always a priority for the school. I believe that when the ground hole dumping site is full, then again they will dump their rubbish at the foreshore, too.

Image 6: Foreshore rubbish

Taken: 25/10/07

6.3.3.2.4 Staff and Student attitudes

It is interesting to note that gender roles are explicit in this school. There were six students interviewed, three girls and three boys. Two of the three boys said that they do not pick up rubbish at school because it is the girls' job. This may be because in Kiribati society differentiation of gender roles still exists but is not strictly followed. Even staff were aware of the waste problem at their school but still resolve to burning as a means of getting rid of the rubbish.

6.3.3.3 WGMC

William Goward Memorial College (WGMC) is a Kiribati Protestant Church (KPC) and a co-educational senior secondary school for Forms 4-7 an equivalent of Year 10-13 in the New Zealand school system. It is a day school that caters for approximately 400 students. The school follows the National syllabus. This is a two year programme for Forms 4-5 and at the end, the student sit the KNC to pass into Form 6. At Form 6, students sit another exam called the PSSC to gain a place into Form 7.

Furthermore, WGMC is the only senior secondary school that still follows the University of the South Pacific (USP) extension courses for Forms 7 at Teaboraereke, Tarawa. The courses at USP extension for Form 7 are very different from the other courses taken by other senior secondary schools known as the SPFSC. USP extension courses for Form 7 follow their own syllabus while SPFSC follows the NZ Bursary syllabus.

The school compound reflects how the school views ESD in their system. Therefore, to comprehend how this school is coping with its waste issues, looking at the school compound, rubbish bins and students' attitudes will shed light on the matter.

6.3.3.3.1 School Compound Trench

They do clean up their compound every morning and after school. However because their rubbish is not collected by TUC, the rubbish is piled somewhere on the school ground where they can find a place for it. At the moment WGMC is using the hole in front of the staffroom to dump their rubbish in. This picture shows the pile of rubbish inside a huge trench in front of the staffroom. Paper and plastics mixed with organics illustrate the common rubbish found at every school compound.

Image 7: Rubbish inside a trench

Taken: 25/10/07

6.3.3.3.2 Rubbish bins

The shortages of rubbish bins are one main issue that most students and teachers that I interviewed mentioned. They said that the school should provide more rubbish bins. Staff and students at this school accept this argument but the problem always boils down to lack of money. This is true in the case of these three schools: SHHS, WGMS and SLHS where the similarity of problems present and piles of rubbish are an unwelcome sight in these school compounds.

Table 7 shows the charges established by TUC for waste collection for different sectors. However, it is not clear what charge schools need to pay. The most comparable charge schools will pay is the charge set up for private businesses of \$400 per year (See Table 7). With no support from the Council and the Government, the school already mentioned that financial support towards waste management is not an option. Schools would pay this money

towards other important things such as school materials, rather than waste collection.

Table 7: TUC waste collection charges

TUC waste collection charges.			
Government Ministries	Private Businesses	Stores	Civil servants living at government houses
\$600/year	\$400/year	\$50/year	\$1.85 fortnightly

KGV&EBS have piles of rubbish too, but the difference is that it is always taken away by the Local Council. MHS is in charge of discarding their rubbish like the other four church schools. However, MHS do a very good job of it because the pile of rubbish cannot be seen inside the school compound. As I have mentioned before, it is a wealthy school and can afford to hire extra human labour to do the cleaning. The problem with rubbish at MHS is alleviated because of the positive attitude of these students towards rubbish, compared with WGMC and the other four secondary schools.

With more awareness on appropriate waste management and the Council's help in providing schools with bins, the piles of rubbish at these schools would slowly diminished. Sinclair Knight Merz Consultant Group (2000) reported that of the total annual income of TUC annually which is about \$300,000, waste management service fees account for about 25%. Moreover, the Council said they do not have any spare funds to invest in these areas. At the moment there are no funds that schools can get from the Ministry of Education for helping out in waste management.

6.3.3.3.3 Staff and Student attitudes

On the contrary, if we look at these students they have very little knowledge about ESD because if they do, this pile of rubbish would not exist. The attitude of staff and students towards rubbish is limited. As the interviewees said, it is hard to change the student attitudes. They admitted that it is hard to change old habits. Even the staff can forget and throw their rubbish unexpectedly anywhere. But after doing it, they have a guilty conscience about it. Students on the other hand, have a careless manner about throwing their rubbish anywhere. "This non-intellectual behavior is inevitable in the absence of proper education (Mohammadi, I.M. 2 (1): 12, 2006)." With ESD, this can change these student and staff's attitudes to be positive towards waste.

6.3.3.4 MHS

Moroni High School is a private, Mormon church-sponsored, co-educational secondary school (Forms 1-7), offering facilities for boarding and day

students with a capacity of approximately 550 students. The school is located at Eita village, where CoGHS is also situated with about 100 meters apart from each other. The next village after Eita going west is Tangintebu, where WGMC can be found.

At MHS an extra Form 6 and 7 known as Form 6 Vocational and 7 Vocational are established for students who didn't get into the other three academic streams of Science, Commerce and Arts. The Vocational stream presents some academic subjects like English and Maths yet focuses more on subjects relating to job or career skills like office skills, carpentry and so forth.

Image 8: Moroni High School Compound

Taken: 25/10/07

MHS is a well known school with a reputation as an affluent school. This is because of the way the school is structured and some of their educational materials are advanced compared with the other five secondary schools on South Tarawa. Also, some of those educational materials that you cannot find in the other 5 schools, you can find at MHS. When you look at the school compound above it clearly portrays a very clean and well set up school.

In-order to understand how this school is well kept, three reasons are explained: wheelie bins, school assemblies and students' attitudes.

6.3.3.4.1 Wheelie bins

Rubbish bins are not an issue here at this school, because wheelie bins are all around the school ground. Still students felt that the school should provide more of them. However, in this case, I suspect that these participants do not have anything to blame so just stressed that there are not enough rubbish bins. When comparing the rubbish bins at this school with the other five schools, it is apparent that this is not true. There are more than enough wheelie bins exists in the school compound and you hardly ever see rubbish lying around the school grounds. With the exception of MHS this paper and

plastic rubbish cannot be seen lying on the ground but are thrown in the wheelie bins.

Image 9: Wheelie bins

Taken: 25/10/07

6.3.3.4.2 School assemblies

Secondly, during school assemblies every Wednesday, even though the school compound is clean and the students know what to do with their rubbish, the Principal always reminds students to throw their rubbish in the appropriate place. Interviewees said that this announcement during school assemblies is very important because it keeps reminding students and everyone to do the right thing.

6.3.3.4.3 Student attitudes

Furthermore, the student's attitudes in this school are very positive. For example, those students who are in charge, called student bodies in this school (prefects in other schools), are always there encouraging students to dump their rubbish at appropriate places during morning and lunch break. Also, even if they held high ranking position at their school, they as student bodies can pick up any rubbish they see lying around because they said that setting an example by role modeling is the key to attracting students' attention to certain behaviours that need to change.

Image 10: Moroni school compound

Taken: 25/10/07

6.3.3.5 CoGHS

Church of God High School (CoCHS) is a Church of God school with approximately 350 students from Form 4-6 and is also a co-educational and a day student school. Like the rest of the senior secondary school, their school program follows the National syllabus, too. The students will sit a KNC at the end of Form 5 into Form 6 and another exam (PSSC) at Form 6 into Form 7 at KGV&EBS. However, most students at this stage who do not gain a place at KGV&EBS, can go and seek a place at the other senior secondary schools that can accommodate them in Form 7.

Image 11: Banana Circle

Taken: 25/10/07

Looking at the way the school is constructed, it is clear that issues regarding ESD are poor. Actions taken by the school like the banana circle, digging a hole in the ground and foreshore dumping are measures taken to try and solve waste problems at the school.

6.3.3.5.1 Banana circle

The banana circle at this school is not well maintained. [Refer to Appendix 1: How to make a banana circle]. Consequently, students are not following the procedures of planting the banana circle and are not using it properly. It looks like the banana circle is there for school compound decoration. Out of the six students being interviewed, five of them did not know that they have a banana circle. Even if they do, they are used into throwing their rubbish at the foreshore site.

6.3.3.5.2 Digging a hole in the ground

Like the other schools, digging a hole to put organic waste into it is common as a result of lack of space. However, as it turns out, all sorts of rubbish ended up in the hole. Although they always start with a good intention the activity becomes less over time. The hole is dug for organic waste to be dumped in and when it is full it will be covered with earth. Later on it will be an ideal place for gardening but it is not always the case because students or even staff did not care where they dump their rubbish. As long they get rid of it, that is the end of their problem.

Image 12: Rubbish in a hole in the ground

Taken: 25/10/07

6.3.3.5.3 Foreshore rubbish

Foreshore dumping sites occur because of limited land space that can be found in the school grounds. Students at this school knew that throwing rubbish here is appalling but that is the place they are being told to use when disposing their rubbish. They have a caretaker who sorts rubbish found in the school compound but rubbish thrown on this foreshore ground are burned if they accumulate.

Image 13: Foreshore rubbish

Taken: 25/10/07

Because of the lack of space, the school resolved to use whatever place they can find to dump their rubbish. When the senior head staff was asked about this foreshore dumping site, the answer was that they do wish to have a proper area to dump rubbish at school but unfortunately they do not do anything about it.

