GENERAL SIR JOHN KOTELAWALA
DEFENCE UNIVERSITY
SYNDICTATE 06
INTAKE 28

SUSTAINABLE DEVELOPMENT AND
ENVIRONMENTAL PROTECTION

SCRIPT
1. **TOPIC**: SUSTAINABLE DEVELOPMENT AND ENVIRONMENTAL PROTECTION

2. **SYNDICATE NO**: 06

3. **MILITARY DS**: LT CDR. (C) MMSDS DHARMADASA
   **MILITARY DS**: MAJ. AAVL ADIKARI

4. **ACADEMIC DS**: MISS. P JAYASURIYA

5. **ENGLISH INSTRUCTOR**: MRS. CJ KOTHALAWALA

6. **SYNDICATE LEADER**: 3827 TUO PD KODITHUWAKKU

7. **SYNDICATE MEMBERS**:
   - (a) 3823  C/SGT  PMP  PANNALAGE
   - (b) 3758  C/CPL  DCN  HAPUARACHCHI
   - (c) 3854  C/CPL  WDK  GUNASOMA
   - (d) 3721  O/CDT  MPP  FERNANDO
   - (e) 3739  O/CDT  LAMASB  LIYADIPITA
   - (f) 3752  O/CDT  MASC  KARUNARATHNA
   - (g) 3784  O/CDT  HS  RANAWAKA
   - (h) 3805  O/CDT  HAJ  RANAWEERA
   - (i) 3819  O/CDT  AKS  SILVA
   - (j) 3838  O/CDT  HPS  FERNANDO
   - (k) 3851  O/CDT  KSBMRLWDB LENAWALA
Chapter 1

(a) Introduction
(b) Aim
(c) Objectives
(d) Limitations
(e) Methodology

Chapter 2

(a) Sustainable Development and Its Constituents
(b) Importance of Environmental Protection for Sustainable Development
(c) Challenges
(d) Weaknesses of Environmental Protection

Chapter 3

Recommendations

Chapter 4

(a) Conclusion
(b) References
CHAPTER ONE

INTRODUCTION

1. The term ‘Sustainable Development’ can be defined as the “Environmental, economic and social well-being for today and tomorrow”. This definition covers a vast range of fields including economy, technology, politics, environment, etc. Thus, it is quite difficult to narrow down the scope only to ‘Sustainable Development and Environment Protection’.

2. As needs of human beings escalate on a daily basis, the consumption of resources increases. This trend is universally accepted and cannot be changed within a month, year or even in a decade. The more the consumption of resources increases the more it becomes a barrier to the sustainable development of the world.

3. Developed countries that have a stable economy and steady social progress such as the USA, UK and Australia can counter this problem of increasing needs of people by using their high tech-low power consumption systems. Those countries invest both financial and non-financial capabilities in resource management and sustainable consumption planning. However, overconsumption of resources has not been fully controlled by those so-called nations and still the problem is being solved.

4. It is obvious that the third world countries and developing countries are poverty-stricken. Hence, the problems that they face are not the same as developed countries. The failures of these countries to maintain sustainable development neutralizes the efforts taken by the developed countries. Thus, inexpensive and less sophisticated methods need to be introduced and implemented in order to strike a balance in the resource consumption of the world.

5. Sustainable consumption planning should ensure the happiness of all people while protecting resources and environment. The system should address the problems in consumption. Though this is a challenging process, the solution for this problem is not that much far away from the system itself. It is important to examine the history, life styles and consumption of our ancestors reveal the evidence of how they had taken actions in order to have sustainable development while protecting environment. This is not to say that we as a world have to go back to the old days and live in a primal manner, but to embrace the simple methods of preservation which are practical, efficient, easy to adopt and cheap.

6. This might not make a huge difference, if you look at the complete picture. However it will change the attitude of people and that will be a fresh start to find an effective and cheap sustainable consumption planning.
7. The aim of this research is to suggest fast and inexpensive methods that can be easily adapted into the current sustainable development process in order to protect the environment.
OBJECTIVES

8. The main objective of this study is to identify and analyze the recent development projects of Sri Lanka and to suggest the methods of protecting environment in order to transfer the development process into a sustainable development process. The following objectives are included in the above mentioned main objectives.

(a) To identify the current methods used in Sri Lanka to achieve sustainable development.

(b) To determine the impact of the recent development projects on the environment.

