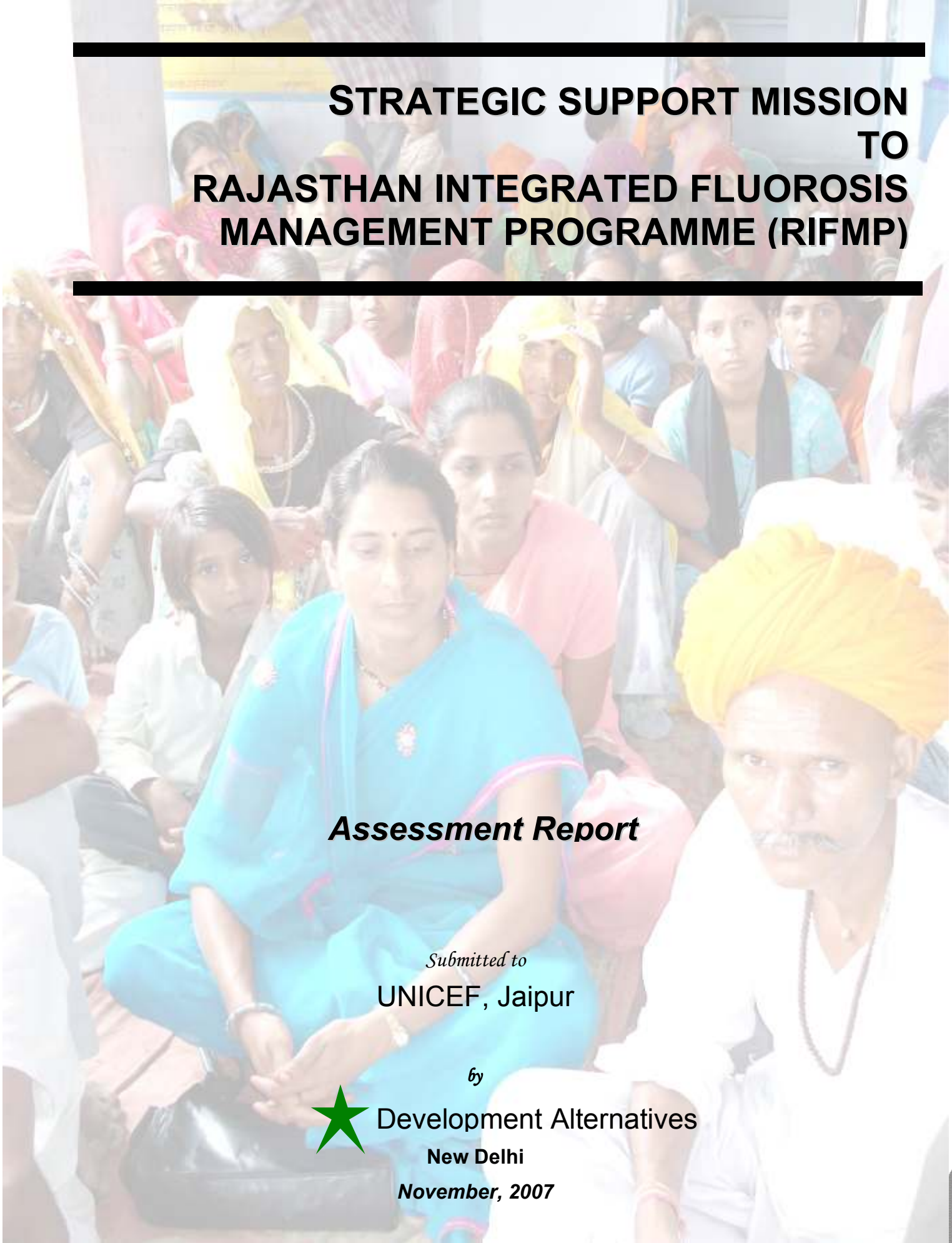

STRATEGIC SUPPORT MISSION TO RAJASTHAN INTEGRATED FLUOROSIS MANAGEMENT PROGRAMME (RIFMP)

Assessment Report

Submitted to

UNICEF, Jaipur

by

Development Alternatives

New Delhi

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TABLE LIST

ACRONYMS USED

AA	Activated Alumina
APL	Above Poverty Line
BPL	Below Poverty Line
DA	Development Alternatives
DDU	Domestic Defluoridation Units
FGD	Focus Group Discussion
IEC	Information, Education and Communication
IIT	Indian Institute of Technology
MEAL	Monitoring Evaluation and Learning System
NGO	Non-government organization
PCA	Project Cooperation Agreement
PHED	Public Health and Engineering Department
PPM	Parts per million
RIFMP	Rajasthan Integrated Fluorosis Management Programme
TDS	Tax Deduction-at-Source
WHO	World Health Organisation

ACKNOWLEDGEMENT

The project team of Development Alternatives acknowledge with thanks, the opportunity given by the UNICEF and PHED, Jaipur for carrying out the project on **"Strategic Support Mission to Rajasthan Integrated Fluorosis Management Programme"** and for the guidance and encouragement received from them time to time, particularly from Mr. Dipak Roy (Project Officer WESS, UNICEF Jaipur), Mr. Agam Mathur (Chief Engineer PHED Jaipur), and Mr. Pankaj Mathur (WES Officer UNICEF Jaipur).

Further the team extends its sincere thanks to other contributing persons like Mr. Palash Vaish (Manager-Projects SARITA Udaipur), Mr. K.N. Khandelwal (Project Officer SWACH Udaipur), Mr. Ashok Kumar Pareek(General Secretary IIES Jaipur), Mr. P.Gyanprakash (MYTRY, Jaipur) and Mr. Ashok & Mr. Arvind (RMSVS Jaipur).

EXECUTIVE SUMMARY

Excess fluoride in drinking water in Rajasthan, 'and the Fluorosis this contributes to', has been a serious problem for many years. The prolonged intake of high fluoride in drinking water results in crippling and entirely avoidable diseases that manifest as dental, skeletal and soft tissue Fluorosis, affecting children as young as three years old. More than half of the fluoride-affected villages in India are found in Rajasthan.

In order to tackle the Fluorosis menace, the Government of Rajasthan together with UNICEF established the Rajasthan Integrated Fluorosis Management Programme (RIFMP) in early 2005. The programme is designed to reduce exposure of rural households to fluoride in drinking water by supplying domestic defluoridation filters *free of cost* to Below Poverty Line (BPL) families , and selling them to the Above Poverty Line (APL) families at subsidised rates. RIFMP is being implemented by Public Health and Engineering Department (PHED), UNICEF and a total of 19 Non-government organizations (NGOs) in 12 districts. The NGO partners are responsible for creating the demand for fluoride free water among the affected rural households by raising their awareness through the identified Information, Communication and Education (IEC) activities.

Through *'Strategic Support Mission to RIFMP'*, Development Alternatives was assigned the task to work out on identifying gaps, find solutions for better implementation, monitoring of this programme and sorting out the various problems encountered.

The **objectives** of the Support Mission Assessment are:

- Review project status at the end of its first phase to inform PHED plans to scale up the project to include 5,000 habitations in 12 districts;
- Recommend practical approaches to strengthen the impact, sustainability and inclusion of project interventions, in particular demand responsive approaches to ensure the inclusion of APL families in the project
- Recommend approaches to strengthen the partnership between participating NGOs, Government and UNICEF, taking into account the mandate and capacity of each organization
- Recommend approaches to strengthen the project's monitoring and reporting systems
- Recommend effective communication / social mobilization approaches to improve knowledge and practices of community related to fluorosis management and maintenance of Domestic Defluoridation Units (DDUs)

The **methodology** adopted for the assignment was:

- Pre-field planning, comprising methodology refinement, questionnaire formulation and literature survey, including reports of 2 Rapid Appraisals done by UNICEF and PHED

- Field Surveys, comprising household surveys (164 households (HHs) in 5 districts) and stakeholder interactions, including a meeting with all 19 NGO partners, UNICEF and PHED in Jaipur
- Post Field Analysis, comprising data analysis and recommendations formulation

Findings and Recommendations

- **Demand generation through IEC activities for fluoride free water**
  - It was found that almost 80% (132) respondents (out of 164 people interviewed) had one or the other symptoms of fluoride induced diseases. Almost the same percentage of people can now establish the link between their health and water quality as a result of the NGOs' awareness raising activities.
  - In all the districts, primarily 4 types of IEC activities were conducted viz. Wall Paintings / slogans, posters, Video shows and leaflets. Out of the 20 villages visited, wall paintings were carried out in 16 villages; the norm being one or two wall paintings per village. In about 12 villages, it was informed by villagers to the survey team that posters were also initially put up. In case of video shows, they were shown in a large number of villages and 63% of the respondents found them to be the most effective medium.
  - It was found that almost all the IEC activities focused on the health issues with very few properly mentioning about the DDU usage or regeneration practices. This was also reflected in the fact that 55% of the people could recall only health issues in the IEC while 25% could not recall anything.
  - The overall findings have been that the NGOs in the surveyed areas have done a good job of raising people's awareness on the issue. Demand creation and generation, however, has been constrained by inadequate and uncustomised IEC activities. The provision for only one-time IEC activities in the programme design, therefore, needs a revision.
  - DA has recommended a communication / social mobilization strategy primarily for the APL families
- **Acceptability of the technology, both among the BPL and the APL families**
  - The DDUs were found to be fairly well accepted by the users with more than 80% owners using them and all users categorizing them as either good or average.
  - With regards to the experience of use of the DDUs, an overwhelming 83% of the respondents said they had no problem with the units. About 11% respondents had concerns about the design and 6% people felt that the unit is not durable enough.
  - The water treatment efficiency of the filters was also tested by using the field based water quality monitoring kits in field conditions, and in conformity with the Appraisal Reports results brought out earlier, almost 90% of the filters are providing safe drinking water.
  - As regards the coverage of the population, it was found that while the BPL families in the surveyed areas were well covered, a very few APL families actually owned the

filters. The owners were essentially the people who were either exposed to NGOs' IEC activities or had some serious fluoride induced diseases in family members.

- Among the non-user APL families, it was found that a large number of them wanted to buy these filters but could not do so due to reasons such as *non availability of filters* and *very low focus of animators*. Interaction with those who did not want to buy at all revealed reasons such as:
  - ❖ Very limited awareness created among APL families
  - ❖ Perception among APL families that "If the BPLs are being provided the filters free, then why are we being charged for it?"
  - ❖ High cost of filters and unattractive packaging
  - ❖ No incentive for aggressive selling to the APL families
- As far as the regeneration practices are concerned, it was found that they are generally efficient but there were instances where the norms laid down by IIT Kanpur were not being followed.
- The major recommendations made for this section are:
  - ❖ In order to improve the coverage of the APL families, there is a greater need for awareness about fluoride amongst the APL families so as to create demand for the DDUs. Money is not a major problem, with most of the families willing to pay between Rs. 225-250. An integrated IEC and marketing campaign should be devised for them. Recommendations on the IEC activities and a supply chain mechanism have been proposed in different sections of this report.
  - ❖ There needs to be much more effort from the NGO animators in educating villagers regarding maintenance of DDUs.
  - ❖ For regeneration practices, there is a need for capacity building of Regeneration Centre operators on best practices of regeneration and maintenance and hygiene aspects; a monitoring system needs to be put in place for regular water quality testing at households and RCs; proper waste disposal methods recommended by IIT Kanpur need to be promoted.
  - ❖ The accelerated bucket regeneration (2 hours) method should be introduced to save time and costs and increase efficiency instead of 8 hours process

- **Appropriate Delivery systems for DDUs and Activated Alumina (AA)**

- As per the programme design, the current delivery mechanism is that after IEC activities and demand creation, NGOs procure DDUs on their own from the identified suppliers. The quality assurance is done by agencies recommended by UNICEF (Shriram Institute of Industrial Research, Delhi and IIT, Kanpur). The bills are then submitted to PHED for reimbursement. Once PHED makes the reimbursement, the suppliers are paid.
- During the assessment period, it was found that there are several gaps in the existing supply mechanism. These gaps are:

- ❖ Inadequate supplies of DDUs and Activated Alumina, leading to NGOs focusing the efforts solely to meet their targets of covering BPL families. The reasons for limited supply are presence of only 3 DDU suppliers with limited production capabilities and the uncertainty of AA availability due to market forces.
- ❖ Lack of DDUs as a composite unit, affecting the visibility of the product in the market as well as making it difficult to regulate supply mechanisms. It was found that the reason lies in two factors: one, limited availability of suppliers for plastic or steel containers of the required quality and two, suppliers of AA being different, AA supply is determined more by high/low demand in the other industries rather than by this market.
- ❖ In the current situation, three private suppliers have been identified for supply of DDUs as a composite product. However, the system is not very well set yet due to payment problems of NGOs as well as the time consuming quality assurance procedure for AA.
- ❖ Inadequate procurement capabilities of the NGOs, in both technical aspects as well as financial capability of making payments prior to reimbursements by PHED. In this situation, the suppliers face a cash crunch. One of the suppliers (in the inception meeting under RIFMP held in Jaipur on 7th June 2007) reported that he had completely stopped supply of DDUs to the NGOs due to accumulation of high recoverables, running in several lakhs.
- ❖ 15% Tax Deduction-at-Source (TDS) by PHED in reimbursements to NGOs, thus making them bear 15% of the DDU cost. Considering their low financial strengths, that may not be able to pay this for very long, thus putting the whole programme structure in jeopardy

– The major **recommendations** made for this section are:

- ❖ Develop atleast 3 more DDU suppliers for meeting the requirements in RIFMP Phase II
- ❖ Ensure AA availability in requisite amount, by
  - ➢ Accelerating the standardization process and thereby increasing the market size for AA suppliers
  - ➢ Reducing time involved in certification processes by developing a testing facility within the state
  - ➢ Finding new media that require regeneration at lower frequency
- ❖ Streamline delivery mechanisms, by
  - ➢ Modifying the existing delivery mechanisms with measures such as procurement done by PHED; changing the pricing structure for BPLs also; providing incentives to NGOs for sales to APL families; and running the Regeneration Centres on a commercial basis
  - ➢ Establishing market based supply chains, having 2-3 manufacturers, 2 marketing agencies that set up the supply chain, co-ordinate awareness generation activities and undertake branding of DDUs.UNICEF should

support the manufacturers with technology design aspects and the marketing agencies with monitoring and formulating partnerships with micro financing institutions. PHED will be required to provide funds to the Marketing Agencies for awareness generation and as subsidies for BPL families

- **Management of RIFMP**

  - The management of the programme is currently done through a tri-partite agreement; the 3 parties being PHED, Government of Rajasthan, UNICEF and the Implementing NGOs. Under this framework, a Project Cooperation Agreement (PCA) is drawn up between UNICEF, PHED and each NGO partner separately. The PCA defines the roles and responsibilities of each of the 3 parties.
  - Most of the parties are quite happy with the way the programme is currently being managed jointly by PHED and UNICEF. The general feeling is that the programme has been a success in its management as well as implementation.
  - Some of the issues that have cropped up in the programme management are:
    - Lack of guidelines within the PHED system for dealing with NGOs
    - Procedural delays at PHED level
    - Lack of appropriate monitoring mechanisms
    - Proper communication systems not yet in place
    - Lack of clarity on legality of DDU procurement and supply by NGOs
  - Regarding these issues, the **recommendations** are:
    - Separate rules may be formulated by PHED for transacting with the NGOs and not clubbing them as other vendors of the PHED. This point may be jointly taken up by UNICEF and PHED to the Department of Finance, Government of Rajasthan
    - Procedural delays may be avoided by orientation of NGOs on the required steps to be done before applying for verification and certification at the local level and completion of all relevant documents before submitting claims for reimbursements. Simultaneously, strict instructions need to be issued to the PHED at local level to conduct the verification and grant the certification within 15 days of the request made by the NGOs. Similarly concerned officials at PHED, Jaipur may be instructed to make reimbursements within 15 days of receiving the complete documentation.
    - Communication hitches may be covered through periodic meeting and circulation of all decisions taken to the relevant stakeholders, all the concern officials should also be intimated about the project and its tasks time to time.
    - As regards legality of DDU procurement and supply by NGOs, proper legal advice needs to be sought

- For effective monitoring mechanisms we suggest monitoring to be done at two levels viz. a) Programme level, to monitor the physical and financial progress of the programme , identify the bottlenecks and documentation of programme learnings and b) Project level, to track the project progress on basis of objectively verifiable indicators identified in the project proposals

In our view, while the overall performance of the RIFMP has been satisfactory, much more (recommended above) will need to be done to ensure greater acceptance of the DDUs and other dietary measures promoted through the programme. Looking at our past involvement in the programme and the current Support Mission, it is felt that RIFMP Phase II is an absolute necessity and will need even greater co-operation and co-ordination between PHED and UNICEF, besides the other implementing partners.

CHAPTER 1

BACKGROUND OF THE SUPPORT MISSION

1.0 INTRODUCTION

Excess fluoride in drinking water in Rajasthan, and the fluorosis this contributes to, has been a serious problem for many years. The prolonged intake of high fluoride in drinking water results in crippling and entirely avoidable diseases that manifest as dental, skeletal and soft tissue fluorosis, affecting children as young as three. More than half of the fluoride-affected villages in India are found in Rajasthan. In particular, nine districts are particularly affected: Tonk, Churu, Barmer, Pali, Sirohi, Jalore, Rajsamand, Ajmer, Nagaur. In these districts, more than half of the villages are affected by Fluorosis.

In order to tackle the Fluorosis menace, the Government of Rajasthan established the Rajasthan Integrated Fluorosis Management Programme (RIFMP) in early 2005. The programme is designed to reduce exposure of rural households to fluoride in drinking water by supplying BPL families with domestic defluoridation filters free of cost, and marketing the same to APL families. The filters use Activated Alumina (AA) as the filter media. The technology was developed with UNICEF support in Rajasthan and Andhra Pradesh in the late 1990s, and its introduction piloted in both these states. The RIFMP itself is based to a large extent on the UNICEF-supported project in Dungarpur in Southern Rajasthan.

