Report on

Solid Liquid Waste Management (SLWM) in peri-urban setting of village Garhi Harsau, Gurgaon, Haryana

Submitted to:

Global Water Partnership South Asia
India Water Partnership

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Acknowledgement

It has been a thought provoking process to work on this project for promotion of Integrated Water Resource Management (IWRM) in peri-urban setting of village Garhi Harsau, District, Gurgaon (Haryana State).

TARU Leading Edge is grateful to IWP/GWP for assigning this project and extending all possible support at ground level and coordinating activities.

The support of India Green Service (IGS) as partner to TARU Leading Edge is invaluable for carrying out the construction of rainwater harvesting structure in the village.

We would also like to thank all the stakeholders in Grahi Harsaru- the Sarpanch, PRI members, motivator, government school administration and people of the village, for taking time and discussing with us their issues, problems and solutions.

1. Brief Summary of the Activity

Delhi National Capital Region (NCR) is a water scarce region, largely dependent on groundwater and surface water resources (located outside the region). The peri-urban areas in Delhi NCR face even bigger water challenges as the situation there is grimmer, in terms of infrastructure and physical development. Water stress is one of the major problems faced in these areas. In view of the over-dependence on ground water, the water table is falling at an alarming rate, much beyond the capacity of the rainfall to recharge it. It is estimated that on an average, NCR receives about 22542 MCM/year rainfall; about 75% of which is received during the monsoon season. Still, most of this precious resource run-offs without being put to any significant use, and thus gets wasted.

Additionally, the water resources are also getting contaminated due to malpractices and consequences of industrialization and urbanization and other anthropogenic factors, like improper waste disposal, open defecation, chemical run-off from fertilisers and pesticides from farms, to list a few. Consumption of unsafe drinking water, improper disposal of human excreta, improper environmental sanitation (solid waste management) and lack of personal and food hygiene are the major causes of human diseases in developing countries such as India. It is an unending vicious cycle. This call for the need of conserving this precious resource and use it judiciously. It also involves addressing neglected aspects of Solid and Liquid Waste Management (SLWM). Thus, there arises the need for integrated approach to manage water.

In order to develop an Integrated Water Resources Management (IWRM) program in village Garhi Harsaru, first two DPRs on (i) SLWM , (ii) IWRM were prepared in 2016, followed by a Detailed Investment Plan was developed after need assessment. To kick-off the plan in 2017, TARU Leading Edge in consortium with its partners is raising funds for the development of Solid Liquid Waste Management system in the village in this phase of the program as it is in high demand from the people. Also, it could trigger general environmental sanitation as the visible surroundings become cleaner.

