Documentation of Best Practices under thematic area of

Role of PRIs in Management of Solid and Liquid Waste

KURAK JAGIR (GP)

District Karnal - Haryana

Prepared by

Dr. Sukhvinder Singh

Associate Professor,
CRRID-Chandigarh

National Institute for Rural Development
& Panchayati Raj (NIRD&PR)

Centre for Research in Rural
and Industrial Development (CRRID)


स्वच्छ गाँव
तरल कचरा प्रबन्धन परियोजना, ग्राम पंचायत कुड़क जागीर
निर्मल जीव
एक कदम स्वच्छता की ओर
स्वच्छता अपनाओ,
गन्दगी भगाओ।


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Study Sponsored By

National Institute of Rural Development and Panchayats (NIRD&PR)

Rajendera Nagar – Hyderabad – Telangana
(Ministry of Rural Development)
Government of India

Study Prepared By

Centre for Research in Rural and Industrial Development (CRRID)

Sector 19 A, Madhya Marg - Chandigarh, 16 00 19 - INDIA
Telephones:- +91-172-2725406, 2725059, 2724010
Fax :- +91-172-725215

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Abbreviations

CAA	Constitutional Amendment Act
CRRID	Centre for Research in Rural and Industrial Development
ER	Elected Representatives
GP	Gram Panchayat
IHHL	Individual Household latrine
LWM	Liquid Waste Management
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
NBA	Nirmal Bharat Abhiyan
NIRD&PR	National Institute of Rural Development and Panchayati Raj
PRIs	Panchayati Raj Institutions
SBM	Swachh Bharat Mission
SLWM	Solid and Liquid Waste Management
SWM	Solid Waste Management
TSC	Total Sanitation Campaign

Executive Summary

According to 73rd Constitution Amendment Act 1992, health and sanitation is included in the Eleventh Schedule. Accordingly, PRIs have a pivotal role in the implementation of total sanitation campaign. The same spirit has been observed during the documenting of this case study. The efforts done by gram panchayat in focusing management of liquid and solid waste have been a remarkable endeavour which is quite encouraging in itself.

Role of PRIs

The 73rd Constitutional Amendment Act, 1992 has endowed gram panchayats with executive powers and authority to function them as units of self-government and had legitimated their status as an executive entity. Since the passage of this act, gram panchayats and their elected representatives across the nation have played a pivotal role in the implementation of rural development schemes and programmes at grassroots level and has accelerated the pace of development in rural India.

Present context

The present success story of best practices achieved by Gram Panchayat '*Kurak Jagir*' in district Karnal from the state of Haryana has been documented in this report to canvass its accomplishments in role of PRIs in solid & liquid waste management under SBM umbrella.

Objectives

The objective of this study was to document best practices on the Role of PRIs in management of solid liquid waste management in selected gram panchayat in the state of Haryana.

Selection of Village

The village was identified and selected for the study with the consultation of Rural Development and Panchayats Department, Government of Haryana.

Methodology

A two member's field team led by the study coordinator visited the village and interacted through Focus Group Discussions with the elected members of the panchayat, members of gram sabha and village level functionaries in order to assess and document the process through which this best practices have been achieved by the village.

Situation and Challenges before the Best practice

The drainage system of the village was hardly functioning and managing waste water in the village was a challenge itself. The drains were quite old and scarcely planned to deal the whole village. Another major concern of the village was how to manage its solid waste being discarded by village's households and similar other avenues, which was needed immediate. Open defecation was also quite in practice among the villagers.

Best Practice

The gram panchayat met district level officials and requested them to support their efforts to devise a strategy to manage their liquid waste/solid waste and open defecation. The following sets of activities were performed over a period of nearly three years to attain the best practice in the village;

1. A new *Five Ponds system (Sullage Stabilisation Pond)* of treatment of waste water, which was earlier well received and praised for its innovative method of treating waste water, was chosen to be implemented in the village Kurak Jagir under the supervision of District Administration, Karnal and the engineering wing of Panchayati Raj Department under SBM-G initiatives. This method of management of liquid waste was mainly focused on maximum reuse of such waste for agriculture purposes with least operational and maintenance costs. The liquid waste treatment plant was built on a 3 acre of area in the village. The construction work regarding this sullage stabilisation pond was started on 1st April, 2015 and all the activities were completed on 31st July, 2017.
2. A total length of 1666 feet drains and 1830 feet of Nala (sewer) were laid in the village to support the liquid waste component in the village.
3. The gram panchayat formed a open defecation monitoring committee to check the areas being regularly used for open defecation and also a census was done to indentify households which lack IHHL. The members of open defecation monitoring committee often visited the households which lacks IHHL and motivated them to construct one in their respective households. Those households which are poor and unable to construct their latrines with their own resources were financially helped under the SBM (R) grants.
4. A Solid Waste treatment plant was constructed under the SBM (R) with a grant of Rs. 2.80 being as a component of ongoing Liquid & Solid waste management project in the village. Further, A tricycle was introduced in the village, which was used to collect and transport discarded solid waste from each households in the village on a monthly charge of amount of Rs. 30/- per household.
5. Despite these main activities, other allied activities were also introduced in the village through gram panchayat, like open gymnasium, parks, tree

plantation, solar lights, IEC activities to sensitise gram sabha members and youths of village on safe hygiene practices etc.

