ANDROID-BASED APPLICATION FOR PLASTIC WASTE MANAGEMENT AND SURVEY

A Project Preliminary Report Submitted To

The APJ Abdul kalam Technological university

In partial Fulfilment of the Requirements for the Award of the Degree of

BACHELOR OF TECHNOLOGY
IN
COMPUTER SCIENCE AND ENGINEERING
BY

Mr. AKSHAY C P	**VVT18CS002**
Mr. BINU A R	**VVT18CS005**
Mr. KARTHIK R	**VVT18CS006**
Mr. PIYUSH RAJA	**VVT18CS009**

Under the Guidance of

Ms. Ranjana . C

(Professor and Head, Dept. of CSE)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
VEDAVYASA INSTITUTE OF TECHNOLOGY
KARADPARAMBA, MALAPPURAM

JANUARY 2022

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
VEDAVYASA INSTITUTE OF TECHNOLOGY, KARADPARAMBA

CERTIFICATE

This is to certify that the report entitled '***ANDROID-BASED APPLICATION FOR PLASTIC WASTE MANAGEMENT AND SURVEY***' submitted by **Mr. AKSHAY C P (Reg:VVT18CS002), Mr. BINU A R (Reg:VVT18CS005), Mr. KARTHIK R (Reg:VVT18CS006), Mr. PIYUSH RAJA (Reg:VVT18CS009)** to the APJ Abdul Kalam Technological University in partial fulfilment of the requirements for the award of the Degree of Bachelor of Technology in Computer science and engineering is a bonafide record of the project work carried out by her under my/our guidance and supervision. This report in any form has not been submitted to any other University or Institute for any purpose.

Internal supervisor

External supervisor

Head of the Department

DECLARATION

I undersigned hereby declare that the seminar report "***Android-based Application for Plastic Waste Management and Survey***", submitted for partial fulfillment of the requirements for the award of degree of Master of Technology of the APJ Abdul Kalam Technological University, Kerala is a bonafide work done by me under supervision of **S. Kavitha Murugesan.** This submission represents my ideas in my own words and where ideas or words of others have been included, I have adequately and accurately cited and referenced the original sources. I also declare that I have adhered to ethics of academic honesty and integrity and have not misrepresented or fabricated any data or idea or fact or source in my submission. I understand that any violation of the above will be a cause for disciplinary action by the institute and/or the University and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been obtained. This report has not been previously formed the basis for the award of any degree, diploma or similar title of any other University.

Place : Kozhikode

Date :

Signature:

Name of the student:

ACKNOWLEDGEMENT

We thank god, the almighty for the blessing us in making the Project a successful one. The satisfaction that accompanies that the successful completion of any task would be incomplete without the mention of people whose ceaseless cooperation made it possible, whose constant guidance and encouragement crown all efforts with success.

We would like to thank our Director Dr. Arun Korath, for providing the best facilities and atmosphere for the Project completion and presentation.

We express our heartfelt gratitude towards Dr. Sangheethaa.S, Principal, Vedavyasa Institute of Technology, for extending all the facilities required for doing this work.

We express our sincere gratitude to Prof. Dr. S. Kavitha Murugesan, Head of Department, Dept. of Computer Science & Engineering, Vedavyasa Institute of Technology, Malappuram for her guidance and support.

We are grateful to our project guide Ms. Ranjana . C & Class tutor Ms. Shibi.B, Asst. Professor, Dept. of Computer Science & Engineering, for the guidance, inspiration and constructive suggestions that helpful us in the preparation of this work and all lecturer of department of computer science and engineering for their valuable suggestions.

Last but not the least; we extend heartfelt gratitude to our parents and friends for their support and assistance.