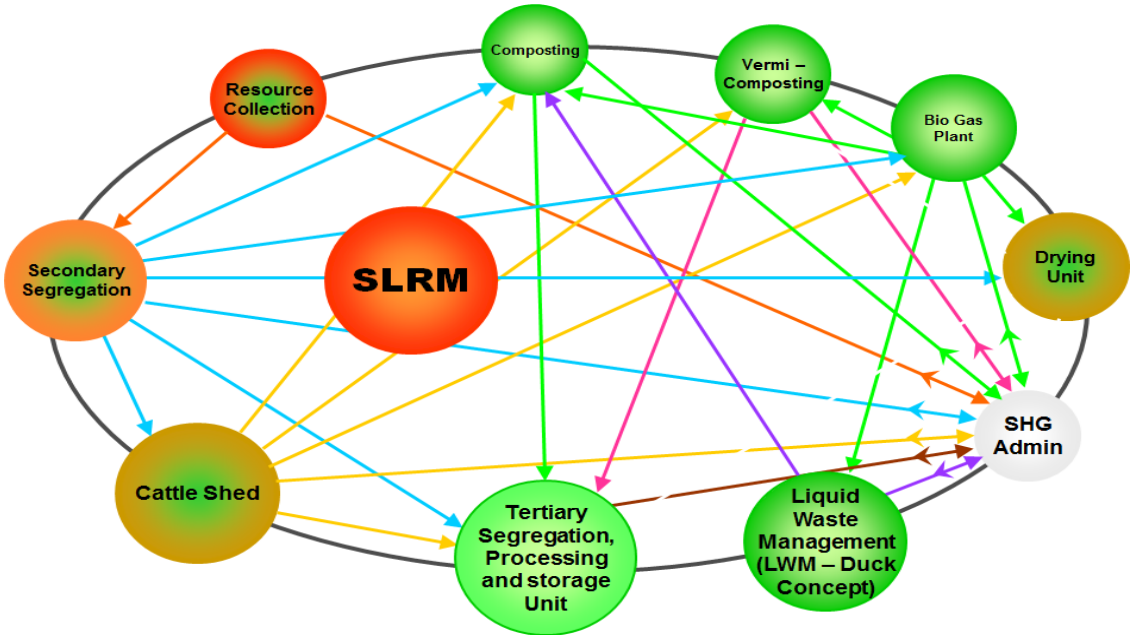
2. Executive Summary

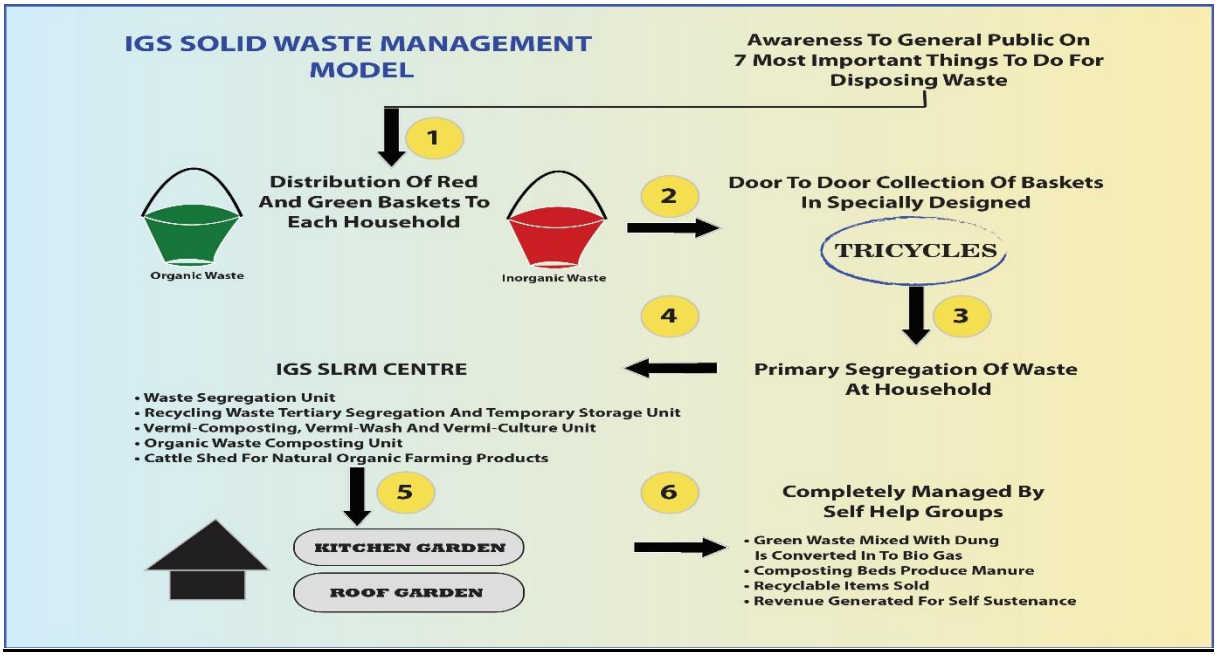
Solid liquid waste management was one of the neglected areas in the village. The Garhi Harsaru Gram Panchayat does not have any infrastructure to collect and transport the waste and there is no specified location for the waste disposal.

In the Action Research Study, it came to fore that majority of the respondents dump their biodegradable waste (68.04%) and non-biodegradable (67.71%) waste in dustbins, which is ultimately thrown in the open fields. A very less proportion of households (1.48%) dispose bio-degradable waste in a safe manner. Safe disposal of bio-degradable waste includes disposing solid waste in an identified place; composting, burying, re-using in the garden and having the GP collect the waste and feeding it to the cattle.