(c) To recommend methods to be implemented in order to protect the environment while stepping up for sustainable development.
LIMITATIONS

9. The topic sustainable development includes a vast subject area that cannot be discussed only with regard to the issues related to the environment. Sustainable development and environment protection generally means ensuring the well-being of society and environment in the process of development. This study is limited to the sustainable development of Sri Lanka and the methods used the Sri Lankan Government to achieve sustainable development while protecting the environment.
10. (a) Primary data
Primary data were gathered from interviews conducted with the relevant personnel by the syndicate members.

(b) Secondary Data
Secondary data were gathered from relevant books, journals, internet, treatises, conventions as well as international and local data records.
CHAPTER TWO

SUSTAINABLE DEVELOPMENT AND ITS CONSTITUENTS

11. Sustainable Development is a pattern of economic growth in which the use of resources aims to meet human needs while preserving the environment, so that those needs can be met not only in the present, but also for generations to come. The term 'sustainable development' was used by the Brundtland Commission which coined what has become the most often-quoted definition of sustainable development: “Development that meets the needs of the present without decreasing the ability of future generations to meet their own needs”. Alternatively, sustainability is defined as the ability to meet the needs of the present while contributing to the future generations’ needs”. There is an additional focus on the present generation’s responsibility to improve the future generation’s life by restoring the ecosystem damage and causing series damages to the environment.

12. Sustainable development combines the concern of the existing natural systems with the challenges faced by humans. In 1970s, the terms "sustainability" was used to describe an economy "in equilibrium with basic ecological support systems." Ecologists have defined it as “The Limits to Growth”. It is also described as the alternative of a "steady state economy" in order to address environmental concerns.

The concept of sustainable development is often categorized into three constituents.

(a) Social sustainability
(b) Economic sustainability
(c) Environmental sustainability

Social Sustainability

13. Social Sustainability is the core element of sustainability. Essentially, sustainability is about creating and maintaining quality of life for people. In that regard, financial and environmental factors are important, but they are both means to the end, rather than ends in themselves. Therefore, by working towards financial and environmental sustainability, we are already working towards social sustainability. However, the social element of sustainability does have a number of its own distinct criteria. Social sustainability involves directly protecting the mental and physical health of all stakeholders, encouraging community,
treating all stakeholders fairly and providing essential services. These elements are essential because a healthy society cannot be developed and maintained if the population are in poor health. If they are treated unfairly, then it will only be a matter of time before they protest, and community fosters the sense of personal and collective responsibility necessary for a society to operate effectively without degenerating into chaos. It is also critical that essential services are effectively delivered to everyone who needs them.

A socially sustainable system must adhere to the following tasks.

(a) Protecting the mental well-being of all stakeholders
(b) Protecting the physical health of all stakeholders
(c) Encouraging the community
(d) Treating all stakeholders fairly
(e) Providing all stakeholders essential services

**Economic Sustainability**

14. Economic sustainability implies a change in the way goods and services are produced, not merely an increase in production achieved using the old methods of production on a wider scale. It also involves improvements in a variety of indicators such as literacy rates, life expectancy, and poverty rates. In addition to increasing private income, economic growth also generates additional resources that can be used to improve social services such as healthcare, safe drinking water etc.

15. Economic growth, measured in productivity and consumption, is actually rising with the rate of pollution. And again, we are caught in a circle in which we pay our attention to sustainable development as a solution to avoid destruction, but we see the solution in unchanged economic growth.

**Environmental Sustainability**

16. Environmental sustainability is the process of making sure current processes of interaction with the environment are pursued with the idea of keeping the environment as pristine as naturally possible based on ideal-seeking behavior.

17. An "unsustainable situation" occurs when natural capital (the sum total of nature's resources) is used up faster than it can be replenished. A steady state economy is an economy of relatively stable size. It includes stable population and stable consumption that remain at or
below carrying capacity. The term typically refers to a national economy, but it can also be applied to the economic system of a city, a region, or the entire planet. Sustainability requires that human activity only uses nature's resources at a rate at which they can be replenished naturally. Inherently, the concept of sustainable development is intertwined with the concept of carrying capacity. Theoretically, the long-term result of environmental degradation is the inability to sustain human life. Such degradation on a global scale could imply extinction for humanity.