Learning Outcomes

As observed in this documented case study, the new innovative scientific method called Five Pond System which have been implemented in the village Kurak Jagir for managing liquid waste in the village have been a milestone itself in scaling up effective liquid waste management across rural areas. Given the immense success of this system, which has been covered under the umbrella of SBM (R) could have been used as a tool to devise new strategy to deal liquid waste in most effective and appropriate manner. The first and foremost learning outcome from this village is that such new innovative methods should be exchange and spread to gram panchayats and villages as per their local suitability in other states across country.

Conclusion

The mechanism and methodology adopted by the gram panchayat Kurak Jagir have very instrumental in service delivery mechanism at ground level which has significantly changed the socio-economic scenario in the village.

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INTRODUCTION

The "Swachh Bharat Mission" launched on *Gandhi Jayanti* on 2nd October 2014, is a mammoth initiative for implementing a comprehensive policy for clean India Mission. The main features introduced in this sanitation programme have laid emphasis on providing cleaner and better hygienic conditions and environment for citizen.

The main objectives of the "*Swachh Bhart Abhiyan*" is to improve cleanliness and strengthened the system to build 120 million toilets by 2nd October 2019, on the mark of 150th birth anniversary of Father of the nation, Mahatma Gandhi, thus, eradicating the open defecation from the country. Emphasis was also laid during 11th five year plan as inclusive growth which helps in resolving the issue of totally abolishing obnoxious practice of manual scavenging in India. Continuity was kept in emphasising the need for cleanliness and sanitation in the country by present centre government whose slogan is *"Pehle Shauchalya: Phir Devalya"* (Toilet first, temple later).

The success rate in achieving the objective of the cleanliness is much depends upon the attitude and strength of community participation at large. Giving the practical form to this concept is "*Jan Andolan*" which was launched by President *Shri Ram Nath Kovind* under the noble name "*Swachhta Hi Sewa*" in order to highlight Swachh Bharat Mission by mobilising people for their greater participation. This community mobilisation will evolve the people from various sectors like Gram Panchayats, NGO's, Women, Children from educational institutions, senior Citizens, Media and Youths to play active role for making the mass campaign into an effective tools in meeting its desired objectives.

The role of improved sanitation and health conditions is significant in creating a productive and enabling environment to develop a vibrant society which in turn contributes in achieving healthy socio-economic status of the country. Moreover, improved sanitation has direct effect on child mortality due to various diseases. The greater impact is noticed in safety, security and restoring the dignity of women especially in rural India. The improved sanitation as per the estimation of World Bank would have a greater economic impact in India. The nation so far have not fully equipped itself to tap its huge potential of generating resources from liquid and social waste management. Even the collection of solid waste in urban sector lacks proper and effective mechanism for its 100 percent collection. The role of local

bodies in managing waste with efficiency is of utmost importance, which has a potential to grow rapidly from waste to energy sector. India being a populous nation and its about 32.8 percent urban population the waste generation is projected to increase every year.

According to the data from the Ministry of Environment, Forest and Climate Change, the GOI only about 75-80 percent of the Municipal waste gets collected and only 22-28 percent out of this waste is processed and treated. Thus, this potential of generating energy is immense for the entrepreneurs of interest which in turn can help in controlling pollution for creating safe environment and fetching monitory gains.

Recently, the awareness levels of the people have increased towards cleanliness and progresses have taken place. Some states have shown encouraging result but many areas are still lags behind. Rural sanitation converge overall have shown a progress and gone up from 39 percent to 68 percent from start to till date. The progress shows that the initiatives taken by the government are yielding positive results throughout the country. It seems that Gandhi's dream of a clean India is now becoming a reality' but it needed to add more affects and to accelerate the pace of progress. In order to bring fast transformational changes it is very important to bring behavioural changes among the society by making small targets and time bound achievements.

In this way, the role of information, education and communication (IEC) for making the public more aware is quite important. The efforts made in this direction in the recent past have brought positive changes in shifting the focus on attitudinal changes of the stakeholders. The private sector has also contributed to accelerate the pace of SBM under corporate social responsibility CSR and other philanthropy areas. Some of the vibrant section of society likes children women and other iconic figures. Documentaries, films have helped in inspiring the society to rise to the occasion and fight the menace of open defecation in particular and general sanitation as such. The ministry of drinking water and sanitation monitoring mechanism needs more strength to assess its impact in implementing of the scheme more swing serving is needed to reach a desirable level land where the nation can feel proud in achieving goals of better and improved sanitation.

RURAL SANITATION AND MANAGEMENT OF SOLID AND LIQUID WASTE

Management of Solid & Liquid Waste in villages is indeed a matter of great concern for all of us. The state Government is seized of the matter and is committed to mitigate this problem. Swachh Bharat Mission (Gramin) initiated by the Hon'ble Prime Minister in October, 2014 is a path breaking step to tackle this problem in a comprehensive manner.

Solid and liquid waste management are becoming issues of great concern in rural India. The changes in consumption patterns including that of people living in rural areas have an impact on the quantity and kind of wastes generated. "It is estimated that rural people in India are generating liquid waste (*Grey Water*) of the order of 15000 to 18000 million litres and solid waste(organic/recyclable) of the order of 0.3 to 0.4 million metric tons per day respectively". While there is an increase in non-biodegradable components in the waste generated in rural areas, a large part of the waste is biodegradable in nature. This poses great health risks if not treated and managed in a sustainable way.