6.3.3.5.4 Rubbish bins

Littering anywhere inside the school compound is further exacerbated by the lack of rubbish bins at school. All of the interviewees said that the school should provide the bins. With the lack of school financial means to support the on-going school program, rubbish bins are not a priority in the CoGHS system.

6.3.3.5.5 Staff and Students attitudes

The attitudes of staff and students towards rubbish have been clearly defined. One staff mentioned that students should know their part in contributing to the community, for example by placing their rubbish in appropriate places, sorting and recycling it. How can this happen when at

school, students blame staff for not doing the same thing? The students also said that they only do the work if there is a prize attached with it. Moreover, it is hard for them to encourage other students about littering at the school campus, as no-one is willing to take responsibility.

6.4 Teaching ESD in Secondary Schools

Teaching ESD at secondary schools can either provide benefits and at the same time challenges if it is implemented at secondary schools.

6.4.1 Advantages of ESD

The advantages of teaching ESD at secondary level are described in detail below. The advantages include teachers working well in teams, increasing their knowledge and improving their attitudes. The knowledge and attitudes of students will also improve and whole school participation is necessary to facilitate and enhance ESD in schools.

6.4.1.1 ESD for the teamwork

Working collaboratively is essential for the on-going programme of ESD. Teachers from different disciplines work together and share knowledge, resources and teaching. For example, if the subject is taught by both a Science and a Geography teacher, students will have the advantage of receiving two points of view.

Furthermore, involvement in ESD brings about greater connection with the wider community than any other curriculum area (Cowie and Eames, 2004). Along with wider community involvement, parents are taking part more frequently within school programmes. In return, more awareness and understanding of environmental issues within the community, and well established and ongoing links between community and schools are maintained.

Community participation is crucial because it is the backbone of these schools. The community supports and continues what the students learn at school. However, it is important to consider other stakeholders that can play a fundamental part in promoting ESD in the schools. They include regional organisations such as the South Pacific Regional Environment Programme (SPREP), and international organisations like Global Environment Facility (GEF) and United Nations Educational, Scientific and Cultural Organisation (UNESCO).

The input of these regional and international organisations provides an invaluable source of support to teachers. For example, The International Network of Teacher Education Institutions for the Reorientation of Teacher Education was launched in the Caribbean Network of Teacher Education to address sustainability and its sub-networks. It has done much to support

local initiatives. Working with such a community of teacher educators has allowed for the exchange of ideas, expertise and experience (Down, 2006).

6.4.1.2 ESD provides knowledge and develops values of teachers and students

The inclusion of ESD into the curriculum will make students more aware and have increased knowledge, understanding and appreciation of the environment. This is consistent with what all the interviewees stated: that people are too lazy and just don't care about the consequence of their actions. It is recognized that environmental education help create awareness, concern and recognition of the consequences of actions. Studying this subject will lead to environmentally responsible behaviour (Said, A. M: 2003, 307). Incorporating EE into the secondary school syllabus will certainly improve the situation.

One example was mentioned by one participant during the Science demonstration at the CoGHS during Science class. The demonstration is about finding out which rubbish amongst paper, plastic and organic wastes has the greatest carbon dioxide in it when it is burned. These wastes are commonly found in the school compound and the table below detail the result of the demonstration.

Table 8: Amount of carbon dioxide in rubbish

Amount of carbon dioxide in rubbish when burned	Type of rubbish
Very huge	Plastic
Medium	Paper
Very small	Organic waste

Source: Fieldwork, 2007.

After the demonstration, the students were very intrigued with the result especially now knowing that plastics have a huge negative impact to the ozone layer. It provoked a lot of questioning from the students and most of them vowed not to burn plastic anymore. As a result the development of positive attitudes and values towards the environment will be evident amongst these students. For example, these students will preach what they have learned at school to their parents, friends and relatives.

In addition, students get a sense of pride and achievement from the activities they do in these programmes. Some students' self esteem is raised, especially students with learning difficulties, socialization or anger management because in these EE activities their intellectual abilities are not tested. Therefore, they tend to enjoy and excel more in these EE activities than the mandatory subjects.

Moreover, teachers' personal interest in environmental education is an important ingredient in students' enthusiasm for the subject. A positive

teacher attitude towards ESD will result in a positive attitude of students towards the subject too. The teachers' positive attitude will be clearly reflected in students' behaviours, understanding and awareness of the environment (Eames and Cowie, 2004). An increased teacher awareness of EE motivates teachers to use satisfactory teaching methods and enhances pedagogical strategies, generating more interest from students to learn about the environment (Research data, 2007).

Furthermore, the inclusion of ESD into the curriculum will make students more aware and give them increased knowledge, understanding and appreciation of the environment (Bolstad, 2003).

6.4.1.3 ESD benefits from whole-school participation

Because secondary schools will implement whole-school participation in ESD, everyone in the school community will learn about it. Cowie and Eames (2004) suggest that a "whole school approach is important to the sustainability of environmental education." The involvement of all students up to the Board of Trustees means students are happy to promote ESD activities at their school, for example whole school paper recycling or doing a litterless lunch.

With no support from schools and families, waste will multiply in school compounds and households. Also, with no specific school activities to involve students practically and experimenting with waste, students would not appreciate the value of waste becoming a resource. Parents' attitudes towards waste reflect on their children if they don't care about cleaning their house. There is a saying that "first lesson always start from the household".

6.4.2 Challenges of ESD

Even though there are definite advantages, there are challenges in incorporating ESD into the secondary curriculum. Cowie and Eames (2004) give a wide range of examples from different schools they studied in New Zealand. They found from their survey that two main factors were identified:

- i) The practical challenges of teaching and
- ii) System and or policy based factors.

6.4.2.1 Practical challenges

From the five categories identified by the teachers surveyed by Cowie and Eames (2004), this research will explain in more detail the first two, namely the lack of teaching resources and the lack of the professional development needed to promote ESD teaching strategies.

6.4.2.2 Lack of resources

A lack of resources is critical not only in teaching ESD but also in teaching other subjects. Resources like magazines and books on the subject can give a clear picture to students. To remedy the problem, teachers can pool together all their resources on ESD and make available an ESD website or any other website that teachers can have free access to.

Some teachers saw resource sharing as a viable strategy to address their need for additional resources, especially resources on cross curricular and curricula-specific activities. Moreover, it provides a good opportunity for teachers to exchange their experiences and knowledge with other schools.

The lack of resources at secondary schools in Kiribati is common therefore resource sharing amongst these schools will help other under-resourced secondary schools to get some materials from the other schools.

6.4.2.3 Lack of professional skills

Secondly, many secondary teachers lack professional development, which can inhibit the successful teaching of ESD. Teachers who lack professionalism will have no confidence in teaching the subject (Smyth, 1983, p.123 and Down, 2006, p.395). Cowie and Eames (2004) suggest more professional development is needed to understand and use the Ministry of Education Guidelines to enable teachers to teach better ESD programmes.

Moreover, Yeung (2005) suggests that a mixed approach between didactic methods and enquiry approaches should be included in training and refresher courses for teachers of ESD programmes. The inclusion of all teachers in the professional development program is fundamental, since more or all staff will support ESD programmes if they all have a better understanding of the basic principles regarding ESD.

The lack of professional skills was raised too by participants during the interview. They know this would be a new subject that would require a different teaching approach because ESD requires teachers to explore the attitudes and values, knowledge, awareness and sensitivity, participation and action and skills of students (Ministry of Education, p.10).

6.4.3 School-system and/or policy-based factors

School-system and policy based factors this research will concentrate on are curriculum overcrowding and the non-mandatory status of ESD.

6.4.3.1 Curriculum overcrowding

Education for Sustainable Development is a vital subject to teach at secondary level, but because there is so much in the curriculum, it is hard for teachers to fit ESD in as a serious subject, especially if the subject is not examinable. Teachers will most likely spend their time on subjects that their students will be examined in. For example, in some secondary schools in New Zealand, it is challenging for teachers to be concerned about ESD because of the competing demands on their time and energy and the pressure from National Certificate of Educational Achievement (NCEA) (Bolstad, 2003).

Another problem arises as teachers do not see this as a compulsory subject. It competes with mandatory subjects, so often teachers do not have the time and motivation to continue teaching it. The problem cannot be solved until the school- and policy-based system makes ESD compulsory in schools. Like what the majority of the participants said, ESD should be compulsory at school so everyone at school can all learn from ESD. Appendix 3 would give some symptoms, diagnosis and cure about this curriculum overcrowding problem (See Appendix 3) (Benedict, F. 1999.Vol.29 (3), 433-446).

Moreover, this research has similar findings to what Law and Tasker (2000) found. They identified that the problem of over-crowding of the curriculum is one of the major limitations in establishing effective teaching and learning for EE, within the current system of pre-service delivery of teacher education in New Zealand.

All of the teachers and some academics interviewed stated that there is already an overcrowding in the Kiribati curriculum. However, most of them still believed that a new subject of ESD should be developed and made compulsory.

6.4.3.2 Non-mandatory status of ESD

Another problem arises as teachers do not see this as a compulsory subject. It competes with mandatory subjects, so often teachers do not have the time and motivation to continue teaching it. The problem cannot be solved until the school- and policy-based system makes ESD compulsory in schools (See Appendix 3) (Benedict, F. 1999.Vol.29 (3), 433-446).

