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# **SIGMA FOUNDATION**

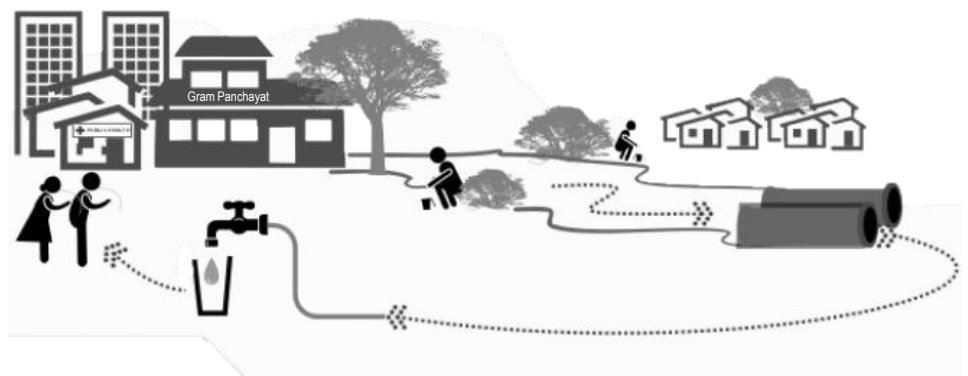
## **ANNUAL REPORT**

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**2018-2019**



## **Support for Improvement of Governance and Monitoring Advancement Foundation**





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# ABOUT US

**Support for Improvement of Governance and Monitoring Advancement (SIGMA) Foundation** is a 'not for profit' society. It was established in the year 2014 for serving the society in various ways with the initiative of Dr. M. N. Roy, the Founder-President of the organisation. The vision of the organization is a poverty free India with equity and justice, where each child can access opportunities to grow to his/her full potential, enjoy all the rights as citizen and be responsible for making the society better and sustainable. SIGMA Foundation has a mission to improve the wellbeing of the people with sustainability as well as equity. Keeping that in mind, it takes up various activities for improving governance towards enhancing both efficiency and effectiveness of the service delivery towards the poor and vulnerable sections of the society.

The organization has specialization in disciplines related to various social and economic development. Its area of expertise includes Monitoring & Evaluation, application of ICT, Real Time Monitoring through Mobile Telephony and application of GIS, analyses of big data generated through programme MIS and its interpretation for decision support, public health including nutrition, maternal and child healthcare, WASH, management of solid and liquid wastes, management of drinking water supply along with quality monitoring, strengthening Panchayats and decentralized planning, alleviation of rural poverty, natural resources management and improvement of environment. It conducts research in all these fields and is also engaged in capacity building in all the said fields.

The head quarter of the organization is at Kolkata. It has a branch office in Maharashtra and also have representatives in the state headquarters of Assam, Bihar and Jharkhand for coordination of projects taken up in those states. It is capable of taking up projects in any state of the country. The organisation has the experience of working in the states of Maharashtra, Bihar, Madhya Pradesh, Chhattisgarh, Himachal Pradesh, Rajasthan, West Bengal and Assam.



## OUR VISION

*“Poverty free India with equity and justice, where each child can access opportunities to grow to his/her full potential, enjoy all the rights as citizen and be responsible for making the society better and sustainable.”*

## OUR MISSION

To provide possible support to all the tiers of government to be inclusive, effective and efficient for improving their performance and use their resources for enhancing human wellbeing and attaining sustainable development.

# BOARD OF DIRECTORS

## **Dr. M. N. Roy (President)**

Dr. M. N. Roy did his M.Tech from University of Calcutta and PhD in social science from Tata Institute of Social Sciences and studied Sustainable Development in the University of Birmingham, UK. He joined the Indian Administrative Service in 1980 and retired from the same as Additional Chief Secretary of the Govt. of West Bengal in the year 2012. He was President of Riddhi Foundation after retirement till February 2018 and is the Founder and President of SIGMA Foundation from 2014. He has been a member of many Committees of the Government of India, particularly the Ministry of Rural Development and the Ministry of Panchayati Raj. He is a member of the Indian Statistical Institute. He is also a member of the Board of Governors of the Child in Need Institute, Kolkata, a pioneer organization for wellbeing of the children and is well conversant with the issues of women and children.

## **Mr. Dilip Ghosh (Vice-President)**

A former member of the Indian Administrative Service, Mr. Dilip Ghosh worked mostly in the areas of Health, Nutrition and Child Development and Rural Decentralisation. He retired as Secretary to the Government of West Bengal. He headed a number of Government and external agency-supported projects on decentralization and rural livelihood implemented by the Government of West Bengal. He was a member of the 5th State Finance Commission of West Bengal after his retirement from service in 2012. He has been an honorary adviser to Viswa Bharati University and Rabindra Bharati University.