In the absence of proper treatment and disposal of solid and liquid waste (grey water and black water), vector borne diseases such as diarrhoea, malaria, polio, dengue, cholera, typhoid, and other waterborne infections such as *schistosomiasis* are increasing. Close to 88 per cent of the total disease burden in rural India is due to lack of clean water and sanitation and improper solid and liquid waste management, which exacerbate the situation. For example: 5 of the 10 top killer diseases of children aged 1-14 in rural areas are related to water and sanitation Almost 1500 children die every day from diarrheal diseases.

High rate of infant and under-5 children mortality is found. The rural Infant Mortality Rate (IMR) is 62 as compared to urban which is 42. The water and sanitation related diseases not only affect the nutritional status of children but also impact their attendance in the school. Close to 50 per cent of school going children in rural areas do not reach class V. The dirty water of the villages being accumulated in the ponds primarily consists of Liquid Waste coming from various houses, which is called the grey water. This problem is further aggravated by the practices at some places of disposal of human excreta especially of children, into open drains. Moreover, there are reports that due to defects in the open drain, makes the water of the drains black which is a big health hazard. Therefore, Rural Sanitation through Solid &

Liquid Waste Management and toilet construction and safe sanitation practices in the rural areas is one of the top most priorities of the State Government. Swachh Bharat Mission (Gramin), aims at providing a comprehensive solution through construction of Individual Household Latrines, Community Sanitary Complexes and solid & Liquid waste Management

ROLE OF PRIs

The 73rd Constitutional Amendment Act, 1992 has endowed gram panchayats with executive powers and authority to function them as units of self-government and had legitimated their status as an executive entity. Since the passage of this act, gram panchayats and their elected representatives across the nation have played a pivotal role in the implementation of rural development schemes and programmes at grassroots level and has accelerated the pace of development in rural India. The 11th Schedule has enshrined 29 subjects to Panchayats and among these, 23rd subject is related to the Health and Sanitation sector which have been also vested within the purview of the panchayats.

Since the last two decades, safe sanitation practices in rural areas have got immense attentions from policy makers and political avenues. Given the importance of this indicator, unprecedented flows of funds and awareness generation have been channelled by government for scaling up rural sanitation in country. The gram panchayat is the foremost executive and implementing agency at the grass root level to efficiently deal and implement the schemes or programmes meant for rural sanitation. In addition, the architects of many rural development schemes like MGNREGS, BRGF and many other similar schemes, have laid their focus on decentralised planning to enhance the role of panchayati raj institutions to achieve optimum results at grassroots level. The gram panchayats have been acting as a wheel to accelerate the compelling need for creation of sanitation facilities and practices in villages, which signifies the importance of PRIs in scaling up all the activities concerning rural sanitation in India.

RESEARCH HYPOTHESIS

According to 73rd Constitution Amendment Act 1992, Sanitation is included in the Eleventh Schedule. Accordingly, the gram panchayats have a pivotal role in the implementation of total sanitation campaign. They will carry out the social mobilization for the construction of toilets and also maintain the clean environment by way of safe disposal of solid and liquid wastes. This needs to be investigated that whether panchayats have any conclusive role in it?

Whether the panchayats contribute from their own sources for sanitation activities and are they acting as the custodian of the assets such as community complexes, environmental component, drainage etc? The union government at the Centre as well as various state governments has been making serious efforts to improve the sanitation conditions in order to raise the quality of living of the people with emphasis on Information, Education and Communication (IEC), Human Resource Development (HRD) and capacity building activities with a view to increase the awareness among the people and generation of demand for sanitary facilities, Whether it is happening at ground level?

The main components covered under these are: individual household latrines, school and anganwari sanitation and hygienic education, functioning of rural sanitation marts and production centre etc. The research questions therefore, arises that, whether best practices are taking into account of all the indicators discussed above. Therefore, it is desirable that their effects and best practices adopted by some GPs should be documented and disseminated for others to follow their strategy, if suited to them. Furthermore, it is also interesting to have a look on these and find out how they achieve the heights of success despite of less or no power delegated to them. Their success mantra needs to be known by others.

OBJECTIVES OF STUDY

The overall objective of the study is to document best practices of Role of PRIs in management of solid liquid waste management in selected gram panchayat in the state of Haryana. However, specific objectives of the study are:

- To study the different formal best practices on management of solid & liquid waste management and Swachh Bharat Mission at GP level;

- To study the strategies and module adopted by panchayats to achieve this best practices;
- To study the role of leadership in achieving these best practices.
- To study the involvement of community and other non-formal organisation in sanitation movement at GP level;
- To study the role of different line departments;
- To examine the IEC activities and role of capacity building of PRIs in achieving the goal of sanitation campaign at ground level;
- To study the other relevant factors associated with the sanitation movement.
- To adopt and formulate replicable methods of sanitation including solid and liquid waste management for other GPs and even if appropriate among urban areas.

PRESENT CONTEXT

As discussed before, constitution has vested panchayats to deal health and sanitation sector at the village level by means of planning, execution and implementation. With such mandates and provisions, it is expected that every village panchayat will promote safe sanitation and clean environment as a way of life among its residents. However, still few panchayat bodies across nation have equipped themselves with very effective mechanism to deal sanitation issues. This difference makes the most sought after questions that what are the reasons behind this gap between the within the parallel existing third tier of rural bodies.

The present success story of best practices achieved by Gram Panchayat **Kurak Jagir** in district Karnal from the state of Haryana has been documented in this report to canvass its accomplishments through active role of ERs of PRIs in Management of Solid and Liquid waste with the assistance of Department of Panchayati Raj, district administration under SBM initiatives.