RIFMP is being implemented by Public Health & Engineering Department (PHED) of the Government of Rajasthan, UNICEF and a total of 19 NGO partners. It is active in 12 districts. UNICEF's role in the project, defined in a set of tri-party agreements with PHED and each participating NGO, focuses on programme monitoring, and the certification (quality control) of filters and activated alumina. Filters and media are currently procured and distributed by NGOs, who are reimbursed by PHED. NGOs also provide a regeneration service for saturated filter media.

Through *'Strategic Support Mission to RIFMP'*, Development Alternatives, New Delhi has been assigned to work out on identifying gaps, find solutions for better implementation, monitoring of this programme and sorting out the various problems

encountered. DA also extends its support in suggesting strategies for the scaling up and efficient replication of RIFM Programme.

1.1 TERMS OF REFERENCE

As per the Terms of Reference, the objectives of the Support Mission Assessment are:

- "Review project status at the end of its first phase to inform PHED plans to scale up the project to include 5,000 habitations in 12 districts; the Mission is to include visits to 200 households in 20 villages in 5 districts. The Mission will be informed by rapid assessments of status in 7 districts currently being undertaken by UNICEF and PHED
- Recommend practical approaches to strengthen the impact, sustainability and inclusion of project interventions, in particular demand responsive approaches to ensure the inclusion of APL families in the project
- Recommend approaches to strengthen the partnership between participating NGOs, Government and UNICEF, taking into account the mandate and capacity of each organization
- Recommend approaches to strengthen the project's monitoring and reporting systems
- Recommend effective communication / social mobilization approaches to improve knowledge and practices of community related to fluorosis management and maintenance of DDUs"

In keeping with these instructions, DA has not made a very elaborate effort to evaluate RIFMP's activities. Nonetheless, with the benefit of our previous experience we have arrived at conclusions regarding RIFMP's sustainability that, in our view, require action well before the next phase starts. The other consequence is that our report may seem overtly critical on first reading, largely due to its focus on particular aspects of the RIFMP. RIFMP's results and activities, which we assess as generally satisfactory, have been studied and analyzed before, including very recently by the UNICEF and PHED. That internal evaluation report, we understand, will be available to readers and should be considered in conjunction with our report.

1.2 DEVELOPMENT ALTERNATIVES – a brief profile

Development Alternatives is a non-profit research, development and consultancy organization working on the design, development and dissemination of appropriate technologies, environmental management systems and institutional mechanisms aimed at sustainable development.

Development Alternatives has been extensively involved in the fluoride mitigation programme, both through technology assessments and training and capacity building. The team comprised 4 professionals with expertise in social & institutional aspects, technical aspects, economic aspects and development communication aspects. The various team members looked at these aspects and have made recommendations in a holistic manner.

CHAPTER 2

BRIEF ON FLUORIDE MITIGATION PROGRAMME

2.0 INTRODUCTION

Water quality has become a major global concern due to increasing human development activities that overexploit and pollute finite water sources. In many developing countries, only a small percentage of population has access to treated piped water supply. To provide safe water to rural population, groundwater is often sought as a source of drinking water. However natural chemical pollution of ground water can lead to chronic health effects. Excessive presence of fluoride and arsenic in groundwater and their health effects has become a major geo-environmental issue in many parts of the world.

According to a study commissioned by UNICEF in 1992, an estimated 66 million people (including 6 million children below the age of 14) in 199 endemic districts in 17 states of India are at risk from drinking water with excess fluoride. As per the latest information, a total of 20 states are affected by the fluoride problem. Based on the information available on the number of districts that are fluoride endemic in each State, the endemic States have been classified into three major categories namely 70-100 per cent districts affected; 40-70 per cent districts affected; and 10-40 per cent districts affected. Andhra Pradesh and Rajasthan are the states which are the worst affected with 70-100 percent districts affected. Out of 33,211 fluoride affected villages in the country, Rajasthan alone has 16,560 villages which is more than 51 percent. From these figures of World Health Organisation (WHO), an inference can be drawn that nearly 10 percent of fluoride affected habitations in the world are in Rajasthan alone.

Table: 1 The Comparative picture of Fluoride levels in Rajasthan

Year of Survey	Villages		Habitation		Fluoride affected			
	Total	*Surveyed*	*Total*	*Surveyed*	*Villages*			*Habitation*
					>1.5-3.0 ppm	>3.0ppm	>1.5 - 3.0 ppm	>3.0ppm
1973	32241	26788	-	-	7847*	1871	-	-
1991	37889	37889	45311	45311	6461	3280	4638	2181
2001	37889	34699	56057	34871	6143	5766	6821	4576

Source: Survey by PHED, 2003

With increasing over-extraction of groundwater for irrigation purposes, the concentration of fluoride in groundwater has been steadily increasing. Rajasthan is one state where ground water with high fluoride concentration is prevalent in all the 32 districts and has become a serious health hazard in 21 districts. According to the water quality evaluation made and validated up to March 2003 by Public Health Engineering Department, the drinking water sources in 11909 villages (34.32 %) out of 34699 surveyed villages (of total 37889 villages) and 11388 other habitations (32.65%) out of 34871 surveyed other habitations (of total 56057 other habitations) have been found to contain fluoride more than 1.5 ppm.

This is of utmost concern as the level of dependence on ground water is as high as 91% due to low rainfall with erratic distribution. The health impacts of long term excess fluoride intake (> 1.5 ppm) are damaging; causing dental fluorosis (teeth), skeletal fluorosis (bones) and non skeleton manifestations (soft tissue and organs).

2.1 RAJASTHAN INTEGRATED FLUOROSIS MANAGEMENT PROGRAMME (RIFMP)

In order to tackle the Fluorosis menace, the Government of Rajasthan established the Rajasthan Integrated Fluorosis Management Programme (RIFMP) with the support of UNICEF in early 2005. The aim of undertaking this programme was to facilitate safe potable water to the inhabitants presently served with excessive fluoride bearing water. This program is envisaged with public participation, in which the Domestic Deflouridation Units (DDUs) installed are intended to be maintained by the user-groups, with adequate maintenance infrastructure support from the Government

RIFMP is being implemented by PHED, UNICEF and at present, a total of 19 NGO partners. The programme was designed to be implemented in three phases:

Table 2: Phase wise distribution of Villages/Habitation for RIFMP

Phase	Duration	Fluoride concentration in source water	No. of villages and Habitations
Phase I	2004-05	Exceeding 5.0 ppm	2643
Phase II	2005-07	Exceeding 3.0 ppm	5056
Phase III	2007-10	Exceeding 1.5 ppm	11388

To meet the objectives of the RIFMP, the mode of implementation resorted to mitigate Fluoride in water would be through:

- DDUs in smaller and scattered populated habitations

- Hand Pump/ Ground Level Reservoir attached in larger & densely populated habitations
- Overhead Surface Reservoir attached, where these are available, e.g. in Nagaur

Table 3: Plan for Fluorosis Management in Rajasthan

S. No.	Type of Unit	Population range	Particulars
1.	Hand Pump Attached Defluoridation Unit	More than 50 but up to 250	One unit per 250 souls
2.	Domestic Defluoridation Unit	Up to 50	One unit per 5 souls
3.	Ground Level Reservoir Attached Defluoridation Unit	Habitations covered with schemes other than HP	One unit/existing GLR

Phase 1 of the RIFMP initially involved three NGOs – SARITA (Bhilwara), SWATCH (Tonk) and MYTRY (Ajmer), and targeted BPL families in 500 habitations where the concentration of fluoride in groundwater exceeded 5 ppm. In February 2006, with the support of the Additional Chief Secretary, Government of Rajasthan, Phase I was expanded to a further 1,572 habitations in 12 districts with fluoride levels greater than 5 ppm.

As of now 17,368 BPL families and 419 APL families have been provided with DDUs in 12 districts (Ajmer, Alwar, Pali, Sirohi, Jaipur, Sikar, Nagaur, Tonk, Dausa, Rajsamand, Bhilwara and Jodhpur). There have been previous appraisals of the programme which has brought out many observations like pointing out to the inability of many NGOs to get even a single APL family to buy a DDU which is of great concern and need serious reflections on the ways and means of working. The communication inputs have not been able to raise sufficient awareness levels both amongst the users and non-users and also with respect to complementary dietary practices, which requires strengthening.

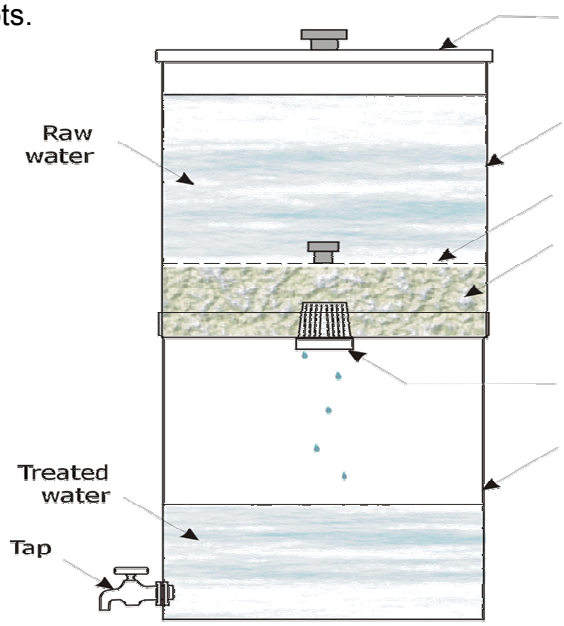
It has also been observed that the process adopted for procurement of DDUs in the project has been an inherent constraint in ensuring smooth supply to meet demand created among APL segment. To a certain extent the packaging of the DDU as a composite unit, the pricing strategy, the dependence on a single source of supply and the procurement process itself, have also been inherent limitations in the design of the project. On the whole, professional marketing inputs in the project are lacking. The regeneration services provided by the NGOs are satisfactory although it needs closer monitoring.

2.2 THE DOMESTIC DEFLUORIDATION UNIT TECHNOLOGY

DDUs are the "point of use" units with a higher degree of individual ownership, as DDUs have to be wholly or partly paid for. This helps in ensuring better maintenance of these units if adequate regeneration facilities are simultaneously set up at the village level. Though awareness creation is still necessary for users to be convinced of the importance of periodical regeneration.

A household filter costs between Rs. 200- 1400 depending on the material used. Materials used for filter unit include Stainless Steel, High Density Polyethylene HDPE (Sintex), Poly Vinyl Chloride PVC and Terracota pots.

Domestic Defluoridation Unit



Micro Filter

Specifications for DDUs

- Grade of Activated Alumina (AA)- Minimum attrition loss and ability to withstand alkali & acid treatment during regeneration.
- Particle size of Activated Alumina - 0.4mm - 1.2 mm
- Amount of Activated Alumina – not less than 3 kg and not more than 4 Kgs.
- Depth of Activated Alumina bed in the unit – between 3-4 cm/kg

Different versions of DDUs

- Rate of filtration - 8 to 10 liters per hour with a PVC microfilter
- Activated Alumina needs to be **regenerated** periodically. This is because after certain period of use (depending upon the fluoride concentration), the fluoride

uptake capacity of AA gets exhausted. This results in low or no change in Fluoride levels even after filtration from AA. As and when the Fluoride levels of treated water starts exceeding 1.5 ppm, it is an indication that it is time for regeneration of AA filter. ***The regeneration process is a chemical procedure used for cleaning up the used AA, so that it can be reused. Caustic soda and Sulphuric Acid are used for regeneration.*** (For details refer Best Practices in Regenerating Activated Alumina for Domestic Defluoridation Units : & Users instruction manual jointly developed by Development Alternatives & IITK with support of UNICEF)

Advantages of DDU

- Unit is easy to use
- Process is not time consuming
- Aesthetically filtered water is highly acceptable in terms of colour and or taste.
- Lower cost for treatment as only volume required for cooking and drinking, which is less than 20% of total requirement, can be treated.
- Regeneration of filters can be organized on community basis and household users are generally willing to participate in the process especially in the case of Rajasthan. In the case of Andhra Pradesh regeneration is done at the household level as well, though at the household, disposal of the harmful effluent is still not tackled effectively.
- Any chemical treatment is bound to generate waste, which needs safe disposal. As lesser volume is treated in DDUs, lower will be the sludge/waste production.

CHAPTER 3

METHODOLOGY

In the conduct of the Support Mission Assessment, the work consisted of the following 3 activity blocks:

- Pre-field planning, comprising methodology refinement, questionnaire formulation and literature survey
- Field Surveys, comprising household surveys and stakeholder interactions
- Post field analysis, comprising data analysis and brainstorming on recommendations formulation

3.1 PRE FIELD PLANNING

Inception meeting at Jaipur, 6th-7th July, 07

The DA team members discussed and prepared the inception report of Support Strategic Mission to RIFMP and detailed questionnaires were sent to UNICEF. After that, the discussion took place in the 'inception report meeting' organized by UNICEF on 6th & 7th of June' 2007, attended by UNICEF, PHED, 19 partner NGOs and DA team *(for deliberations please refer Annexure I)*. In accordance to this, certain changes were made in the inception report and questionnaires and were re-sent to UNICEF.

3.2 FIELD SURVEY

After the UNICEF's feedback, the field appraisal was started by the DA team members. The details are:-

Table: 4 Field Survey Schedule

S.NO.	DISTRICTS VISITED	NGO RESPONSIBLE	DATED
1.	AJMER	MYTRY	18.06.2007-19.06.2007
2.	TONK	SWACH	20.06.2007-21.06.2007
3.	PALI	RMSVS	25.06.2007-27.06.2007
4.	SIROHI	IIES	28.06.2007-30.06.2007
5.	BHILWARA	SARITA	02.07.2007-03.07.2007

a. Selection of study sites

- A total of 5 districts were covered, in consultation with UNICEF.
- The logic was, since the NGOs like MYTRI, SWACH and SARITA have been conducting this programme in these areas for more than two years, so this will give a more comprehensive picture.
- The two districts selected in Phase I -extended i.e. Pali and Sirohi had been selected because these were not included in UNICEF's prior field assessments. In addition, the NGO in Sirohi is also a DDU supplier.

b. Type of information gathered

Keeping in mind that the purpose of the mission is less to evaluate the program and more to provide suitable recommendations; therefore both qualitative and quantitative information was collected. Accordingly and also as brought out in the inception report meeting *(refer Annexure I)* the below mentioned points were covered in field appraisal:

Household Survey

- Looking at the coverage of the BPL and APL families in the programme areas
- Understanding, in depth, the factors that lead to the above performance. The understanding is that these factors are particularly related to:

- Demand creation for fluoride free water *(do people know about the fluoride problem, what tools and techniques have been used for awareness activities, how effective were these tools and techniques, what can be done to improve them, what are the budgets required)*
- Willingness to adopt the DDUs *(are the BPL and APL users actually using it; if not, then why; what are their experiences with the technology; why did other APL families not buy the product)*
- Supply side issues *(what is the current supply mechanism, where are the gaps in this mechanism, what are the constraints faced by the various actors, what are the ways to smoothen this process)*
- Project Management related issues *(relationship between various parties, gaps, if any, monitoring mechanisms)*

Within each district, 4 villages/habitations were covered. Selection of villages was random, based on villages list provided by UNICEF, PHED (where filters have been provided at least four months ago). Though earlier it was thought that 10 households would be covered per village i.e. 40 Households per district, later during the visit, the people were found to be in small clusters *(dhaniyaan)* of around 8-15 families. Most of the people were found to be providing similar answers to the questions. Therefore, the number of questionnaires filled was reduced from 200 to 160. It was ensured that out of 4 selected villages in each district; at least 1 village has a sizeable number of APL DDU user families. In other 3 villages in each district, there will be an appropriate proportion between BPL families with DDUs and APL families that have not purchased the DDUs.

Finally, a total of 160 Households in 20 villages/habitations were covered through questionnaires, across the five districts.

Table 5: Villages surveyed under study

DISTRICT	NGO WORKING	Villages/ Habitations Covered	No. of Families Covered			
			BPL	APL Users	APL Non Users	Total
AJMER	MYTRY	Kishangarh	0	2	4	6
		Kanpura	5	0	0	5
		Sheopura	2	1	2	5
		Lalawas	3	0	6	9
		Goyala	5	0	0	5
		Sub total				**30**
TONK	SWACH	Alimpura	4	0	1	5
		Pahadi	3	1	0	4
		Saulatpura	5	0	1	6
		Shri Kripalpura	3	2	0	5
		Sub total				**20**
PALI	RMSVS	Dhinawas	5	0	5	10
		Dorandi	5	0	5	10
		Bhairon ji ka mandir	5	0	6	11
		Kakadia	5	0	6	11
		Sub total				**42**
SIROHI	IIES	Balda	5	0	5	10
		Fasoria	5	0	5	10
		Sorthara	5	0	5	10
		Sindrath	5	1	5	11
		Sub total				**41**
BHILWARA	SARITA	Bhimpura	5	5	1	11
		Rathwalon ka khera	5	1	4	10
		Pratappura	9	1	0	10
		Balapur	-	-	-	
		Sub total				**31**
		TOTAL				**164**

Besides household questionnaires, Focus Group Discussions (FGDs) were held in all the districts. The number of FGDs to be done earlier was only 9, which was increased to 14 as per the need-felt. The logic was people were living in small clusters (*dhani)* of 8-15 families and it made more sense to get views of the groups themselves.
The details of these are:


Group Discussion at Pratappura

Table 6: Details of FGDs

District	Total No. of FGDs	FGD No. along Village/Habitation	Group Members
Tonk	3	1 in Alimpura	1 FGD with APL Non-user men folk.
		2 in Pahadi	1 FGD with APL non-user women folk. 1 FGD with BPL women folk.
Ajmer	2	1 in Kanpura	1 meeting with Sarpanch.
		1 in Sheopura	1 FGD with APL non-user women.
Pali	2	1 in Dhinawas 1 in Kakadia	1 FGD with BPL men 1 FGD with APL non user
Sirohi	1	1 in Sindrath	1 FGD with (BPL + APL) user
Bhilwara	6	4 in Balapur	1 FGD with Male non-users (APL & BPL). 1 FGD with Female non-users (APL & BPL). 1 FGD with Children non-users (APL & BPL). 1 FGD with Teachers (non-users).
		2 in Rathwaalon ka Khera	1 FGD with APL & BPL users. 1 FGD with PRIs representatives.

