Sustainability in Waste Management a Study of International Hotels- A Review of Literatures

Sandhya Anilkumar[1], Rashmi Koppar[2]& Pratisha Baruah[3]

[1]Associate Professor, Ramaiah University of Applied Sciences, sandhyaanilkumar@msrchm.edu, Mobile: 9448493215

[2]Associate Professor, Ramaiah University of Applied Sciences, rashmikoppar@msrchm.edu, Mobile: 9945204396

[3] Assistant Professor, Ramaiah University of Applied Sciences, pratishabaruah@msrchm.edu, Mobile: 9663379975.

Abstract: *The concept of sustainable waste management has been in discussion for some time now. This paper is a literature review on managing waste in the context of International hotels. Based on a detailed review of literature we find one thing in common which is, stakeholders role is crucial in the management of waste and they make substantial contribution in achieving worthwhile sustainable Municipal Solid Waste Management (MSWM). In addition, there is also a significant role played by the informal sector which primarily consists of community-based organizations (CBOs), Non-Governmental Organizations (NGOs) and private organizations which offer viable solutions in managing and improving then the functioning of MSWM. Literature survey also indicates towards the*

present condition of waste management and how inefficiently hotels still continue to manage waste. Research have suggested that managing waste efficiently in hotels can leads to more profitability and can cause less damage to our environment. As we are becoming more aware of the hazards of not managing waste efficiently various discussions on grounds of moral, social, ethics are gaining prominence. Discussions are also going on production concepts and how hotels can gear up to adopting to new technologies which will reduce and minimize waste. However also there has be a parallel plan how the hotel industry professionals can be trained and given adequate know how to gear up to these change in technology. As we aware from the survey of literature, hotels both in rural and urban areas are generating huge amounts of solid and liquid waste and it is becoming increasing difficult to dispose them. One primary reason why this is not tackled well could be because of limited finances and then follows inadequate services and no technical help also there is insufficient data to deal with this. Moreover, data if available the source cannot be trusted as the data is scattered, unorganized and not reliable and this make it even more challenging to plan and execute sustainable waste management in hotels. With numerous environmental hazards contributing from various sources, it is important that we pay attention to address this critical issue of waste management and find innovative ways by which hotels can implement concepts like cleaner production and integrate the same into its very design of the

organization and in turn this will influence the ways the hotel functions in terms of it management, engineering and marketing.

Keywords

Sustainable, waste, environmental, financial, profitability, organizations, positive

1. Introduction

In today's world of globalization and with various new businesses and industries coming up the service sector has contributed towards it in a big way. The tourism and hospitality industry has been a major contributor in the overall growth of the service sector. Outlook of people towards life has changed and this has led tourism to gain prominence and this result in new job opportunities and employment and also have contributed significantly to the increase in foreign exchange for different countries. The hospitality industry is expected to have significant growth across the globe and according to experts, this industry in the near future will contribute to generating unique new jobs which will amount to almost 13.45 million new jobs. The hospitality industry in India has contributed a huge chuck to the rising scale in the GDP and this have resulted in the coming up of new hotels across the country with much higher focus to customer orientation and satisfaction. However the flip side to this is with increased human activities there is increased amount of waste generated from these hotels and with no proper idea of how this waste is to handled in terms of collection, storing and disposal the hazard is still lurking around which potentially is a

threat to public health and the environment. Also with increase in new avenues in terms of business and industries and overall rapid urbanization, waste generation has doubled over the years posing great health hazard to humans and to other living beings and is a threat to the entire ecosystem. To address this issue, efficient recycling of waste is of utmost importance and this process is prime in effectively managing Integrated Solid Waste Management (ISWM), which enables to reduce and reuse (Memon, 2010).

2. **Need for managing waste in hotels**
    - Focus on reducing waste produced and thus save material, resources and energy.
    - Focus on reducing cost. Hotels incur cost twice for the waste it produces regards to packaging first and second on disposing.
    - With number of landfills shrinking and the cost of waste collection becoming higher, disposal of waste has become an expensive activity.
    - Across the globe, waste legislations with newer norms and guidelines for businesses and households have become stricter and more so in the European Union and in India.
    - Many items considered as waste still have value and these can be recycled. Hotels thus can recycle its waste and save cost.
    - It is observed that at least 30% of hotel's solid waste can be sorted and recycled.

