

The Environmental Audit report on the plastic importing, management of usage and post usage in Sri Lanka



Report Number: PER/B/2019/01



NATIONAL AUDIT OFFICE
ENVIRONMENTAL AUDIT DIVISION



1. Executive Summary

The meaning of plastic “to change shape without breaking” has been derived from the Greek word “Plastikos”. The most commonly used plastic are classified under 07 categories in the present world. The total quantity of plastic imported to Sri Lanka during the 07 years from 2012 to 2018 was 3,353.9 million kg and costing Rs.184,300.9 million. Plastic imports are imported under 04 main categories such as raw materials, finished products, furniture and toys. In 2018, 64% of the total plastic were imported as plastic raw materials.

Approximately 30 percent of the quantity of plastic imported to Sri Lanka is recycled annually in systematical manner. Accordingly, 30% of the remaining 70% is dumped directly into the environment. The audit aims to evaluate the effectiveness of several plastic recycling programs currently being implemented, including the increasing use of plastic and even simultaneous post-plastic recycling programs not function at expected level and discharging the plastic waste in non-environmentally friendly manner. At the performance checking of 100 major centers in Sri Lanka in regard to the post usage plastic management process, there were 26 centers without an Environmental Protection License and the license had been expired in 28 centers, at the date of 31st August 2019.

Even though RS. 452.7 million has been invested in a project aimed at developing some exemplary local authorities that perform optimally in plastic polythene waste management as at 31 December 2018. It was observed that the performance of the project was inadequately met with the responsibility by the parties concerned. It was also observed that the objectives expected to achieved by the CEA by issuing 06 gazettes notifications in 2017 for achieving the eco-friendly nature of polythene plastic production, trade, minimization usage and post-usage management were not adequately addressed.

Although various programs have been implemented for the post usage of plastic, the success of these programs has been low and the performance has been low in implementing Cabinet decisions of the Ministry of Mahaweli Development and Environment regarding the post usage of plastic and polythene.

Reviewing the current legal status of plastic polythene and the necessary amendments and it was observed that important to focus on expeditious measures for the import, manufacture, trade, reduction of usage and taking immediate action for post usage management of plastic polythene. It was observed that the importation of plastic polythene should be discouraged and the usage of plastic polythene in the country should be reduced, support the implementation of post-management practices at rural level and further strengthen the market structure for the implementation of post-use management programs.

2. Background and the nature of the report

2.1 Background

In the present world there is a higher tendency in consumer goods made of plastic which is designed as the forms of goods, materials and wrappers. Accessories made of plastic are increasingly used in the manufacturing of electrical equipment and motor vehicles. Accordingly use of plastic products has been increased with modernization of human lifestyle. The word of plastic is derived from the Greek word “plastikos” which means " ability to change the shape without breaking”. Most of the plastic we use are made of petrochemicals. Plastic with various properties are manufactured using Additives such as polymers and pigments stabilizers and fillers which are used in manufacturing plastic. Plastic is high in robustness and doesn't react with water. Possibility to buy at low prices. As a result of these reasons plastic have been rapidly spread in the society. However, the adverse effects of plastic are not easily decomposed, non-reactive in water, producing various gases from combustion and specially not favorable for the growth of plants and trees because of the adverse reactions due to accumulating them in the soil of the earth. Accordingly, the impact of plastic has become one of the major factors in creating huge environmental problems.

2.1.1. Use of plastic in food packaging

In order to be suitable for plastic food packaging the synthesis process must be carried out under appropriate conditions. Then that is known as food grade resins. Food grade resins should be used for food packaging and production process should be done in a hygienic manner. The manufacturer has printed the symbol of “wine glass and fork” for identification of suitable plastic products.

(Sources: Magazines)

2.1.2. Strategies in Plastic Management

Although the plastic has been introduced to the market by each and every country of the world, the remedy also has been introduced with that to prevent the environmental problems. Accordingly following are the 03 methods can be used in using plastic.

- i. Reduce
- ii. Reuse
- iii. Recycle

2.1.3. Affects of disposing plastic into the environment

A lot of problems have been faced, due to inadequate methodology of disposing discarded plastic with the increasing use of plastic. Water, soil and air the main environmental resources of Sri Lanka have been polluted by this non decaying plastic. Not only that it has been reported that the resources such as wildlife, birds and fish were being dying due to eating these plastic and polythene. Health problems can be occurred due to the lack of eco- friendly combustion of plastic, Dioxin and Furon gas is released and the leakage of chemicals of polythene into the food. These include cancer, skin disease, immune deficiencies, development of the problems of endocrine system and reproduction. Recently it has been revealed through newspapers that from the year 2021 the EU has banned the number of plastic productions which are disposed after using once only. Under these straws, cotton-buds and forks made of plastic have been prohibited

Further the international ecologist has also revealed that about 60,000 kilometers of the Dead Sea is being created in the Bay of Bengal. According to the research conducted by the National Aquatic Resources Research Institute (NARA) with the ship owned by the Norwegian government, it was reported that the coastline of Sri Lanka has been polluted in a great extent. It has been revealed that 50% of the overall bet of Sri Lanka's ocean has been polluted due to collecting of garbage.

According to this research it has been reported that the Western coastal belt of Sri Lanka has been contaminated due to deposition of garbage and the main reason for the pollution of the coastal belt is the micro plastic. The Northwest coastline has been identified as the heavily polluted coastal line. It has been calculated that 0.89 micro fluids per cubic meter in the North West coast have been identified. As a result of this marine pollution, the marine fish resources around the sea of Sri Lanka have been decreased drastically over the past 40 years. The institute of NARA has reported that, the biodiversity is damaged due to lack of sunlight and ventilation for marine organisms due to increasing of marine pollution. The impact of plastic on the environment can be described as follows

(Sources: Newspapers)

(a) Air pollution

Disposal of plastic waste into the open ground and combustion of environmental unfriendly manner, the greenhouse gases such as Carbon dioxide is discharged in to the environmental. Further incomplete combustion can also course, severe odors, dust particles and toxic fumes. Depending on the type and the combustion process of plastic raw materials, the emission from the plastic will be determined. Due to incomplete combustion of polyethylene (PE), polypropylene (PP) and polystyrene (PS) materials, the emission of gases such as Carbon Monoxide (CO) and Nitrogen Oxide (NO_x) which contribute to release the greenhouse gases into the environment.

Diagram No - 01



Emission of gases and Combustion of plastic

(b) Affects on Health

The toxic gases such as styrene is released into the environment by the combustion of products such as materials of food packing which contain polystyrene polymer. The toxic gases of the Styrene group have the high potential to enter into the body through the skin and lungs which can be caused the health diseases. Long-term exposure to toxins belongs to the Styrene group may course the diseases such as headache and stress due to affecting the nervous system. Dioxin is a persistent organic pollutant (POP) that doesn't decompose for a long time. This can be led to cancer and neurological deficiencies. And also, gases emitted from the combustion of plastic at risk for heart disease, asthma skin diseases headaches and can cause damage to organs such as the kidneys, liver and nervous system. Due to disposal of plastic in an environmentally unhealthy manner can cause the spread of pathogens such as mosquitoes and flies by accumulating water in them.