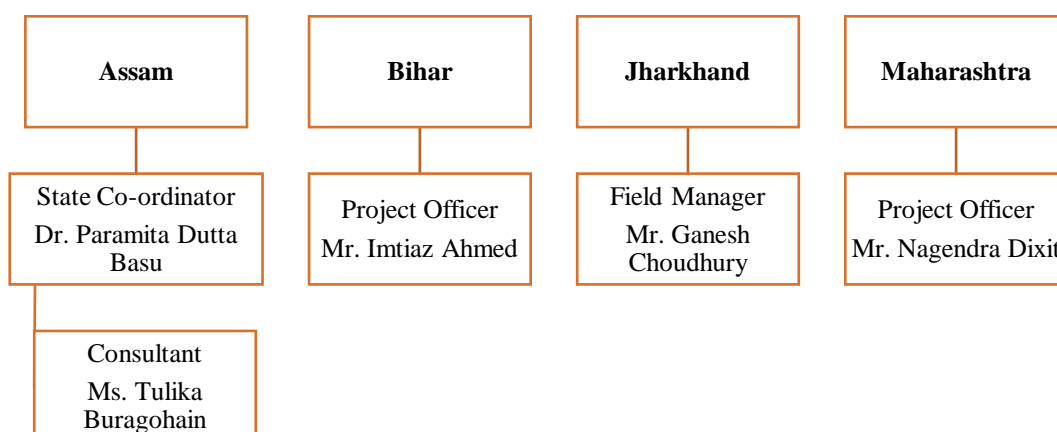
## **Mr. Tapan Kumar Majumdar (Secretary)**

Mr. Tapan Kumar Majumdar is also a retired IAS officer and he retired as Joint Secretary to the government of West Bengal. He has a long experience of working in District Administration besides overseeing the performance of important flagship programmes of the Public Health Engineering Department and the Panchayat & Rural Development Department of the government of West Bengal.

## **Mr. Nirmalya Sarkar (Treasurer)**

Mr. Nirmalya Sarkar is an FCA and has served Government of West Bengal for 34 years in West Bengal Audit & Accounts Service. He has wide experience in Project/Programme Fund Monitoring & Accounting and accounting of Panchayat Bodies.

## STATE REPRESENTATIVES





# OUR TEAM

SIGMA Foundation is led by Dr. M.N.Roy, who has a background in Electronics & Telecommunication as well as in social science research. He held key positions in the government during his career in the Indian Administrative Services spanning more than three decades. He is assisted by a few other retired IAS and State Civil Service Officers and professionals from various disciplines. The team consists of professionals from diverse backgrounds having various skillset who are energetic and experienced in conducting socio-economic research to solve complex problems. The vision of the organisation resonates with every team member and they motivate and inspire each other to do their best work. One of our greatest strength is our team spirit as we unite every day in doing our best to bridge the gaps in programme implementation through technology driven tools in order to provide our clients with the best results.





## Message from OUR PRESIDENT

SIGMA Foundation started its journey in the year 2014 to serve the society as a self-financed social enterprise with voluntary effort. It became a “not for profit” registered society in the year 2017 to widen its scope of work in providing consultancy services, to conduct socio-economic research and to partner with other organizations for serving the people in various disciplines of socio-economic and natural resources development. A committed team of multidisciplinary professionals with long experiences have since joined the Foundation. The core area of expertise of the organization is embedded in its name, i.e., ‘Providing Support for Improving Governance and Monitoring Advancement’. This covers disciplines like (i) Monitoring & Evaluation of various programmes and projects, (ii) Application of ICT including mobile telephony and GIS in real time monitoring, (iii) Big data analysis, (iv) Improving delivery of services in sanitation, public health, nutrition and education, (v) Improving management of drinking water supply & water quality monitoring, (v) Ground water prospecting using remote sensing data for promoting water security, (vi) Improving governance, particularly at the local level, (vii) strengthening decentralization and participatory planning, (vii) Alleviation of poverty, promotion of livelihood and management of natural resources & environment etc. It is also very competent in building capacity, developing training materials and provide training in the said fields and providing IEC and BCC module preparation and monitoring support for various programme implementation. It has capability of taking up projects in the entire country as well as outside the country. So far, it has experience of working in states like Maharashtra, West Bengal, Rajasthan, Assam, Himachal, Bihar and Chhattisgarh.

Being a knowledge-based organization, it puts utmost effort in continuous learning and adoption of advance technologies for remaining in the forefront of knowledge, capability and competitiveness. Providing best quality services to its clients/partners, which ranges from various state governments, UN organizations, public sector agencies as well as Non-Government Organizations is a commitment of the organization. Maintaining ethics and integrity in all dealings are the core values cherished by every member of the team and as a group we are fully committed to work for the betterment of the society and its sustainability.

(Dr. M. N. Roy)  
President  
SIGMA Foundation



# OUR GROWTH STORY

2014

**SIGMA Foundation** was established in the year **2014** for serving the society in various ways with the initiative of Dr. M. N. Roy, the Founder-President of the organisation.

2017

To strengthen the activities of the organisation, it was registered under the West Bengal Society Registration Act in the year **2017**.