TABLE OF CONTENTS

Chapter No.	Description		Page No.
	ABSTRACT		i
	LIST OF FIGURES		ii
	LIST OF ABBREVATIONS		iii
	LIST OF TABLES		iv
1	**INTRODUCTION**		**1**
	1.1	PURPOSE	2
	1.2	NEED FOR STUDY	2
	1.3	BACKGROUND	4
	1.4	ANDROID STUDIO	5
		1.4.1 FEATURES	5
	1.5	FLUTTER	6
		1.5.1 FRAMEWORK ARCHITECTURE	6
		1.5.1.1 DART PLATFORM	6
		1.5.1.2 FLUTTER ENGINE	7
		1.5.1.3 FOUNDATION LIBRARY	7
		1.5.1.4 DESIGN-SPECIFIC WIDGETS	7
		1.5.2 IDE SUPPORT	7
	1.6	DART	7
	1.7	FIREBASE	8
	1.8	APPLICATION	8
2	**LITERATURE SURVEY**		**9**
	2.1	ANDROID-BASED SOCIAL MEDIA SYSTEM OF HOUSEHOLD WASTE RECYCLING: DESIGNING AND USER ACCEPTANCE TESTING	9
	2.2	SOLID WASTE MANAGEMENT IN SAUDI ARABIA	10

	2.3	SOLID WASTE RELATED RESEARCH IN SCIENCE CITATION INDEX EXPANDED	10
	2.4	SMART WASTE COLLECTION SYSTEM	11
	2.5	DESIGN AND DEVELOPMENT OF A WASTE MANAGEMENT SYSTEM IN SYLHET AGRICULTURAL UNIVERSITY	11
	2.6	SOLID WASTE MANAGEMENT IN INDIA AN ASSESSMENT OF RESOURCE RECOVERY AND ENVIRONMENTAL IMPACT	12
3	**PROPOSED PLAN AND FUTURE WORK.**		**13**
4	**CONCLUSION**		**14**
5	**REFERENCES**		**15**

ABSTRACT

Plastic pollution is the widespread of plastic objects and particles for example plastic bottles, bags etc in the Earth's environment that adversely affects wildlife, wildlife habitat, and humans. Although there are municipal authorities working on it, the method used by them is unscientific and old. In order to find a solution for this An Android-based application is being build that can be used to measure information about the plastic waste collection and removal data. This method promote users to separate organic and non-organic waste so that municipal authorities can collect the non-organic waste from houses. Application is expected to collect data on how much plastic waste is generated by houses in a given area. With this data the user understands how much waste is produced by an individual house and thus awareness can be brought, leading the country to a plastic free country. Application consist of simple UI that can be used by any house members to separate and inform municipal authorities about the waste produced in their house letting them know when to collect the waste produced in that area. This Application database can be accessed by municipal authorities with no skill required.

Keywords: Simple UI, Android Based, Plastic free country

LIST OF FIGURES

Sl. No.	Description	Page No.
1	TYPES OF SMART-PHONE USERS	2

CHAPTER 1

INTRODUCTION

The goal of our work is to facilitate to make the work of plastic waste collectors easy. so making this it is easy to collect waste from houses by house. Which intern decreases the energy used by each workers. Currently waste management is not a systematic manner. So our system aims to overcome this problem through a interactive approach. It also support Municipal Community and their service. Today the major source of plastic waste disposal is coming from household uses. It is classified into organic and non- organic. Organic waste are easy to decompose and are useful to nature. Non organic waste may contain plastic waste, e- waste, and other package waste. These waste are non-degradable and they cause drastic effect towards nature. These causes danger to the existence of life itself. According to the Associated Chambers of Commerce and Industry rapid economic growth and consumer behaviour has increased e-waste generation in India to 5.2 million tonnes per year. Household waste is growing daily and the reason for this is lack of proper waste disposal mechanism. This will effect in the growth of city regionally as well as globally. There for this paper aims to design a simple user interface for household member who won't be needing any kind of skills to send alert to the waste collection team to collect the waste from their house before it is drastically increased. By this way it is easy to find the quantity of waste generated by a household as well as it informs the user how much waste has been generated by their house in a daily basis. In other countries they have adapted a method of routine collection of their waste making it a clean growing city. Here in India the method taken by the municipal council is not the best and consumes more energy. The waste collection team had to go from house to house in.