6.4.3.3 Teachers' and students' views towards ESD

Teachers are a crucial part of the education system because they play a significant role in determining the successful implementation of ESD to the students. If teachers have a negative attitude towards ESD it will result in students also having a negative attitude. Therefore determining the environmental gap of teachers with respect to concern, knowledge and

practices is critical in order to assess their preparedness to guide and shape the younger generation in adopting a sustainable lifestyle.

Said (et.al, 2003) stated that we should understand first the knowledge gap between teachers and students on ESD topic. If we know the level of education these teachers and students have on ESD. Then we can formulate a plan or effective policies to help bridge this knowledge gap between teacher and student. With this it will create positive new patterns of behaviour in individuals, communities and citizens.

Staff involvement in reorienting their course or programme to address sustainability is another challenge faced in introducing ESD. The sharing and cooperation between teachers on the concept of sustainability is invaluable unless teachers and educators understand, accept, insert and teach ESD concepts and strategies into the curriculum.

Having explained teachers' concepts of ESD it is important to explore students' knowledge and attitudes towards ESD in more detail.

As future leaders, students need to be equipped with adequate knowledge and learning skills to develop the attitudes that lead to an appropriate consumption pattern and lifestyle so they can lead a sustainable way of life.

Often if a subject is introduced and seen as something new or different some people see it as not relevant. Therefore, changing people' behaviour and attitude in many areas is hard to do. There is no such thing as value-free in this world because everyone has preconceptions of what they believe and value.

This is identified in the report by Parliamentary Commissioner for the Environment (2005), which describes an interview with Year 12 students in New Zealand schools investigating students' knowledge and attitudes towards ESD subjects called Sustainable Futures. Students who are not enrolled in the class judged the subject by its name "Sustainable Futures" as being too "greenie" and a useless subject (Bolstad, 2003).

During the interviews, teachers' and students' attitudes towards incorporating ESD at secondary syllabus are very positive. Time will tell if this really is the case, student's positive attitude towards ESD if it is indeed present in the secondary syllabus.

6.4.4 What needs to be done

The advantages and challenges of incorporating ESD into the secondary curriculum have been investigated in this chapter. Hopefully stakeholders involved in implementing ESD into the curriculum will have some ideas and find ways to counteract the challenges. The advantages mentioned above are

real, but amending and modifying to improve the situation is essential for sustainability to progress.

6.5 Funding and Incentives

Kiribati relies on funding, and obtaining funding poses a fundamental problem for Kiribati. Like what the participant from the Environment Division (Kiribati) said, it is very hard to maintain the project as it is because we do not have enough money to keep it going. Therefore, most of the projects that we conducted will stop, when the funding of that project ceased.

Moreover, the people of Kiribati should learn to do things voluntarily without requiring any kinds of incentives in return. The research found out that most of the project in Kiribati started out first as a competition. Therefore, people are not inclined to do anything without something to gain in return.

Giving incentive plays a huge part in changing people's behaviour and attitude towards getting something you want them to do. Participants agree that people will not do the work unless they get something back that will benefit them. Moreover, participants response is consistent with Mackenzie's (2007) and Lawrence's (1984, p. 429) research in Kiribati where he declared that the response he got from his surveyed are similar.

For example, the Village Competition on South Tarawa when stopped, people reversed back to their usual habits, of not sorting and recycling their waste at home. This is the same case with the Household Competition in Bikenibeu too. Furthermore, the majority of student participants agree that incentives played a huge role in motivating these students into doing the activities required of them by the school. For example, the school competition inspired students to clean up their classrooms but if there is no competition, students will not conform.

Awareness on this issue should inform people about the consequences relating to their health if they live close by with their rubbish. Also, the public should be taught too, that Kiribati has very limited resources and funding. Therefore, the government cannot allow spending money on incentive purposes if people can do the job for their own benefit. What is more, they should be aware too, that their actions today can either suffer or benefit their generations in the future.

6.6 Media:

The media through the radio and newspapers are the two means of communication easily accessible by people throughout the country. The radio and newspaper can inform and remind people everyday of the dangers of rubbish. If this means of communication is consistent on rubbish awareness to the people, in time the public will change their attitudes, behaviours and actions towards rubbish.

For example, the campaign on smoking has been consistent for at least 10 years now. As a result of this media awareness, people have changed. Rules have been set up to ban smoking at public places. Before, people cannot approach and tell someone off for smoking at a public place. Today, non-smokers can approach and asked these smokers not to smoke at these public spaces. Even smokers are aware of the hazard they impose on non-smokers, and there is a gradual decrease of smokers smoking at public sites. For example, it is hard to see someone smoking on the bus nowadays.

6.7 Cultural values:

I-Kiribati people have their own set of values and expectations towards something they believe in. It is hard to change someone's attitudes and behaviours unless they experienced it themselves. Like the Kiribati people today, their attitudes and behaviours towards waste is negative.

People's activities will greatly impact on waste. The notion of cleaning to I-Kiribati is very peculiar. When they clean their lands, they tend to cut down trees, root out grasses and burn them at the end. The burning of rubbish is a traditional way of clearing rubbish from one's piece of land (Interview, 20007; MacKenzie, 2004). If not, they throw them onto the beach or put it near the road for the council to pick it up.

Most of these rubbish heaps contained dead leaves, tree branches and many other things which are organic matters. Therefore, educating these people to bury their rubbish to add nutrients to the soil should be promoted.

Another human activity people are doing to maintain their rubbish is by constructing a seawall. Within that seawall, they put their rubbish inside it to fill up the hole. This is one way of containing their rubbish because waste collection by the Council does not extend to these sites. Moreover, when that sea wall is filled with rubbish, another piece of land is created. People can make a living on that land.

Image 14: Rubbish inside a sea-wall

Taken: 25/10/07

The rubbish is dumped by the council's waste truck inside this seawall at the request of the owner. It could make a good piece of land for the land owner but at the cost of getting a contaminated land too.

6.8 Religion:

It is imperative to include church leaders for each religious affiliation represented on South Tarawa or Kiribati in any ESD issues. There is a shift of leadership roles in Kiribati and most participants supported the idea that the "Unimane System," where old men are leaders of the community, is deemed not as effective as it used to be today. Churches are more effective and are more respected widely in communities. One interviewee insisted that leadership in Kiribati has made a clear paradigm shift from Unimane to Church. Therefore, Churches should be included in every program established by the government.

Moreover, participants with religious beliefs expressed the view that we need to involve churches in decision making at local and national level. Two reports [MacKenzie (2004) and Bryant (1987)] stressed the important status of Churches within the PICs. They are effective community centres which can be used for environmental education.

Figure 5 show the two main denominations in Kiribati, which are the KPC and Catholic. These two denominations have a huge influence in political matters and social, economic and environmental issues. From many examples of religion becoming involved in political issues, this following example is drawn from the decisions made by the Moderator (KPC Head of Church) and the Bishop (Catholic Head of Church). These two Heads of Churches' word is

sacrosanct and every topic related to religion criticising these two main denominations is a sensitive matter.

In the early 1990s, there was a plan by the Curriculum Development Resource Unit (CDRC) to include sex education in the syllabus for Primary Schools. They applied for funding, were approved by donors and got hundreds of thousands of dollars for the sex education topic. But the problem is that during the consultation process the CDRC only consulted with the Primary teachers. After consultation, everything was organized - the syllabus was set and the materials for this sex education topic completed.

Just before the launch of this syllabus and materials to schools, the two Heads of Churches (KPC & Catholic) learned about this syllabus and wrote to the Ministry of Education to stop the launching. The sex education syllabus has still never been launched and the materials developed for the topic is still sitting at the Curriculum Unit, in a safe place but probably rotting to pieces as the years go by. The two major heads of denominations voices are huge in politics mainly because of the large number of voters coming from the KPC and Catholic churches (Anonymous interview, 2007).

Another example happened just a few months ago (July-October, 2007). One of the Members of Parliament (MP) was not elected back to position again by the people during the election that just ended in October, 2007. The cause of this MPs' loss was religion related too. The defeated MP said something considered negative about one of the two major denominations found in Kiribati. The rumour spreads very quickly. When the members of this denomination heard about this rumour, they were disappointed and did not vote for the MP which led to the loss of this MP's position (Anonymous interview, 2007)

As mentioned previously in Section 2.2.2, Unimane are quite willing to step back from their role as decision makers in favour of a missionary. Therefore today in Kiribati, the power structure has gradually changed and a shift away from Unimane to priests'/ministers' power is evident. This is evident in the following ways:

Firstly, this clear distinction of Local church leadership power can be seen in the way communities act. Especially in the Outer islands, meetings used to be held in village maneaba (big local meeting house). Some participants mentioned that nowadays, the meetings are held in church maneaba.

Secondly, the mentality of I-Kiribati nowadays is that the word of a priest or minister is sacrosanct. As Kirata (1985) mentioned, the integration of religion into the Kiribati culture became one with the culture and is viewed with high prestige in the eyes of Christians. However, when these church leaders are asked if they include environmental concerns in their preaching, most of them don't. One reason from the KPC ministers is that, they have a year plan they have to follow which does not include environmental issues in it. It is up

to the individual to include environmental problems in their preaching or do it as part of the announcements to remind people of this issue.

Even the engagement and mobilization of villages in some islands, for local or educational awareness meetings particularly the Northern and Central islands, would require the support of the churches. In these islands, it makes more sense to deal with church leadership in the villages rather than the traditional village leadership, which is not as effective as it used to be (Mackenzie, unpublished).