(c) Impact on wildlife and physical environment

The disposal of plastic materials in open ground with the garbage has a major impact on wildlife wild animals such as elephants, tuskers, birds, oxen and domestic animals are coming to those places with garbage, searching for food and they eat the material such as polythene bags and polythene. This poses huge diverse effects on the health of the organisms Inadvertent release of plastic into the environment leads to blockage of drainage the water pollution is done due to accumulation of plastic substances in streams and rivers. The accumulation of plastic in the waterways can lead to flooding by blocking the waterways.

Diagram No- 02



The affects of plastic on wild lives

(d) Marine pollution

Marine pollution is caused by plastic materials entering the ocean through water sources. Plastic with low thickness floats on the surface of the ocean and the organisms who are coming in search of food adversely affected by the accumulation of plastic in places where food is found. When it considers the period of time to decay, it takes around 20 years for plastic bags to break into pieces and 450 years for the bottles and 600 years for plastic packaging nets for decaying. Approximately 5 trillion plastic particles are estimated to float on the ocean surface, most of which are said to be micro plastic particles less than 5 millimeters in diameter. By infiltration into the food pathways of fish can threaten the lives of fish as well as the human lives who consumes particular fish as food.

(Source: Internet)

Diagram No-03



The affect of plastic on the coast and marine organisms

At present the disposal of plastic materials without proper management has become a serious social and environmental problem. Scientist have warned, that burning plastic should not be done in a field or domestically with the temperature below 1000 - 1200 centigrade. However, plastic is burnt at the temperature of 300 centigrade in the field or domestically. Combustion of low-temperature chlorinated plastic, harmful chemicals such as dioxin and furon can be released into the environment.

2.1.4. Classification of importing plastic materials / goods

When import raw materials of goods from any country in the world, the Customs Department of the respective country uses combination classification methods to identify those goods and the 08-digit numbering classification is used for plastic raw materials and related product (harmonized HS code). The HS code used here is specified internationally as follows.

39010000	-	Polymers of ethylene	-	Primary level
39020000	-	Polymers of propylene	-	Primary level
39030000	-	Polymers of styrene		
39040000	-	Polymers of vinyl chloride		
39050000	-	Polymers of vinyl acetate		
39060000	-	Acrylic polymers		
39070000	-	Polyether		
39080000	-	Polyamides		
39090000	-	Amino resins		
39100000	-	Silicones		
39110000	-	Petro resins		
39120000	-	Cellulose		
39130000	-	Natural polymers		
39140000	-	Ion - Exchangers based on plastic		
39150000	-	Waste		
39160000	-	Monocryl		
39170000	-	Tube, pipe, hoses		
39180000	-	Floor covers		
39190000	-	Self-adhesive plates, sheets		
39200000	-	Plates, sheets		
39210000	-	Plates, sheets		
39220000	-	Baths, Washbasins		
39230000	-	Containers (boxes, bags)		
39240000	-	Tableware		
39250000	-	Builders wave of plastic		
39260000	-	Articles of plastic		

(Sources: Internet)

This combined classification methods can be mentioned as follows according to the nature of importation.

Table N0-01

HS Code	Nature of goods
39011000 - 39140000	Plastic importation as raw material
39151000 – 39269990	Plastic importation as finished goods
94011010 – 94069000	Plastic importation as furniture
95030010 – 95089000	Plastic importation as toys

(Sources: Custom Data)

2.1.5. Coding the Classification of Plastic

Plastic is classified under 07 categories and coded

Table No-02

Category of Plastic	Identification Name of Plastic	Short Name	Code
Polyethylene Terephthalate	Polyethylene Terephthalate	PETE or PET	1
High – Density Polyethylene	High – Density Polyethylene	HDPE	2
Poly Vinyl Chloride	Poly Vinyl Chloride	PVC	3
Low - Density Polyethylene	Low - Density Polyethylene	LDPE	4
Polypropylene	Polypropylene	PP	5
Polystyrene	Polystyrene or Styrofoam	PS	6
Other Plastic	Polycarbonate, Polylactide, Acrylic, Acrylonitrile, Butadiene, Styrene, Fiberglass and Nylon, Miscellaneous plastic	-	7

(Sources: Internet)

2.4. Basis of choosing the Topic

- i. Although the Central Environmental Authority has provided provisions by Extraordinary Gazette Notifications issued in September 2017 to reduce the production, selling and usage of plastic, it has not been implemented due to the slow pace at implementation.
- ii. Although many government and non-government organizations use plastic for various purposes, there is an increasing of the damage causes to the environment due to non- follow up on the disposal process after the particular task.
- iii. Inadequate public awareness of the numbering system introduced to identify the category of plastic.
- iv. Inadequate measures have been taken to educate the public on the recycling process of plastic polythene and its importance and to encourage for engaging recycling.
- v. Inadequate motivation for the plastic / polythene recycling centers and plastic / polythene collectors.
- vi. Lack of sufficient market for recycling centers to sell by products produced in the recycling centers.

2.5. Scope of Audit

2.5.1. Compliance with the international standards

My audit is conducted in accordance with the International Auditing Standards of the Supreme Audit Institutions. (ISSAI 5110-ISSAI 5140)

2.5.2. Scope

The observations shown in the report were following observations regarding its scope in drawing conclusions.

The measures taken to reduce the use of plastic were examined by the following institutions.

- i. Ministry of Mahaweli Development and Environment
- ii. Central Environmental Authority
- iii. Consumer Affairs Authority
- iv. Local Authorities
- v. Department of Coastal Conservation
- vi. Department of customs

2.6. Audit approach

2.6.1. Sources of evidence

Relevant evidences obtained from the following sources which were deemed to be adequate and to enable a reasonable conclusion.

- Files
- Discussion notes
- Questionnaires
- Field trips
- Physical inspection of several recycling centers relating to post usage plastic management project under the Central Environment Authority
- Physical inspection of several private recycling Centers
- Newspaper articles
- Magazines
- Media notes

2.7. Audit Criteria

- i. Polythene and plastic management regulation introduced by the Central Environmental Authority
 - Gazette No. 2034/33 dated 1st September 2017, prohibiting the manufacture, sale, offer for sale, offer free of charge exhibition or use of polythene or any polythene product which is twenty (20) microns or below in thickness with the in country use. (Annexure-01)
 - Gazette No. 2034 / 34 dated 1st September 2017 of prohibiting the manufacture sale, offer for sale, offer free of charge, exhibition or use of food wrappers manufactured from polythene as a raw material within the country. (Annexure-02)
 - Gazette No 2034\35 dated 1st September 2017 of prohibiting the manufacture, sale, offer for sales, offer free of charge, exhibition or use of any bag manufactured from high density polyethylene as a raw material with in the country. (Annexure- 03)
 - Gazette No 2034/36, dated 1st September 2017 of prohibition of open burning of refuse and other combustible matters inclusive of plastics. (Annexure- 04)

