

The study on solid waste management: Case study of Daffodil International University

Md. Atiqur Rahman



DEPARTMENT OF CIVIL ENGINEERING
DAFFODIL INTERNATIONAL UNIVERSITY

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Prepared by:

Md. Atiqur Rahman

ID: 162-47-195

Supervised by:

Rabaka Sultana

Lecturer,

Department of Civil Engineering,

Daffodil International University

Date: _____, 2020

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Approval

This is certify that the thesis entitled “The study on solid waste management: Case study of Daffodil International University” submitted by Md. Atiqur Rahman (ID: 162-47-195), Session Summer 2016, has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Bachelor of Science in Civil Engineering on _____ 2020.



Rabaka Sultana

Lecturer,
Department of Civil Engineering,
Daffodil International University

DECLARATION

I thereby declare that the research work reported in this thesis has been performed by us under the Supervision and guidance of **Rabaka Sultana**, Lecturer, Department of Civil Engineering, Daffodil International University, Dhaka. And this work has not been submitted elsewhere for any purpose (except for publication).



Md. Atiqur Rahman

ID:162-47-195

ABSTRACT

Solid Waste Management is one of the chief issues now a days . As a developing country like Bangladesh, we face lots of difficulties regarding this Solid Waste Management. In this research, researcher analyzed the present system of Solid Waste Management and finds out difficulties in this regards This study has been conducted following a mixed method approach. Two different research instruments are used to accomplish this research. In this study researcher choose Daffodil International University (permanent campus) as his study area. This study reveals that, in DIU vegetation and food waste are the core sectors of Solid waste. In order to find out the actual amount of Solid Waste, researcher took 3 different sectors like DIU permanent campus, girls and boys hostels of DIU. In this paper researcher recommends some ways and eco-friendly system for Solid Waste Management.

Key words: Daffodil International University (DIU) Solid Waste Management (SWM), Land filling, Decomposition.

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Chapter 1: Introduction:

A healthy and clean life as well as better environment are the basic demand for all. Waste is produced by different human activities. According to Rick, 2018

“Solid Waste refers to the range of garbage arising from animal and human activities that are discarded, as unwanted and useless”. SW is generated from industrial, residential and commercial activities in a particular area.

1.1: Hypothesis: The solid waste products are decomposed faster, when the temperature of the sun is constantly changing.

1.2: Justification of the Study: In our present generation, waste disposal has been limited in waste management rather than it has developed as a large industry.

In our day to day life, we carry out various types and amounts of waste by means of various activities. It can be anything starting from peel of vegetables, papers, garden waste, bottles and so on. Now a day's solid waste management has become a massive challenge, not only for Bangladesh but for the whole world. In order to save the environment from such a massive problem, we need to work cautiously to get rid of the waste. It is not an overnight process, it will take time, but it is doable. This study explores and explains some appropriate strategies and ways for managing solid waste.

Although it is a massive problem, but in this regard a tiny amount of research work has been organized in our country. In this case, this research paper will provide the in-depth understandings of the importance of solid waste management and the possible ways to tackle this massive problem. Hopefully, this research paper will contribute and stimulate further research on the solid waste management in other areas.

1.3: Objectives: The main objective of the study is to understand the existing solid waste management system and to implement compact solid waste management which is not only protective for human health but also for environment. In this regard the following objectives have been outlined:

1. To analysis and estimate the amount of solid waste generation in Daffodil International university.
2. To study and evaluate the existing solid waste management system.
3. To find out the difficulties at various stages of solid waste management system.
4. To asses the impact of final disposal of solid waste focusing on land requirement and landfill gas generation as well as the effect of landfill location on transportation cost.

To recommend some suitable ways for solid waste management system.

Chapter 2: Literature Review:

According to T. Srinivas (2005) solid waste management is the process of 'collecting, treating and disposing' of solid material because it is of no longer use. He also said that solid waste management is the process which include 'systematic, economic and hygienic matter'. Moudud Hasan (2016) defines, solid is the materials which has been rejected for 'further use'. In 2014,WHO termed Dhaka as one of the mostly polluted cities. According to World Air Quality (2018) reported Bangladesh emerges as the 'most polluted' country. Bangladesh of Bureau statistics (BBS)(2001) found the rate of urbanization in Dhaka was 28.4%. In 2019 the estimated population of Dhaka is 20,283,552. This entails the astronomical growth of solid waste. The issue of poor solid waste management has become a challenge for government because it is a turning point to the protection of public health, safety and environment. Solid waste needs to be handled in a way that reduces not only the risk of environment but also human health. According Yasmin and I. Rahman (2017), solid waste needs 'proper channel' of management which includes 'storage, collection and proper disposal'. In the context of solid waste management system, Linzer and Lange(2013) and Alam & Sohel(2008) have illuminated the importance of informal market as a significant components of solid waste management. Choudhury (2007) analysis the differences in solid waste management between 'slum & non slum areas' in Dhaka city.