Table: Environmental Sustainability

<table>
<thead>
<tr>
<th>Consumption of Renewable Resources</th>
<th>State of Environment</th>
<th>Sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than nature's ability to replenish</td>
<td>Environmental degradation</td>
<td>Not sustainable</td>
</tr>
<tr>
<td>Equal to nature's ability to replenish</td>
<td>Environmental equilibrium</td>
<td>Steady state economy</td>
</tr>
<tr>
<td>Less than nature's ability to replenish</td>
<td>Environmental renewal</td>
<td>Environmentally sustainable</td>
</tr>
</tbody>
</table>

18. Sustainable development does not focus solely on environmental issues, and it can be conceptually broken into three constituents: environmental sustainability, economic sustainability and sociopolitical sustainability. The outcome report of the United Nations 2005 World Summit refers to the "interdependent and mutually reinforcing pillars" of sustainable development as economic development, social development, and environmental protection. Further, indigenous people have argued that it has a fourth pillar of cultural diversity.
**Economic Growth and Environmental Protection**

19. Sustainable development is said to set limits on the developing world. It is being argued that while the countries that are recognized as the developed countries have been polluted significantly during their development. The same countries encourage the third world countries to reduce pollution, which sometimes impedes growth. Sustainability requires that human activity only uses nature's resources at a rate at which they can be replenished naturally. Theoretically, the long-term result of environmental degradation is the inability to sustain human life. Hence, degradation on a global scale could imply extinction of humanity.

20. Trade is an important factor which has an impact on both growth and environment. If trade is distorted by subsidizing fuels that pollute, it would result in environmental pollution. On the other hand, trade liberalization offers a particularly powerful impetus to growth and it is entirely compatible with sustainable development. In fact, sustainable development encompasses the growth of efficient developmental patterns.

21. However, the conflict between economic growth and sustainable development is not always necessary. Economic growth does not always contribute to environmental degradation. In the early stages of growth, quality of environment generally deteriorates, but at higher levels of per capita income, it improves. The link between income and pollution arises because the composition of output changes with growth in favor of newer, cleaner technologies. Thus, sustained economic growth is the key to sustainable development.

22. Pollution tends to be related with population, and population growth is related to income growth. Higher average income and output levels are only good for the environment when associated with policies that lessen demographic pressures by reducing personal risk and the need for large families. Also, improvements in the security of employment, education and training, pension policies, social security and the employment of women are especially important in this respect.

23. A relatively new term 'green development' is generally differentiated from sustainable development. Green development prioritizes environmental sustainability over economic and cultural considerations. There are other views that consider environmental and social challenges as opportunities for development. This is particularly true in the concept of sustainable enterprise that frames these global needs as opportunities for private enterprises to provide innovative and entrepreneurial solutions. This view is now being taught at many business schools in the West.
IMPORTANCE OF ENVIRONMENTAL PROTECTION FOR SUSTAINABLE DEVELOPMENT

24. Sustainable development is a pattern of economic growth in which resources are used to meet human needs while protecting the environment, so that those needs can be met not only in the present, but also for generations to come. Furthermore, there is an additional focus on the present generation’s responsibility to improve the future generation’s life by restoring the previous ecosystem damaged and reducing environmental pollution.

25. Environmental protection means that human beings consciously protect and reasonably make use of natural resources, and at the same time, they prevent natural environment from pollution and destruction. Meanwhile, environment protection has the meaning of the general terms of all kinds of actions taken by humans in order to solve the practical or potential environmental issues: coordinate the relationship between humans and environment, and ensure a sustainable economic and social development.

26. Controlling the environmental pollution resulted from production and life activity includes controlling the “three wastes” (waste water, waste gases, and waste residues), dust and radioactive substances, noise, vibration, rancidity and electromagnetic radiation resulted from industrial production. It also includes the pollution of harmful gases, liquid, noise caused by transportation, maritime shipping emissions, toxic and hazardous chemicals in industrial and agricultural production and people’s living, smoke emissions, sewage and garbage caused by urban life.

27. Preventing environmental damage caused by the construction and developmental activities includes prevention of environmental pollution and destruction caused by large-scale water conservancy, railways, highways, major ports, airports, large industrial projects and other projects.

28. Protection of natural environment includes protecting rare species and their living environment, the natural history of specific sites, geological phenomena and landscape. Besides, the content of environmental protection also includes urban and rural planning, control of water and soil loss as well as desertification, forest planting, control of population growth and distribution, rational distribution of productive forces. Environmental protection has become the world’s governments’ and people’s common action and the main tasks. Countries have formulated and promulgated a series of environmental protection laws and regulations to ensure its implementation.
29. The environmental protection of the earth focuses on the governance and protection. As the land has already been polluted, it should be protected in line with treatment. As for the land (soil, mountains, continental shelf) with previous pollution, the best way is to treat it via strengthened measures and restore to their former outlooks.

30. Water is an important substance that human being’s existence relies on. Clear water can bring people beautiful environment of luxuriantly green plants, birds’ twitter and fragrance of flowers, quiet and comfort and picturesque beauty. Talking about how to manage and deal with water pollution, we must fully aware of the fact that water is so closely related to social production and life, which have been conditioned by water scarcity, water shortage and water pollution.

