

**Best practice in Sanitation and Wastewater Management: An experience from Rural Water Supply and Sanitation Fund Development Board, Nepal.**

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**Abstract**

Sanitation and wastewater management covers a broader field of activities and services, however this paper assumes sanitation facilities for rural areas as adequate disposal system of human excreta and solid waste as well as disposal of wastewater from taps and domestic use. No open defecation would be practiced. Sanitation sector especially in third world countries is still in fragile state and had least priority in plan and policies. Mother and Children are the most susceptible for many diseases and problems. They are needy and focus groups to be carried out health, hygiene and sanitation education activities with them. Water and sanitation facilities alone are no guarantee of health. Promotion of health, hygiene and sanitation education can dramatically affect the number of deaths from diarrhea disease in children under five. In order to ensure best practice in long- term program, the programs should be demand driven, efficient, accountable, transparent, impartial and neutral and not corrupt.

The paper reflects on the institutional arrangement model; health, hygiene and sanitation model; policy, legislation and regulation model and capital investment fund management model which are crucial for effective sanitation and wastewater management with an experience from rural water supply and sanitation fund development board, Nepal.

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**1. INTRODUCTION**

Sanitation and wastewater management covers a broader field of activities and services, however this paper assumes sanitation facilities and wastewater management practices for rural areas that include:

- i) Personal Hygiene Practice: Nail clipping, hand washing, bathing, cloth washing, teeth washing etc of women, men and children.
- ii) Household Hygiene: Defecation habits, solid waste disposal practice, water storage and handling practice, covering cooked and left over foods.
- iii) Environmental Hygiene: community solid waste disposal practice, wastewater management at the kitchen garden, animal bathing, drainage management, foot trail cleaning practice etc.

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The purpose of this paper is to reflect on the best practices in sanitation and wastewater management through an experience from the Rural Water supply and Sanitation Fund Development Board, Nepal.

## 2. BACKGROUND

Rural water Supply and Sanitation Fund Development Board (RWSSFDB), popularly known as the Fund Board, has been established by His Majesty's Government of Nepal in order to bring fundamental changes in supply oriented to adopting a demand driven and participatory development approach in rural water supply and sanitation delivery mechanisms in the country. The program has been implemented with the main assistance from The World Bank/IDA and co-financed by DFID while Water Aid Nepal has committed to assist in performing some of research studies.

The overall objective of the Fund Board is to promote cost-effective and sustainable demand driven rural water supply and sanitation projects in order to reduce rural poverty with full emphasis on community ownership and responsibilities. (Ref. Supporting Information: Art 1 & 2 for details)

## 3. BEST PRACTICES

Applying best practice is perhaps the most simple, but effective approach. An experience from RWSSFDB is useful to identify the following best practices in Sanitation and Wastewater Management in rural areas.

### 3.1 Institutional Arrangement Model

#### 3.1.1 Fund Board Model to Deliver Water Supply & Sanitation Services:

The Model adopted by the Fund Board has been identified as one of the best practices in several studies (e.g. Terai Rural Development Option Study: SAPPROS for The World Bank, 2000; Hill Rural Development Option Study: SAPPROS for IFAD, 2001 etc.) done by different agencies in Nepal.