6.8.1 Religion vs the environment

However, amongst the answers for each subject given, one participant stressed the need to involve local church leaders to establish an activity for students to promote a holistic perspective on waste. Also, the participant suggested, that local church leaders should stopped preaching about love to the community. Instead they should preach about the protection of the land we live in because we are not owners of this land but guardians. God is the landlord, but we are aliens and tenants (Levictus 25: 23-24)

In Psalms (24: 1-2), God clearly states that the Earth is the Lord's and everything in it. Therefore, we must not pollute the land but protect it. In Numbers (35: 33-34), God said that we (people) should not defile or pollute for the land is his. The people in Kiribati nowadays greatly respected their missionaries, therefore religious influence have a greater impact on the people (Lawrence, 1984, p.427).

Thus, it is befitting for missionaries to preach this waste problem and support it from the bible readings. It is without any doubt that these people will do anything the missionary say. The incentive for doing what the local church leaders say is being a good person in the eyes of God.

Chapter 2, section 2.2.1 also talks about the effect of Christianity in Kiribati. Local church leadership should be a priority when setting up ESD into the curriculum. The local church leaders can get through to the public easily and quickly since people respected them immensely.

6.9 The Public:

Involving the public in ESD issues will promote team-working and the successful progression of ESD in the community. In this research, the public refers to the private sectors, the women's church groups, youth church groups and family groups that are helping and trying to decrease the problems relating to developmental issues such as waste and other related ESD problems.

6.9.1 Private sector participation

The need to involve other private companies is required since companies are the ones who imports the goods to Kiribati. Of the companies established on South Tarawa, only MOEL Trading Company ran a competition of returning noodle plastics. The noodle is one of their imported products, and the competition ran for more than five months in 2001. There were ten prizes but the person returning the greatest number of noodle plastic will win the 1st prize, followed by the other nine prizes.

The competition benefits South Tarawa greatly. During the competition, noodle plastics are barely seen ubiquitously. The competition stopped after that first trial but unfortunately I did not have time to interview any workers at MOEL Trading Company. However, the consensus amongst the participants is clear:

Businesses like MOEL do not want to repeat the competition because they will only lose out money from that kind of competition. Since businesses' main aim is to make profit, competition of all sorts will simply unconsciously consume their profit (Anonymous interview, 2007).

One other business called Punjas company is doing the same thing that MOEL have done. In this case, they give money on the spot to any customer who returns the specific items belonging to the company, for example, packets of Punjas tea, and so forth (Anonymous interview, 2007). Unfortunately, with the tight schedules the company and I both have, I did not have time to interview someone from the company to fully analyse the extent of this activity.

Another, company co-owned by the government called Bobotin Kiribati Limited (BKL) was another company from which I had time to interview one participant. At the time of interview, there were no activities this company was undertaking to minimise waste. The participant also stated that the company should take some initiatives in doing some actions to try and help minimise waste on the island.

6.9.1.1 Local industry

With scant resources, tiny coral atoll islands of Kiribati, and an alkaline soil, lack of variety vegetation to grow on it is plain to see. Kiribati's isolation from major exporters is another factor for this lack of resources. Most participants agree that this is one problem Kiribati now faces. The only abundant resource they have comes from the marine environment. However, if this marine resource is not looked after properly it will decrease.

Respondents suggested that if there are local industries that can produce these goods we consume everyday, the increasing problem with plastics and

packages will lessen. We would not have to import these goods because we can manufacture them in Kiribati. However, with little resources, this idea is not feasible. Also with the lack of technology and financial support Kiribati faces, it is impossible to build these local industries without the necessary skills, knowledge and aid or funding that is needed.

Women's church groups are very common in Kiribati and form the necessary bodies that currently do assist with ESD matters.

6.9.2 Women Church Groups

Each denomination has its own Women's Church Groups (WCG). After the interviews, I found out that there are some active WCG operating in their respective villages. These WCG inspect houses for cleanliness with a set of criteria that the women have agreed upon. The house inspection criteria vary within and outside the household. Within the household they check that the house is clean and tidy. The pigsty inspection is also included for the outside inspection.

This inspection is carried out once every two weeks with a surprise visit from the head committee of the WCG. If the house being inspected does not follow the rules, they are fined and the money goes to fund a competition and the day to day running of the WCG. Household prizes like a set of plates or cups are given to the winner of the month as an incentive for all women to maintain and keep cleaning their houses.

The women's groups rarely operate outside the influence and ambit of the main churches in the outer islands, so in order to engage the women the main channel is through the church authorities in the islands. There may be some other women's organisations whom are not affiliated to the churches in the outer islands, but they do not have the same following as those affiliated to the churches (Mackenzie, unpublished).

From women's church groups, there are youth church groups too. Youth church groups are important as they involve everyone from adolescent up to mature people who wants to be involved in any YCGs activities.

6.9.3 Youth Church Groups (YCGs).

Most Youth Group activities are organised by their denominations and some of their activities are associated and initiated by the Environment or Health divisions respectively. For example, for places that are considered public places on South Tarawa, the Environment division dedicates and sets aside a place for each Youth Group to clean and look after it for the whole year.

Image 15: Rubbish alongside Ananau Causeway

Taken: 25/10/07

Image 15 shows one of the public places on South Tarawa where rubbish is not disposed of properly. That is why the Environment division is organising a range of activities for the youths to be involved in. One previous example is to try and minimize the problems of waste and the un-welcoming sight of rubbish lying beside roads. CYGs are given a public fixed spot to take care of throughout the year (Anonymous interview, 2007).

Every fortnight or once a month, these CYGs go and clean their allocated places. The day and times to clean their spaces will depend on their Youth leader(s). There are times when an officer from the Environment division will go and make a surprise visit and check up these public locations. If these public areas are not clean, Youth leaders are contacted and are encouraged to try and maintain their designated sites.

There are also instances when CYGs are needed urgently, mainly for labour purposes by the Environment or other organizations. These events include the "World Health Day", the "Environment Week" and so forth. Nearly all the time, the work done by these CYGs is voluntary. However, there are occasions when donations are given to these CYGs as a token of appreciation for the job they did.

Another recent action promoted by Betio Town Council (BTC) to clean up the Betio side causeway is still ongoing. All CYGs from all denominations are involved. Since there are a huge number of youths in each CYG, BTC official(s) in charge only ask for five to ten youths to be present at the time of cleaning. The time and day is organized by the BTC official(s) where they send a letter either to the Youth leader, the priest, or minister for each denomination. The letter requested the leaders to send their youths to be present during the cleaning. Therefore, the decision to send their youths will depend on the youth leaders or the church priests and ministers.

Mackenzie (unpublished) found in his research that the church authorities also control the youth organizations in most outer islands. For youth to be meaningfully engaged in the Kiribati Adaptation Project (KAP) and any other projects or research, the support again of church authorities is required.

There is an advantage in engaging the churches – both at village and island levels. At this time, when the decline of volunteerism is lamented, the churches are probably the last of the bodies which are able to motivate people to do things, even on a voluntary basis (Mackenzie, unpublished). This is true because as mentioned before in Section 2.2.1, church leaders are well respected and people will go as far as they can to impress their local church leaders.

However, family groups are important too, to consider as they form the social basis for small groupings within the community.

6.9.3.1 Kiribati Protestant Church (KPC) Youth Groups

KPC youth groups have always been active with their programs of spreading both the Christian and social-health message to the Outer Islands. They go from house to house and try to find out what are the problems youth are having on their islands. The most common problems these families are facing with their youths are underage drinking, and smoking. The first step in solving these families' problems, is asking these families how they can cope with these problems. Otherwise the KPC youth groups take these problems back to their Coordinator at their youth center, because in their next visit to these islands, they can come back with the solution.

Also, some of the workshops they did in the Outer Islands were associated with the teaching of health education like the dangers of smoking and drinking alcohol. The Health division takes this opportunity to include their program with Youth groups programs. They work collaboratively in-order to deliver the idea in an easy and effective way.

One particular occasion was seen on the island of Abaiang. The Health workers teach three members from each group of the KPC Betio Youth group about what they would teach to the community. This includes HIV/Aids, communication, and alcohol education. For every village of Abaiang, there is a Youth group in charge of this Health education. The participation of these Youth groups with Health education makes the word spread out within a week. This of course would have taken about at least a month if the Health workers were the only ones involved in it.

The only youth group interviewed came from the KPC denomination because they were the only ones available at the time of interview. Therefore, details of KPC youths are more explored than other youth groups from the other

denominations. However, the interviewee said that the other denominations are also actively involved in their own ways in dealing with waste issues.

6.9.4 Family Groups

There are several family group associations that can be found on South Tarawa. Family group associations have been established for friendship purposes and also to try and solve any family issues. One of the issues these family groups faced was to try and retain the cleanliness for each household. Because of time constraints, I managed to interview only one member from one of the family groups.

The person I interviewed said that about at least five households reside in the area. These five households composed what is called; the family group. With the low standard of living they have, the women decided to upgrade and maintain the area they inhabited. They did it by regular inspection of the houses. Because the on-going programme is sustained by women, their men and children are supporting it in every way they can. For example, the men did what is required by them. Some had to build a kitchen and others had to built a pigsty or whatever the women decided that would have beneficial effect to the household members.

The children on the other hand of each household are the ones cleaning around their houses and making sure that the chores set for them by their mothers are done before inspection time. As a result, the participant revealed that the area her family lived on has changed dramatically from being very dirty to clean. With the help of the women of that family group, the area is now sustained as a beautiful and clean place.