The study seeks the performance and outcome of the best practices at gram panchayat level to manage a comprehensive sanitation system by developing key strategies and mechanism of solid and liquid waste at village level, which can be replicable across the state and country. This study will also be helpful in suggesting suitable measures to accelerate the implementation process with efficient and effective approach in other parts of the country.

SELECTION OF VILLAGE

The **Kurak Jagir** gram panchayat has been selected for the documentation of best practices under the thematic area of "***Role of PRIs in Management of Solid and Liquid waste***" from the state of Haryana. The village was identified and selected for the study with the consultation of Rural Development and Panchayats Department, Government of Haryana.

The selected village has a model in management of liquid and solid waste and overall progress in rural sanitation in the district and state. The village has shown remarkable progress in managing its liquid waste through installing a five pond system which stabilised its waste content and treat the waste water which can be reused especially for irrigational purposes. In addition to this, village has also excelled in providing quality life to its resident's through providing a clean and hygienic environment with cent per cent coverage of individual toilets, solid waste management, construction of parks, plantations and all around cleanliness in the village including of schools, anganwaris and community places. All these achievements have formed the base for selecting this village for the documentation under the study.

METHODOLOGY

A two member's field team led by the study coordinator visited the village and interacted with the elected members of the panchayat, members of gram sabha and village level functionaries in order to assess and document the process through which this best practices have been achieved by the village. Focus Group Discussions and meeting were held with various primary and secondary stakeholders to gain first hand impressions of the motivation and key activities which have been carried out in the village which has led the gram panchayat for present best practice. The research team also visited the schools in the village and interacted with the students. Team also verified the usage of IHHL in many households in the village particularly of Scheduled caste and backward classes. The team also visited playgrounds, ponds, parks, playgrounds, plantation work, Anganwari centre, community places and solid & liquid waste treatment plant in the village during their visit. During this, all the activities were well documented through videography and photography. The efforts to make village unique and a role model on sanitation purpose, the contribution of each and every stakeholders has been recorded and discussed in this report.

HISTORY AND BACKGROUND OF THE VILLAGE

The villagers traced village's history from late 18th century. The initial name of the village was only Kurak, however, when a wealthy "***Jagirdar" (landlord)*** namely *Sh. Sampooran Singh* became its residence before independence, 'Jagir' was also added to the name of village and since then, it became 'Kurak Jagir',.

The Kurak Jagir village is situated under the *Nilokheri* block of district Karnal in the state of Haryana. It is located 12 kilometres towards north from District head quarters Karnal, 10 kilometres west towards from NH-1 & its block Nilokheri and approximately 127 kilometres from the state capital of Chandigarh. The village has close proximity to the GT Road or National Highway no - 1, which is connecting national capital Delhi to Ambala.

The total area of village extends upto 292 acres approximately. There are three schools (one each of primary, middle and senior secondary) in the vicinity of the village.

DEMOGRAPHIC DETAILS

Total population of the village is 1623 and Female constitutes 46.6 percent out of them. The numbers of total households are 355 in the village. Population is Overall literacy rate in the village is 65.7 percent, whereas, Female Literacy stands only at 28.0 percent. This is medium size village and has its population is mostly engaged in farm activities. The village has a predominantly Hindu population and Hindi language is local dialect in the village. There are eight wards in the village.

Table 1: ***Village's Demographic Indicators at Glance* (2011)**

Indicators	*Figures*
Total Population	1623
Total No of Houses	355
Female Population	756(46.6 %)
Total Literacy rate	1067 (65.7 %)
Female Literacy rate	28.0 % (454)
Scheduled Caste Population	869 (53.5%)
Working Population %	27.5 %
Child (0 -6) Population	200
Girl Child (0 -6) Population	39.5 % (79)

Source: Census, 2011

GRAM PANCHAYAT DETAILS

The present Gram panchayat body was elected in 2016. There are eight panches in the gram panchayat body along with Sarpanch *Sh. Sudesh Kumar Sharma*, who is a first time office bearer as village head. There are four female panches (women elected representatives) in the gram panchayat body.

Information, Education, Communication (IEC) activities organised under the SBM (R)

The gram panchayat performed following IEC activities for community mobilisation for escalating sanitation activities;

- Sensitisation of villagers through motivators
- Organisation of special Gram sabha meetings
- Discussion in the gram sabha meetings.
- Organised awareness camps for youth and women of the village
- Interaction of the villages with Sant Balbir Singh Seechewal
- Meeting of NRIs with common Villagers

Details of funds received (2014-2017)

The detail of funds received by gram panchayat under Swachh Bharat Mission (R) has been given in the following table. The details show that an amount of Rs.1.15 lac has been received by the GP under the component of construction of Individual household latrine (IHHL), whereas, a sum of 15 lac has been granted under the provisions of SLWM in the village. in addition to this, one lac rupees have been also given to panchayat as award money for its better performance in rural sanitation indicator in the financial year of 2017-18.