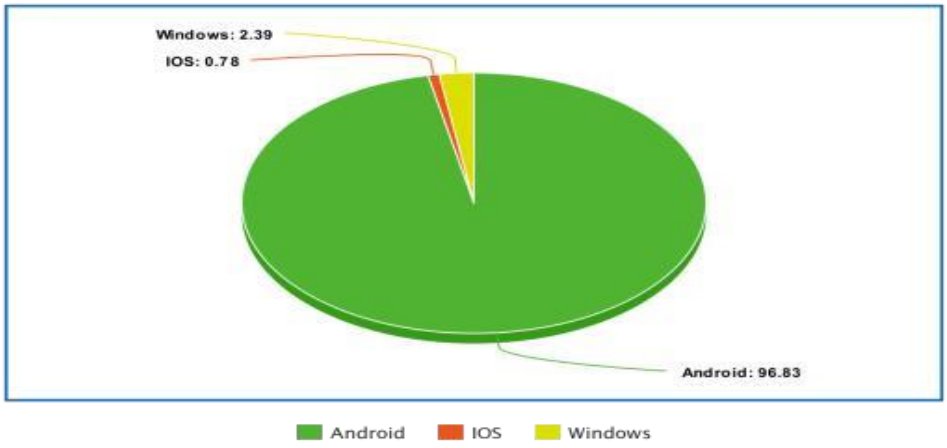

fig 1:Types of Smart-phone Users

1.1 PURPOSE

- Contribution on Swachh Bharat Mission
- plastic waste will be forwarded to any construction work for road

1.2 NEED FOR STUDY

Disposing of waste has huge environmental impacts and an motive serious problems. Unnecessary to mention, the maximum vital motive for proper waste control is to shield the environment and for the health and safety of the population. it's miles a very critical subject matter that needs to be addressed, and everybody have to be aware why waste segregation can be the distinction among the survival of the earth and the worsening outcomes within the herbal biological gadget.Waste management has been dependably the subject of lots dispute.

Waste control involves the handling of waste substances from the time it's miles made to its disposal. This includes how the business or organisation collects, transports, tactics, recycles, or disposes its waste. The overall populace is increasing and, correspondingly, the quantity of waste is increasing as well. If we view the information, we can see that there may be a colossal quarter of waste disposal anywhere for the duration of the world. Waste disposal locations are a huge difficulty for the planet. It effects in extra contamination, openings in ozone layers, and unfold of recent illnesses. Thinking about the occasions, waste control may simply be the answer.

Many natural assets which include timber, fuel, and water are depleting. as an example,

paper, cupboards, paper cups, and plenty of other merchandise that we use every day are crafted from bushes. Huge areas of trees are cut down each year, and new bushes do no longer have enough time to fully grow.

Fortunately, it's miles possible to recycle paper merchandise instead of cutting down new bushes. Reforestation can best achieve this a lot.

Moreover, it is also viable to reuse steel items. In a few international locations, there are sites wherein you can bring and sell antique newspapers, metal gadgets, or even glass. a lot of these merchandise are recycled and used again. Those little matters have an immense effect in our typical battle to save the surroundings. Some other point of consciousness is on pollution. Aside from leaving plenty of waste, humanity pollute the environment by way of producing various merchandise. As an instance, plastic factories pollute the ecosystem with smoke considerably by using production plastic. Positive forms of waste may be quite dangerous and may contaminate the environment. Bad waste control practices can cause land and air pollution which can bring about serious scientific situations in people, animals, and even flora. Right waste control carried out via companies like technology Park of the Philippines reduces pollutants and allows shop power.

Proper waste management is a splendid way to do just that because recycling produces strength. By using recycling something, we keep energy because greater strength is typically had to produce a new item. as an example, it's far very viable to get power from recycling plastic. Over 500 billion kilos of new plastic is synthetic each year and kind of 33% of that is for unmarried use and thrown proper away. All over the world, businesses and individuals are beginning to produce fuel from waste plastic. This reuse of plastic ought to doubtlessly maintain full-size amounts of plastic out of landfills and out of the oceans.

Every other important factor to recollect is that segregated waste is often cheaper to dispose because it does no longer require as lots guide or mechanical sorting as blended waste. Having a right waste control can bring about the availability of precious materials to reuse. this can store cash at the same time as probably growing new jobs and commercial enterprise possibilities. Lowering, reusing and recycling your waste is important for the surroundings, however it may additionally be profitable. It decreases the quantity of waste for disposal, saves space in landfills, and conserves natural assets.

Sooner or later, waste management is likewise important for public health. Harmful wastes can purpose long term health problems, so it's miles very crucial that they're disposed of accurately and carefully and now not jumbled together with the everyday waste coming out of your property or office.