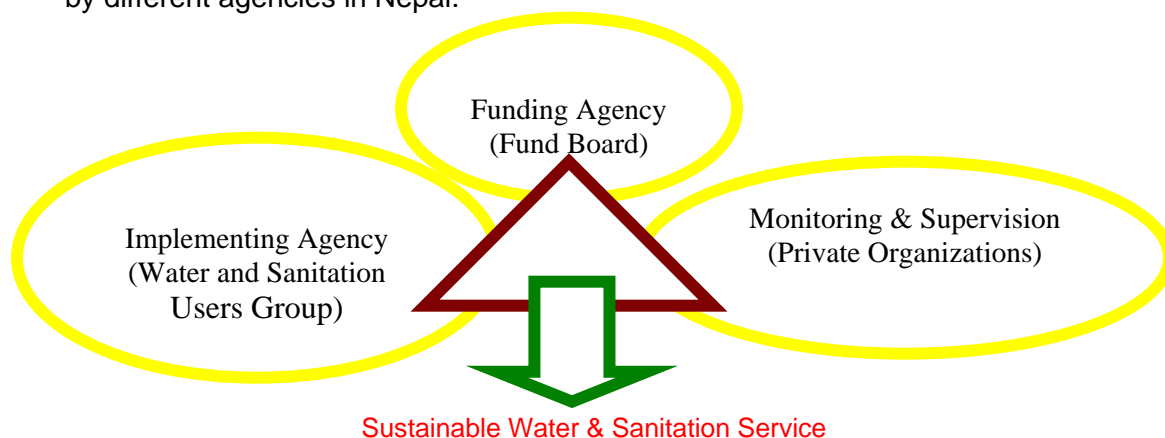


Fig.1: Fund Board Model to deliver Water & Sanitation services

### **3.1.2 Water and Sanitation Users Group (WSUG):**

The beneficiary community is sensitized to acquire active participation from all households without any restriction or discrimination by forming a WSUG to pursue common goal/interest of the community people through organizing in an institution. The WSUG should have democratically selected representative executive committee called Water and Sanitation User Committee (WSUC) of 9 to 13 members.

The basic premise of community organization and mobilization is to remove the social, political and psychological disempowerment of people, particularly women, that prevails in a society. The women involvement in WSUC is moving around 28% and on an average each WSUC/scheme constitutes a slight more than 3 women as against a target of 2 women per scheme. Around 83% women against 100% targeted are involved as treasurers in the schemes (Ref. Supporting Information: Art 3 Table 6).

### **3.1.3 Mother and Child Tap Stand Group (MCTG):**

The Mother and Child Tap Stand Groups have been formed for each tap stand aiming at cleaning as well as protecting taps and managing for drainage coupled with irrigation of wastewater for income generating especially for vegetable production (Ref. Supporting Information: Art 3 Table 7).

The women in each group have developed calendars for cleaning the tap stand and surroundings. In some places, this group is active to penalize the people who neglect the rules on the group and mal-practice. They sometimes coordinate with school teacher-student group and organize health/hygiene and sanitation campaign.

### **3.1.4 Women Technical Support Service Groups (WTSSG):**

Besides the Fund Board WTSS grant, the groups also have their own regularly saving practice. Most of the communities have invested the WTSS grant amount and their own accumulated saving amount in income generating activities. The WTSS fund has been partly used for vegetable cultivation using wastewater for irrigation. (Ref. Supporting Information: Art 3, Table 8).

### **3.1.5 Teacher-Student Group (TSG):**

Teachers and students are encouraged to form a small group to conduct health, hygiene and sanitation activities in the schools with the support from WSUGs (Ref. Supporting Information: Art 3 Table 5)

## **3.2 Health, Hygiene and Sanitation Model**

Health, Hygiene and Sanitation Program (HHSP) is a central component of the Fund Board to promote health and improve the quality of life among rural communities by provision of potable drinking water and environmental sanitation programs with effective participation of the users. It is well established that preventive health, including HHSP,

has a more lasting impact on the health of individuals and community than curative programs and the benefits from improved water supply service can only be fully achieved if accompanied by changes in health status of the entire people of the community. However, as documented by several studies, rural communities generally overlook preventive health practices because they are not well informed about sound hygiene practices. The identified best practices on HHSP Components are outlined below:

**3.2.1 Village Health Promoter (VHP):** VHPs have been trained in community mobilization particularly focusing on health, hygiene and sanitation promotion including cleaning roads, public places, intake, Reservoir Tank (RVT), Tap stand and Break Pressure Tank (BPT). VHPs have been assisting to motivate community people to improve personal, household and neighborhood sanitation through building household latrines and domestic waste disposal pits and other activities. In total VHPs, 95% are female to undertake the functions and responsibilities. (Ref. Supporting Information: Art 3 Table7)

**3.2.2 Healthy Home Survey:** Healthy Home Survey is carried out to identify and understand the health and sanitation situation of the community people. It is taken as a main baseline and regular monitoring activities of the Mother and Child Tap Stand Group (MCTG). The Mother Child Tap Stand Group with the help of VHP administer a series of health related pre-developed standard questions through HHS to the community people in order to understand and to act to prepare Community Action Plan (CAP) of HHSP for improving health behaviors of the community people. This tool is used at the community to empower the target group enabling them to monitor their hygiene and sanitation status by themselves and become facilitator to take appropriate measures to achieve total sanitation.