2018

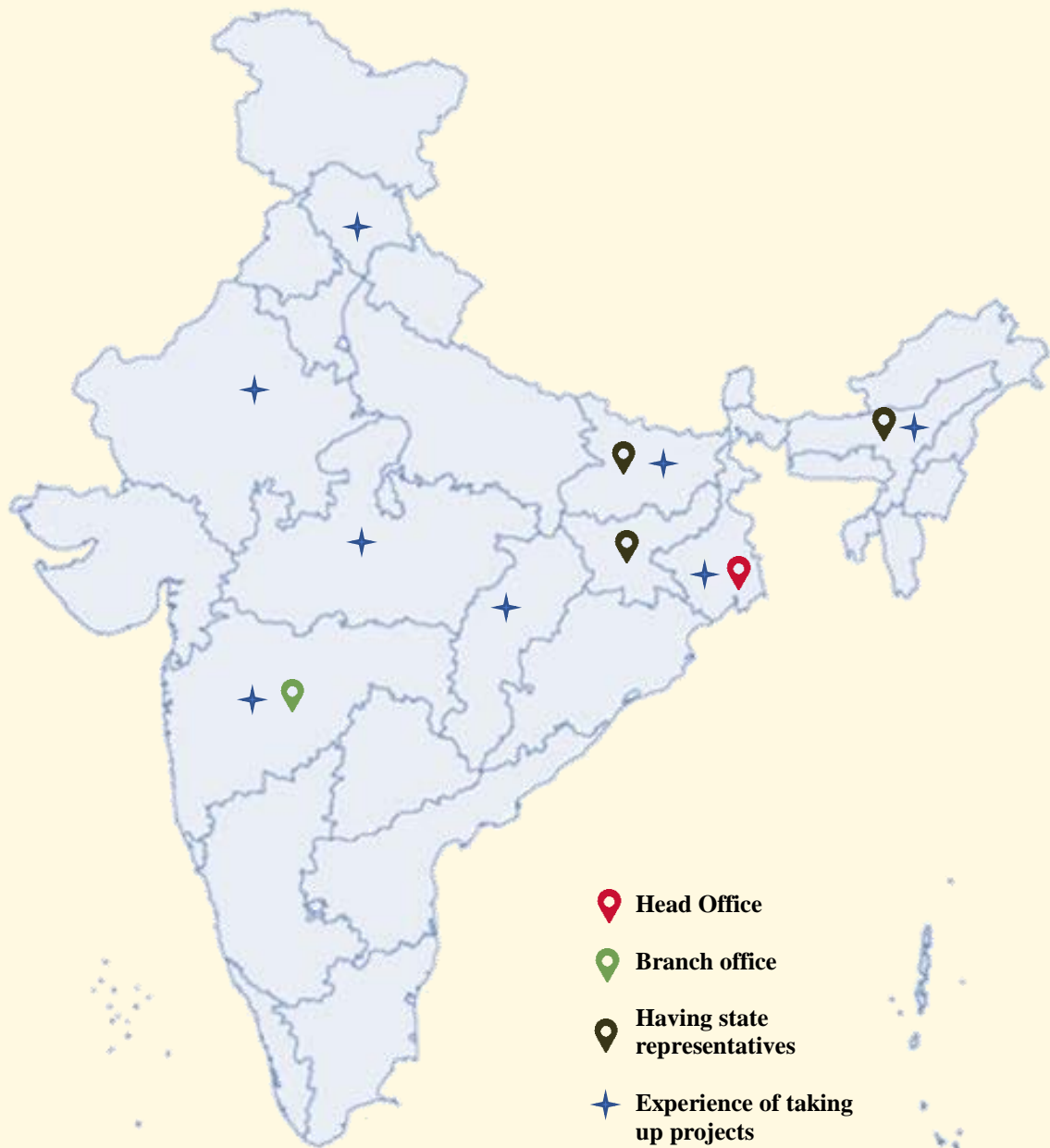
In the financial year **2017-18**, it had completed four projects and five other projects were running in partnership with international aid organisations and NGOs, Government ministries/ agencies, and grassroot development organisations.

2019

By the end of the financial year 2018-19, Sigma Foundation has completed a total of twelve projects over seven states and seven other projects are in progress thereby gaining more experience and sharpening its expertise.



