

**A Workshop Report
On
"Sustainable Sanitation with special focus on Ecological Sanitation"**

Organised By:



June 28 & 29, 2013 Hotel Patliputra Ashok Patna, Bihar.

Supported By:





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Background

India is marching on path of development. Its journey to become a developed country is gaining momentum. Several challenges are there creating hurdles. One of those hurdles include is poor hygiene and sanitation. Even after six and half decades of independence, around 73% of the total population of the country is still living without toilet. This problem is much deeper in the states like Bihar where according to the figures of census 2011, only 18% of people have access to toilets, which means 88% people of the state still defecate in open, posing serious threat to ecosystem and human health. Provision of basic water supply and sanitation facilities especially in rural areas and urban slums is still a major concern for governments. Though United Nation (UN) and other national and International agencies are working on this issue, but lack of basic amenities lead to poor health and also affect the livelihood of the poor and vulnerable communities. When we discuss hygiene and sanitation, many issues are linked to it like fast depletion of ground water, water quality issues, poor sanitation coverage, poor focus on hygiene, problems in dealing in solid and liquid waste, fast urbanization, emerging issues due to climate change, demand adequate human resources with necessary capacity. Unfortunately, Hygiene and sanitation issues are still less addressed. There is a need to change the approach because it is directly concerned with ecosystem and human health. In order to address the above issues, with the support of Plan India & WASH Institute are taking lead role along with other like-minded organizations. It is aimed to organize both non-formal and formal courses on "Water and Environmental Sanitation" through partnership with Non-Governmental Organizations (NGOs)/ International NGOs, Government training institutes and academic institutions. It aims to cater to the capacity building needs in India and its neighboring countries.

At the core WASH Institute's mandate is to train and groom water, sanitation, hygiene and environmental professional and other functionaries involved in this sector. Species focus given to middle level professionals who directly involved in managing the programs on ground. Round the year, the WASH Institute runs various non-formal short-term training/academic courses, and two formal courses with the affiliations of Madurai Kamaraj University (MKU), Madurai, Tamil Nadu.



Executive Summary

On June 28th and 29th, 2013, two-day national workshop was organized in Patna, the capital of the state of Bihar by WASH Institute/PLAN India (KRC of Ministry of Drinking Water and Sanitation, Government of India) on "Sustainable Sanitation with special focus on Ecological Sanitation". The Principal Secretary, Mr. Vyasji of the Department of Health & Family Welfare, a number of experts from all over the country, engineers, resource persons, representatives from Uttar Pradesh, Jharkhand, West Bengal & Orissa and field workers participated in the workshop and gave valuable suggestions in their respective deliberations and presentations. Prominent among the dignitaries include Dr. PK Jha, MDWS, Govt. of India, New Delhi, Mr. Arumugam Kalimuthu, Country Director- Water For People, Dr. S. Shankar Narayanan, Director -PSI, Patna, Dr. A. K. Sengupta, DG, Sulabh Academy, Mr. Prabhakar Sinha, SDC Specialist SPMU-RWSSP, Dept.

of Rural Development, Govt. of UP, Mr. Amitava Bhattacharya, Founder of Banglanatak.com, Kolkata, Mr. Sanjeev Kumar, Senior Communication Consultant, New Delhi, Mr. Palas Sharangi, State Consultant, UNICEF, Kolkata, Dr. Prof. C.A. Srinivasanmurthy, Dept. of Soil Science & Agri-Chemistry, Bangalore, Mr. Sujeet Ranjan, Director Program Implementation, DFID SWASTH, Dr. P. Rajasekar, Environmental Engineer/Principal, Green Tech College of Engineering for Women.TN, Ms. Rupali Tripathi, State Consultant, ARSH, Bihar, Mr. Ranjan Verma, Development Consultant, New Delhi, Mr. Nanak Santdasani, Unicef Bihar, Mr. M. Subburaman, Director- SCOPE, Trichy, Dr. C.A. Srinivasamurthy, Professor- Department of Soil Science & Agriculture Chemistry, Bangalore, Mr. A K Sen Gupta, Director General, Sulabh Academy, New Delhi, Mr. P. Praveen, Anna University, Tamil Nadu, Mr. Prakash Kumar, SEI-WASH Institute, Mr. Vinay Kumar, Secretary, Water Action, West Champaran, Mr. Kanchan Pathak, Program Coordinator, Taru Mitra, Mr. Sanjeev Kumar, SABRI, Mr. Vijay Kumar Srivastava, Executive Engineer, PHED, Nalanda, Bihar, Mr. Manoj Kr. Choudhary, Executive Engineer, Khagaria, Bihar, Mr. S. Jawaid, Director, PMU, PHED, Govt of Bihar, Er. Seemanchala Das, SE, Koraput, Govt of Orissa, Mr. Rajendra Prasad, Deputy Director, PMU, SWSM, Govt of Jharkhand, Ms. Olga Murujew, University of Wageningen, Netherlands, Ms. Kaushiki Kaushal, Lady Sri Ram College, New Delhi and experts from WASH Institute, Patna Mr. Gautam Kumar and Mr. Niket Kumar Jha.

The workshop was divided into four technical sessions followed by state presentations and field visit to 'Taru Mitra', Patna. In all sessions there was a chairperson and a co-chairperson. All the technical sessions were interactive, audience were given time to ask their questions and query. In the workshop field workers also shared their experiences and gave suggestions.

The aim of this workshop was to discuss on sustainable sanitation. **Special focus was given to ecological sanitation to find out new ideas and ways to strengthen sanitation program all across the country and also to change the behavioral pattern of the people to induce them to opt for ecological sanitation.**



Plenary Session Proceedings

Welcome remarks

Mr. A.K. Shrivastava, Chief Engineer Welcomed the key dignitaries, Mr. Vyas **Jee** Principal Secretary, Health Department, Govt of Bihar, Mr. Arumugam Kalimuthu, Country Director, Water For People, Dr. PK Jha, MDWS, Government of India, New Delhi, Dr. S. Shankar Narayanan, Director-PSI, Patna, esteemed guests from all over the country, Engineers from districts, PRI representatives, Resource persons and Media people. He acknowledged that in the recent years WASH Institute has organized various workshops and programmes related to hygiene and sanitation which have given positive and encouraging impact. He said this "National Workshop on Sustainable Sanitation with Special Focus on Ecological Sanitation" is another one in the ongoing series of such workshops. The aim of which is to establish coordination at all levels, search for innovative ideas and share success stories to increase motivation. Need of the hour is to create more awareness on hygiene and sanitation among the people of flood prone states like Bihar, Uttar Pradesh and West Bengal. He expressed hope that this two-day workshop will be a milestone in giving new dimension to the hygiene and sanitation programmes all over the country and would strengthen ecological sanitation.



Mr. A.K. Shrivastava,
Chief Engineer, PHED,
Patna, Bihar



Mr. Prakash Kumar, DTL
DFID, SWASTH

Mr. Prakash Kumar, DTL DFID SWASTH, expressed happiness that this workshop is taking place in state of Bihar for the first time. He said WASH Institute is working as a key resource center in the field of hygiene and sanitation. According to the survey of the Planning Commission 73% people across the country are still living without toilet facility whereas according to the figures of census 2011, only 18% people of Bihar have toilet facility, which means 88% people of

the state still defecate in open. The programmes for settings up lavatories are have been running since 1980, but is not getting adequate success. He felt the need to involve mass at large scale to ensure success of this program. Giving the details of the workshop Mr. Kumar informed the 2-day workshop has been divided into four technical sessions, in which the techniques being followed in states and countries which are implementing hygiene and sanitation programmes effectively will be will be discussed. Also, there will be discussions on new ideas and innovations in this field. Technical session-1 will discuss the ways to mobilize community and to bring about behavioral changes in them. The second technical sessions will be focused on components of sustainable sanitation. Marathon discussion on the new ideas and innovations in sustainable sanitation will be held in



third technical session followed by the demonstration of ecological sanitation in the fourth technical session. He urged the participants to implement new ideas emerging out from this workshop at ground level to get better results.

Keynote address

Mr. Vyas Jee, principal Secretary, Department of Health & Family Welfare, Government of Bihar, in his keynote address said, sanitation is directly connected with our health. He said we spent too much amount on treatment after falling in grip of diseases, but we can prevent this national wastage by maintain proper hygiene. He called to promote hygiene as preventive health measure. He said we can save money by maintaining good health and use it in other productive works. The principal Secretary informed that Departments of Health, PHED and Nutrition, in consultation with



**Mr. Vyas Jee, IAS, PS,
Health, Govt. Of Bihar**

development partners, community members and different stake holders have developed 10 commandments to keep good health, which has been named as **"Dus Ka Dum Swastha Rahenge Hum"**. It describe steps to be taken for maintaining good health. Mr. Vyas Jee said cleanliness may be our habit, but one can't maintain habit in absence of resources. The financial status of people of Bihar is not very sound, many people are not in position to construct and maintain toilets. The principal secretary apprehended that if money to build toilets is provided to the people before its construction, they may use in different work. So there is a need to revisit change in behavioral pattern and supply side intervention. Expressing happiness on the changed scenario Mr. Vyas Jee said as compared to earlier years there are more funds available for development and large number of organizations are working in various areas, so we are confident to bring about positive change. He said, in South India, every practice is meticulously followed without too much effort, but in the states like Bihar and UP good things took a long time to fructify, so cultural issues are also important in social sector. He expressed hope that fruitful ideas will emerge from the workshop, which would be shared with PHED and Health Department so that the government can reformulate existing programmes and if needed it can work on new programmes. The recommendations would not only academic exercise, but would be acted upon by respective governments.



**Mr. Arumugam Kalimuthu,
Country Director, Water For
People.**

Mr. Arumugam Kalimuthu, Country Director, Water For People, discussed on national Sanitation Status-the progress and challenges. Expressing happiness on improvement in the trend of sanitation in India, he said, in 1981, sanitation coverage was only 1%. Now it is more than 60%. The demand creation and post implementation support is also gaining momentum, but still much needed to be done. He said even states which are progressing with good sanitation



coverage have not very satisfactory level of that coverage. We should give more focus to address sanitation issues like household sanitation, institutional sanitation. 77% of schools across the country have good sanitation coverage, but still 22% schools sans sanitation facility. There is a need to examine whether the sanitation facilities available are merely fundamental? Mr. Kalimuthu informed since 1st Five year Plan until now there has been substantial increase in funds for water and sanitation, but still many state governments fail to spend the amount. He suggested that if we introduce good quality toilet, people will invest more money in addition to subsidy and incentives. He expressed concern that India is way behind the global achievement in the field of sanitation, according to MDG figure 1.2 billion people across the globe defecate in open of which nearly 55% is living in India. Even in comparison to South Asian Countries like Nepal, Bangladesh, Sri Lanka and Maldives India is low performing in sanitation, so we are the worst performer in terms of sanitation. He said in states like Bihar and West Bengal water flow across open drains which are hazardous to health. Sewage gets blocked and slums usually bulges. There is a need for proper sludge management. Lack of awareness creation, demand creation before the consumption, after construction, post implementation support regarding how to use and maintain toilet should be given top priority. Sanitation should be given more priority and importance. He said another critical element is supply chain because it brings down the cost of construction. There is a need to focus on private players and entrepreneurs for support on various sanitation supply products, design & support and post implement support. He said though the government provide nice incentive, but money is only available after construction of the toilet. Families look at support right at the start. He emphasized the need of global investment in sanitation sector and suggested bringing micro-financing institutes and nationalized banks to support sanitation. He said none wants to spend more time for toilet construction, so there should be modular toilet to accelerate sanitation coverage. He also stressed on the need of sludge management and rural mobilization.

Dr. P.K. Jha, MDWS, Govt of India, New Delhi, gave presentation on Initiatives taken by Government of India for promoting sustainable environmental sanitation in rural areas. He expressed happiness that the workshop is houseful. He said he had rarely seen full houses in such workshops, but this workshop is unique. Dr. Jha suggested need to create awareness to make sanitation a socio cultural issue. He said awareness and motivation is primarily important than fund. It is the backbone of NBA programme. He said most of the state lack awareness. Special initiatives should be given to girl's toilet in schools. He said we could not run toilets in rural areas like pay and use pattern being followed in urban areas, therefore, Gram Panchayats should take guarantee of maintenance of toilet complexes. He suggested that toilet complexes may be attached with a small room for sale of kitchen items



**Dr. PK Jha, MDWS, GoI,
New Delhi**



to link it with economic activities; it will enable ladies to come forward to maintain such toilets. **(Refer Annexure-2).**



Dr. S. Shankar Narayanan,
Director -PSI, Patna

Dr. S. Shankar Narayanan, Director -PSI, Patna, expressed concern on open defecation in Bihar and said its hazards are compromising brain development of children below two years. Quality of life can never be improved without toilet. He said in rural areas of Bihar, it is very hard to collect materials to construct toilet, rather than purchasing a mobile phone. Need of the hour is to simplify the supply chain and also to strengthen it. He described liquidity crisis and frequent price rise as one

of the key affordability barrier. He also suggested giving proper attention on the depth of pits while making toilets. He expressed satisfaction over the supply chain system in the state and said the problem is that people don't rely on masons; rather they get themselves involved in long discussions with their fellow villagers. Mr. Narayanan gave detailed presentation on Sustainable Sanitation Improvements in Bihar through Supply-side Strengthening **(Refer Annexure-3).**

Proceedings in Technical session-1

The first technical session was to discuss on 'Community mobilization for sustainable sanitation'. This session was chaired by **Dr. A. K. Sengupta**, DG, Sulabh Academy. **Dr. S. Shankar Narayanan**, Director- PSI, Patna was the co-chairperson, whereas Mr. Gautam Kumar, WASH Institute, Patna was the focal person. In this session there were four presenters which include Mr. Prabhakar Sinha, SDC Specialist SPMU-RWSSP, Dept. of RD, Govt. of UP, Mr. Amitava Bhattacharya, Founder of Banglanatak.com, Kolkata, Mr. Sanjeev Kumar, Senior Communication Consultant, New Delhi and Mr. Palas Sharangi, State Consultant, UNICEF, Kolkata.