**3.2.3 Health, Hygiene and Sanitation Education (HHSE):** Under this activity, communities are educated and sensitized on importance on health hygiene and sanitation through different sessions (Ref. Supporting Information: Art 4). Mother and Children are the most susceptible for many diseases and problems About 4 billion cases of diarrhoea per year cause 1.8 million deaths around the world, over 90 per cent of them (1.6 million) among Children under the age of five (Ref UNICEF website: Water, Environment and Sanitation- Common water and sanitation related diseases). As per Nepal Human Development Report 2001, the under-five mortality rate is 108.4 per 1000 live births in Nepal and the incidence being higher in areas of rural areas among children of illiterate or less educated mothers. So if mothers are aware, unnecessary death of children could be prevented because in our culture and social setting women play vital role to care for the Children. VHP is responsible and take lead role to motivate community on Health Hygiene and Sanitation, construct latrines, cleaning roads, public places, intake, RVT, Tap stand and BPT. Hand washing with soap will be promoted.

**3.2.4 Latrine Promotion Activity (LPA):** Latrine Promotion Activity (LPA) includes construction and use of clean latrines in the household through utilization of Sanitation Revolving Loan Fund (SRLF) and self-help latrine promotion in the community. Institutional latrines and urinals at the schools, health posts and others are also promoted in this sub-activity.

**3.2.4.i Latrine Construction through Utilization of SRLF:** Sanitation Revolving Loan Fund (SRLF) is grant money given by RWSSFDB to the water and sanitation users committee (WSUC) through the Support Organization (NGO) to construct household certain standard latrine by mobilizing this fund as loan. RWSSFDB provides grant up to squatting toilet pan (commonly used in rural areas in Nepal) level for about 25% of the household in the community to create the revolving loan fund to construct household latrine. Household can take a loan with rules and regulations of pay back from WSUG. The households are selected by discussion and decision of the community meeting as per healthy home survey information. Money revolved until every household in the scheme site constructs latrines. Finally, the amounts of SRLF including earned interest and penalty amount (if any) are kept in O & M fund after the construction of toilets in each household in program areas.

**3.2.4. ii Latrine Promotion through Self-help Construction:** The self-help latrine construction has been promoted to the households with relatively well to do and have exposure and sensitive towards health, hygiene and sanitation. The VHP has been given the responsibility for mobilization, dissemination and demonstration of the information and materials regarding the importance and impacts of latrine construction and its utilization on health in the community. As a result, more than 50 % out of total household latrine in RWSSFDB-I has been constructed through self-help initiatives without using SRLF. (Ref. Supporting Information: Art 3, Table 4)

**3.2.4.iii Institutional Latrine:** Institutional latrine has been focused mainly in government schools keeping in mind the necessity and regular use of latrine by majority of the community children. The size and type of the latrines depend upon the number of the students and teachers in school. In some schools urinal chambers have also been constructed with the initiations of schools (Ref. Supporting Information: Art 3, Table 5).

**3.2.4.iv Technical options for Type of Toilet:** From the sustainability study done by Fund Board, the offset type household latrine with double ditches is found to be cost effective as well as the best practice from sustainability point of view.

**3.2.5 School Health and Sanitation Program:** School health and sanitation program focuses on child-to-child learning and child to home/community learning approach and environment. Fund board experience shows that children can act as potential agents of change within their homes and communities. Children who learn good health and hygiene education and practices in school can become good health promoters at home. The unsanitary conditions typical of many school toilets send a wrong message to students about the importance of sanitation and hygiene.

**3.2.6 Household and Village Environmental Sanitation:** To become healthy, the environment should be clean as well, requiring household latrine and its proper use. Pits are constructed to decompose domestic waste. All the wastewater has been drained to either a kitchen garden or to the agriculture land.

### **3.3 Policy, Legislation and Regulation Model**

**3.3.1 Policy:** The policy is geared towards maximization of health impact to the rural communities especially women and children through integration of water supply, sanitation and hygiene education. It identifies rural women and children as a vulnerable group living in poor conditions.