31. Most importantly, water treatment plays a key role to solve the current emergency situation. Therefore, the area of water treatment involves in very broad range, and forms a huge industrial application, which has the tendency to overpass “natural water”. So there is no argument that the environmental protection plays a key role to achieve sustainable development.
COMMON CHALLENGES

32. In comparison with other South Asian countries, Sri Lanka probably makes a greater effort to conserve its environment. Nevertheless, limited commitment and dedication from both public and the Government have created serious environmental threats in recent years. Series of questions concerning current challenges of environmental conservation include deforestation, freshwater pollution, air pollution, noise pollution, soil erosion, wildlife poaching, coastal degradation, and mangrove reduction in Sri Lanka. Environmental conservation is a broad theme which is primarily focused on preservation and improvement of the environment. In addition, it includes activism and lobbying in order to protect natural environmental and ecosystems. Today, globally also large number of international institutions are working to conserve the environment more than ever due to the threats that humans have created on the natural environment.

33. Sri Lanka is an island which has been identified as one of the top biodiversity areas in the Asian region. Sri Lankan’s natural forest resources are amongst the most floristically prosperous in Asia, and it has the highest density of species diversity. However, recently anthropogenic threats to its forest and other natural resources (e.g., coastal, rivers, soil, fauna, flora, etc.) have increased exponentially.

**Deforestation**

34. Deforestation is one of the most serious environmental issues in Sri Lanka. In the 1920s, the island had a 49% forest cover but by 2005 this had fallen by approximately 20%. Sri Lanka lost an average of 26,800 ha of forests per year. This amounts to 1.14% of average annual deforestation rate. Between 2000 and 2005, the rate accelerated to 1.43% annually. Deforestation rates of primary cover have actually decreased 35% since the end of the 1990s. This can be identified as one of the major problems. The main reasons for this problem is illegal cutting down of trees for households and financial purposes.
Soil Erosion and Dam Siltation

35. Soil is one of the primary resources for survival of life on earth. Under the Sri Lanka Soil Act (1996) there are several institutions responsible to protect soil resources. The institutions are ministries and other authorities that focus attention on environment, land, Mahaweli development, housing, highways, plantation industries, finance and planning, mines and minerals, forestry and irrigation. The Soil Act has clearly proposed measures in order to protect soil resources from various damages. Although soil conservation regulation is well outlined in the legislation, the implementation of such regulation is very limited. Due to poor implementation of regulations and lack of public awareness, rich soil in the hill country has been eroded. One obvious repercussion of soil erosion is reservoirs’ sedimentation. For example, more than 40% of the full capacity of the Polgolla Dam is filled with silt.

Garbage and Pollution

36. Increased garbage and environmental pollution are major issues in Sri Lankan urban environments. Moratuwa, Kandy, Colombo, Matale, Gampaha, Negombo are some of the municipalities which are currently suffering from increased garbage pollution owing lack of proper dumping or recycling methods. At present infrastructure for garbage collection are lacking in most municipal areas. This has increased uncontrolled scattering and dumping of garbage everywhere in the country including urban and suburban areas. It has increased the problem of stray animals including wild elephants and monkey in some areas feeding on garbage.

37. The increased garbage quantity also causes slower water-flow in many drainage channels and provides breeding places for disease vectors such as rats and mosquitoes. Kandy Meda-Ela is one of best examples for this problem. Open dumping sites (e.g.Gohagoda in Kandy) cause pollution of ground and surface-water sources. Open burning of waste without any government regulation is widespread in the country and cause bad smell and air pollution in neighborhoods. It contributes to atmospheric pollution and may cause serious health problems.

Wildlife Poaching

38. Sri Lanka is an island and cannot bear to lose its wildlife resources because there are no adjoining land masses which could support wildlife migration like other large continents such as Africa, South America, North America or India. Poaching wildlife has increased during the last five years. Specifically, leopard and monkey populations in Sri Lanka have
become increasingly threatened. Wild boar, elephants, wild buffalo, deer are a few other wild species that face severe threats due to increased human activities.

39. Since human settlements have expanded, and forests have been cleared, invariably it is leading to conflicts not only with elephants but with other wild animals as well. It should be noted that when there is a human-elephant conflict in some areas, the traditional answer has been to “translocation” the elephants, evacuate them from their habitat and place them in a new environment with the expectation that it would settle down them without any conflict. It is very unprofessional that experts and policy makers do not identify the root of the problem before taking such an action. For example, the Environment and Natural Resource Minister Champika Ranawaka is planning to relocate elephants from Udawalawe National Park to Ritigala Nature Reserve due to lack of space in Udawalawe. This proposal has created serious tensions between the local people of Ritigala and the Ministry.