Mr. Prabhakar Sinha, SDC Specialist SPMU-RWSSP, Dept. of RD, Govt. of UP discussed on '**Household Sanitation & Community Led Total Sanitation Approach**'. His main focus was to involve community in the process of total sanitation. He said earlier more attention were on number of toilets to be made rather than their use. Our policies forced people to depend on government. The conditions, prevailing in villages are quite precarious. In many places people use toilets for all other purpose than defecation. Benefit of sanitation can't be obtained without freeing entire village from open defecation. The need of the hour is to change behavioral pattern of the people, for this it is



Mr. Prabhakar Sinha, SDC Specialist, SPMU-RWSSP, Dept. of RD, Govt. of UP.



necessary to shed shyness and communicate in local language for better understanding of the rural mass. This will enable them to freely exchange their views and would make the process more interactive. Mr. Prabhakar Sinha also laid focus over the importance of trigger tools in community mobilization. He called the participants to sensitize people on hazardous of open defecation. He gave presentation about how CLTS has contributed in changing behavioral pattern of the people. **(Refer Annexure-4).**



Mr. Amitava Bhattacharya, Founder of Banglanatak.com, Kolkata

Mr. Amitava Bhattacharya, Founder of Banglanatak.com, Kolkata, gave deliberations on **'Theatre as a medium for community mobilization for sustainable sanitation'**. He called the participants to grow aspiration in villagers for their proper mobilization. Mr. Bhattacharya was of the view that community mobilization would act as catalyst of development. We must realize that pride and aspiration is extremely important part of our behavior, which we are missing a little bit in sanitation. Community treat supplied toilets as BPL toilets deliberately imposed on them. They never respect such toilets avoid there is general conception that theatre means street plays (Nukkad Naatak). It is partially correct. Street play is just a part of theatre, it can't work in isolation to use it. We should be

ready for paradigm shift otherwise things will not change. Therefore, we have to go for behavioral change. We should not ignore social entrepreneurship. It can solve the address issues well. He described theatre as an effective methodology for behavioral change as well as outreach meeting, workshops and social research. He said. Post show community meetings are also very important. Community feedback also needs to be incorporated in the process. He said theatre can be a brilliant tool, but use of its every component is very important. **(Refer Annexure-5).**

Mr. Sanjeev Kumar, Senior Communication Consultant, New Delhi, gave presentation on **'BCC for Sustaining Advances made in Sanitation'** His discussion was interactive. He asked what behavior is. He communicated with them by using the techniques of short games involving the audience. His presentation was completely two- way.



Mr. Sanjeev Kumar, Senior Communication Consultant, New Delhi



Mr. Palas Sharangi, State Consultant, UNICEF, Kolkata

Mr. Palas Sharangi, State Consultant, UNICEF, Kolkata, explained about 'Sanitation in Aaganbadi and schools'. He said most of the schools have poor toilet facilities. Right to education, has made regular attendance of students in schools is compulsory, but lack of toilets or poor quality toilets in schools are creating obstacles. Poor hygiene is adversely affecting boys and girls, leading



to diarrhoea, transmission of soil transmitted helminthes respiratory diseases and malnutrition. Adolescent girls need safe toilets and private sanitation facilities in their schools, which they are not getting. Children, in particular girls, miss out time at school because they have to fetch water. He was of the view that Improving hygiene and sanitation facilities, schools (and communities) can increase enrolment levels, girl/boy ratios, quality of education, educational achievement. Learning outcomes of healthy children are much higher than children infected with STH's. Children are eager to learn and schools can stimulate and support them to develop skills and knowledge to face daily challenges now and in the future. Mr. Sarangi also came out with some suggestions. He said WinScan be used as an effective and most efficient tool in RTE compliance. Triggering a competition could help in igniting improved school environment with optimum ownership. Improved convergence and effective synergy between national flagship programs like NBA, SSA, MDM, MGNREGA, BRGF, NAP, LWE can be achieved if recognizing good practices in place. Mr. Sharangi stressed on the need for more political and administrative commitments. He said everybody looks united in the meetings, but in ground they work separately. This practice should must be stopped. **(Refer Annexure-6).**

Chairperson's remarks

At the end of the session the chairperson **Mr. A.K. Sengupta** expressed hope that Bihar would become a model state in ecological sanitation. People from other states would visit Bihar to study the model followed by it. Mr. Sengupta also appreciated the presenters for expressing their views.

Proceedings in Technical Session-2

The second technical session discussed on the 'Components of sustainable sanitation'. It was chaired by **Dr. Prof. C.A. Srinivasanmurthy**, Dept. of Soil Science & Agri Chemistry, Bangalore, **Mr. Sujeet Ranjan**, Director Program Implementation, DFID SWASTH was the co-chairperson. The focal person was Mr. Niket Kumar Jha, WASH Institute, Patna. Dr. P. Rajasekar, Environmental Engineer/ Principal Green Tech College of Engineering for Women, Tamil Nadu, Ms. Rupali Tripathi, State Consultant, ARSH, Bihar and Mr. Ranjan Verma, Development Consultant, New Delhi were the presenters in this session.

Mr. P. Rajsekar, Environmental Engineer/ Principal, Green Tech College of Engineering for Women, Tamil Nadu, gave presentation on **'Solid and Liquid Waste Management'**. He said since we are producers of waste so we should manage it. He informed it is estimated that the generation of liquid waste (grey water) is about 15,000 to 18,000 million liters and solid waste (organic/recyclable) is 0.3to0.4million metric tons per day respectively. Waste is not at all a waste, it is a resource. Mentioning



**Dr. P. Rajasekar, Principal,
Green Tech College of
Engineering for
Women.TN**





global figures Mr. Rajsekar said 1.8 million people die every year from diarrhoea, 1.3 million people die of malaria, 160 million people are infected with schistosomiasis, whereas 133 million people suffer from high intensity intestinal helminthes infections. He said the objectives of waste management is to protect human health and improve quality of life, reduce environmental pollution and make rural areas clean, promote recycling and reuse of both solid and liquid waste, convert bio waste into energy at village level and generate employment for rural people by offering new opportunities. He said, there are two types of waste namely black water (Which come from toilet) and grey water (Waste water from bathrooms or kitchens). 90% of waste water generated is grey water. It is the great resource. For effective management focus should be on management at household level. He also gave details about root treatment system for grey water. He said septic tank can be effectively used to treat black water. He also explained in detail about the way to construct septic tanks. About solid waste management he said Indian cities now generate eight times more MSW than they did in 1947 because of increasing urbanization and changing lifestyles. Generally in India, MSW is disposed of in low-lying areas without taking proper precautions or operational controls. He said bio degradable and non-bio degradable wastes should be stored in separate bins. Composting, vermin composting and biogas plants can make biodegradable wastes reusable. He also gave tips on use and maintenance of pits. Mr. Rajsekar also presented a case study on solid waste management **(Refer Annexure-7).**



Ms. Rupali Tripathi, State Consultant, ARSH, Bihar

Ms. Rupali Tripathi, State Consultant, ARSH, Bihar, gave deliberations on 'Menstrual hygiene management'. She said every woman undergo menstrual cycle from the age of 10-11 years till attainment of menopause. Our society ignores particular requirements of that time. So there is need for proper management of menstrual hygiene. In our country there are least safe places to change napkins. This issue is still less addressed, so the need is to include it more properly in the government policies. There is no proper support system for girls.

Menstrual hygiene management is absent or had been of low focus from programmes for water and sanitation and hygiene promotion. It is not incorporated into infrastructure design or policies for toilets and environmental waste disposal. Giving the detailed figure Ms. Rupali pointed out, out of India's 355 million menstruating women only 12% use sanitary napkins. The remaining 88% women resort to alternatives like non-sanitized clothes, ashes and husk band. About 68 percent rural women cannot afford sanitary napkins. Poor demand for sanitary napkins discourages rural vendors from maintaining stock of napkins. Girls are reluctant to attend school during menstruation resulting in 50 days of absenteeism from school, due to lack of facilities at school. She suggested three pronged approach to manage menstrual hygiene, i.e. (i) safe disposal (ii)



education and (iii) facilities for management. Girls and women should be taught about how to be hygienic. She said in order for women and girls to live healthy, productive and dignified lives, it is essential that they should have Access to appropriate clean water for washing clothes used to absorb menstrual blood and having a place to dry them. Private places to change clothes or disposable sanitary pads preferably separate Toilets. Facilities for proper disposal of used materials to manage this biological function with safety and dignity. She suggested that female toilet should have a small platform for washing the soiled clothes with proper availability of water for washing and cleaning and space for drying the washed clothes and a dustbin/closed bucket for putting used Sanitary napkins, which can be later buried with rest of the garbage. **(Refer Annexure-8).**

Mr. Ranjan Verma, Development Consultant, New Delhi gave presentation on '**Model Nirmal Gram Panchayats and impact evaluation**'. He said the monitoring of Gram Panchayats mainly takes place in main tolas (areas). Usually the interior habitats are left behind. Rural people are still not well-informed about subsidy system of the government in making toilets. People does not know how to maintain toilets after its construction and where to access different stake holders. Supply chain is weak in many places. The area which has effective social mobilization has rendered good result. Mr. Verma also came out with suggestions. He said NGOs should not be used merely as contractor. Continued social mobilization and constant monitoring is also necessary for the areas which have received the "Nirmal Gram" award **(Refer Annexure-9).**



Mr. Ranjan Verma,
Development
Consultant, New Delhi

Chairperson's remarks

The Chairperson **Dr. Prof. C.A. Srinivasanmurthy**, appreciated all the presenters for sharing beneficial information. He expressed hope that proceedings of the session would help in fulfillment of the objective of proper sanitation.

Technical Session-3

The third technical session was the last session of the first day of the two day national workshop on "Sustainable Sanitation with special focus on Ecological Sanitation". The topic of the session was 'New Ideas and Innovations in Sustainable Sanitation'. The chairperson was Dr. P Rajasekar, Environmental Engineer & Principal Green Tech College of Engineering for Women, Tamil Nadu whereas, the Co-Chairperson was Mr. Nanak Santdasani, UNICEF, Bihar. The focal person was Ms. Olga Murujew, University of Wageningen, Netherlands. The presenters of the session were Mr. M. Subburaman, Director- SCOPE, Trichy, Dr. C.A. Srinivasamurthy, Professor- Department of Soil Science & Agriculture Chemistry, Bangalore and Mr. Alex Praveen, Anna University, Tamil Nadu.



Mr. M. Subburaman,
Director, SCOPE, Trichy

Mr. M. Subburaman, Director- SCOPE, Trichy, discussed on 'Community Ecosan System/ Critical issues in urban sanitation'. He also came with a nice presentation on the topic. He said sanitation is still a low priority sector in our country, so more innovations are needed. Rapid urbanization and lack of basic sanitation facilities are the major challenges before the nation and urban local bodies. Urbanization is happening much faster than predicted. Unplanned growth of towns and semi-urban areas, where houses, apartments, malls, industrial units and slums are growing up in large numbers causing immense pressure on all existing infrastructure facilities. Water, drainage and sanitation systems have also been severely affected and are unable to cope up with the rapid urbanization. Absence of adequate number of community toilets, unsatisfactory maintenance of community toilets, Poor management of sludge and solid wastes sludge management, Poor solid waste management and Poor sanitation and hygiene are major cause of various infective diseases. Ironically the sanitation and solid waste management are is still low priority for civic authorities as well as the people. He also addressed the technical issues in septic tank and leach pit. In his presentation Mr. Subaraman also demonstrated how Ecosan community toilets are effectively working in some parts of Tamilnadu. He termed Ecosan toilets are the best alternative to leach pit and septic tanks.

Dr. C.A. Srinivasamurthy, Professor- Department of Soil Science & Agriculture Chemistry, Bangalore, discussed on use of human excreta and waterless urinals. He said Urbanization is essential for social development, but is also becoming a curse, when large number of wastes remained untreated. He informed that one of the huge wastes generated by high density population of urban centers is anthropogenic waste from closets through internal drainage system. It consists of human urine, kitchen wastes, fecal matter and large quantity of water-disposed of indiscriminately. He demonstrated urine potential in India with its graphical representation and also discussed on how urine can be used to make bio fertilizers. He quoted "We have borrowed the Earth from the past generation and it is our Duty to protect it and Return it Without Damage".