The functional regeneration centres in the area of the domain were also visited and were assessed for their ways of operating; the up-keep of records was also checked. The stocks of chemicals, weighing balance, gloves, buckets etc. were also noted. The Facilitator and associated field staff were questioned. The IEC material displayed was also noticed and captured through camera.

The observations were recorded using audio-visual modes, written records in form of questionnaires and self notes.

Table 7 : Regeneration centers visited during field survey

District	No. of Regeneration Centres	Location
Tonk	2	Baroni, Gunsi
Ajmer	1	Kishangarh
Pali	2	Sojat , Karmawar
Sirohi	1	Sindrath
Bhilwara	2	Rathwaalon ka Khera, Pratapura

Discussions were also held with PHED officials (Junior Engineers, Assistant Engineers) on telephone and observations made are included.

3.3 POST-FIELD ANALYSIS

After the collection of data from the meetings, field visits and literature survey, information was collated and analyzed to find out the overall scenario, areas requiring interventions and suggesting suitable recommendations and amendments in the programme. This was done incorporating inputs from technical, social, economic and communication specialists.

The four prime areas on which evaluation has been conducted and recommendations provided are:

1. Demand generation for fluoride free water through IEC activities
2. Acceptability of the technology, both among the BPL and the APL families
3. Delivery mechanisms for supply of filters and Activated Alumina
4. Management of the RIFMP

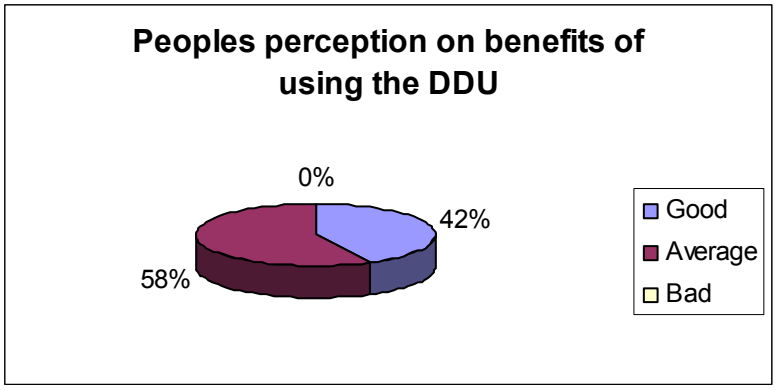
CHAPTER 4

ACCEPTABILITY OF DDUs – FINDINGS AND RECOMMENDATIONS

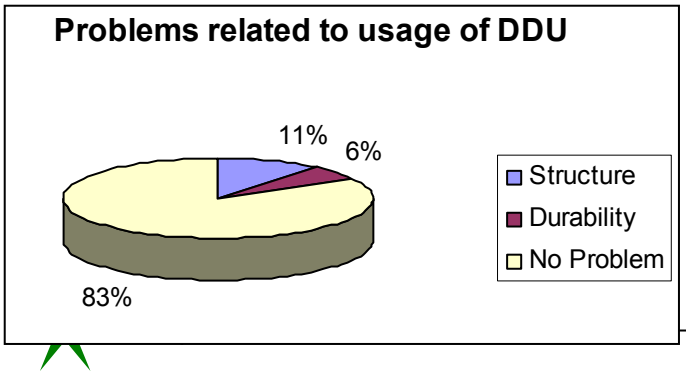
In order to extend the programme to a much larger number of villages, it is important to assess the acceptability of the technology by the people and the reasons for low coverage among the APL families. This chapter looks at these aspects and gives recommendations related to technical and other aspects.

4.1 FINDINGS ON ACCEPTABILITY DDUS

There have been rapid appraisals conducted by UNICEF and PHED which have brought out the observations that 82% of the DDU distributed were being used and maintained by the users. Very high usage of the filters is also confirmed by the household survey results in this study wherein the team visiting the five districts came to an observation that of the 103 (89 BPL & 14 APL) households possessing the filters, around 100 households were using the DDUs successfully, with 3-4 households not using them consistently or for purposes other than water filtration.



As regards the people's perception of the benefits of using the DDUs, the users have observed a reduction in fluoride affected symptoms like joints pain, yellowing of teeth, gastric and bloatedness in the stomach. A fortunate finding was that there was no user who thought that the DDUs have not been of any use. Almost 42% of the respondents reported that the performance of the DDUs was good while 58% thought it was average. However, on further enquiring about the benefits of using the purification system, almost all respondents mentioned that they had much reduced joint pains and other problems after beginning to consume the treated water. All the respondents who have adopted the



technology were also willing to recommend it to others.

As far as the existing users of the DDUs are concerned, we tried to assess their experiences with the use of the filters. This was done in order to find out if there is a need for improvement in the technical aspects. During the field visits, an effort was made to understand the people's reaction on DDU structure and design. About 83% of the users were satisfied with the current version of the DDU and 11% had concerns regarding the structure of DDU with 6% of users complaining about the durability of the unit. The major concerns with the structure were pertaining to the size of the unit. A few families would also prefer if the DDU was made from steel, because there have been a few instances of plastic unit breakage.

Regarding the filtration effectiveness of the DDUs, previous appraisals by UNICEF had shown that almost 80% of the working filters were providing 'safe' drinking water. The evaluation team tried to validate this result by checking both the input and output water quality for fluoride concentration. The villages visited have a fluoride content of about 5-6 ppm in the ground water which is the primary source of drinking water. The treated water from each of the functioning filters was tested on site using standard field test kits. Results indicate that in 90% of the filters checked, the treated water was within the recommended limit (1.5 ppm as per BIS norms). Among the rest 10%, it was found that the placement of the nylon bag was such that it did not fold up and led to seepage of unfiltered water. Previous appraisals by both DA and UNICEF also indicate this problem.

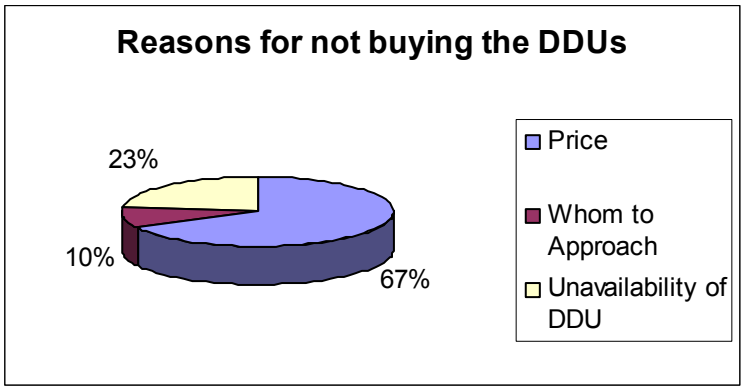
As regards the knowledge of the people about handling and maintenance procedures, it was found that in 95 out of 100 households (where DDUs were functioning), the filters are washed every day. In the rest of the households, washing is done one in 3-4 days. Maintenance includes cleaning of unit, nylon bag, micro filter and correct placement of nylon bag in the unit. While washing, the AA is kept in a container and then placed back after about 2 hours.

Coverage of APLs and BPLs

In the overall RIFMP, 12 districts have been covered (Ajmer, Alwar, Pali, Sirohi, Jaipur, Sikar, Nagaur, Tonk, Dausa, Rajsamand, Bhilwara and Jodhpur) where 17,368 BPL families and 419 APL families have been provided with DDUs. The current practice is that DDUs have been provided free of cost to the BPL families in the target areas while they have been provided at a cost to the APL families.

Keeping these facts in mind, we tried to identify the causes of such a low coverage in the APL category. In doing so, we interacted with both: APL families who have purchased the DDUs and those who have not purchased the DDUs. We have basically tried to find out what prompted the buyers to buy and the non buyers to not buy.

Through interactions with buyers from APL families, we have found that these were essentially the people who were either exposed to NGO's IEC activities or had some serious fluoride induced diseases in family members. Their awareness levels about the fluoride issue were the same as those of BPL user families and they understood the benefits of purifying the water.



From the survey of non user families, it was thought that it would be wise to differentiate between those who had decided to buy but could not buy due to certain reasons and those who did not want to buy at all. From the survey, it was found that about 48% of the respondents wanted to buy it but could not do so due to reasons such as non availability of filters and very low focus of animators. From the rest 52% of respondents, we tried to extract reasons for not buying. The reasons varied between respondents, the division of which is depicted in Chart attached.

Besides the surveys, villagers were also interacted with through the Focus Group discussions. In addition, the field personnel of the NGOs were asked their views. Together, some of the reasons that emerged for low coverage among the APL families were:

- **Very limited awareness created among APL families**: The RIFMP, by design, had a very low coverage target (5%) for the APL families. Similar target was passed on to the NGOs. Therefore, in order to ensure that atleast the BPL coverage targets were met, a huge bulk of the IEC activities were focused on the BPLs. This is reflected in the fact that 37% of the non user APL families have not been exposed to any kind of IEC activities. Out of the 39 respondents who were exposed to the IEC activities, 34 have seen wall paintings (which are not very effective), while only 7 have seen the video shows (the most effective medium). The villages chosen were also those where the BPLs are in sizeable numbers, the awareness events were mostly done in areas of their concentration and even personal interaction was mostly done with them. This led to very low awareness levels among the APL families about the need for filters.

- **Perception of 'free' provision:** The first reason that nearly all APL families gave was "If the BPLs are being provided the filters free, then why are we being charged for it?" They highlighted that this approach is not appropriate as one cannot expect to give it free to one group of people while making others buy. This is more so because the classification of APL and BPL is not perfect. In a village / hamlet, most of the

families are actually of the same economic status. Additionally, there are cases when APL families are actually poorer than the BPL families. Therefore, the discrimination does not go down very well with the APL families and their thinking is that they should also be provided these filters free.

- **High cost of filters and packaging:** Most of the APL families in the target areas comprised of farmers, agricultural labourers or unskilled labour working in the nearby towns. Their incomes on an average are in the range on Rs. 1500 – 2000 / month. For them, the initial price of Rs. 800 / filter was considered to be too high. Later when the price was brought to Rs. 480 for the double container filter, it was still way too high for them. During the survey, we tried to assess their willingness to pay and most of the people said they would be comfortable in the price range of Rs. 200 – 250. Therefore, when we tried to probe why the single container filters being provided at a unit price of Rs. 280 /- are being bought, people response was that the product does not look worth Rs. 280. Therein, therefore, lies the issue of packaging of the product.

- **No incentive for aggressive selling:** As already mentioned, most of the efforts for DDU promotion have been focused on the BPL families. One reason for this is that since there are no real sales channel established, nobody has any incentive to promote them aggressively. All the animators do not necessarily have the sales aptitude nor do have much interest in finding buyers among the APL families since they do not get any additional benefit over and above their salaries.

4.2 FINDINGS ON REGENERATION PRACTICES

During the field visits, 8 regeneration centres were visited by the team. It was found that these centres do about 30-200 regenerations per month depending upon the need. The regeneration centres visited were being maintained and operated by the animators of the respective area. It means, the collection and distribution of the AA bags is done by the animator itself.

The major points of observation are:

- ***Method of Regeneration:*** The regeneration centre in Bhilwara was using normal 8 hrs method for regeneration whereas in Ajmer 2 hrs process was being used. In Bhilwara, the animator in charge of the RC was not aware of the 2 hours which is not in accordance with the IITK recommendations. The staff in Ajmer was well versed with both the process.

Regeneration done by Animator at Rathwalon ka khera

- ***Infrastructure facilities*:** Both the centres were found to have adequate infrastructure like gloves, weighing balance, goggles, etc. However, there was lack of acid proof tilling work in both the centres.

- ***Waste disposal*:** the waste generated as a result is collected in a disposal tank in the RC. The animators use lime to neutralize the effluent and then dispose of the dried sludge in a pit. This is also not in accordance with the norms set by IITK. In Ajmer, the dried sludge was given to local construction units. Quantity of lime to be added in spent mix of regeneration and time of settling is not clear with the animators. According to the manual of SARITA, 85g lime is to be added in effluent of each regeneration which is not in accordance with IIT prescription.. While SWACH literature does not contain details of proper disposal procedures. According to them ½ kg lime should be added in each regeneration spent mix. These instructions are based on the assumption that in a day normally 10 regenerations take place. However, in reality this may differ. In actual practice the Regeneration Centres operating under SWACH add 250g lime for every regeneration done (as per IITK 500g of lime should be added for 10 regeneration.)

  There is no knowledge on disposal of spent AA and used chemical containers. Also animators are not sure of the shelf life/ termination of AA life. In training programs, animators were told that AA can be used up to 3-4 years / 30 regenerations.

- The IEC material describing the precautions and safety points was available.

- The RCs at Bhilwara and Ajmer maintain a stock of spare AA bags to replace the bags which have come for regeneration but in Tonk, the RC does not have a backup system, which means the people have to drink fluoride contaminated water for 2-3 days during which their AA bags are regenerated.

  It may be noted that IITK prescribes 3Kg AA with 1% NaOH and 1% H_2SO_4 (*Source: March 2000- July 2001, IIT Summary Report*). In DA's previous studies, it was observed that in the field, all DDUs are using 5 kg of AA in order to maintain a bed depth of 9 cm. This variation in volume is due to the variations

in the diameter of DDUs supplied by various manufacturers. This warrants quality certification systems in future. Else, it would lead to wastage of Alumina without any additional contribution to performance of the filter.

Overall findings

The regeneration centres are generally efficient but there were instances where the norms laid down by IITK were not being followed.

4.3 RECOMMENDATIONS

- In order to improve the coverage of the APL families there is a greater need for awareness about fluoride amongst the APL families so as to create demand for the DDUs. Money is not a major problem with most of the families, but there are a few families which can not afford these filters. There should be some kind of provision for them. An integrated IEC and marketing campaign should be devised for them. Recommendations on the IEC activities and a supply chain mechanism have been proposed in different sections of this report.
- There needs to be a little more effort from the NGO animators in educating villagers regarding maintenance of DDUs.

Regeneration Practices

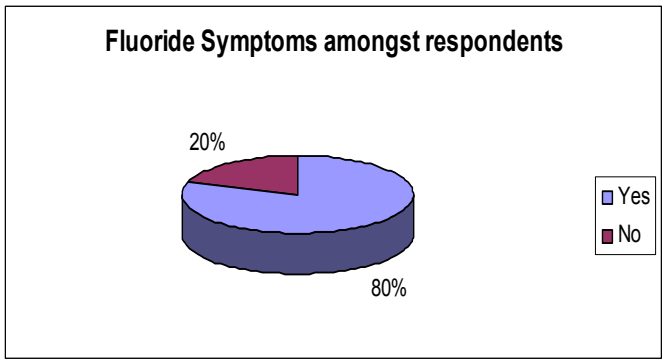
- Capacity building of the RC operators needs to be done on:
  - Accelerated bucket regeneration and best practices of regeneration is needed. This method of 2 hours would greatly reduce the time (presently 8-10 hours) of regeneration and enable operators to work efficiently.
  - Maintenance and hygiene practices at the RCs. This is important since many people back off due to non-maintenance and unhygienic conditions at the RCs
- A comprehensive multi level, multi tool system of monitoring is to be put in place to monitor
  - Water quality at the household level, especially in areas with fluoride levels higher than 5 ppm
  - Effective functioning and proper regeneration of defluoridation units. Overall water quality surveillance needs to be the responsibility of PHED. However on a regular basis, an agency or an NGO selected by the PHED can be trained to check F levels in water. The PHED can also shortlist and identify a 3rd party agency like BIS for monitoring and certification of AA and for standardization/ certification of regeneration centres.

- Proper waste disposal practices recommended by IIT Kanpur need to be promoted. For this purpose, legislation also needs to be brought out immediately.
- Research needs to be undertaken on developing ways to ensure that at the end of the lifecycle of AA, its smallest particle size should not be less than the size of the micro filter. This is essential to avoid clogging of the micro filters by small grains of AA.

CHAPTER 5

IEC FOR DEMAND CREATION – FINDINGS & RECOMMENDATIONS

One of the key components of any health intervention among the communities is generating the interest among them by raising their awareness on the issue and triggering a desire to undertake the desirable actions. Within the RIFMP also, it is quite evident that activities related to Information, Education and Communication (IEC) are an important component of the programme. This chapter evaluates the effectiveness of the IEC activities conducted within the programme in terms of their reach and influence on the people in generating a demand for the filters.



The chapter also recommends an IEC strategy for Phase II of RIFMP.