Table 2: **Financial Outlay in Kurak Jagir village (2014-2018) {Rs. in Lac}**

Component	2014-15	2015-16	2016-17	2017-18
IHHL	1.15	---	---	---
SLWM	15.00	---	---	---
Award Money	---	---	---	1.00

Source: Executive Engineer, Deptt of Panchayati Raj , Karnal, Government of Haryana

Table 3: Status of SLWM Projects in Village (as on 07.09.2017)

Administrative Approval No. & Date	Funds Sanctioned		Funds Released	Expenditure		
				Upto Previous month	During Month	Total
47-MEC-NBA-Consultant (S & H) 2014/3513 date 06.08.14 & revised SBMG-consultant (S&H)-2015/39836-37 , Chandigarh dated 20.7.15	SBM-G (GP)	15.00	15.00	14.55	0	14.55
	State Fund (XEN)	12.88	12.88	0	11.98	11.98
	State Finance	20.31	0	0	0	0
	MGNREGA	0	0	0	0	0
	Other Source – if any (Specify)	0	0	0	0	0
	Total	48.19	27.88	14.55	11.98	26.53

Source: Executive Engineer, Deptt of Panchayati Raj , Karnal, Government of Haryana

Situation and Challenges before the Best practice

During the FGDs, conducted in the village, the Gram panchayat members along with Sarpanch and the residents reported that situation of sanitation and management of solid and especially liquid waste was in very awful condition. The following problems were the main concerns of the village panchayat that needed immediate remedial;

1. **Liquid Waste**: The drainage system of the village was hardly functioning and managing waste water in the village was a challenge itself. The drains were quite old and scarcely planned to deal the whole village. Further, the expansion of the habitations caused new threats to the drainage system which subsequently failed to comply with the management of liquid waste with its present situation;
2. **Open Defecation**: The centre and state government has initiated to give hefty incentives to prevent open defecation but it was still unchecked in the village and they were still practicing open defecation before the best practice. Haryana state has become close to attain zero open defecation status but still there were some pockets like this village, where it was still practised especially among the male members of the society due to the rigid traditional beliefs of society. The same pattern was also reported during the FGDs conducted in the village before the best practice;
3. **Solid Waste**: Another major concern of the village was how to manage its solid waste being discarded by village's households and similar other avenues, which was needed immediate, check. The FGDs members revealed that the main hindrance to resolve this issue, was people's attitude as they do not care about the fact that piles of garbage can pose serious health hazards and in-fact had had multiplier effects on overall sanitation issues in the village. There was no system to collect, transport or recycle the solid waste in the village. People would throw their discarded matter wherever they desired and thus, places filled with trash were a common scene in the village. Therefore, this issue was their one of key priority to deal it accordingly;
4. **Cleanliness** of village streets and community places was in very poor condition;
5. **Plantation** in village was scarce and also there were lack of park or community ground was available in the village;
6. **Indifferent attitude** of villagers towards sanitation activities as earlier they do not consider lack of sanitational facilities as a problem and its ill effects and adverse consequences on human health.

Roadmap and Foundation of Activities which leads to Best practice

The transformation of village Kurak Jagir to achieve best practice was planned in a mannered way. The foremost concerns which needs to be immediately addressed, was to curb open defecation, management of liquid waste and to deal solid waste in the village. The elected representatives of gram panchayat Kurak Jagir, along with gram sabha members came to a consensus to change and revive the prevailing situation of existing dreadful condition of drainages and sanitation in the village through. All the accomplishments have been achieved through the sheer determination of gram panchayat with the help of community and financial assistance from Rural Development and Panchayats department, Government of Haryana and district Administration, Karnal. Village Level functionaries and sanitation motivators were also mobilised to involve in the ongoing courses of action as per their departmental cadres and speciality. GP urged the common villagers to collaborate in this effort to curb unhygienic situations and practices prevailing in the village. The youth of village were also targeted to involve them as they have the potential and desire to change their village as accordance with the urban & developed areas. The village were getting regular exposure of urban amenities due to their close proximity with the district Karnal and national highway no-1 which connects Delhi to Ambala. Initially, villagers were sceptics and non-cooperative with the plans and the roadmap being prepared for escalating sanitation activities in the village, but lately they convinced to participate in this drive.

Execution Period of the Best Practice

All the activities which has led the Kurak Jagir village to achieve the said best practice has been executed and implemented within the short span of initiation and introduction of Swachh Bharat Mission (G) in the state. The roadmap and blueprint of the same was approved in the later months of year 2014 and all the works were duly completed in the month of July, 2018.

Details of Activities carried out under Best Practices

The following activities were carried out in order to establish the best practices of sanitation and other allied indicators in the village whose details are as follows;

1. Liquid Waste Management

Liquid waste management is becoming issue of great concern in rural India. The changes in consumption patterns including that of people living in rural areas have an impact on the quantity and kind of wastes generated. "It is estimated that rural people in India are generating liquid waste (Grey Water) of the order of 15000 to 18000 million litres per day. This poses great health risks if not treated and managed in a sustainable way. In the absence of proper treatment and disposal of liquid waste (grey water and black water), vector borne diseases such as diarrhoea, malaria, polio, dengue, cholera, typhoid, and other waterborne infections such as schistosomiasis are increasing. Close to 88 per cent of the total disease burden in rural India is due to lack of clean water and sanitation and improper solid and liquid waste management, which exacerbate the situation. For example: 5 of the 10 top killer diseases of children aged 1-14 in rural areas are related to water and sanitation. Due to these, almost 1500 children die every day from diarrheal diseases.

The dirty water of the villages being accumulated in the ponds primarily consists of Liquid Waste coming from various houses, which is called the grey water. This problem is further aggravated by the practices at some places of disposal of human excreta especially of children, into open drains. Moreover, there are reports that due to defects in the open drain, makes the water of the drains black which is a big health hazard.

Therefore, Liquid Waste Management in the rural areas is one of the top most priorities of the centre and state governments. The Swachh Bharat Mission (Gramin) aims at providing a comprehensive solution of Liquid waste Management in villages through proper and scientific methods.