3. **Objectives for waste management in hotels**

- To procure less and focus on producing as much as possible less of waste.
- To set up a process to collect and sort out the waste, which can be reused and recycled.
- To access items that can be reused and recycled which can be considered to be either sold or donated to organizations who can use them.
- To set a systemin which everyday items of waste such as bottles, cans, paper and cardboards and so on are collected and sorted for recycle and reuse.

4. **Need forReducing Waste**

- **Disposing of waste is increasingly difficult and costly.**

Around 1kg (2lb) of waste per night is created by a hotel guest and more than half of it is paper, plastic and cardboard. In In addition to the negative effects on the environment, as landfill capacity decreases, the cost of waste disposal becomes greater. Costly.

For instance, in the UK, the cost of landfilling is now £ 48 per tonne (1.1 tons) compared to £ 18 per tonne in 2005.

- **It causes enormous environmental concerns**

Landfilling not only takes up precious ground space, but also causes contamination of air, water and soil, releases carbon dioxide (CO2) and fills the atmosphere with methane and it also percolates into the earth and pollutes the groundwater with chemicals and pesticides.

Additionally, Waste also has to go to the landfill sites which are located at long distances hence consuming fuel and adding to greenhouse gases.

- **Need to comply with stricter regulations put forth by the government**

National and local governments are proposing more stringent wast e management standards for landfills. Recycling and recycling, and the industry must comply to the same.

- **This is an inefficient use of energy.**

Sometimes it is more resource efficient to produce new items by recycling rather than starting from scratch. For instance, It takes 95 percent less energy to recycle used aluminium tins into new tins than to turn bauxite ore into aluminium. It also takes strong commercial sense, It saves cash on raw materials as supplies are used more effectively. By selling old equipment and reusing or recycling useful waste materials, income can be generated. Waste disposal expenditures decrease as the amount of waste you create decreases. Pat Maher, a former hotel executive now working as the AmericanHotel and Lodging environmental consultant Association claims that good waste management and recycling is an important tool for public relations because it illustrates a good waste management and recycling. Engagement of environmental policy also denotes corporate transparency. "It's important to do in-room recycling because the guest will see it,' he says. Hotels may also trim their waste by removing paper, plastic and other recyclables from their waste.

A big savings in cities where waste removal is costly, disposal bill is reduced by as much as 50 percent.

"It's not unusual in New York City to have a $100,000-a-year waste bill" says Maher, "and if you can cut that by $50,000, that's a big deal for a hotel operator."

- **To treat waste in a sustainable way:**

There are many options for more efficient waste management and a very useful roadmap is given by the waste hierarchy, outlined in t he EU Waste Directive to promote best practice:

- Prevention
- Planning for reuse
- Recycling (including composting)
- Additional recovery(including energy recovery)
- Disposal

The disposal of hotelwaste is typically subject to numerous household waste laws and it may not be necessary to use public facilities. Make sure that you comply with the regulations on waste, including proper management of waste, maintaining the relevant paperwork and using only approved contractors.

5. **Best methods of waste management**

Composting

- Composting not only decreases the cost of disposal by substantially decreasing the collection volume, it also creates an end product that can be used to enhance the quality of the soil in hotel grounds or gardens, thereby

doubly ensuring the quality of the soils ecological sustainability.

- Make sure it is compliant with national legislation when determining which technology to use. For example, composting could most likely be necessary to take place in closed containers and meet stringent temperatures to kill bacteria if meat and fish waste are being processed.
- In-vessel composting refers to the enclosed equipment where the organic material is placed, combined, shredded and aerated, such as a drum, silo or trench lined with concrete. Some devices are fully automated with temperature, humidity and oxygen control sensors and odor reduction or elimination bio-filters. They can handle vast quantities of waste, eliminate almost all organic waste, including raw meat, fish and grease-and take as little as a few weeks to complete the composting process. UK based Tidy World, for example makes the Rocket Composter, which comes in a size to accommodate the composts food in 14 days. "The cost savings are significant as waste disposal charges are rising," says Tidy Planet Sales Director Huw Crampton. "Not only has composting become the most environmentally sensitive approach, but is also one of the most financially sensitive approaches."