Dr. C.A. Srinivasamurthy,
Professor- Department of
Soil Science & Agriculture
Chemistry, Bangalore



Mr. P. Alex Praveen, Anna
University, Tamil Nadu

Mr. P. Alex Praveen, Anna University, Tamil Nadu, gave deliberations on 'Remote Sensing & GIS Application in Water and Sanitation sector'. Describing about the efficient ways of using GIS, Mr. Praveen said Remote Sensing, leads to ease of use for various applications. Combining with GIS is the best way. It stores attribute data, analyze raster data and map small areas by combining various small data. Mr. Praveen also laid focus on integration remote sensing and GIS. **(Refer Annexure-10).**





The first day of the workshop came to end after completion of third technical session. **Mr. P. Velusami**, Principal cum Program Coordinator, WASH Institute briefed the proceedings of the day.

Proceedings of Second Day.

Technical Session-4

On the rainy morning of June 29, 2013, the second day of the two-day national workshop on "Sustainable Sanitation with special focus on Ecological Sanitation" started with 4th technical session. The agenda of the session was Ecological Sanitation in Bihar, progressing with the initiatives of Stockholm Environment Institute and WASH Institute. This session was chaired by Mr. Arumugam Kalimuthu, Country Director-Water For People, Mr. Prabhakar Sinha, SDC Specialist SPMU-RWSSP, Department of RD, Govt. of U.P. was the co-chairperson. The focal person in this session was Ms. Olga Murujew, University of Wageningen, Netherlands, whereas the presenters in this session were Mr. Prakash Kumar, SEI-WASH Institute, Mr. Vinay Kumar, Secretary, Water Action, West Champaran, Mr. Kanchan Pathak, Program Coordinator, 'Taru Mitra', Mr. Sanjeev Kumar, SABRI. Mr. Vijay Kumar Srivastava, Executive Engineer, PHED, Nalanda, Bihar and Mr. Manoj Kr. Choudhary, Executive Engineer, Khagaria, Bihar shared their experiences of the ongoing Ecosan projects in their areas.

On the beginning of final day's proceedings **Mr. Prabhakar Kumar** welcomed the dignitaries and audience and summarized the first day's proceedings in his brief speech.



Mr. Prakash Kumar, SEI-WASH Institute

Mr. Prakash Kumar, SEI-WASH Institute, discussed on the benefits of ecological sanitation. He said Chinese population is far more from that of India, still they do not waste human excreta, but they use it in agriculture. Vietnam, Laos and Cambodia are also doing the same. There are 40-50 Lakh urine Diversion and Dehydration Units in China. Emphasizing the necessity of ecological sanitation, Mr. Kumar said flush toilets consume about 10-12litres of water at a time. On an average a person urinates four times a day and defecate at least single times in a day. Thus, about 60 liters of water is wasted by a person in one day. It will not be ridiculous to say that we are increasing our challenges. He said since nature doesn't mix stool and urine in our body, it has created two separate systems for the purpose. Therefore, we should not let urine and feces to get mixed together, we should collect them separately. This is the main crux of ecological sanitation. He said a person



defecates about 50 liters of stool in a year and urinates around 1500 liters the amount of water mixed by a person is around 15000 liters. Thus, a person produces about 1550 litres of pathogenic material in a year. He said we can stop this wrong practice by encouraging ecological sanitation. It will lead to vast decline in pollution and will save large quantity of water. Mr. Prakash Kumar also discussed the benefits of human urine. An adult person can produce 7kg NPK in a year, thus one can hardly imagine how much nutrients 100 crore people will produce. We can do this by following ecological sanitation. He said the ultimate aim of ecological sanitation is sanitation, health, nutrition, education, agriculture and energy saving. Mr. Kumar appreciated Stockholm Environment Institute for its contributions in ongoing projects of ecological sanitation in Bihar.

Mr. Vinay Kumar, Secretary, Water Action, West Champaran, explained about the ongoing projects of ecological sanitation in flood prone village 'Gaunha' of West Champaran. He said his organization has selected a village in which 37 families live, to implement the model of ecological sanitation there. The project was started in April 2012, In-depth studies of flood trends in that area was conducted before the start of project. Several community meetings were called to mobilize the people. Local villagers were also consulted about designing of toilets in their homes. Work became easier due to mass mobilization. Mr. Kumar informed so far 21 toilets have been constructed there and construction of 10 more toilets is in progress. Before the construction of toilets, separate urinals for ladies and gents were installed. The urine collected were used in agriculture, this led to increase in production. The village achieved 30-40% more production than earlier by using the collected urine. He expressed satisfaction that people of the village are now using soap to wash their hand and awareness among females regarding menstrual hygiene has also increased. **(Refer Annexure-11)**



Mr. Vinay Kumar,
Secretary, Water Action,
West Champaran



Mr. Kanchan Pathak,
Program Coordinator, Taru
Mitra

Mr. Kanchan Pathak, Program Coordinator, 'Taru Mitra' illustrated unique contributions of his organisation in environment conservation and promotion of ecological sanitation. He said 'Taru Mitra' is a Student's forum for Environment. It has been working since 1988. Its aim is to conserve trees. There were 1400 varieties of trees in North India. Now only 250 varieties have remained. 'Taru Mitra' felt the need to conserve trees. It decided to set up a bio-reserve. Thousands of students worked with great commitment. Their dream came true and a lush green was created and inaugurated in 2000. Now 450 varieties of trees with its mother nursery are there. 'Taru Mitra' has also set up Eco-friendly huts named after six seasons of India. Water are not wasted here, it is recycled in *Jal Mandir*. Mr. Pathak expressed deep



concern on disposal of entire sewerage of Patna into the holy river Ganga. He said, this dirty practice has severely polluted the river Ganga. 'Taru Mitra' doesn't let even a single drop of water to fall in Ganga. It has developed its own waste water recycling mechanism. 'Taru Mitra' has also developed tree house and a special hall, the roof of which is made up of paper. Discussing on rapid urbanization Mr. Pathak said over the next 25 years 90% of the world's population growth will be absorbed by the urban areas. It will result in massive production of pathogenic materials and huge waste of water. The only solution to this problem is ecological sanitation, which is an approach to sanitation that saves water, does not pollute and returns the nutrients in human excreta to the soil. It avoids mixing of water in feces and urine. Feces and Urine are used as fertilizer after decomposition. 'Taru Mitra' has started experimenting with Organic Farming from 2011. It has disseminated the message of ecological sanitation among 10000 visitors and participants in Bio- reserve. 4527 people have participated in 32 seminars and workshop during the last five months and programme covered in Delhi, Kerala, Orissa, Rajasthan, Bangalore, Bhopal and Patna. 'Taru Mitra' has introduced the issue of Eco-san in these seminars and workshops and people appreciated everywhere **(Refer Annexure-12)**

Mr. Sanjeev Kumar of SABRI informed about urine harvesting in Nalanda. He said it is the project of Stockholm Environment Institute and WASH, in which human urine are collected in tanks of the capacity of 500 liters installed within waterless and odourless urinals. After 30 days the collected urine are used as fertilizer. So far, use of human urine as fertilizers has been experimented on the vegetables like lady finger, green cabbage, cauliflower, tomato, papaya and banana. Baring cauliflower all other vegetables yield good result. Mr. Kumar expressed happiness that the society is also taking urine harvesting positively. Through his presentation he also showed comparative results of urine application and application of chemical fertilizers. **(Refer Annexure-13).**



**Mr. Sanjeev Kumar,
SABRI**

Mr. Vijay Kumar Srivastava, Executive Engineer, PHED, Nalanda, shared his experience of ecological sanitation. He said, we are very fortunate to have the use of old technology of ecological sanitation. These are not new, only approach and applications are being done with new technology. He said in urban areas the community sanitation complexes are mostly ill-maintained. Though this process has been outsourced in tourist places but conditions there also are more or less the same. Eco-san is providing us odourless, waterless toilets and is also conserving water, what more we want? Special equipment are available which reduce the fecal matter to just 50%, which we can use to produce compost. He said in Bangkok 80% of the feces are treated and used as fertilizer. Mr. Srivastava also briefed about the projects running in the villages of Bihar.



Mr. Manoj Kr Choudhary, Executive Engineer, Khagaria, Bihar said Nepal Tola and Railway Tola of Khagaria District has been selected for the construction of eco-san toilets. Survey were conducted in 153 houses for this purpose. So far, eco-san toilets has been constructed in 40 houses of which 36 are in use. He suggested to make the lid of eco-san toilets more convenient and said that it should be of light weight made up of plastic.

State Presentations

The last session of the two-day national workshop on "Sustainable Sanitation with special focus on Ecological Sanitation" was State presentation session. Officials from Bihar, Odisha and Jharkhand illustrated about the initiatives taken and best practices adopted for promoting sustainable sanitation in their states. Mr. S. Jawaid, Director, PMU, PHED, Govt of Bihar was the representative of Bihar, Er. Seemanchala Das, SE, Koraput, Govt of Orissa was from Odisha, whereas Mr. Rajendra Prasad, Deputy Director, PMU, SWSM, Govt of Jharkhand was there to represent Jharkhand. The Chairperson was Mr. Sanjay Dubey, PHED, Darbhanga, Govt of Bihar, the co-chairperson was Mr. Dharendra Prasad, PHED, Supaul, Govt of Bihar. Ms. Kaushiki Kaushal, Lady Sri Ram College, New Delhi was the focal person.

Starting the session, the chairperson **Mr. Sanjay Dubey** pointed out about diverse climatic conditions of north and south Bihar. He said the parts of south Bihar, which shares border with Jharkhand have transitional soil where leach pit model can be successful, but the same can't be used in flood prone areas of North Bihar where soil is alluvial. In rainy season and flood times, when there will be water logging in these areas, the organic decomposition of faeces will not be possible using leach pit technology. Similar condition prevail in Odisha and some parts of Uttar Pradesh. Therefore, need is to develop some another technology according to the requirements of these areas.



**Mr. S. Jawaid, Director,
PMU, PHED, Govt of
Bihar**

Mr. S. Jawaid, Director, PMU, PHED, Govt of Bihar, gave presentation on initiatives taken and best practices adopted for promoting sustainable sanitation in Bihar. He said the 'Nirmal Bharat Abhiyan' now also include certain categories of APLs. People of Arwal, Aurangabad, Gaya, Jamui, Jehanabad, Kaimur, Munger, Nawada, Paschim Champaran, Rohtas and Sitamarhi, which are IAP districts would get higher incentives for building toilets. The government is giving financial assistance to each Gram Panchayats for management of solid and liquid waste. Illustrating the component wise progress in Bihar, he said total achievement in IHHL is 41.39%, school toilet achievement is quite satisfactory, it is 89.42%, 48.29% of Anganbadi complexes are now having toilets, whereas achievement in sanitary



complex is 41.91%. Banka, Vaishali, Madhubani, West Champaran and Muzaffarpur are the top five districts in terms of IHHL progress. Araria, Banka Bhagalpur, Bhojpur, Buxar, Gopalganj, Jamui, Kaimur, Sasaram, Sheohar, Siwan and Supaul are the districts which have achieved 100% in school toilets. There has also been significant achievement in the construction of toilets in Anganbadi centers in the state with the districts like Bhojpur, Buxar, Kishanganj, Samastipur, Sasaram, Sheohar and Supaul districts having 100% achievement. Some Anganbadi centers are running in private buildings where the construction of toilets is difficult, whereas some centers have no space to construct toilets. The government is working out to overcome this problem. Mr. Jawaid suggested to open more sanitary marts, so that people may conveniently purchase all items of toilet construction within one roof (**Refer Annexure- 14**).

Mr. Seemanchala Das, SE, Koraput, Govt of Orissa demonstrated about the initiatives and practice followed in Odisha for promoting sustainable sanitation. He said Odisha has 56% achievement in household toilets. The sanitation coverage in schools and Anganbadis is around 99%. The government is providing sanitation boats to the tribal. He also presented a case study of Bandaaguda Village of Koraput District, which has made remarkable achievement in community laid total sanitation (CLTS). This village is situated 25 KM away from Semiliguda Block & at foothills of Deomali hill. It has total population of 231 with 31 BPL household 14 APL households and 45 ST households of Kandh tribes. Water sources in this village include a Sanitary well & a Tara pump. Not a single household had toilet till the year 2010, the villagers used to go outside for defecation. According to the TSC norm, only 31 BPL families were eligible to get incentive. With the initiatives of the administration and the villagers now the village has set up an example. No one goes open defecation in the area. (**Refer Annexure- 15**).



Er. Seemanchala Das,
SE, Koraput, Govt of
Orissa



Mr. Rajendra Prasad,
Deputy Director, PMU,
SWSM, Govt of
Jharkhand

Mr. Rajendra Prasad, Deputy Director, PMU, SWSM, Govt of Jharkhand laid focus on 'Nirmal Bharat Abhiyan' in Jharkhand. Mr. Prasad presented the statistical figures of achievement in sanitation in the state. He specially mentioned the achievement of Gadri village where the government used revolving fund to construct toilets. Within one and half month toilet was constructed in entire village. Incentives were also provided after construction. He said we can use revolving funds to construct toilets and to make our areas free from open defecation (**Refer Annexure- 16**).