- Gazette Notification No 2034 / 37 dated 1st September 2017 on prohibition of the use of all forms of polyethylene, polypropylene, polyethylene products or polypropylene products as decoration in political, social, religious, national, cultural or any other event or occasion. (Annexure-05)
 - Gazette No 2034/38 dated 1st September 2017 on prohibition of sale, offer for sale, offer free of charge, exhibition or use of food containers, plates, cups and spoons manufactured from expanded polystyrene with in the country. (Annexure-06)
- ii. National Environmental Act No. 47 of 1980. (Annexure-07)
 - iii. Consumer Affairs Authority Act No.09 of 2003 (Annexure-08)
 - iv. National Program on “Punarudaya” Environmental Protection 2016 to 2018 (Annexure-09)
 - v. Ordinance under section 10(1) of the Consumer Affairs Authority Act No 1588/18 dated 11th February 2009 (Annexure- 10)

3. Observations

3.1. Quantity and cost of plastic imports in Sri Lanka

Observations were as follows

3.1.1. Importing of plastic

(a) The quantity and value of imports

While examining the statistical data obtained from the Sri Lanka Customs Department from the year 2012 to 2018, it was observed that the total quantity of plastic imported during the period of 7 years amounted to 3,353.9 million kilograms and the cost incurred was 184,300.9 million Rupees.

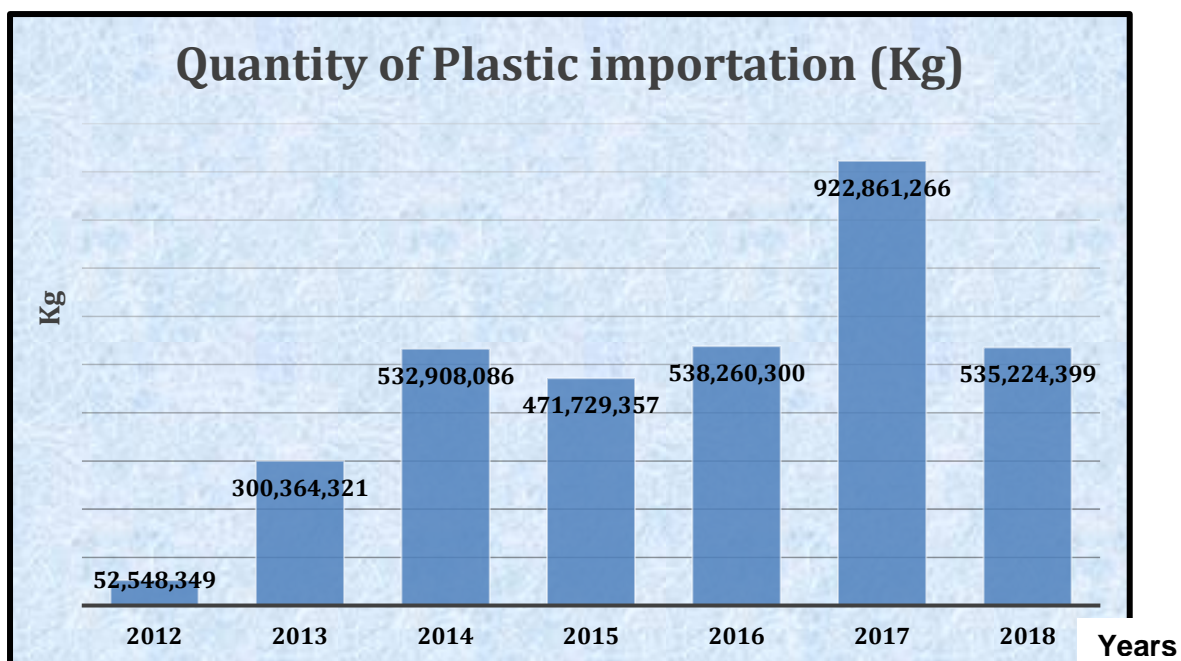
Table No-03

Year	Quantity KG	Value (Rs.)
2012	52,548,349	1,880,090,674
2013	300,364,321	17,037,930,470
2014	532,908,086	28,758,407,072
2015	471,729,357	30,942,548,811
2016	538,260,300	36,068,260,874
2017	922,861,266	35,277,537,698
2018	535,224,399	34,336,222,615
Total	3,353,896,078	184,300,998,214

(b) Growth of imports

Import data analysis showed that quantity of imports has been increased rapidly from 2012 to 2017 while the quantity of imports has increased in 2017 compared to previous year. Due to lack of proper implementation of the waste management system in Sri Lanka, it was observed that, the current import volumes are remaining further unaffordable to the country.

Diagram No-05



3.1.2. Nature of imported plastic

Depending on the nature of imported plastic, they can be classified as raw materials, finished products, furniture and toys. It was observed that imports of raw materials were 64% of the total imports in 2018. Imports of plastic raw materials has been increased by 3.65% in 2018 compared to 2017 and the expenditure on it has been increased by 1.23 %.