Fig 1- If the composting method used is anaerobic over aerobic it has an advantage, ie. the residue produced out of the anaerobic composting may be again used for the purpose of agriculture in the form of compost. But if the comparison of the above two methods is made with WTE.

WTE itself is the best choice for the solid waste treatment in rural areas as the input used for energy generation could be the mixed solid waste. In the process whole lot of solid waste could also be used up.

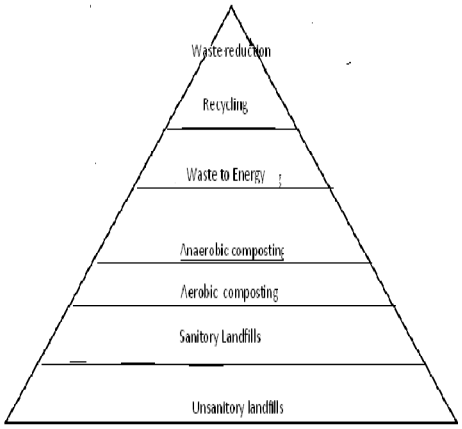

Figure - 1

Biomass energy and anaerobic digestion (AD) .

- Biomass refers to organic materials that can be used for electricity, heat and power generation, from processing foodwaste. By conversion processes, such as combustion and fermentation, the energy from biomass can be released.
- As part of its carbon mitigation plan, with the aid of the PDM Group, London's The Savoy, owned by Fairmont Hotels & Resorts, is converting its food waste into renewable energy. From its Simpson's-in-the-Strand restaurant at its Silvertown, London factory, PDM recycles all unused food preparation and plate scrapings, where it is bulked up with other commercial catering waste. Electricity supplied to the national grid is then brought to PDM's organic biomass-to-energy renewable power plant to generate electricity.
- Another method of biomass conversion is anaerobic digestion. . This is a process which breaks down organic waste in an environment free of oxygen. Under regulated conditions,

biogas can be burned as renewable energy in order to generate heat and electricity. Solid and liquid digestate, which is nutrient rich is also provided by this process. As a soil conditioner also it can thereby be used.

- The food-recycling specialist PDM Group has joined forces in the United Kingdom with SARIA Bio-industries, the European food-to energy firm, in developing a network of AD plants nationwide to process energy from food to electricity.

Worm-composting

- Worm-composting uses earthworms to speed up the process of breaking down kitchen and garden waste, but cannot embrace meat or dairy products. The aerated static pile arranges waste in long rows and is either manually or automatically aerated. Without regular turning and close monitoring of temperature and moisture, this device can take large quantities but cannot tolerate large quantities of meat or grease.
- Unaerated static pile depends on mixing organic waste with bulking material. Meat or grease cannot be taken from this process and is ideally suited to small businesses. If the waste is to be disposed of by a contractor for the purpose of composting or biogas development, then hoteliers must verify that the carriers are registered and that the contractors are in possession of sufficient composting or other biodegradation processing permits/licences and authorisations.

The law on waste management is evolving rapidly, and although municipal ("household") waste has always been the primary concern, policymakers are increasingly shifting their attention to commercial and industrial waste. The drive to divert waste from landfill will continue, and in certain countries, some materials are absolutely excluded from landfill. This pattern, combined with rising landfill costs, would undoubtedly help corporations make an economic case for more waste to be separated and recycled. The latest EU Waste System Directive has explained and simplified EU waste legislation in Europe, is introducing a new waste hierarchy and extending the 'polluter pays' concept by stressing the obligation of the producer. It also sets out guidelines for national strategies to prevent waste. Those regulating Waste Electrical and Electronic Equipment (WEEE) and batteries are other main EU directives likely to impact the hotel industry. Although Europe-wide legislation has provided a more consistent playing field, many foreign hotel groups outside Europe find that company-wide environmental waste management strategies are not feasible because waste facilities are not available and regulations can vary so greatly from country to country.