Even though, most of the participants overall believed that each child's learning starts from the home. Unfortunately, Figure 9 showed that only seven of the participants said that households held a primary responsibility for waste disposal, albeit a saying that "school begins at the home". Moreover, 46 of the participants stated that all of us should be responsible for our own actions regarding waste.

These family groups could be encouraged to work together with the schools on ESD matters in order to solve their problems regarding waste. This would show ESD in practice. This clearly showed that family group associations worked well as one social structure. With participants' belief that child's learning starts at home, ESD teaching in communities should involve more of these family groups in order to target the main cause of waste issues on South Tarawa.

6.9.4.1 Waste disposal issue on South Tarawa

Interestingly, the data collected by A-N-D Consultancy in 2000 depicted an opposite result with what the data found in this research. The range of

answers A-N-D Consultancy (2000) gave vary from “no problem, to slight problem, serious problem, very serious, very very serious problem and no answer”.

Table 9: Seriousness of Waste Disposal issue for South Tarawa

	No problem	Slight problem	Serious problem	Very serious	Very very serious	No answer	Total
Tarawa	2.2	51	11.1	0.6	2.9	32.2	100

Source: A-N-D Consultancy, 2000.

The six range of answers from A-N-D Consultancy were reduced to fit the data collected in this research. Table 9 displayed the two results from each research. In the table below, the “slight problem” from A-N-D Consultancy result becomes “small problem”, the “serious problem” becomes “medium problem” and the “very serious” and “very very serious problem” are combined and put under one heading “serious problem”.

Table 10: Seriousness of Waste Disposal issue for South Tarawa, Kiribati.

	Not a problem	Small problem	Medium Problem	Serious problem	No Answer	Total (%)
A-N-D Consultancy data (2000)	2.2	51	11.1	3.5	32.2	100
Research data (2007)	0	4	10	86	0	100

A pattern can be clearly portrayed of how people’s views have changed over time by the line graph below. Plotting only from small problem, medium problem to serious problem, an opposite result is clearly portrayed. With this graph, it is evident that over the past six years, people’s awareness of the dangers and problems associated with waste has dramatically increased.

Figure 14: Seriousness of Waste Disposal issue in Kiribati

Source: Fieldwork, 2007.

However, A-N-D Consultancy (2000) has 314 participants compared to 65 participants in this research. Therefore, even though Figure 14 clearly illustrate the contrasting views from the two researches. A-N-D Consultancy will represent a more accurate result.

An acknowledgement should be made to the Kiribati government dedication to this rising waste issue. Yet, the government still needs to act on other issues relating to waste. Particularly relating to this research, incorporating education for sustainable development is one missing link the Kiribati government should focus more of its attention on.

However, even though the Government of Kiribati (GoK), have not incorporated Education for Sustainable Development into the curriculum, there are plenty activities the government has taken to try and decrease the waste issue in Kiribati. The following section will describe the GoK's activities on South Tarawa undertaken to minimize waste problem.

6.10 Government:

The acts, ordinances and by-laws below are some of the policies the government should maintain in-order to minimise waste problems on South Tarawa. Some other activities explored are the village and house competition, resettlement schemes, decentralisation and lastly but not least are the members of parliament attitudes towards waste.

6.10.1 Land Planning Ordinance 1973

The Local Planning Board considers development proposals before submitting cases to the Central Land Planning Board for further consideration prior to Ministerial decision. The TUC⁷ has been designated as the Local Planning Board for the purposes of land planning in South Tarawa. The result of land use plan and zoning of Bikenibeu West does not conform to the South Tarawa Land Use Plan. The local government body also plays a key role in environmental management.

The land planning on South Tarawa is another problem the council is trying to resolve. As a result of these un-planned houses, there is no road for waste collectors to follow in order to reach other houses at the back and collect their rubbish.

With increasing urbanisation on South Tarawa, especially on the tiny islet of Betio, waste generation has become a major problem. Participants did mention that waste at these places becomes a problem because houses are closely constructed to each other. There is no room for waste truck collectors to drive through and pick rubbish at these cramped houses. The Council is urged to do a proper town planning at these congested villages.

As a result of these overcrowded houses there is evidence that people are still continuing to use the beach as toilets because not all households are connected to the sewerage system. Furthermore, what may be unacceptable in another social environment is acceptable here.

Not enough space together with inadequate and insufficient waste collection service leave people with no other choice but to use the sea, beachfront, and lagoon as dumping grounds. With the exception of Betio, Bairiki and Bikenibeu the collection service does not cover all households, especially those which are far from the main road (A-N-D Consultants, 2000).

6.10.2 TUC Public Health By-law 1975

Under this law, people are prohibited from disposing of their rubbish anywhere they wanted including the beach and the sea. This law is vital to enforce because there is a growing problem of waste being thrown out to the sea and onto the beach. Moreover, because most people do not have their own toilets at home, they use the beach as their toilet. Some participants have to chase away people who defecate on the beaches. At the same time participants knew that these people do not have proper toilet at their house, which makes this issue much more complicated because this is the only place for these people they know of to do their toilet business.

⁷ TUC – Tarawa Urban Council

Also, graveyards should not be created within 100 yards from the wells. But as can be seen at some houses on South Tarawa, people buried their loved ones very close to the wells they drink because they lack the awareness of pollution issues. The issue of the lack of awareness, and the hazardous waste proved that this TUC Public Health By-law 1975 should be enforced.

6.10.2.1 Out of Sight, Out of Mind

With the growing population, they demand more resources. Kiribati like most other Pacific coral atoll islands, is particularly challenged by the increase in the solid wastes left behind (SPREP: n.d), by these imported goods. Together with people's carelessness about the situation, the problems of waste will continue to be substantial. For example, in Kiribati people depend more on imported goods rather than their native foods (Anonymous interview, 2007).

Moreover, development improvements on South Tarawa escalate the migration of people from rural to urban areas. Together with increasing population growth, there is a great boost in imported of goods, too. Meaning the demand of imported goods will continue to rise unless solutions to these problems are met. Otherwise the prize of this increasing development will adversely affect the environment.

Participants declared imported goods as the reason to the worsening of waste in Kiribati for the past 20 years. They also said that the main problem with these imported goods is that people do not know how to dispose of it properly. Some participants even stated that the Kiribati people are hygienic and clean people but disposing of their rubbish is major concern. They can just dump their rubbish anywhere they want, for example, on the beach, into the sea, to their neighbours land or any place as long as these rubbish is out of sight from them, their problem is solved: **"Out of sight, Out of Mind"**.

These problems are intensified by the lack of knowledge and improper disposal of wastes. Also, people don't care or more or less are lazy to act on the right thing. As MacKenzie (unpublished 2007) found out too, complacency and apathy are two things that are very hard to shake from people's behaviour.

Lack of awareness on waste can cause huge setbacks for the country. Respondents said that the on going problem associated with waste is caused by lack of awareness on the issue. If people are well informed on the impacts and consequences of waste, throwing rubbish into the sea would not a first choice to them. This lack of awareness is associated with their attitudes of not caring about the consequences that will incur or what their actions will impact on the environment.

Participants suggested that those people with limited educational background are the ones who really need more education for better clarification of the matter on waste issues. An on-going program on waste issues in

villages/communities will breach the gap between formal and non-formal education (Anonymous interview, 2007).

Moreover, it is the Councils' and other involved stakeholders' failure for not penalising people who do not follow the rules. Furthermore, as participants said, there are no on going programs on waste so people will not forget but keep being reminded of what to do with their waste. The use of media to spread the message should be taken seriously as it has successfully advertised the bad effect of smoke in Kiribati.

Other related problems like hazardous wastes should be a concern to the government too, as it has a detrimental effect to the environment.

6.10.2.2 Hazardous wastes

With development, a growing affluent life-style is greatly sought. Consumerism is increasing with individuals and apparently people on South Tarawa seek more of their wants than their needs. An example is seen with those people who lived in a near ruined local thatched house but they have a television set, stereo, computer and a car in their household.

Nearly every household on South Tarawa have a television and or stereo. A good proportion of households have a computer and quite a number with cars, but every school, and offices have computers. A few people have all four of these items present in their households. Some people had three of these items but the majority had mostly television or stereo itself or a combination of the two.

The possession of these items poses a great threat to the environment as these people do not know the proper disposal of these objects when they become waste. During the research, I found out that the failed televisions or stereos are left outside under the rain to rot. Some are thrown away and maybe ended up at the landfill and some are buried or thrown away at sea. The components of these products, like mercury, when leaked and if they reach the waterlens, will poison the main source of water these people depend upon. It is very toxic and mercury exposure can affect the brain, kidneys and liver, and cause developmental problems that can lead to death (Aircycle Corporation).

6.10.2.3 TUC Control of Animals By-law 1975

This law prevents straying dogs and other animals from disturbing public rubbish sites. If these animals are seen roaming around these public places, they will be taken by the council for breaching the law. However, dogs, cats and other animals are frequently seen messing the rubbish at public places. The council is not doing their job properly because if they have done it well, these wandering animals would not be seen disturbing the rubbish everywhere.

6.10.2.4 Local Government Act 1984

The by-laws are laws made by the council to administer the area that the council operates. TUC and BTC have their own set of by-laws. However, because these councils are both located on South Tarawa, their by-laws are quite similar in most cases where the councils have to undertake a variety of jobs including waste and water issues.