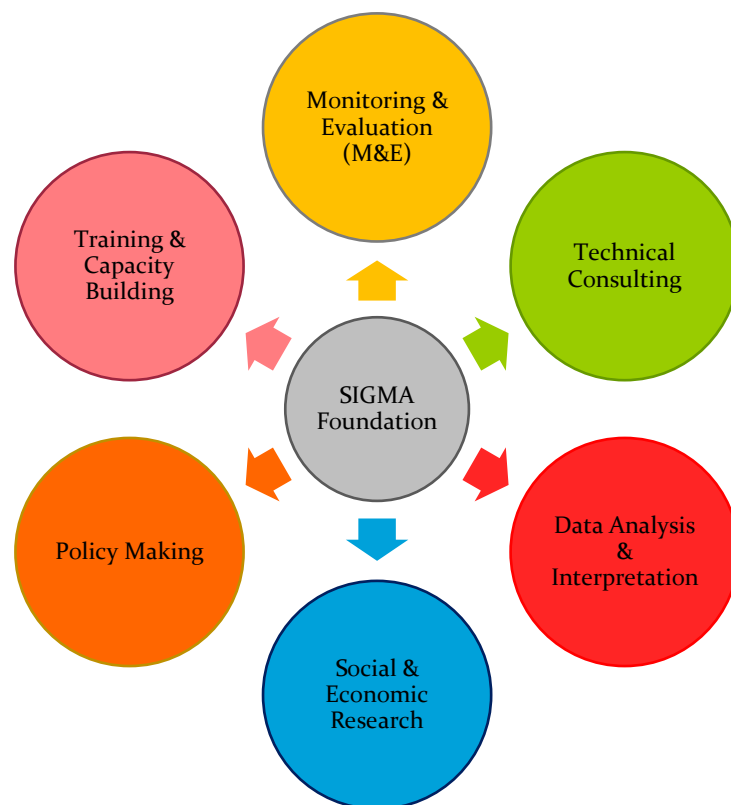
# OUR FOOTPRINT





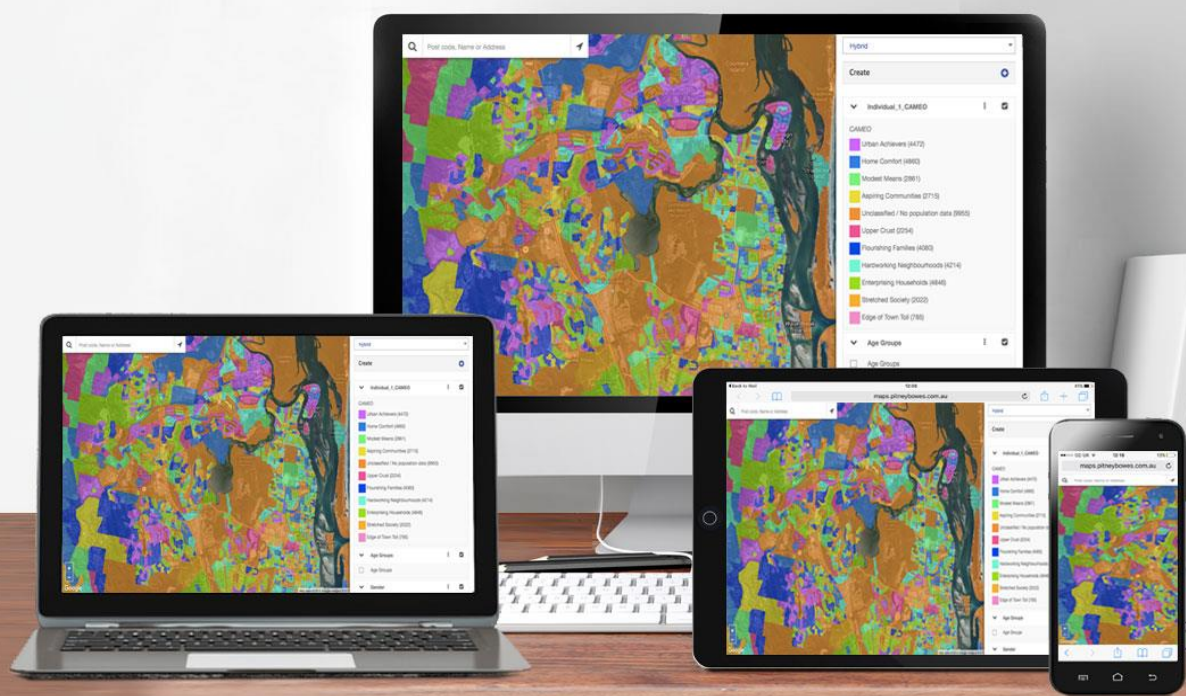
## OUR SKILLS

SIGMA Foundation has acquired formidable skill in all the fields covering its major activities. It has been working for monitoring and analysis of data captured through MIS of several flagship programmes and the team has gained huge analytical skill for analysis of big data and generating feedbacks for the implementing agencies for identifying and pre-empting areas of failures. Such feedbacks have been very effective in making interventions for course correction. SIGMA Foundation has taken up several socio-economic researches and the experience has been very useful in taking up such works requiring more advance analysis. It is engaged in study of local governance and decentralized planning in some states, which has added to its understanding and analytical capability of local governance research. SIGMA Foundation has imparted training in all the field of its activities and the team is now more experienced and have better skill in training and capacity building in monitoring & evaluation, local governance, decentralized planning, improving sustainability and safety of water and community-based management of water supply, implementation of sanitation programme and nutrition management.



# OUR SECTORIAL EXPERTISE





SIGMA Foundation have expertise across various segments of work like monitoring and evaluation (M&E), WASH, Panchayat, Decentralised Planning and many more. The organisation has always maintained good relation with its clients. It has also delivered good quality outputs within the proposed time frame. Therefore, work quality, punctuality and moreover the overall support are the keys of choosing us by our clients. The services provided by us are as following:

### **Monitoring and Evaluation**

Monitoring and Evaluation (M&E) of projects and programmes is one of the important services delivered by SIGMA Foundation. It is very capable of designing web-enabled system having GIS backbone where necessary for monitoring. Developing Android run mobile applications for capturing geo-tagged data from the field on real-time is another area of expertise of the organization. Dashboards are designed as a part of the web-enabled system to provide ready feedback as per programme requirement. Locational data captured through GIS where captured are integrated with the MIS to enable making spatial analysis. Assessment of status at baseline in the sectors like WASH, Nutrition, Processes of Local Governance, mid-term evaluation of any project for suggesting appropriate course correction and end-line evaluation at the end of the project are also carried out by the organization.

### **Data Analysis and Interpretation**

The data management and analysis wing of the organization has long experience and proficiency in analysis of big data and helping the programme implementation authority for various decision support. The team has supported implementation of several national flagship programmes like Swachh Bharat Mission (Grameen), Integrated Child Development Scheme etc. in the past. It also carries out disaggregated analysis of national/state wide programmes for bringing out performances across regions and over time for gaining better insight of the programme implementation and guidance for appropriate interventions for taking corrective measures.







### **Sanitation, Nutrition, and Public Health**

The team of SIGMA Foundation is well experienced in providing support to implementation of Swachh Bharat Mission. It has expertise in conducting field surveys, designing tools which can help in making the ODF status sustainable and improvement of Solid and Liquid Waste Management (SLWM). The team is also conversant in monitoring nutrition services and tracking nutrition status of individual child and other associated preventive healthcare measures, particularly those targeted towards women and children.