2.1: Types of Solid Waste:M. Hasan defines five types and sources of solid waste. These are:

- I. Municipal Waste: These include garbage (biodegradable), food waste. According to Yadav, these wastes have 70% moisture content. Rubbish (non-biodegradable), Construction and demolition waste (moisture content of about 25%).
- II. Special Waste: These include hazardous waste like toxic, substance, radioactive waste, corrosive materials, biological waste etc.
- III. Domestic Waste: These include garbage, waste paper, plastic, cloth etc which are generated from domestic cooking and serving food.

- IV. Agriculture Waste: These wastes are generated from farms like corn residues, paddy husk etc.
- V. Industrial Waste: In this sector the major generators of wastes are the metals, chemicals and pesticides, dye etc. It has two types like process waste and non process waste.
 - a) Process Waste: Generated from the product being manufactured like plastic waste, rubber waste, metal scraps, food processing waste etc.
 - b) Non- process waste: It is generated from all industries like office and cafeteria waste, packing waste etc.

On the other hand, F.Hayat(2017) includes one more types of solid waste. That is biomedical waste or hospital waste.

- a. Biomedical Waste: It is generated during the diagnosis treatment. It includes sharps, discarded medicines, chemical waste etc. This waste is highly infectious. If it is not managed in a scientific and discriminate manner, it can be a serious threat to health. F.Hayat also states that, it has been examined that, if any hospital generates 4 kg of wastes, 1 kg waste will be infected.

According to Yasmin and I.Rahman (2017) solid waste are generated at a 'faster pace' and indicated 'serious management threat'. Ahmed(2015) and Khan(2014) has unlocked the system failure in solid waste management and recommend some corrective steps on this point. Rapid growth of industries, inadequate trained manpower, inappropriate technology and lack of financial resources and awareness of the people are the major barriers of solid waste management. Day by day the volumes of these wastes have increased swiftly. Community engagement plays an important role in this regards. Both Baharuddin et al (2012) and Gozun et al(2000) have stressed the need for 'community level engagement' in solid waste management. Now a days the nature of solid waste is getting changed because of the development. Solid waste like polythene and other

plastic goods indicate problem towards human health and environment. Yasmin and I.Rahman (2017) states that, controlling urban solid waste is an 'inevitable challenge'.

2.2: Sources of solid waste :

According to F.Hayat (2017) the composition of waste is

- Paper, wood, cardboard 53%
- Garbage, glass, crockery 10%
- Metals 8%
- Rubber, plastic, discarded text 29%

2.3: Legal framework:The evolution of the legal framework for SWM for Dhaka City is given in the following table:

Time and legislation	Framework for SWM
1864, Municipal Act	Night soil collection by Bullock cart Liquid waste collection by Dhaka WASA (DWASA)
1983, Dhaka City Corporation Ordinance	Dhaka City Corporation held responsible for secondary waste collection to remove waste from its dustbins/containers, and transport the waste to final disposal sites. Residents are responsible for bringing their waste to DCC's waste collection points where dustbins/containers are located.
1995, National Environmental Management Action Plan (NEMAP)	Waste recycling has been promoted, less land filling encouraged, EMS promoted among industries.
1997, Environmental rules and regulation	This policy outlined mainly the hazardous industrial waste. No other SW related guideline provided.
1998, National Policy for Water Supply and sanitation	This policy suggested government to take measures for recycling waste as much as possible and use organic waste materials for compost and bio-gas production.
2004, Dhaka Declaration on Waste Management by SAARC countries	This strategy is based on 4R principle i.e. reduce, reuse, recycle and recover of the waste, stressing the need for composting, segregation of waste at source, separating collection and resource recovery from wastes.
2006, Lead Acid Battery Recycling and Management Rules	Under the rules collection and recycling were expected to improve as it had stressed the need for Dhaka Environment Management Plant.
2006, Draft National Urban Policy	CDM and recycling emphasised in the policy.
2009, City Corporation Act	City Corporation held responsible for removal of waste from all public streets, public latrines, urinals, drains and buildings and land of the corporation and for proper disposal of waste.
2010, National 3R Strategy	3R Principal for Solid Waste reflected in the national and local government policies and plan.
2011, City Corporation Act 2009 (amendment)	Amendment about the re-formation of Dhaka City Corporation and distribution of resources and power between them.