Given the context of above, the proposed approach of the initiative will be the implementation of ‘Zero Waste Model’ based on integrated Solid & Liquid Resource Management (SLRM) methods that goes beyond managing generated waste to preventing waste generation. SLRM is about redesigning this resource flow so that most of what is generated as waste can be reused as raw material for further production. This resource flow is more sustainable and will take us closer to ‘zero waste’. In other words, “Zero Waste is a goal that is both pragmatic and visionary, to guide people to emulate sustainable natural cycles, where all discarded materials are resources for others to use. Zero Waste means designing and managing products and processes to reduce the volume and toxicity of waste and materials, conserve and recover all resources, and not burn or bury them. Implementing Zero Waste will eliminate all discharges to land, water, or air that may be a threat to planetary, human, animal or plant health.”

The Zero Waste Model is more sustainable because of the involvement of the local community, use of environment friendly technologies and efficient business processes. SLRM methods reinforce the principles of Zero Waste. It is an interlinking & interconnecting web model and its interlinking categories as presented in pictures below.





The SLRM methods have been successfully implemented across different villages and municipal areas in India by the Consortium Partner (IGS). However, contextualising the location, community, institution, program and market environment, the methodology has been customised for better uptake, upkeep and sustainability of inputs and systems created in Garhi Harsaru.

3. Details of Activities

- ### Advocacy and Fund Raising:

  - **Meetings with different corporates:** Initial rounds of meetings were held with following corporates to explore funding opportunities for the proposed DIP.
    - Honda Motorcycles
    - Spirotech
    - Accenture India Limited
    - Nasscom foundation
    - Cairn India Limited
    - Hero Honda
    - GatewayRail
    - ITC
    - Magneti Marelli India Private Limited
    - Indian Oil Corporation
    - Yes foundation
    - Hero Motocorp

  - **Extensive research to explore CSR funding opportunities:** Extensive research was done to explore and established contacts with different CSR organisations. Discussions regarding the DIP were initiated with the CSR organisations such as Accenture India Limited, Nasscom foundation, Cairn India Limited, Hero Honda, GatewayRail, Coca Cola Foundation-India, Mahindra & Mahindra, Ireoworld, Maruti Suzuki, Satyam Auto components Pvt. Ltd., Sona Group, Panasonic, Renew Power, Hero Honda, NTPC, PVR Limited, JCB India, Adidas Group, SBI group, IOCL, SRF Limited etc.

  - **Presentation of SWM:** Detailed Investment Plan on Solid Waste Management was presented to Mr. Rajguru Behgal, Asst. Vice President, Gateway Rail; CSR Head, Karbonn Mobile; Mr. Abhishek chawla - VP HR and CSR, Hero Motocorp, Head, Honda motorcycles etc.

Details of the corporate	Remarks and follow up
Mr. Anil Rajput Vice president ITC LIMITED	• Entire proposal for Garhi Harsaru project was presented • A proposal with specific budget has been forwarded to Mr. Biswajeet handling CSR for Delhi NCR region
Mr. Rajguru Bahgal Gateway Rail Garhi Harsaru	• Gateway Rail has already given INR 15 lakhs to the Panchayat but activities have not been completed. Mr. Rajguru Bahgal wanted a separate proposal with specific activities and a letter signed by the panchayat accepting to finish the activities on time. • The proposal as requested with the letter from panchayat has been submitted. • Gateway rail has agreed to support further.

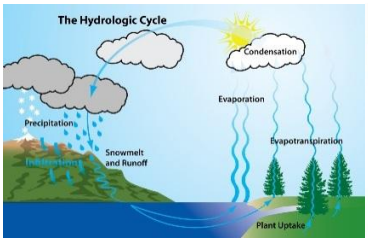
- ### Awareness Activities

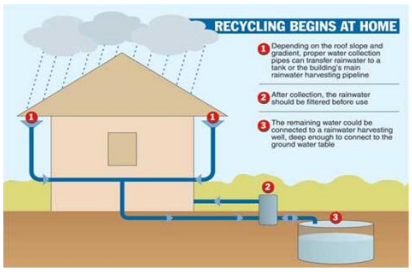
Awareness activities were conducted in two schools- Government Senior Secondary and Government Girls Middle School, Garhi Harsaru with students from class 6th to 8th. The awareness activities were broadly categorized into Water and Sanitation. The awareness activities were followed by a small oral quiz competition.

