

Wastewor(l)d



KYW (Know Your Waste)

Wastewor(l)d Series

KYW (Know Your Waste)

Jyoti Mhapsekar



Stree Mukti Sanghatana



This publication is funded by the
European Union Technical Cooperation for Environment in India Project
The views expressed in this publication do not necessarily reflect the views of the European Commission

Introduction

The booklet series Wastewor(l)d, is an effort to disseminate our knowhow in the field of solid waste management. Since 1975 Stree Mukti Sanghatana (SMS) is working towards the empowerment of women. With the objectives to realise the ideals of equality and social justice, SMS consciously began working amongst the waste pickers in Mumbai, from 1999. SMS's Parisar Vikas programme aims to address the problems of waste picking women who are engaged in the 'menial' tasks of 'cleaning waste'. Additionally, Parisar Vikas addresses the problem of waste management engulfing our urban existence. Prima facie waste management is an environmental and health issue but poverty, equity, power, caste, gender, human behaviour, political will and good governance are also associated with waste management. Following the principles of environmental justice is the key component in our work, as we strive towards zero waste. Therefore, our emphasis is to highlight the socio cultural dimensions of environmental issues. SMS has introduced these issues in each booklet of this series.

These books discuss many aspects of solid waste management, a few solutions and good practices. Publication of this series is possible with the support from European Union.

Looking forward to your feedback!

Foreword

Waste management is directly related to issues of poverty, health, equity, power, gender, human behavior, and governance. People who treat waste as a mere technical problem believe that that technology can provide all the solutions to issues of waste. In third world countries about 1% people are engaged in the recycling industry. In India waste management also has a caste and gender dimension.

People in the waste sector, whether they are Municipal workers, waste pickers, itinerant buyers, sorters, or small traders, work in extremely unhygienic conditions. Therefore, modernization of this informal industry and citizens' participation are essential components for effective waste management. And it is the need of the hour. Moreover, to understand 'waste' we also need to learn about related issues like global warming, climate change and green house gas effect. We should also be familiar with terms like Carbon Foot print, Extended producer's responsibility and Zero waste, as they are related to waste management. Solutions for effective waste management are possible only when these systems start supporting social and economic justice and ecological sustainability. This booklet is an effort to explain some of the above mentioned issues and explain rules and regulations for waste management.

Jyoti Mhapsekar

Life on earth is blessed with natural resources like air, water, and soil. The flora and fauna, fossil fuel and many other reserves are freely available to us. We are indebted to the earth for everything that nature provides us. But do we really know how to repay it? Do we carefully consume the earth's resources? And once done, do we responsibly deal with the generated waste? Filthy roads, choked pipelines, polluted water bodies are all examples of our failure to around us.



Each and every organism on the earth generates waste. But nature takes care of its disposal. For example, every year there is fall foliage and the leaves get decomposed. Humus is created and soil is enriched with nutrients. Same cycle is observed in the animal kingdom. Waste is reused, recycled, reprocessed in the natural course. This is nature's way of waste management. Today's urban lifestyle with growing consumerism has resulted in the generation of huge amounts of waste. Now it is the need of the hour that we learn to properly and sustainably manage our waste learning from Nature. It is better that we shed away our negligence, ignorance, apathy and take a proactive approach to good practices of solid waste management.

We know that the sun is the main source of energy for us. Most of the sun's energy that falls on the earth's surface is not used but reflected back. Part of the sunlight is absorbed by some gases which hold it for some time and gradually release back out of the atmosphere. This helps in keeping our earth warm. These gases are named as green house gases and this effect is called Green House Gas (GHG) effect. GHG include Carbon-Di-Oxide, Methane, Nitrous oxide, water vapours, Ozone and Hydro-Chlorofluorocarbons. Global

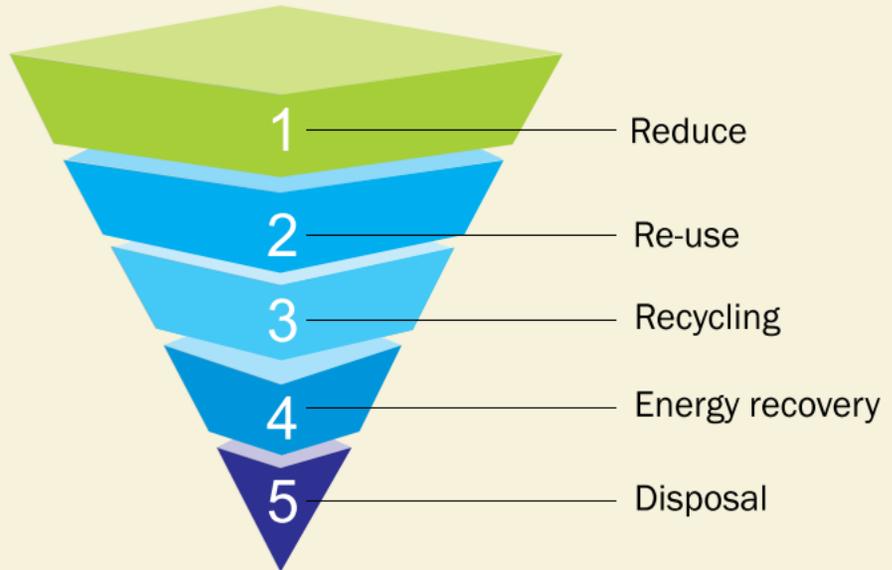
average temperature would be much colder, about -180 C and life on earth would not have been possible if these gases had not played a major role in keeping the earth warm. Most of these gases occur in the atmosphere naturally, But, for the last few decades a constant rise in their percentage has been observed. This results in the rise of the temperature of the planet. This is called global warming and it is really worrisome. An important contributing factor to global warming is the human population, our lifestyles and behaviour. Globally, countries and their governments are encouraging programmes that lower down the levels of greenhouse gas emissions and global warming.