**3.3.2 Legislation:** In order to provide legal status to Water and Sanitation Users' Group (WSUG), it has been made mandatory to register the WSUG under Water Resources

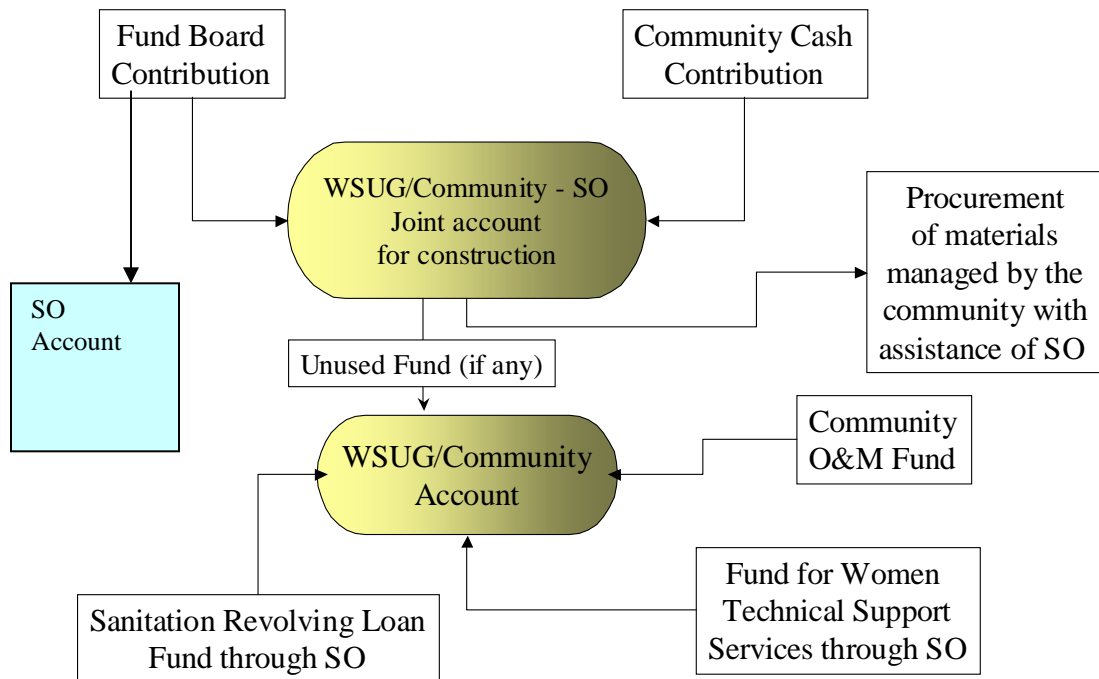
Act. The WSUG should have democratically selected representative executive committee from among WSUG members, called Water and Sanitation Users' Committee (WSUC) of 9 to 13 members.

**3.3.3 Regulation:** Polluter Pays Policy (PPP) has been adopted at the community level. No open defecation would be practiced, for nobody should have right to pollute the environment.

### 3.4 Capital Investment Fund Management Model

A demand driven approach requires appropriate financial policies and accountability to community members. The capital investment fund management model of Fund Board is identified as a best practice model even in the current conflicting situation that prevails in Nepal which is as follows:

## **CAPITAL INVESTMENT FUND MANAGEMENT**



## 4. RESULTS

The results of different studies done by the Fund Board have shown that forest and open fields were prime sources for defecation before the project's intervention while toilet use is on top after the project (Ref. Supporting Information: Art 3 Table 1). The construction and use of household and institutional latrine, clean and adequate drinking water, preparation and use of hygiene food and other sanitation practices such as personal and community hygiene have big impact on health of the community people. Comparative

analysis done based on data collected both during base period and after project intervention shows that the incidence of water and fecal borne diseases has been reduced (Ref. Supporting Information: Art.3 Table 2 & Table 3).

## 5. LESSONS LEARNED

**5.1 Provision of gender-specific sanitary facilities:** During the process of the planning, designing and implementation of institutional latrine a special attention is to be given for the girl student friendly latrine. The lack of appropriate facilities may discourage students, especially girls from attending the school. Toilets that do not accommodate menstrual management, and that are smelly, unsafe to use, increase absenteeism among adolescent schoolgirls.

**5.2 Bio-gas Promotion together with Toilet Construction:** Emphasis is laid to bio-gas together with toilet construction that on the one hand reduces forest degradation, increases productivity through manure and reduces most of the diseases prevailing in the Nepalese society.

## 6. CONCLUSION

This paper attempts to show the best practice in sanitation and wastewater management from institutional, financial as well as socio-technical aspects at program level with an experience from The Rural Water Supply and Sanitation Fund Development Board, Nepal. Ultimately what is important is a change in behavior and practice for the better. I hope this paper goes some way towards helping the professionals who are especially involved in Rural Sanitation Management.