Figure 1: Legal framework related to SW

2.4: Major initiatives

There have been several projects and programmes on SWM in the city. Among them, public-private partnerships have been a path breaking initiative

Duration and Funding Agency	Project Title	Objectives/expected outputs of the projects
2013 (January to December) European Union	Towards Zero Waste (CONSORTIUM)	<ul style="list-style-type: none"> • Project consortium establishment and analysis of the situation in the pilot cities • Municipal cluster coordination and strategies • Capacity building on 3R towards zero waste
2013-2016 (First phase) Waste Concern, Swisscontact	Value for Waste (Household Solid Waste Management Project)	<ul style="list-style-type: none"> • Keeping the value of recyclables intact by encouraging segregation at source at household level. • Allocate space for waste management and operate waste transfer stations and • Awareness campaign in schools and universities • Promotes green businesses producing goods from recycled domestic waste
2007 to 2011 JICA partnership with DCC and LGRD&C	Strengthening of Solid Waste Management in Dhaka City	<ul style="list-style-type: none"> • Strengthened project management and coordination capacity of DCC • Improved capacity for solid waste collection and transportation, Efficient operation and management of Final Disposal Site, Improved accounts system for solid waste management and participation of citizen

Duration and Funding Agency	Project Title	Objectives/expected outputs of the projects
2009 to 2010 JICA partnership with DCC and LGRD&C	Improvement of Solid Waste Management in Dhaka toward the low carbon society	<ul style="list-style-type: none"> • To strengthen the waste collection and transportation capacity of DCC • To reduce emissions of greenhouse gases in waste collection and transportation in Dhaka City.
2010-2014 Govt. of Bangladesh and Asian Development Bank	Urban Public and Environmental Health Development Project	<p>Among other components of the project, solid waste related objectives are as follows:</p> <ul style="list-style-type: none"> • Solid waste management in six city corporations. • Building secondary transformation station (STS) • Composting in slum areas
November 2009 to June 2011 UNICEF and GoB and Waste concern	Preparation of Solid Waste Management Plan for 19 towns of Bangladesh	Preparation of Action Plan for solid waste management in 19 towns of Bangladesh based on 3R principle and carbon financing.
2006- Continuing GoB and UNDP	Recycling training centre	<ul style="list-style-type: none"> • To promote the concept of the 3R principle (Reduce, Reuse and Recycle) • To demonstrate efficient technology and provide hands-on training • To introduce a small-scale CDM model for urban waste recycling projects

Figure 2: Major initiatives taken for SWM

Dhaka city corporation (DCC) is in charge of collecting and managing waste in Dhaka. But due to lack of infrastructure, funds and vehicles, a significant amount of waste in Dhaka is not collected. Hasan (2009) has said the demand for landfill sites.

Transportation cost plays a vital role of waste management system. In this regard, Chowdhury et al.(2006) underlined 'cost effectiveness of waste' through commercialization. On the other hand, Bhuiyan(2010) also proposed 'effective governance'. After that, Luton(1996) outlined the theories of effective governance in solid waste management system. In order to maintaining proper solid waste management, two important initiatives has been undertaken. One initiative was undertaken by Japan International Corporation Agency (JICA) in 2005. The main objective was to formulate a master plan of Dhakacity and to develop capabilities and management skills in DCC. A major factor of this programme is given below:

- Preparing master plan for domestic waste. Medical and industrial waste are not considered.
- Attempting to estimate, generation, collection and disposal of solid waste in the city and giving an overview of solid waste management.
- Analysing financial budget and cost of solid waste management.
- Conducting a household survey to understand the practice and perception of solid waste management.
- Reviewing the administrative mechanism in practice.

Another initiative was undertaken in 2010 by Department of Environment (DoE) and Ministry of Environment and Forestry of the government that is called 3R-Strategy. It means: Reduce, Reuse and Recycle. In order to creating sustainable waste management, 3Rs can play a vital role to protect environment and convert waste into invaluable resources.

Major focus of this programme is listed below:

- Emphasizing the need for intervention on the both production and Consumption.
- Lack of landfill sites.

- Lack of guidelines for an efficient use of agriculture waste.
- Lack of hazardous waste disposal facility.

Some recommendations of 3Rs strategy are:

- Encouraging public -private partnership in this regards.
- Collaborating scientific research bodies to promote recycling.
- Supporting informal Sector of recycling

In 2012, 3R pilot project was implemented in selective wards of Dhaka and Chittagong but this project failed to achieve its goal. For that reason, this project was abandoned.

Chapter 3: Research design and data collection

This study mainly focused on the present situation of solid waste management practice at Daffodil International University. Data collection included solid waste generation, waste handling process, collection of solid waste, storage of solid waste and landfill. This study tries to identify the lacking of waste management and try to give a proper waste management plan. Researcher usage both qualitative and quantitative methods for collecting data. Direct field observation, focus group discussion are used to collect data. For secondary data collection researcher uses articles, books, periodicals etc. In order to find out solid waste management practice, the primary data was collected from various classes of people and they were selected randomly. Primary data also collected by visiting waste collection process and the selective dumping area

3.1: Study Tools:

Researcher uses a set of objectives based questionnaire for data collection. The questionnaire was the combination of both open ended and close ended questions.