Let's enlighten ourselves about one more concept i.e. carbon foot print - It means the amount of carbon dioxide released into the atmosphere as a result of human activity. Prosperity gives birth to consumption of resources and more consumption increases the carbon foot print.

Most
Favoured
Option



Least
Favoured
Option



(The diagram depicts the ways of lowering down the carbon foot print.)

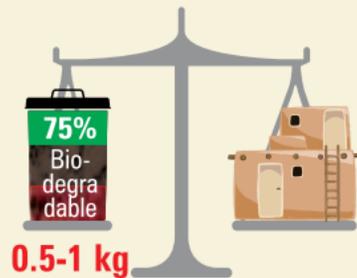
Carbon foot print is directly related to our life style and consumption patterns. Let's have an over view of the waste generated by different societies at different places.



Family in developed countries



Urban middle-class family in developing countries

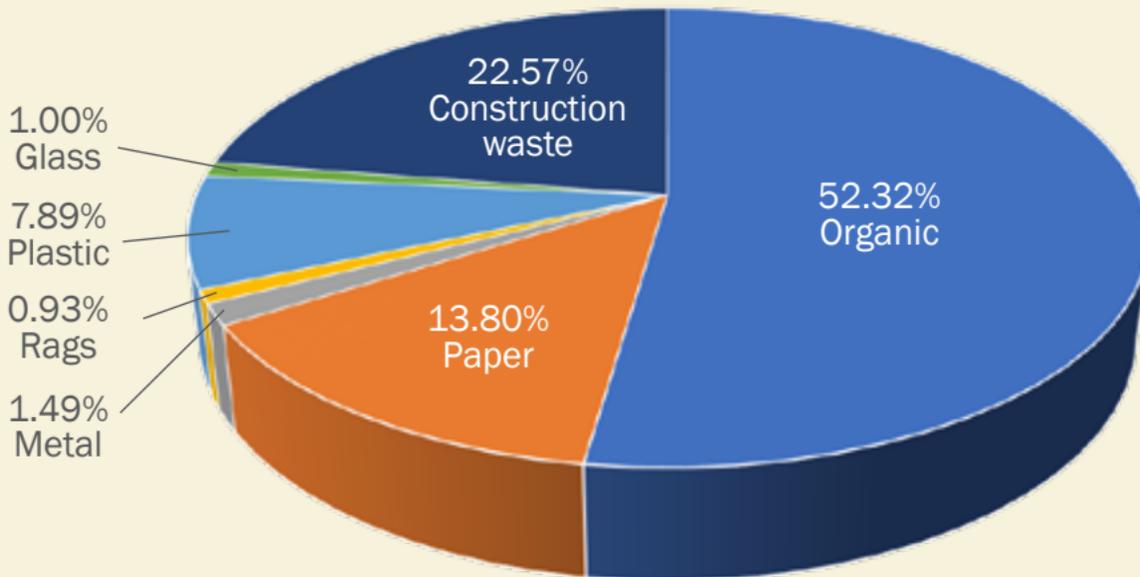


Urban poor family in developing countries

How much waste we generate?

As per the Solid Waste Management rules 2016 issued by Ministry of Environment, forest and climate change “in India 62 million tonnes of waste is generated annually at present, out of which 5.6 million tonnes is plastic waste, 0.17 million tonnes is biomedical waste, hazardous waste generation is 7.90 million tonnes per annum and 15 lakh tonnes is e-waste. Only about 75- 80% of the municipal waste gets collected and out of this only 22-28 % is processed and treated. The remaining is disposed of indiscriminately at dump yards. It is projected that by the year 2031 the MSW (Municipal Solid Waste) generation shall increase to 165 million tonnes and to 436 million tons by

2050. If cities continue to dump the waste at present rate without treatment, it will need 1240 hectares of land per year and with projected generation of 165 million tons of waste by 2031, the requirement of setting up of land fill for 20 years of 10 meters height will require 66,000 hectares of land“.



Composition of waste

Ref.: NEERI 2011

The census of India 2011 shows three cities have population over one crore and 53 cities over 10 lakh citizens.

Improper management of waste collection and disposal have left a lot of waste lying untreated on streets and at public spaces. All cities in India face a land crisis. And lands in rural communities are being identified to dump urban waste. Rural bodies like gram panchayats are now refusing to part with village land for refill sites and dumping ground. Because there is an increase in the awareness of ill-effects of waste and pollution. And waste management has become a critical issue.

What is the solution for the aforementioned problems? Of course forestation, water conservation, use of non conventional renewable energy and last but not least, proper waste management.

The word waste is associated with shabby roads, choked sewer lines, proliferation of mosquitoes and rats, infections and diseases. But how is waste related to global warming?

Methane is the answer. Methane, is 21 times deadlier than Carbon-Dioxide.

It is released during the process of decaying. Capturing this methane and not letting it in the atmosphere will decrease its percentage in GHG. By simply processing the organic waste and converting it into compost or biogas we can get rid of this problem. Both these methods are discussed in two other books of this series.