Water	Sanitation
• Water availability on earth • Sources of fresh water • Water cycle • Rainwater harvesting • What is safe water? • Water purification techniques	• Water borne diseases • Transmission of diseases • Importance of ODF • Hand washing behaviour • Hand washing steps

Awareness activity conducted at school

IEC material used





List of the Winners of Quiz Competition	
Senior Secondary Government School	**Middle Government Girls School**
• Ajeet- 6th A • Vikas- 8th B • Shivam- 7th A • Geetanjali- 7th A • Deepak- 8th B • Bharat- 6th B • Ashish- 6th B • Sarvee- 7th A	• Keerti- 8th B • Heena- 8th B • Geetanjali- 7th A • Kajal- 6th • Anjali- 7th B • Tamana- 8th B • Nikita- 8th A • Sneha- 7th B

- ## Community Institution Building and Sensitization

Different meetings were held with PRI members and other influential people of the community. A small team was also formed as a representative group of the village, led by the Sarpanch. This team includes a motivator who is closely interacting with the community and panchayat members to formalise different institutions at community level.

- ## Solid Liquid Waste Management Activity

Sensitization of the community specially the school children was done so that they understand the importance of waste segregation and its proper disposal. This was followed by distribution of two pairs of dustbin- green (for wet waste) and blue (for dry waste), to the Senior Secondary Government School.

Dustbins provided at school

- ## Installation of Rainwater Harvesting System

The *Bhumi pujan* for the Rainwater Harvesting Structure was conducted at the Senior Secondary Government School, in the village of Garhi Harsaru, in Gurgaon, Haryana. The ceremony was graced by the presence of:

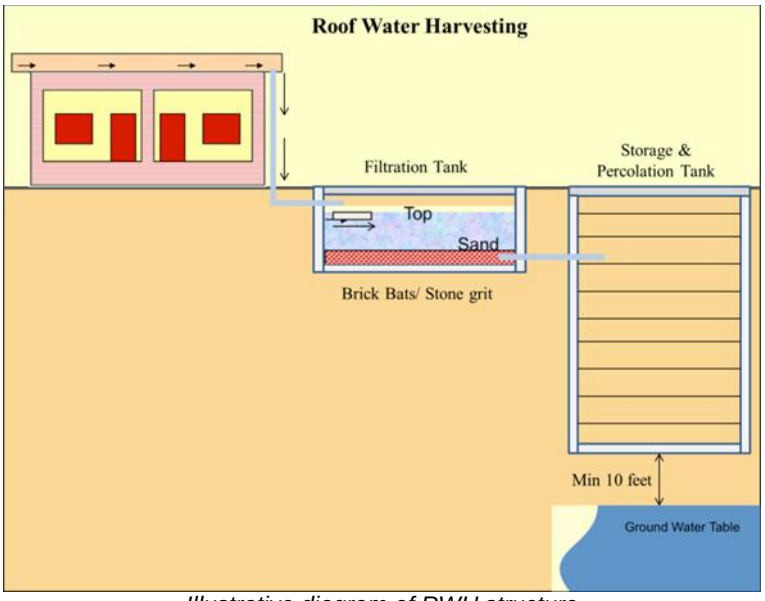
1. Mr. Bhupendra Singh Chauhan (Bhartiya Janta Party (BJP) District Chair Person)
2. Mr. Sachin Gautam (General Manager-Esotech)
3. Mr. Kailash Chandra (Project Manager-Prerna Group)
4. Mr. Ashutosh (General Manager- Godrej)
5. Mr. Rajguru Behgal (General Manager-Gateway Rail)
6. Mrs. Snehlata Sharma (Garhi Harsaru Sarpanch)

The welcome address was delivered by Sarpanch Mrs. Snehlata Sharma and Dr. Veena Khanduri, Executive Secretary-cum-Country Coordinator, India Water Partnership, who shared their insight on the Integrated Water Resources Management in the village, which is being conducted in the village since 2015. This was followed by key note address delivered by the Chief Guests. Mr. Rajguru Behgal, the General Manager of Gateway Rail, stated that Gateway Rail is committed to helping the Senior Secondary Government School in raising its boundary wall for the safety of the students.