Diagram No-06

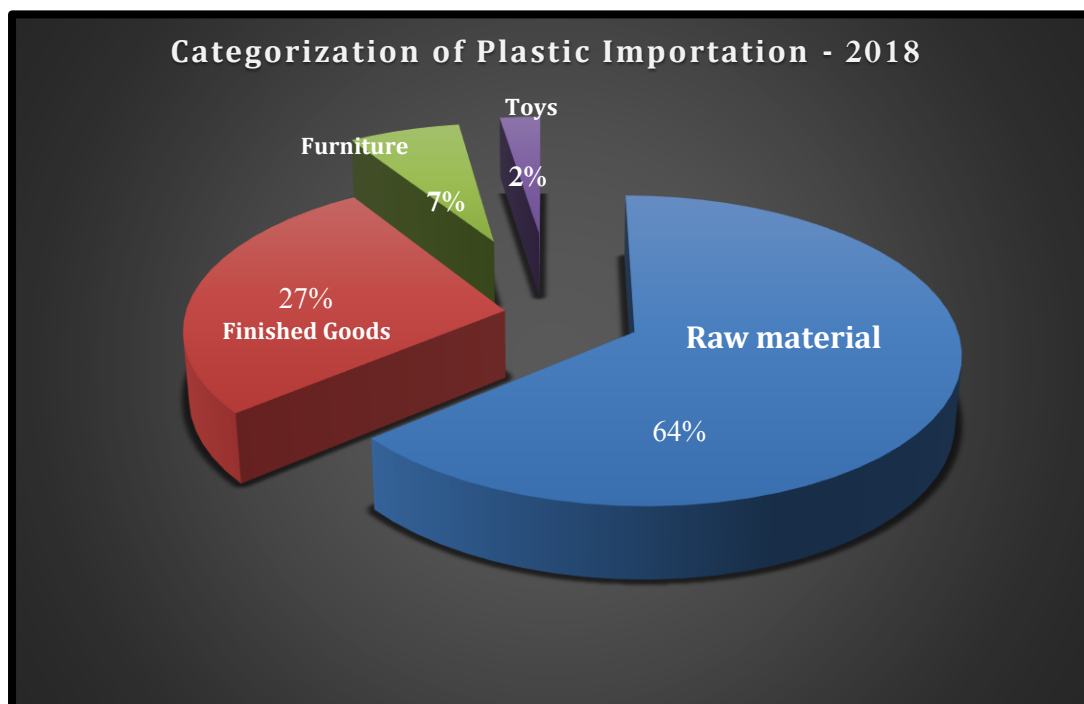
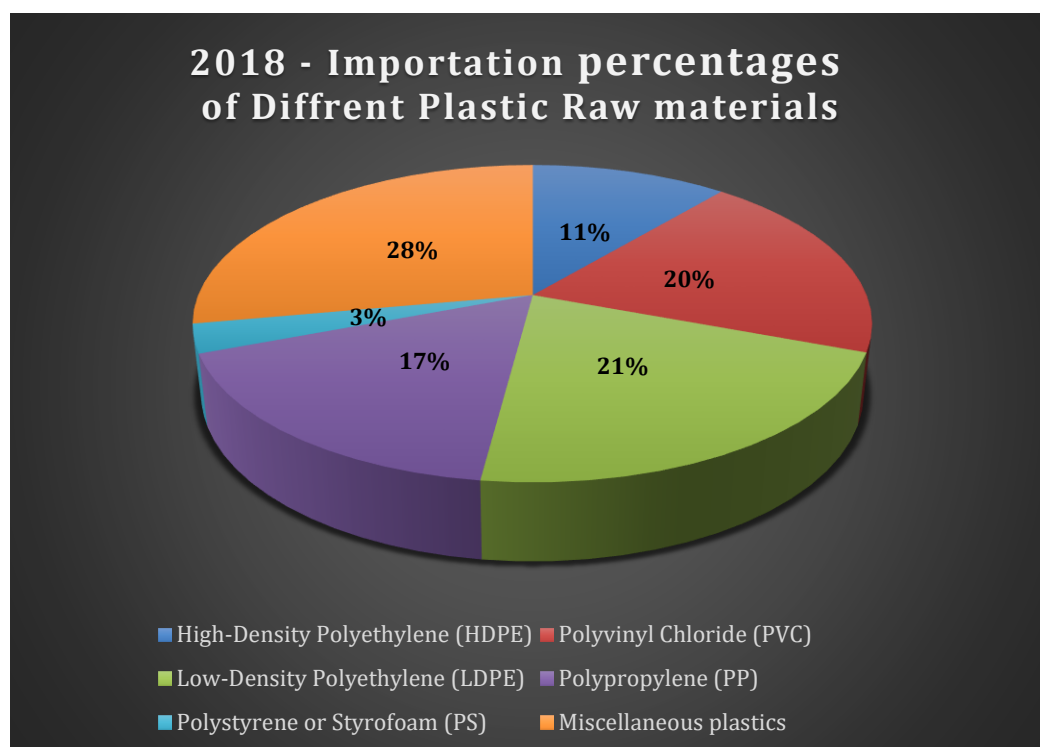


Table No-04

HS Code	Category	2017		2018	
		Invoice Value (Rs.)	Net Weight (kg)	Invoice Value (Rs.)	Net Weight (kg)
39011000 - 39140000	Raw material	2,331,889,987	330,155,559	2,360,573,724	342,211,772
39151000 - 39269990	Finished Goods	27,743,541,092	137,983,432	26,715,537,383	144,763,543
94011010 - 94069000	Furniture	2,982,921,518	441,702,435	2,781,222,846	35,316,706
95030010 - 95089000	Toys	2,219,185,101	13,019,840	2,478,888,661	12,932,378
Total		35,277,537,698	922,861,266	34,336,222,614	535,224,399

(a) Importing of various types of plastic

Imports in the form of plastic raw materials have gradually increased under the combined classification No. 39011000- 39140000 during the last five years from the year 2014 to 2018, and the percentage of imports was about 28% of total imports of raw materials under the other category (code No-07) in 2018 was higher than the other categories.

Diagram No-07

(b) Importation of Polyethylene Terephthalate (PETE or PET) type plastic

It was observed that the increase of importing raw materials by 3.7 million kilograms in the year 2017 compared to imports of polyethylene terephthalate plastic in the year 2014.

(c) The trends of importing plastic raw materials.

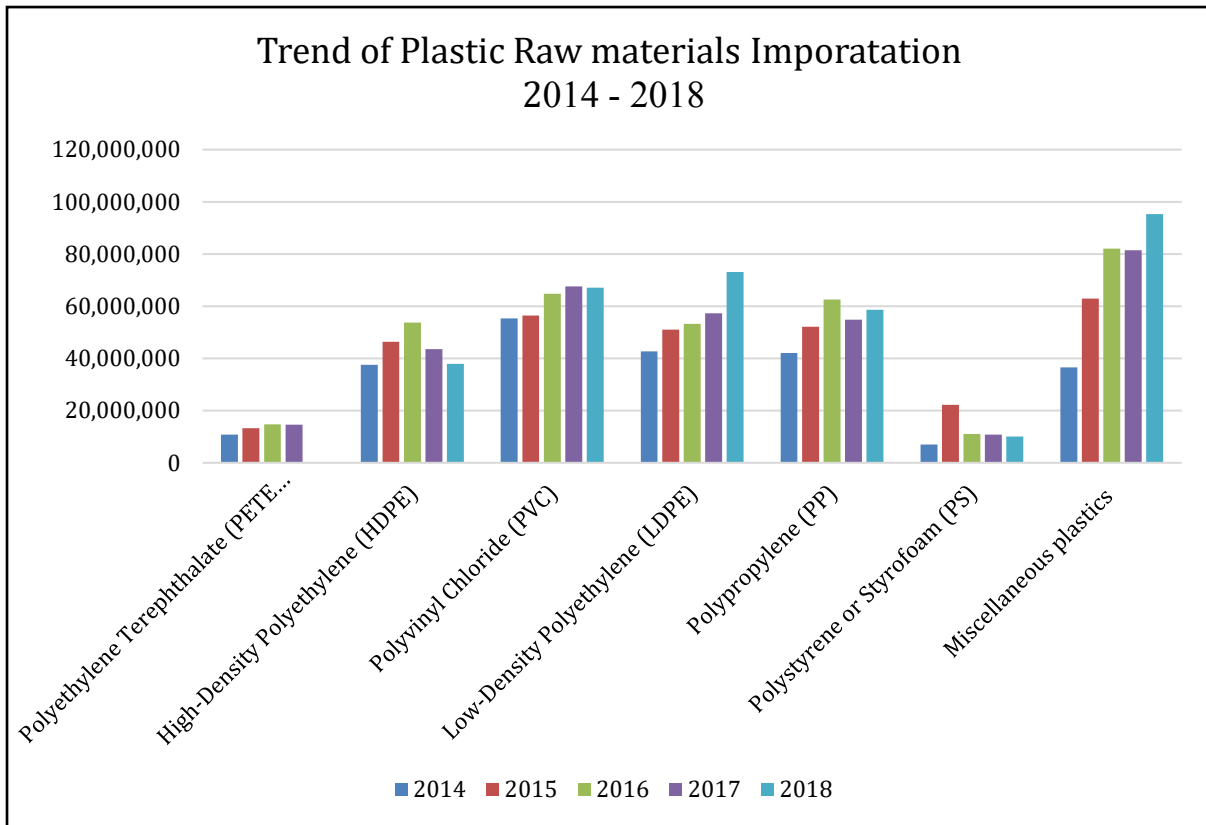
It was observed that there has been an increase of importing the types of polyvinyl chloride (PVC) plastic by 21.19%, polystyrene plastic by 44.67%, polypropylene plastic by 39.24% and the different category plastic by 160.79% in the year 2018 compared to the year 2014.