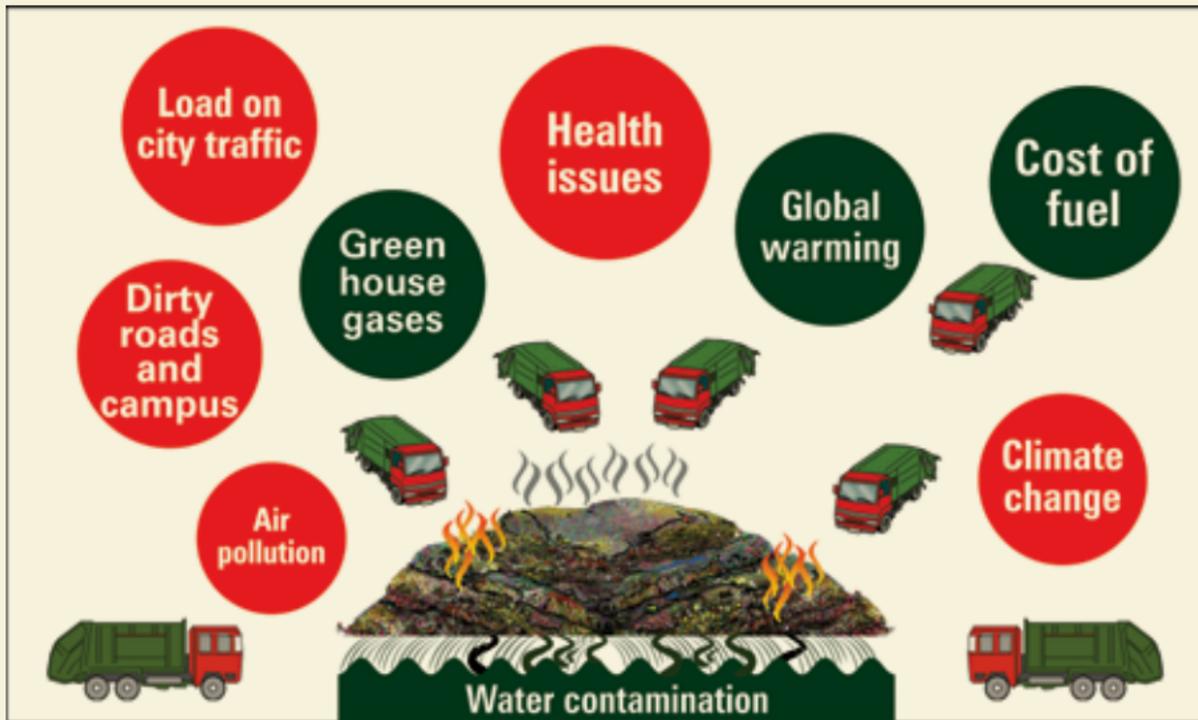
Reduce, Recycle, Reuse are 3 great principles which lessen waste. 'R's conserve natural resources air, water, soil etc. landfill space and energy.

Currently solid waste is managed in centralised manner which involves collection of waste from different places ,transportation to a designated place called dumping ground and treatment as per requirement.

This system requires lot of space, is not energy efficient, consumes lot of funds on transportation, increases pollution, and it is not environment and human friendly.

How do these dump yards look like? Experience a visit to dump yard through the illustration on next page

A simple solution to get rid of all these problems is to KYW or Know your waste.



As per SWM rules of 2016 waste is divided in 3 broad categories

Wet waste –The other names of this type are organic and biodegradable.

It includes fallen leaves, vegetable stalk and peels, fruit peels and seeds, dried flowers, sawdust, fingernails, hair, leftover food, bones, fish bones, coconut shell, tender coconut etc.



A new term has been coined for this waste i.e. – compostable.

There is a difference between biodegradable & compostable- Compostable means that a product is capable of disintegrating into natural elements in a compost environment, leaving no toxicity in the soil. Almost everything is biodegradable but compostable things degrade in a much shorter period. Biodegradable products may take years and decades, even centuries to disintegrate.

Dry waste –

This type is also known as recyclable waste. Paper, cardboard, plastic, cloth, leather shoes, Rexine, thermocol, rubber, glass fall in this category.



Here is an important note to remember. If you find a wet paper will you call it wet or dry? Does 'wet' mean actually wet? Please do not mistake a wet plastic sheet or rubber cloth with wet waste. Wet waste comprises of organic things (living things). All non-living things fall in the category of dry waste. No matter how wet they are. Mere application of water on outer /inner part of any such article does not make it wet waste or organic waste.

So wet bottle, wet rubber cloth, wet plastic sheet are all examples of 'dry' waste and NOT wet waste.

You must have purchased snacks packed in plastic bag, paper carton or thermacol tray. Ready to eat vegetable or fruit juice we drink in Tetra Packs is a classic example. The packaging is dry waste whereas the contents are organic waste. This type of article needs special care at the time of disposal. We should remove the food particles and droplets of the liquid from the pack, clean it well before handing over to a dry waste collector.

Hazardous waste – This type is sub categorized again, as domestic hazardous waste, e waste, and biomedical waste.

Domestic hazardous type includes Poisonous / dangerous items like Sanitary napkins, diapers, bulbs, tube lights, empty acid bottles, empty containers of cleaning agents, mosquito repellents.

Usage and disposal of sanitary napkins and diapers: You must have heard that irresponsible disposal of used sanitary pads and diapers is new challenge. Mostly they are handed over with dry waste from households. After use the napkin should be cleaned, wrapped in a paper. A red mark should be put on the wrap so that it can be distinguished easily. It should be handed over along with domestic hazardous waste and not with dry waste.