1.3 BACKGROUND

In current system, it only meant for collecting data (survey).There is no proper technique to manage the waste disposal or plastic waste. As in different towns of India, disposal of Municipal solid Waste (MSW) poses extra demanding situations to the government of Pondicherry. it's far anticipated that 600 TPD of MSW are generated in Pondicherry urban regions. currently, it's far being accrued, transported and disposed at Kurumbapet dumping yard considering the fact that 2010. these practices appeal to lot of public and academicians objection in view of open dumping of MSW, obnoxious odour and flies menace and so on.
It also poses terrific hazard of floor water contamination due to percolation. locating a scientific way to the MSW disposal hassle is top consideration of the government as it is related with public fitness issues. As according to the Municipal stable Waste(management and coping with) rules, 2000, waste disposal techniques prescribed includes composting, vermin composting, anaerobic digestion and incineration. Puducherry authorities explored the opportunities of adopting composting thru Coimbatore and Vellore version. Reportedly, elements are attributing constraint to enforce the equal in Pondicherry viz. (i) poor source segregation (ii) Mingling of plastic wastes with MSW.
A crew below the Chairmanship of the Hon‟ble chief Minister of Puducherry Shri N. Rangaswamy including Shri N.G. Pannir Selvam, The Hon‟ble Minister for neighbourhood management, Shri Chetan B Sanghi, the leader Secretary to government, Shri Vaiyapuri Manikandan, The Chairman, Puducherry Tourism & development organization, Shri I. Vasanthakumar Reddy, Officer on unique responsibility to chief Minister and Dr. N. Ramesh, Environmental Engineer, department of science, era & surroundings have visited Malaysia and Singapore from 5.1.2014 to 7.1.2014 to understand the municipal stable waste disposal technique being practiced there and discover the opportunity of adopting the equal model in Puducherry. Series and transportation device being practiced each in Malaysia and Singapore is comparable but final disposal device is different from every other. In Malaysia, very last disposal is Sanitary Land Fill observed by strength era through methane gas shaped in the land fill.
In Singapore, final disposal technique is incineration observed by energy technology.

1.4 ANDROID STUDIO

Android Studio is the official integrated development environment (IDE) for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. It is available for download on Windows, macOS and Linux based operating systems or as a subscription-based service in 2020. It is a replacement for the Eclipse Android Development Tools (E-ADT) as the primary IDE for native Android application development. Android Studio was announced on May 16, 2013, at the Google I/O conference. It was in early access preview stage starting from version 0.1 in May 2013, then entered beta stage starting from version 0.8 which was released in June 2014. The first stable build was released in December 2014, starting from version 1.0. On May 7, 2019, Kotlin replaced Java as Google's preferred language for Android app development. Java is still supported, as is C++.

1.4.1 FEATURES

A specific feature of the Android Studio is an absence of the possibility to switch autosave feature off. The following features are provided in the current stable version:

- Gradle-based build support
- Android-specific refactoring and quick fixes
- Lint tools to catch performance, usability, version compatibility and other problems
- ProGuard integration and app-signing capabilities
- Template-based wizards to create common Android designs and components
- A rich layout editor that allows users to drag-and-drop UI components, option to preview layouts on multiple screen configurations
- Support for building Android Wear apps
- Built-in support for Google Cloud Platform, enabling integration with Firebase Cloud Messaging (Earlier 'Google Cloud Messaging') and Google App Engine
- Android Virtual Device (Emulator) to run and debug apps in the Android studio.

Android Studio supports all the same programming languages of IntelliJ (and CLion) e.g. Java, C++, and more with extensions, such as Go; and Android Studio 3.0 or later supports Kotlin and "all Java 7 language features and a subset of Java 8 language features that vary by platform version." External projects backport some Java 9 features. While IntelliJ states that Android Studio supports all released Java versions, and Java 12, it's not clear to what level Android Studio supports Java versions up to

Java 12 (the documentation mentions partial Java 8 support). At least some new language features up to Java 12 are usable in Android.
Once an app has been compiled with Android Studio, it can be published on the Google Play Store. The application has to be in line with the Google Play Store developer content policy.