**Coastal Degradation**

40. Sri Lanka has 1,585 kilometers of beautiful coastal zone. During the last two decades increased human induced activities have caused severe threats to the coastal regions. Unsustainable coastal resource utilization such as coral mining, sand mining, cutting mangroves etc has increased around the island. Also lack of planning and management of resources have intensified pollution and erosion. The worst affected is the southwest coastal zone.

**Freshwater Pollution**

41. Water resources are at times, subjected to conflicting multiple demands such as domestic uses, agriculture, health and sanitation, inland fisheries, hydro power generation, industrial and commercial uses, recreational and other activities. Mass scaled urbanization and lack of adequate waste disposal and management facilities has resulted water pollution by discharging of domestic waste into water ways. The larger cities such as Colombo, Galle, Jaffna and Kandy have serious problems in the disposal of liquid waste, sewage, industrial effluents and industrial and domestic solid waste³.

**Urban and Industrial Wastes**

42. Increased urban and industrial waste is a serious environmental problem in Sri Lanka. Almost every city in the country faces industrial waste and lack of proper dumping or recycling solutions. Colombo is the most affected urban area which faces a serious threat with
respect to the disposal. According to Perera (2003) of around 1500 tons of solid waste materials are released to the environment per day. Perera (2003) states that roughly 80-85% of municipal domestic solid waste produced is being released in Sri Lanka consist of organic waste, including food items and garden-related waste. The balance, 15%-20% consists of paper, glass, plastics, metals and other inorganic materials. One of the recent adverse consequences is the lack of proper urban solid waste management which has increased the risk of dengue fever in the country.

**Destruction of Mangroves**

Sri Lanka is gifted with natural resources. Many estuaries and lagoons are fringed with diverse mangrove forests with high biodiversity. According to Karunathilake (2003) although the total mangrove cover is very small – around 0.1% to 0.2 % of the total land area, it plays a major role in preventing coastal erosion and support nesting and reproduction for fish and birds. Further, Karunathilake (2003) explained that, about 25 different mangroves have been identified in Sri Lanka. Large mangroves can be found in lagoons such as Kalpitiya, Batticaloa, Madu Ganga, Trincomalee, Jaffna, Potuvil, Panama, and Periyakalappu. Mangroves also help people sustain their livelihoods in fishing, timber, and various other socio-economic activities. In recent years mangrove resources have been drastically damaged or reduced due to various illegal activities. The increased human activities such as illegal timbering, clearing for settlements and business, dumping municipal and urban waste, landfilling for housing development, cutting firewood, and practical demonstration for security reasons in the Northern and Eastern districts have caused serious pressure to the mangroves. This has intensified flooding and erosion in the lagoons and coastal areas.

**Air Pollution**

Although Sri Lanka has an impressive portfolio of environmental legislation and a set of standards for the quality of air, poor implementation of the law results in poor air quality in urban areas. During peak traffic hours (between 6 a.m. to 8.30 a.m. and 4 p.m. to 6 p.m.), urban areas such as Colombo, Kandy, Gampaha, Negombo, Kegalle, Kurunegala, Moratuwa, Galle, Kalutara, and Matale face severe air pollution. Carbon monoxide (CO) – a colorless and toxic air pollutant-is produced in the incomplete combustion of carbon-containing fuels, such as gasoline, natural gas, oil, coal, and wood. The largest anthropogenic source of CO in Sri Lanka is vehicle emissions. Breathing the high concentrations of CO, typical of a polluted environment leads health effects that include headaches and increased risk of chest pain for
persons with heart diseases. It is obvious that vulnerable groups such as children and pregnant mothers suffer from unclean air.

**Lack of Regulations and Commitments**

45. Although Sri Lanka has environmental education, still it lacks the political will and commitment to protect the environment. The war contributed to the destruction of the environment. Now the war is over, and it is time for the Government and public to rethink and act progressively to protect the environment for future generations.

**Recent Development Projects in Sri Lanka**

46. Sri Lanka is a fast developing country in the South Asian Region in the post-war era. The new development projects launched can be categorized into four major sectors.

   (a) Transportation  
   (b) Power Generation  
   (c) Agriculture  
   (d) Other

**Transportation**

47. The transportation service can be further categorized into three sectors.

   (a) Land Transportation  
   (b) Air Transportation  
   (c) Maritime Transportation

48. In considering the recent development projects in the transportation sector of Sri Lanka, the following projects have been launched and some of them are ongoing projects.