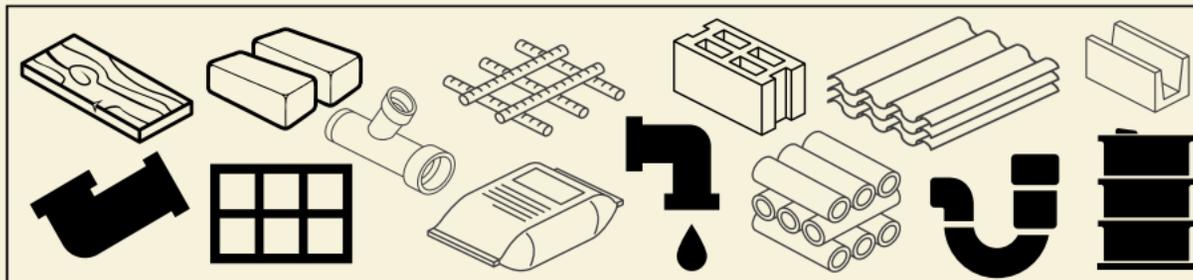
Alternatives for disposable sanitary pads are available in markets. Cloth pads and menstrual cups which need to be tried and popularised. At present approx. 12% of women in India can afford sanitary napkins. But increasing awareness of menstrual health will surely escalate the number.

There are separate rules for other types of hazardous waste like e waste, construction waste, bio-medical waste etc. It is mandatory to segregate them at source. Separate agencies are authorised for the scientific disposal of these items.



Construction & Demolition Waste:

The major constituents of this kind of waste are concrete, soil, bricks, wood, asphalt and metal. Brick & masonry, soil, sand & gravel account for over 60% of total construction and demolition waste.



Proper waste management : A path towards zero waste

Zero waste

Zero waste is a holistic outlook towards waste disposal. Achieving zero waste means changing your lifestyle and learning new habits. Zero waste has the potential to make industry, bureaucrats and elected representatives more

accountable and responsible.

Zero waste

- Does not mean 'No Waste Generation'
- Does not mean disposing waste away from sight
- Does not mean burning waste. (Incineration can only be done if international standards of safety are strictly followed)

Zero Waste means returning the wealth of nature back to nature in the right manner.

Proper waste management involves collection and disposal of waste in decentralised manner. Decentralization reduces soil and air pollution, groundwater contamination. It saves energy and minimises transportation. And it enables easy access to recyclable material. Decentralization provides an alternative income to solid waste management operators and other active stakeholders like waste workers and waste-pickers. In brief, decentralisation has economic, social and environmental benefits.

The precondition for a decentralised waste management system is meticulous segregation of waste at source. Once dry, wet and hazardous waste substances are handed over separately. Wet waste can be converted into compost or biogas. (For more information on this process, refer to the books Not really waste and Nisargruna in this series). Through composting or biogas production, a major chunk of waste is removed from the total waste generated.

Separate collection and scientific disposal of debris, medical waste and e waste will root out another chunk of waste.

What remains then are the recyclables.

Economy – Empowerment - Environment

‘Sustainable human development is development that not only generates economic growth but distributes its benefits equitably; that regenerates the environment rather than destroying it; that empowers people rather than marginalizing them. It gives priority to the poor, enlarging their choices and opportunities and providing for their participation in decisions affecting them. It is development that is pro-poor, pro-nature, pro-jobs and

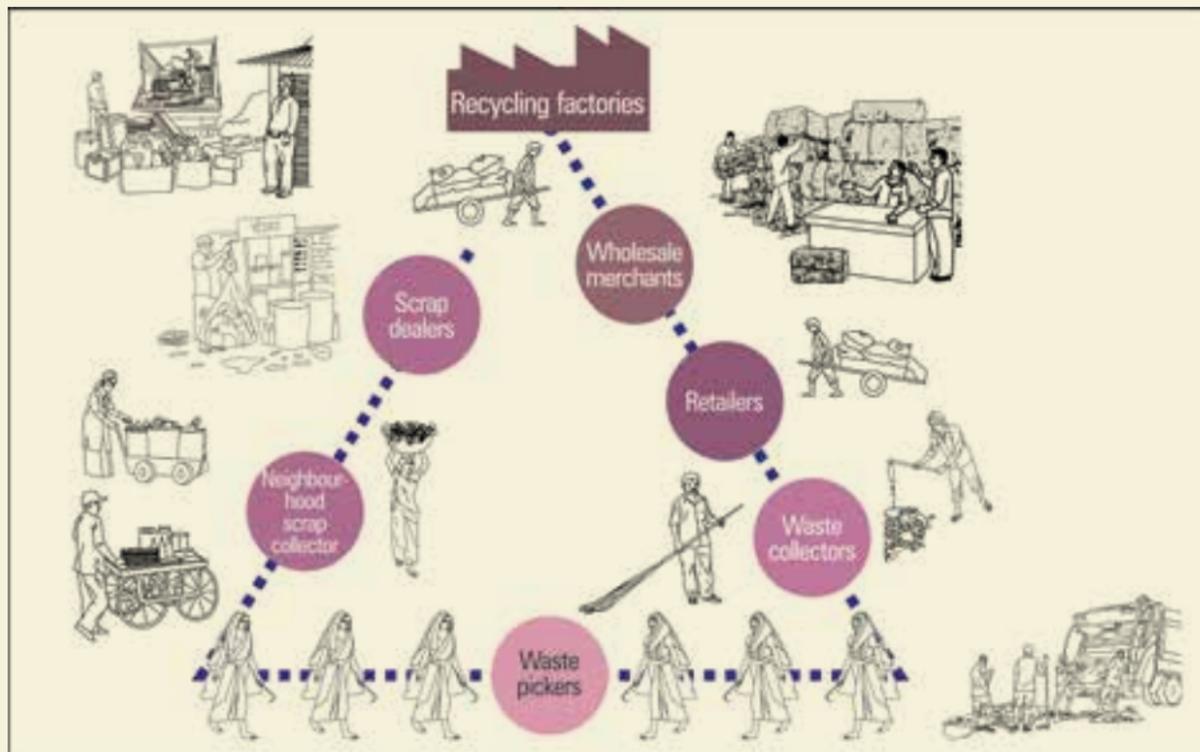
pro-women'.-[Future of the United Nations Development Programme : Initiatives for Change, 1994]

