

Sustainable Tourism: Waste Management Issues

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Abstract—The United Nations has been expressing concern about environmental issues since last few decades. Initially the focus was on manufacturing industries as the main culprit but recent studies revealed a growing concern on hotel organizations as a sector of the tourism industry whose activities harm the environment [1], [2].

The hotel sector has been identified as the largest consumer of durable and non-durable goods [3] resulting in large amounts of waste generated.

The International Hotel Environmental Initiative [4] indicated that solid waste generation is considered one of the most adverse environmental impacts created by small hotels. Typically, a hotel guest can produce 1 kg of waste per day.

Most of the hotels/resorts don't focus on waste management and take very little action to reduce the environmental impacts. On one hand, for a hotel business, the cost of solid waste is not only the cost of disposal but includes other hidden costs, i.e. staff, resources and energy [5].

And on the other hand, the wide research going on waste management has not targeted the hospitality sector to the desired extent. A focused sustainable waste management plan will decrease the pressure on landfills, reduce the risk of leaching and will benefit the management by decreasing the waste disposal costs.

This paper discusses the typology of waste, the current practices of disposal, sustainable solid waste management practices and a waste management plan for hospitality sector.

1. INTRODUCTION

Waste is a wide ranging term encompassing most unwanted materials, defined by the Environmental Protection Act 1990. Solid waste is a key concern in the hospitality industry. Typically, a hotel guest can produce 1 kg of waste a day that accumulates to thousands of tonnes of waste annually [4]

Small businesses often face a range of barriers in recycling their waste, including lack of space, inconvenience and time constraints [6]. Operators of small tourism firms often lack the information, guidelines, time and motivation to implement environmental practices [7]. Sustainable waste management in tourism affects the society to a large extent as shown in Fig. 01.

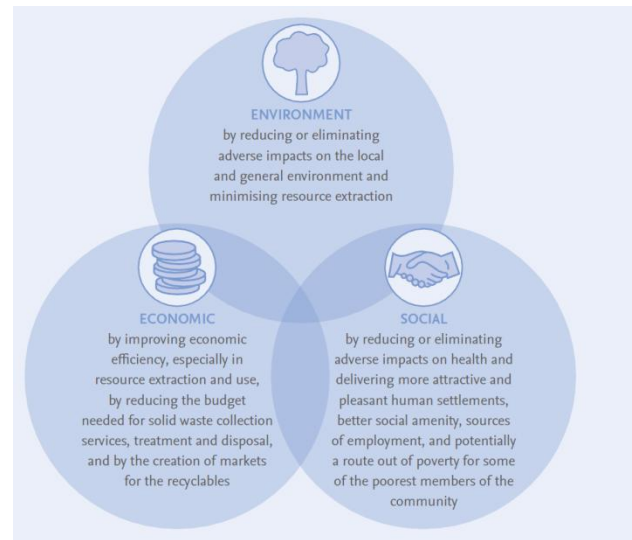


Fig. 1: Waste management policy contributions to sustainable development

2. WASTE TYPOLOGY IN HOSPITALITY SECTOR

Since the hotel sector has been identified as the largest consumer of durable and non-durable goods, it is expected that the sector generates huge amount of waste [2], [3]. For instance, the food and beverage department generates various solid and organic waste in the form of packaging and food waste, aluminum cans, glass bottles and cooking oil [8]; while the housekeeping department generate wastes in the form of cleaning materials and plastic packaging.

The major problems in waste management are:

- No storage of waste at source
- No waste segregation
- No System of Primary Collection from the Doorstep
- No proper mechanism for disposal or treatment

Waste Category	Percentage	Type of Waste	Percentage
Paper	35%	cardboards	20%
		newspapers	10%
		mixed papers	5%
Plastic	22%	PET bottle	3%
		HDPE container	5%
		Polystyrene & other	14%
Glass	1%	CA Redemption glas	1%
		other glasses	
Metal	4%	steel can	4%
		aluminum can	
		other metal	
Organics	17%	Food Waste	18%
Textiles	6%	linens, towels, etc.	7%
Other Waste	15%	All type	16%
Total			100%

Fig. 2 : Waste Characterization (Waste characteristics adopted from Solana Recyclers)

Fig. 02 discusses the waste typology in a hotel. Paper and plastic occupy around 50% of the waste.

3. CURRENT STATUS & POLICIES OF WASTE MANAGEMENT

The existing waste management triangle is as shown in Fig. 03. It shows no regard to the strategies of reducing, reusing and the waste ends up in landfills mostly.

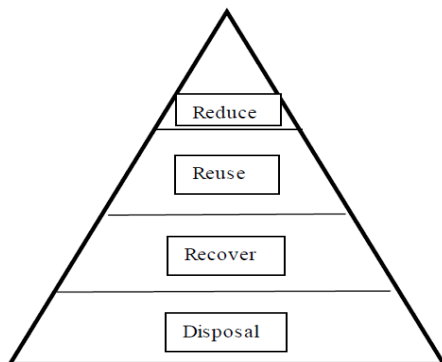


Fig. 3: Prevalent Methodology [22]

The National Action Plan for Climate Change, 2009, aims at finding ways to handle climate change within India.

It states, “While the informal sector is the backbone of India “highly successful recycling system, unfortunately a number of municipal regulations impede the operation of the recyclers, owing to which they remain at a tiny scale without access to finance or improved recycling technologies” This is part of the Mission on Urban Sustainability.

The National Environment Policy, 2006 states “Give legal recognition to, and strengthen the informal sector systems of collection and recycling of various materials. In particular enhance their access to institutional finance and relevant technologies”

The Municipal Solid Waste (Management and Handling) Rules, 2000 Manual directs storage, waste, segregation and

transportation of all municipal wastes. The hospitality sector lacks a specific set of rules or policies.