5.1 CURRENT IEC STRATEGY BEING FOLLOWED IN PHASE I

As per the Programme arrangements in Phase I, each partner NGO, in it's respective district, is mandated to conduct IEC activities for sensitizing the communities on issues related to fluoride and fluorosis. It is expected that these IEC activities will:

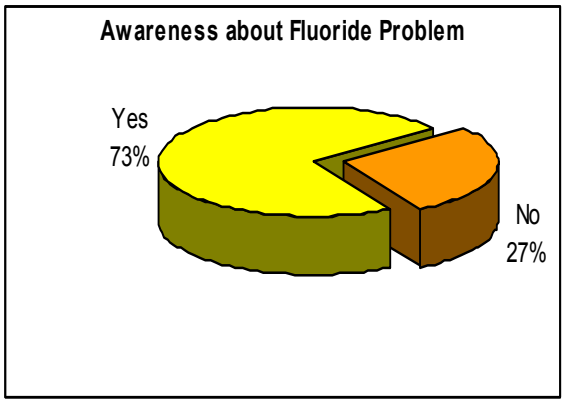
- Inform the communities on health damages due to consumption of fluoride contaminated water
- Generate demand for DDUs
- Inform people about the use, upkeep and maintenance of DDUs
- Provide information on complementary diets to be taken
- Show guidelines for the suitable regeneration process

The IEC activities are to be done through

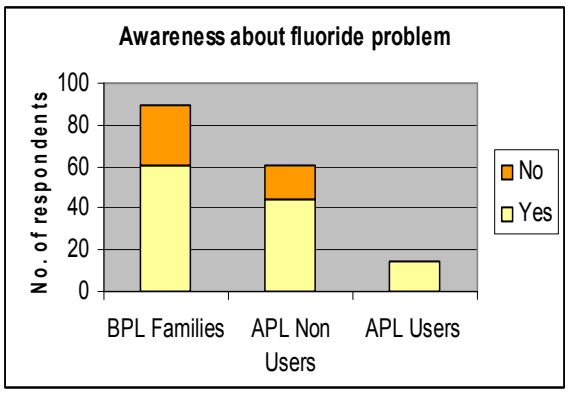
- Village Contact Drives, which include door to door contact & survey, slogan writing, cultural show
- Slogan writing
- Wall paintings at prominent places of block / district (20 per district)
- Displaying Posters (7 posters set for each village & 3 posters set at each regeneration center)

5.2 FINDINGS ON IEC EFFECTIVENESS

In order to look at the magnitude of the problem, we started with an **assessment of prevalence of fluoride induced diseases** among people. It was found that a majority of the respondents (almost 80%) had one or other symptoms. The most prevalent symptoms of Fluorosis were of dental fluorosis – decolouration of teeth and 60% of target group is found to be suffering. Pain in joints was almost universal. An extreme case of a crippled and bedridden villager due to fluorosis was also observed in one family at village 'Sri Kripalpura' of Tonk district. In several places we came across people of ages 45-55 who looked much older and weaker due to bent back and decayed teeth.



As a next step, the level of **awareness of people on presence of fluoride** was checked. It was found that before the RIFMP Programme activities were initiated in the villages, they were not able to establish the linkage between their water quality and health problems However, now in areas where the programme has gone on for almost 1-2 years; it was felt that level of awareness among the targeted groups is fairly high. In total, 73% of the respondents knew about the problem in drinking water, although there were district wise as well as category wise differences present**.** Surprisingly, 72% of the APL Non-User families as compared to only 68% of the BPL user are aware of the problem of fluoride in water. 100% of the APL user families are aware of this problem. Almost all of the respondents got to know of this problem in the water through the IEC activities conducted by the respective NGOs. There were a few people who were informed about the problem through print and electronic media. These were largely those who were either school teachers or who came in contact with officials executing government's development programmes.



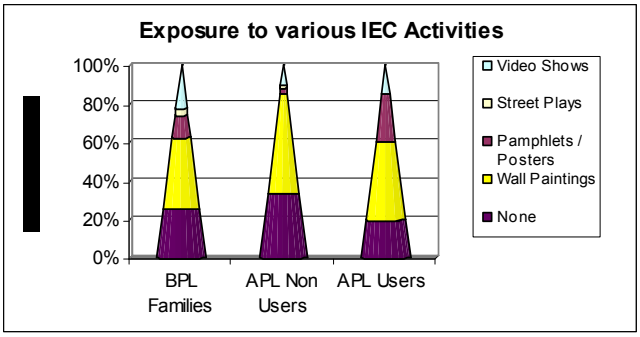
Further, an attempt was made to understand the **nature of IEC activities** conducted by the NGOs. In all the districts, primarily 4 types of IEC activities were conducted viz. Wall Paintings / slogans, posters, Video shows and leaflets. Out of the 20 villages visited, wall paintings were found to be done in 16 villages; the norm being one or two wall paintings per village. In about 12 villages, it was reported that posters were also initially put up. However, we came across only one of them as it was informed that the rest have worn down.

Video shows or Village Contact Drives, as called by some NGOs were the most effective mode of awareness creation. The shows were organized by the NGO by hiring the video players or using the ones available with relatively affluent villagers. Leaflets on DDU usage/ maintenance, complimentary diets and symptoms of fluorosis were being used by the animators for creating awareness through individual interaction with households. In Pratappura village (Bhilwara district), no IEC activities had been carried out. The reason given was that no funds were allocated for it as this area is being covered under the extended phase of the RIFMP.

Besides these tools, it may be noted that the animators or the Field Personnel appointed by the NGOs are themselves the most important medium of spreading awareness. In most of the villages surveyed, villagers recognized the animator and almost all the animators knew the various family members by name. Since the animators were mostly locally recruited, they were quite aware of the caste and other dynamics in the villages. Most people also expressed that the animators visit the village very frequently (atleast once in 15 days) and interact with them at their households. It is actually the animators who convince the people to take measures for water purification and use of filters.

To better understand the effectiveness of the IEC activities, we looked at the various tools of these IEC activities. It was found that **almost all the IEC activities focused on the health issues.** The villagers were aware of problem due to the various symptoms of fluorosis but could not relate it to fluoride contamination in drinking water. There were very few who said anything about presence of fluoride or any other contaminant. The content of various types of IEC activities was:

- Wall Paintings – primarily health problems related to fluoride and complimentary diets
- Posters – primarily health problems related to fluoride; very few posters also had information on DDU usage procedures
- Video Shows : Health issues completely
- Leaflets : some information on DDU usage and complimentary diets



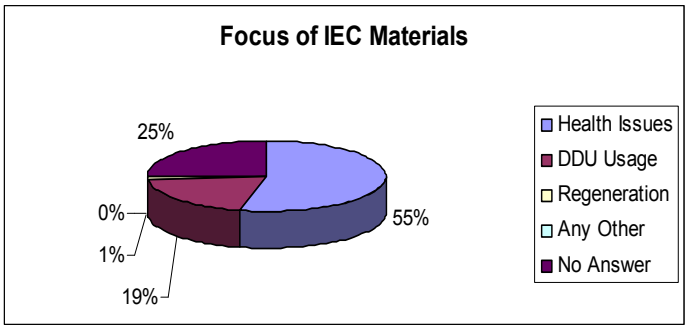
We also tried to look at **who the IEC activities were focused at**. It came out from interacting with the villagers that although the video shows were carried out by involving all the community members, especially the BPL families, there were instances that women could not watch the shows due to gender issues like men and women do not assemble together. Since these were taken up only once in each village, a large number of people who missed these shows never got to watch them. The constraint with wall paintings is that the budgetary allocation is for only 20 wall paintings per district and

moreover, the site selection has not been done judiciously. Therefore in a majority of the cases, people did not either see the wall paintings or understand them. In all the villages visited the problem of gender isolation was encountered i.e., the male animators were interacting with only males and female animators with only female members of the community. Therefore, in some villages either only men were focused or in others only women were focused on, depending on the sex of the animator. Further, in none of the villages these issues were being discussed in public meetings such as the *Gram Sabhas*.

We also looked at the differential exposures of APL and BPL families to the IEC activities. It was found that almost 37% of the non-user APL families have not been exposed to any IEC activity at all; the corresponding figures for BPL user families being 32%. 34 of the 69 APL non-user respondents have been exposed to wall paintings and only 7 of them to video shows. As against this, among the BPL families, 42 respondents (out of 89) had seen wall paintings and 26 had seen the video shows, some respondents having seen both.

Based on these, an attempt was also made to understand the most effective IEC activity amongst the ones used. In all the five districts, it was found that it was the video shows that captured everybody's attention. One, many more people remembered the occurrence of video shows (almost 63%) and two, among the people who were exposed to the different types of IEC activities tended to remember the contents of the video much more as compared to wall paintings or posters.

As far as effectiveness of the content of the IEC activities is considered, we found that almost 55% of the people could only recall health issues being discussed while 25% of them could not recall any content of the IEC activities. Very few people could actually recall the messages in the wall paintings and posters. The prime reasons for this were that these awareness materials were heavily text oriented and the villagers found it difficult, to comprehend the contents due to low levels of literacy. In addition, most of the IEC activities were conducted only once in each village during the entire project period. People have forgotten even the incidence of the awareness activities, not to mention the messages conveyed.



On enquiring with the NGOs about the less effectiveness of the IEC activities, all the NGOs expressed a need for repetitive awareness activities along with making them more "**customized and interesting**".

Overall Findings

The problem of fluoride induced diseases is a widely prevalent one and demand action on a significant scale. Under the RIFMP, the NGOs in the surveyed areas have done a good job of raising people's awareness on the issue. Demand generation, however, has been constrained by inadequate and uncustomised IEC activities. The provision for only one-time IEC activities in the programme design, therefore, needs a revision.

Problems with current IEC campaign:

- The IEC activities in the Phase – I villages have been carried out only once
- The language and methodology used in wall paintings is not easily understood by the target audience. The technical term like "fluoride" was not explained to the community though they are aware of symptoms of fluorosis
- The yellow background of wall paintings creates hindrances in differentiating & explaining the symptoms of dental fluorosis

Case Study

The wall painting was an IEC tool in village Dhani lalawas of Tonk District. The painting is an attempt to create awareness regarding the symptoms of Fluorosis, Use of DDU filter and complimentary diet to be taken

However, from the graphics people find it difficult to comprehend the message conveyed specially in regard to physical abnormalities due to fluorosis. It is difficult to differentiate between the symptoms of fluorosis and normal case.

While selecting appropriate space for wall paintings the NGO should take into consideration that the images and content are placed in such a way that they convey correct meaning and interpretation of the desired message.

Suggestions to improve current IEC campaign

- The IEC campaign stresses on symptoms of fluorosis and not on fluoride. The strategy should pay equal attention on both aspects. In the campaign the word fluoride should be related clearly to its symptoms.
- As the video show is very popular so the documentary movie should be revamped or one new documentary movie should be made on the cause, effect and benefits of the filter.
- More use of traditional media for the awareness and campaign like: street theater & puppet shows.
- Training of animators on various issues (DDUs, regeneration process & practices, etc) needs to be done in order to communicate the same to the target group.

5.3 SUGGESTED COMMUNICATION STRATEGY FOR PHASE - I EXTENDED AND PHASE -II

The suggested communication strategy to be adopted for RIFMP Phase –I extended and Phase –II is as follows:

Purpose of the communication strategy

– To create large scale awareness about health risks of fluoride water

– To provide information on purpose and usage of DDU filters

– Demand creation amongst the APL families for DDUs

Key Messages to be communicated

– Health risks due to consumption of fluoride contaminated water

– DDU filters are an effective and affordable solution

– Ways to use and maintain the filters

– Long term cost effectiveness

Target Audience

– BPL Families - for usage

– APL families – for usage and marketing

Strategy

The communication strategy for RIFMP should address two major issues of communicating the health risk factor of fluoride and awareness about the simplest method of purifying water, 'DDU filters".

Table 8: Mode of action: Phase wise (Phase I, Phase II, Phase III & Phase IV)

Phase	Description	Duration
Phase I	general communication materials for going to the field	4 months
Phase II	for the partner NGOs and local leaders	3 months
Phase III	for the communities	3 months (developing to implementation)
Phase IV	to gauge the impact of campaign and documentation	2 months

PHASE I - General materials for going to the field

Communication materials will be made as background material on the concept. It will be useful while talking to the partners, APL families and communities.

Details

- Posters, brochures and flyers communication about the fluoride problem and DDU filters for individual household consumption
- Audio/visual presentation, theatre/puppet shows for public viewing

PHASE II - For the Partners

As the project lies on the hand of partners to implement the project and establish the messages, the action starts with the partners. This phase will orient them and enable them with information, methods and tools.

Action

There is a need for capacity building of animators and other field personnel on various aspects of the programme.

The training should include schedules on DDU usage and maintenance, regeneration practices conforming to the norms laid down by IIT –Kanpur, etc

Material

- Flexi Posters (awareness pictorial poster)
- Workshop folder with leaflet on the main message
- Flip charts
- Backdrop
- Banner
- Script of theater and lyrics of the jingles

PHASE III - For the communities through the partners

Socio – economic characteristics and behavior of target communities

- Low level of literacy
- Lack of awareness and exposure to technology
- Most common local dialect is Hindi/Mewari /Rajasthani
- The village dynamics are influenced by caste, gender and financial status of the community
- Financial problems

Challenges

- Need to create respect for the simplicity of the method
- How to sustain the behaviour

Action

- Small scale testing of water quality
- Health survey on extent of fluorosis, particularly in children
- Community meetings with focus on women
- Participatory training

Material

- Banners in each village
- Awareness Posters
- Wall Paintings – 4 per village
- 2 Jingles – played in community meeting and local radio
- Mobile exhibition
- Puppet show
- Street Theater

Venue

- Village community centers
- Panchayats
- Schools
- Village wells/ponds
- Dhabas (road side eateries)

CHAPTER 6

MANAGEMENT OF RIFMP – FINDINGS & SOLUTIONS

The success of this programme is critically dependent on it's efficient management In this chapter, we take a look at the current management structure and identify the lacunae that exist within it. As per the ToR, we also provide recommendation on the Monitoring and Evaluation aspects of the programme.

6.1 THE PROGRAMME MANAGEMENT STRUCTURE

As per the Programme documents provided to DA and discussions with the various stakeholders, the management of the programme is done through a tri-partite agreement; the 3 parties being PHED, Government of Rajasthan, UNICEF and the Implementing NGOs. Under this framework, a Project Cooperation Agreement is drawn up between UNICEF, PHED and each NGO partner separately. The stated roles and responsibilities of the various partners are shown in Table below.

Table 9: Responsibilities of Key stakeholders in RIFMP

Party	Responsibilities
NGOs	**Planning** ▪ Survey of identified habitations to collect water samples ▪ Identification and preparing list of BPL and APL families ▪ Identification of field facilitators ▪ Identification of regeneration centres **Communication campaign** ▪ Village meetings to discuss effect of fluoride in water on health, removal of fluoride using DDUs and the project provision. ▪ Small group meetings to explain use and maintenance of DDUs ▪ Wall writings and display of posters to reinforce messages **Promotion of use of DDUs**

	▪ Distribution of DDUs to BPL families ▪ Meeting with APL families to motivate them to purchase DDUs \ ▪ Weekly visits to strengthen contact with users **Monitoring of use and servicing of DDUs** ▪ Establish regeneration centres of A/A ▪ Testing of water quality to ensure that fluoride level does not exceed 1.5mg per litre. ▪ Removing A/A bags and replacing after regeneration
PHED	▪ Bear the cost of the DDUs as well as the cost of regeneration of A/A. Reimbursements to NGOs for these costs are done after submission of installation certificate by the NGOs ▪ Bear one third of the project support cost - cost of managerial and field staff to be engaged by the NGOs for implementing the programme, mobility expenses of the field staff of NGOs and related project management costs
UNICEF	▪ Programme Monitoring ▪ Quality control of Filters and Activated Alumina ▪ Bear cost of training and IEC activities ▪ Bear two third of the project support cost - cost of managerial and field staff to be engaged by the NGOs for implementing the programme, mobility expenses of the field staff of NGOs and related project management costs ▪ Together with PHED, issue to officials, agents or representatives of the Government all such instructions as may be necessary or appropriate for the prompt and effective implementation of the tasks to be done by the NGOs *(as written in the PCA provided to the team)*

6.2 FINDINGS

While talking to the various stakeholders, both during the meeting in Jaipur and separately with them, we felt that most of the parties are quite happy with the way the programme is currently being managed jointly by PHED and UNICEF. This is all the more creditable considering that it is a pioneering initiative in terms of tri-partite agreements between public agencies, a UN Agency and NGOs. The general feeling is that the programme has been a success in its management as well as implementation.

However, as with any programme that is charting new territories and is large in size, there are bound to be certain hiccups, which can only be identified in the duration of the programme. Same as the case with RIFMP wherein certain issues related to procedures

and legislations have cropped up and need to be sorted out. Following are the issue that we have identified in this Support Mission:

- **Lack of guidelines within the PHED system for dealing with NGOs**: As already mentioned elsewhere, the main grudge that the NGOs have is that they are being treated like the Contractors within the PHED system. The reason for this is that on each reimbursement for the DDUs procured and installed by the NGOs, they are reimbursed only about 85% of the value, the remaining 15% being retained as Tax Deduction at Source (TDS). The clause for this is in the event of any procurement done by the PHED, TDS of 15.2% is cut from the suppliers / contractors'' quoted value. The NGOs are however, not suppliers/ contractors in reality since their reimbursement is only for supply to families at the same value as what they are procured for. This anomaly needs to be corrected.

- **Procedural delays at PHED level**: Many of the NGOs felt that procedural delays within the PHED system were obstructing the progress in their activities. The NGOs felt that there were delays at two levels:

  - At the block level, where certification of installation of filters is required to be done by the PHED staff along with the Panchayat. NGOs reported that this often takes quite a bit of an effort to get this staff to certify after verification from the household level. This leads to a delay in submission of documents to the PHED, Jaipur for reimbursements
  - At the PHED, Jaipur level, where delays happen due to the procedural requirements followed by PHED. However, PHED officials also reported that NGOs often do not submit the complete documentation, thus causing the delay.

