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SOLID LIQUID WASTE-CHANGED PERSPECTIVE AND LOCAL SOLUTIONS

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Abstract- Management of solid and liquid waste is an issue in India and Uttar Pradesh. Rapid urbanization and its reach to villages has made the situation of collection of waste to infinite. Along with this liquid waste is a huge issue. There is no clear guidance and policy of government at centre or state which can guide to solutions in useful manner. Landfills or burning of waste is a way to dump all collection of waste happens in rural and Urban areas. In rural area too slowly it becoming an issues due to lose of conventional practices. Waste dumping is happening in natural water resources in villages or is either burned. Plastics can be seen logging the water in drains. Excess use of plastic has not only impacted our environment, it has also reached to stomach of animals specially fishes and cows. They are subjected to death due to collection plastic in their stomach. Inadequate e guidelines on SLWM and inappropriate policies make is more pathetic with the increase in the population, the generation of waste increases proportionately. Swacch Bharat Mission has put lot of efforts towards making the villages open defecation free. One these gram panchayats are made ODF which is just stopping open defecation by communities and using toilets, there is need to put additional efforts to make communities managing their waste in form of solid waste of liquid so they are and basic hygiene is maintained. Also there is need to create livelihood prospect for communities in village itself. Along with this there is need to find solutions for solid and liquid waste in village itself.
This paper is an attempt to provide some solution which not only tell that the waste can be seen as resource, there are easy solutions to reduce the waste, recycle, convert it into resources. Segregation at different levels is process which can done in decentralised manner in low investment with long term effect. This is not only needed in each community but for planet where we live. To reduce the after effects of landfills, climate change, on human life and water we have. This helps to not only convert waste into resource, it also helps to think avenues for livelihoods for many.

Keywords: Solid waste management, types of solid waste, segregation of waste, liquid waste management, collection of waste, recycling, reducing the waste, refusing the waste.

INTRODUCTION AND CONTEXT

India produces 1.6 lakh metric ton solid waste approximately which is either dumped in landfills, or is burned. This waste is not segregate at any level. Millions of money is waste in transportation of this waste. Waste can be seen anywhere in drains, lying at the corners of any colony offices markets. Many animals specially cows eat plastic and die. It is estimated roughly that every household generates approx. 200-600 gram of waste. This is form of plastic, paper, rappers, vegetable waste, **electrical waste, hairs, left out food, rubber, electronic waste, medical waste etc. Since all this waste is not segregate and thrown here and there lying in open, virus and bacteria develops in waste, is home to flies which leads to health hazards and diseases.**

What is solid waste and liquid waste

These are waste products from various sources like households, industries, hospitals, construction, and building sites. They are basically of two types i.e. biodegradable and non-biodegradable .Municipal solid waste consists of household waste, construction and demolition debris, sanitation residue, and waste from streets.

Uttar Pradesh and role of WaterAid India

In Uttar Pradesh, situation of waste collection is equally poor. In current year state Swacch Bharat Mission has put lot of efforts towards making the villages open defecation free. Once these gram panchayats are made ODF which is just stopping open defecation by communities and using toilets, there is need to put additional efforts to make communities cleaner, ensure other factors of sanitation and hygiene are also maintained. Also there is need to create livelihood prospect for communities in village itself. Along with this there is need to find solutions for solid and liquid waste in village itself. In village there are many types waste like animal waste, bio degradable waste in form of vegetable, foods etc . Also there are dray leaves which is generally burned. All these waste can be easily converted into resources by smaller efforts in convention way. Slowly urbanization has reached to villages as well specially villages near to cities and lot of inorganic waste is generated. It timely collection and management till reaching to recyclers is important. Currently villager are either dumping these waste like plastic bottles, used polythenes,

Figure 1: Chief Development Officer, Lucknow distributing dustbins to village people

thermocol platesetc. in ponds or are burning. Both these practices are environmentally hazardous. One is leading to dying water bodies and later one is making huge air pollution.