**Land Transportation**

49. Under the Mahinda Chinthana development plan and Mahinda Chinthana Idiri Dekma, the following projects have been launched to develop rail and road transport.

50. The total distance of the highway system of the country is 280 km. Also, the estimated cost for its development is around Rs. 280 billions.
**Southern Highway**

51. The Southern Expressway consists of 96km. The newly constructed Galle Port access road of length 5km will connect this expressway to the Galle city. The expected travel time from Kottawa to Pinnaduwa (Galle) takes about one hour. The section from Galle to Matara includes 35km and it is under construction and scheduled to be completed by 2013.
Colombo-Katunayake Highway

52. The Colombo-Katunayake Highway which is under construction creates a high mobility link between Colombo and the Bandaranayake International Airport. This enables a person to travel to the airport within 20 minutes. The length of the expressway is around 25 km, starting from the New Kelani Bridge and ending at the Airport Access Road at Katunayake. The total estimated cost for the project is US$ 292 million. The proposed Colombo-Katunayake Expressway will provide a high-speed road link between Colombo City, and the Free Trade Zone and Bandaranaike International Airport at Katunayake. The Expressway would be a gateway to accelerate infrastructure development in the area which is vital for the setting up of more business ventures while facilitating current business establishments in the area. With the construction of the Expressway, the current travel time of the motorists who travel through the Peliyagoda-Puttalam (A3) Road is also expected to be reduced.
Rail Transportation.

53. The roads in North and East areas and rehabilitation of railways are under construction is about length of 160 km.

54. The other railway network from Medawachchiya to Mannar and Kankasanthurai is about 280km.

Air Transportation

55. Ports and terminals are important for the economic development. Thus, Mahinda Chinthana Idiri Dekma has described constricting new airports. Mattala International Airport is an international airport currently under construction in Mattala in Hambantota. Upon completion, the Mattala International Airport will be the second international airport in Sri
Lanka. It will primarily serve the city of Hambantota, along with the southern and eastern parts of Sri Lanka.

56. Further, initial plans were taken to build an international airport at Weerawila to serve the southern part of Sri Lanka, but these plans were not implemented due to environmental concerns. The site was then moved to Mattala, a small town 15 kilometers north in Hambantota. Construction was valued at $200 million for the first phase of the airport and started in November 2009. Moreover, the largest aircraft in the world known as A 380 is scheduled to be landed in this airport.

Maritime Transportation

57. Maritime transportation is waterborne transportation that includes both sea and inland water transportation. Recently, the Government has started constructions of harbours. It has also expanded the Hambanthota Harbour and Colombo Southern Harbour.

Magampurathota Mahinda Rajapaksha Harbour (Hambanthota)

58. The Port of Hambantota (also known as the Magampura Port) is a maritime port in Hambantota. The Port is built inland and operated by the Sri Lanka Ports Authority.
Expanding Colombo (South) Harbour

The expansion of Colombo (South) Harbour includes an area of approximately 600 hectares and also it has 3 terminals each having 1,200m length and facilities to accommodate 3 berths alongside. The major activities of mitigation and monitoring adopted to the project are as follows:

(a) Dredging and reclamation
(b) Breakwater construction
(c) Re-routing for sub sea oil pipe line
(d) Haulage and stock piling of quarried rock
(e) External arrangements for material supply
   1. Load out Point
   2. Quarrying
   3. Haulage of quarried products to Load out point
The Norocholai Power Station (also known as the Lak Vijaya Power Station)

60. The Norocholai Power station is a large coal-fired power station in Norocholai, Puttalam, Sri Lanka. Construction of the 900 MW facility was segmented into three 300 MW. Further, this power plant can be recognized as the first coal power plant in Sri Lanka. The total projecting site covers 95 hectares over the Puttalam coastal area.

Kerawalapitiya Power Plant

61. Kerawalapitiya Power Plant is built on 33 acres of Negombo, accompanied by seawater intake system. It has been designed and constructed using local expertise. This mega project is the largest combined cycle power plant in Sri Lanka. This project is implemented by West Coast Power, a subsidiary of the Government of Sri Lanka at a cost of US$ 295 million. The power plant operates with two types of power generating equipments - gas and steam.
turbines. The first stage showed the installation of two gas turbines generating 200MW to the national grid, while the second stage focused on the installation of the steam turbine producing 100 MW. In the second stage, the exhaust from the gas turbines is converted into steam.