- **Lack of appropriate monitoring mechanisms:** A look at the Project Co-operation Agreements reveals that currently NGOs are mandated to set up self monitoring and reporting mechanisms in consultation with UNICEF and PHED. In the initial six months, they are required to submit monthly and quarterly reports need to be submitted thereafter. The monitoring should include:

  a. **Technical Audit** – Random testing of output water from DDU's for F concentration at sites of installation. The number of DDU's tested for output water shall be minimum 5% of the number of DDU's installed by SWACH each fortnight and every time, a new set of DDU's shall be tested, (. Based on the results of such audits, frequency of regeneration may be decided in consultation with UNICEF / PHED.

  b. **Social Audit** – Public Opinion shall be taken from at least 10 villages and habitations where the tasks are provided to determine:

     - The acceptability of DDUs installed

- Satisfaction of beneficiaries regarding the mode of collection, supplying of regenerated Activated Alumina bags
- Comment of villagers/beneficiaries on over-all tasks
- Acceptance of DDUs by APL families as represented by sale of DDUs
- Level of Affordability for bearing the costs of regeneration, in case of APL families etc.
- Satisfaction as to routine Maintenance of the supplied DDUs both to APL and BPL families

Keeping these aspects in mind, we have tried to understand the real monitoring and reporting systems being followed. It was found that although the reports are submitted regularly, there is no real monitoring system in place. The reports often contain what NGOs like to report and not all the progress made or barriers / challenges being faced. This is holding up extraction of any significant learnings obtained by different NGOs as part of their activities.

- **Proper communication systems not yet in place**: Many NGOs felt that adequate communication systems between the NGOs, UNICEF and PHED were still lacking. It was reported that at several instances, decisions taken in the monitoring meetings were not communicated to them. As regards meetings themselves, they were being called at very short notices.

- **Commercial transactions by NGOs:** As per the laws, organizations registered as not-for-profit (e.g. Societies, Trusts etc) are barred from conducting any commercial transactions. As per RIFMP programme design, partner NGOs are currently buying DDUs from commercial vendors and selling them to the APL families. This is very akin to a commercial transaction and may be illegal

6.3 RECOMMENDATIONS

- **Formulation of guidelines for dealing with NGOs:** It may be recalled that DA has recommended a modified procurement mechanism in an earlier section wherein PHED would make the procurement and provide it to the NGO, However, if the current system is to be followed, it is recommended that separate rules may be formulated for transacting with the NGOs and not clubbing them as other vendors of the PHED. This point may be jointly taken up by UNICEF and PHED to the Department of Finance, Government of Rajasthan

- **Eliminating procedural delays:** In order to minimize or totally eliminate the procedural delays, it suggested that
  - NGOs should be clearly oriented on the required procedural aspects before applying for verification and certification at the local level and completion of all relevant documents before submitting claims for reimbursements
  - At the same time, strict instructions need to be issued at the local level to conduct the verification and grant the certification within 15 days of the request made by the NGOs. Similarly concerned officials at PHED, Jaipur may be instructed to make reimbursements within 15 days of receiving the complete documentation

- **Communication mechanisms**: To ensure good communication systems, it is recommended that minutes of all the relevant meetings held should be circulated to all the concerned parties with major decisions taken clearly mentioned. It is also recommended that every 6 months a meeting of all the parties may be convened to share progress, ideas, learnings and ironing out of differences. These meeting may also be used to inform in detail the various relevant operational decisions taken in the previous 6 months, Either UNICEF or PHED could convene this meeting.

- **Legality of DDU procurement and supply by NGOs:** Recommendations have already been made to modify the procurement system. However, still it is felt that we do not have the expertise to suggest a solution. We only recommend that proper legal advice be sought in this regard.

- **Effective Monitoring Mechanisms: As** regards putting in place effective monitoring mechanisms, we suggest the following monitoring strategy:

Objectives

The RIFMP needs to be monitored at two levels a) Programme level and b) Project level

Programme Level

To monitor the physical and financial progress of the programme, identify the bottlenecks and documentation of programme learnings.

Project Level

To track the project progress on basis of objectively verifiable indicators identified in the project proposals

Table 10: Framework of RIFMP monitoring system

Components	Mechanism	Frequency	Who	By Whom	Purpose
Performance Tracking	- Six monthly & quarterly progress report	Six/ three months	Project officers of UNICEF & PHED	Monitoring Committee	Tracking
	- Quarterly Progress Report	Three months	NGOs	Project officers of UNICEF & PHED	Tracking
Focused Studies	- Field Visits	As per requirements	UNICEF & PHED team jointly	-	Lessons Learnt

Functional mechanisms

a. Target audience and identification of their information needs

For any prudent monitoring system, identification of target audience and information needs is of paramount importance. The lack of clarity in this respect results into junk information being gathered, processed and transferred. In addition, it results into loss of time, money, energy and above all causes delay in decision making process, which defeats the very purpose of monitoring. The crux of the matter is that pinpointing the audience and identification of their precise information needs is significant. In the RIFMP, the prime audiences are:

b. Internal

- The Programme Co-ordinators (UNICEF and PHED)
- NGOs

c. External

- The Monitoring Committee
- Government of Rajasthan

Table 11 : The data and information requirement for individual audience

Target audience	Information needs
Programme Co-ordinators	- Input (professional) provided and the resultant output - the status of deliverables - The status of ongoing projects - Liquidity status of RIFMP account - Lessons learnt
NGOs	- Status of achievement of their promised deliverables and identification of alternate strategies required, if any - Financial situation - Knowledge of successful approaches adopted by other NGOs
The Monitoring Committee	- Status of population coverage under the programme - Status of financial and other resources allocated, spent and further required - Successful interventions in various districts - Partnerships required to be formed with other agencies (e.g. micro-financing institutions) - Lessons learnt and disseminated
Government of Rajasthan	- Status of population coverage under the programme and the future targets - Financial resources required for meeting the targets

d. Performance indicators

Indicators are significant component of any monitoring system. An indicator is a measure that is used to demonstrate the change or result of an activity project or programme, in case direct measurement is not possible, proxy indicators may be used.

The indicators should be selected at project formulation stage, generally while selecting an indicator the programme/project objective(s), the target group and their

needs, the outcomes should be kept at the back of mind. A good indicator should have SMART characteristics:

S	Specific
M	Measurable
A	Attainable
R	Relevant
T	Trackable

The following indicators will be used to measure the performance of the RIFMP programme, these indicators are clubbed in accordance to different audience

Programme Co-ordinators

1. Ratio of targeted deliverables and achievements
2. Adherence to time schedule and objectives by NGOs.
3. Status of outputs with respect to technical support
4. Total grant funds received and disbursed
5. The current balance in RIFMP account
6. Number of success stories documented

NGOs

1. Coverage achieved in terms of both APL and BPL families
2. Number and type of promised programme activities completed
3. Total funds received, spent and remaining
4. Documentation of learnings and any new / alternative strategies adopted

The Monitoring Committee

1. Ratio of targeted deliverables and achievements
2. Adherence to time schedule and objectives by the programme
3. Total grant funds received and disbursed
4. The current balance in RIFMP account
5. Number of success stories documented
6. Progress made on the required partnerships

Government of Rajasthan

1. Coverage achieved in terms of both APL and BPL families and their continuity

2. Total funds allocated, disbursed and remaining

e. Mechanisms for Data Collection

Different mechanisms like progress reports, field visits and project reviews need to be used to collect and share the data and the information as per the requirement of different audiences:

– **Progress Reports**

The physical and financial progress reports of the programme should be submitted on quarterly and half-yearly basis, based on a reporting format to be prepared jointly by UNICEF, PHED along with the Monitoring Committee members. This report needs to be prepared every six-months and one hard copy of each should be sent to the Monitoring Committee members.

The NGOs that are part of the RIFMP shall report to the Project Officers of UNICEF and PHED every quarter in format jointly developed by them. The progress report shall be submitted within the stipulated time period given in the Project Co-operation Agreement

– **Field Visits**

From the perspective of monitoring the project field visits are very useful source of first hand information on project progresses. The team from the Programme Co-ordinators should under take regular field visits as per the work plan to appraise the progress of the ongoing projects:

The team members under taking the field visit shall prepare field report high lighting the objectives of the field visit, the observations and the follow up activities required. Before starting the filed visit the member(s) shall prepare a detailed plan of activities to be performed during the visit.

Further, field visits will be used for undertaking focused studies for bringing out the project learning under different thematic areas.

– **Project Review**

Depending upon the indications from progress reports, field visits or monitoring reports on project, the RIFMP programme team shall review the individual projects under the following two circumstances.

1. The project has shown exceptional results
2. The project has shown mis-management, deviation from project goals and objectives or inappropriate delay in project deliverables

Besides the above, an annual project review exercise should be undertaken on the basis of performance indicators.

f. Analysis and documentation

The information collected from different mechanisms discussed above will be synthesised and analysed by the Programme Co-ordinators. The information will be used to document the programme learning both good and bad, it would also strengthen of the programme processes

g. Feedback and corrections

The programme learning will be passed on to the NGOs to make necessary adjustments and corrections in the projects to achieve better results.

6.4 The Recommended Programme Management Structure for RIFMP Phase - II

Based on the specific findings in the assessment and the various recommendations made, the following programme structure within the RIFMP Phase II is recommended.

Table 12 : Responsibilities of Key Stakeholders in RIFMP

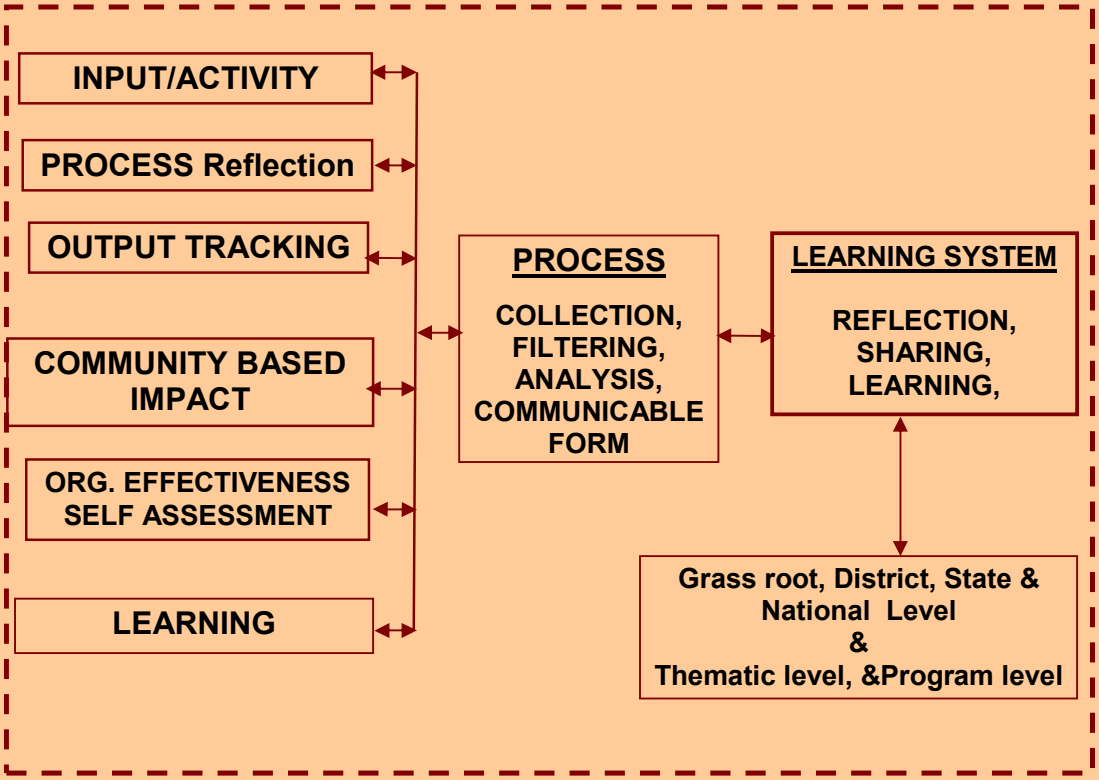
Party	Responsibilities
UNICEF	▪ Facilitation between different stakeholders involved ▪ Provide technical support for a. Improvement in technology by DDU Suppliers b. Improvement in Regeneration processes c. Standardisation of Activated Alumina d. Quality Assurance and Certification of DDUs and AA e. Setting up AA testing facility in the state ▪ Overall Programme Monitoring ▪ Formulating partnerships with a. Marketing Agencies for setting market-based supply chain of DDUs b. Micro-finance institutions for devising appropriate financing schemes for improving DDU affordability ▪ Design effective communication strategy and provide IEC materials ▪ Undertake to provide trainings and capacity building for PHED staff, NGO personnel etc.
PHED	▪ Overall management of the programme, including

	a. Selection of Partner NGOs, together with UNICEF b. Local level verification and certification of DDU installations c. Programme monitoring d. Monitoring of progress of Marketing Agencies ▪ Procurement and supply of DDUs a. Undertake procurement of DDUs from identified suppliers; issue them to the NGOs against certain advance and recover payments b. Provide financial support to identified marketing agencies for establishing a supply chain ▪ Undertake periodic water quality monitoring with the support of identified agencies
NGOs	**Planning** ▪ Survey of identified habitations to collect water samples ▪ Identification and preparing list of BPL and APL families ▪ Identification of field facilitators ▪ Identification of regeneration centres **Communication campaign** ▪ Village meetings to discuss effect of fluoride in water on health, removal of fluoride using DDUs and the project provision. ▪ Small group meetings to explain use and maintenance of DDUs ▪ Wall writings and display of posters to reinforce messages **Promotion of use of DDUs** ▪ Distribution of DDUs to BPL families ▪ Meeting with APL families to motivate them to purchase DDUs \ ▪ Weekly visits to strengthen contact with users **Monitoring of use and servicing of DDUs** ▪ Establish regeneration centres of A/A ▪ Testing of water quality to ensure that fluoride level does not exceed 1.5mg per litre. ▪ Removing A/A bags and replacing after regeneration

Model Framework for MEAL

Monitoring Evaluation And Learning System (MEAL) is a multiple system for complete and overall evaluation and management of a project. The system works towards establishing improved systemic base within the organisation for better project management and converting experiences and actions into knowledge. MEAL acts a tool for enhancing stakeholder's interaction and sharing for greater impact and sustenance of the project.

MEAL FRAMEWORK



Note: The system can be customized to address the monitoring demands of RIFMP ***(see Annexure ii)***

CHAPTER 7

APPROPRIATE DELIVERY SYSTEMS – FINDINGS AND RECOMMENDATIONS

Supply and delivery being the key determinants in ensuring the desired coverage of the programme, we tried to understand this issue in detail. As in other cases, the team looked at the previous findings from the appraisals conducted by UNICEF and PHED earlier as well as DA'S previous studies conducted earlier. In this evaluation, assessments were done initially in the Meeting with all the 19 NGOs, UNICEF and PHED officials in Jaipur and were then followed by individual interactions with these stakeholders.

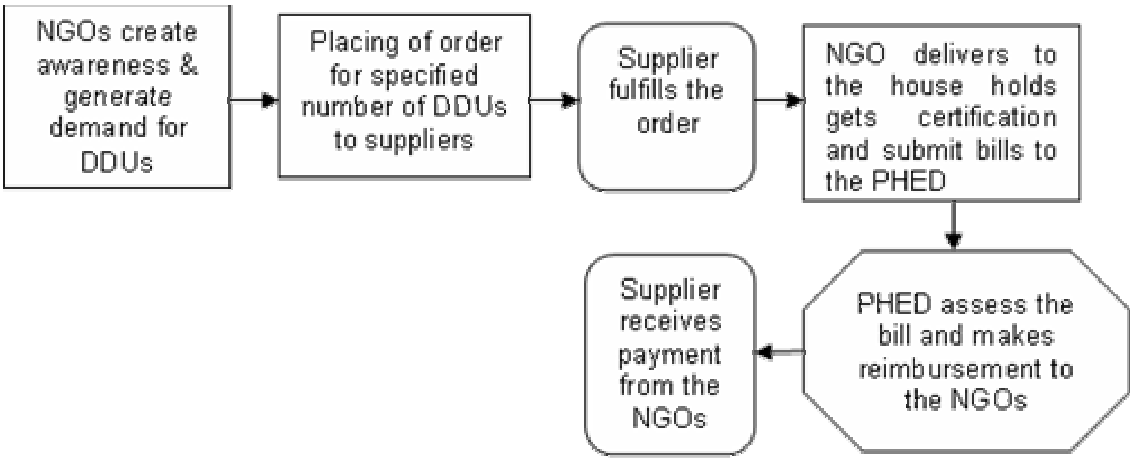
7.1 CURRENT DELIVERY MECHANISM

As per the programme design, the NGOs procure DDUs on their own from mostly identified suppliers. The quality assurance is done by agencies recommended by UNICEF (Sriram Institute of Industrial Research, Delhi and IIT, Kanpur). The bills are then submitted to PHED for reimbursement.

Once the filters are received, the NGO stocks them at an identified place in the block. A minimum of 5% of the number of DDU's received are kept for the APL families within the block. The material supplies i.e. containers and Activated Alumina of above specification are then to be got inspected at the cost of the NGO by a reputed third party. The supplies should be supported with valid certificates of inspection and shall be with mark of approval of the NGO designated Inspection Agency.

With this aspect completed, the NGO installs these units in the households. After all BPL families of the village / habitation are provided the DDU's, 5% verification of installation is done by the Assistant Engineer or the Junior Engineer of the PHED of the respective area in a specified format. The certificate of verification by Sarpanch & Patwari and that from Assistant Engineer or the Junior Engineer for installations in BPL families are thereby produced to PHED for release of payments to the NGO for the item of supply & installation of units.

Once all these procedures are completed, the NGO submits bills to the PHED for reimbursement. The PHED does the due diligence on the bills and issues the payment to the NGOs.



7.2 GAPS IN EXISTING SUPPLY MECHANISM

During the meeting in Jaipur, the NGOs raised several issues, which were further investigated during the field visits and individual interactions with the officials. These issues broadly relate to:

- **Inadequate supplies of DDUs and Activated Alumina**: With regards to the supply mechanism of the DDUs and AA, The Appraisal reports indicate that the supply situation relating to the DDU as a composite product (consisting of the containers, micro-filter, tap, covers, and activated alumina in a nylon bag) and the procurement process adopted in the project has resulted in continued supply crunch. In turn, the limited access of potential users to DDUs has meant that the project has focused almost entirely on meeting the basic requirement of providing free DDUs to BPL families and servicing them.