### **Communication for Development**

SIGMA Foundation has implemented programme on assessment of IEC/SBCC in the context of sanitation and the team is capable of extending support for development communication and assessment of existing system of communication for appropriate improvement.

### **Drinking Water Management and Water Safety**

SIGMA Foundation has implemented several projects involving drinking water supply management and water quality monitoring system. The organisation has expertise in establishing sound water quality monitoring system, monitoring management of water supply projects, aquifer mapping through latest remote sensing technology. It has special expertise in establishing protocols for Good Lab Practice Models (GLPM) and putting in place required arrangement for NABL accreditation for chemical and bacteriological water quality assessment.

### **Improving Local Governance and Decentralized Planning**

SIGMA Foundation has a very versed team for providing consultancy in strengthening governance, particularly at the local level, curriculum designing for training of local government functionaries, development of training materials, strengthening participatory planning process and application of PRA tools and related capacity building. The team members have wide experience in working with Panchayats and designing and supporting institutional strengthening measures across many states of the country. Computerization of the accounts, web-enabled system with GIS backbone for monitoring participatory planning & its outcome and development of grievance redressal system are the other areas of expertise of the team. The team is also experienced in taking up organization studies for improving governance and delivery of services.

### **Training and Capacity Building**

SIGMA Foundation is also highly experienced in providing training in all the streams of activities in which it is engaged with. Training is provided using mostly participatory mode for enhancing learning outcome with the help of training materials like case studies, video clips etc. It has a small training facility in Kolkata office where training is conducted for smaller groups. For larger groups suitable training venue is hired for imparting training.

### **Poverty Alleviation and Management of Natural Resources**

The team of SIGMA Foundation is well experienced in monitoring and evaluation of poverty alleviation programmes and livelihood development. The team has also expertise in management of natural resources for sustainable development and improving environment.





# PROJECTS COMPLETED

## **Baseline survey on functioning of VWSCs and VHSNCs in Sagar and Patharpratima Block of South 24 Parganas –**

Client: Naihati ProLife

Starting date: 07.09.2017

Completion date: 30.09.2017

1

2

## **Prepare four modules on the role and responsibility of VWSC, VHSNC and Water User Committees -**

Client: Digambarpur Angikar

Starting date: 11.09.2017

Completion date: 30.09.2017

## **Improve the capacities of monitoring and evaluation officials for better appreciation of MIS data and monitoring & improving Drinking Water Quality in Assam –**

Partner: UNICEF, Assam State Office

Starting date: 30.11.2017

Completion date: 31.12.2017

3

4

## **Provide support in demonstrating a more effective Gram Panchayat Development Planning (GPDP) process in 12 Gram Panchayats of Tonk district**

Client: Chief Planning Officer, Tonk

Starting date: 30.10.2017

Completion date: 10.02.2018

## **Develop a sound water quality management system for Assam**

Client: WSSO (PHE Dept., Assam) and UNICEF, Assam

Starting date: 15.3.2018

Completion date: 30.06.2018

5

6

## **Collecting Baseline Information, Conducting Post-Implementation Monitoring and water sample collection for water quality testing in Sheohar district (Bihar) & Sagar and Patharpratima Blocks of South 24 Parganas**

Client: Water For People

Start date: 14.03.2018

Completion date: 31.08.2018

**Swaccho – Nirapad Paribesh (Clean and Safe Environment) in Rajnagar Block of Birbhum district (West Bengal)**

Client: Water For People, India

Start date: 1.06.2018

Completion date: 31.08.2018

**7**

**8**

**Assessment of Management Practice and Functioning of the Rural Piped Water Supply Schemes Maintained by GP/VWSCs as well as PHED in the Districts of Nadia & Hooghly of West Bengal**

Client: PHED, Govt. of West Bengal

Start date: 07.3.2018

Completion date: 07.09.2018

**SBCC Capacity Strengthening for WASH in Assam**

Client: WSSO (PHE Dept., Assam) and UNICEF, Assam

Start date (month/year): August 2018

Completion date (month/year): January 2019

**9**

**10**

**Monitoring IEC Activities Across Five States of India**

Client: UNICEF, India Country Office

Start date (month/year): June 2018

Completion date (month/year): February 2019

**Assignment name: Quick Assessment Study on Mission Antyodaya GPs**

Client: NIRD&PR

Start date (month/year): January, 2019

Completion date (month/year): February, 2019

**11**

**12**

**Assignment name: Time and Work study for Panchayati Raj Functionaries in India**

Client: NIRD&PR

Start date (month/year): December, 2017

Completion date (month/year): March, 2019





# 1.

## Baseline survey on functioning of VWSCs and VHSNCs in Sagar and Patharpratima Blocks of South 24 Parganas

### BASELINE INFORMATION ON LOCAL INSTITUTIONS FOR SAFE DRINKING WATER, SANITATION & HYGIENE PROMOTION

A Report By SIGMA Foundation

For Naihati Prolife, a partner organization of Water For People



Access to safe water and sanitation is critical for human survival and is to be reached to every individual on a sustainable basis. These are important goals related to access to safe water under SDG (Goal 6.1) and India is committed for attaining the same. While there is need for putting in place appropriate policy and resources by the State and the Union government, there is also critical need for community actions in ensuring access to safe water and sanitation for all and forever. The local actions like installation of the drinking water facilities and their maintenance, sustenance of the services and developing appropriate attitude and practice by everyone have to be led by the Gram Panchayats, the rural local government in India. The community action is planned to be steered by the VWSCs (Village Water and Sanitation Committees) and the VHSNCs (Village Health Sanitation and Nutrition Committees), the former at the GP level and the latter at the Gram Sansad level, as have been prescribed by the government.