62. Mahinda Rajapaksa Cricket Stadium in Hambantota was one of the successful development projects in Sri Lanka. It was built for the 2011 Cricket World Cup and hosted two matches in 2011. The stadium has a capacity of 34,300 people. This development project helps to develop rural areas of the country.
Housing programs

63. Providing standard houses to the people in settlements with deficient facilities and providing houses to the urban middle class people for an affordable price by using the urban lands in the best way possible is under the concept of formal urban colonization. Five programmes are to be implemented in the year 2011 and 760 standard housing units for the people in settlements with deficient facilities and 700 housing units for urban middle class community for an affordable price are to be built over the country under this project. More foreign capital is expected to be utilized in this project. An amount of Rs. 25,000 Mn is expected to be invested in this housing scheme system. Rajagiriya Housing Program, Anuradapura and Kandy “Ranawiru Gammana” are the main housing projects after the war.

64. Janasevana “Upahara” is also a development programme which has been launched under the housing programmes. A lot of small housing projects are ongoing in all rural areas of Sri Lanka under the Janasewana Upahara programme.
65. The newest test cricket ground located in Pallekale is another example of development.

Nelum Pokuna Construction Programme

66. “Nelumpokuna” Construction Programme is also one of the significant development programmes in the country. It provides economic and social advantages not only to the city but also to the entire nation.
WEAKNESSES OF THE ENVIRONMENTAL PROTECTION

67. The following negative effects of the development projects affect the environment.

   The project of the Mattala Air Port has an impact on the biodiversity of the area.
   
   (a) The airport is constructed blocking an elephant path way.
   (b) The noise of air planes and vibration badly affects people and wild animals.

Impact of the Harbour

68. The Government of Sri Lanka has identified the main advantage that Sri Lanka has gained due to its location by developing and constructing new harbours near the international sea route. However, these projects have a huge impact on the environment in those areas.

69. For instance, chemical composition level of water can be changed due to the construction activities and under-water rock blasting. Garbage of the sites would generate solid wastes. Also, oil leakages tend to cause soil pollution, and dust level of the air is increased. The noise level and vibration badly affect the residents in the vicinity. Further, there is an impact on fishery and aquatic environment due to constructions of sea oil pipe line and fuel filling activities.

Impacts of the Norochcholi Power Plant

70. Norochcholi Power Plant is an important project in Sri Lanka, but during its pre-development stages, numerous protests were carried out by the residents living near the project site, claiming that they were deceived by the Government.

71. Emissions of sulphur-dioxide contribute to acid rain, harming local agriculture fields. Discharge of waste water would cause coastal erosion. Also, discharge of warm water to sea negatively affects corals and aquatic environment. Coal dust released from the station may cause respiratory diseases of the residents living in the vicinity, and also it affects the ground water quality. Emissions of carbon dioxide and carbon monoxide contribute to greenhouse effects and global warming. Noise level badly affect the residents in the vicinity.

72. Kerawalapitiya Power Station extends up to Muthurajawela marsh which is a protected wetland of south Negombo. The gas released from the power station would destroy the biodiversity and it negatively affects the animal species living in the area.
Disadvantages of the Developmental Projects related to Construction

73. Construction sites are found both within urban and rural areas, often in the close proximity of houses. Due to their proximity to houses and the materials used, construction sites may generate pollution. This involves air, water, soil, and noise pollution. Additionally, construction work may reveal existing subsurface pollution. In such situation, construction work should be stopped. Thus, construction creates pollution affecting both house owners and construction site owners. Moreover, construction workers (especially in the past) may be exposed to pollution.

74. Air Pollution - The air that breathes may be polluted due to the construction work. Apart from the noise, poor air quality is the most immediate pollution effect that may experience from a construction site. Airborne contaminants and volatile compounds are spreading around (mostly carried by wind) in the surrounding neighborhood.

75. Water Pollution – The surface water runoff and groundwater at and close to a construction site become polluted with various materials used in the construction work. The contaminants that can pollute the water include paints, diesel, oils, other toxic chemicals, and cement.

76. The immediate effect is creating turbidity in the runoff water and it affects surface and groundwater. Overall, water pollution from construction sites is underestimated and has a potential to generate severe environmental problems.

77. Soil Pollution – Soil at and around a construction site may become contaminated due to air transportation followed by deposition of construction contaminants as well as water runoff of construction contaminants. Soil may constitute a sink for pollutants and some of those may accumulate in soil and persists over longer periods of time. e.g. PAHs

78. In addition to the above mentioned disadvantages, the following negative effects can be found in projects related to construction.