  Similar findings were also obtained from stakeholder interactions in this evaluation, where most of the NGOs felt that the time lag between the placing of an order and the delivery of the DDUs is too long (3-6 months). Sometimes even the volume of order placed is not met. This has serious implications on the promotion of the product. Basic marketing principles dictate that for consumer products, delivery should be in very quick time once the consumer has decided to use the product. In this programme's case, initial demand is generated after the IEC activities, but effective demand is generated only if villagers are immediately persuaded for filter adoption / purchase. Quick delivery of the product then becomes crucial to close the deal. However, if the demand is generated and the product is not available, this demand quickly wanes away. Since the programme provided for only one time activities and no second time IEC activities incorporated, the adequate coverage is

not achieved. This leads to the fact that mostly NGOs focus on meeting the basic need of coverage of only BPL families who are to be provided the filters free of cost.

When we tried to find the reasons for these inadequate supplies, it was found that there are only 3 suppliers available. Taking into consideration the programme's requirements, their production capacities are limited. Together with this, the NGOs often place their orders in bulk, with several NGOs placing their orders at the same time. This results in the supply crunch.

Another factor that determines the supply of DDUs in the system is the availability of Activated Alumina at the desired price. As per the Status Report of the RIFMP prepared by UNICEF, Activated Alumina is a product with no established national standards for human consumption. UNICEF has developed the current draft standards for drinking water treatment applications. The principal use of AA however is in the petrochemical industry, which is guided by a completely different set of market forces. As a result of growth in the petrochemicals sectors, recently, the prices of AA has gone up significantly, i.e. Rs 110 per kg. This has meant that NGOs can longer procure it at a price that is fixed to be reimbursed to them (i.e. Rs 80 per kg) as per the norms fixed under the RIFMP design. This has led to the fact the NGOs are not able to procure the AA, thus affecting even the regeneration processes.

- **Lack of DDUs as a composite unit:** As per the UNICEF Appraisal Reports, there are no known manufacturers of the DDU as a composite product, even today in the Indian market. The containers and Activated Alumina are required to be procured. This has several implications:
  - The product (DDU is a functional unit) is not visible in the market.
  - There is no one primary stakeholder from the supply side;
  - Since the composite product does not exist in the "market", its servicing (mainly regeneration) does not interest any one stakeholder.
  - It is ironic that as per the Central Excise and Customs Rules, of GoI, the composite DDU is exempt from Excise duties, while the individual components (containers or AA) are not.

While the evaluation surveys confirmed these findings, an attempt was also made us to answer the question "why are DDUs not available as a composite product". It was found that the reason lies in two factors: one, limited availability of suppliers for plastic or steel containers of the required quality and two, suppliers of AA being different, AA supply is determined more by high/low demand in the other industries rather than by this market. As already mentioned elsewhere, the technical specification of the DDU technology demands that the containers should be of a

certain quality and size, as determined by the technical parameters. These kinds of containers are not very readily available in the market since there is hardly any other existing market for them and the DDFU market till date has been too small. To circumvent this problem, MYTRY, the NGO was brought in by UNICEF from Andhra Pradesh since it had production capability for plastic containers and also had direct access to AA manufacturers and therefore, could provide the DDU as a composite and packaged product. However, MYTRI itself has a limited production capacity. It was found that they can still manage to supply DDUs as a composite unit, but they had certain reservations like:

- As a NGO, they are a not-for-profit organization and therefore cannot enter into a business
- Timely payments from NGOs is a big issue (elaborated later). In Phase I, MYTRI had run into serious cash flow problems and therefore would like a time bound payment system to be formulated

In the current situation, three private suppliers have been identified for supply of DDUs as a composite product. However, the system is not very well set yet due to payment problems of NGOs as well as the time consuming quality assurance procedure for AA. Testing of AA for quality assurance is time consuming since IIT, Kanpur is the only competent agency to test FUC, the most critical indicator. It takes nearly two months for a lot of AA to be certified. Although Sriram Institute was additionally included as a testing agency, there are huge differences in the test reports because of difference in methodologies for testing.

- **Inadequate procurement capabilities of the NGOs:** While none of the evaluation reports brought out earlier mentioned about the procurement capabilities of the NGOs, during the meeting in Jaipur, it came out very clearly that most of the NGOs were not comfortable in procurement processes and wanted this responsibility to be taken away from them in the next phase of the programme. The reason found for this was that the NGOs participating in the programme are basically relatively small NGOs with majority of their activities not relating to any sort of bulk procurement. With respect to the RIFMP, they have the following two types of constraints:

  - **Technical capabilities:** In the procurement process, the NGOs have to adhere to several procedures fixed in the Tri-partite agreement. The NGOs are not adept at activities related to procurement such as getting quotations, negotiating prices, terms of delivery and payment, quality control measures, insurance and transportation conditions etc. For these type of transactions, separate expertise is needed which most NGOs do not have.
  - **Financial capabilities:** The RIFMP Project Co-operation Agreement provides that NGOs initially procure the DDUs, pay the supplier and then get the

reimbursements from PHED. Most partner NGOs however, do not have enough financial resources to make investments in procurement of DDUs. Therefore, mostly the case is procurement is undertaken on credit, with an implicit assumption that payment will be made on reimbursement from the PHED. The reimbursement from PHED, however, takes 15 days- 60 days. In this situation, the suppliers face a cash crunch. When we met the supplier in the meeting in Jaipur, he had actually completely stopped supply to the NGOs due accumulation of high recoverables, running in several lakhs.

- **15% Tax Deduction-at-Source (TDS) by PHED:** As per the PHED Procurement norms, TDS is cut from the payments made for any procurements made. Same is done in the RIFMP case, when reimbursements are made to NGOs for procurement of DDUs from the suppliers. This is however not budgeted for in the PCAs. The NGOs therefore, are required to make full payments to the suppliers, while when they are being reimbursed, the get only 85% of the payment. Consequently, instead of having an incentive on each installation, they end up paying 15% for each unit procured. This is an issue that needs to be tackled urgently since one, it is unfair that the NGOs end up paying for better performance, and two, considering their low financial strengths, that may not be able to pay this for very long, thus putting the whole programme structure in jeopardy

7.3 RECOMMENDATIONS FOR STRENGTHENING THE DELIVERY SYSTEMS

In order to strengthen the delivery systems, following are the DA's recommendations:

- **Ensuring availability of DDUs and AA**

  - **Develop more DDU suppliers :** Taking into account the fact that Phase II of the programme will involve procurement of atleast 3 times more DDUs as compared to Phase I, it is suggested that atleast 3 more suppliers of DDUs are identified. Corporates currently entering into the filter market (e.g. Tata Projects, Kirloskar etc.) can be brought about in the picture as DDU suppliers.
  - **Ensure AA availability in requisite amount:** Availability of AA being a major factor in inadequate of DDUs, it is suggested that :
    - **Accelerate standardization process**: As noted, UNICEF has already initiated the process for formulating standards for Activated Alumina for drinking water treatment applications. It is recommended that this process should be speeded up. This is because once the standards are finalized, these can be used for fluoride mitigation in all programmes across India. With this, the market size for AA for water treatment applications will

increase significantly and more suppliers will be interested in supplying AA to this market. This will significantly improve the availability of AA.

- **Develop a testing facility within the state** : Since testing of AA takes up considerable time due to the facility being available in IIT Kanpur, it is recommended that a atleast 2 testing facilities are set up within the state. These testing facilities may be located either in any of the existing universities involved in the process or may also be run by an independent agency willing to operate it in a commercial manner. UNICEF may provide technical support in setting up this facility.

- **Test out new media for regeneration**: In order to reduce the frequency of regeneration, it is recommended that newer media for regeneration may be tested out on a suitable scale. For example, the new media grade called ALCAN AASF 50 (FUC is 23000 mg/kg) may be tried out in Indian conditions. It is understood that UNICEF and PHED tested these out but results from testing in two laboratories varied considerably. It is recommended that UNICEF and PHED enter into a dialogue with the suppliers of this grade for developing a suitable media for India that requires much lower frequency of regeneration. The possibility of exhausted AA (after use for atleast an year without regeneration) being taken back by the manufacturers for either regeneration or supply to an industry that can use it as a raw material should also be explored.

– **Streamline delivery mechanisms:** In order to make the supply chain more efficient, DA recommends that in Phase II of the programme, while the current procurement mechanism may be continued with some appropriate modifications for a specific time frame (preferably 2 years), parallely a market based supply chain should also be established. We elaborate these suggestions in the following points:

- **Modifications in the existing procurement system**

  In the current system of procurement, the following modifications need to be made:

  - Each NGO needs to be given specific coverage targets with respect to both BPL and APL families. In deciding on the payment schedules, adherence to these targets should be rather strict.
  - On the basis of the total coverage to be done, each NGO should submit to PHED a plan of procurement for the next 6 months twice a year. Together with this, an advance deposit of 20% of the total procurement value should be made to the PHED.

- On the basis of the procurement plans, the PHED can place a consolidated order to the DDU suppliers wherein supplies are to be made phase wise. UNICEF should provide support to the PHED in technical aspects of the filters. In this way, the suppliers will also be able to plan their production cycles and deliver the DDUs in time.
- Certification of the products needs to be arranged by the suppliers through PHED / UNICEF designated agencies. The material should be accepted by PHED only if it is accompanied by a certification. PHED should then make payments for the DDUs to the suppliers. This will solve the problem of the NGOs not having the financial muscle to pay to the suppliers.
- The filters procured by PHED may be sent to local PHED offices, from where the NGOs of the respective areas can take the delivery. On providing / selling the filters and obtaining the requisite certificates from the Panchayat or the local PHED office, the NGOs will be able to get their 20% deposit back.
- As regards the pricing is concerned, it is recommended that the pricing of the DDUs should be so done so that the consumers are communicated that bulk of the cost (Rs. 200) is for the AA, while a smaller share (Rs. 80) is for the plastic container. Knowing that this price range is within the reach of most of the BPL families, it is recommended that the BPLs may be charged for the AA only, while the APLs may be charged full cost. A choice in the types of containers may be provided and those wishing to buy more expensive containers may be provided the same on payment.
- The NGOs should be provided an incentive (10% of the filter value) for each filter sold above the basic minimum coverage.
- As far as regeneration is concerned, the Regeneration Centres should be run on a commercial basis. Willingness to Pay evaluation indicated that almost all the users are willing to pay upto Rs. 20 per regeneration. Such an amount must be charged from the users and shared between the animator and the RC operator for providing the services of availability of regenerated AA at people's doorsteps.

➢ **Establishment of a Supply Chain**

It is now well recognized globally that the private sector has clear advantages over the public and the NGO sectors in reducing production costs, and in the efficient distribution of goods and services. We therefore suggest that in the first two years of Phase II of the RIFMP, an attempt should be made to establish a market based supply chain. We suggest

here one model of the proposed supply chain which may be considered by UNICEF and PHED under RIFMP Phase II.

Suggested Supply chain

a. Manufacturing and Distribution network

b. Servicing channel

c. Financials

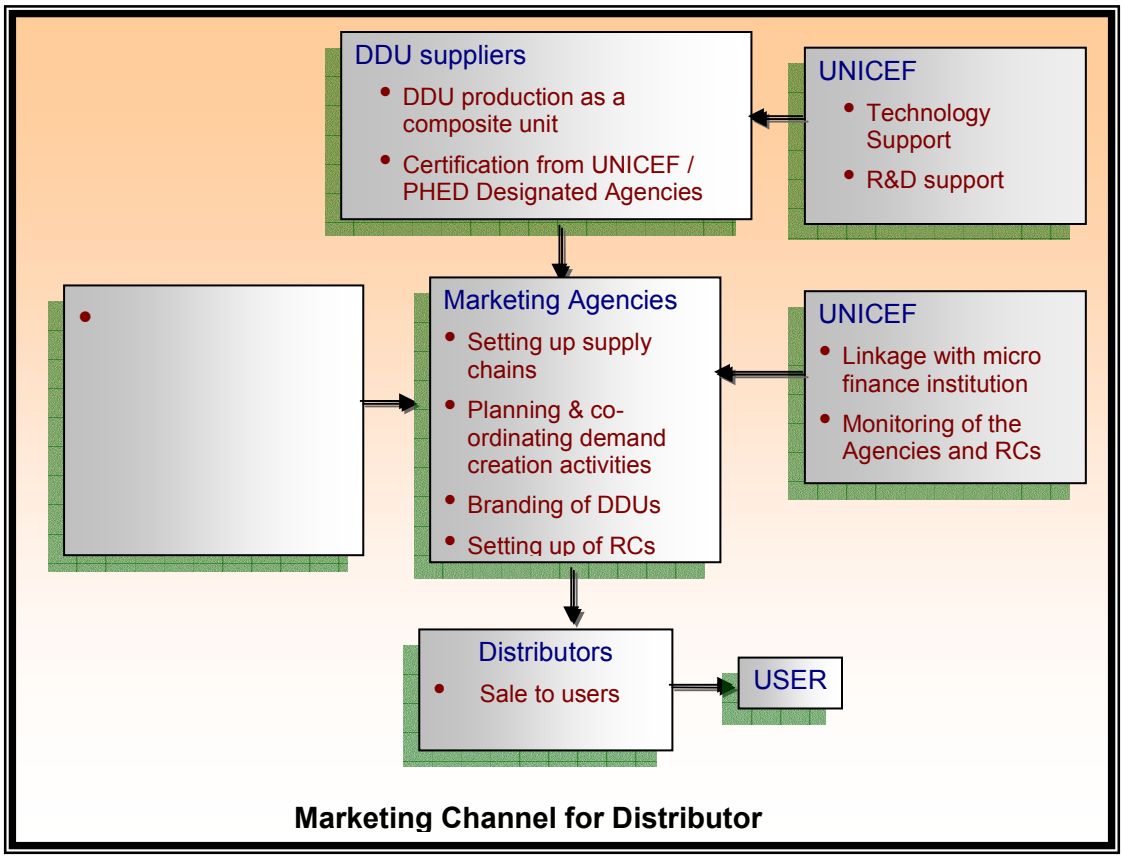
a. Manufacturing and Distribution Network

It is suggested that the production of DDUs is undertaken by 4-5 suppliers with atleast a required minimum production capacity that may be determined as per the programme requirements. These agencies would be responsible for procurement of AA from suppliers and making DDUs as a composite unit. UNICEF would support these producers in the form of R&D for the improvement of the technology and making it more consumer and environment friendly. The DDUs produced from these agencies would be certified by UNICEF and PHED designated agencies (e.g. Bureau of Indian Standards (BIS)) so that it could be differentiated from the local ones which may be available once the DDUs are commercially available.

For the distribution of produced DDUs, it is suggested that atleast 2 commercial agencies may be identified. These agencies may be the one who have a capacity to adequately plan and undertake social marketing campaigns. These two agencies will have districts designated for their operations and targets for coverage given to them by UNICEF and PHED. Their primary role will be to co-ordinate distribution efforts across the target areas on a commercial basis. They will plan the awareness related activities, set up distribution channels in the districts, manage inventories and undertake branding of the products. It is felt that in this case, branding will be extremely crucial to avoid the quality product being confused with the locally available ones. The government would assist these centralized agencies with funds for awareness generation and the subsidies which are to be given to the people below the poverty line. These agencies could than identify the appropriate channels for awareness generation. UNICEF and PHED together would be responsible for monitoring of the performance of these agencies and providing them support structures required for better performance.

At the district level, the marketing and distribution agencies will identify and set up the appropriate sales channels. We explored the various channels

currently being used for products promoted through social marketing campaigns and now suggest that the following sales agents may be used:



Marketing Channel for Distributor

- Existing retail shops selling utensils, medicines etc.
- Direct sales agents, with supervisors at the district level.
- Self-help groups, undertaking this as an income generating activities
- NGOs, on a commission basis.

b. Servicing Channel

DDUs would be regenerated through the nearby regeneration centers (RC). Each RC would be run by a local entrepreneur known as RC animator. The RC would be as one stop shops for all things related to DDUs. They would not only provide regeneration services but also would keep spares like micro filters, adhesives and buckets. The territory of each RC would be fixed to keep its financial viability into consideration. Therefore each RC would have a territory of at least 100 households. The training of the local entrepreneurs would be carried out by the state level agency.

RC animator would visit regularly to the households to check for fluoride in filtered water as well as people would also get the filtered water

checked in the awareness camps organized by the local agency. Apart from checking the filtered water RC animator would also check for any other faults in the equipment like clogging of micro filter, leakage of buckets.

The RCs may also be set up by the marketing agency. The local entrepreneurs managing the Regeneration centre will have to trained and the monitoring of regeneration centers will also need to be conducted. UNICEF and PHED would have to play a role in supporting the marketing in providing these trainings and conducting periodic monitoring.

c. Financials

As far as the product pricing is concerned, it is recommended that price determination may be left to the marketing agency, with an overall ceiling being provided by UNICEF and PHED. A portfolio of the filter products in different price ranges may be brought out to suit different tastes. Since the product would be commercially available, therefore no subsidies would be given. At best, in order to subsidise poor families, extra revenues form sale of premium products may be used to subsidise the lower end products.

In order to facilitate purchases, it is recommended that access to credit facilities may be provided. Experiences around the world have shown that People desperately want access to safe water and sanitation—and they're willing to pay for it themselves given access to the right credit tools For this purpose, there are two options:

- Use of SHGs for social collateral: In villages where there are relatively mature SHGs (with a history of about one year of savings), they can be used for demand aggregation and therefore collective loans from banks. DA's own experience suggests that banks are relatively more receptive to providing loans to groups since it becomes collective responsibility of the group to repay the loan. This system of social collateral has witnessed much higher repayment rates.
- Linking up with micro-financing institutions: Several micro-financing institutions are now into the business of providing small loans to individuals for consumption purposes or income generating activities. It is recommended that UNICEF initiates a dialogue with micro-financing agencies to explore this possibility for DDUs.