3.2: Validity and reliability:

Seliger and Shohamy (1989), say that the reliability presents the 'extent to which data collection procedure elicits accurate data'. Phelan and Wren also share the opinion about reliability which is similar to the Seliger and Shohamy. Phelan and Wren (2005) say that reliability is the degree to which an assessment tool 'produces stable and consistent results'. In order to define validity, Burns(1999) says that validity is an essential criterion for 'evaluating the quality and acceptability of research'. Phelan and Wren(2005) say that, validity refers to how well a test measures what it is 'purported to measure'. Some of the aspects that were taken into account while making it valid and reliable, are as follows.

- Objectives of the study
- Theoretical discussion of the methods
- Consultation with the supervisor of the research.

3.3: Universe of the Study:

Because of time limitations, the researcher collects data from Daffodil International University -permanent campus. Researcher maintains the validity and reliability of the data because a large scale of survey would have involved a lot of money and time which are not available for and undergraduate study like the present one.

Therefore, the researcher deliberately chooses particular units of sample to make the data more convincing.

3.4: Study area: In this part, researcher is working at Daffodil International University permanent campus.



Figure 3 : Map of Daffodil International University Permanent Campus

3.5: Solid Waste generation and characteristics:

There are lots of factors that depend on producing waste in a city like geographical conditions, climate conditions and waste collection system. Proper waste management is really very important for our environment. For future waste management planning, we need quality and valuable waste. A percentage variation of the wastes given in table.

3.5.1: Waste Handling Processing in Daffodil International University:

According to Talyan et al, the strategy of waste handling and processing has coordinate impact on 'general wellbeing, accumulation efficiency', Solid waste of Dhaka generally directed and fixed by large informal sector. Division of waste is a viable and manageable practice. It's depends on recuperation as well as reuse of materials.

3.5.2: Collection of solid waste: A well planned waste management system will help us to make our environment clear and budget friendly for people. Daffodil International University separated its area in to 10 zones for supervision of solid waste production. These 10 zones are

- Vegetation
- Food
- Plastic
- Hospitals
- Metals
- Paper
- Soil
- Wood
- Glass
- Others

Basically three departments control the entire waste management.

1. Conservancy
2. Transport
3. Mechanical engineering

Regarding waste management number of surveys were carry out time to time by World Bank, BCAS, JICA etc.

3.5.3: Storage of solid Waste: Wastes are disposed in containers by van service. City Corporation carries this waste with their truck and transported to the dumpsite. The timing of collecting waste by the van services between 6pm and 10pm. It is expected that, the collected waste transported to the landfill without any delay. But it was found that van services are not operational throughout the day. For that reason, wastes remain in the container for a longer period. Many containers are not located in suitable places. The waste are dumped in three styles

- Concrete container site
- Steel container site.
- Open space.

Chart

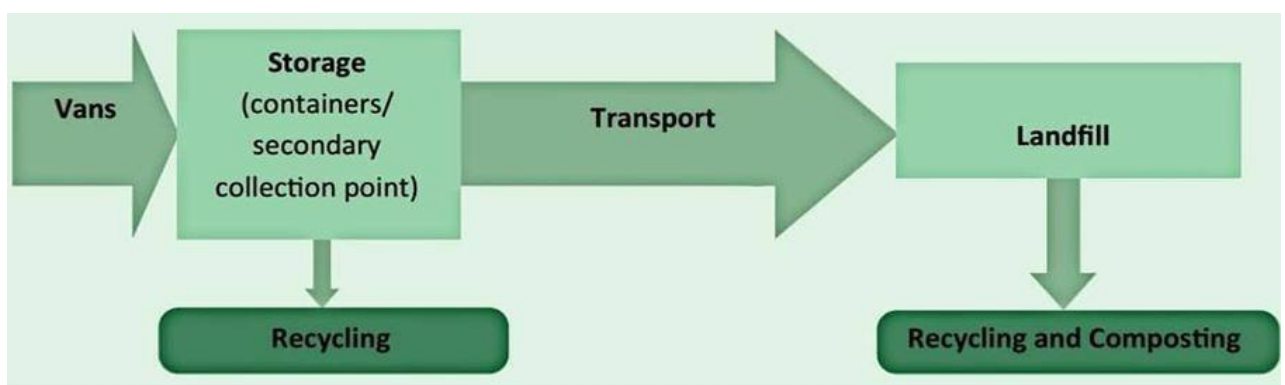


Figure 4: Solid Waste Management.

3.5.4: Methods of disposal of solid waste : There are three methods for disposing solid waste. These are:

- Land Filling
- Incineration
- Vermicomposting

Land filling: Landfill is the sites of solid waste disposal. From the containers the waste is transferred into the landfill. Landfills of Dhaka usually situated outside of the Dhaka. There are two landfills like,

- Matuail is the sanitary landfill of South Dhaka.
- Amin Bazar is the landfill of north Dhaka.

Matuail landfill is a semi aerobic landfill, where methane dioxide, oxygen and odorous gases release through the pipes because of that smell of landfill less toxic. Landfill section has three departments under the waste management department.

Chart.