Water For People, a reputed international NGO has been working for providing access to WASH services under their programme called ‘everyone and forever’ in Sagar and Patharpratima Blocks of West Bengal with their partners. As a part of the project and keeping in view to understand the future needs to be addressed in the coming country plan of ‘Water For People’, an international organisation supporting the initiatives in Patharpratima and Sagar blocks with local partners, the status of functioning of the VWSCs and the VHSNCs were to be assessed. The work order was issued by Naihati Prolife, a partner organization of the Water For People. The survey was completed on time and a report was submitted. The report also came out with important recommendations for strengthening the VWSCs and the VHSNCs.





## 2.

### **Preparation of four modules on the role and responsibility of VWSC, VHSNC and Water User Committees**

Water For People has been working for providing access to WASH services ‘for everyone and forever’ in Sagar and Patharpratima Blocks of West Bengal with their partners. The project aims at more involvement of the community for sustainable delivery of services in the WASH sector. As a part of their capacity building project they wanted to develop three training modules for training the members of the VWSCs, VHSNCs and the Water User Committees. A fourth module was to be developed for training of trainers. The work was assigned to SIGMA Foundation by Dimagambarpur Angikar, a partner organization of the Water For People. The Modules were prepared and submitted on time.

Training Module for specific members of Village Water and Sanitation Committee (V.W.S.C) for the purpose of providing safe drinking water and improved health facility for the villagers



Prepared by SIGMA FOUNDATION

The Training Module is prepared by the initiative of volunteers of Digambarpur Angikar of Patharpratima block of S-24 Parganas

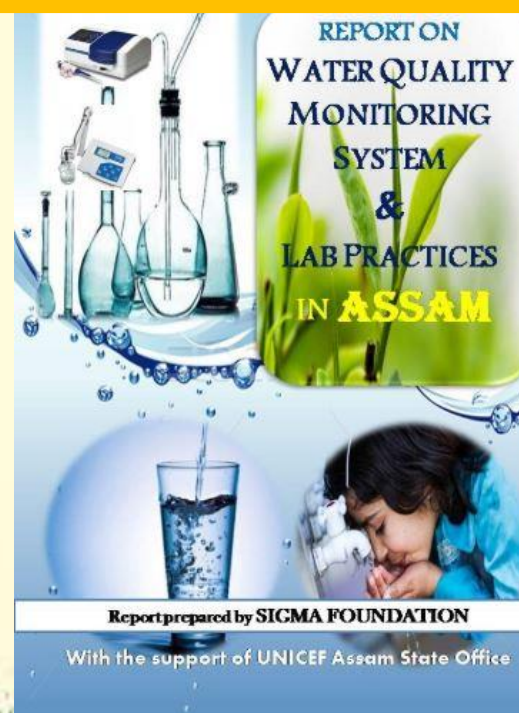
(Everyone Forever Program – 2017)

## 3.

### **Improve the capacities of monitoring and evaluation officials for better appreciation of MIS data and monitoring & improving Drinking Water Quality in Assam**

This was a partnership under SSFA (Small Scale Funding Agreement) with UNICEF Assam State Office. The project had two parts:

The first part was to train the state and district level M&E officials of Assam on basic aspects of monitoring, techniques of analysis of data available in the IMIS of the MDWS and presentation of results for decision support. To improve understanding of the district/state MIS officials on different aspects of implementation of the Swachh Bharat Mission (Grameen), the training of the officials on Monitoring and Evaluation of Assam was arranged by SIGMA Foundation with support of UNICEF. The objective was to improve implementation of SBM(G) and its progress in Assam for making the state ODF by 2nd October 2019.







The 2-days training included the basic concepts of Monitoring and Evaluation (M&E), understanding of sanitation and hygiene related aspects, implementation of SBM(G), generation of feedback for decision support in improving implementation of SBM(G) and regular follow up, concept of spatial monitoring, disaggregation of data and application of GIS, analysis of MIS data for monitoring SBM(G) and how to prepare Fact Sheets. Dr. M. N. Roy and other officials of SIGMA Foundation had trained the team on graphical representations of data and also explained the fundamental principles of monitoring in both quantitative and qualitative term. Various ICT (Information and Communication Technology) tools for monitoring the performance under SBM (G) like spatial analysis, data management and disaggregated data analysis for generating information were explained during the training sessions. It helped the officials to understand the implementation of the programme, disaggregated analyses, its visualization, decision support tools and feedback to the implementers based on analyses of the data. Dr. M. N. Roy sensitized the team on physical verification and how to make field visits more effective in judging quality of implementation of the programme including usage of toilet & sustainability of ODF, sanitary facilities and practices in the public domain (institutions and public places) and validation of data being uploaded under IMIS.