Recycling

Recycling is a major industry employing thousands of people. The other stakeholders of this pyramid are municipal waste workers, itinerant scrap vendors, scrap retailers, wholesalers. Waste pickers are the backbones of recycling Industry. They work hard and provide clean and segregated waste to the industry. As per estimates by The World Bank, 1% of population is engaged in this informal sector of labour. The significant contribution of waste pickers to the city includes:-

- Reduction in municipal waste-handling and transport costs
- Supply of raw material to recycling factories
- Saving space at the dumping grounds
- Resource recovery in the form of valuable compost and conservation of the environment when trained in these alternate skills

Pyramid of Solid Waste Management –



If waste pickers do not collect recyclable, saleable items from waste bins and waste dumps, thereby reducing the volume of waste, we would require more vehicles to transport the waste, more fuel in the transportation more personnel to handle the waste, and more land for dumping waste.. And so, this invisible workforce should be reckoned with more sensitivity by citizens, urban local governments.

Types of dry waste –

Plastic

Plastic has become an inevitable part of our day to day life and only 9% of total plastic thrown away is being recycled. Plastic takes centuries to disintegrate completely. And if not recycled, it lies on our landfills, open spaces, and the oceans. You must have seen many disheartening videos of plastic floating in oceans, causing deaths to marine life..

Percentage of plastic in Indian waste is increasing day by day especially, plastic below 50 microns, multi layered plastic and one time use plastic. 17

states so far have banned this kind of plastic as they are extremely dangerous for the environment. However, a lot needs to be done on this front. Such type of plastic is not collected even by waste pickers as it does not fetch a good price for them to make ends meet. This plastic ends up thrown on the road or sent to dumping grounds, becoming dangerous for the environment. Its damaging effects can be mitigated only by recycling, which needs active co-operation from citizens, who need to:

- Stop using plastic less than 50 microns in thickness
- Reusing plastic bags and not discarding them irresponsibly.
- Cleaning and segregating plastic at source and disposing them to authorised persons for recycling

Plastic products are made from different polymer granules or fibres. Bottles for drinking water and cooking oil are made from Polyethylene Terephthalate (PET). Caps and the rings around the neck are made from high density polyethylene (HDPE), a different type of plastic. The label on the bottle is either made from Poly vinyl chloride (PVC) and cables, pipes etc. are made from

Key Challenges in Solid Waste Management (SWM)



Society / Citizens

Lack of public awareness

Reluctance in adopting new techniques and decentralised system

Citizen's apathy and indifference

Insensitivity about people working in waste



Local Self Governing Bodies

Apathy of local self governing bodies

Vested interests in transport of waste

Lack of training

Paucity and squandering of funds

Inexcusable negligence towards essential services

Disregard in implementation of rules.



Labour in the Waste Sector

Illiteracy

Double duty

Caste compulsions

Lack of training

Poverty / Low income

Gender based inequality and gender bias

Lack of economic & social security

Filthy workplace

them. Medicine bottles, packaging films are made by recycling Polypropylene (PP), Low density polyethylene (LDPE) is recycled into carry bags and films. Polystyrene is recycled into foam packaging, tea cups etc. The processes for recycling each of these materials are different. And recycled plastic is not used for making food grade containers. It is converted into articles like footwear, chairs, tables, buckets, etc.

Unclean plastic bags need to be emptied and washed, before they are taken for further processing and converted into granules for making plastic articles like plastic footwear, furniture, buckets etc.

Fuel

Plastic has also successfully been converted into crude oil. One kg of plastic can generate 700 ml of fuel. And it will be a major recycling success when this fuel generation is done on a large scale.

RDF

Refuse Derived Fuel is made by compressing the plastic into small balls for

use as a fuel instead of coal, to fire boilers in factories. However, these balls must not contain PVC or any wet Waste. And many environmentalists have flagged this fuel as a polluter of the atmosphere and damage environment.

Road Surfacing

It is claimed that roads become longer lasting by replacing bitumen with molten plastic.

Fuel for Cement Furnaces

Many food products (eg. wafers, biscuits) are packed in multi-film wrappings. These wrappings are made by laminating paper with different plastic films. These are light weight and so do not fetch a good price and so they are ignored during collection. Disposing these wrappings is a major problem, they can be fired in cement furnaces at very high temperatures of around 1200 oC. The Central Environment Ministry has stated that burning at this high temperature is safe, as no toxic fumes are generated from the plastics. However, there is a difference of opinion regarding the use of plastic waste in making roads and burning in cement kilns.

On Cement Kilns:

There is mounting evidence that burning or incinerating waste have public health and climate impacts. Some of the most troubling aspects of incineration are the toxic pollutants that result from burning waste, as well as resulting greenhouse gas emissions that endanger clean energy goals. Incineration also undermines recycling and other zero waste efforts, leading businesses and cities in the opposite direction from true environmental solutions.

Similar to Waste Incineration is Cement Co-processing that burns waste as feedstock in Cement Kilns and evidence shows the hazardous and public relations risks of association with the cement industry. A report “Concrete Troubles: A report on the emissions from Cement Plants in India and a critique of the ongoing co-incineration of Hazardous Wastes in the Cement Industries (2014)”, conducted by Global Alliance for Incinerator Alternatives (GAIA) – India & Community Environmental Monitoring, The Other Media. As part of the study, air samples near cement kilns were found to have high levels of heavy metals like lead, manganese, and copper at cement plants, leading to

increased community protests and regulatory challenges.