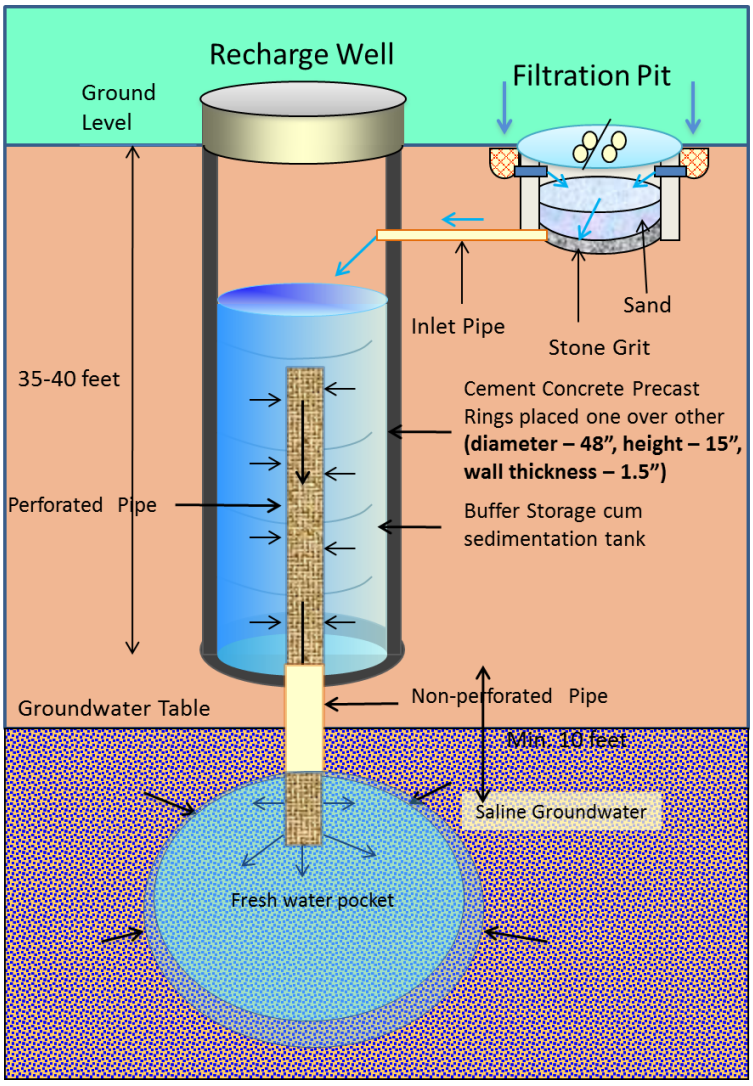
The *pujan* ceremony was then conducted in the presence of the esteemed guests, representatives from TARU and IWP, Panchayat members, and village locals.

Inaugural photographs of Rainwater Harvesting Structure

The Bhumi pujan for the Rainwater Harvesting Structure (RWH) was done on 16th January, 2018 *(due to administration and practical problems).* The installation of RWH is complete and operational now. The structure will help in recharge of groundwater and replenish the level of groundwater table. It will also improve the quality of groundwater addressing the problem of saltwater contamination. Once the groundwater table is maintained, timely and sufficient water supply services can be planned for the households. Through this system of rainwater management, people of Garhi Harsaru will be the main beneficiary. The maintenance of the rainwater harvesting structure will be taken care by the Panchayat. Also, plants have been planted around the RWH structure for its protection and this will also enhance seepage of rainwater in the ground with minimum run-off.



Illustrative diagram of RWH structure



Site images of RWH structure construction

4. Results

i. Narrative reporting on results:

Sensitization among leaders and the community at large have increased awareness on water and environmental issues, fostering a sense of personal environment responsibility, and greater motivation and commitment towards the protection of the environment. PRI members with support from TARU Leading Edge and India Water Partnership had raised funds from different CSR organizations working around the area for the overall development of the village. Various organizations have shown interest for the funding like Cairn India Limited, Hero Honda, GatewayRail. Proposal have been submitted to them, further progress is awaited.

ii. Outputs:

- Rooftop Rainwater Harvesting Structure was demonstrated at Senior Secondary Government School, Garhi Harsaru, Gurgaon as a part of one of the key outputs of the project.
- Provision of two pairs of dustbin for proper solid liquid waste disposal at Senior Secondary Government School.
- Another key output is development of effective Solid Liquid Waste Management System in the village.