Waste collection is incorporated in this law too, where the council should see that waste is taken care of by waste collectors. The problem is that waste collectors are not doing their job as this is one of the participants' complaints about the council's work. Waste collection is not consistent. Therefore participants find other means to dispose of their rubbish, sometimes dumping the rubbish on the beach or into the sea.

Nevertheless, one interviewee mentioned that the by-laws did not achieve their goals sometimes because the officials at the councils misused the funds that were meant to be used for waste control. As the research found out, one huge obstacle that deters the continuation of the programmes or projects is funding shortage. The local and national government should prioritise their goals, giving waste the attention it deserves (Anonymous interview, 2007).

6.10.2.5 TUC Building By-law 1986

The law forbids the public from construction of any houses unless the public liaised with the necessary bodies in charge of building constructions. But it has been established that the Bikenibeu West survey found that there is much evidence that the public is aware of the rules but does not want to follow them. It is the legal responsibility of the Kiribati Police, the Council Warden and the Island Council itself to ensure that this legislation is respected and complied with.

The Bikenibeu West survey confirmed that the Kiribati Police and the TUC have ignored their legal responsibilities. Public resistance and lack of effective enforcement are a nation-wide problem, and it is imperative that the appropriate authorities find a speedy solution to this gridlock if the I-Kiribati desires for an improved quality of life are to be recognized.

This is an example of the lack of awareness from the public because if they understood what these by-laws are all about, they would follow the rules. People do not follow the building by-laws and as a result, the environmental problem on South Tarawa is evident.

6.10.3 Environmental problems

A whole series of environmental problems in Kiribati are manifested on congested South Tarawa. These are poor land use of town/village planning, water scarcity, sewerage, overcrowding human settlement and waste

disposal systems. A serious problem of land shortage on South Tarawa is increasingly critical as population continue to grow.

There is a need to increase Tarawa's capacity to accommodate more people through better land-use and environmentally sustainable development. If resources and land management do not improve, population growth will worsen the present problems of housing congestion, declining public health, inadequate water supply, poor waste management and environmental degradation

(<http://www.faopacific.ws/members/kiribati.htm>).

The main problems in recent times, apart from land ownership, have centered on the adequate supply of development land in urban Tarawa, which the government is seeking to provide under leasing arrangements. In 1983 a land leasing system was initiated on Kiritimati. Resettlement schemes were instigated where people from South Tarawa and the other outer islands were sent to live at the Line and Phoenix islands, particularly to Kiritimati, Tabuaeran and Teraina islands.

Map 4: Map of Kiribati

Source: Map of Kiribati (n.d).

Despite efforts of the government with its scheme to minimise population density on urbanized South Tarawa, people still float in, and urbanization and growth rate keeps growing significantly.

6.10.4 The Environment Act 99

The act empowers the Minister to impose such activities of prevention and control of pollution. It also forbids the public to pollute the beach, sea, lagoon or foreshore that will result in pollution and consequences to health

problems, to any person. This provision is not implemented. Like what Olowu (2007) stated, there is nowhere in the act that “prescribes elaborate penalties for unlawful disposal of human and animal excrements for offshore/foreshore discharge of toxic wastes or hazardous materials, or the breaking of contaminated ships on Kiribati shores” (Olowu, 2007, p.268).

Also, this act is undergoing a change (Anonymous interview, 2007). On, Monday 28 May, 2008 the Environment Act “99” passed its second reading. The last reading should be at the beginning of 2009, when the first parliamentary session proceedings for that year are held. If this third reading passes, then one of the changes of this Act will require people to sort out their rubbish. Recyclables will be sent back to the recycling site, green waste will be deposited in the banana circle, or to be buried underground, and the rest will go to the landfill.

The Environment Division policies/acts on waste are not yet passed at the Kiribati House of Assemblies. If the amendment act bill is passed, people will sort out their rubbish and littering problems on roadsides, beaches and any unauthorised places will decline because people are going to be fined if they do not follow the act. Even though, there are other policies/acts that concerned parties involved can act upon, at the moment these parties are not active in their duties.

6.10.5 The Environment Regulations 2001

The regulations give more details of the original definition of pollution and waste. The definition of pollution is broadened so as to include contamination of land, contamination of water, contamination of air, and noise. The definition of waste is elaborated to include household waste, demolition waste, hazardous waste, clinical waste, quarantine waste, ballast waste, and oil waste.

The regulations provide guidelines on acceptable limits of soil and water pollutants. The regulations also require a report on the state of the Kiribati environment every two years. The Environment Act and the regulations provide for the appointment of Environment Inspectors (EI). Unfortunately, the EI are not enforcing the Act or the regulations.

This has become a problem in Kiribati as some participants stated that people residing near the Public Utilities Board Power house in Betio have a major problem with water pollution. The oil waste running off from this power house percolated through the water lens and reached some of the wells closed by.

The following paragraphs will give detailed explanation of some of the government’s activities supporting waste issues on South Tarawa.

6.11 Villagers' cooperation with cleaning.

Some villages on South Tarawa are cleaner than other villages. However, most villages are not well kept. Piles of rubbish alongside the road are common (Image 16). These un-welcoming sights are obvious in most villages. The Environment division suggests that tackling these problems is through village and household competition.

Image 16: Piles of rubbish alongside roads.

Taken: 25/10/07

6.11.1 Village competition

The Tarawa Tidy Town competition was run during Christmas 2003 by the coalition of AMAK, FSPK, CDSP and IWPK. This contest was a contest to find which village is the tidiest on South Tarawa. The competition has been effective in promoting a general cleanup, and they distributed free greenbags as an incentive. Eita village was the winner. Now, before you enter the village, a big sign board emphasised Eita village as the winner of the 2003 Tarawa Tidy Town contest.

However, this competition did not continue because of funding issues. Even the village people stopped cleaning because there is no incentive they can expect from the government. As a result, Eita village today did not maintain its cleanliness compared with when the competition ran in 2003.

6.11.2 Household Competition:

From October to December 2004 the International Waters Project Kiribati (IWPK) ran the Zero Waste Competition, at Bikenibeu West, the IWPK pilot area. The Bikenibeu West community project was designed specifically to

build on existing environmental activities being undertaken by non-governmental organizations and other development assistance agencies that were active in the community.

With the assistance of the Foundations of the Peoples of the South Pacific Kiribati (FSPK), in an area they are currently working in, Sinclair Knight Merz Consultancy was able to conduct a waste survey from the pilot area. Houses were selected according to the following socio economic groups; low, middle and high income households. Some small businesses were included into the high income household category.

The competition ran for eight consecutive days, with the first day waste was excluded from the analyses as they may contain waste from previous days. Each household were given eight greenbags, one for each day of the competition. The aim of the competition was to get people to look at the nature of their waste stream, and to start to identify and separate waste. Organic waste went into the banana circle, recyclable waste went back to the Material Recycling Facility (MRF) and the rest was placed into the greenbags.

Image 17: Greenbags

Source: Leeney, 2006.

The greenbag was only a single component of this competition, but the emphasis was on the banana circles and the recyclables as identifying resources in the waste stream. One of the aims of the competition was for people to reduce waste from the source (Interview, 2007). Prizes were given for the best household management, such as composting and gardening utensils.

The result of Sinclair Knight Merz Consultancy of waste survey was phenomenal. More than half the wastes are bio-degradable (51.3%), followed by glass, metals, other, plastics, paper, textiles and hazardous wastes. Therefore, people should be encouraged to reuse and recycle the bio-degradable wastes into livestock feed, and gardening.

People in the participating village followed the rules from the beginning till the end of the competition. Unfortunately, when the competition ended, people reversed back to old habits.

Moreover, one of the houses in the trial village competition was my aunties' house. I noticed that during the competition, she kept her house very clean and tidy. She followed the procedure where she sorted her rubbish. Then, when the competition ended, the cleanliness slowly diminished. The plastic wrapping of noodles that used to be set aside and put inside the green-bag are now seen strewn inside the ditch.

6.11.3 Resettlement Schemes

A resettlement scheme was initiated by the government to try and solved and at the same time eased population density on South Tarawa.

During the interview process, some of the interviewees suggested that the "closed district status (CDS)" policy during the British colonial rule should be enforced again. The CDS policy did not allow people to migrate to the capital island, Tarawa. If anyone wanted to come to South Tarawa, they had to go through an interview process. If pass the interview, you were given a permit to enter South Tarawa, but you had to renew it if your permit expired (Anonymous interview, 2007).

Getting a permit to enter South Tarawa is considered a strict business. You are allowed to get into the island only if you have a close relative (base on nuclear family relationship) working there. Extended family members are hard to get them through to come into the island. But even close relatives are subjected to enter. The person they want to visit on South Tarawa had to agree first for them, and then they are given a permit (Anonymous interview, 2007).

A similar system done on South Tarawa was employed on another Kiribati island called: Christmas island. Government officials were very strict on this policy. However, the policy was banned in the early 1990s by the standing government at that time because it went against human rights (Anonymous interview, 2007). Since then, people are free to migrate from island to island within the 16 islands of Kiribati. The presence of transportation means aids people to travel easily and affordable to any desired island.

However, if we go back to the year 1993, this CDS rule was considered during a one day workshop about CHALLENGING THE FUTURE: Towards Development Standards for Land, Housing, Water, Sewage and Waste in South Tarawa. Participants during the workshop gave a range of responses toward the speedy solution to this impasse. One of their responses is for the GoK to reintroduce the CDS on South Tarawa as a way to reduce population

pressure on land and the environment (Ministry of Home Affairs: 1993, p.16).