Packing material by Tetra Pak

Tetra Pak is useful in keeping milk and juices fresh but the three-layered packing material creates problems for disposal. The packing contains 75% paper, 20% plastic and 5% aluminum. If used Tetra Pak cartons are segregated and bundled to processing plants, the paper content can be leached by spraying with water under pressure. The wet paper pulp formed is recycled to make paper. Plastic and aluminum is separated and recycled or it can be pressed together in machines to make sheets for roofing or also to make furniture. In short, damage to the environment can be reduced if the use of plastic is avoided or minimised, and it is recycled and reused.

Paper

Recycling of paper is very crucial for environment because if one-ton paper is recycled 17 trees are saved. Virgin paper is made from trees, Used paper, old newspapers are sent to paper mills for reuse and to make paper again. The waste paper is treated with chemicals and water and made into a pulp. It



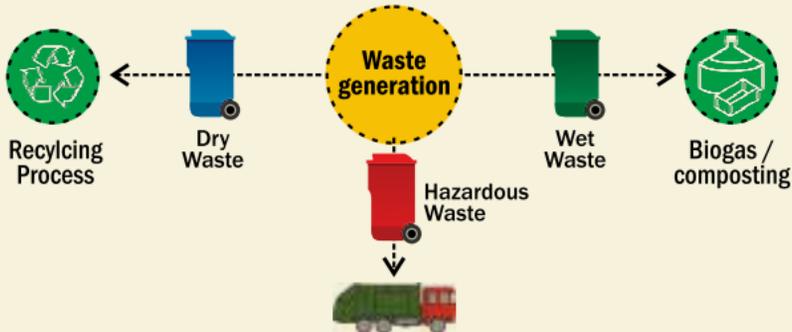
is filtered, to remove impurities. Colours and ink is also removed before it is finally made into paper. However, such reprocessing weakens the fibers in the paper and so such recycling can be done upto 7 times. There are also simple machines to make handmade paper from used paper. Today in India, 20 lakh tons of waste paper reaches factories but 60 lakh tons of waste paper is still dumped in landfills. This shows how we are wasting national resources and damaging the environment by not segregating Waste.

Metals

Waste generated during construction and civil activities, waste from factories during production and also what is thrown away after such products have finished their usage, contain a significant portion of metals and metal compounds. It is more economical to recycle metals than to dig them out from the earth. Recycling of metals is done by treating them suitably and converted back into pure metals or their compounds. Metals fetch a good price and so they are recycled in large quantities. You will often see collectors' screening waste dumps with strong magnets. However, metals can be recycled only if they are properly segregated.

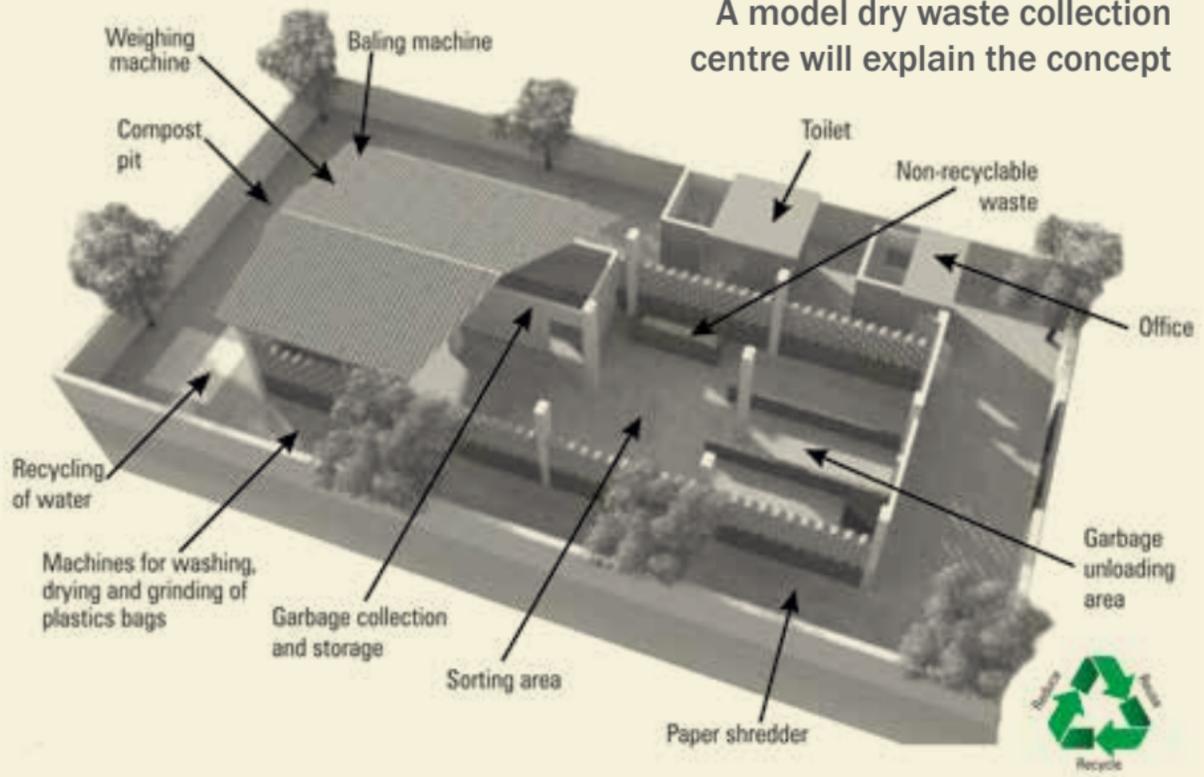
Material Recovery Facility

The recyclable material is destined to go to Material Recovery Facilities (or MRFs) of which there are hundreds of successful examples around the world. Their function is to separate the paper, cardboard, glass, metals and plastic and prepare them to meet the specifications of the industries, which will use these secondary materials to manufacture new products.