1.5 FLUTTER

Flutter is an open-source UI software development kit created by Google. It is used to develop cross platform applications for Android, iOS, Linux, macOS, Windows, Google Fuchsia, and the web from a single codebase.
First described in 2015, Flutter was released in May 2017.

1.5.1 Framework architecture

The major components of Flutter include:

- Dart platform
- Flutter engine
- Foundation library
- Design-specific widgets
- Flutter Development Tools (DevTools)

1.5.1.1 Dart platform

Flutter apps are written in the Dart language and make use of many of the language's more advanced features.
While writing and debugging an application, Flutter runs in the Dart virtual machine, which features a just-in-time execution engine. This allows for fast compilation times as well as "hot reload", with which modifications to source files can be injected into a running application. Flutter extends this further with support for stateful hot reload, where in most cases changes to source code are reflected immediately in the running app without requiring a restart or any loss of state.
For better performance, release versions of Flutter apps on all platforms use ahead-of-time (AOT) compilation.

1.5.1.2 Flutter engine

Flutter's engine, written primarily in C++, provides low-level rendering support using Google's Skia graphics library. Additionally, it interfaces with platform-specific SDKs such as those

provided by Android and iOS. The Flutter Engine is a portable runtime for hosting Flutter applications. It implements Flutter's core libraries, including animation and graphics, file and network I/O, accessibility support, plugin architecture, and a Dart runtime and compile toolchain. Most developers interact with Flutter via the Flutter Framework, which provides a reactive framework and a set of platform, layout, and foundation widgets.

1.5.1.3 Foundation library

The Foundation library, written in Dart, provides basic classes and functions that are used to construct applications using Flutter, such as APIs to communicate with the engine.

1.5.1.4 Design-specific widgets

The Flutter framework contains two sets of widgets that conform to specific design languages: Material Design widgets implement Google's design language of the same name, and *Cupertino* widgets implement Apple's iOS Human interface guidelines.

1.5.2 IDE Support

Flutter maintains official support for the following IDEs and editors via plugins:

- IntelliJ IDEA
- Android Studio
- Visual Studio Code
- Emacs

Other IDEs can be used with community-supported plugins, or by using Flutter tools from the command line.

1.6 DART

Dart is a programming language designed for client development, such as for the web and mobile apps. It is developed by Google and can also be used to build server and desktop applications.
Dart is an object-oriented, class-based, garbage-collected language with C-style syntax. Dart can compile to either native code or JavaScript. It supports interfaces, mixins, abstract classes, reified generics, and type inference.

1.7 FIREBASE

Firebase is a platform developed by Google for creating mobile and web applications. It was originally an independent company founded in 2011. In 2014, Google acquired the platform and it is now their flagship offering for app development.

1.8 APPLICATION

- This can be best used by Municipal Corporation for their betterment of management regarding collection of wastes.
- With the help of proper technology (GPS & SOFTWARE APPLICATIONS) we can guide the trucks to choose the shortest path.
- It also favours the “SMART CITY” project and “DIGITAL INDIA”.

SUMMARY

This chapter gives an overview of plastic waste generation in our locality. Further chapters discussed about the related work, existing system, proposed system etc.

CHAPTER 2

LITERATURE SURVEY

This section presents some of the most recent research works related to this research and possible solutions suggested by most eminent authors.

2.1 ANDROID-BASED SOCIAL MEDIA SYSTEM OF HOUSEHOLD WASTE RECYCLING: DESIGNING AND USER ACCEPTANCE TESTING. (R YUNANTO), 2018

This paper is to design Android-based applications that can be a media of household recycling waste information and to know the level of user acceptance on Android-based social media system of household waste recycling (Pilah Matur App). To measure user satisfaction in user acceptance test, authors used the survey method. The problem of waste, especially household waste, has not been handled properly including in urban areas. The addition of landfill sites cannot directly solve urban waste problems, because the volume of waste at the landfill is very large and mixed with dry and wet wastes, also organic and non-organic wastes. Separation of household waste is a very important part of the effort to reduce the garbage disposed to the landfill. Information technology can take a role in facilitating the waste sorting process. Pilah Matur App can be used as a media for sharing the recycled waste information so that household waste can be interchanged by urban residents who might be needed it to be reused. Sharing the recyclable material information using Pilah Matur App is expected to reduce the amount of waste disposed to the landfill. The application design such as user interface and application prototype is introduced to the users in order to obtain feedback and measure the level of user acceptance. In general, Android-based social media system of household waste recycling can be accepted by users, there are 12 indicators that show positive results and 2 indicators that show negatives. The negative results caused by users expect more various features and users expect the application to be faster in the process of sending or uploading data. Furthermore, authors have to improve the speed of uploading process of a large photo of household waste recycling. Available features should also more added to increase user acceptance levels.