Role of WaterAid India

To support the issues of solid and liquid waste in UP, WaterAid has engaged with Uttar Pradesh State government to support the solution and developing gram panchayats solid and liquid resource management plans and turn every item which is thrown out as waste is used and turn in economy. 24 Gram panchayats of 8 districts of Uttar Pradesh were chosen which had already attained Open Defecation Free status. The Detail Program Resource Plans(DPRs) were developed for each of these Gram Panchayats. These plans were developed after a detail survey of assets like ponds, abandoned building, number of animals who dung is produced, amount of waste water produced, drainage systems, hand pumps, dry leave produce etc. These DPRs were approved and implementation has been started in villages. SHG members were selected from each of village and were trained on making of composting, dry leaf manure, segregation of bio degradable and non-biodegradable manure.

Case presented from -SLRM Initiatives under SBM (Rural) in Lalpur Gram Panchayat, Lucknow

WaterAid India with support from its implementing partner organization Vatsalya has implemented a solid and liquid resource management (SLRM) initiative in Lalpur Gram Panchayat, Mohanlalganj block, Lucknow since August 2017. While the village had achieved ODF status in August 2016, in the absence of a system of Solid and liquid waste management, that achievement fell short of achieving comprehensive cleanliness and hygiene that would lead to an overall improvement in quality of life.

A start was made by training 30 community members, mainly women, in different aspects of SLRM. Of these 11 members formed a registered SHG group which now makes organic manure, liquid fertilisers and bio pesticides. There has also been a start at marketing these products as a viable and profitable community led enterprise model. The SLRM efforts have been preceded by extensive preparations including behavioural change. In August 2017, two types of dustbins, green and red, were distributed to every household for segregating organic and inorganic waste respectively. Segregation though was not a natural instinct and the community was made aware of its benefits in household, group and individual meetings. Each of Lalpur's 232 households contributes Rs 2 per day towards waste collection. A group of Self Help Group (SHG) members goes around the village every morning from 9 to 12 picking up the garbage. A two-hour break is given to each women to have food and complete home chores, later the women come together to segregate the waste at the community centre which serves the purpose. The collected waste is kept at the solid waste managing resource centre built in village. The inorganic waste has so far been sorted and stored while the women negotiate with buyers in nearby cities. Primary level of segregation happens at home. Onwards the secondary and tertiary level of segregation is done at the centre by the SHG group.

Collection of waste and segregation in stipulated time is very important, if segregation is done within 8 hrs of collection biodegradable waste can be used for animal food, making compost etc. It was observed that within a month in a village good amount of solid non bio degradable waste can be collected, cleaned like newspapers, bottles, bottle caps, egg shells, and other thing. Egg shells cleaned, dried and powdered to be used and good nutrients in many plants. Many of such items have good reusable quality and many can be converted to use in productive forms. Dry leave manure is made by collecting all dry leave and making six by eight fit loaf, adding liquid dung, cover it for 45 days with rug sheets. This manure can be used for agricultural fields and it is much better than inorganic manure used in field.

Figure 2: Team from international defence collage reviewing the program

Categories of solid waste	
Organic waste	Kitchen waste, vegetables, flowers, leaves, fruits.
Toxic waste	Old medicines, paints, chemicals, bulbs, spray cans, fertilizer and pesticide containers, batteries, shoe polish.
Recyclable	paper, glass, metals, plastics
Soiled	hospital waste such as cloth soiled with blood and other body fluids

The waste is then packaged to transport to the end recyclers in the market. The profit margin gained by selling the waste is collected in SHG account. A portion of same is used as small salary to each woman, rest of it is used in operational cost of managing the work.

It was observed that while villagers were happily giving all the inorganic waste to which they had understanding that it is of no use further, they were still keeping all the other inorganic waste which had some further selling cost. Secondly it was also observed that a part of community feels that only SHG females are gaining out of this project. To align the larger community in the concept of managing waste, procurement of inorganic waste which had the cost was also initiated.