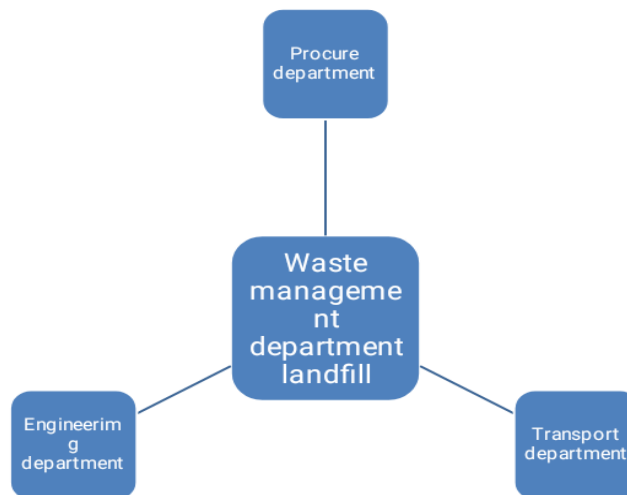


Figure 5 : Stakeholders of Landfill

Waste management department deals with the maintenance of the landfill sites.

Transport department deals with the transport like bulldozer and other equipment. Engineering department works with renovation, repairing etc. Procurement department deals with requisition.

Incineration : Its deals with of burning waste but there are several problems like emission of dangerous fumes and it also requires a source of energy to start.

Vermicomposting: In this methods worms are used to compose solid waste. It has several benefits like highly economical and it also help to manage biodegradable waste.

3.5.5: Composition of solid waste:

According to Ahmed and Rahman(2000), composition of solid waste is 'favourable for composing'. It's including higher percentage of organic matter and right moisture content. The chart of composition of solid waste is given below,

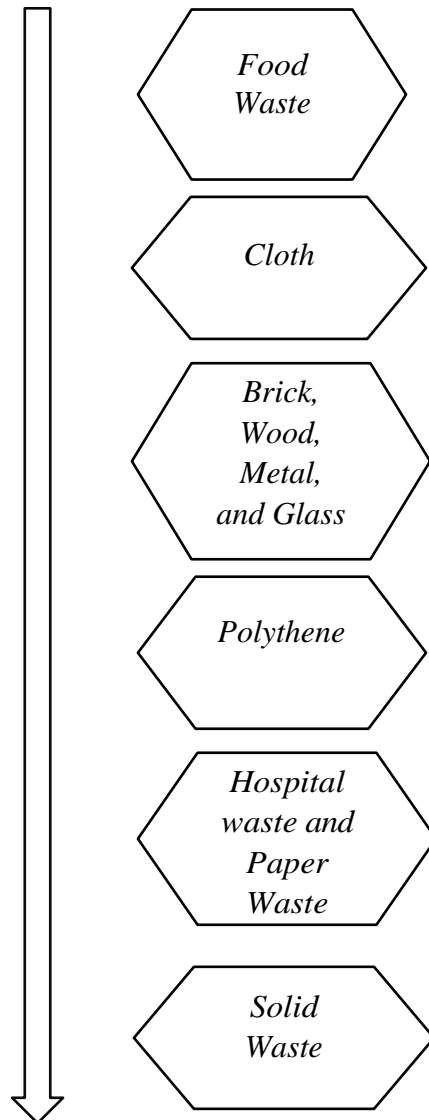


Figure 6: Composition of Solid Waste

In order to find out the amount of solid waste from DIU -permanent campus, researchers did a survey. Researcher divided his sample into three categories. So that, we can get the actual data. Researcher took data from boys and girls hostels of DIU as well as DIU university. Researcher find out the discharge

amount of solid waste from boys hostels and girls hostels. Then the researcher finds out the actual amount of discharge of solid waste of DIU-permanent campus. In every month, 100 kg solid waste is discharged from DIU. In this 100kg there are several categories of solid waste. These are listed below with the percentages of each category:

Waste Composition	DIU (%) by weight
Vegetation	30%
Food	30% (Biodegradable :16% Non-biodegradable: 14%)
Plastic	10%
Hospitals	2%
Metals	2%
Paper	10%
Soil	10%
Wood	2%
Glass	2%
Others	2%

Figure 7 : Amount of Solid Waste from Daffodil International University
Permanent campus in every month .

In order to compare the amount of Solid Waste, Researcher also takes data both from boys and girls hostel of Daffodil International University Permanent

Campus . In every month 15 kg solid waste are discharged from boys hostels and 18 kg solid wastes are discharged from girls hostel. The amount of these solid wastes is listed below:

Categories of solid waste(Boys)	Percentage by weight(15kg)
Food	5%
Plastic	3%
Glass	2%
Paper	3%
Others	2%

Figure 8 : Amount of SW composition of boy's hostels

Categories of solid waste(Girls)	Percentage by weight(18kg)
Food	7%
Plastic	3%
Glass	2%
Paper	4%
Others	2%

Figure 9: Amount of SW composition of girl's hostel

Chapter 4: Result and Discussion:

In the study the following obstacles and prospects have been identified and the necessary discussions are included. In figure 4, we can see the total amount and is categories of SW of Daffodil International University. In this chart, we can find out the highest percentage of SW that is vegetation as well as food and its approximate 30%. Foods have two categories like biodegradable and non-biodegradable and its percentage is approximate 16% and 14%. Second highest categories include plastic, paper and soil. All are around approximate 10%. Then hospitals, metals, wood, glass and others have 2%. These are the SW which are discharged in every month from DIU parent campus.