The table below shows the details

Table No-05

Number	Description	2014 (Kg)	2015 (Kg)	2016 (Kg)	2017 (Kg)	2018 (Kg)
1	Polyethylene Terephthalate (PETE or PET)	10,854,751	13,226,604	14,734,724	14,586,574	-
2	High-Density Polyethylene (HDPE)	37,579,410	46,345,320	53,715,935	43,576,495	37,966,547
3	Polyvinyl Chloride (PVC)	55,373,960	56,443,733	64,767,975	67,574,532	67,105,683
4	Low-Density Polyethylene (LDPE)	42,679,321	51,000,308	53,185,623	57,272,211	73,076,891
5	Polypropylene (PP)	42,076,262	52,180,694	62,595,564	54,844,670	58,587,350
6	Polystyrene or Styrofoam (PS)	6,950,249	22,196,514	10,991,203	10,860,439	10,054,747
7	Miscellaneous plastic (includes: polycarbonate, polylactide, acrylic, acrylonitrile butadiene, styrene, fiberglass, and nylon)	36,548,200	62,980,756	82,052,799	81,440,639	95,312,596
	Total	232,062,153	304,373,929	342,043,823	330,155,560	342,103,814

Diagram No-08



3.2. Monitoring the use of plastic

3.2.1. General legal provisions relating to plastic

According to the provisions regulated in the Extraordinary Gazette No 1588/18 dated 11th February 2009 activating under the authority given under the section 10(1) of the Consumer Affairs Authority Act No.09 of 2003, food wrappers/ packing of polythene and the producers of waste containers or vendors should include a label in each packet or bundle wrappers/packing of polythene and waste containers, with the details such as the name and the address of the manufacturer, manufacturing date, generic name of the product, general thickness using Microns (μ), Environmental Protection License number of the manufacturer, registration number of the company / business of the manufacturer, the dimensions of the food wrapping / packing of polythene and waste containers with millimeters(mm).The consumer affairs authority has been given the authority to check whether the institutions which are mentioned in a label in the food wrapping/ packing and the production of waste containers which are produced using polythene according to the provisions mentioned in the above Gazette and one who fails to comply those provisions could be punished in terms of section 60 (5) of the Gazette Notification.

The observations were as follows

(a) Penalties for illegal activities (National Environmental Act)

According to the legal provisions under section 31 of the National Environment Act Number 47 of 1980, a person convicted of an illegal action is sentenced to be punished in one way or both of the two ways, two years imprisonment or fine not exceeding 10000 rupees. It has been observed that the environmental hazards arising from the unauthorized incorporation of polythene into the environment are very high and the penalties imposed by the individuals / institutions who produce such production are not sufficient as per the above provisions preventing the illegal process of producing polythene.

(b) Penalties regarding illegal wrappers (Consumer Affairs Authority Act)

It was observed that the penalties imposed by the provisions of the Act are inadequate when a penalty is imposed on an offender who doesn't comply with the provisions of section 10 (3) (1) of the Consumer Affairs Authority Act No 09 of 2003

3. 2. 2. Management regulations regarding polythene / plastic - Central Environmental Authority

Following are the details observed during the audit regarding the responses obtained by the Central Environmental Authority for the questionnaire submitted to the Authority regarding the progress of the implementation of the directives of the six Gazette Notifications dated 1st September 2017, issued by the Central Environment Authority with the objective of minimizing the manufacturing, sale and usage of polythene and plastic.

(a) Restrictions and raids on promotion of polythene wrappers.

According to the extraordinary Gazette No 2034/34 dated 1st September 2017, issued for prohibition of the sale, offer for sale, offer free of charge, exhibition or use of food wrappers manufactured from polythene as a raw material with in the country.

The following were observed

- i. Cases has been filed against 250 institutions who produce/ sale in legal productions while the legal action is been initiated against 560 institutions by 30th June 2019.
- ii. Judgments were given for 16 institutions for the cases filed in 2018 and the fine of 10,000 rupees were imposed on each of the individuals and institutions convicted of the offences.
- iii. Drafts were made to authorize the Sri Lanka police under section 71 of the Police Ordinance to carry out the rates in a wide range and strengthening.
- iv. In the implementation of the provisions of the above Gazette Notification, the lots identified as illegal are not completely ceased by the Central

Environmental Authority while only the samples are taken as the productions of the cases to produce to the magistrates.

- v. It was observed that the existing staff of the investigation division was not sufficient for the rates.
- vi. There is no standard set out mentioning the definite necessities which should be included in the bio-degradable food wrappers in the present market and the standard sale price has not been established.
- vii. It was observed that the consumers don't have any sense regarding the environmental problems via polythene, due to the higher demand for the polythene food wrappers than the bio-degradable food wrappers because of the low price and the convenience in usage.
- viii. Although there is a tendency in using food wrappers made of bio-degradable raw materials, it has not been scientifically confirmed, what chemicals and biological changes would occur after the polymeric are released into the environment and then addressed the water, soil, marine environment and waste management yards in the environment.

(b) Consumers are not charged the costs associated with the wrappers.

Extraordinary Gazette Notification No 2034/35 dated 1st September 2017 issued to prohibit the sale, offer for sale, offer free of charge, exhibition or use of any bag manufactured from High density polyethylene as a raw material with in the country.

The following were observed

- i. Implementation progress between 40% and 50% per hundred.
- ii. It has been stated that the objection in implementing this Gazette Notification, is the judgment of the supreme court which was issued to the consumer not to charge extra for any packing or wrappers issued with any item.
- iii. It was observed that there is an ability to minimize the polythene wrappers in a considerable amount by discouraging the free distribution of containers and wrappers related with polythene free of charge for the consumers by the shops, supermarkets and other places. And also observed that there is an ability of issuing potential for offering bonuses to encourage them for using the biodegradable wrappers.

(c) Controlling the outdoor burning of garbage containing plastic

No person should be allowed to burn the waste contains plastic or any other easily flammable material in the open air, making arrangements to burn and allows or gives permission to burn and also a person who fails to admit above mentioned regulations may become an offender under the National Environmental Act No 47 of 1980 and compliance to penalty under the statement 31 of the Extraordinary Gazette No 2034/36 dated 1st September 2017, which has been issued to implement the regulations.