A space of 30 x 80 feet, (i.e. 2400 sq. Ft) is needed in the populated area. This can hold about 2 tons of Waste and if need be, the capacity can be increased by raising the height. It is the responsibility of the municipality to provide adequate space for the storage of dry waste.

A model dry waste collection centre will explain the concept



Simultaneous segregation and dispatch of the Waste can enhance the capacity to 3 tons. Waste can be an eyesore, so a 10 feet high compound wall is necessary. This is also needed from security point of view.

Waste is received at the shed from:

1. Waste collectors, who go from door to door in residential areas
2. Trade and commercial establishments
3. Citizens bringing assorted waste for sale
4. Sanitary staff.

It is the responsibility of the municipality to provide at least one shed in every corporator's constituency. Mumbai is the first municipality to provide such sheds for Waste collectors but Pune and Bengaluru municipalities have provided better facilities. Areas have also been identified for expansion. It is necessary that local governing bodies erect such sheds and give them to Waste collecting organisations, to enable decentralised management of solid waste. The municipality must also arrange for the following facilities in each

shed:

- Water supply and electricity connection
- Toilets, water and soap
- First aid kits
- Fire extinguishers, as the shed holds paper and plastic, which are are flammable.
- The operators of the shed must bear the costs of these facilities. Areas must also be identified for expansion.

Activities at the shed include:

5. Unloading and receiving Waste
6. Meticulous segregation of the Waste received.
7. Wet Waste to be added to compost pit. (Details in next section)
8. Weighing the dry Waste

9. Shredding of paper if required.
10. Making appropriate payment according to agreed rates.
11. Bagging together similar type of waste.
12. Re-weighing and storing in separate area.
13. Dispatch for sale.
14. Dispatch of hazardous and non-recyclable solid waste to scientific landfill.

If space permits

15. Plastic can be washed with water, dried and shredded in another machine and sold.
16. Segregation of Waste and washing consumes a lot of water. A treatment plant for this waste water can enable it to be recycled.
17. A separate section can be set up to manufacture recycled paper from the waste. This paper can be used for stationery & in the packaging industry.

Extended producer responsibility

Instead of segregation at source many urban local bodies prefer burning of plastic waste. Larger Corporations prefer incineration of waste. There is mounting evidence that burning or incinerating waste have public health and climate impacts. Some of the most troubling aspects of incineration are the toxic pollutants that result from burning waste, as well as resulting greenhouse gas emissions that endanger clean energy goals. Incineration also undermines recycling and other zero waste efforts, leading businesses and cities in the opposite direction from true environmental solutions. Therefore, it is important to follow 3 R principles 'Reduce, Recycle and Reuse' in everyday life as 4th R is responsibility. Responsibility of Governments, citizens and also of the manufacturers. In last two decades many laws have been passed especially in Europe to extend this R to manufacturers.

Consuming products wrapped in use and throw materials generates more waste and puts a burden on natural resources. Extended producer responsibility (EPR) is a strategy designed to promote the integration of environmental costs

associated with goods throughout their life cycles into the market price of the products. EPR means manufacturers should take the responsibility of their product from cradle to grave. .EPR is based upon the principle that because producers (usually brand owners) have the greatest control over product design and marketing they have the greatest ability and responsibility to reduce toxicity and waste. EPR may take the form of a reuse, buy-back, or recycling program. EPR shifts the responsibility for waste management from government to private industry, obliging producers, importers and/or sellers to internalise waste management costs in their product prices and ensuring the safe handling of their products. EPR also means reducing consumption, and requiring that products be made in ways that are safe for people and the planet.

Our air, soil and water do not have to be polluted, and our natural resources don't have to be trashed. In the EPR model waste reduction or minimizing waste can be tackled with awareness, empathy and proactiveness. Rigorous and systematic public campaigns to propagate the concept would help in the reduction of waste. Recently Global Alliance for Incinerator Alternatives

and Break Free From Plastic conducted India Waste and Brand Audit - a unique and powerful tool which uses public participation to demonstrate the evidence of plastic pollution. Ten GAIA member organizations and partners, of which SMS was also part of, conducted clean-up and waste and brand audits in 15 cities of India-Bengaluru, Chennai, Darjeeling, Dehradun, Delhi, Goa, Himachal Pradesh, Kolkata, Leh, Mumbai, Nagaland, Pune, Sikkim, and Trivandrum.

Results showed that both local and international brands are responsible for the plastic waste pollution in the country. 62% of the plastic waste during the audit was attributable to Indian brand owners and 38% to international brands. International brands though have a smaller share in the India Waste and Brand Audit results; they have a much higher share in the total global waste.

In terms of packaging, 48% of waste was found to be multilayer plastic packaging, which is not recyclable, followed by 22% of single layer packaging, 15% of PET and 12% of hard plastic. The data also revealed that over 90% of the plastic packaging was used for food products followed by 5% for household

and 4% for personal care products.

Let us remember that waste is resource at wrong place

As per the Report of the Task Force of the erstwhile Planning Commission, 'the untapped waste has a potential of generating 439 MW of power from 32,890 TPD of combustible wastes including Refused Derived Fuel (RDF), 1.3 million cubic metre of biogas per day, or 72 MW of electricity from biogas and 5.4 million metric tonnes of compost annually to support agriculture.'