Since these females are not much aware of market and business acumen, much of handholding is needed and is provided by WaterAid India, wherever needed. The collection of waste in now scaling up to 7 more Gram Panchayats. In this plan waste which has value is also procured from household so that each household to get some meagre cost for the waste.

From fewer illnesses to a cleaner village, and from a semblance of economic independence to pride in the praise of the status of the village, SLRM has led to a host of tangible and intangible benefits. Community efforts at affecting the change have brought about greater cohesion and a stronger social fabric. Each of SHG woman is able to make 2000-3000 per month from the work.

***Liquid waste Management*:**

As the village pond was collecting almost 90% of its' grey water, WaterAid has supported a conversion of the pond into a natural treatment water body, that is a Waste Stabilization Pond, that will help naturally treat the effluent water which shall then sustain pond life, enhance ground water recharge and contribute to irrigation and other needs.

Process involved in Pond treatment, Assessment of grey water – how much intake from Village based on discussion with community,Taking the technical consultation, Technical consultation was focused on simple and less costlysolution and should be easy for O&M for community. Size of pond is 120 mt in length and 70mt in breadth. This was divided in to four parts. First portion was kept with depth of 10ft to collect all the grey water of village through channelized drains. Next three part were kept at the depth of 4-5ft .Concept was shared with all the required stakeholder of the state and district like - SBM MD UP, CDO Lucknow, DPRO, ADO, Sachiv, and Pradhan. Three rounds of visit and helping the community understand hazards of grey water, WSP as part of solution.

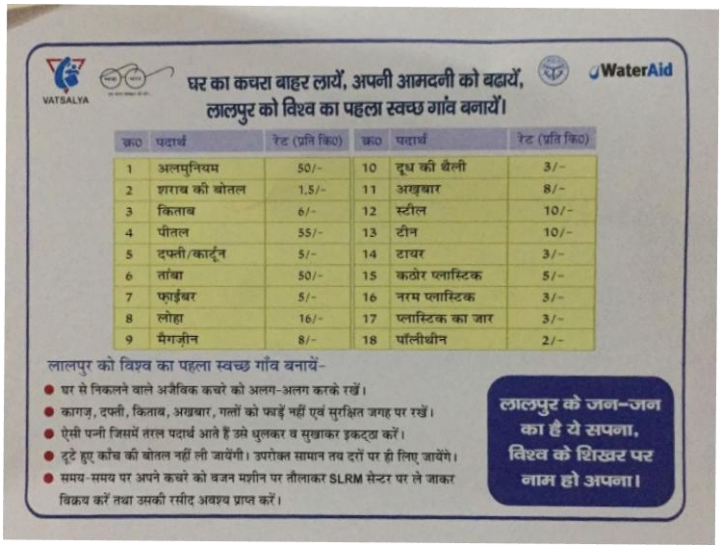

Figure 3: procurement rate of inorganic waste in village

Figure 4: Initial condition of pond- Liquid and solid waste going into village pond

Figure 5: Waste Stabilisation Pond (WSP) in Lalpur: Anaerobic Tank, Facultative tank, maturation tank and clear water tank