Following were observed

- i. It was stated that a model letter, prepared to inform all households in the country as the progress of the implementation has been issued to the Local Authorities. Furthermore, it was also stated that the Public Health Inspectors were intended to be empowered to monitor the practicality of the directives mentioned in the Gazette.
- ii. Although the specimen letters have been prepared to inform the local authorities about the implementation of the above Gazette Notification, the public was not properly informed by the local authorities.
- iii. While the sample investigation on the implementation of the regulations of the above Gazette in the rural areas , it was observed that the polythene/plastic are burnt abundantly in the open air and the formal methodology has not been implemented by the local authorities for disposing the polythene waste in an environmental friendly manner and collecting them properly.

(d) Limiting the use of polythene for festivals and decorations

Extraordinary Gazette Notification No 2034/37 of 1st September 2017 prohibited the use of all forms of polythene, polypropylene, polyethylene products or polypropylene products as decoration in political, social, religious, national and cultural or any other event or occasion.

The following were observed

- i. The authority has informed that the drafts prepared for empowering the police department of Sri Lanka to carry out the raids under section 71 of the Police Ordinance Act regarding the violations of polythene and plastic regulations declared under the National Environmental Act and making arrangements to make the district /electoral organizers of all political parties and representatives of Pradeshiya Sabha aware on the progress of implementation. However, it was observed that the awareness of villages was insufficient in this regard.

(e) Use of expanded polystyrene

The Extraordinary Gazette Notification No 2034/38 dated 1st September 2017, issued to prohibit the production of food containers, plates and cups and spoons manufactured from expanded polystyrene with in the country and sale, offer for sale, offer free of charge, exhibition or use of food containers, plates cups and spoons manufactured from expanded polystyrene.

The following were observed

- i. With the increased use of polythene and plastic it is observed that the plastic products used in the supply of food (such as spoons, forks and cups) and the authority does not have the necessary equipment to check whether the products contain expanded polystyrene.

3.2.3. Provisions made by the cabinet decisions on Plastic Management

The approval of the Cabinet Memoranda issued by the Mahaweli Development and Environment in the year 2016 and 2017 with the aim of implementing an action plan comprising short term, average and long term activities which were prepared by the panel of experts appointed by the cabinet of ministers to minimize the environmental problems caused by polythene / plastic and the sustainable management of polythene and plastic in the country is given in the schedule number - 01.

(a) National policy on Waste Management

Although the National Policy on Waste Management which includes solid liquid and gaseous waste categories have been drafted and presented to the cabinet of ministers, it has not been in the operational level. The approval of the cabinet ministers have approved by the 10th of October 2019, it was not yet operated by the date of audit

(b) The cost of wrappers Shall be borne by the consumers

Prior to the 13th October 2008 consumers were charge a fee for the bags/ wrappers during which time polythene based products were widely used, for the above judgment has been given by the supreme court on the 13th October 2008, for a case which had been filed by a consumer against the charging a fee for these bags/ wrappers by the vendors. Based on the decision, the Extra ordinary Gazette No 1571/25 dated 17th October 2008 issued by the Consumer Affairs Authority (Annexure-11), all vendors were ordered not to charge any fee, directly or any other way from the consumer for the bags/ wrappers while selling the goods to the consumer.

(c) Prohibition of the use of non- degrading shopping bags

The short term activities in the Cabinet Memorandum No 16/17 02 / 704 / 45 dated 2nd June 2016 with the objective of providing eco-friendly packing to the consumers and to prevent the sale and use of high density polythene bags including silly bags which are delivered as containers at the time of purchase, it was observed that although the activities were prepared the objectives were not fulfilled. (Annexure- 12) (It was revealing that approximately 5 lacks shopping bags are used per month in one branch of the supermarkets)

(d) Enforcement of the principle of extended accountability

The Cabinet Memorandum No 16 / 22 36 / 704 / 061 dated 11th October 2016 affirm the necessity of enforcing the principle of extended accountability. It was identified that approximately 210,000 metric tons of plastic and polythene are added to the natural environment annually and there is a danger of 40% to cause dengue. Accordingly, the above cabinet memorandum was presented for the purpose of enhancing waste management in Sri Lanka and for the implementation of the comprehensive accountability principle of the manufacturer trader and consumer. Paragraphs 3.1 and 3.2 of the Cabinet Memorandum anticipated the appointment of a committee to draft or amend the relevant rules and regulations for the implementation of these procedures, the implementation of pilot projects within a period of 06 months and substitution for the entire product within one year.

Sociological study was conducted in the year 2016 covering the districts such as Anuradhapura, Colombo, Gampaha, Kandy and Kurunegala in order to implement the above requirements and the process of repayment of deposits for not naturally decaying packing, had been tested here while conducting the survey proposed to deposit at least 3 rupees to 13 rupees for the customer and at least 2 rupees 50 rupees for the vendor for the packing of 09 types of goods. However, it was observed that as at the date of audit 30th September 2019 the above principle was not legalized and not in a condition to implement. (Annexure- 13)

(e) Testing the quality of polythene

Cabinet Memorandum No 17 /1405 /704 / 022 dated 29th June 2017, expected to manage the use of polythene properly to reduce the environmental problems caused by polythene and plastic.

Following were observed

- i. The Basel Technical Committee has banned the import of recycled high density polyethylene (HPDE) and low density polyethylene (LPDE). The Customs Department of Sri Lanka has not established the necessary facilities to verify the suitability of imported polythene to the local market through a laboratory test. Due to this the nature of the imports imported by an importer was decided only on the information submitted by the particular importer.

- ii. The Sri Lanka Standard Institution has drafted the set of standards for biodegrading lunch sheets, it has not been legalized by the 30th September 2019.
- iii. There has been no implementation of quality standards in importing or manufacturing of biodegradable polythene products by the 30th September 2019 (Annexure- 14)

(f) Provisions relating to goods with plastic wrappers

It was observed that it is examined by only the quantity of microns which should be included in the label of the food wrapping or packing according to the legal provisions mentioned in the Extraordinary Gazette No 2034 / 33 dated 1st September 2017 and they are not tested under laboratory testing.

(g) Standards issued by the Sri Lanka Standard Institution on plastic

Information on standards issued by Sri Lanka Standards Institution for the monitoring of plastic, polythene is given in Schedule No - 02.

The following were observed

- i. As of the 30th September 2019, Sri Lanka Standards Institution have issued 25 standards relating to the regulations of plastic and polythene. It was observed that the contribution of the relevant agencies was insufficient to implement such standards.
- ii. Although the Sri Lanka Standard Institution has issued a standard for the code to be included in the food / beverage plastic packing, the physical examination on recycling the packing, showed that these products have not been made of the coded ingredients.

3.2.4. National program of “Punarudaya” environmental conservation

The following observed

(a) Financial provisions

Although the cost of 500 million rupees have been estimated for the implementation of the principle “Polluter should be paid” on recycling waste and the “Punarudaya” environmental conservation national program(2016 to 2018) as 50 million rupees from September 2015 to December 2015, 250 million rupees for the year 2016 and 200 million rupees for the year 2017. However estimated cost was not incurred. It was observed that only a committee comprising representatives of the relevant institutions have been formed and a report has been submitted.