6.11.4 Decentralisation:

Building Junior Secondary Schools (JSS), upgrading medical health clinics for all outer islands and all other sorts of activities that the GoK is maintaining on these islands is a way of encouraging people to stay put in their home islands rather than migrating to South Tarawa (Anonymous interview, 2007).

Another big main hospital was erected on South Tabiteuea island. North and South Tabiteuea combined have the second highest population in Kiribati. Also because Tabiteuea is situated in the south, the idea for building this hospital here is to cater for all people living in the south without coming to South Tarawa, since the hospital on South Tarawa will cater for people living in the central and north Kiribati.

This method will ease population pressure on South Tarawa because by cutting population increase to South Tarawa it should lead to further waste minimization on the island too.

6.11.5 Members of Parliament attitudes towards waste issues:

Members of Parliaments (MPs) are crucial decision makers who can allow the passing of a law in the House of Parliament (HP). At the moment the "Environment Act 1999" has been reviewed and is undergoing the process of an amendment at the HP. One of the amendment bills' clause is on household waste sorting. If the bill is passed and becomes an act, the consequence for people for not following it is to be fined. The amendment bill is in its second stage of reading and was approved. The final stage of reading will be at the beginning of this year (2008) when the HP commences again.

After an interview with one of the officials from the Division of Environment and Conservation, they stated that the MP's attitudes towards this bill is very positive and have full confidence that this bill will be passed without problems (Anonymous interview, 2007).

6.12 THE CURRICULUM:

The root of the problem of waste issues can be traced back to the Curriculum Development and Resource Center (CDRC), the department who oversees the development of the curriculum. There is a trace of some ESD topics in some subjects in the secondary level like Science, and Geography. However, it is not enough for students to fully understand and grasp the bigger problem they are experiencing in their world today. Otherwise, they need to be able to make informed decisions about waste management for themselves today and in the future.

Students being interviewed in this research and their decisions about waste management are very narrow-minded. When these students are asked about where their rubbish in their school compound goes to, the answers were similar for all of the 6 secondary schools students. They put it in the rubbish bins or throw them at allocated places the schools have designated. Only a few mentioned that the rubbish in the bins is taken away by the Council. It is interesting too, how their first description of the problem is based on the physical appearance of the land.

However, from those few students, only some knew where the rubbish will go to after being taken by the Council. They do not really understand the consequences of rubbish if it is not disposed of properly because none of them cared to explain further on the matter. Only if provoked to answer they only elaborate on it with little effort or what seemed to be a careless manner.

Clearly, if ESD was taught to these students, their perspective in the world will be relevant, holistic, critical, value-oriented, issue-based and action-oriented (Bolstad, 2003).

Chapter Seven: Conclusion and Recommendation

5. Introduction:

This chapter contains the conclusion and recommendations needed to establish the success integration of ESD into Kiribati national syllabus. Firstly, it will state the conclusion and then followed by the recommendations.

5.1 Conclusion:

This study has demonstrated the importance and significance of incorporating Education for Sustainable Development (ESD) into the syllabus in order to minimise the problems of waste on South Tarawa. Compounded with the growing population growth, urbanisation and development on South Tarawa, there are huge problems associated with waste. However, some issues whether regarding waste or land, are also political issues making it difficult to resolve the matter quickly.

A good example of political involvement in any issue is well stated in "The National Development Strategies 2004-2007" where it says that:

Pressure on land in South Tarawa from the growing population has made the implementation of regulations about leaseholds and squatting very difficult, requiring patience and firmness by the relevant officials. The difficulty is complex when the implementation of regulations is made into a political issue at local or national government level (National Development Strategies 2004-2007, p.19).

Although there is evidence of topics relating to ESD at the Primary and Junior Secondary School national syllabus, however, this is not present at the Senior Secondary School level. It is very important to continue with this education at the senior level also, because these students are old enough to make their choices as responsible citizens. Most of these students' education ends here unless they get a scholarship and continue on to tertiary level. Therefore it is significant to teach ESD at this stage, where the bulk of the population can still have free access to information for this syllabus.

Education for Sustainable Development is a phrase that is relatively new to the public. Therefore, numerous definitions are offered from diverse disciplinary scholars and well known organisations around the world, who each devise their own definition. However, the underlying connotation behind

this term is the same; educating people to learn to live in a manner today so the resources can support future generations.

However, the most fitting definition that this thesis encompasses comes from the UK Panel for Education for Sustainable Development:

ESD "enables people to develop the knowledge, values and skills to participate in decisions about the way we do things, individually and collectively, locally and globally, that will improve the quality of life now without damaging the planet of the future" (UK Panel for Education for Sustainable Development, 1998)'.

This definition is what I-Kiribati should dwell upon since their attitude and behaviour are always negative towards waste. Moreover, their lifestyle depends on today, without any consideration of the future. Therefore, if ESD is compulsory at a secondary level and all other educational levels, whether formal or non-formal education, then students will maintain a positive attitude.

Even, after the United Nations (2005-2014) declaration on the Decade of Education for Sustainable Development, little progress was being made under the name of ESD. Kiribati is one of the countries that is still behind in their ESD planning. But they are now working their way and reviewing policy on the "Environment Act 99" on ESD issues especially on waste matters. The Environment and Conservation Division (ECD), is engaging the public with many waste management activities, for example banana circle and so forth.

Several months during these waste management activities, people's attitudes and behaviours did change. Then when the government withdrew, leaving the public to their own devices, people referred back to their usual habits. As Mackenzie (2002) found in his social survey, complacency and apathy are the two main problems these people have to overcome. One way around this problem is by offering incentives. This idea was supported by most of the participants, saying that people are motivated to do the work only if there are incentives attached.

This incentive notion is reflected in four of the six secondary schools I visited. Rubbish is strewn everywhere in the compound. Participants stated that their school compound was clean during the inter-forms competition. After this competition ended, students came back to their usual norm of tossing their rubbish anywhere in the school compound.

Moreover, the four schools could not afford to pay the council to take their rubbish therefore they resolved this by dumping their rubbish in their backyards. They also dug holes in the school compound to throw in decomposable rubbish. Introducing the banana circle in the school compound enabled students to sort where their green waste should go. One school even banned ice-block plastics inside the school grounds to minimise littering.

Ice-block plastics, noodle plastics and paper are the three main rubbish items dispersed across the school compound. Students are reminded everyday during their assemblies or form meetings about littering. Every morning, the school is clean due to students tidying the compound before school begins. After the morning break at 10 o'clock, ice-block, noodle plastics and paper are scattered all over the school compound.

Most of the activities carried out at these schools started with a good intention in trying to manage their waste. However, no-one seemed to take responsibility so the effort only remained for a short term resulting in a negative effect. For example, introducing the banana circle in the school compound was intended to teach students to be able to sort their rubbish (Refer to Chapter 5) but the activity was a failure because these schools did not have any gardeners who would be responsible to remind students not to throw non-decomposable wastes in the banana circle. Therefore, as a result all types of rubbish ended up inside the banana circle. This poses a huge problem to the environment. However, the school management knows that it is a problem, but that is the only way they can afford to manage their waste at the moment. This is because the main problem these four schools have in common is the lack of financial support.

Yet, students are also well aware of the problem but are still continuing what they have usually done. As a result, their banana circle which was only meant to have green wastes, ended up with every type of rubbish because students just discarded their rubbish without any care. Again, complacency and apathy overruled their common sense in giving a logical judgement.

Religions possess one or more of five sources of power. They shape people's worldviews, wield moral authority, have the ear of multitudes of adherents, often possess strong financial and institutional assets, and are strong generators of social capital, an asset in community building. All of these assets can be used to help build a socially just and environmentally sustainable world

(Gardner, G. 2002, p.5)

Therefore, religious leaders are key instrument to involve in creating a syllabus for ESD because they have a great influence on their congregation members. This is true in the case of many Pacific Islands including Kiribati. People respected their church's local leaders to the point that the Unimane System subsides into the background. Where the Unimane were once respected, their leadership role has now been replaced by a Religious System.

Now many educational organisations around the world are reorienting their curricula programmes to address sustainability issues. However, the Curriculum Development & Research Centre (CDRC) in Kiribati on the other hand, is slowly progressing. They do have some topics relating to ESD for the Primary and Junior Secondary School (JSS) level. For example, at Primary level they have topics like "Caring for our Water", "What to do with wastes"

and so forth. And at JSS level they have a topic on "Man and His Environment". Also, they are still in the early stages of their curriculum reform.

On the other hand, there is no topic for the Senior Secondary level. Maybe the problem can be blamed on these two divisions: the CDRC under the Ministry of Education, Youth & Sport Development (MESD) and the Environment Division under the Ministry of Environment, Lands & Agriculture Development (MELAD), because they have not modeled teamwork between the two bodies.

The problem is palpable; there is no consensus between these two ministries. After interviewing four participants from the two ministries, it is evident that there is finger pointing from one ministry to another. No-one wants to be responsible for the ESD missing in the national syllabus. Therefore, an agreement and compromise should be attained between these two ministries in order for ESD to be implemented.

Furthermore, after the interviews, the results proved that all participants want ESD to be formalised into the national syllabus at secondary level. Since, it is one way to decrease the waste problem where people know how to manage their waste properly and allows them to sort rubbish as a waste or rubbish as a resource. ESD should be implemented to educate people on waste management issues.