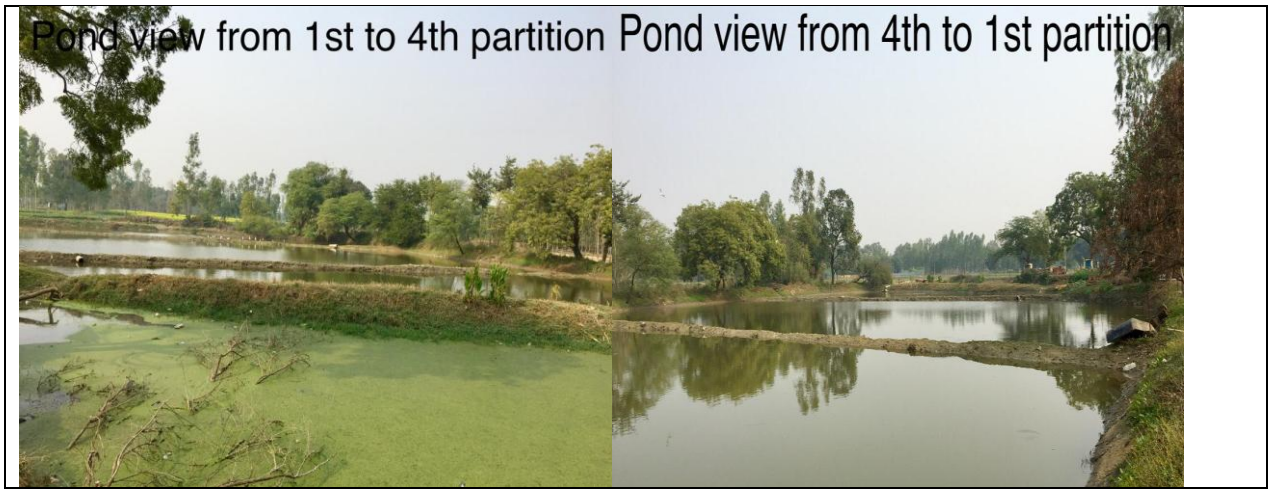

Figure 6: WSP pond view from anaerobic tank to clear water tank

Figure 7:WSP from the cleaner side of pond (4th portion)

Lalpur is an inspiring example of community led change that started with responsible WASH practices, constant vigil, adoption of household incinerators to dispose of the menstrual waste, garbage segregation that then morphed into a comprehensive solid liquid waste management program.
A sustained and community led approach has enabled WaterAid India its Lucknow partner to develop a model SLWM approach in just 6-7 months. As Lalpur's Pradhan says, "This transformation might seem something like a miracle. This is a miracle we made".

CONCLUSION:

Reuse, Reduce and Recycle is basic in any solid waste management work. There is need for decentralised system of collecting and managing the waste. Primary level segregation should happen at the home. There is need of a collection and segregation point at each small location/village or small communities like urban societies. Collected waste should be segregated further for composting and recycling. This mechanism has potential to involve the rag pickers, waste pickers to have better and dignified job to manage the waste. These centres can be managed by further selling of all such waste which has some potential cost. There is necessity to decentralise planning and thinking and taking tough decisions. There is necessity to allocate separate fund for initial support for making low cost solid waste management centres. Also support is required for convergence and inter department acceptance of products. Swacch Bharat Mission has kept fund for SLWM work, but there has to collective vision towards segregation and management of waste instead of shallow talking on just constructing some soakpits, NADEP etc. Capacity building and handholding is key to implement any such concepts. Government has to act locally. There is necessity that all dumping sites are vacated and such SLRM methods are used. This would make world better cleaner and greener for us.

RECOMMENDATIONS:

1. Collection and segregation centre to be made in each of Gram panchayats or in cluster of Gram panchayat where collected waste can be kept, further segregated and packaged for further recycling.
2. Pond to be reviewed and use of conventional methods like duck production, fisheries should be done. It would help pond to remain alive and oxygenated, ducks would produce egg which can be used for egg selling business, duck can be given all non- vegetarian waste of community and its healthy for them. This would help to generate further revenue for group and village.
3. Governments should support in linkages and convergence of departments so that products made out of program like organic manure, organic pesticideetc be used by agriculture departments.
4. Conventional method are always best to solve the program at local level like drains is not a successful in village areas. Canna plants etc can used instead in place of Nalis so that these plants can soak excess water are good for environment too
5. Self-help group member need to be involved and their capacity should be built.
6. There are immense livelihood opportunities if Solid and liquid resource management program is implemented well and waste can be turned into resources. Issues is collection, segregation and linking it to vendors who can bought the materials like empty glass bottles, plastic wrappers etcis important needs further linkages and handholding.
7. Government should designate fund and schemes for the SLRM in each of state and districts
8. Training and refreshers are required and people should be oriented on same
9. TV, Media should be included for larger dissemination of message

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