(b) Performance of the program

A proposal for the National Project on the Recycling of Post-Disposable Packages of pesticides was submitted to the “Punarudaya” Environmental Protection Program 2016 - 2018. Although the Ministry of Mahaweli Development and Environment had made a request of Rs. 1,950,000 in 2018 and a sum of Rs 1,200,000 in 2019, it was observed that the project was not implemented under the “Punarudaya” program until 30th September 2019.

3.3. Plastic / polythene recycling

3.3.1. Establishment of Recycling Centers

The following are the observations made during the audit regarding the recycling centers of plastic and polythene, registered under the Central Environment Authority (CEA).

(a) Ownership of centers

Out of the 100 plastic polythene recycling centers operating in the nine provinces of Sri Lanka according to information obtained from the provincial offices of the Central Environment Authority, 09 recycling centers are operated under the state ownership and the remaining 91 are privately owned. Accordingly, the contribution of private companies towards recycling has increased.

(b) Compliance with the legal requirements.

It was observed that, 26 (4 state-owned) centers are operating without an Environmental Protection License, out of these 12 centers are in western province of August 31, 2019, there are 28 recycling centers which have expired license, out of these 18 centers are in western province. (Schedule - 03)

(c) Operation of Recycling Centers

Out the above, only 14 centers offer PET-type plastic recycling, while PP, LDPE and HDPE-type plastic have been found to be more recyclable.

(d) Capacity utilization

The capacity utilization of each of these centers was examined in 23 centers where the average capacity for plastic recycling is 278,220 kg and its current capacity utilization is 180,440 kg. Accordingly, it was observed that there were amount of 97,780 kilograms unutilized in those centers. As there were insufficient data on capacity utilization in the other 77 centers, no audit observations could be made on the efficiency of capacity utilization of these centers.

3.3.2. National Post use Plastic Waste Management Project

(a) Background of the project

It has been revealed that approximately 500,000 tons of plastic are imported into the country annually and approximately 30 percent of which recycled and rest is being added to the environment unsystematically. Thus, only about 40 percent of the to protect which added to the environment just contributed to recycle. The Central Environmental Authority (CEA) inaugurated a project of post – usage plastic management project in 2007 for minimize the adverse effect from non-decaying waste and it had invested Rs. 452.7 million at the date of 31st December 2018.

The objectives of the project are as follows.

- i. Development of several local authorities in Sri Lanka as model organizations for optimum performance of plastic / polythene waste management.
- ii. Earn an additional income to local authorities by handing over plastic / polythene waste management to local authorities.
- iii. Socializing the overall message by providing awareness on the plastic / polythene recycling.
- iv. Dissemination of separated waste disposal system and separated waste collection system in local authorities.

(b) Coordination with Local Authorities

There were 08 plastic recycling centers established in Balangoda, Kurunegala, Kaduwela, Matara, Anuradhapura, Kandy, Jaffna and Nuwara Eliya Under this project. The Central Environmental Authority (CEA) as the first party, the Local Authority as the second party and the Provincial Council as the third party have been responsible under this agreement for the implementation of the project. The Central Environmental Authority will assist the Provincial Council to construct a center for store the recycling materials in the project site, Local authority will assist the Provincial Council in the management, operation and maintenance of the Recycling Center and supervise the project activities and Provincial Council will assist to Local Authority for implementing and monitoring of those projects.

(c) The terms of the agreement relating to the project

In accordance with the agreement entered into by the Central Environmental Authority, Local Government and Provincial Councils on 18 August 2011, the project should be carried out by the second party with the continued support of the third party mentioned in the agreement and the terms and conditions set therein.

In the event that the second party fails to make all the activities of the project as agreed by this agreement in accordance with clause 2.19 of the above agreement, the first party should pay the expenses of the building and other operating expenses provided by the second party by valid money in Sri Lanka and all other equipment should be provided to the first party. If the project is not implemented properly by the second party, the third party should notify the first party in writing of the assessment recommendations of the committee in terms of Section 3.9 of the Agreement.

Following are the observing conditions during the audit carried out in respect of each project of the centers.

- i. In terms of section 23 (b) of the National Environmental Act No. 47 of 1980, an Environment Protection License was required to obtain, even though Environment Protection License for projects have not been obtained of plastic post use plastic management as at date of the audit.
- ii. It was revealed that one center has recycled plastic polypropylene (PP) of post usage plastic in nine colors and the market demand for it is high. There is only one buyer to buy these products and taking action to expand the market and sale the product.

Diagram No-09



- iii. It was observed that in sufficient spaces for shorting, washing and drying in some centers and the ground was dusty.

Diagram No-10



- iv. Since there is no specific market for plastic / polythene it had not been considered by-products of recycled plats.
- v. It was observed that he problem of plastic recycling and the difficulty of recycling dirty plastic and polythene along the road sides and the lack of cleaning equipment, Receiving of plastic and polythene for recycling to some centers at low level and Not Applying the mechanical system for cleaning of polythene (Polythene washes are man-made and consume a lot of time)
- vi. The training provided to the workers in these centers was insufficient to operate the machinery.
- vii. Some manufacturing companies are discriminated fraudulently coding categories of plastic products.

- viii. It is being received the significant quantity with the laminated cover under the plastic products which difficult to recycle. Dispose Unlimitedly the plastic items that are used only once, and toys have less durability, plastic flowers, lawns and decorations. Products such as lunch sheets / shopping bags are difficult to recycle and excessive availability of such materials.
- ix. Inability to recycle plastic products which are produced as a mixture of several types.
- x. It has to carried out repairs of plastic polythene recycling machines frequently (blade sharpening / other mechanical defects)
- xi. Problems related to electronic wastes recycling (CD / CFL bulbs and others)
- xii. Inability to recycle plastic / fiber / regiform which are used for electronic use
- xiii. Recycling is basically twice the input load.
- xiv. The recycling center has a large quantity of non-recyclable waste in the plastic container, which has to be disposed of and used for recycling. (Booking errors) Other contaminants such as water, mud and sand may be mixed with the waste that is transported to the recycling center.
- xv. Plastic polythene recycling has been observed to remove some packaging labels and stickers, which can be very time-consuming and costly. These labels are made of a very thick layer of gum to attach to the plastic, making it impossible to recycle the plastic.
- xvi. The cost of selecting polythene is very expensive. It was observed that the motor of the polythene heater was malfunctioning and was not used.
- xvii. Lack of machinery for washing plastic and polythene and lack of proper plastic separation.
- xviii. All three machines in one hub are not operating at maximum capacity and the daily operating capacity for all three machines is 1500 kg which is 650 kg daily underutilization.
- xix. Plastic Crushing Machine and Compactor, leased to one center, has been leased to the private sector since January 2019.

Accordingly, it has been observed that, as of the date of the audit, each Provincial Council has not adequately evaluated the implementation of the project. Accordingly, the activities of all these centers have been evaluated and it is observed that short term and long term plans have the potential to improve the performance.