The second part was to have a quick assessment of the existing Water Quality Monitoring System (WQMS) in Assam, status of functioning of the water testing laboratories and suggesting ways for improvement of WQMS in Assam. This was done by analyzing the IMIS data on water quality available in the website of the MDWS, interaction with the officials of the state head quarter, the officials of the state referral laboratory at Betkuchi, Guwahati and those at the district water testing laboratories and their supervising officials of the districts of Jorhat and Kamrup Rural. The State Referral Laboratory and the District Level Laboratories of Jorhat and Kamrup Rural districts were visited for that purpose by the study team and a brain storming session was organized with participation of professionals engaged in water quality testing from the entire state. A 'Report on Water Quality Monitoring System & Lab Practices in Assam' has been submitted to the Assam PHE Department and UNICEF Assam State Office. The report has recommended several steps to be taken for strengthening WQMS in Assam for consideration of the state Government.

## 4. Providing support in demonstrating a more effective Gram Panchayat Development Planning (GPDP) process in 12 Gram Panchayats of Tonk district

The project is a joint initiative of District Administration of Tonk, Rajasthan and UNICEF Rajasthan state office. The objective of the project was to develop models of preparation of Gram Panchayat Development Plan (GPDP) for the year 2018-19 in respect of two selected model GPs of the district with intense handholding by the experts of SIGMA Foundation and providing support for preparation of GPDP in other 10 GPs. The assignment also included developing the capacity of district trainers' team through that process.

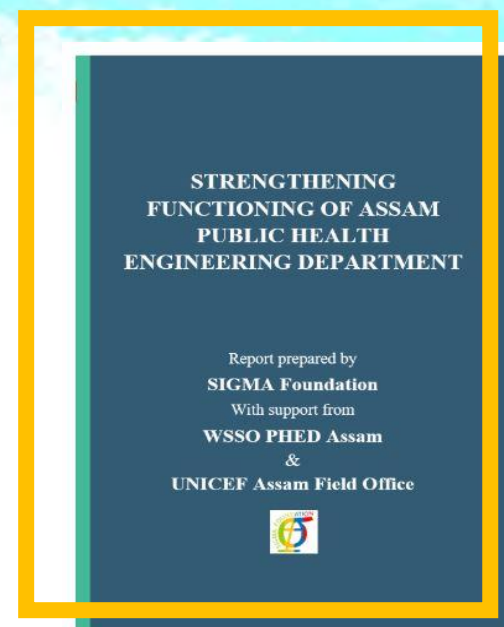
The project deliverables were:

- i. Re-orientation of a team comprising of 12 District Trainers Team (DTT) members, 8 GPCC (Gram Panchayat Planning and Coordination Committee) members of two model GPs and officials of DRCU to enhance their knowledge and facilitation skills for the preparation of quality GPDP
- ii. Demonstration of effective GPDP through two-day field work and two-day write-shop followed by facilitation of Special Gram Sabha in 2 GPs
- iii. Delivery of complete GPDP document of two models GP through demonstrating the GPDP process consistent with the State Government Guidelines.



## 5. Strengthening Functioning of APHED and Water Quality Monitoring System of Assam

The Government of Assam desired to improve the performance of the PHE Department of the state to meet the challenges related to drinking water supply, keeping the SDG (Goal 6.1) in mind. The state government approached UNICEF Assam for support and the latter identified SIGMA Foundation to take up a diagnostic study for Assam PHED. The other area in which the state requested support of UNICEF was water quality monitoring since the state faces serious problem of water quality. Drinking water in some areas of Assam is not safe as per the set standard under the BIS and water quality has emerged as a major problem in the State. 21 out of 27 districts of the state are already known to have problems of Arsenic or Fluoride contamination or both. WSSO Assam entered in to a MOU with SIGMA Foundation for taking up the following two activities:





### Activity 1: Diagnostic Study of APHED for strengthening its functioning

To assess and examine the system of implementation of the National Rural Drinking Water Supply Programme (NRDWP) by the APHED in terms of ongoing and proposed project and related capacity. To identify the constraints in functioning of the PHE Department, particularly in implementation of NRDWP and utilization of funds available under related schemes and to suggest steps to be taken for improving functioning of the department.

### Activity 2: To develop a sound Water Quality Monitoring System (WQMS)

- i. To conduct a Refresher Training Program for the lab personnel of 27 DLLs and 1 SRL of Assam. The training was to be conducted in two batches in residential mode at the SRL with due emphasis on hands on training at the laboratory.
- ii. The SRL, Betkuchi was assisted for NABL accreditation for critical water quality parameters such as Arsenic and Fluoride. The Technical Specification and the recommended protocol was provided to SRL for the accreditation.
- iii. Orientation of the personnel in six selected DLLs including Jorhat DLL for adoption of good lab practices and Membrane Filtration technology for testing bacteriological quality of water with the ultimate objective of enabling the Jorhat lab to be able to apply for NABL accreditation by the end of December 2018 (was to be achieved in the second phase). Training on sanitary survey for the quality affected districts to protect the source contamination during the project period. They were also trained on Membrane Filtration technology, if facilities were put in place by the time their training was taken up. All tasks were completed on time and the report was presented to the government of Assam.