Open House Questions

The uniqueness of the two- day national work shop was the presence element of interactivity throughout the workshop. The presentations and exchange of information aroused curiosity in the audience. Plenty of useful and relevant questions came from their side. The experts present in the workshop answered all the questions. Some of the questions asked are as under:

- Q. What are the criteria of Nirmal Gram Award?
- Q. How urine fertilizer is impacting on soil fertility (any detrimental effect?)
- Q. How will u promote UDDT toilet behavior among people?
- Q. Meaning of 'permaculture'?
- Q. Is there any side/after effects of using urine on agricultural tracts?
- Q. Specifically to Mr. Javed as compared to India, what is the situation in Bihar in sanitation?



Participants asking questions from experts.

Recommendations

The deliberations, presentations, discussions and suggestions in the 2-day session came out with many implementable ideas. The government officials from Uttar Pradesh, Bihar, Jharkhand & Odisha found these ideas worth enough to include in recommendations. The chairman of the State Presentation session Mr. Sanjay Dubey, PHED, Darbhanga, Govt of Bihar, informed about those recommendations. **(Refer Annexure-1).**

Wrap Up



At the end of the session the chairman **Mr. Sanjay Dubey** said we concentrate more on drinking water than sanitation. Sanitation issues should also be addressed with top priority. For this strong political will and commitment is required. Construction of toilets should be linked with behavior of people. He suggested for more two way communication than media advertisement, so as to directly connect people with sanitation campaigns. He stressed on the need of massive advocacy to expedite sanitation work and to do mapping of behavioural change. He said Pilot models should be developed to find an effective and innovative way for solid and liquid waste management. He also called for post-implementation follow ups of sanitation programmes.

Vote of Thanks

Offering sincere thanks to the officials of the experts, presenters and participants, **Mr. M.S. Jawaid, Director PMU, PHED, Govt of Bihar**, expressed his happiness over the response that emerged during the workshop. He expressed his hope that this workshop will significantly contribute in development of innovative and more actionable and people oriented plan on sanitation which would be administratively convenient, financially feasible, socially acceptable and politically desirable.



Annexure-1

National Workshop on Sustainable Sanitation with special focus on Ecological Sanitation, 28 – 29 June, 2013, Patna, Bihar.

Summary of recommendations of the workshop

- ❖ Sanitation to be treated as priority. Political will & commitment for promoting sanitation, systematic planning to address 'Total sanitation' instead of a mere 'toilet construction' approach
- ❖ Specific communication strategy to be prepared and rolled out. Massive advocacy/ sensitization at all levels with all stakeholders to be carried out.
- ❖ Interpersonal communication and BCC to be rigorously focused as compared to conventional IEC.
- ❖ Mapping behavioural change in terms of sustained sanitation as compared to toilet construction/ Nirmal Grams.
- ❖ Capacity building of the stakeholders involved - Government, beneficiaries other associated agencies like banks and credit institutions.
- ❖ Immediate supply chain mechanism for the beneficiaries.
- ❖ Ensuring production/ supply of material, especially rural pan, pipes, cement, skilled manpower for quality construction.
- ❖ Integrated effort at the field level in terms of implementation, concurrent monitoring, and impact evaluation.
- ❖ Providing incentives/ subsidies on equitable basis - depending on the geographical locations like hilly/ flood prone areas.
- ❖ Focused IEC for targeting school children. Child-friendly toilets design to promote children as Sanitation ambassadors, from school to home and to the community at large.
- ❖ Post-implementation and follow up for the components of sanitation, especially for common interest services, solid & liquid waste management technologies.
- ❖ Comprehensive research in terms of back-end design.
- ❖ Integrating disaster preparedness and management for sustained sanitation.
- ❖ Support community incentives monetary as well as non-monetary. Government departments to incentives sanitised villages with better infrastructure and amenities.
- ❖ Development of entrepreneurship for boosting sanitation as a business.
- ❖ Massive scope in terms of promoting BCC, information dissemination, capacity building, ensuring implementation and quality control, post implementation support and research to evaluate outcomes.
- ❖ The community shall be given the option of design, desirable and affordable to them; Incentives to toilets released irrespective of the type or model of the sanitary pans fixed.
- ❖ BCC on Sanitation should be integrated in NRHM and also in Nutrition



- ❖ VHNC has been formed and functional in some states and VHND is also celebrated therefore a circular has to be issued for the formation of VHNC in all states and Sanitation should be integrated as one of the components in VHND.
- ❖ Clarity about Ecosan toilet is missing in TSC program, so a circular should be made regarding this
- ❖ Revised framework should be done including Ecosan toilets and be sent to different regions depending upon the water level(High water level & Low water level) and coastal region.
- ❖ In Bihar, from 1st April 2013, the incentive for constructing the toilet is directly transferred to the beneficiaries in his/her account. Hence it should be replicated across country. Also the incentives can be sent through Panchayat and it can be replicated across country.



Annexure-2

Initiatives taken by Government of India for promoting sustainable environmental sanitation in rural areas.

Financial support for IHHL under the NBA.

- Incentive provided under the scheme is extended to all Below Poverty Line (BPL) households and Above Poverty Line (APL) households restricted to SCs/STs, small and marginal farmers, landless labourers with homestead, physically handicapped and women headed households.
- The incentive amount to BPL household/identified APLs for construction of one unit of IHHL is Rs.4600.00 (Rs.5100.00 for difficult and hilly areas). The central share out of this is Rs.3200.00 (Rs.3700.00 in case of hilly and difficult areas) and State Government share is Rs.1400.00. Minimum beneficiary share is Rs.900.00 in cash or labour. In addition there is financial support of Rs 4500 from MGNREGS for BPLs

Financial support for Anganwadi Toilets

- Unit cost of a toilet is up to Rs.8,000 (Rs.10,000 in case of hilly and difficult areas) for each Anganwadi in the rural areas. Financial assistance is given by Government of India up to Rs.5,600 (Rs.7,000 in case of hilly and difficult areas).

Support for School Toilets

- The Central assistance per unit is restricted to 70% for a unit cost of Rs.35,000/- (Rs.38,500 in case of hilly and difficult areas). Funding for School Sanitation in a NBA Project is provided by the Central and State Government in the ratio of 70:30.

Community Sanitary Complexes

- Maximum unit cost prescribed for a community sanitary complex is up to Rs.2lakh. Sharing pattern amongst Central Government, State Government and the community is in the ratio of 60:30:10.

Rural Sanitary Marts and Production Centers

- Interest free loan up to Rs.3.5lakh can be given for establishing RSM/PC from revolving fund available with the district. A maximum of up to Rs.35Lakh from the Revolving Fund can be utilized for this purpose.

Sustainable Management of liquid and solid wastes under NBA

- Under the NBA there is centrally sponsored scheme for solid and liquid waste management in rural areas.
- Total assistance under NBA for SLWM projects varies with no. of households in GPs
- It is maximum of Rs.7 lakh for a GP having up to 150 HH,



- Rs.12 lakh up to 300 HH,
- Rs.15 lakh up to 500 HH and
- Rs.20 lakh for GPs having more than 500 households.
- Funding is provided by the Central and State Government in the ratio of 70:30. Any additional cost requirement is to be met with funds from the State/GP.
- Besides, there is provision of financial support from MGNREGA for some of the technologies for SLWM having durable assets.

Activities under MGNREGA for SLWM include solid and liquid waste management.

Liquid Waste Management consists of

- Construction of low cost drainage,
- (ii) Construction of soakage channels/ pits, reuse of waste water,
- (iii) Construction of stabilization ponds.
-

Solid Waste Management consists of

- Construction of Compost pits/common compost pits,
- System for collection, transportation, segregation and composting and disposal of household garbage.

A typical SLWM project for a population of 1000 people comes to Rs.5 lakhs. The labour: material cost ratio is 35:65.

- For Soak Pit-Rs.2000 with labour: material ratio of 50:50.
- For NADEP Composting -Rs. 8000 per compost unit with labour: material ratio of 25:75.
- For vermi composting -Rs. 9000, with a labour : material ratio of 25:75.



Annexure-3

The 3SI project plans to construct 490K toilets in rural areas of 8 innovation districts over the coming 4 years, accounting for nearly half of projected NBA targets over 2013-17.

Piloting & Scaling Up Business Models

Pilots of developed business models in 3-4 districts (early year 2)

- Detailed monitoring and evaluation of pilots, to conduct early on-road repairs and identify most sustainable models
- Development of demand creation strategy, based on pilot experience and consumer insights
- Scale up of most successful and appropriate business models, including:
- Entrepreneur selection and incubation
- Demand creation activities such as interpersonal communication, community mobilization, roadshows, etc.
- Continuous monitoring, to ensure quality

Customer Behavior | Key Lessons from Phase 1

- Demand exists, driven by privacy, safety, social status and convenience, and not perceived health benefits.
- Toilet construction ranks low in the hierarchy of needs, and decreases with customer's affluence (as represented by the socio-economic classification).
- Affordability is the key barrier to adoption for a majority of rural households (92%-94%).
- Financing can help surmount this barrier, for 10%-12% of households, financing also acts as a decision driver among households that can afford toilets.
- An additional 40%-45% of households will likely need subsidy, in addition to financing, to adopt toilets.
- Even with subsidy and financing 35%-40% of the households will not be able to afford a toilet.
- Customers desire quality products that provide a sense of permanence (i.e. 10-15 year pit life, sturdy superstructure) and are affordable (INR 7,000-10,000); however, lack of choice of quality products in this price range.
- Current high-quality solutions very expensive; low-cost solutions generally of poor quality –i.e. 'poor solutions for poor people'.
- Customers tradeoff price over convenience, in purchase–i.e. usually unwilling to pay higher price for greater convenience; however, prestige is more important than price – would prefer to hire a pit cleaner to empty pits instead of handling fecal sludge themselves.
- CWEs are usually the final decision-makers on toilet purchase; however, women are key influencers.
- Other family members, friends and village masons also act as sources of information



Value Chain | Key Lessons from Phase 1

- input materials available at local level, except in some flood-prone areas distant from district centers –retailers of cement, bricks, sanitary hardware, and other input materials usually present in every village /panchayat
- However, lack of standardization of product design, product quality, inputs and costs a key issue
- Current input material providers unwilling to provide complete (i.e. turnkey) sanitation solution.
- Product providers unwilling to extend into providing services –requires major change in mindset
- Additionally, sanitation forms a small percentage of overall business revenues / profits for most value chain players
- Many cement ring manufacturers (CRMs) willing to be solution providers; however, not very prevalent in Bihar
- Moreover, usually clustered in specific geographies, mainly where the TSC program supported cement rings before their use was discontinued in 2007-08
- Need for bridge financing for toilet purchase going forward, as subsidy given only post toilet construction under NBA
- However, low presence of institutions for customer financing in rural Bihar
- Lack of financing accentuated by low interest of existing financiers (MFIs, SHGs, banks) in sanitation.
- Many value chain actors face working capital constraints in scaling; find it difficult to obtain financing.

WAY FORWARD FOR SUSTAINABILITY

Focus on outcomes–since 2003 when the NGP program was established, the focus has been on achieving open defecation free communities;

- This outcome orientation recognizes that what matters is not whether people have access to a latrine but whether they actually use it on a consistent and sustained basis.
- That is, successful rural sanitation is fundamentally a demand-led process that involves catalyzing and sustaining community-wide behavior change.
- If this doesn't work, the hardware won't actually be used and maintained.
- In turn, this has important implications for how and when subsidies should be applied.
- The importance of incentives to achieving the desired sanitation outcomes.



- As the saying goes, 'you get what you pay for' ... and if you pay for latrines, you often get latrines ... but you don't know if they are used and maintained.
- Whereas if you pay for achieving open defecation free status *based on reliable reporting*, then you're much more likely to get what you want.



Annexure-4

Community Led Total Sanitation –CLTS. Principles & Practice.

Base of CLTS Programme-

- Stress on cleanliness for making open defecation free community.
- Collective decision by community.
- Behaviour change.
- Stability.

Principles of CLTS

- To create awareness among communities for behaviour change.
- To make available technical alternatives according to the need of community and local conditions.
- To promote community level initiatives.
- To motivate private suppliers to meet the demands of sanitation items and services.
- Pivotal role of communities and Panchayats in implementation.

Triggering agents for Behavioural Change

- Privacy
- Convenience
- Dignity/shame
- Peer group pressure
- Fear Economic reason
- Demonstration
- Health Reward/Incentive

Trigger tools

- Establishing relations with communities.
- Visits within communities for assessing behaviour.
- Pictorial representation of sanitary conditions of the village.
- Measurement of faecal output of village.
- To highlight the reasons due to which faeces returns back in food and water due to open defecation.
- To compute the expense which can be incurred in water borne diseases due to open defecation.
- Examination of water samples to know the level of contamination.

Issues to be considered for CLTS



- Proper training
- Village level trainings to volunteers
- Village level triggering
- Constitution of community level committees and its training
- Cooperation at village level in toilet construction
- Completion of projects within suitable time.