### A. References

1. Knowledge, Attitude & Practice (KAP) Impact Study Batch I, II & III; Fund Board
2. KAP Baseline and Immediate Impact Study of Communities Development Activities (CDA) of Batch II & III; Fund Board
3. Milestone Monitoring data from MIS; Fund Board
4. Sustainability Study of Batch I & Batch II, Fund Board
5. Technical Audit of Batch I, Batch II & Batch III, Fund Board
6. Terai Rural Development Option Study: SAPPROS for The World Bank, 2000
7. Hill Rural Development Option Study: SAPPROS for IFAD, 2001
8. Nepal Human Development Report 2001
9. Health, Hygiene and Sanitation Guidelines, Fund Board
10. UNICEF website: Water, Environment and Sanitation - Common water and sanitation related diseases.

### B. Supporting Information:

#### 1. Working Modality of the Fund Board

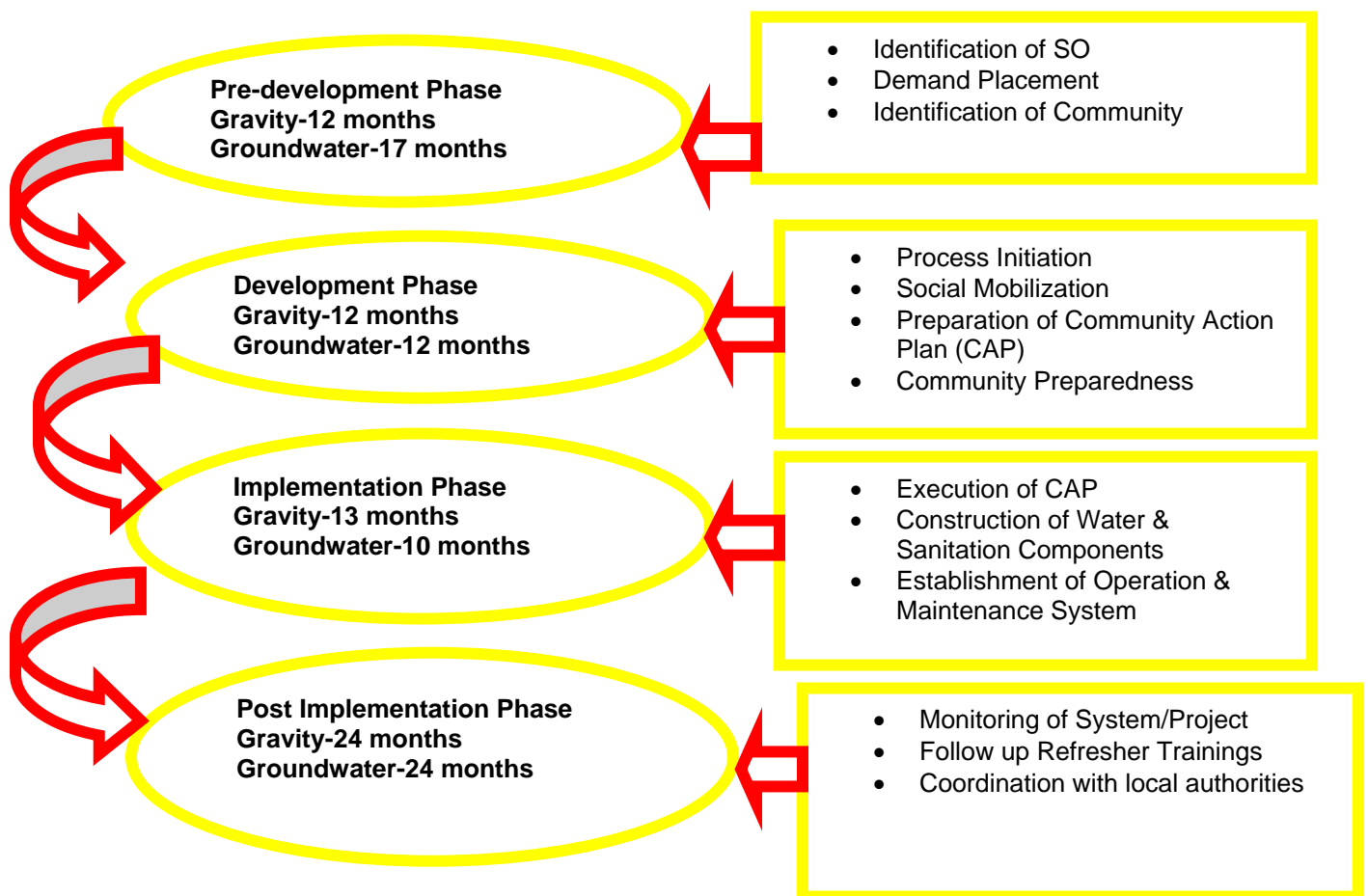
The Fund Board approach has been appreciated due to its proven best practice and recently completed Phase I program that led to design and implementation of present Phase II programs. Under Phase I Program, Fund Board has completed about 900 schemes serving about 600,000 populations, while it has target of completing about 1400 schemes covering more than 800,000 populations under Phase II Program.