The best approach is to ensure that all applicable national legislation is complied with and then to establish a flexible plan setting out key values and aspirational goals in such a way as to allow companies in individual countries to work towards them in the most effective way, while at the same time continuing to work towards environmental sustainability as a whole. We are likely to

see a growing emphasis on waste management for urban, commercial and industrial waste in the future. This is likely to bring to the fore problems such as impacts on the life cycle, eco-design, and sustainable procurement. Encouraging the public and private sectors to work more closely together to achieve economies of scale and cost savings through reuse, recycling and energy recovery.

This is particularly the case for bio-waste, where local authorities and retail and catering companies have worked together to improve composting.

Waste generated in a hotel consist of both wet (organic/biodegradable) waste and dry waste. The wet waste accounts to more than 50% of the total waste produced and one third of it comes from food that is served, (Wagh, 2008), (Curry, 2012) (Marthinsen et al., 2012).

Considering the amount of waste generated from the hotel industry (half a pound to 28.5 pounds of trash per day per room), and the pace at which the industry is growing, it becomes imperative that the hotel industry should firmly adopt environmental best practices and include measures such as benchmarking and auditing to ensure informed decision making when we comes to managing waste. With new waste legislations coming in with stricter norms and guidelines, hotels should also focus on training their employees to ensure best practices and that they abide by the regulations and contribute to reduce the rising cost arising out of waste (Goldstein and Primlani, 2012). Annually there are millions of tons of waste

which gets generated and the hotel industry is a prime contributor as on an average a hotel guest is estimated to generate up to 1 kg of waste per day (International Hotel Environmental Initiative, 2002), which eventually adds to this waste generated worldwide. Therefore studying hotel management is of great importance and possibly this is the only way to minimize the waste which is generated in hotels.(International Journal of Scientific and Research Publications, Volume 6, Issue 9, September 2016 672 ISSN 2250-3153 www.ijsrp.org). In a hospitality business, the cost incurred for solid waste management primarily includes factors like disposal and transport of waste, and the associated labor costs (Todd and Hawkins, 2003). The Hotel industry is a major contributor in generating waste, a large component of this waste generated is from the hotels lodging, storing, utility and kitchen areas. Managing this waste effectively can contribute positively to the social, economic and environmental issues of countries and organization (Rohweder, 2008). Some years back, a study conducted in Bali, gave amazing results when it was observed that conscious participation in a waste management program had direct economic benefits to the hotels (through waste minimization), and indirect benefits to name a few, such as better corporate brand image, and avoided costs (liability) (Tang,2004; Vahatiitto, 2010). Studies in the past have also shown a trend where tourists or corporate guests or clients are willing to pay additional if they find that the hotel invests in environmental friendly products and services (Kang et al.,2012; Masau and Prideaux, 2003). As

observed in contemporary times many hotels are adopting ways to practice environment friendly policies and practices, which includes recycling of waste to managing waste effectively and efficiently. These steps thus taken ensures further benefits to increase the hotel's profit and get better and undisputable positive customer response and much to ameliorate their brand image.

6. **Suggestions**

1. **Conduct a waste audit**

   Identify where waste is created by the hotel and measure the currently discarded recyclable materials. List all the things you plan to dispose and calculate the expense and the amounts involved for each department.

2. **Set goals and objectives**

   Set goals and targets, such as buying less supplies, reducing waste disposal costs or generating revenue from waste materials, once you've established where to concentrate your efforts on.

3. **Implement the plans**

   Require staff at all levels so that they grasp the scheme and endorse it. Provide benefits and rewards to people who give suggestions for waste-saving or make a substantial contribution to the program. Educate visitors and convey your priorities to suppliers on your recycling and environmental policies.

4. **Track, analyse and fine-tune**

   Set standards for program tracking and assessment, and determine how often to assess progress.