On the other hand, in figure 5 , we can see the categories and amount of SW that is discharged from boys hostels of DIU and figure 6 shows the categories and amount of SW that is discharged from girls hostel of DIU. We can make a comparative study between these two charts. The representation of bar graphs is given below:

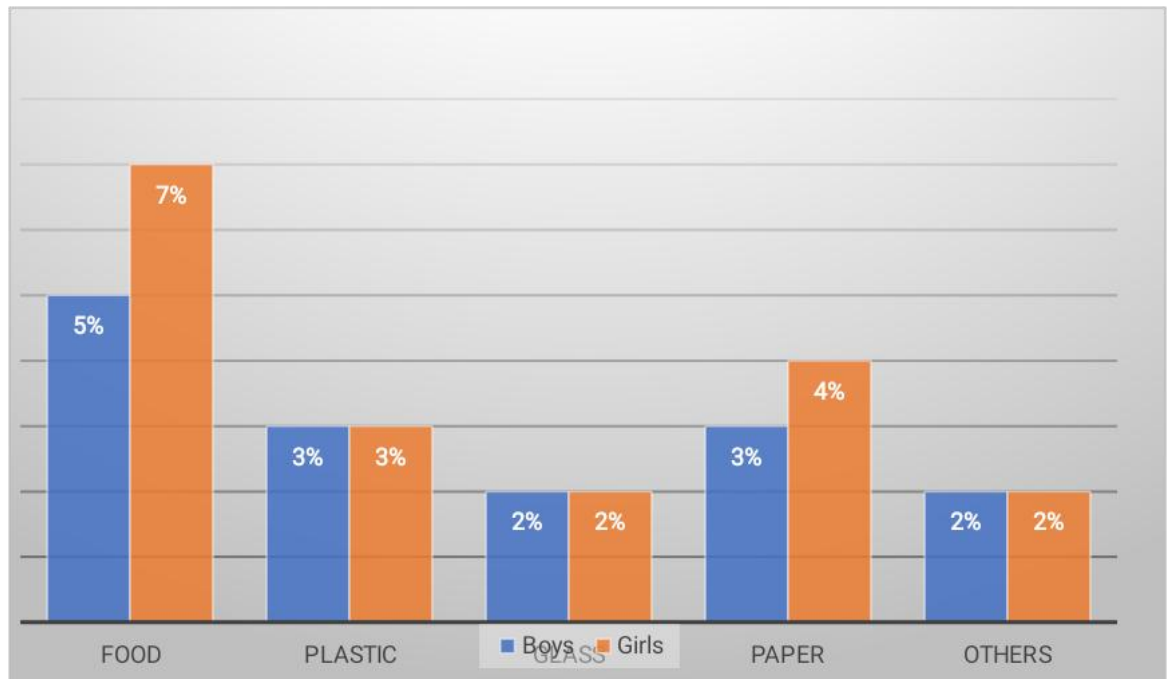


Figure 10 : Comparative bar graph

In this graph we can see the comparative percentages between boys' and girls' hostels of DIU. The main SW of these two hostels are food including biodegradable and non biodegradable. In every category, the amount of SW discharged of girls hostels are higher than the boys hostel. During the research, researcher find out that, there are almost 60 bins, 30 for boys hostel and 30 for girls hostel . Bins are sufficient but the problem is that, there are no particular bins for bio degradable and for non-bio durable. for that reason, proper solid waste management would happen. But can go a long way to solve solid waste management. Researcher also analysed that, the way solid waste are disposed is not the proper way, there are a vast ways for solving this problem. There are also a lot of negatives for the poor solid waste management system.

4.1: Problems of Solid Waste Management

There are many problems and drawbacks of solid waste management in the urban areas of Bangladesh. The major ones are as follows:

Absence of national policy to encourage recycling practice;

- Lack of proper handling rules and standard;
- Lack of finance, and inefficient tax collection;
- Inefficient practice of waste collection;
- Shortage of suitable lands for final disposal of solid waste;
- Lack of awareness about environmental problems associated with solid wastes
- Lack of partnership between public sector, private sectors and community groups

4.2 Negative Impacts of Poor Waste Management

Poor waste management is harmful for health as well as for environment. One of the most adverse impacts of poor waste management are diseases such as malaria and respiratory problems, as well as other illnesses through the contamination of ground water. Biomedical waste is "highly infectious" and is a hazard since it is often disposed of into the sewage system or drains. As a result, mosquitoes and bad odor are among the negative impacts of poor SW management. The River is afflicted by the noisome problem of pollution. So we can see the mass affect of poor SW management system.