Annexure-5

Theatre based methodology on participatory communication for hygiene promotion in rural India.

Methodology at a glance:

- Rapid appraisal study;
- Project Initiation;
- Developing Script and Theatre Productions;
- Pretesting before campaign;
- Interactive Street Theatre shows;
- Post Show Community Meetings
- Workshop with PRI and other stakeholders;
- VWSC formation workshops;
- Workshop with Community
- Workshop with Community / PHED;
- Mobilizing school children;
- Monitoring Visits;
- Final Block and District Level Consultations;
- Evaluation Indicators.



Annexure-6

Sanitation in Schools and Anganbadis

NIRMAL VIDYALAYA ABHIYAN (NVA) -a change in offering.....

ISSUES

- Low level of knowledge and practice on improved hand washing in schools. A 2009 study on MDM found hand washing with soap before MDM in only 23% of Primary Schools.
- Hygiene education under TSC has been limited. Toilet coverage in schools and AWCs was only prioritized.
- Low child participation in use and maintenance of WASH facilities. Though the infrastructure was available, access was often denied.
- Limited convergence between Education and P&RDD to trigger WASH in School under SSA/TSC.
- Curriculum and text books did not address WASH issues adequately.
- Low priority amongst the policy makers to mainstream WinS.

NVA- A PARADIGM SHIFT

- Observance of International Hand Washing Day in 2009 and 2010 in collaboration with Education Department.
- 7th April has been announced as School Hygiene Day in 2011 by the GoWB and being observed by all schools under SSA.
- School Hygiene, Child Cabinet & Disaster Management has been included in the In-Service Training of Primary Teachers under SSA.
- Week long School Hygiene Drive launched in 2012 to raise the profile of School Hygiene Day.
- More than 11% Upper Primary Schools have been provided with Incinerator under SSA for safe disposal of sanitary napkin.
- The concept of child cabinet to ensure meaningful participation of children in improving the school environment has been up-scaled and separate allocation under SSA (Gender) made for empowering the child cabinet.
- Nirmal-O-Sishumitra Vidyalaya Puraskar was launched in 2011 and rolled out in 2012 under SSA to recognize the good practices.
- GoWB has decided to upscale the initiatives in Upper Primary Schools and launched Jamini Roy Puraskar for High Schools.
- Training of Upper Primary teachers on school hygiene and Menstrual Hygiene Education & Management included in SSA agenda with strategy for child participation.
- The School Education Department has decided to include WASH elements adequately in the text books at both Primary and Upper Primary levels.



- Dedicated resource has been allocated for Nirmal Vidyalaya Abhiyan under SSA Budget 2013-14 (1.34 crores including state share).
- School Education Department has adopted SLTS as an innovation under NVA.

SCHOOL AWARDS-A STRATEGY

- GoWB has launched the School Awards as an innovative scheme under SSA to recognize the good practices.
- The objective is to trigger a competition amongst schools in achieving and sustaining the child friendly norms & standards.
- Nirmal-Sishumitra-Jamini Roy Awards have organically linked WASH, Education and Aesthetics that are important to ensure enabling learning environment.
- One Primary and One Upper Primary/High Schools of each circle may receive the NirmalVidyalayaPuraskar.
- Two Primary and One Upper Primary/High School of each educational district may receive the Sishumitra Vidyalaya Puraskar.
- Three High Schools of the state may receive the most prestigious Jamini Roy Puraskar.
- All awards carry cash prizes, trophy and certificate of appreciation.

NORMS & STANDARDS

- Access to gender segregated, clean and functional toilet in the ratio of 1:80 and urinal of 1:20 with disabled friendly facility.
- Toilet linked facility for the safe disposal of sanitary napkin like incinerator in Upper Primary and High Schools.
- Disabled friendly facilities.
- Protected water source within 50 meters of the school campus.
- Water testing report of last 12 months period shows that water is safe. Short term mitigation measure in case of chemical contamination.
- Monitoring of Sanitary Score and Water quality at periodic interval with safety measures
- School campus is protected through boundary wall/bio-fencing.
- System for collection, storage.
- Segregation and recycling of solid waste.
- System for liquid waste disposal and/or recycling.
- Trained functionary involved in hygiene promotion.
- Child cabinet involved in use and maintenance of facilities and monitoring of practice.
- Hygiene components in BaLA elements, text books, communication materials.
- Growth monitoring and referral.
- Health Check-up and de-worming at periodic interval.

- Counseling and sensitization session for good menstrual hygiene practices.



- Kitchen garden and/or plantation with lawns and gardens aesthetically developed
- School safety and O&M Plan
- Community outreach plan to promote home hygiene.

NVA has triggered a competition.

Child cabinet has emerged as a platform of participation.

Sit & Draw competition has brought change in perception, thinking, action & evaluation.

NVA has linked schools with families.



Annexure-7

Solid & Liquid Waste Management

Objectives of waste management in rural areas-

- To protect human health and improve quality of life.
- To reduce environmental pollution and make rural areas clean.
- To promote recycling and reuse of both solid and liquid waste.
- To convert bio waste into energy at village level.
- To generate employment for rural people by offering new opportunities.

Types of waste

Two types of waste water generated:

1. Black water-Waste water from toilets containing fecal matter.
2. Grey water-Waste water from Bathrooms or kitchens.

Techniques of waste management

Root zone treatment system for Grey water.

Salient features of Root zone treatment:

- Require simple construction methods.
- No machinery (pumps, aerators, etc.) and no inputs of energy or chemicals are required for the treatment process.
- In the root zone treatment process no sludge is generated, therefore the sludge handling and disposal problem is restricted only to primary sludge tank.
- This is a unique and remarkable feature of RZTSs. Can handle a large variety of pollutants.
- Does not require skilled personnel for operation and maintenance.
- Very low operation and maintenance costs.
- Can be built to suit both decentralized and centralized sewage treatment systems; in decentralized situations considerable drainage costs may be saved.
- High efficiency in removal of pathogens.
- Allows re-cycling and safe re-use of waste water.
- Capital costs are comparable to other similar wastewater treatment systems.
- Long life span of systems.



Advantages of Root Zone Treatment

- Natural system- Resembles a garden, attracts birds and butterflies.
- Easy to operate-does not need skilled operators.
- No additions of chemicals.
- Robust process with stands shock loads and no sludge production.

Treatment of Black water in Septic tank

- Septic tank is used to treat the waste water i.e., sewage generated from the toilet of houses/institutions, hotels, camps, industries etc.
- Septic tank should be rectangle in shape, resistant and watertight.
- Construction of septic tanks should be such that direct currents are not established between inlet and outlet.
- Using submerged pipe tees, by baffle walls near the inlet and outlet ends & partitions
- The level of outlet is about 15 cm lower than the inlet.
- Septic tank should be properly ventilated.
- Volume of the septic tank is deciding quality of flow and detention period.
- Period varies 2½ days to 3days; ratio length to width is about 2to4.

Advantages

- Performance of properly constructed and operated septic tank is very good
- It can remove about 90% of BOD and about 80% of SS
- The sludge removal may be carried out will be once in a 4-5 years.

Main Source of Solid Waste:

- House hold waste
- Commercials
- Street sweeping



- Hotels and restaurants
- Clinics and dispensaries
- Construction and demolition
- Horticulture
- Sludge

Management of house hold solid waste:

Sorting out or segregation at household level

Keeping bio-degradable and non-bio-degradable waste in separate color bins.

The following technologies and reuse the treated products:

- Composting
- Vermi composting
- Biogas plant

Composting:

- Composting is carried out in two ways:
- Aerobically (in presence of Oxygen)
- Anaerobically (in absence of Oxygen)
- Compost pit can be underground unlined compost pit or over ground compost-heap method or over ground brick line compost pit.

Use and maintenance of Pit

- Go on adding garbage from the house over the layer of bricks (only biodegradable type).
- When the garbage attains a height of about 150mm, add dung slurry, mix it with garbage & level it.
- Spread a very thin layer of soil over it (once a week) to avoid odour & fly nuisance.
- Continue to add garbage every day.
- Follow the above procedure & repeat the layers till the pit is full. It is recommended to fill the pit up to about 300mm above ground level.
- After 3-4 days the garbage above ground settles down.
- Plaster it with soil.
- Leave the pit as it is for 3-6 months for maturation.
- After 3-6 months take out the compost & use it in the fields, till the manure in the pit matures, use another pit of the same dimensions, dug at a minimum distance of 1m from the first pit.



Vermi Composting

Vermi-composting involves the stabilization of organic solid waste through earthworm consumption which converts the material into casting.

Bio Gas

Bio-degradable organic solid waste is subjected to anaerobic decomposition, a gaseous mixture of Methane and Carbon-dioxide, known as BIOGAS could be produced under favorable conditions.

Biogas: It is a marsh gas, a mixture of Methane (55-65%), CO₂ (35-45%), trace amount of Hydrogen, H₂S & Ammonia.

Used for heating, lighting, powering pump, generating electric power, and for local use for cooking purpose.

The gas is smokeless, Environment friendly & fuel Efficient.

It is a combustible gas.



Annexure-8

Menstrual Hygiene Management.

The Challenge-

Menstruation for girls brings:

- Restrictions & rules.
- Confinement.
- Changed expectations.
- Lack of safe, dignified practices to manage menstruation.
- Create silence around this important life cycle change.
- Restrictions in self-expression, schooling, mobility, freedom and space.

Need for Menstrual Hygiene Management

- Menstrual hygiene management is absent or had been of low focus from programmes for water and sanitation and hygiene promotion.
- It is not incorporated into infrastructure design or policies for toilets and environmental waste disposal.
- Hygiene programmes 'teach' girls and women how to be hygienic without explicitly providing materials, spaces, water and washing agents that cater to menstruation.

Three pronged approach for MHM:

Adolescent girls and women require to manage their menstrual needs in terms of-

- Materials
- Education
- Facilities for management and disposal

Safe Material for MHM:

- Out of India's 355 million menstruating women only 12% use sanitary napkins (SNs).
- The remaining 88% women resort to alternatives like unsanitized cloth, ashes and husks and.
- About 68% rural women cannot afford sanitary napkins available in the market.
- Poor demand for sanitary napkins discourages rural vendors from maintaining stock of napkins.
- After attaining menarche girl students are reluctant to attend school during menstruation resulting in 50 days of absenteeism from school, due to lack of facilities at school.

Menstrual Hygiene Programme:

- To address the problem Govt. of India launched Menstrual Hygiene Programme in June 2010 in 150 districts.
- The Govt. of India supply low cost Sanitary Napkins for adolescent girls



- Each pack of napkin to be sold at Rs.5 by ANM to ASHA.
- ASHA to sell each pack to Adolescent girls @ Rs6.
- Rs.50 as incentive for ASHA for conducting education session on monthly basis.

Bihar Update-Till May2013-(Cumulative data)

- 9 Districts are covered.
- 9,812,093 Adolescent Girls are reached
- 3,398,644 Sanitary Napkin Packets are sold.
- 3,650,784 Adolescent girls participated in Monthly meetings.

Menstrual Hygiene Education

- To create awareness among adolescent girls about safe Menstrual Hygiene practices ASHA conducts monthly meeting.
- These meetings provide a platform to adolescent girls to discuss the taboo issues openly.

But

- These issues are discussed with adolescent girls only, which make them aware about hygiene but do not create suitable environment for seeking and maintaining Menstrual Hygiene.

Facilities for Management

In order for women and girls to live healthy, productive and dignified lives, it is essential that they have-

- Access to appropriate clean water for washing clothes used to absorb menstrual blood and having a place to dry them.
- Somewhere private to change clothes or disposable sanitary pads, preferably separate Toilets.
- Facilities for proper disposal of used materials to manage this biological function with safety and dignity.

Facility Design

- The female toilet should have a small platform for washing soiled clothes.
- Availability of water for washing and cleaning.
- If possible then space for drying the washed clothes.
- A dustbin/closed bucket for putting used Sanitary napkins, which can be later buried with rest of the garbage.



Annexure-9

Nirmal Gram Panchayats: Impact evaluations.

The Nirmal Gram Puraskar

An Annual Award given to PRIs on achieving.

- All household having access to toilet with full use and no open defecation.
- All schools having access to sanitation facilities and put to use; separate toilet for girls and boys in co-ed schools.
- All Anganwadis having access to sanitation facilities, and.
- General cleanliness of the settlement.
- Launched in 2003-04, with first year of award being 2005.
- Till 2011, 28,002 GPs, 181BPs and 13ZPs awarded.

The Impact Evaluations of NGP awarded GPs

To assess whether the principles, quality and spirit of the NGP are maintained during its scale up

- Two large scale Impact Evaluation studies.
- In 2008 by TARU (6States; 162GPs).
- In 2011 by CMS (12States; 664GPs).
- Various state specific studies.
- Water Aid in some states.
- TARU in Bihar.
- And others

Key Issues and Challenges

- Very few GPs fulfill NGP norms.
- About 14% -18% gap in access and use of toilets.
- Mostly poorest of the poor getting left out.
- Location disadvantage.
- Ability to access subsidy.
- Poor monitoring and verification process.
- High slippage.
- Poor installation.
- Lack of proper information.
- Design options; cost factor and subsidies; cleanliness and maintenance; role of different stakeholders.
- Issues concerning behavior change.