2.2 SOLID WASTE MANAGEMENT IN SAUDI ARABIA (ANJUM M., R. MIANDAD, M. WAQAS, I. AHMAD, Z.O.A. ALAFIF, A.S. ABURIAZAIZA, M.A. BARAKAT ANDT. AKHTAR), 2016

The problem of municipal solid waste (MSW) management is critical to the Kingdom of Saudi Arabia (KSA). MSW contains two major components, organic waste and plastics. The organic waste is generated due to the extensive use of food, while the massive use of disposable stuff is the main source of plastic waste, especially during the visit of a large number of pilgrims every year. In the current scenario, the management of waste by conventional methods such as dumping causes significant environmental impacts, including greenhouse gas (GHG) emissions, leachate production and soil contamination. The problems associated with the uncontrolled dumping can be avoided by shifting to waste-energy approaches, leading to economic and environmental sustainability. This review focuses on the current status of the waste disposal system in KSA and its environmental impacts. Based on the overall current situation and types of solid waste production in KSA, waste treatment methods such as anaerobic digestion and pyrolysis processes have been proposed. The anaerobic digestion could be used for treating the organic fraction of municipal solid waste, wherein the methane produced during the process can be used as fuel after up-gradation or converted to liquid fuels. On the other hand, pyrolysis is highly suitable for the treatment of plastic waste because of non-biodegradable nature and pyrolysis of plastics can result in the production of a variety of value- added products, such as fuel oil, char and gases. Keeping in view the positive aspects of anaerobic digestion and pyrolysis, there is a great potential to use these technologies in KSA to make waste management practices highly effective and eco-friendly.

2.3 SOLID WASTE RELATED RESEARCH IN SCIENCE CITATION INDEX EXPANDED (HANYU MA, YUH-SHAN HO, HUI-ZHENFU),2019

A bibliometric approach was employed to quantitatively assess current research trends on solid waste by analyzing the related publications in the Science Citation Index Expanded (SCI-Expanded) database from 1991 to 2010. The general analyses were processed by characteristics of distribution covering publication outputs, journals, Web of Science categories, countries, and institutes, and

research emphases and trends including author keywords, words in title, words in abstract, and KeyWords Plus analysis. Over the last 20 years, annual publication outputs showed a notable growth trend. Waste Management published the most articles, and the solid waste related articles were becoming centered in this journal, especially in 2009 and 2010. The G7 (the USA, Germany, the UK, Japan, France, Canada, and Italy) played active roles in publication, and the USA was the most productive country. Particularly, China experienced the greatest growth rate, and surpassed the USA in annual production in 2008. Furthermore, the searching keyword "solid waste*" was migrating from the fields of author keywords, title, and abstract to the field of KeyWords Plus. By synthetic analysis of these keywords, it was concluded that landfill, waste-to-energy, composting, and recycling were the common solution methods for solid waste problems, and would continue to be the leading research methods. Heavy metals, anaerobic digestion, sewage sludge, soil, and adsorption were also considered as hot spots. Food waste, another increasing concern, had strong potential in the near future.

2.4 SMART WASTE COLLECTION SYSTEM (MUHAMMAD JAVED RAMZAN) , 2018

This project named smart waste collection is need of today as there is no efficient waste collection system installed in the earth these days this system is to revolve the waste collection method of the advancing technological 21st century. This system is supported by an android app named "SWC" and fire base real time data for more efficient user friendly usage. where's cloud storage also makes it easier for storage of collection record providing the authorized origination to control manage and audit performance data.