The filthy site of overflowing ponds and water logged streets due to improper disposal of waste water was a usual scenario in the Kurak Jagir village as reported by participants during the FGDs being conducted in the village. The

waste water management was a major challenge before the gram panchayat. The followings were the main factors which were causing hindrance in proper handling of waste water in the village which were revealed from FGDs;

- Existing ponds in the village were insufficient to deal waste water as they were in deplorable conditions due to encroachment and improper timely maintenance. Further, they were also mismatched with the increased volume of waste water hence their capacities to deal waste water were upto certain level only;
- Capacity of drains were incapable of increased influx of waste water as compared to their capacity as quantity of discharged waste water was increased rapidly with increase in population of the village; hence they were always overflowing at many places.
- Private submersibles had added additional load to the existing discharge of waste water hence they increased volume of waste water in the village.

Therefore, to deal above mentioned issues, there was an immediate and imminent need for proper disposal of this waste water and to use existing polluted and incapable ponds as resources and to competing disease as well as meting scarcity. Given the immense value of clean water, it was also devised that such mechanism could be used to deal waste water which can be further treated and used for gardening, aqua-farming and irrigation purposes. The Capacity of the existing ponds were also needs to be increased.

The gram panchayat met district level officials and requested them to support their efforts to devise a strategy to manage their liquid waste. Interestingly, during that period, especially in the wake of Swachh Bharat Mission (R), the state government was trying to identify best suitable methods and technologies for Liquid Waste Management in the villages across Haryana state. The methods adopted for management of liquid waste was mainly focused on maximum reuse of such waste for agricultural purposes with least operational and maintenance costs. For treatment of waste water, technologies such as Waste Stabilization Pond (WSP) technology, Phyto Rid Technology (developed by NEERI), Anaerobic decentralized waste water treatment were also being tested in various villages during that period.

However, a new **Five Ponds system (Sullage Stabilisation Pond)** of treatment of waste water, which was earlier well received and praised for its innovative method of treating waste water, was chosen to be implemented in

the village Kurak Jagir under the supervision of District Administration, Karnal and the engineering wing of Panchayati Raj Department under SBM-G initiatives.

The mechanism on which five ponds system works is as follows;

The grey water *(Grey water is waste water from bathroom, washing of clothes and kitchen of household)* of the village collected through the drains/nallas collected at a common point and passed through the iron mesh of different sizes & then allowed to pass through large shallow basins or ponds excavated at suitable land site and placed serially as stabilization system in which grey water is stabilized. Its pathogenicity is reduced and stabilized water becomes reusable. By this system, grey water is stabilized by natural oxidation process involving algae, and bacteria. Hot climate is very suitable for this process. Solar radiation and light is necessary for efficient functioning of this system. The three ponds in this system are called as:-

1) Anaerobic Pond (10 feet deep)
2) Alternative Anaerobic Pond
3) Facultative Pond (5 feet deep)
4) Maturation Pond (5 feet deep)
5) 2nd Maturation Pond

a. **Anaerobic Pond**: The grey water reaching in this pond has high solids content. The grey water is retained in this pond for two-three days, so that solids present get settled in the bottom, where these are digested anaerobically. Then this water is allowed to enter in the second pond called Facultative Pond.

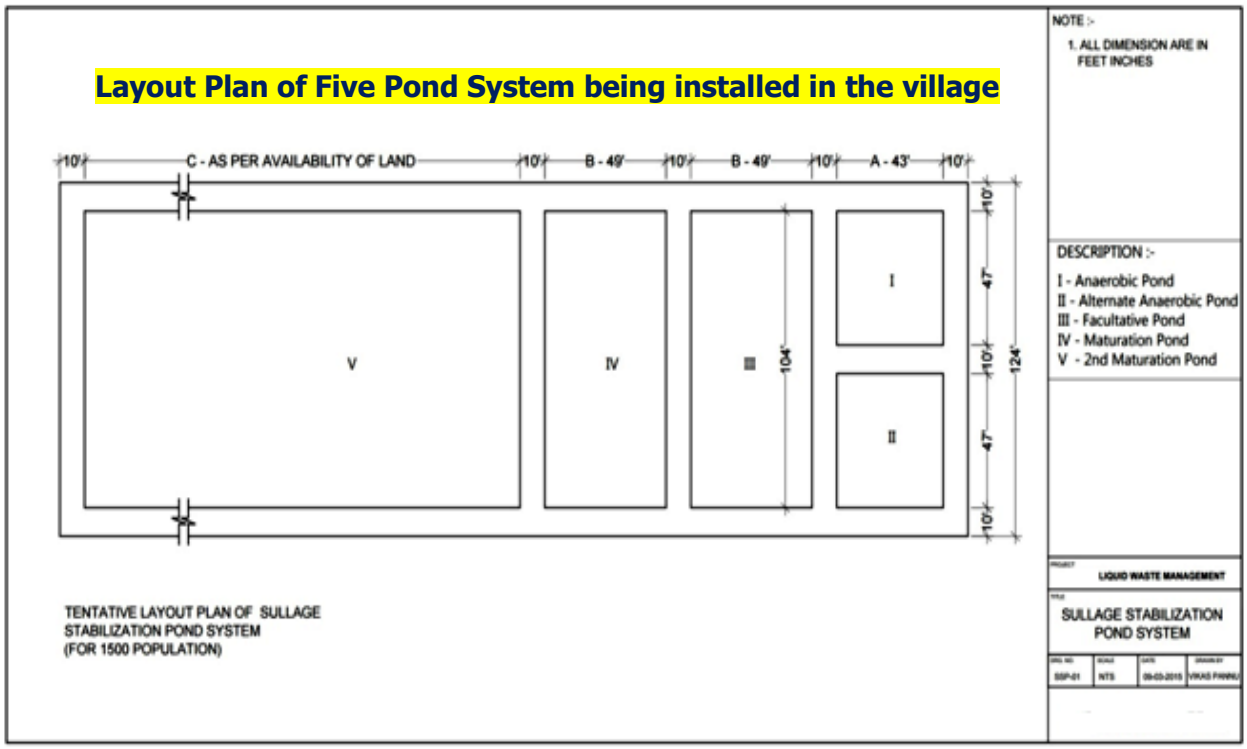
b. **Facultative Pond**:- In this pond water is retained for 3 to 5 days and the oxidation of this water takes place. In this pond, the aerobic conditions are maintained in the upper layer and anaerobic conditions exist in the lower layer. In this pond, solids are generally taken care of by three mechanisms as under:-