The working modalities of the Fund Board are summarized as follows:

- Fund Board in the role of facilitator only.
- Participatory approach in project identification, planning, implementation and managing the schemes.
- Resource allocation through Support organizations (NGOs) and communities.
- Community contribution, community procurement and financial transparency.
- Equity in water supply, health, hygiene and sanitation.
- Social inclusions (women, indigenous and disadvantaged people)
- Capacity building of Government, NGOs and private sector organizations.
- Quality control through Participatory Monitoring and Evaluation.
- Cost effective service.
- Operation and management of schemes by communities.
- Backing government's goal of poverty alleviation.
- Coordination, linkages and partnership building with other programs.

## 2. Scheme Cycle of the Fund Board Program

The project follows the scheme cycle of pre-development phase, development phase, implementation phase and post implementation phase as shown below:



## 3. Data from the different studies done by the Fund Board in its schemes



<b>I</b>	<b>76</b>	<b>5305</b>	<b>1197</b>	<b>22.6</b>	<b>1320</b>	<b>24.9</b>	<b>2517</b>	<b>47.44</b>
<b>II</b>	<b>203</b>	<b>16197</b>	<b>2546</b>	<b>16</b>	<b>2830</b>	<b>17.5</b>	<b>5376</b>	<b>33.20</b>
<b>III</b>	<b>302</b>	<b>35870</b>	<b>6184</b>	<b>17.25</b>	<b>11277</b>	<b>35.44</b>	<b>17461</b>	<b>48.7</b>
<b>IV</b>	<b>359</b>	<b>36743</b>	<b>12227</b>	<b>33.30</b>	<b>7842</b>	<b>21.35</b>	<b>20069</b>	<b>54.62</b>
<b>Total</b>	<b>940</b>	<b>94115</b>	<b>22154</b>	<b>24</b>	<b>23268</b>	<b>24.73</b>	<b>45423</b>	<b>48.3</b>

Source: Milestone Monitoring data from MIS; Fund Board

**Table 5**  
Teacher-Student Group (TSG), Institutional Toilets, Sanitation Campaign and Waste Disposal Pits

<b>Batch</b>	<b>No. of Scheme</b>	<b>No. of School</b>	<b>TS Group</b>	<b>No. of Institutional Latrine Constructed</b>	<b>No. of Sanitation Campaign</b>	<b>No. of Solid Waste Disposal Pits Built</b>
Batch I	76	56	56	51	117	1321
Batch II	203	145	145	124	276	3163
Batch III	302	308	308	227	570	9571
Batch IV	364	286	286	187	187	5706
<b>Total</b>	<b>945</b>	<b>795</b>	<b>795</b>	<b>589</b>	<b>1150</b>	<b>19761</b>

Source: Milestone monitoring data from MIS; Fund Board

**Table 6**  
**WSUG and Female Member and Treasure in WSUC**

<b>Batch</b>	<b>Total No. of WSUG</b>	<b>Total No. of WSUC Member</b>				<b>% of Female Member</b>	<b>Female Treasure in WSUC</b>			<b>No. of Female in WSUC</b>
		<b>Male</b>	<b>Female Target</b>	<b>Female Actual</b>	<b>Total</b>		<b>Target</b>	<b>Actual</b>	<b>%</b>	
<b>I</b>	<b>76</b>	575	<b>152</b>	231	806	29	<b>76</b>	67	88	3.03
<b>II</b>	<b>203</b>	1697	<b>410</b>	615	2312	27	<b>203</b>	173	85	3.02
<b>III</b>	<b>302</b>	2600	<b>616</b>	953	3553	27	<b>302</b>	260	86	3.16
<b>IV</b>	<b>365</b>	2808	<b>776</b>	1119	3927	27	<b>365</b>	284	77	3.11
<b>Total</b>	<b>946</b>	<b>7680</b>	<b>1954</b>	<b>2918</b>	<b>10598</b>	<b>28</b>	<b>946</b>	<b>784</b>	<b>83</b>	<b>3.10</b>