2.5 DESIGN AND DEVELOPMENT OF A WASTE MANAGEMENT SYSTEM IN SYLHET AGRICULTURAL UNIVERSITY (M.A.R. SARKER, M.A. HOSSAIN, F. ISHAQUE AND M.H. RAHMAN), 2018

The study was conducted to observe the present status of waste management system and develop a new management system in Sylhet Agricultural University. For this persistent reconnaissance survey was conducted to study the existing strength and weakness of waste management system. In addition, questionnaire survey was carried out to understand the problems faced by the stakeholders. By the survey work it was recognized that few people (4%) were familiar with the waste management system. Majority of the people (96%) were blind about the waste management system. There was not a single person got the waste management training. For disposing of waste, about 13% people used bin, 24% people threw the waste in the drain and 63% people kept the waste in open area. For

developing waste management system plastic bin were recommended instead of concrete and steel bins. For the assortment of cleaning time, cleaning interval, vehicle type, and collection route of waste at morning, 1 to 2 days per week, waste collection van through teacher's quarter route respectively were suggested. It was proposed to set up transfer station including disposal site and biogas plant near the new bus stand. For incineration, enclosed container was advised. Finally, to establish composting plant and sanitary landfill have been proposed near agricultural field and back side of boy's residential hall.

2.6. SOLID WASTE MANAGEMENT IN INDIA AN ASSESSMENT OF RESOURCE RECOVERY AND ENVIRONMENTAL IMPACT (ISHER JUDGE AHLUWALIA, UTKARSH PATEL), 2018

This study analyses the environmental and financial sustainability of solid waste management in Indian cities. It presents an assessment of the rapidly rising volume of municipal solid waste, its changing composition, the continuing practice of mixing biodegradable (wet) waste with dry waste at the source of generation, and the growing volume of plastic in the waste. The present system is focussed on collection and transportation of largely mixed unsegregated waste. Resource recovery from the waste and safe disposal of the residual waste in scientifically designed landfills are grossly neglected. Rules have now been put in place for sustainable solid waste management, but the capacity to plan and manage the system and ensure the enforcement of the rules is a major challenge.

The inability to ensure segregation of waste comes in the way of proper recycling, effective functioning of biomethanation plants, and also of safe operation of waste to energy plants which consequently leads to release of toxic pollutants into the atmosphere. Sites allocated for landfills are used as open dumping sites where far too much waste is dumped without resource recovery, generating leachate and methane gas. This study also presents the sources of greenhouse gas emissions from the solid waste sector. Besides presenting some mitigation choices to respond to the growing challenge, it also suggests mechanisms for ensuring that the system is financially sustainable.

SUMMARY

The major contribution of this chapter is the study and comparison of related papers. Various techniques related to Waste Disposal and Waste Management is also described. Main goal is to

smartly dispose waste generated in the rural area efficiently. Using latest technology such as mobile applications and smart-bin, we can achieve maximum proficiency.

CHAPTER 3

PROPOSED PLAN AND FUTURE WORK

It is direct connection with local authority, which we can manage the waste generation by allowing them to collect waste regularly on a fixed time period. When compared to the existing system:

- This system is very simple.
- Application is more reliable.
- It can use regional language.
- To simple UI.
- No higher technical knowledge is needed..

We aim to bring smart-bins in association with the application providing full filling functional IoT base project. Paper aims to develop the software to collect data on waste gene
ration by a particular house.

CHAPTER 4

CONCLUSION

Household waste managing Application uses survey method to collect data on waste generation from household. The advantage of using this method is that it is easy to create a clean UI for our user to gather information on waste and give an alert to the waste collection team to come and collect the waste from the specific house. Most important fact is that no specific skill is needed to use this application.

CHAPTER 5

REFERENCES

[1]. R Yunanto 2018 IOP Confi. Ser.: Mater. Sci. Eng. 407 012139

[2]. Kinnaman, Thomas C.. "The Economics of Municipal Solid Waste Management." Waste Management (2009) : 2615-2617.

[3]. Anjum, M., R. Miandad, M. Waqas,I. Ahmad, Z.O.A. Alafif, A.S. Aburiazaiza, M.A. Barakat andT. Akhtar. 2016. Solid waste management in Saudi Arabia.

[4]. Hanyu Ma, Yuh-Shan Ho, Hui-Zhen Fu Solid waste related research in Science Citation Index Expanded, 2011.