iii. Outcomes

- This installed rainwater harvesting system will help in recharge of groundwater and replenish the level of groundwater table. Once the groundwater table is maintained, timely and sufficient water supply services can be planned for the households.
- Awareness activities sensitize school children to upkeep their overall health through better sanitation practices.
- Provision of dustbins at school will help in maintaining a clean school environment and children will develop a behavior of keeping surroundings clean.

iv. News/media

An article on inauguration of rainwater harvesting structures in Garhi Harsaru, Gurgaon was uploaded in GWP SAS website. Article marks the progress made in IWRM. Link to the article: http://www.gwp.org/en/gwp-SAS/WE-ACT/change-and-impact/News-and-Activities/2018/rwh-in-india/

5. Explain, if any delays in implementation, challenges, and lessons learned & best practices

Fund raising is the biggest challenge for the village. Some of the challenges faced were as follows:

- **Company's Interest and Mandate:** Corporates have their own mandate and business objectives and an inherent need to create a brand, which sometimes does not, matches our goals.

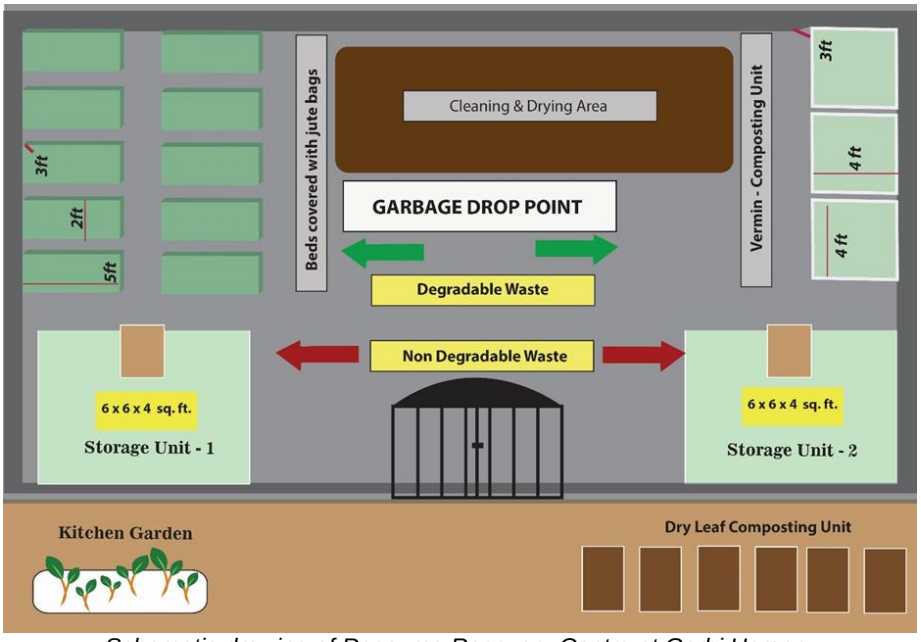
- **Duration and Location of Project:** Since companies function on the basis of a year-on-year budget, their CSR spending is pre-decided and almost non-negotiable. With respect to location, companies find it quite relevant and hassle-free to have the program implemented in and around their office/factory site. Only a few companies are located around the periphery of the village.

- **Decision Making:** Big companies have a large and complex hierarchical structure. Hence, it becomes difficult to work one's way around this structure to get a CSR program passed. The solution lies in directly getting the decision maker in the picture, which itself becomes a challenge.

Another challenge faced was in implementation of Resource Recovery Centre (RRC). Though all the consultations were done but funds could not be realized. RRC would be in place with following specifications, if funds are mobilized.

Key specifications of the Resource Recovery Center

Description	Volume		Description	Volume
Total Building Area	2000 square feet		Flooring	Cement Flooring
Height of the Building	15 Ft		Side Walls	4ft Brick Walls on all sides*
Vermi Compost Tanks Inside the Centre	Tanks of capacity 54 cu. Ft (4x3x4.5 Ft)		Iron Mesh	9 Ft
Waste Handling Capacity	4000 kgs /day		Roof	GI-Sheet Welded with Side Mesh
Gate	Iron Gate 4 Ft Height			



Schematic drawing of Resource Recovery Centre at Garhi Harsaru