Mahatma Gandhi had a broad and practical perspective for motivating individual participation in waste management. According to him, cleaning toilets was also a service to the nation. Public and personal hygiene was a part of his daily routine. And it should become a part of ours as well. This will be a true zero waste campaign.

Annexure I

Some of the features about EPR in SWM Rules, 2016 include: -

1. All manufacturers of disposable products such as tin, glass, plastics

packaging etc. or brand owners who introduce such products in the market shall provide necessary financial assistance to local authorities for the establishment of waste management system.

2. All such brand owners who sale or market their products in such packaging material which are non-biodegradable should put in place a system to collect back the packaging waste generated due to their production.
3. Manufacturers or Brand Owners or marketing companies of sanitary napkins and diapers should explore the possibility of using all recyclable materials in their products or they shall provide a pouch or wrapper for disposal of each napkin or diapers along with the packet of their sanitary products.
4. All such manufacturers, brand owners or marketing companies should educate the masses for wrapping and disposal of their products.

There are around 17 states in India who have banned one time use items and plastic bags below 50 micron.

Important websites for reference

References	Websites
Alliance of Indian Waste Pickers	globalrec.org/tag/alliance-of-indian-waste-pickers/
Bhabha Atomic Research Center	www.barc.gov.in/
Central Pollution Control Board	cpcb.nic.in/
Centre for Environment Education	www.ceeindia.org/
Chintan, New Delhi	https://www.chintan-india.org/
Dr. Almitra Patel	www.almitrapatel.com/
Global Alliance for Incinerator Alternatives	www.no-burn.org/
Global Alliance of Waste pickers	globalrec.org/
Indian Centre of Plastic and Environment	icpe.in/

MMR-EIS Climate Change Resources Toolkit	http://mmreis.org.in/mmr-ccrt/index.php?lang=en
Intergovernmental Panel on Climate Change	www.ipcc.ch/
National Environmental Engineering Research Institute	www.neeri.res.in/
National Green Tribunal	www.greentribunal.gov.in/
Self Employed Women's Association	www.sewa.org/
Stree Mukti Sanghatana	streemuktisanghatana.org/
Hasiru Dala	http://hasirudala.in/
Solid Waste Collection and Handling (SWaCH)	https://swachcoop.com/
Swachh Bharat Mission	swachhbharaturban.gov.in/
Toxics Link	toxicslink.org/

United Nations Development Programme	www.in.undp.org/
United nations Framework Convention for Climate Change	https://unfccc.int/
Women in Informal Employment: Globalizing & Organizing	www.wiego.org/



CREDITS

Illustrations - Meghana Samant, Kalpanand Dandekar,
Kedar Parabhavalkar, Jui Pednekar

Lay-out, Design - CSR Hub India, Mumbai

Printer - Creative Advertising & Marketing, Mumbai

© 2018 : Stree Mukti Sanghatana

Limited Circulation - 1000 Nos

Wastewor(l)d series edited by Jyoti Mhapsekar

with valuable inputs by Alka Pawangadkar, Meenal Joshi, Rucha Chandwankar

Other booklets in the Wastewor(l)d series on Solid Waste Management -

- Not Really Waste
- Indebted to Nature - Nisargaruna
- Visit to Litterland
- Social Entitlements for Waste Pickers
- Waste to Wealth (Miniature Posters)



स्त्री मुक्ती संघटना

Stree Mukti Sanghatana

(Womens Liberation Organization)

31, Shramik, Royal Crest, Lokmanya Tilak Vasahat,
Lane No 3, Dadar, Mumbai - 400014

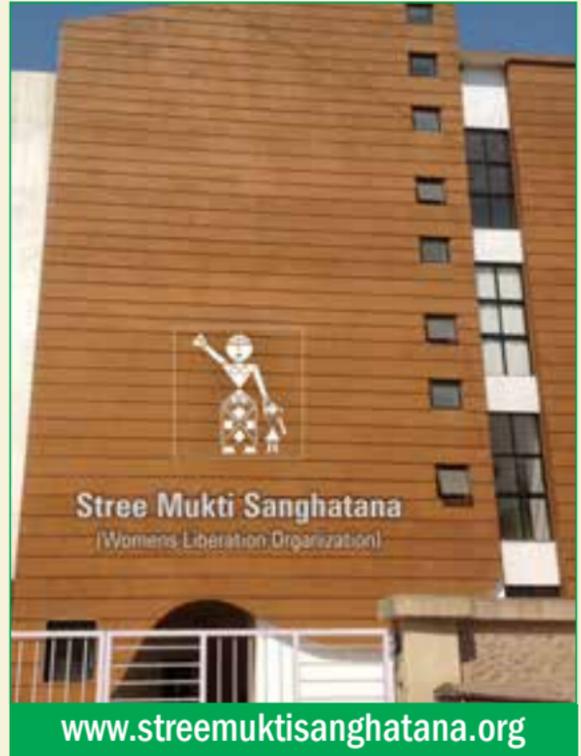
● email - wasteworld@streemuktisanghatana.org

SMS Activities

- Cultural Troupe: Theatre & Songs
- Publication and Resource Material
- Family Counselling Centres
- Jidnyasa - Adolescent Sensitization Programme
- Parisar Vikas Programme for Waste-Pickers
- Day Care Centres

Our Federations & Co-operatives provide

- Magic Baskets
- Plants & Culture
- Magic Powder
- Awareness Programmes
- Compost Pits
- Maintenance of Bio-gas Plants
- Books, CDs
- Posters



Contact for Waste Management Services - 022 25274588