Steps to Establish the Supply Chain

- **Set Objectives:** Before setting up the supply chain, it is essential that a certain target population be decided upon. With regards to RIFMP, it is recommended that 4 districts may initially be targeted to pilot test the supply chain model.
- **Get a Feasibility Study done**: Since the market for the DDUs is not at all developed, private marketing companies would be extremely hesitant to enter this market without proper assessments having been done. To provide them a comfort factor, it may be useful to engage a professional market research agency to conduct feasibility assessment of the particular consumer types, and the incomes and expenditures of promoting filters in a completely commercial manner. Generation initial numbers of commercial numbers will be helpful in giving an indication to the marketing agencies of the commercial scale of operations. The market research firm may be engaged using a commercial bidding process.
- **Decide upon the support to be provided by PHED and UNICEF**: Based on the market research findings, PHED and UNICEF should decide upon the type of support to the marketing agencies. The support may be financial in the form of marketing subsidy (exactly the way export subsidies are provided on the lump sum basis) or technical support. The support should be so decided so as to keep in mind adequate incentives for the marketing agencies to cut costs and improve profits by attaining larger numbers.
- **Develop standards for DDUs and Activated Alumina**: As mentioned earlier, standardization of Activated Alumina will open up the supply market immediately. UNICEF, therefore, at the national level should come out with standards for AA which will be applicable in all their fluoride mitigation programmes. Similarly, technical parameters for filter units also need to be standardized.
- **Engagement of AA Suppliers**: While a few AA Suppliers are already working with UNICEF, standardization would bring about new suppliers. 3-4 additional suppliers need to be engaged through a bidding process. The bidding should essentially focus on the ceiling price for the standardized AA. In addition, UNICEF should also provide them technical support and incentives to conduct R&D on improved AA requiring regeneration at much lower frequencies or lower costs.
- **Identify Filter Suppliers**: 4-5 suppliers of filters as composite units will also have to be identified. While 2 suppliers are already within the folds of the RIFMP, 2-3 more need to be identified, depending on the

programme requirements. These suppliers should also be engaged through a bidding process, with the condition that all technical parameters for the units need to be met.

- **Identify the Marketing Agencies**: For the 4 selected districts, 2 marketing agencies (having a coverage area of 2 districts each) should be identified through a tendering process. A few specific terms and conditions may be as follows:

  a. Specific number of households (in both APL and BPL categories) within each district to be covered within specific timeframes.

  b. Each marketing agency will have a supply monopoly over 2 districts for a period of 2 years. After this, more marketing agencies may be allowed to function in these districts.

  c. The filter units to be sold should confirm to the standardized technical parameters and should be procured from any of the identified suppliers. This will also promote competition among the suppliers.

  d. They may identify and set up sales partners they consider most appropriate for the task.

  e. They should set up Regeneration Centres and are responsible for sustained functioning of these RCs.

  f. UNICEF would provide technical support to the marketing agencies in conducting trainings of the operators of Regeneration Centres.

- **Monitoring and Evaluation:** UNICEF and PHED should jointly support this system and monitor the performance of the marketing agencies on a six-monthly basis. The monitored performance should be properly evaluated according to a pre-designed format and constructive inputs need to be given to these agencies to improve performance.

Annexure

Annex - i

Deliberations of the Inception Meeting

June, 2007

The Consultation Meeting was attended by NGOs, PHED and UNICEF Officials and representatives from Development Alternatives.

Mr Dipak Roy, Project Officer, WESS, UNICEF,Jaipur explained the context of the meeting where he outlined the need to scale up the RIFMP. He brought out the results of the previous rapid appraisals being carried out earlier where it was found that there has been satisfactory coverage in case of BPL households but less than 1% of APL Families have been covered which is a cause of concern.

Thereafter was a plenary session involving a card exercise where each member present there had to put in two highs and two lows of the programme. The cards were posted and the conclusions drawn were as follows:

Highs of the RIFM Programme –

- This project is a good example of Public Private Partnership (PPP).
- DDU is an acceptable and appropriate technology for removal of Fluoride.
- There has been awareness generation among the communities on fluoride issues.

Lows of the RIFM Programme-

- High cost of DDU is one of the major reasons for less procurement by APL Families.
- Limited use of IEC Materials
- Problems in AA Regeneration Process.
- Issues on the materials used for the filter (outer structure).

The plenary session concluded with discussion on the above points.

The group highlighted some issues with regard to use of materials (HDPE and Food Grade Plastic) for making the DDU. UNICEF Team pointed this to be an important issue and asked Development Alternatives to look into the pros and cons of using these two types of material.

Thereafter group work exercise was carried out on the following four issues –

Each group had member NGOs, officials from PHED and UNICEF and representative from DA. There were a set of guidelines for each group work (Attached as annexure)

Group 1 - *"Improving adoption of DDUs by APL families – Possible Way Forward"*

The group acknowledged that there is less awareness amongst APL Families on DDUs.

The reasons for this is due to –

- One time IEC Activities
- Limited availability of DDUs
- IEC Activities are related to the availability of DDUs – Due to irregularity in supply of DDUs the NGO does not take pains in undertaking IEC Campaigns.
- Psychological behaviour (BPL Free, why not APL?)

Bottlenecks –

- Motivation of NGOs – Incentives for NGOs greater role of UNICEF
- Cost of DDUs – Single container
- Meeting the hidden expenditure – To be accounted for in the budget
- Deduction of Taxes and security deposits – May be waived

Recommendations –

- Repetitive IEC Activities
- Target groups – Schools, Doctors, Anganwadi workers, PRI and influential people.
- Different tools for IEC – Nukkad Natak, Folk Dances, Jal Chetna Yatra
- NGO seeking permission to sell DDUs in whole block rather than in targeted villages only
- Setting up of stalls and rural marts
- Minimum stock of DDU available to the NGOs
- Centralized procurement of AA by PHED

Group 2 - "Communication channels for betters outreach"

Current tools used –

Poster, Slogans, wall paintings, TV Show (Audio-visuals), Village contact programmes, cultural programmes, rallies by school children.

Important Points –

- Most of the IEC Tools focus on health issues.
- Word of mouth helps in spreading of message.
- Discussions with women groups help in spreading the message in a better way.

Gaps-

- Less availability of finances for IEC Activities
- Most of the IEC materials were textual-did not help illiterate people.
- The content of the IEC materials was not designed according to regions
- No training of field workers on these issues including regeneration
- Due to less salary, the quality of people required are not obtained

Future strategy needs to focus on the following points –

- APL families should be option of paying for the filter in installments
- Using the folk media for better communication
- Greater Inter Personal communication
- Repetitive IEC Activities
- Training of filed staff
- Animator should be qualified-right procedures followed for his appointment
- Linking the programmes with institutions like schools and panchayats.
- Awareness on fluoride issues to be built in school curriculum
- More use of audio-visual tools
- Creative content design should be the focus

Group 3 - "Appropriate delivery mechanisms for DDUs"

Demand patterns for DDUs for APL and BPL Families-

- Demand exists throughout the year
- Maximum Rs 200/- This is the amount the APL families are willing to pay
- Sales promotion materialsto be provided by the PHED mentioning the name of the NGOs of the area working under RIFMP

Current Delivery Mechanism

- Demand should be worked out in advance
- NGOs have no financial capacity to pay advance to suppliers

- The suppliers do not possess capacity to execute bulk orders as it is not a running item
- The procurement procedure to be replanned
- 15.24% deduction from the bill of the NGOs to be removed. If necessary the rules be changed accordingly.
- Support for installation of DDUs is insufficient.
- It will be better if PHED itself procures DDUs & AA and supply to NGOs as a composite unit.

Three possible models for effective delivery mechanism –

- PHED should procure and supply to NGOs
- For APL, nominal deposit from NGOs towards DDU and a revolving system can be worked out
- Change in model/design enabling the local manufacturer to supply DDUs in open markets

Group 4 - "Project Management"

Agreement with stakeholders

- Absence of guidelines to determine terms of reference with regard to working of PHED with NGOs –resulting in arising of financial clauses with regard to problems.
- NGOs are treated as "contractors" - 15% deduction clause needs revision and make recommendations to financial department
- Lack of flexibility in UNICEF Procedures – UNICEF Needs to modify guidelines for tripartite PCAs- (Considering this to be one of its own kind of initiative)
- Support for IEC Component in phase 1 – Extension uncertain – UNICEF to request PHED to support IEC (make budget provision).

NGO Selection

- Financial capacity to invest in marketing
- Turnover adequate criteria; ability to invest/ benchmark- turnover and experience
- Qualification of field staff- Present levels not adequate
- Viability of operation
- Capability to handle operation

Monitoring

- Current system inadequate to monitor both software and hardware aspects – Local PHED Staff needs to be engaged
- Independent quality assurance system
- PRIs not involved in monitoring and implementation
- Adequate notice for meetings

Procedural delays in communication operational decisions - Decisions in monitoring meetings not conveyed to NGOs'

Procurement

- Nodal NGOs to be identified to procure
- UNICEF can procure a min no for social marketing

Annex - ii

Monitoring Evaluation and Learning System (MEAL)

MEAL is a multiple system for complete and overall evaluation and management of a project. The system works towards establishing improved systemic base within the organisation for better project management and converting experiences and actions into knowledge. MEAL acts a tool for enhancing stakeholder's interaction and sharing for greater impact and sustenance of the project.

Objectives of MEAL

- Enable self-monitoring, maintaining strategic direction and timely corrective action
- Inform and stimulate project staff & communities to improve quality and timeliness
- Measuring progress toward achievement of project outputs and purpose – individual projects and the program
- Sharing and enriching learning among various programme partners, across the districts, clusters and the state
- Generate a body of knowledge and experience for sharing among programme partners and other stakeholders

Principle of MEAL

- Mechanism for strengthening the learning processes at all levels
- System for capturing information through monitoring, evaluation, research and innovation
- Usage of these information by different stakeholders for improved quality of the programme
- Focus on learning and capacity building
- Designed with users and stakeholders
- Includes both qualitative and quantitative information
- Answer whether project activities are leading to output and to suggest ongoing changes
- Focus on regular analysis and reflection at all levels
- Adaptable and capable of responding to situational change

MEAL development Process

Step 1: Situation Analysis
Information Needs, Existing Systems and Structures

Step 2: Consensus on Findings of Situation Analysis
Overall consensus and taking crucial decisions for moving further

Step 3: Conceptual Framework

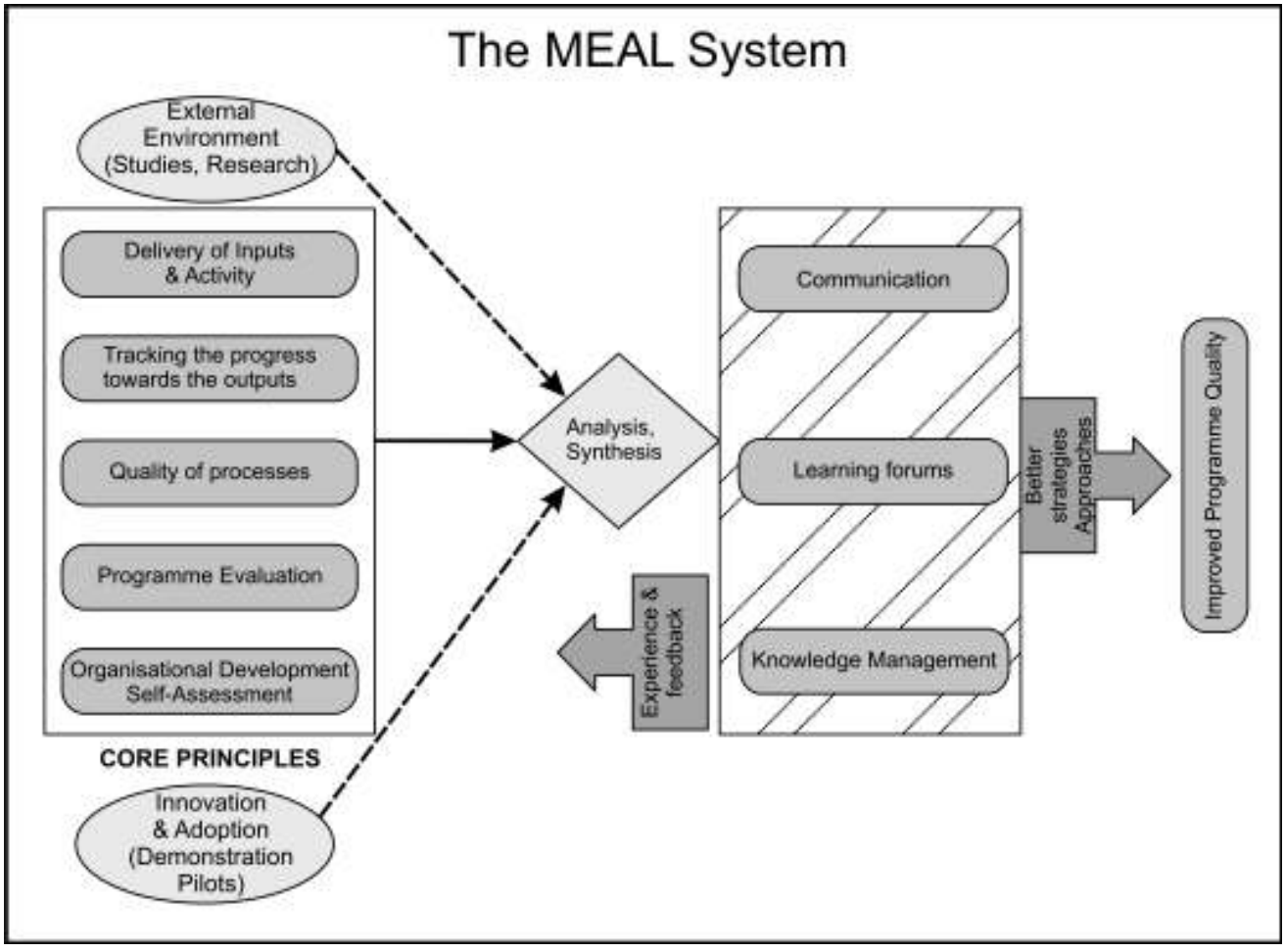
Development and Consensus on Conceptual Framework

Step 4: Operational Framework
Operational Guidelines and thematic clarity

Step 5: Field Testing
Testing M&E System at 3 NGOs (2 Districts) & testing of Learning System Approach

Step 6: Finalising MEAL System
Consensus and Refining of MEAL System

Step7: Developing or modify Operational Plan
MEAL Operationalisation Plan



Rajasthan Integrated fluorosis Mitigation Programme

RIFMP implemented by Public Health & Engineering Department (PHED), Government of Rajasthan, UNICEF(Jaipur) and 19 NGO partners and is active in 12 districts of Rajasthan. This type of cooperation (tripartite agreement) is one of its own kind (unique) and is successfully running in Rajasthan from the past 2 years. As a part of strategic support mission, *i.e.* in order to increase the magnitude of the impact of RIFMP and to make it more effective and efficient. A Monitoring Evaluation And Learning tool (MEAL) has been suggested, which includes Reporting formats for Situation-Analysis along with Reporting hierarchy.

Draft Monitoring formats

I For Situation-Analysis/Monitoring – *Reporting formats*

Reporting formats for:

- Villagers (APL/BPL families)
- Gram Panchayat (PRIs)
- Field Animators
- NGO Coordinators
- Regeneration Centre(s)

II Reporting hierarchy

Reporting Formats

[redacted]

1. Name of the village
2. Name of District
3. Name of village Head / Sarpanch
4. Total families in the village
5. Total BPL families
6. Total APL families
7. Families having DDFUs:
   - 7.1 BPL Families
   - 7.2 APL Families
8. Source of drinking water
9. Concentration of Fluorosis in the water source
10. Families affected by fluorosis
    - 10.1 Severity of the fluorosis
      - Type of fluorosis
        - Dental
        - Skeletal
        - Teeth (Yellowish)
11. Water Quality of the Drinking all water sources:

S.No.	Source	Fluoride (mg/lt)	Chloride (mg/lt)	TDS (mg/lt)	Nitrate (mg/lt)

Reporting Formats

[redacted]

BPL/APL

1. Name of family head
   1.1 Income of family
2. Number of family members
3. Is the family suffering from fluorosis
4. User / Non user
   4.1 Date of installation of DDFUs

Activity	1	2	3	4	5	6	7	8
Date of fluoride monitoring								
Date of Regeneration								
Date of maintenance								

5. Outcome/Impacts of using DDFUs
6. Suggestions, if any:

Reporting Formats

[redacted]

1. Village:
2. Sarpanch/PRI member:
3. Education:
4. Trained by NGO: Yes/No

House No.	Head of the Family	Person responsible for DDFUs maintenance	Date of Fluoride monitoring	Level of F in water	Date of Regeneration of AA	Date of Maintenance	Signature of the family member

Reporting Formats

[redacted]

1. Location of RC:
2. Area of RC:
3. Is the RC accessible by road:
4. Regeneration done for ……. number of villages
5. Name of the Animator (person operating Regeneration Centre):
6. Water availability at RC:
7. Distance from nearby habitation:
8. Manufacture's certificate for chemicals:
9. For chemicals:
    - Acid used is 90% pure…….
    - Alkali (flakes) with 97% purity…….
    - Lime – Commercial grade……..