Acidification

79. The soil and water pollution occurs due to acid precipitation and deposition usually through precipitation. This process disrupts ecosystem nutrient flows and may kill freshwater fish and plants dependent on more neutral or alkaline conditions.

80. Acid rain is characterized as containing harmful levels of sulfur dioxide or nitrogen oxide. It damages and potentially deadly to the earth's fragile ecosystems, Hence, acidity is measured using the pH scale where 7 is neutral. Values greater than 7 are considered alkaline, and values below 5.6 are considered acid precipitation.
Desertification

81. The spread of desert such as conditions in arid or semi-arid areas, due to overgrazing, loss of agriculturally productive soils or climate change is called desertification. It occurs due to the long term effects of the projects.

Water-Borne Diseases

82. Waterborne diseases are those in which bacteria survive in, and are transmitted through water. They are always a serious threat in areas with an untreated water supply.
The following are few recommendations for consideration.

84. To achieve sustainable development and environment protection, maximum usage of environmental management concepts and techniques (i.e. disposal management, green management etc.) should be included in the policies implemented by the Government.

85. In some situations, the Government face difficulties in managing the developmental projects in an effective way. Therefore, the Government has the responsibility of working in corporation with the private sector and military forces.

86. The development process of the Government projects do not require additional funds to achieve sustainable development. The requirement is designing them in environmentally friendly manner with the use of expertise. Further, consumption of energy and pollution should be reduced as much as possible.

87. People should be encouraged to use renewable energy sources that reduce environmental pollution and degradation of future resources. Renewable energy sources found in Sri Lanka are as follows.
   (a) Wind power – Mannar, Hambanthota, Puththalama
   (b) Hydro power- (large hydro power plants/small hydro power plants in upcountry
       There is no carbon dioxide emission, and the maintenance cost of hydro power is low. The waste water can be used for agricultural purposes.
   (c) Geothermal energy- in the experimental level
   (d) Solar energy- specially in the dry zone
   (e) Tidal power – all around the island
   (f) Ocean Thermal Energy Conservation (OTEC)- all around the island
   (g) Biogas technology- all around the country

88. Consumption of the natural raw materials should be reduced while adhering to the concept: “Reducing, reusing and recycling”.

89. Increase the attention given to the environmental protection and sustainability in the country by ensuring that environmental issues are addressed especially in relation to economic and sustainable development.

90. Promote collection and availability of high quality data for sustainability indicators and the development of appropriate new indicators.
91. Develop and implement voluntary programs and market-oriented policies that use economic incentives to foster sustainable and equitable outcomes.

92. Use education to inform and motivate the public, creating the social context for sustainable decision making by consumers, investors, businesses, and all levels of the Government.
CHAPTER FOUR

CONCLUSION

89. Sustainable development is achieving development that meets the needs of the present without decreasing the ability of future generations to meet their own needs.

90. Sri Lanka is a developing country. However, still it doesn’t have a plan for sustainable development. Not only that, the available resources and technology are inadequate to carry out such a process. Because of that, the methods and plans that have been proposed should be suitable to the economy and technology of Sri Lanka.

91. Trade policies may have an adverse effect on the environment. Thus, it is up to governments to initiate policy changes. Improved minimum standards and global cooperation for environmental management are vital steps to ensure that the benefits of economic growth may more quickly and effectively be reflected in an enhanced environment. Not only growth is sustainable, but it is a necessary condition for improved environmental management.

92. The concept of sustainable development is rooted in this sort of thinking. It helps us understand ourselves and our world. The problems we face are complex and serious. We can't address them in the same way as we created them. This research is to encourage a sustainable consumption plan which is simple, effective and practical.
BIBLIOGRAPHY

Newspapers
(a) Sunday Island – 08th April 2012
(b) Lankadeepa – 15th January 2012

Websites
(a) (Accessed 11 June 2012) Available at:<http://www.asiantribune.com>
(b) (Accessed 11 June 2012) Available at:<http://www.ebscohost.com>
(c) (Accessed 12 June 2012) Available at:<http://www.groundreport.com>
(d) (Accessed 13 June 2012) Available at:<http://www.topssrilanka.com>

Books
(a) National Environment Act.
(b) Mahinda Chinthana Development Plan
(c) Sri Lanka Environment Outlook
CERTIFICATION

LT CDR. (C) MMDS DHARMADASA
(MILITARY DS)

MAJ. AAVL ADIKARI

MISS. P JAYASURIYA
(ACADEMIC DS)

MRS. CJ KOTHALAWALA
(INSTRUCTOR IN ENGLISH)