- Fear of pit getting filled; lack of awareness and peer pressure.
- Weak supply chain (materials, design, information etc.) for toilet installations affecting sustainability.
- High correlation between social mobilization and open defecation free households.
- Major drop in social mobilization activities post NGP award.
- Poor social mobilization in some states.
- In some states limited involvement of PRI bodies, NGOs, CBOs, and community.
- Some states use NGOs as contractors for construction of toilets alone rather than involving in social mobilization.
- Not enough focus on solid and liquid waste disposal.

Key Recommendations-

- Strengthen the system of monitoring and verification.
- Ensure quality during installation of toilets.
- Set up mechanism to ensure availability of trained masons for toilet construction.
- Focus on behavior change communication.
- Capacity building of NGOs, CBOs and PRIs to manage their assigned roles in NGP.
- Holistic IEC plan and demonstration of model toilets at important locations.
- Improve the supply chain of sanitation services (quality material, cost effective, locally available etc).
- A staggered achievement scale (and hence a staggered award system) may be designed to acknowledge the efforts.
- ☑Continue social mobilization and communication activities -beyond receipt of the NGP award -to ensure sustainability.
- ☑Continue monitoring -open defecation free status, use of household toilets, hygiene behaviors—and follow-up after NGP award.



Annexure-10

RS & GIS APPLICATIONS IN WATSAN SECTOR

GIS (GEOGRAPHIC INFORMATION SYSTEM)

GIS-Computer based System designed to store, manipulate, analyze, and manage all types of geographical data.

Applicable areas of GIS

Resource Inventory	Land Management	Network Analysis
Incident Mapping	Spatial Measurement	Corridor Selection
Transportation Modelling	Logistics Routing	Resource Exploration
Facility management	Geo-Processing Modelling	Spread & Diffusion
Contour Mapping	Topographic Analysis	Demographic Analysis
Engineering Design	Site Selection	Watershed Analysis

REMOTE SENSING (RS)

RS is the acquisition of information about an object without making physical contact with the object. Generally refers to use of aerial **sensor** technologies to detect and classify objects on Earth. e.g. electromagnetic radiation emitted from aircraft or satellites.

EFFICIENT WAY OF USING RS

Remote Sensing, leads to ease of use for various applications.

- Combining with GIS is the best way
- Stores the attribute data.
- Raster data can be analyzed.
- Mapping small area can be done by various data combinations (aerial photos, toposheets, etc.,)

APPLICATIONS OF RS & GIS IN WATSAN.

Surface & Ground water conservation and management.

- Water source identification, recharge site selection, ground water potential assessment.
- Infrastructure Mapping
- Bore Wells / Hand Pumps
- Over Head Tanks, taps
- Community Toilets
- Household Toilets
- Schools, Anganwadi facilities
- Community Waste Recycling sites & Units.



- Optimal Route Identification.
- Watershed and hydrological mapping.
- Water flow analysis, quality monitoring (data) & distribution master planning.
- Pollution studies.
- Water supply systems.
- Drainage design.
- Site selection for community toilets.
- Appropriate sites for the Solid & Water waste disposal.

SOLID & LIQUID WASTE MANAGEMENT

- Remote sensing excellent tool for inventory and **analysis** of environment.
- GIS combines Spatial (maps, aerial photographs, satellite images) and Non-Spatial data with the other quantitative, qualitative and descriptive information databases.
- GIS, not only **reduce time and cost** of the site selection, but also provide a digital Data bank for future **monitoring** of the site.
- GIS is used as the **decision** support tool for **planning** waste management.

ADVANTAGES OF RS & GIS IN WATSAN

- Features can be collected accurately.
- Obtaining accurate measurement.
- Time savings and cost effective.
- Easy information up-dation.
- Spatial data conversion.
- Effective planning, implementing & monitoring.
- Lobby Advocacy.

CONCLUSION

- Remote sensing & GIS are effective tools in all aspects of WATSAN.
- Remote sensing with GIS forms a good data base for analysis and useful for planners & designers.
- GIS & RS, having practical applications in various fields.
- Technology of RS & GIS is getting advancing day-by-day.



Annexure-11

Phaydemand Shauchlaya: A sustainable sanitation alternative for flood prone regions of North Bihar.

- It has been constructed in Poorvi Tola of Rupwaliya Village.
- Before construction of this toilet, design elements discussed, modified and finalized in consultation with individual owners, which facilitated adoption of facility.
- Household based limitations and challenges were respected during implementation, thus the design according to the owners become contextual.
- Children were also involved in the campaign.
- At last the dream came true.
- 21 Phaydemand shauchalyas were built, all are in use.

Lessons learnt

- Innovative process to be adopted to elicit involvement of the children to mobilize mass on safe sanitation.
- Targeting children enhances the pace of realization within community.
- Involvement of children in managing the facilities ensured sustained use.

Positive Effect

- Residents have cohesively prepared a comprehensive village development plan for various works to be undertaken through MANREGA.
- Phaydemand Shauchalaya has been advocated with the district administration with the help of PMRDF to be included in the list of work activities under MANREGA.
- Researchers from the University of Hohenheim, Germany is documenting Phaydemand Shauchalaya as technology option for innovative agricultural practices under SATNET Asia Programme.



Annexure-12

Tarumitra “Friends of Trees” is a Students’ Forum for Environment. It has been working for environment from 1988.

Once North India had over 1400 varieties of trees, of these less than 25 varieties are only available in a locality today. Tarumitra students decided to set up a bio-reserve.

Thousands of Students worked here. Thus a common dream came true. Tarumitra center was inaugurated in 2000.

This center has 450 varieties of trees with its mother nursery.

Green buildings with Solar Utilities in the guidance of Green Architect.

Taru Mitra has a set of Eco-friendly huts named after the seasons.

We recycle our waste water

We have a tree-house too!

We have a special hall also, Roof made of waste paper.

It has ecosan toilet.

Eco-san is an approach to sanitation that saves water, does not pollute and return the nutrients in human excreta to the soil. It avoids the mixing of water in faeces and urine, we use some spoons of ash after each defecation.

Faeces and Urine are used as fertilizer after decomposition. We got irrigated the field with urine mixed with water.

We started experimenting with Organic Farming from 2011.

Over 11 National and State level print media have covered 10 major events during last five months. Also 2 events were telecasted by the visual media.

The message of Ecological Sanitation is spreaded among 10000 visitors and participants in Bio-Reserve.

4527 people participated in 32 seminars and workshop during the last five months and programme covered in Delhi, Kerala, Puri, Orissa, Kota, Rajasthan, Bangalore, Bhopal and Patna.

We introduced the issue of Eco-san in these seminars and workshops and people appreciated everywhere.

Our Journey continues.



Annexure-13

Effect of human urine as fertilizer.

- Number of plants grown

Plants Grown	Results of Chemical Fertilizer	Results of Urine Fertilizer
Cauliflower	261	344
Cabbage	255	280
Brinjal	185	145
Chilies	126	171
Tomato	221	126
Papaya	40	50
Banana	40	55
	1208	1171

- Results

		Average length of Fruits (CM)		Avg. Width (CM)		Avg Weight (Kg/gm)	
	Chemical	Urine	Chemical	Urine	Chemical	Urine	
Cauliflower							
Cabbage	18	-	45		1 1/4	-	
Brinjal	18	18	45	45	1 1/4	1 1/4	
Chilies	12	12	24	24	250 gm	250 gm	
Tomato	8	6	3	3	4 gm	4 gm	
Papaya	6	6	13	13	80 gm	80 gm	
Banana	14	12	6	6	12 gm	12 gm	



Annexure-14

Nirmal Bharat Abhiyan (NBA)

- Covers all BPL and identified categories of APL families -
 - Scheduled Caste (SC)
 - Scheduled Tribe (ST)
 - Small/Marginal farmers
 - Landless labourers
 - Physically handicapped
 - Women headed households
- Central Share incentive - Rs 3,200
- Central Share incentive for Integrated Action Plan (IAP) Districts – Rs.3,700
- State Share incentive - Rs 1,400
- Minimum Beneficiary Contribution - Rs 900
- Any family, living in rural areas, who constructs a toilet of their own with a higher cost is also eligible for incentive of Rs. 4,600
- IEC and capacity building cost: 15% of the total NBA outlay
- Administration cost: Lowered from 5% to 4% of the total outlay
- Financial assistance to each GP for solid-liquid waste management ranging from Rs. 7 lakh to Rs 20 lakh (Centre: State/Panchayat – 70:30)
 - Rs.7 lakh for a GP having up to 150 households
 - Rs.12 lakh up to 300 households
 - Rs.15 lakh up to 500 households
 - Rs.20 lakh for GPs having more than 500 households.
- Identification of Gram Panchayats for targeting 'Nirmal Gram Panchayats' (NGPs), based on saturation approach in a phased manner (convergence with NRDWP).
- Gram Panchayats having water supply to be given priority
- Emphasis on toilets with IAY/ State Housing Schemes
- Convergence with MGNREGS, wherever possible with appropriate use of provisions

Component-wise Progress – Bihar

Sr No.	Components	Objective	Achievement in No	Achievement in %age
1	IHHL (BPL)	6195779	3480086	56.17
2	IHHL (APL)	4975535	1143574	22.98
3	IHHL (Total)	11171314	4623660	41.39
4	School Toilet	102268	91448	89.42
5	Anganwadi Toilet	16444	7942	48.29
6	Sanitary Complex	2362	990	41.91
7	Rural Sanitary Mart	364	400	109.89



Issues in IHHL construction

- Emphasis on construction of toilets without IEC activities
- Lack of awareness among beneficiaries
- Lack of information among beneficiaries regarding models of toilet
- Lack of confidence among beneficiaries regarding payment of incentive
- Delay of incentive payment to beneficiaries
- Low usage of toilet
- Non implementation of convergence with MGNREGA
- Incentive to motivators is not in place
- Absence of alternative delivery mechanism
- Village/ Panchayat level volunteers (Swachachata Doots) is not yet institutionalized
- No involvement of ASHA/ AWW/ Vikas Mitra as a sanitation and hygiene promoters
- Inadequate manpower of PHED/no grass root level staff

Issues in School Sanitation

- Providing minimum one toilet unit in 1173 schools, where there is no building (863) or no space (310) to construct a toilet
- Providing additional unit of school toilet in 1860 schools, where there is no space for construction of toilet
- Providing additional toilet in all schools as per the strength of the students
- Maintenance of drinking water source and toilets in schools

Issues in Anganbadi Sanitation

- Maximum number of *Anganwadis* running in private/ rented buildings
- Construction of Child Friendly *Anganwadi* Toilets in *Anganwadi* centres running in private/rented building
- Weak linkage of *Anganwadi* workers with ongoing NBA programme as a facilitator for construction and usage of toilets
- Convergence with Department of Women and Child Development (DWCD)

Convergence with other Government programs

- Provision of convergence for IHHL construction in NBA, with existing programmes of Rural Development Department.
- Modalities for convergence with MGNREGS finalised by BSWSM and RDD. Approval awaited from the Cabinet.
- Incentive of NBA to be transferred to Panchayats for convergence with MGNREGS.



- Under IAY, incentive support to be up-scaled for beneficiaries.
- Incentive for LHHL under BA to be transferred to BDOs for ensuring transfer to IAY beneficiaries.
- Rest (unidentified categories) of APL families to be provided with equal incentive for toilet construction under *Lohiya Swachhata Yojana*.
- Convergence with the Bihar Education Project for construction of toilets in schools.
- Convergence with ICDS for construction of toilets in *anganbadis*.