5. **Place bins for recycling in guest rooms**

   In guestrooms, placed two bins, one for general waste and one for recycling. It recycling one should be the larger one and determine which items can be put in it. Housekeeping trolleys must be equipped with separate

   recyclable material storage bins.

6. **Using old linen, towels and robes again**

   Turn old linen into linen bags or aprons, and use stained towels or robes for cleaning, or donate these things to local charities. One UK business, Sleeping Bags Social Enterprise Ltd, makes reusable

   shopping bags using condemned linen from a Marriott hotel in London.

7. **Reduce the delivery of newspapers**

   In central areas, such as the lobby, include newspapers and ask guests to order one at check-in if they want it delivered to their room. Marriott International stopped distributing newspapers to every guest room last year and an estimated 8 million newspapers annually are saved by this environmental policy

8. **Buying in bulk and using environmentally friendly options**

   Buy in bulk nontoxic cleaning items to reduce packaging and costs, and select manufacturers that use reusable and refillable containers. Switch to dispensers and buy bulk containers for toiletries.

The hotel chain Scandic discovered that just 15 percent of its soaps, shampoos and conditioners, with the rest thrown away, were used. Scandic has lowered its waste volume by 40 percent and packaging waste by 11 tonnes annually by replacing conventional amenities with bulk products. Encourage visitors to take away their half used soap or donate toiletries to local shelters if individual toiletries are offered; tax incentives may also be eligible.

The US Clean the Planet Foundation blends social and environmental responsibility with safe and responsible tourism and collects soap and shampoo from hotels, recycling them for distribution around the world.

Always purchase items that are environmentally friendly. Bottles made predominantly from plastarch, a biodegradable corn based material, are provided by Room Service Amenities, while Green Suites International packages its toiletries in collapsible paper bottles. Vegware produces biodegradable goods, including tableware and takeaway packaging, from plant materials.

9. **Reduce the use of paper**

In toilets, refill tissues only when the dispensers are completely empty. Save them for use in employee bathrooms or donate to shelters if the policy is to replace half the toilet rolls.

Consider using double rolls that supply twice the amount of paper per sheet. Instead of paper towels in toilets in public places, add hand dryers.

Recycle file folders and interoffice envelopes in the office, use both sides of paper while copying, and send letters instead of emails.

10. **Stop purchase items that may become hazardous and harmful waste**

    In the first place, stop buying harmful goods. You are liable for the safe and proper disposal of it if you cannot so ensure that you appoint a licensed contractor.

    For example, in a special crushing machine that recovers the glass for reuse in loft insulation and the mercury for pure mercury processing, fluorescent lights can be disposed of. In the US, Marriott has teamed up with Air Cycle Corporation to use the Bulb Eater, a system that crushes the bulbs, to recycle its fluorescent lamps, packaging them into a sealed drum ready to be picked up.

11. **Check on the purchase of furniture and mattresses**

    Hotel refurbishment creates vast quantities of voluminous waste, most of which can be recycled. Furniture may be sold, donated to charity or taken to a furniture recycling system for employees. Alternatively, the furniture can be reupholstered and repurposed by an accomplished furniture refinishing agency. Old beds, mattresses and chairs are stored and recycled by several hotels.

Mattresses are updated every 6 years at Whitbread's Premier Inn hotels. Premier Inn has developed a new environmental strategy instead of sending 6,000 mattresses annually to landfill, has teamed up with bed maker Hypnos, which has developed a machine for shredding and separating mattress materials.

Metal hinges and springs are recycled back into steel products, foam is reused in carpet underlays, and textiles are recycled into industrial heating insulation products or briquettes.

Ceramic and stone flooring tiles can be crushed to make paths or used by the building industry as an aggregate, while carpet and other flooring can be reused by a charity or returned for recycling to the supplier. By recycling 27 tons of carpet, the US hotel group La Quinta Inns & Suites recently decreased its environmental impact by partnering with Shaw Industries, a business that reclaims the fibers to produce other carpet items.