- Aeration through the surface
- Oxidation due to oxygen liberated through photosynthetic activity of algae growing in the pond because of the availability of plant nutrients from bacterial metabolism in water and the incident light energy from the sun.

- The pond bacteria utilize the algal oxygen to metabolize the organic solids content of grey water and the process involved is a natural process.

c. **Maturation Pond**:- The water received from facultative pond is retained for 3 to 5 days in this pond. The main function of the maturation period is the destruction of pathogens and the pond is wholly aerobic. The water treated by above natural method can be used for irrigation and fish farming.

The above said liquid waste treatment plant was built on a 3 acre of area in the village. The construction work regarding this sullage stabilisation pond was started on 1st April, 2015 and all the activities were completed on 31st July, 2017. The treated water in the pond is now being used for fish farming and irrigational purposes by the villagers. The best practice as mentioned above in managing liquid waste in the village has become a role in the state and nearby areas. Similar, methods have been also adopted and replicated in the nearby villages across the districts.



Source: Executive Engineer, Deptt of Panchayati Raj , Karnal, Government of Haryana


स्वच्छ गाँव
तरल कचरा प्रबन्धन परियोजना, ग्राम पंचायत कुड़क जागीर
एक कदम स्वच्छता की ओर
निर्मल गाँव
स्वच्छता अपनाओ,
गन्दगी भगाओ।

2. Construction Drains

As the whole exercise of installing Five Ponds system in the village was meant to treat liquid waste in the village, however, carrying this waste water from its originating source i.e. households and streets to treatment ponds were a new task. There was already a drainage system in the village but in the blueprint of solid and liquid waste management project report was to develop a new systematic underground drainage system which would connect all the households to new liquid waste treatment plant outside the village. A total length of 1666 feet drains and 1830 feet of Nala (sewer) were laid in the village under the liquid waste component in the village.

Table 4: Technical details of Drains/Nala constructed under LWM in village

Sr. No.	Size	As per estimate - length (in ft.)
1	Drains	1666 ft
2	Nala 1′ × 1′	400 ft
3	Nala 1.5′ × 1.5′	730 ft
4	Nala 2′ × 3′	700 ft

Source: Executive Engineer, Deptt of Panchayati Raj , Karnal, Government of Haryana

3. Elimination of Open Defecation in Village

The lack of toilet facilities in rural areas presents a major health hazard. FGDs conducted in the village disclosed the fact that Open defecation was rampant in village before the best practice mainly due to ignorance of villagers due to their traditional beliefs and even there were some households that were lacking toilets. The villagers do not acknowledged the fact that lack of sanitation facilities at household level is a problem due to their ignorance.

Some of them considered defecating in the open to be a sign of virility, and believe a stroll to the fields aids digestion. And if there were toilets constricted within the parameters of their houses, they often used them as a storeroom for firewood, grass, chickens, cow-dung cakes and food grains. However, the scene came to change in the village, when state and district administration focused on eliminating open defection as per the target of SBM (R).

The gram panchayat formed a open defecation monitoring committee to check the areas being regularly used for open defecation and also a census was done to indentify households which lack IHHL. The members of open defecation monitoring committee often visited the households which lacks IHHL and motivated them to construct one in their respective households. Those households which are poor and unable to construct their latrines with their own resources were financially helped under the SBM (R) grants.

In addition, the gram panchayat body presented a resolution on the gram sabha that Additional Deputy Commissioner (ADC) of the district should visit the village and motivate the villagers to curb open defecation from the village. The resolution was passed and the then ADC visited the village as per the wishes of gram sabha. She (ADC) along with various cadres of district motivated the whole of village and sensitise them about the benefits of IHHL and its benefits on environment and individual health. A fine was also announced by the gram panchayat on those who would practice open defecation. This step was introduced to check and discourage villagers to stop this practice at any place which was earlier a routine scenario in the village.

4. Solid Waste Management

Since a five pond system has been successfully implemented in the village to deal its liquid waste, the next measure was to manage the solid waste of the village in a proper and systematic manner. As discussed earlier, The gram panchayat body presented a resolution on the gram sabha that Additional Deputy Commissioner (ADC) of the district should visit the village and motivate the villagers to practice safe disposal of sanitation activities in the village. ADC visited the village as per the wishes of gram sabha and sensitise the villagers about the benefits of solid waste management and its implications on environment and humans, if not treated in scientific manner. She with the help of gram panchayat distributed dustbins to every household in the village in order to make them collect their household waste, which can be further easily collected and transported to solid waste collection centre which was constructed outside the village.