4. SUSTAINABLE WASTE MANAGEMENT PRACTICES

There are a variety of sustainable practices which can be implemented but the foundation has to be the SWM hierarchy (Fig. 04). The purpose of the waste hierarchy is to give priority to waste prevention.

The steps which can be taken at the source are the best possible strategies. The next step is to promote reduction and recycling which could be done by composting etc. when all the above stages fail then only the waste should be disposed in landfills.



Fig. 4: The SWM hierarchy (UNEP (2011). Towards a Green Economy: Pathways to Sustainable Development and Poverty Eradication.)

Auditing of the usage of various products can help in reducing the wasteful buying. The next step should be segregation at the point of generation which will help in recycling the paper and plastic. Toxic waste should be collected separately and sent to a dedicated facility at regular intervals and the rest waste may go for incineration.

Organic waste from the kitchen can be treated in various ways. Composting is an essential method of dealing with organic

waste [9]. Composting is the decomposition of organic matter by microorganism in warm, moist, aerobic and anaerobic environment. Main advantages of composting include improvement in soil texture and augmenting of micronutrient deficiencies.

It also increases moisture-holding capacity of the soil and helps in maintaining soil health. Moreover, it is an age-old established concept for recycling nutrients to the soil [10]. Composting is an odour-free process, normally taking between three and six months, depending on how the materials are handled.

The period can be reduced by turning over the composting materials regularly [11]. The composting process can be simply undertaken using a traditional compost heap at site via using open windows, covered windows and specially designed composting vessels [12].

Vermicomposting is another method of treating natural waste. The result is the natural organic manure produced from the excreta of earthworms fed on scientifically semi-decomposed organic waste. [9].

5. SWM MODEL

Cummings (1997) [13] developed a hierarchy model of hospitality SWM. The model introduces five levels for waste minimisation including commit to waste minimisation, purchase with eco-intelligence, use efficiently to generate less waste, reuse waste materials and segregate and recycle waste.

However, Cummings's model will not be applicable to hoteliers who have negative attitudes towards the implementation of more sustainable SWM practices as the model does not have any system of motivation and/or pressure to influence hoteliers' behavioural intentions in relation to SWM. It is essential to educate and train staff about waste minimisation practices, along with providing incentives to enhance their commitment to the programme [13], [14].

Abu Taleb (2005) [15] developed a model for larger hotels in Egypt to assist them recycling hotel waste. It involves nine steps: (1) incorporating recycling into hotel policies, (2) performing a waste audit, (3) reusing waste materials, (4) identifying eligible materials for recycling, (5) working with the waste carrier at all stages, (6) developing a waste separation programme throughout the hotel, (7) purchasing recycled products, (8) making staff aware of the hotel's waste recycling programme and (9) involving customers.

Legislation must be strengthened to implement sustainable SWM practices. Apart from incentives and motivation, regulations can make compliance easy. However, government cannot penalise people for not recycling until they provide an effective recycling system for commercial businesses and tell people how to do it in order to make it a viable opportunity.

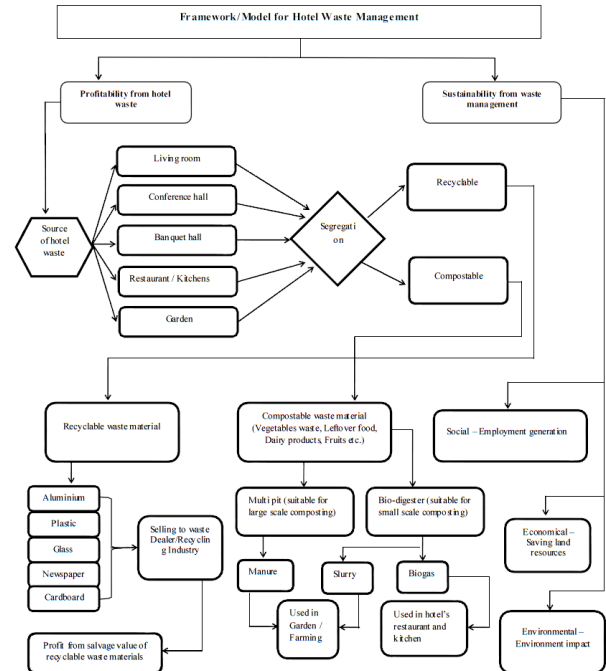


Fig. 5: Framework for hotel waste management [16]

Many countries undertake the principle of "pay as you throw" to encourage waste reduction activities [17]. This process instills a sense of responsibility in the users.

6. CONCLUSION

Lack of awareness, absence of efficient waste collecting and disposal mechanism are few factors which are behind lack of waste management in hospitality sector. The product take back concept for all waste streams, i.e. packaging, electrical and electronic waste and force manufacturers to accept their product back for reusing and recycling will go a long way in decreasing the quantity of waste. Similarly training of hotel staff is necessary in implementing any waste management plan. The involvement of customers will enhance the awareness.

Implementation of sustainable tourism practices among hotels would help them reduce the cost of operating hotel businesses [18] [19]. This point should be advertised well to create interest in the hoteliers. Recent studies indicated that hotel organizations are beginning to adopt and implement sustainable Tourism Practices in their hotels [20], [21].

The researchers identified the benefit of reduced cost of operations and the reasons for environmental protection as the motivating factors. Other reasons include image building and the provision of safe and comfortable environment for the hotel guests [18], [19].

The provision of incentive by the government and other green bodies will enable hotels to adopt sustainable practices.

Waste will keep on creating problems until it's not seen as waste but resource. A detailed and integrated waste management plan will help in moving towards a cleaner and greener future. A strong policy framework will expedite the progress.

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