12. **Waste electronics (e-waste)** This is the world's fastest growing waste source, which includes televisions, computers, telephones, refrigeratorsand ce ll phones. Governments are establishing evertighter rules on th eir disposal.

    Can swap or return "old equipment to yoursupplier or sellor do nates it to schools, charities or businesses specializing in the refurbishment of these goods.

Waste Management and LG Electronics are launching WM Re cycle in theUS this year a hotel recycling system for TV and computer monitors.

This is critical at a time when it is anticipated that many hotels will upgrade their rooms with LG flat-panel digital TVs.

In the United Kingdom, the Waste & Resources Action Progra mme claims that 3 million tons of food waste from hotels, restaurants and bars alone

ends up in landfill sites every year (WRAP). It rots and emits methane once at the landfill site, which is 23 times as strong a greenhouse gas as CO2.

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7. **Findings**

The food industry as a whole contributes about 19 percent of the UK's greenhouse gases, According to a 2008 University of Surrey survey. If food waste was removed, it is calculated that it will be the same as taking one in five cars off the UK roads in terms of reducing the environmental effects. Other than merely being aware about the environment and industry, it seems that consumers really want to reduce food waste. A recent survey conducted by Cawleys, a UK waste management company, found: 78% of diners agree that the provenance of ingredients is as important as where food waste ends up in a restaurant with outstanding environmental credentials, 44 per cent of diners will be able to pay more. The report concluded that by showing that their handling of food and waste represents a sense of environmental responsibility, restaurateurs have the potential to draw new customers and develop a loyal customer base.

Other solutions to reduce food waste include:

Make yourself imaginative. Turn leftover chicken into soup, for ins tance, and fish into pâté.

Alternatively, use leftovers in the canteen for workers or contribute them to a nearby food bank or shelter for homeless people.

Unused food scraps can also be donated for animal feed to a local f arm. Other technologies that use microorganism combinations to tu rn food waste into a nontoxic liquid that is suitable for drains and s ewage systems are also available. Mechline Innovations Ltd, for in

stance, develops GohBio, a rapid decomposition device for food w aste, which it says converts food waste into a non – toxic liquid within 24 hours.

Never dispose of cooking oils down drains or sewers, which can lead to problems with blockages, odor and vermin, as well as polluting local rivers and streams or with your other waste. At more than 22 of its hotels around the world, Fairmont Hotels & Resorts is turning its cooking oils into biodiesel. For example, Fairmont Scottsdale has teamed up with an external company to turn leftover oil into fuel, and has recycled enough biodiesel to supply about five cars with annual fuel consumption. Our roads are the new use of used cooking oil.

Aggregate Industries, based in the UK, has found that used chip fat is a good alternative to bitumen, which is costly and uses precious supplies of crude oil. A variety of road-surfacing programs are currently evaluating the new device, which is pending a patent.

The disposal of plastic or glass bottle is a major problem. This problem could be solved by the avoidance of pre-bottled water. Sandic has undertaken a unique strategy of offering guests water that is chilled and filtered, still and carbonated from taps instead of bottled water. The hotel Rafayel in London has reduced approximately 205 tones of glass bottle waste over five years. They have achieved this by using a mains-fed bottled water system from Vivreau. This system dispenses filtered and purified water from the mains. This initiative has significantly reduced the impact on the environment.

Some food items contribute to higher greenhouse emissions. This finding has been a result of study: Reducing Tourism's Carbon Footprint, published in Food Management in Tourism report and has been coauthored by many academics experts in the area of sustainable tourism. Managing their use and careful planning of food purchases could contribute significantly to climate change mitigation. The report has several recommendations, the important one being to adjust the quantity of food depending on the consumers. For example, the portion size and type of food would be different for a pensioner vise a versa a teenage sports team.

Social marketing can reduce food waste. The Maritimpro Arte Hotel in Berlin recommends that the guests only serve themselves the amount of food they can consume. An alternative organic breakfast buffet with 52 food components as against a traditional buffet of 100 food components is offered as a healthier choice. Smaller plates are given to control portions.