Chapter 5: Recommendations

In this study, researchers find out lots of problems regarding SW management. If we want to take the initiative of proper SW management, we should implement some new methods. We should promote “Green Economy” concept for SWM. This concept has no internationally agreed definition, but UNEP interpretation is widely used. That is

“An economy that results in improved human well-being and reduced inequalities over the long term, while not exposing future generations to significant environmental risk and ecological scarcities” (UNEP, 2010)

The main aim of this concept is to create “Low Carbon Economy” . If we implement this “Green Economy” concept for SWM, we will be benefited in this way like such as,

- It emphasizes occupational health and safety.
- It provides economic service delivery.
- It helps to reduce the financial pressure on governments.
- It guarantees cost recovery.

“Green Economy” concept has three pillars, these are given below,

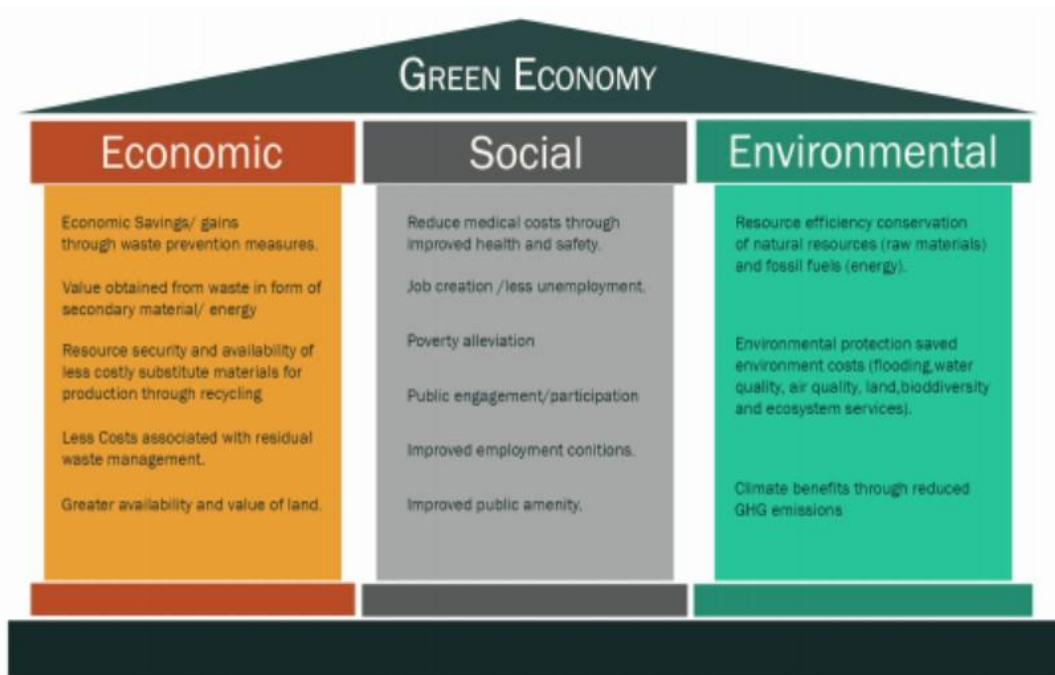


Figure 11: Three pillars of Green Economy

In this figure, we can see the economic, social and environmental benefits of Green Economy. The Green Economy highlights issues such as “Ecological Services”. The focal sectors of the green economy includes

- Renewable Energy
- Green Buildings
- Clean Transportation
- Water Management
- Waste Management
- Land Management

If we implement this Green Economy concept there are lots of possibilities for managing wastes.