3.3.3 International Coastal Cleanup Program conducted by the Institute of Coastal Conservancy

The Marine Conservation Institute, together with volunteer organizations and individuals around the world, conducts an international coastal clean-up program annually. Here, information is collected and categorized into 10 categories of waste, collected from the beaches of the world and waterways. According to data obtained from the Annual Reports of the Marine Conservation Institute for the 05 years from 2013 to 2017, the information on the coastal cleanup program in Sri Lanka is given in (Schedule No - 04).

The observations were as follows.

(a) Discharging of plastic waste into the environment.

It was observed that there were 150,242 bottles of beverage, 100,875 food wrappings, 80,483 straws, 74,183 lids of bottles, and 64,646 plastic bags and 56,154 cigarette buds have been accumulated within 05 years from 2013 to 2017 within a total of 318 kilometers of the coastal belt of Sri Lanka. It was observed that. These beaches are particularly important for tourist attractions and entertainment, as well as the main rivers and other streams flowing through the interior of the country and the places connected to the sea, and as a whole flowing and spreading along the coastline by the tides and it can be observed the non-decaying waste in this beach. Even though the coastal cleanup programs conducted by volunteer organization, Department of Coastal Conservation and the local authorities, it was observed that further intervention should be done in relation to this adverse environmental condition.

(b) Increasing the discharge of the plastic wastes

In the analyzing of the waste accumulated waste collected, the plastic waste have been increased significantly in 2017, comparatively in the year 2013.

The observations were as follows.

- i. When the analysis of the increasing of above disposal, it was highlighted the increasing of beverage bottles, grocery materials and straws has a percentage respectively 7053, 5456 and 1089 in 2017 comparatively year of 2013. Accordingly, the process was implemented in relation to the was use management was inadequate and it was observed the direct contribution from the manufactures should be obtained.

Table No. 06

	Category of Plastic	Value of Total Accumulated of 05 Years from 2013 – 2017	Increase in Year of 2017 Comparatively of Year 2018
1.	Cigarette buds	56,154	492%
2.	Food wrappers	100,875	131%
3.	Beverage bottles	150,242	7053%
4.	Bottle caps	74,183	225%
5.	straws	80,483	1089%
6.	Other plastic bags	64,646	536%
7.	grocery	49,792	5456%
8.	Glass bottles	52,874	110%
9.	Beverage cans	39,124	2%
10.	Cups & plates	27,452	439%

3.3.4. Participatory Social Responsibility

(a) Use of polythene / plastic in religious activities

There is no mechanism to reduce the amount of waste that is added to the environment annually by garlands made of polythene used by the devotees for religious purposes. Though it is very easy to understand the negative impact to environment and existing organism perspective of certain activities of devotion on the religious philosophy that one believes in, and the message which should be spread among all living beings including humans, through this noble task by the holy places is also very easy. It was revealed that, it is essential to make the Environmental organizations and responsible agencies to think seriously about that matter.

(b) Use of polythene / plastic in politics and advertising

There are 04 major elections being conducted under the Sri Lankan Elections Act and there is a very competitive nature among them. The competition in the preferential system has been further intensified and the use of plastics or polythene is very high in the methods used in propaganda. It is worth noting that the adverse impacts of the environment should be recognized by voters and agents, but it has been observed that the relevant organizations need to understand and take responsibility for the impact of social organizations, environmental organizations and public opinion on this issue.

(c) Plastic products

Ellen Macarthur of the United Kingdom has predicted that, by 2050 the amount of marine plastics will outpace than its inhabitants. Co-operation for turtle conservation has been obtained by adopting incentives for post use plastic management in the ocean. For that, they have been focusing on new inventions made out of post usage plastic. It was observed that the environment friendly sustainable production process initiated with the participation of the Sri Lanka Navy needs further attention to streamline the various manufacturing processes using plastic waste in the coastal zone.

(d) Making an income source from disposable plastic.

With the objective of establishing a child development fund to meet the educational needs of non-school children in the Kegalle district, the 'LelyWeek' had generated an income of Rs. 60,000 from 3 metric tons of discarded plastic. The waste was purchased by the Sri Lanka Recycling Association and by the end of the 'Lely week', the total amount of money collected by the Fund was Rs. 20 lacks. It was observed that there is a need for further extension of such social programs in other districts as well.

(e) Contribution of Non-Government Organizations.

It was observed that according to a survey conducted by the Sarvodaya Movement - Colombo District Office, polythene, plastic nets and nylon ropes were the main causes of the destruction of coral reefs from Mount Lavinia to Kolpitty. It was observed that, it is important to pay attention to the recommendations made by such surveys and there is a possibility to prevent the potential adverse impact on biodiversity.

4. Recommendations

- 4.1.** Periodically updating the National Environmental Act.
- 4.2.** Obtaining the contribution of the Ministry of Local Government and the Local Authorities in the collection and disposal of plastic waste.
- 4.3.** Facilitate collection and disposal of waste in local authorities.
- 4.4.** Strengthening the laws regarding food wrapping, plastic food packing and plastic use for onetime. (Food grade plastic)
- 4.5.** To support to the development of Plastic Recycling Industry.
- 4.6.** Re-examine the issue of free polythene bags when customers buy goods from the market.
- 4.7.** Labeling of Bio-Degradable Food Products Packaging and the labeling of all the Bags of Products manufactured in collaboration with the Consumer Affairs Authority will be easy to identify to customer. All shopping bags should be labeled with each other and the necessity of labeling the outside of the food packaging implementing practically.
- 4.8.** Taking action to prepare a plan to collect household polythene and plastic waste at least once a month by the relevant local authorities covering all houses in their area.
- 4.9.** Empower public inspectors through the Department of Health and inform the public of the implementation of the Regulation No. 2034/37, published under the National Environmental Act, which stated does not permit, allow, or permit burning of waste included plastics or other flammable materials in public.
- 4.10.** There is no standard set for biodegradable foods in the market and no selling price has been decided. Food wrapping papers manufactured by polythene are cheaper and easier to use when compared to biodegradable food wrapping. Therefore, polythene food wrappings are more demanding in the market than biodegradable food wrappings. Hence it should be decided the standards and control prices for biodegradable food wrappings.
- 4.11.** Since there were no experimental study carried out, there should be conducted experimental study in relation to how food wrappings which are manufactured by biodegradable raw materials react in chemically and biologically after release to these into soil, marine, environment and waste management yards.
- 4.12.** Discourage the importation of polythene manufacturing raw materials and make available and promote the use of environment friendly substitute products.
- 4.13.** Strength the policy decision making by Proper Corporation with Central Environment Authority for environment protection under the Consumer Authority Act which implemented to protect the consumer.

- 4.14.** Provide necessary mechanism to Central Environment Authority for accelerate the legal functions of the raids.
- 4.15.** Establishment examine mechanism for the imported polythene and plastic at the premises of Srilanka Custom of a testing system for imported polythene plastic.
- 4.16.** Making the public aware about the important of plastic coding system and important for directing to plastic/ polythene recycling.
- 4.17.** Obtaining the Environmental Protection License for Plastic Recycling Centers
- 4.18.** Enhancing the efficiency of plastic recycling centers.
- 4.19.** Exploring the possibility of operating underutilized assets to maximum efficiency.