*Stefan Gössling, Brian Garrod, Carlo Aall, John Hille, Paul Peeters

8. **Summary**

As per the paper, "Analyzing solid waste management practices for the hotel industry" by S.T. Pham Phu1,*, M.G. Hoang2, T. Fujiwara1, taking an overview of the hotel's SWC Table 4 presents an overview of the hotel's SWC. The table depicts that the differences in SWC of hotels is explained by the specification of tourism business in addition to the influence of the climate,

economic level, cultural norms and geographical location. Bio-degradable waste of the hotels in HAC, in comparison to developed countries was higher. It was lower in in comparison to Asian cities. It is also observed that the rate of recycling is almost two times for hotels in developed countries. The differences in components of waste were relative in hotels in Vietnam because of the regional tourism characteristics such as the culinary style or the type of guest. For hotels in HAC, amount of garden waste and recycling waste of the were higher and kitchen waste was lower than that in the dry season vies a versa wet season (Giang et al., 2017). Statistics show that 95% occupancy is achieved for HAC's hotel industry for two seasons. This accounts for 82% international guests in wet season and 38% in dry season. Interestingly, it is noted that the rate of recycling waste is higher and the quantity of food waste is lower if the number of international guests are more. This could be because of their culture, food preferences and services. This shows that the different type of guest arrivals and tourism activities by seasonality could be the reasons for the differences in SWC in addition to the climate.

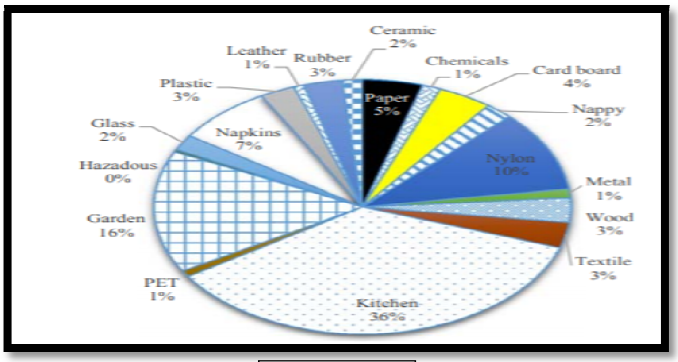

Figure - 2

Fig. 2 describes in detail the waste composition of HAC's hotel industry. Notably, biodegradable waste accounted for the highest percentage of 58.5%, includes kitchen waste (35.5%), garden waste (15.5%) and tissue paper (7.5%). Also, recyclable waste accounted for about one-fourth of total waste which consists 1.2% of metal, 4.2% of cardboard, 12.9% of plastic including plastic bags, 0.8% of PET bottles, 2% of glass and 4.7% of the paper. The other components belong to combustible and incombustible waste with the proportions less than 3.5% for each element.

In the study conducted in the paper, "Waste Management in Hotel Industry in India: A Review" by Afsanehsadat Omidiani*, SeyedMohsen HashemiHezaveh** show that proper recycling practice can ensure profits for hotels in the long term. This is an additional benefit in addition to being environmentally friendly. GHG emissions can be saved to a large extent. This can be done by elimination of waste at source and efficient recycling. One of the major problems faced today across the world is global warming and pollution. Proper recycling practice can slow decrease both. A thorough literature review along with experts' interviews done by researchers can be used to develop a waste audit form for the calculation of waste volume. WARM Model and equivalency calculator calculated the impact of waste on environment. Cost benefit is the subsequently the most important analysis. A framework or model should be developed eventually that expounds

the value of profitability and sustainability. Public awareness and governmental attention need to be garnered to raise awareness on waste management as it a serious issue.

9. Conclusion

Many subjective and objective causes, such as improper waste storage, lack of SWM knowledge and skills, and being unsanitary, explained the situation of hotel SWM practices.

The findings of this study provided details on existing hotel industry SWM activities, leading to the overall evaluation of the practice of municipal SWM.

In addition, this study proposed that the waste recycling and composting capacity of the SWM of every hotel should be evaluated, assessed in depth and specifically prepared for implementation in order to mitigate the generation of waste.

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