Source: Milestone Monitoring data from MIS; Fund Board

**Table 7**  
**Status of Mother and Child Tap Stands Groups (MCTG) and VHPs by Batch**

<b>Batch</b>	<b>No. of HH</b>	<b>MCTG Group</b>	<b>VHP</b>			<b>HSE Session</b>
			<b>Target</b>	<b>Actual</b>	<b>Female</b>	
B I	5305	778	76	78	77 (99)	1424
B II	16197	2439	203	218	199 (91)	1551

B III	35870	5118	302	343	317 (92)	1895
B IV	36743	4387	365	365	359 (98)	1396
<b>Total</b>	<b>94115</b>	<b>12722</b>	<b>946</b>	<b>1004</b>	<b>952 (95)</b>	<b>6266</b>

Source: Milestone Monitoring data from MIS; Fund Board

Note: Figures in parenthesis indicate percentage.

**Table 8: WTSSG Status by Batch**

Batch	Targeted WTSS Group	No. of WTSS Group Formed	Women Involved	FB Grant (NRs)	Group' Own Saving (Nrs.)	Activity	No. of Orientation Training	Linkage of WTSS Groups
I	76	192	4192	668400	41931.00	GR, PF, S/C, KG, PR, IW	89	In 19 Schemes
II	203	262	9375	1787200	135,507.5	GR, PF, PR, GR, S/C, others	357	In 39 Schemes
III	302	392	18602	3028000	693,011.00	GR, PF, PR, GR, S/C, others	395	In 53 Schemes
IV	359	359	15990	3480800	1042,217.00	GR, PF, PR, GR, S/C, others	502	In 37 Schemes
<b>Total</b>	<b>940</b>	<b>1162</b>	<b>48,139</b>	<b>8,964,400.</b>	<b>1,912,666</b>	-	<b>1343</b>	<b>148</b>

Source: Milestone Monitoring data from MIS.

Note: GR= Goat raising, PF= Poultry Farm, S/C= saving and credit, KG= Kitchen Garden, PR= Pig raising, IW= Iron work for blacksmith (deprived caste)

#### **4. HEALTH, HYGIENE AND SANITATION EDUCATION SESSIONS**

##### **For WSUC, MOTHER AND CHILD TAPSTAND GROUP, STUDENT AND TEACHER GROUPS**

1. IDENTIFICATION OF HEALTH PROBLEMS IN THE COMMUNITY \CLUSTER.
  - ★ MASS MEETING/HEALTHY HOME SURVEY
2. COMMUNITY MAPPING (HEALTH SITUATION IN THE CLUSTERS)
  - ★ BASE LINE DATA COLLECTION ON HEALTH AND SANITATION
  - ★ ON THE FACILITATION OF THE SO STAFF PRIORITIZATION WILL BE MADE ON THE BASIS HSE PROBLEM FINDINGS
3. ACTION PLANNING WITH THE HELP OF SO STAFF
4. IMPORTANCE OF CLEANLINESS
5. PERSONAL, DOMESTIC AND ENVIRONMENTAL HYGIENE
6. IMPORTANCE OF POTABLE WATER
7. IMPORTANCE OF LATRINE
8. FAECAL ORAL ROUTE DISEASES AND PREVENTION.
9. DISEASES TRANSMISSION: DIARROHEA AND DEHYDRATION
10. WHAT TO DO WITH DIARROHEA?
11. DEMONSTRATION ON PREPARATION OF ORS.
12. IMMUNIZATION
13. USE OF VACCINES TO TARGET GROUP
14. NUTRITION
15. PREVENTION OF MALNUTRITION
16. USE OF WASTE WATER AND KITCHEN GARDENING
17. RECORDING AND REPORTING
18. MONITORING AND EVALUATION

19. <sup>1</sup> SUPPORTIVE SESSION

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<sup>1</sup> (Note: supportive sessions for community worker will be provided on TOT orientation e.g. health education methodology and how to prepare local teaching materials etc.)