This Solid Waste treatment plant was constructed under the SBM (R) with a grant of Rs. 2.80 being as a component of ongoing Solid & Liquid waste management project in the village.

Further, a tricycle was introduced in the village, which has been used to collect and transport discarded solid waste from each households in the village to solid waste collection centre on a monthly charge of amount of Rs. 30/- per household, which was a very nominal and acceptable charges. This collection tricycle would round up daily in the village at morning and collect and transport solid waste from respective households to collection centre. This method of using tricycle for collection and transportation of solid waste is already a successful model of managing solid waste in the urban avenues all around the country. Cleanliness in the streets and community places were also checked and regularly taken care of.

Table 5: Details of Shed constructed for SWM

Sl.No	***Details of Components***	***Particulars***
1.	Sizes of Shed	36 X 24
2.	No. of sheds to be constructed	1
3.	Status of construction	Completed
4.	Estimated cost	2.87 lac
5.	Expenditure upto previous month	2.80 lac
6.	Expenditure during the month	0
7.	Total expenditure	2.80 lac
8.	Date of start	28.11.14
9.	Target date of completion.	Completed

Source: Executive Engineer, Deptt of Panchayati Raj , Karnal, Government of Haryana

Steps undertaken to Manage Solid waste in village Kurak Jagir

5. Vermi-Compost Unit

A vermi-compost unit was constructed in the village to make manure from the discarded organic waste of the village as part of the SLWM project. It was proved to be highly successful for the villager's as majority of them have been engaged in agricultural activity especially in growing world famous Basmati rice and the manure produced from this vermi-compost unit was remained instrumental in increasing agricultural productivity. Vermi compost unit was highly appreciable as it has been recycling solid waste into useful assets.

6. Widening of Streets and Roads

Gram panchayat has also reconstructed and paved all the main streets and roads of the village. In a bid to use maximum space, most of the roads and streets were widened. All the roads are well maintained and tree plantation with tree guard was done along all the streets and roads.

7. Cleanliness in village

The cleanliness in streets and public places were very poor before the drive of gram panchayat. The panchayat members and Sarpanch made every effort to clean his village by means of employing more resources and manpower. He employed MGNREGA workers to clean the village streets and motivate the villagers to keep Jhattipur village more clean, hygienic and eco-friendly. The effect was quite visible as the whole village was neat and clean and every corner was free of any litters. Not only this, villagers voluntarily have been participated in this drive of cleaning the village.

8. Hygiene Practices in Schools/Anganwari Centres and PHC

Panchayat has made every effort to teach students about the benefits of safe sanitation and safe hygiene practices. Special measures were taken to provide a clean environment in all the anganwaris of the village. The PHC of the village has also been found in excellent conditions which are very essential for a health and sanitation in the village.

9. Open Gymnasium

After successful implementation of the project, an open gym has been also installed in one acre of area nearby the liquid waste treatment plant. Solar Lights All the youngsters, children and females of the village usually come to do exercises in morning and evening in the park. This initiative has been marked a new era in the chapter of the village and villagers have highly appreciable of this activity.

10. Installations of Solar lights in Open Gymnasium

Renewable energy sources are not only eco-friendly but also a cheap source of energy. One such source that is easily available throughout the year is solar energy. Solar panelled street lights are quite popular in rural areas as they are durable and almost they have negligible usage of bills. The gram panchayat has installed solar lights in the open gymnasium cum park of the village**.**

11. Tree Plantations

Panchayat along with community planted hundred of trees in the streets of the village and village's its outskirts (*firni*) to preserve the environment and to promote greenery in the village

Conclusion

The essence of 73rd Constitutional Amendment Act, have proved the worth of democratic decentralisation at the grassroots level of rural areas. The same spirit has been observed during the documenting of this case study. The efforts done by gram panchayat in focusing management of liquid and solid waste have been a remarkable endeavour which is quite encouraging in itself. The mechanism and methodology adopted by the gram panchayat Kurak Jagir have very instrumental in service delivery mechanism at ground level which has significantly changed the socio-economic scenario in the village.

Learning Outcomes

Lessons learned in the process of documenting accelerated implementation of evidence-based best practices has compelling results which needs to be replicated at various other similar avenues which are lagging behind in sanitation coverage. The mechanism which has been observed at village Kurak Jagir has the following key aspect which can be replicated at other similar rural avenues;

Exchange and Spread of Technology of New Innovative Techniques of Liquid waste management and other related activities across country

As observed in this documented case study, the new innovative scientific method called Five Pond System which have been implemented in the village Kurak Jagir for managing liquid waste in the village have been a milestone itself in scaling up effective liquid waste management across rural areas. Given the immense success of this system, which has been covered under the umbrella of SBM (R) could have been used as a tool to devise new strategy to deal liquid waste in most effective and appropriate manner. The district of Karnal in the state of Haryana was the first avenue where this experiment was carried out as a pilot project and upon its high rate of success, the model was further extended and replicated across various other gram panchayats in the state of Haryana.

The first and foremost learning outcome from this village is that such new innovative methods should be exchange and spread to gram panchayats and villages of other states according to their local needs and suitability as per their topography, soil and other related components across the country for replication. The five ponds system could be a new milestone in answering multi-dimensional rural sanitation activities in India. The finances and exchange of technology should be integrated through umbrella of SBM (R) and inter-state coordination between department of panchayati raj and rural development.

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Dr. Sukhvinder Singh
(Associate Professor)
CRRID, Chandigarh
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