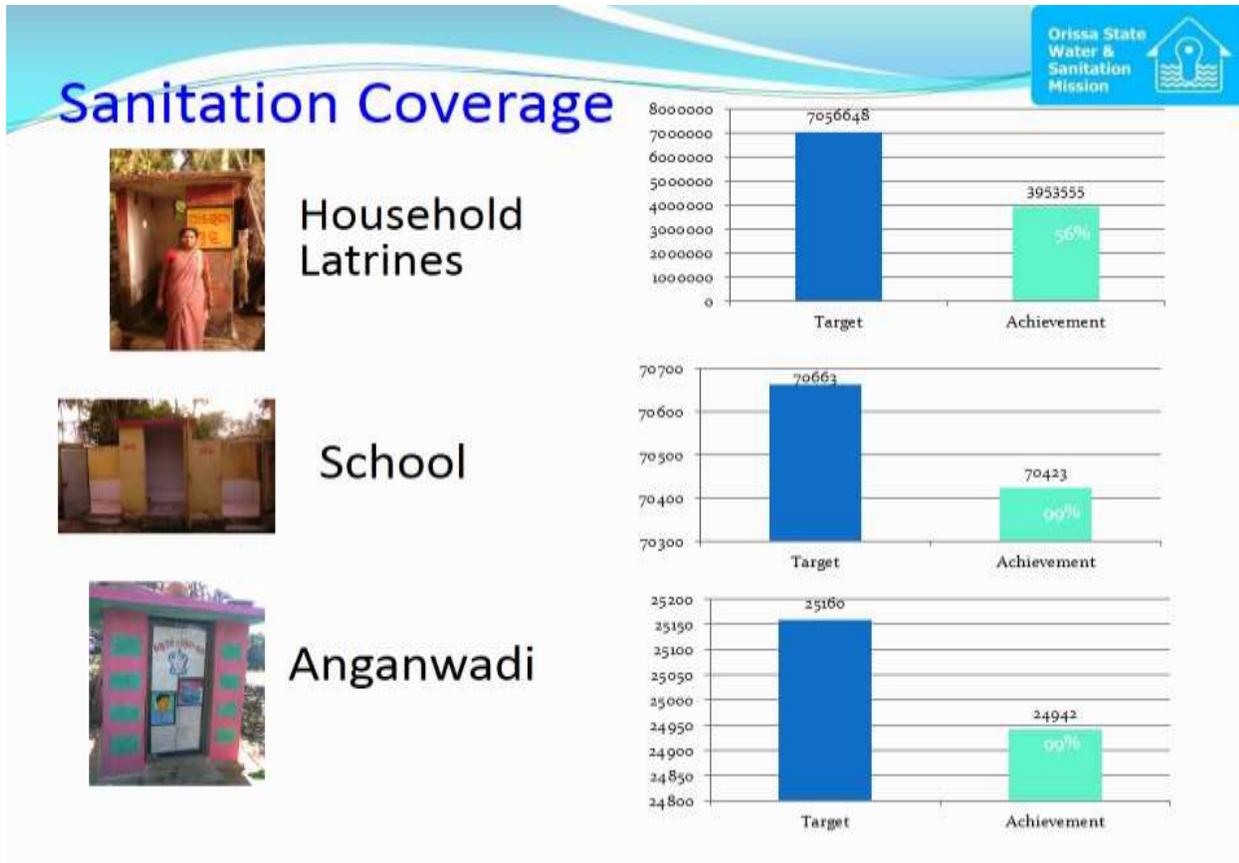
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Annexure-15

Community Led Total Sanitation (Koraput Distict)- (A case study of Bandaguda



Village).

Profile of the Village

- Name of the Gram Panchyat- Khudi
- Name of the Block- Semiliguda
- Name of the Habitation: Bandaguda
- Total Population- 231
- No of Households- 45
- No BPL Household- 31
- No of APL household- 14



- No of ST Households- 45, (all Kandh tribe)
- No of SHG-2, Bandaguda Mahila Mandal & Biraja Mahilamandal
- No of water sources - One Sanitary well & One Tara pump

Main occupation- Cultivation & Labour

- Bandaguda, an interior Kandha tribal village
- Not a single household had toilet till the year 2010
- They used to go outside near to nala for defecation

Intervention by DWSM, Koraput

- District Administration selected 3 GPs in each block for implementation of TSC through B-MASS ((Block Mahila Anchalika Sanchayika Sangha).
- DWSM, Koraput Provided revolving fund worth Rs. 50,000/-to Bandaguda Mahilamandal (SHG) through B-MASS, Semiliguda.
- DWSM provided training to the SHG as well as all technical support for construction of cement bricks.
- Mason trainings organized for construction of IHHL.
- Out of 45 house-holds, only 31 households are BPL & 14 & 14 are APL Families.
- As per the TSC norm, only 31 BPL families were eligible to get incentive @Rs2200/- for construction of toilet.
- Bandaguda Mahila Mandal made a resolution to cover all the HHS out of the incentive amount meant for 31 families.
- It was decided that APL families can avail soft loan from Mahila Mandal for construction of toilet.
- The Mahila Mandal is also established a Grain Bank & extend loans to the needy.

DWSM Triggered the community through community led Total Sanitation (CLTS) approach

- Apart from making Cement bricks, they decided to make CB bricks.
- Collected stone and sand of their own.
- Community provided labour contribution for digging of pit and construction of IHHL.



- DWSM Provided Mason Training for construction of IHHL to the unskilled mason of the same village.
- As per the traditional household pattern, some households do not have backyard for construction of toilet.
- Even if some HHs have no space, they constructed toilet adjacent to the kitchen.
- Series of Toilets constructed for the HHs having no space.
- Over-coming all the challenges, the village become ODF (all HHs have toilet & are using.)
- Though there is no PWS, they collect water from Tara pump/Sanitary well for use in toilet.
- Some HHs have constructed bath rooms along with toilet.
- School toilet constructed & used by children.
- Clean village Environment.

All these efforts made the village a MODEL for others.



Annexure-16

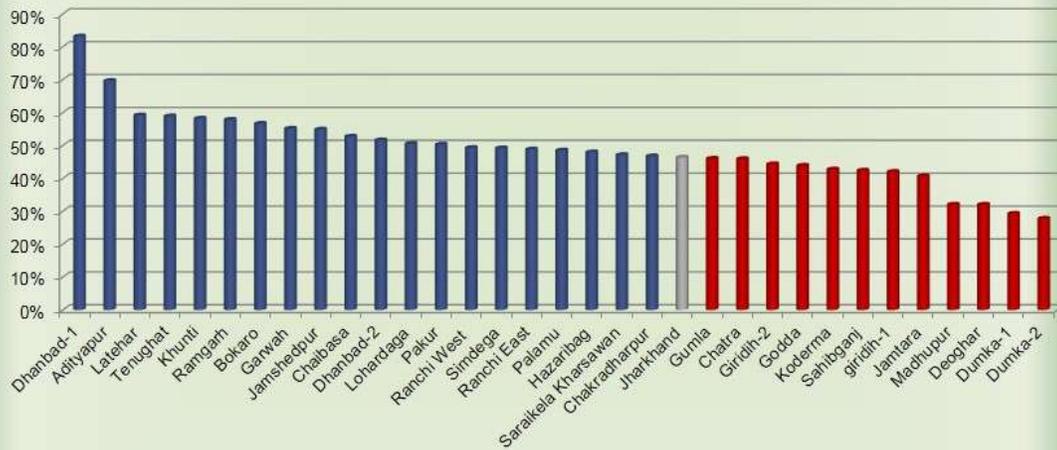
Nirmal Bharat Abhiyan (NBA)																	
Ministry of Drinking Water and Sanitation																	
PHYSICAL PROGRESS REPORT AS PER INFORMATION RECEIVED UPTO 25-06-2013																	
SL. No.	State Name	Project Objectives								Project Performance							
		DDIL BPL	DDIL APL	DDIL TOTAL	San. Comp	School Toilets	Ang. Tns	RSM	PC	DDIL BPL	DDIL APL	DDIL TOTAL	San. Comp	School Toilets	Ang. Tns	RSM	PC
1	BIHAR	1445937	201888	1647025	278	39307	7489	234	516								
Total :-		1445937	201888	1647025	278	39307	7489	234	516								

ग्राम जल एवं स्वच्छता समिति (VWSC) के गठन की अद्यतन स्थिति मई 2013 के अनुसार																	
क्रम	प्रकार	ग्राम जल एवं स्वच्छता समिति (VWSC) के गठन की स्थिति				ग्राम जल एवं स्वच्छता समिति (VWSC) के गठन की स्थिति				x	z1 x 100	z2 x 100	z1 x 100	Average (Dir)	RANK (Dir)	Average (circle)	RANK (circle)
		कुल ग्राम की संख्या	ग्राम जल एवं स्वच्छता समिति (VWSC) के गठन की संख्या	ग्राम जल एवं स्वच्छता समिति (VWSC) के गठन की संख्या	ग्राम जल एवं स्वच्छता समिति (VWSC) के गठन की संख्या	ग्राम जल एवं स्वच्छता समिति (VWSC) के गठन की संख्या	ग्राम जल एवं स्वच्छता समिति (VWSC) के गठन की संख्या	ग्राम जल एवं स्वच्छता समिति (VWSC) के गठन की संख्या	ग्राम जल एवं स्वच्छता समिति (VWSC) के गठन की संख्या								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Medininagar	Palamu	1664	1532	1332	210	17.115	22	58	92.07	86.95	13.71	1.28	48.50	18			
	Garhwa	848	812	812	52	148.85	29	504	95.75	100.00	6.40	18.33	55.12	10	53.04	4th	
	Latehar	734	734	734	269	0	0	0	100.00	100.00	36.65	0.00	55.51	9			
Ranchi	Ranchi East	723	703	674	15	17.03		19	97.23	95.87	2.13	2.52	49.43	17			
	Ranchi West	605	589	585	3	31.39		10	97.36	99.32	0.50	5.36	50.63	16	52.1	5th	
	Khunti	758	726	658	281	48.83	49	489	96.03	90.63	38.71	7.42	58.20	8			
Dumka	Dumka-I	750	482	323	0	0	0	0	64.27	67.01				31			
	Dumka-II	1915	1477	1025	0.00	0	0	0.00	77.13	69.40				32			
	Sahibganj	1286	1040	638	86	113.54	86	430	82.15	61.35	8.27	17.80	42.39	26	37.42	9th	
Hazaribagh	Pakur	1128	1075	809	207	92.23	97	509	95.30	75.26	19.26	11.40	50.30	15			
	Hazaribagh	1207	932	892	89	90.58	78	7928	77.22	95.71	9.55	10.15	48.16	19			
	Chatra	1362	1109	756	100	127.86	190	169	81.35	66.41	17.15	16.91	45.46	23	48.61	7th	
Dhanbad	Ramgarh	355	325	316	102	35.31	52	209	91.55	97.23	31.38	11.17	57.83	8			
	Koderma	595	547	230	100	44.22	95	0	93.34	48.93	18.28	19.23	43.20	25			
	Dhanbad-1	448	441	436	372	222.43	304	195	98.43	98.86	84.35	48.24	79.31	1			
GUMLA	Dhanbad-2	694	518	400	140	110.11		40	74.64	77.22	27.03	27.53	51.60	11			
	Giridih-1	1215	1035	738	88	22	52	147	85.19	71.30	8.50	2.98	41.99	27	55.45	3rd	
	Giridih-2	1323	1080	937	61	30.6	42	119	81.63	86.76	5.65	3.27	44.33	23			
Chaibasa	Bokaro	332	324	318	72	27.37	33	167	97.59	98.15	22.22	8.61	56.64	6			
	Tenukhat	377	241	227	126	57.08	70	0	83.93	94.19	52.29	25.14	58.88	5			
	GUMLA	945	874	720	32	39.59	32	285	92.49	82.38	3.66	5.50	46.01	22			
Jamshedpur	Lohardaga	353	340	288	40	26.85	6	0	96.32	84.71	11.76	9.32	50.53	14	58.59	2nd	
	Simdega	448	448	448	189	354.7	147	902	100.00	100.00	37.72	79.18	79.23	2			
	Chaibasa	787	756	641	227	88.25	353	70	96.06	84.79	30.03	13.77	56.16	12			
Deoghar	Chakardharpur	864	854	473	280	51.75	207	97	98.84	55.38	32.79	10.94	49.49	21	48.86	6th	
	Sarakela Kharsawan	1147	998	823	132	47.62		130	87.01	82.46	13.23	5.79	47.12	20			
	Deoghar	1244	1244	1244	425	55.52	1207	28	100.00	100.00	34.24	4.46	59.68	4			
Jamshedpur	Madhupur	1176	825	480	16	1.47		0	70.15	55.76	1.94	0.32	32.04	29	40.67	8th	
	Godda	1640	555	516	270	291.27	270	0	33.84	92.97	48.85	56.45	57.98	7			
	Jamtara	1071	802	548	135	14.12	85	312	74.88	68.33	16.83	2.59	40.66	28			
Jamshedpur	Jamshedpur	1185	1133	1042	298	58.47	108	0	95.61	91.97	26.30	5.61	54.87	9			
	Adityapur	447	430	415	351	17.5	44	0	96.20	96.51	81.63	4.22	69.64	3	62.25	1st	
		29595	24080	20458	4939	2283.7	3665	12825	2792.56	2683.81	751.80	447.47					



Overview of VWSC (2012-13) VWSC analysis district wise (till March)

Overall district wise performance of VWSC a/c opened, fund transfer and action plan prepared



BRC Structure

- For the Population of 70,000 or less – 1 Block Coordinator & 1 Cluster Coordinator.
- For the Population of 70,000 to 1.5 lakh - 1 Block Coordinator & 2 Cluster Coordinators.
- For the Population of more than 1.5 lakh - 1 Block Coordinator & 3 Cluster Coordinators.

Selection of NGOs

- 16 NGOs were selected.
- Each NGO to cover one – three districts.
- Recruitment of Block Coordinators and Cluster Coordinator has been completed.
- They have been deputed in all districts.

IEC Activities undertaken



- Audio – Visual

State level -

- Live Phone in Programme, telecast by Doordarshan, Ranchi.
- Radio jingals broadcast by Aakashwani, Ranchi.

District level –

- Swachhata Rath and Observance of important dates where messages on sanitation is disseminated.
- Distribution of IEC materials, in form of Programme guidelines, training modules and designs, modules and toilet models.

Village Level –

- Door to door contact with members of VWSC.
- Village meeting and interaction during regular village meetings.
- Involved with PRA exercises by groups or teams.