11. Method followed for waste Disposal:

_____
_____
_____
_____

AA bag code No. & details	Date of receipt of AA bag	Date of Regeneration	Level of fluoride in exhausted AA bag	Weight of AA before rege-neration	Date of expiry of Acid	Date of expiry of Base	Rege-neration method followed (2 hrs/ 8hrs)	Wt. of AA after rege-neration	Level of fluoride after rege-neration	Date of giving back the rege-nerated AA	Observation (s)	Signature of the Supervisor

Reporting Formats

[redacted]

IEC Activity

I. Awareness Activity (Sensitisation)

A. VCD/Street Play

Content of film	
Language of film	
Duration of film	
Quality of film	

Time of the VCD frequency/time/date of VCD location of VCD

B. Slogan writing

Language used for slogan location of slogan writing……

C. Wall Painting

Location of wall painting (should be centrally located)……

D. Posters

Read out during "Panchayat Meeting and PRIs"……

II. Efforts made to Market the DDFUs to the APL families

III. No. of DDFUs sold to APL Families……

HRD activities:

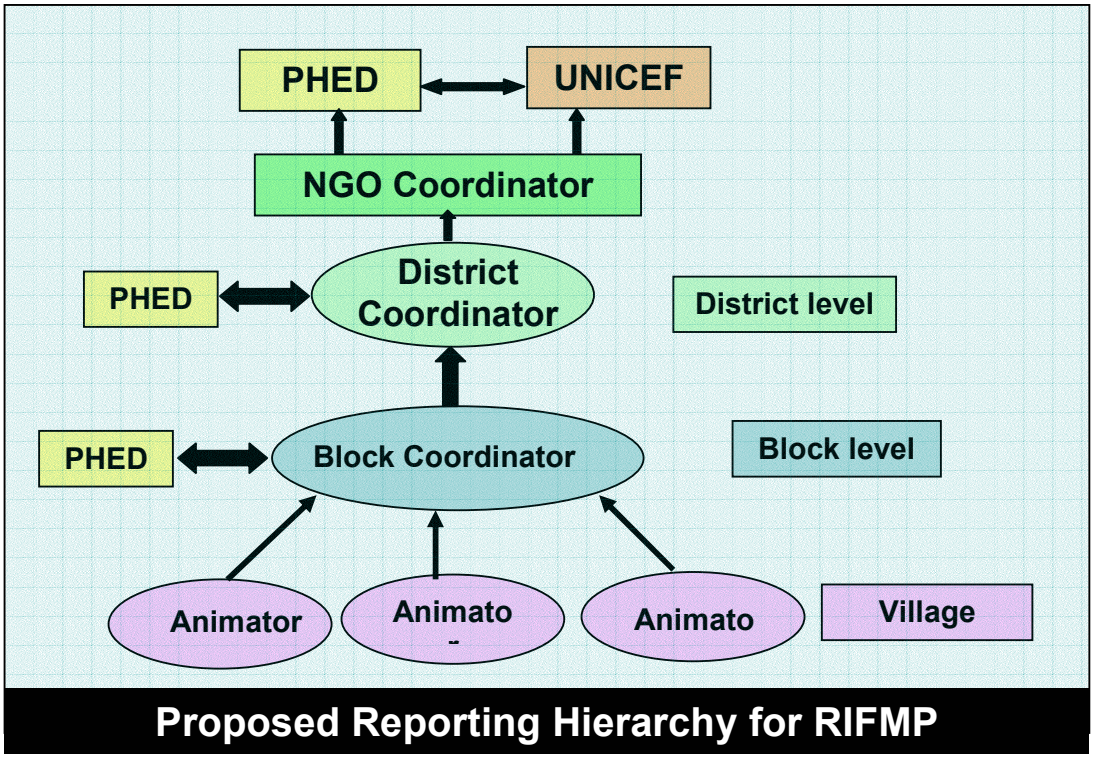
- Training of facilitators
- Orientation of PRI members and grass root level workers

Installation of DDFUs:

- Maintaining stock of 5 % DDFUs for APL families (block level)

Head of Family	Income	Affordability for Regeneration of AA		Affordability for purchasing the DDFUs
		BPL	APL	

Suggested Reporting Hierarchy



Proposed Reporting Hierarchy for RIFMP

Annex - iii

Questionnaire for BPL Households

Basic Information:

District:	Name:
Block:	Age and Sex:
Village:	No. of family members:
NGO Responsible:	Regeneration Center Name:
Approximate distance between:- ○ NGO Office and the household: ○ Regeneration Centre distance: ○ NGO Office and RC:	

Questions:

1. Are you aware of the fluoride problem? (Yes / No)
2. How did you get to know about the fluoride problem?
3. From how long are you using DDU? _____(months).
4. How many litres of water is withdrawn per day and being used for what purposes other than drinking & cooking (if any)?
5. Do you know for what purpose the DDU is given to you? (Yes / No)
6. If yes, why? _____
7. Are you satisfied with its performance (Yes / No)
    a. Is it useful in removing fluoride? (Bad / Average / Good)
8. Fluorosis Symptoms in the family members? (Yes / No)
9. If yes, what are the benefits incurred?
10. Do you feel any health benefits after using DDUs? (Yes / No)
11. Is there any problem with DDU's design, structure, handling, cleaning and intactness? (Including tap, micro-filter and nylon bag containing activated alumina.)
12. Are you aware of the correct maintenance procedures of a DDU (Yes / No)
    a. Washing the filter (Yes / No). How often? _____
    b. Transferring the media? (Yes / No) How often? _____
    c. Washing the micro-filter? Yes / No) How often? _____
    d. Drying the AA Medium (Yes/No) How often? _____
13. How is the regeneration done

a. Do you go

b. Sanchalak comes

14. How often you regenerate AA?

a. After 3 months

b. More than 3 three months

c. When the level of Fluoride is above permissible limits

15. How much time does the RC Animator takes to return AA? _____ (days).

16. How much do you pay for regeneration?

17. a) Does somebody come for water quality testing

b) If yes, How often?

18. Do you remember the following communication material related to awareness of the programme?

a. Wall painting (Yes / No)

b. Pamphlets & Posters (Yes / No)

c. Street Play / Puppet shows (Yes / No)

d. Any other? _____

19. Out of these which were the most effective?

20. What did the IEC material focus on?

a. Health Issues

b. DDU usage

c. Regeneration

d. Any other? _____

21. Are there any means that you would suggest in order to spread awareness in a better manner? _____

22. Have you been told about the complimentary diets to be taken?

23. Do you discuss about fluoride problems and DDUs amongst other villagers? (Yes / No)

24. Did you discuss about fluoride problem and DDUs in Gram Sabha meeting? (Yes/ No). If yes, how many times in the last year? _____

25. Willingness to participate and spreading of message? (Yes / No)

26. Has the problem of fluoride and DDUs ever discussed directly in schools?

27. Has the problem of fluoride and DDUs discussed directly among women?

28. What is the frequency of visits of NGO personnels_____ Field extender_____-animator_____ Supervisors_____

Annex - iv

Questionnaire for APL Households (Users)

Basic Information:

District: Village: NGO Responsible: Regeneration Center Name	Name: Age n Sex: No. of family members:
Approximate distance between:- ○ NGO Office and the household: ○ Regeneration Centre distance: ○ NGO Office and RC:	

Questions:

1. Are you aware of the fluoride problem? (Yes / No)
2. How did you get to know about the fluoride problem?
3. Why did you buy a DDU?
4. How much did you pay for DDUs?
5. What is the time gap between order and delivery?
    a. 1-2 months
    b. 3-4 months
    c. >4 Months
6. From how long are you using DDU? _____(months).
7. How many litres of water is withdrawn per day and being used for what purposes other than drinking & cooking (if any)?
8. Are you satisfied with its performance (Yes / No)
    a. Is it useful in removing fluoride? (Bad / Average / Good)
    b. Will you recommend it to others (Yes / No)
        i. If No, Why? (Specific Reasons) _____
9. Fluorosis Symptoms in family members? (Yes / No)
10. Do you feel any health benefits after using DDUs? (Yes / No)
11. If Yes, what are the benefits incurred?
12. Is there any problem with DDU's design, structure, handling, cleaning and intactness? (Including tap, micro-filter and nylon bag containing activated alumina.)
13. Are you aware of the correct maintenance procedures of a DDU (Yes / No)

c. Washing the filter (Yes / No). How often? _____

d. Transferring the media? (Yes / No) How often? _____

e. Washing the micro-filter? Yes / No) How often? _____

f. Drying the AA Medium (Yes/No) How often? _____

14. How is the regeneration done

g. Do you go b. Sanchalak comes

15. How often do you regenerate AA?

h. After 3 months

i. More than 3 three months

j. When the level of Fluoride is above permissible limits

16. How much time does the RC Animator takes to return AA? _____ (days).

17. How much do you pay for regeneration?

a) Does someone come for water quality testing? (Yes / No)

b) If yes, How often?

18. Do you remember the following communication material related to awareness of the programme?

k. Wall painting (Yes / No)

l. Pamphlets & Posters (Yes / No)

m. Street Play / Puppet shows (Yes / No)

n. Any other (s) ? _____

19. Out of these which were the most effective?

_____

20. What did the IEC material focus on?

o. Health Issues

p. DDU usage

q. Regeneration

r. Any other? _____

21. Have you been told about the complimentary diets to be taken? (Yes / No)

22. Do you discuss about fluoride problems and DDUs amongst other villagers? (Yes / No)

23. Did you discuss about fluoride problem and DDUs in Gram Sabha meeting? (Yes/ No). If yes, how many times in the last year? _____

24. Willingness to participate and spreading of message? (Yes / No)

25. Has the problem of fluoride and DDUs ever discussed directly in schools? (Yes / No)
26. Has the problem of fluoride and DDUs discussed directly among women? (Yes / No)
27. Are there any means that you would suggest in order to spread awareness in a better manner? _____
28. What is the frequency of visits of NGO personnels_____ Field extender_____animator_____Supervisors_____?

Annex - v

Questionnaire for APL Households (Non-Users)

Basic Information:

District: Village: NGO Responsible: Regeneration Center Name	Name: Age n Sex: No. of family members:
Approximate distance between:- ○ NGO Office and the household: ○ Regeneration Centre distance: ○ NGO Office and RC:	

Questions:

1. Are you aware of the fluoride problem? (Yes / No).
2. How did you get to know about the fluoride problem?
3. Any Fluorosis Symptoms in any of the family member? (Yes / No)
4. Are you aware of the supply and distribution of DDUs?
5. Where did you get the DDUs from?
    a. NGO campaigns
    b. Panchayat Meetings
    c. Word of Mouth
6. Have you ever tried buying DDUs?
    i. If Yes, Whom did you approach
        a. NGO, Panchayat , PHED
        b. Didn't know whom to approach?
    ii. If No, Why?
        a. Too expensive.
        b. Do not need it.
        c. Discrimination in distribution between APL & BPL
            - If features additional from the current filters are added will you buy? If Yes, Any suggestion?
        d. Any other?
7. Do you remember the following communication material related to awareness of the programme?
    a. Wall painting (Yes / No)
    b. Pamphlets & Posters (Yes / No)
    c. Street Play / Puppet shows (Yes / No)
    d. Any other (s)? _____
8. Out of these which were the most effective?

    _____
9. What did the IEC material focus on?

a. Health Issues
b. DDU usage
c. Regeneration
d. Any other? _____

10. Are there any means that you would suggest in order to spread awareness in a better manner? _____
11. Have you been told about the complimentary diets to be taken?
12. Do you discuss about fluoride problems and DDUs amongst other villagers? (Yes / No)
13. Did you discuss about fluoride problem and DDUs in Gram Sabha meeting? (Yes/ No). If yes, how many times in the last year? _____
14. Willingness to participate and spreading of message? (Yes / No)
15. Has the problem of fluoride and DDUs ever discussed directly in schools?
16. Has the problem of fluoride and DDUs discussed directly among women?
17. Are you aware of the DDUs usage in your neighbourhood?
    a. APL Families.
    b. BPL Families.

Annex –vi

Questionnaire for NGOs

Name of NGO:

Target Area as per RIFMP:

Number of Villages covered:

Number of BPL families covered:

Number of APL families covered:

Communication

1. What do you know about Fluorosis?
2. What kind of IEC provided by PHED/UNICEF for awareness generation? Or did you prepare anything by yourself
   - Wall Painting
   - Posters
   - Audio Visuals
3. What type of communication tools used
   - Street plays
   - Folk songs
   - Transect Walk
4. Who is your target Audience?
   - Males
   - Females
   - Children
   - Whole family
5. IEC activities are one time or done regularly, at what interval ?
6. Other than IEC activities how you motivate the APL families?
7. Do you incorporate Anganwari workers, Teachers, PRIs, Doctors/ Health workers for generating awareness?
8. Is there any specific marketing strategy used for motivating the APL/BPL?
9. What kind of customization you suggest in the IEC material/tools?

Supply of DDUs

10. Who provide DDUs to NGOs and how?
11. What type of DDUs are supplied?
    - Stainless steel or

- Plastic with single Chamber, double chamber or Three chambered

12. How much time the concerned authority required for delivery of the DDUs once the order placed? Specify for both BPL and APL families
13. Do you get any kind of test certificate of the material being supplied?
14. What is the terms and conditions of the payment?
15. Do you provide any kind of training to the HHs at the time of installion?
16. Does the Animator market filters to APL families locally?

Regeneration

17. Is there any Regeneration Center (RC) present in your implementation area?
    - If yes, Is the RC is running fully/partially/Dysfunctional
    - Year of establishment
    - Which method is following? 36 hours, 24hours, 8 hours, 2 hours(latest IIT-K method of Accelerated Bucket method).
    - Per day capacity of the centre
18. What is the Educational Qualification of the Animator?
19. Is the Animator trained and he understands the process fully?
20. What kind of Capacity building training provided to the animator and from whom did?
21. Training is one time or repeated regularly?
22. How the animator tests the Fluoride level in water? Does he use any kind of fluoride detection device?
23. Does the animator go to individual households or the households visit him?
24. At what interval the animator tests the performance of the DDUs
25. When the animator found the fluoride level in water is more than permissible, how much time he took to get the AA regenerated?
26. Does the animator know the permissible limit of Fluoride in water and its significance?
27. Does the animator have spare set of AA? (And replace the exhausted AA by other set of regenerated AA simultaneously?)
28. Does the animator maintain any record/register of visits, to the DDU users (for testing F) as well as for the regeneration done?
29. What is the status of the RC in your region? (Functional/ Non functional)
30. Is the RC located centrally? If not, then how much distance he has to travel per day to avail the Regeneration?
31. How much the Animator is being paid off for single Regeneration?

32. Does the animator come across with the caste and religion problems?
33. What is the monthly expenditure and benefit?
34. Are you running this like a business
35. Do people pay for the services provided?

Monitoring, Evaluation and other details

36. Is there any office of the NGO present locally?
    - If yes, is it furnished and staffed accordingly?
    - What are the responsibilities of the staff/animator ?
37. Is the Animator's activities monitored by the supervisor?
38. Records of the following maintained
    - Visits to the families where DDU installed
    - No. of working DDUs
    - No. of DDUs actually used (filtered water is used for drinking)
    - Reasons for non-working DDUs (type of damage)
    - Number of regenerations done per day
    - Effectiveness of Regeneration process

Programme Management/Support

39. How often the PHED official visits the area?
40. How is the approach of the PHED officials towards the NGOs
    - Cooperative
    - Non-cooperative

Annex –vii

Questionnaire for Regeneration Centres

Date:

Name of District:

Name of Block:

Name of Panchayat Samiti:

Name of Village:

Section I:

1. Name and address of Regeneration Centre:
2. Is the land private or government?
3. Date of establishment:
4. Run by which NGO:
5. Reasons for establishing the RC at the given location:
6. Cost of establishing the RC:
7. Components of the RC, cost and supplier of each:
8. Is the RC active/defunct:
9. No of regenerations done till date:
10. No. of total households (DDU) being catered by the RC:
11. No. of regenerations being carried out in a month:
12. Minimum regenerations needed for RC's financial sustainability in a month:
13. Cost of each regeneration:
14. Do RC operators contact DDU users for regeneration of their AA? Or else, how is AA brought to RC for?
15. How it is decided that regeneration has to be done for AA? Who decides that AA is exhausted and has to be regenerated?
16. Mode of transfer of AA to RC:
17. Does the user get back his AA or is it interchanged:
18. Time taken for each regeneration:
19. Whether regeneration done one at a time or in a bulk:
    a. Quantity of AA regenerated at a time:
20. Are all regeneration practices as fixed by IIT-K being followed?
21. During the regeneration process, are the following looked into:
    a. Hygiene

b. Effectiveness of regeneration

c. Conservation of water and chemicals

d. Clean practices

e. Quantity of chemicals used

f. Chemical storage

g. Contact time for regeneration whether maintained:

h. Quantity of AA lost in a cycle of regeneration:

22. How do they get to know that AA has been completely regenerated:

23. Any F testing kit used:

24. How is it determined that the active life span of AA is over i.e. when is the time for replacement of AA itself:

25. Input/Output F content in water:

26. Availability of water for regeneration

a. Quantity of water required for entire process (conservation):

b. Quality of water - F, pH, Hardness, Turbidity, Colour:

27. Disposal

a. Method:

b. Location of sludge disposal:

28. Whether any documentation/records/inventories kept:

(Tagging AA, user's information, chemical suppliers, date of regeneration etc)

29. Existing process surveillance, quality checks:

30. Would they be benefited if there is a certification system of quality & environment management?

31. Problems in regeneration in detail/ Visible problems:

32. Any solutions figured out by the RC operators themselves:

33. Are social aspects (caste) a barrier in regeneration?

34. Possible enhancements (if required):

35. Is there 'call-in' system exists that is HH get their own bag of AA back

Section II: <u>RC operators</u>

1. No. of RC operators:

2. Who carries out the regeneration?

a. Literate/illiterate:

b. Experience:

c. Trained/ Untrained:

d. Level (extent of training undergone):

3. Any training conducted for them, by whom:
4. Who according to them should undergo the training?
5. Would regular trainings for the RCs be helpful to them:
6. Any awareness material developed for them:
7. Any Local skills/household operators:
8. How do they exchange info/ skills within RCs

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