

WM02

For Environmentally Harmonious Society in South Asia

Noor Danish Ahrar Mundari¹, Kyoko Sasaki², Kiyoshi Haraguchi²

¹ *Kyushu Institute of technology, Kitakyushu, Japan,* ² *KIC, JICA, Kitakyushu, Japan*

Abstract— In the process of Industrial development of a country, its society passes through the phase of rapid changes. To accommodate the challenges of industrial development and keeping its ecological and environmental beauty intact, systematic development plan is required, which should be based on utilization of natural resources and recycling of those resources, according to environment-friendly approaches. South Asia, being an agriculture-based economy should make proper guideline and plan for the recycling and possible disposal of waste in hygienic manners. This paper deals with the method to recycling and disposal of used resources keeping the view of south asian society

INTRODUCTION

In the process of Industrial development of a country, its society passes through the phase of rapid change. With the rapidly changing society in South Asia due to a developing economy, citizen habits and its capability to affect nature and environment is also changing. South Asia is facing deforestation, loss of fertile soil, and change in weather and precipitation pattern. These all changes are affecting adversely to individual and society as a whole with sea level rise challenging existence of some of its precious beauty and affecting severely the human inhabitants, specifically near coastal regions. To accommodate the challenges of industrial development and keeping its ecological and environmental beauty intact, systematic development plan is required, which should be based on utilization of natural resources and recycling of those resources, according to environment-friendly approaches^{1,2,3,4}. The process of recycling of used product will allow to save resources for next generation and will keep nature least affected by human interference. In order to implement environmental friendly approach an ingenious method for the distribution of information and knowledge about environmental aspect is required. South Asia being a religious land has lot of Temples, Mosque, Church, Gurudwara, Buddhist temple, all these centers which preach the knowledge of human welfare, social welfare need to be incorporated for the environmentally harmonious society. These religious centers and schools can enlighten the life of fellow visitors and students with the environmental problems which affect their social and personal life with the possible solutions. This new approach will work in accordance with the customs and religious believe with no significant modification in lifestyle. The way in which we consume materials will affect whether we have a sustainable society that leaves resources available for future generations, the approach we need is to see "waste" as a "resource". This directly influences Human sustainability.

DIFFERENT TYPES OF WASTE

Waste or rubbish is what people throw away because they no longer need it or want it. Almost everything we do creates waste and as a society we are currently producing more waste than ever before. We do this at home and at work. Waste can be broadly categorized in three main groups namely¹, 1. Household waste, 2. Industrial waste, 3. Agricultural waste

The household waste contains things which come from individuals' homes. It contains paper, wood, cloth, kitchen garbage, plastics, metals, stone, mud, etc. All these need to be separated and part of them can be recycled as per the technology available. In this case, the waste quality and composition is dependent on individual house. So, waste separation is to be carried out at home and again at the recycling place with industrial means of separation. To make the separation at home, individual household need to be trained, this can be carried out using print, electron media and through initiatives from various forums (e.g., NGOs), religious centers.

Industrial waste is generated by companies, hospitals and small enterprises. Industrial waste can be classified in different groups such as medical waste, environmentally hazardous waste, poisonous gases, metals, radioactive waste and many more. Government needs to regularize norms for the development of these organizations generating waste in such a way that they are responsible until the last recycling is done. Use of radioactive materials and its disposal should be carried out with proper way to avoid accident like which happened in India's capital by wrong disposal of radioactive materials in scrap market by university management. South Asia, being an agriculture-based economy should make proper guideline and plan for the recycling and possible disposal of agriculture waste in hygienic manners.

MANAGEMENT OF WASTE

Emissions from landfill sites are a significant contributor to global warming. Biodegradable waste in landfill produces methane and carbon dioxide both of which contribute to global warming. Reducing the biodegradable waste sent to landfill is a very effective way of reducing methane production and may help to slow the increase in global warming. Some of the problems associated with landfill

- Loss of arable land
- Loss of amenity value of the land
- Potential methane emission, potent greenhouse gas causing global warming

- Potential leachate problems (liquids containing materials from landfill)

Figure 1 below show one of the most developed landfill of kitakyushu city, Japan. In this landfill the waste after processing is thrown. The processing of the waste is done at different incineration centers.



Fig. 1: Landfill in Moji, Kitakyushu

Figures 2, 3, 4, 5, 6, show the machinery and process why which it is decided, how and using what technique you can incinerate waste.



Fig. 2: Distribution of waste in different categories



Fig. 3: Crushing of the waste, Incineration of waste of Lab scale



Fig. 4: Determining calorific value of the waste.



Fig. 5: Waste incineration center of Industrial scale



Fig. 6: Waste incineration at industrial scale.

Weight before drying (g)	Weight after drying (g)	moisture content (%)	Composition	Weight (g)	Ratio (%)	Size	Weight of residue (g)	Weight before ignition (g)	Weight after ignition (g)	Weight loss (%)	St ratio of composition w (%)	combustible content (dry) (%)
			Paper									
			Fiber									
			plastic									
			rubber									
			wood									
			garbage									combustible content (dry) (%)
			metal									
			glass									
			china/cer									
			others									
			Total									

Table 1: Showing how to calculate calorific value of waste.

Collection of waste and transport to incineration centers

Waste shall be collected from the individual home, shops and industrial centers, after collection they need to be transported to waste processing center and then to incineration center. All these steps need careful management as these waste may be quite hazardous to health. Figures 7, 8, 9 and 10 shows these steps needed for collection and transportation of waste.



Fig. 7: Collection of waste



Fig. 8: Separation of waste in different categories



Fig. 9: Compressing of the waste



Fig. 10: Transportation of compressed waste to incineration center

Educating the society about waste management

Any industrial development will achieve its purpose of making harmonious society only when its member is sensitive towards waste management. The Governments and leading organizations of the society should take initiative to educate people about them. In Japan these work are done by CIVIC centers. In south asia these work can be carried at religious centers, school etc.

CONCLUSION

To achieve the actual benefit of the industrial development in south asia with sense that it does not disturb its citizen life style much, it need to develop some ingenious plan to tackle the problems related with environmental degradation. In order to solve this problem, south asia need management of waste at industrial level, but it need to develop its own method for the management of waste. Some of the technology available with the Japan can be used for the waste management as they were developed by japan during the process of industrial development when its leads to environmental disaster.

ACKNOWLEDGMENT

The author will like to thanks JICA for allowing to attend its schedules classes on south asia waste management. The author would like to thank Dr. Md. Atiqur Rahman Ahad, Dr. Hendra, Mr. Zayauddin Ahrar, Mrs. Zohara Ahrar for valuable discussion. Author would also like to thanks Prof. Mengu Cho of Kyushu Institute of Technology and Prof. Hiroyuki Miyake of Kitakyushu University for guidance in this research report.

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