Sanitation Campaign in Gadri (Ranchi)

Community Meeting to discuss Sanitation Issue.

Community Initiation over toilet construction.

Toilets Constructed – a sense of pride and dignity.

CTLS in Jharkhand - Approach towards an ODF Society

Information Education and Communication is the important start up component of the CLTS Programme. The objective of IEC is to trigger the demand for sanitary facilities in the rural areas for households, schools, Anganwadis and community sanitary complexes.

Triggering of community- Mapping of open defecation areas on the ground showing households, sacred places and water resources of the village. Areas of open defecation are shown with colored powder. Facilitators encourages the people to trace the flow of human excreta from the places of open defecation to water bodies resulting in their contamination

Mapping exercise- Triggering the people to think on the time spent by them to walk far for defecation, the amount of human excreta produced in a unit time period (day, month and year), the medical expenses on diarrhoea, dysentery & water borne diseases due to contamination of water resources by human excreta.



Triggering the women- women always take initiative on the construction and use of latrines as they welcome an idea for privacy, dignity and safety issues related with open defecation. They also take part in maintenance of latrines and sustaining hygienic behaviour change.

Educating the school children- a core component of the programme is IEC among children.

Post triggering effect- Anxious community members discussing among themselves. It is the awareness on faecal-oral contamination that mobilizes them to take decision on sanitation requirement. A positive aspect of this phase is the emergence of natural leaders.

Post triggering effect- Digging of pit for toilet preparation. Pits were prepared and finally toilets construction completed.

Outcome: Sense of dignity and pride.



Workshop At a glance



Lamp Lighting



Release of CD of a film on CLTS



Welcoming the guest



Brainstorming



The Session is going on



The WASH Team





Program Schedule

National workshop on "Sustainable Sanitation with special focus on Ecological Sanitation" June 28-29, 2013, Hotel Patliputra Ashok, Patna, Bihar

DAY-1 28.06.2013, Friday

Plenary Session

From	To	Programme
9:00	10:00	Registration
10:00	10:10	Welcome address: Shri. A.K.Shrivastava, Chief Engineer PHED, Patna, Bihar
10:10	10:15	Lighting of the lamp : Shri Vyas Ji , IAS, Principal Secretary, Health, GoB
10:15	10:25	Objective of the Workshop : Mr. Prakash Kumar, DTL DFID SWASTH
10:25	10:30	Launch of CLTS Film
10:30	10:40	Key note Address - Linking Health with Sanitation : Shri Vyas Ji , IAS, PS, Health, Govt. Of Bihar
10:40	10:50	Initiatives of MDWS for promoting Sustainable Sanitation- Dr. PK Jha, MDWS, GoI, New Delhi
10:50	11:00	The National Sanitation Status- The Progress and Challenges: Mr Arumugam Kalimuthu, Country Director- Water For People
11:00	11:20	Sustainable Sanitation Improvements in Bihar through Supply-side Strengthening : Dr. S. Shankar Narayanan, Director -PSI, Patna
11:20	11:45	Photo Session & Tea Break

Technical Session-1

Components of Sustainable Sanitation

Chairperson: Dr. Prof. C.A.Srinivasanmurthy, Dept. of Soil Science & Agri Chemistry, Bangalore,

Co-chair Person: Mr. Sujeet Ranjan, Director Program Implementation, DFID SWASTH

Focal Person: Mr. Niket Kumar Jha, WASH Institute, Patna

From	To	Programme
11:45	12:05	Household Sanitation & CLTS Approach - Mr. Prabhakar Sinha, SDC Specialist SPMU-RWSSP, Dept. of RD, Govt. of UP.
12:05	12:25	Theatre as a medium for community mobilization for sustainable sanitation : Mr. Amitava Bhattacharya, Founder of Banglanatak.com, Kolkota
12:25	12:45	BCC for Sustaining Advances made in Sanitation : Mr. Sanjeev Kumar, Senior Communication Consultant, New Delhi
12:45	13:05	School and Anganwadi Sanitation : Mr. Palas Sharangi, State Consultant, UNICEF, Kolkota
13:05	13:15	Question and Answers
13:15	13:25	Chairperson's Remarks



13:25	13:45	Lunch Break
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Technical Session-2

Components of Sustainable Sanitation

Chair Person: Dr. Prof. C.A.Srinivasanmurthy, Dept. of Soil Science & Agri Chemistry, Bangalore

Co-Chair person: Mr. Sujeet Ranjan, Director Program Implementation, DFID SWASTH

Focal Person: Mr. Niket Kumar Jha, WASH Institute, Patna

From	To	Programme
14:15	14:35	Solid and Liquid Waste Management :Dr. P. Rajasekar,Environmental Engineer/Principal, Green Tech College of Engineering for Women.TN
14:35	14:55	Menstrual Hygiene Management: Ms. Rupali Tripathi, State Consultant, ARSH, Bihar
14:55	15:15	Model Nirmal Gram Panchayats and impact evaluation : Mr. Ranjan Verma, Development Consultant, New Delhi
15:25	15:35	Question and Answers
15:35	15:45	Chairperson's Remark
15:45	16:00	Tea Break

Technical Session-3

New Ideas and Innovations in Sustainable Sanitation

Chair Person : Dr. P Rajasekar, Environmental Engineer /Principal ,

Green Tech College of Engineering for Women, Tamil Nadu

Co-Chair Person: Mr. Nanak Santdasani, Unicef Bihar

Focal Person: Ms. Olga Murujew, University of Wageningen, Netherlands

From	To	Programme
16:00	16:20	Community Ecosan System/ Critical issues in urban sanitation: Mr. M. Subburaman, Director- SCOPE, Trichy
16:20	16:40	Use of human excreta and waterless urinals : Dr. C.A. Srinivasamurthy, Professor- Department of Soil Science &Agriculture Chemistry, Bangalore
16:40	17:00	Innovations in Sanitation Sector: Mr. A K Sen Gupta, Director General, Sulabh Academy, New Delhi
17:00	17:20	Remote Sensing & GIS Application in Water and Sanitation sector- Mr. P. Praveen, Anna University, Tamil Nadu
17:20	17:30	Question and Answers
17:30	17:40	Chairperson's Remarks
17:40	14:45	Sum-up for day one : Mr. P. Velusami, Principal cum Program Coordinator, WASH Institute



DAY-2- 29.06.2013, Saturday

Technical Session-4

Demonstration of Ecological Sanitation in Bihar, SEI-WASH Institute Initiatives

Chairperson: Mr. Arumugam Kalimuthu, Country Director-Water For People

Co Chair Person: Mr Prabhakar Sinha, SDC Specialist SPMU-RWSSP, Dept of RD, Govt. of U.P.

Focal Person: Ms. Olga Murujew, University of Wageningen, Netherlands

From	To	Programme
10:00	10:05	Welcome and Recap of day 1: Mr. Prabhakar Sinha, SDC Specialist SPMU-RWSSP, Dept of RD, Govt. of U.P.
10:05	10:15	Brief about SEI- Bihar project: Mr. Prakash Kumar, SEI-WASH Institute
10:15	10:30	Ecosan Household toilet in West Champaran : Mr. Vinay Kumar, Secretary, Water Action, West Champaran
10:30	10:45	Ecosan toilet complex at Digha , Patna : Mr. Kanchan Pathak, Program Coordinator, Taru Mitra
10:45	11:00	Urine harvesting and its application in Nalanda :Mr. Sanjeev Kumar, SABRI
11:00	11:05	Experience Sharing By- Mr. Vijay Kumar Srivastava, Executive Engineer, PHED, Nalanda, Bihar
11:05	11:10	Experience Sharing By- Mr. Manoj Kr. Choudhary, Executive Engineer, Khagaria, Bihar
11:10	11:20	Question and Answers
11:20	11:25	Chairperson's Remark
11:25	11:35	Tea Break

State Presentation

Chairperson: Mr. Sanjay Dubey, PHED, Darbhanga, Govt of Bihar

Co- Chairperson: Mr. Dharendra Prasad, PHED, Supual, Govt of Bihar

Focal Person: Ms. Kaushiki Kaushal, Lady Sri Ram College, New Delhi

From	To	Programme
11.35	11.55	Initiatives taken and Best Practices adopted for Promoting Sustainable Sanitation. State:Bihar - By- Mr. S. Jawaid, Director, PMU, PHED, Govt of Bihar
11.55	12:15	Initiatives taken and Best Practices adopted for Promoting Sustainable Sanitation. State:Orissa- By- Er. Seemanchala Das, SE, Koraput, Govt of Orissa
12:15	12:35	Initiatives taken and Best Practices adopted for Promoting Sustainable Sanitation. State:Jharkhand- By- Mr. Rajendra Prasad, Deputy Director, PMU, SWSM, Govt of Jharkhand
12.35	12:55	Initiatives taken and Best Practices adopted for Promoting Sustainable Sanitation. State: U.P.- By- Mr. Prabhakar Sinha, SDC Specialist SPMU-RWSSP, Dept of RD, Govt of U.P.
12:55	13.05	Question and Answers
13.05	13.15	Chairperson's Remark



13.15	13.20	Announcement of Groups for Preparation of Strategies and Recommendations to Govt. of India
13.20	14:00	Lunch Break
14:00	14:45	Group discussion
14.45	15:20	Presentation on future strategies and recommendations to MDWS,Gol
15:20	15.25	Announcement for Field Visit to Taru Mitra (7 Kms. From Hotel Patliputra Ashok)
15.25	15.30	Vote of Thanks : Mr. S. Jaswaid, Director, PMU, PHED, Govt of Bihar
15:30	15.35	Tea Break
15.35	17.15	Visit to Taru Mitra



Media Clippings





हिन्दुस्तान

पटना • शनिवार • 29 जून 2013

खुले में शौच बीमारियों को न्योता : व्यासजी

पटना | हिन्दुस्तान ब्यूरो

स्वास्थ्य विभाग के प्रधान सचिव व्यासजी ने कहा कि स्वच्छता अभियान को जन-जन तक पहुंचाने की जरूरत है। स्वच्छ जीवन ही मानव का सबसे बड़ा धन है। स्वच्छता स्वास्थ्य से जुड़ा मामला है। स्वच्छ वातावरण नहीं रहने के कारण ही लोग हमेशा बीमार रहते हैं और इलाज पर हजारों रुपए खर्च करते हैं। सरकार स्वच्छता अभियान से जुड़ी कई योजनाएं चला रही है।

शुक्रवार को होटल पाटलिपुत्र में सस्टेनेबल सैनीटेशन पर दो दिवसीय कार्यशाला का उद्घाटन करते हुए व्यासजी ने कहा कि स्वच्छता अभियान को तब तक सफलता नहीं मिलेगी जब तक समाज की भागीदारी नहीं होगी। खुले स्थान पर शौच करने पर कई तरह की बीमारियां होती हैं। इनसे रोज कमाने वालों

की आमदनी पर बुरा असर पड़ता है। परिवार के अन्य सदस्य बीमार की देखरेख में अक्सर अपनी दैनिक आय खो बैठते हैं। दवा व चिकित्सा पर खर्च बढ़ जाता है, जिससे भारी आर्थिक क्षति होती है। लोक स्वास्थ्य अभियंत्रण विभाग के मुख्य अभियंता एके. श्रीवास्तव ने कहा कि राज्य सरकार ने शौचालय निर्माण के लिए अभियान चलाया है। गांव-गांव में शौचालय का निर्माण कराया जा रहा है। वाटर फॉर पीपुल के निदेशक ए. काली मुथु ने कहा कि खुले स्थान में शौच करने पर रोक लगाना आवश्यक है। कार्यशाला को संजीव कुमार, डा. सी. ए. श्रीनिवासमूर्ति, प्रकाश कुमार, प्रभाकर सिन्हा ने भी संबोधित किया। कार्यशाला का आयोजन वाश इंस्टीच्यूट कोडिकनाल (तमिलनाडु) ने किया था। यह कार्यक्रम पेयजल व स्वच्छता अभियान भारत सरकार द्वारा संपादित है।



अर्ली मॉर्निंग

E-mail : info@earlymorning.in

शनिवार, 29.06.13

सेनीटेशन स्वच्छता के लिए आवश्यक



होटल पाटलिपुत्र में सेनीटेशन पर कार्यशाला को संबोधित करते व्यास जी पटना। सफाई व जल निकास की समुचित व्यवस्था स्वच्छता को बनाए रखने और निरोग रहने के लिए अत्यंत आवश्यक है। उक्त बातें स्वास्थ्य विभाग के प्रधान सचिव व्यासजी ने शुक्रवार को स्थानीय पाटलीपुत्र अशोक होटल में 'जल निकास व स्वच्छता' विषय पर आयोजित दो दिवसीय कार्यशाला को संबोधित करते हुए कही। राज्य सरकार के सहयोग से आयोजित इस कार्यशाला में 150 लोगों ने भाग लिया जिसमें इंजीनियर, सरकारी अधिकारी और कई स्वयंसेवी संस्थाओं के प्रतिनिधि शामिल थे। कार्यशाला में जल निकास और स्वच्छता के लिए इस्तेमाल की जानेवाली अत्याधुनिक प्रौद्योगिकी पर भी विस्तार से चर्चा हुई।