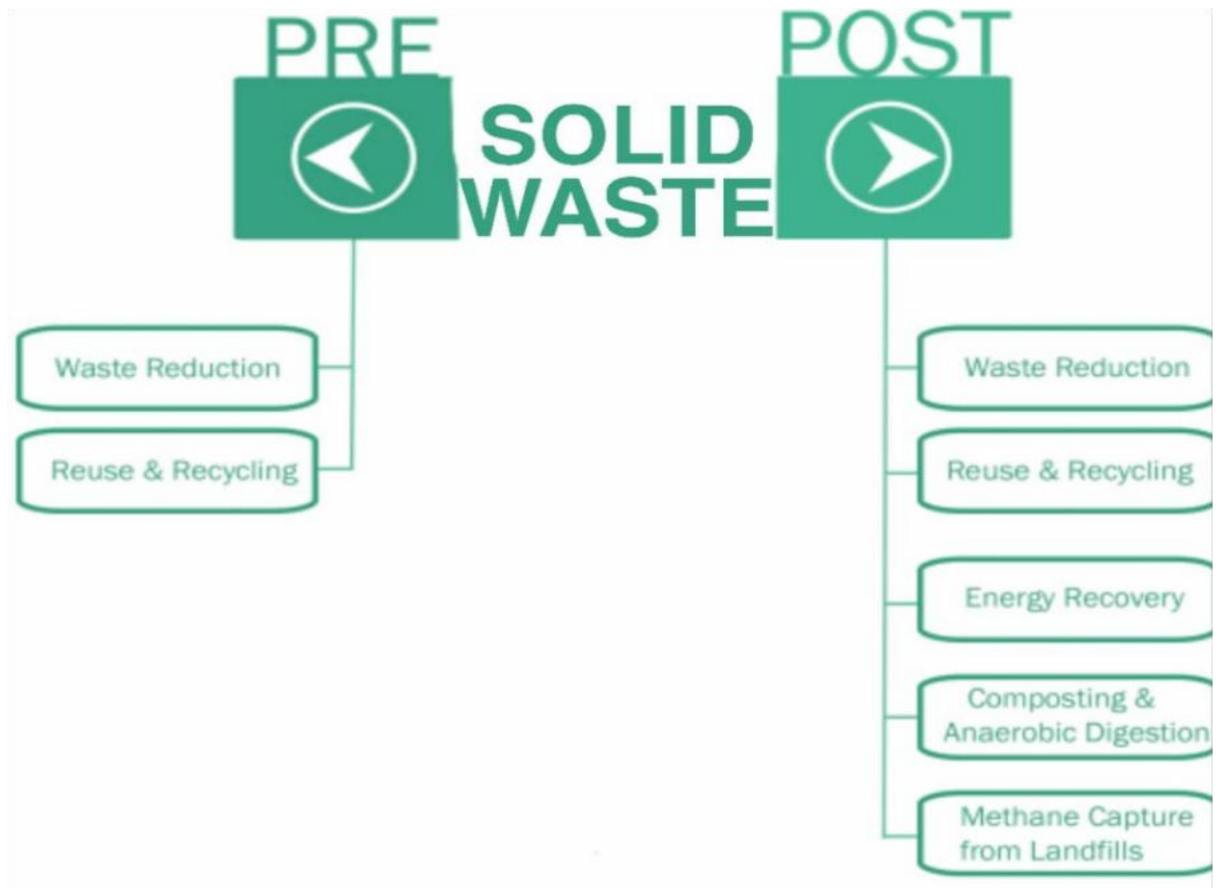


Figure 12 : Possibilities for Greening Waste Sector.

In this concept we can see the Energy Recovery method .Generating energy from waste by product can be an economically valuable option for SWM system . Another method is methane capture from landfills . Capturing and utilizing methane gas from landfill helps to reduce global warming .

Green economy concept is an eco friendly method for SWM system. If the authority considers to promote this environment friendly method as an official way , then it can be said that , this method will be sustainable for our environment.Apart form this researcher , provides some ways for SWM system. which are listed bellow:

Wastes may be turned in to resources by the following recommendations.

1. Encouraging effort on recycling of organic waste.
2. Proper management of clinical wastes should be implemented.

3. Promoting activity of civil society and environmental awareness group
4. Establishment and development of waste recovery and recycling system.
5. Using media and social media in environmental awareness program.
6. Promoting two colours of bins like Red and Green. Red for non-biodegradable and Green for biodegradable waste.
7. Public awareness of the waste management should be raised through mass media for cooperation from city
8. Providing well thought , detailed and clear policy developed by government that is bound to implement.
9. Establishing a comprehensive, integrated , harmonious, plan and 3Rs should be promote(Reduce,Reuse,Recycle)
10. Current poor practice like open dumping and open burning should be stopped immediately

Chapter 6: Conclusion

Proper waste management system is very important for our health and environment. But there are lots of obstacles behind this solid waste management. Everybody dreams for neat, clean and poverty free society. Proper SW management system and waste recycling process can help to make our dreams into reality. In this research, researcher's aims is to find out the total amounts of SW discharged from DIU- permanent campus and its managing system. Research also. Tries to show some suitable ways for SW management. Only authority can not bear this responsibility. Its our responsibility that we should work altogether to make our dreams into reality. We should inform people of the negative impact of poor waste management system and we also promote the benefit of waste recycle process. In our country most of the people do not have the idea of biodegradable and nonbiodegradable waste. people mix all these bio and non biodegradable waste and through it to the bins. For that reason, it is very time consuming to discrete these wastes. For that reason, everyone should have minimal knowledge about SW management. On the other hand, waste recycle also reduce green. House gas Reduction. In many. Countries waste recycle project are taken.to manage SW. In our country, this is acute problem. Because of time limitation, researcher could not find all the difficulties regarding SW management. In order to find out the actual problem and promote eco-friendly SW management system, extensive research works are needed. If we can implement the proper ways of SW management, our environment will be better for our future generation.

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