Even with many activities associated with waste problems practiced by the Environment Division, people are still complacent and ignorant of this growing waste issue. Ideally, there is a consensus amongst the 65 participants that they desire the ESD to be included at secondary level. This is an indication that people are aware of the waste issue and the need for ESD to be formalized is crucial to help minimize waste problems.

Formalising ESD into secondary school syllabus is the first step towards acknowledging waste problems on South Tarawa. But unless there is no cooperation between stakeholders, waste issues will increase dramatically and sustainability will not and cannot be achieved.

5.2 Recommendations

To achieve widespread incorporation of Education for Sustainable Development (ESD) in Kiribati, these are some of my recommendation to be considered:

1. The development of a broad based policy framework which includes relevant departments, the Recycling site, the private sector, research institutions, financial institutions, support and community based groups such as NGOs. Government through the Curriculum Development and Research Centre (CDRC) and the Environment

Division could provide leadership in steering the process. It may be necessary to enlist international or regional organisations to support local institutions such as CDRC that may not have the experience in setting up ESD into the syllabus.

2. Broad policy strategies which can support alternative ways to minimize the problems of rubbish are already in current government policy, but this political will has not yet been translated into enhanced practical activities. This is probably because of the planning priorities and the fragmentation of efforts to promote ESD. Also, due to the shortage of staff and financial problems that government departments experienced throughout the year, it makes it impossible to follow up initiatives to promote ESD. What is required are conducive and enabling policy instruments crafted in a multi-stakeholder and interactive framework. This approach enables more ideas to be generated and better strategies to be formulated.
3. Restructuring of the secondary school syllabus to incorporate ESD into different subjects in order for students to get inter-disciplinary views. Integrating ESD into subjects will get students and the public to learn about ESD without knowing that they are learning it, rather than establishing it as a new subject.

People have certain resistance to new things, therefore if ESD is incorporated into existing subjects, students will learn about ESD in the different subjects they learn, without realizing that they are learning a new topic. After several years, review this and if incorporating ESD into subjects is not a success or there is reason to build it in as a new subject, then develop it accordingly. However, if incorporating ESD into subjects work, then continue implementing the syllabus.

Even though this research looks at incorporating ESD at secondary level, it is important to include ESD at all levels of education starting from pre-school because it provides a fundamental period for the formation of environmental attitudes (Chapman & Sharma, 2001, p.269) up to tertiary level to reinforce what they have learned from previously.

4. Education and awareness of rubbish problems should be widespread and consistent to help change people's negative attitudes towards rubbish. Especially with the case of rubbish in Kiribati, publicising the consequences of rubbish with relation to peoples' health will motivate the public to act. Smoke awareness in Kiribati was successful because the media reports were consistent and related to people's health. If smoke awareness works in Kiribati in this way, then rubbish awareness will succeed too, if they keep referring the dangers of rubbish to peoples' health.

In the process of education and awareness programmes, there is optimism that people's attitudes of wanting rewards for the job they do will disappear. They will learn that everything they do to clean up the environment is for their own benefit, and will not need money in return for their work. All stakeholders should do their share of educating the public but community based organizations and NGOs could take the lead.

5. In Kiribati, religious figures such as pastors and fathers are well respected. Therefore, involving these people in the curriculum development will give them voice to the holistic views that people should follow. The government departments should convince Heads of Churches found in Kiribati, that preaching about love would not be enough to save our country. Preaching about the destruction of land by people is one way that will make people act to the increasing problems associated with rubbish.
6. Providing more resources for rubbish collection and training of rubbish collectors will certainly improve the situation. For example, supplying four colour coded big containers for plastics, paper, bottle and the fourth for general wastes. Green wastes should be returned back to earth. The four colour-coded containers will be provided for every 5 households to have their rubbish in.

Training of rubbish collectors to do their job well is necessary. Firstly, is the concern with their safety where they must know what sort of materials to use to protect themselves from the dangers of rubbish when they are working. They should also collect and leave rubbish containers of the households that combined their rubbish in one container. Then, reporting to authorities of the specific households who do not follow the rules to be fined.

7. Set up a policy that would include private sectors to do waste management activities. The policy will find alternatives for private businesses to employ that will assist them in minimising waste problems.
8. Implementing ESD requires widespread advocacy and a responsible media committed to encouraging informed and active citizens.
9. The Environment Division had a trial scheme with primary schools on South Tarawa. The scheme involved schools to sort their rubbish and build their gardens. After sorting, they use the decomposable rubbish in their gardens. It is a competition between these primary schools and at the end of a term, the winner, second and third school will get a prize. The trial was a huge success, so the ED decided to continue the effort.

This kind of activity should be introduced at Junior Secondary and even Senior Secondary Schools. Especially, building gardens for each schools because this will certainly used up the green wastes they have at school but not wind up in landfills.

10. E-Waste known as electronic waste like used television set, computers, radio, mobile phones and so forth should be carefully monitored. Importing of these products into Kiribati has increased over the years and these items are considered hazardous by the Basel convention of 1989 (Basel Action Network, 2004, p.40). Especially "mobile phones should be closely monitored because they are small, portable and its usage is experiencing unprecedented growth in consumption worldwide. This growth, combined with their rapid obsolescence has created a mobile phone waste deluge (Basel Action Network, 2004, p.41)." Moreover, mobile phones are now widely used in Kiribati, the more reason to closely monitor its usage.

How To Make a Banana Circle

1. Dig a pit 2 paces across and one arm length deep

2. Line the pit with cardboard

3. Fill the pit with leaves until it is piled high

4. Plant 4 bananas around the edge and water them

5. Sweep up the leaves every day into the Banana Circle. You can even throw pit! Tom onto the pile and washing up water

Do not throw organic stuff in the rubbish for the Council, Save it for yourself and grow bananas to eat!

Appendix 2: Secondary school locations on South Tarawa.

Appendix 3: Symptoms, diagnosis and cure about this curriculum overcrowding problem.

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TABLE I. Systemic challenges in environmental education: symptoms, diagnosis and cure.

Systemic challenge	Symptom	Systems diagnosis	Systems cure
1. COMMITMENT to provide room for EE in the education system	<p>National efforts in EE are led by organisations outside the school rather than the Ministry of Education, 'by-passing' those who are actually responsible.</p> <p>Responsibility for EE falls on a few teachers rather than the principal and school as a whole. Individual teachers become burned out.</p>	<p>School leadership at national, regional, local and school level lacks the commitment needed to take responsibility for the educational change process.</p>	<p>Ministry of Education takes the lead by developing clear policy, strategies and action plans for EE, linked to other priority areas when possible.</p> <p>Ministry of Education communicates/clarifies priorities to schools and follows up. For example, schools must demonstrate that teaching plans reflect the principles, contents and methods of EE.</p> <p>Adapt processes of planning at school level to allow for interdisciplinary, action-oriented EE.</p>
2. CURRICULUM mandating EE in the education system	<p>Claims that there is 'no room' for EE in local curriculum plans and that the curriculum is already full of necessary knowledge.</p> <p>Teachers interested in EE struggle to make room for EE in school teaching plans.</p>	<p>Curriculum guidelines don't give a clear enough mandate for EE.</p>	<p>Revise the curriculum guidelines: to clarify that EE is a high priority and mandated area; to clarify the goals, contents and methods of EE; to clarify how EE can give effective learning of knowledge and skills in language, mathematics, social sciences, etc.</p>
3. COMPETENCE to implement high quality EE in schools	<p>Teachers feel that EE falls outside their area of competency</p> <p>Teachers don't understand the nature of EE and are unmotivated.</p>	<p>Teachers and schools lack competence to implement existing curriculum guidelines.</p> <p>Basic and in-service teacher training gives insufficient competence in EE contents and methods.</p>	<p>EE and sustainable development should be integrated into basic and in-service teacher training.</p> <p>School-level planning processes need revision and improvement</p> <p>More teachers should become involved.</p>

Appendix 3 - Cont'd

<p>EE is assigned to biology/natural science teachers and classes.</p> <p>Teachers don't understand the methodology of EE, including new methods such as project work, problem solving, interdisciplinarity, field methods, action orientation, experience-based learning</p>	<p>Teachers have too narrow disciplinary competence and are not good at cooperating with each another.</p> <p>Older teachers cannot adapt to should be integrated into basic interdisciplinarity, field work, project work, community work.</p>	<p>A good social atmosphere needs to be created for cooperation among teachers.</p> <p>Better support services are needed, such as national and international EE programmes providing access to top competence.</p> <p>A new generation of teachers who understand the contents and methods of EE.</p>
<p>4. COOPERATION between schools and actors outside the school</p> <p>EE does not produce the intended changes in pupil attitudes and behaviour.</p> <p>EE is not action-oriented.</p> <p>Environmental studies methodology is unclear and the quality variable.</p> <p>Schools are isolated from the real world.</p> <p>Results from schools are not used by society.</p>	<p>Teachers lack good models and examples of EE.</p> <p>Schools lack cooperative partners (in the local community, nationally and internationally) who can give pupils meaningful tasks, ensure high quality methods and who will use the results.</p> <p>Local Agenda 21 work must include schools</p>	<p>Networks for cooperation with businesses, government departments, research institutions at several levels.</p> <p>School support and quality control through EE programmes offered by various ministries and research/management institutions</p>

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