## 6.

### Collecting Baseline Information, Conducting Post-Implementation Monitoring and water sample collection for water quality testing in Sheohar district (Bihar) & Sagar and Patharpratima Blocks of South 24 Parganas (West Bengal)

The study had three parts. The first part captures the current drinking water and WASH Scenario in Sheohar district of Bihar. The second part was to access impact of the investment of 'Charity Water' through post-implementation monitoring of the installed water points in Sheohar as well as Sagar and Patharpratima blocks of West Bengal. The third component was testing water quality of the project area. The results of this study was primarily used by Water for People and Sigma Foundation for the following purposes:





- Clear understanding of the present scenario of drinking water in Sheohar district of Bihar as well as Sagar and Patharpratima blocks of West Bengal. The inference will be directly based on the user's feedback regarding their satisfaction with the water point they use, the type of sources which are required to be installed with the support of 'Charity Water'. A picture of water accessibility and WASH infrastructure and facilities was also drawn from the study.
- Assessment of impact of the interventions already done by 'Charity Water'. The functionality of the water points and user's perception regarding the same would help WFP to prepare a detailed analysis of the impact of their project implementation and the scope of improvement if required. The present condition of WASH at household and school levels was also understood in the post implementation phase.
- Water Quality test of water samples would provide the real time primary data which would be used for knowing the status of water quality post interventions.
- A 3-days "Orientation programme on water quality monitoring and baseline survey by Water For People (WFP), New York, Charity Water-Denver and WFP, India with the technical supervision of SIGMA, Foundation.
- The project was completed on time and the report was submitted to WFPI.



## 7. **Swaccho – Nirapad Paribesh (Clean and Safe Environment) in Rajnagar Block of Birbhum district (West Bengal)**

This proposal was based on three broad objectives – WASH in facilities, community sanitation and behaviour change components to reach out to the most vulnerable and excluded communities in Rajnagar Block. The WASH initiatives aimed at functional WASH facilities in all the government aided primary schools, Anganwadi centers (AWCs) and tribal schools/Ashramshalas along with establishing operation and maintenance system for WASH facilities, behaviour change communication and strengthening local institutions. The program aimed at Rajnagar being a sustained ODF block through strengthening the Gram Panchayats (Village Water and Sanitation Committees) for full coverage and monitoring the usage of toilets by all family members.

SWACCHO – NIRAPAD PARIBESH (CLEAN AND SAFE ENVIRONMENT) IN RAJNAGAR BLOCK OF BIRBHUM DISTRICT (WEST BENGAL)



For

Water For People India Trust





The objectives of the Baseline Survey were the following:

- i. Assessment of the status of WASH (Water, Sanitation and Hygiene) infrastructure and facilities (availability, conditions and usage) in all government aided primary, upper primary & high schools, tribal schools and AWCs etc. along with use of the facilities and related behaviour.
- ii. Sustenance of the ODF status at the community level and current activities related to BCC for generation of critical awareness in ensuring adoption of sanitary behaviour by everyone and everywhere i.e., both in private domain as well as the facilities/public places.
- iii. Collection of secondary data on synergy and collaboration by all the stakeholders in keeping the environment safe and clean with sustained ODF status and status of operation and maintenance of the WASH facilities.
- iv. Level of awareness about their roles and responsibilities in working for ODF sustainability and maintaining a clean and safe environment and capability of the local institutions, particularly the Gram Panchayats (GPs) and various community-based organizations in discharging their responsibilities. There is also need to assess the gap in awareness and institutional capacities for bridging the same



The survey was done using Android run application for easier data management. A report was prepared on the status of access and usage of toilets, coverage of water (hand pump, well, piped drinking water supply system etc.) and its safety and security at the household level as well as at the village institutions like primary, upper primary & high schools, tribal schools and AWCs and identifying the factors which can enable sustainability of ODF status. The report also highlighted the status of IEC/BCC and ways for strengthening and monitoring the same for supporting ODF sustainability and ways for strengthening engagement of the local level committees for improving source protection.

The report was submitted to WFPI.





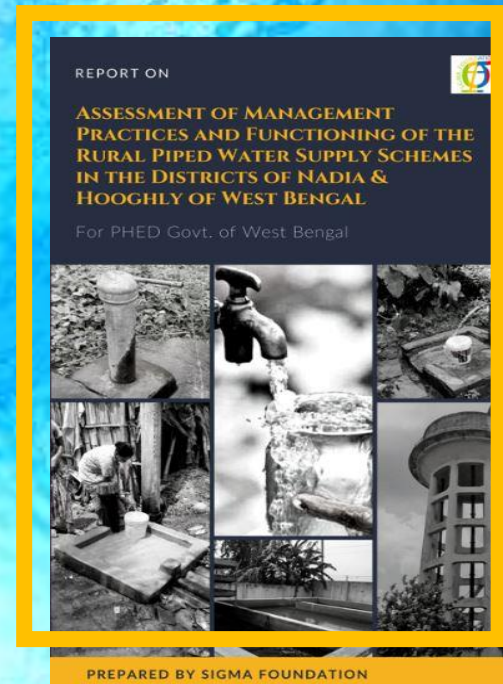
# 8.

## Assessment of Management Practice and Functioning of the Rural Piped Water Supply Schemes Maintained by GP/VWSCs as well as PHED in Nadia and Hooghly Districts of West Bengal

Public Health Engineering Department (PHED) is responsible for installation and maintenance of the rural Piped Water Supply Schemes (PWSS). In the year 2013 Ministry of Drinking Water & Sanitation (MDWS), GOI, has initiated the decentralization process of drinking water supply through PRIs and community involvement to ensure active participation of the villagers, which will ensure the drinking water security as well.

For this purpose, GoI has directed all the States to constitute one VWSCs in each GP to function for promotion of water and sanitation, which has to function under general guidance and control of the GP concerned. Hence, Government of West Bengal has decided to hand over the responsibility of management, operation and maintenance of all the Piped Water Supply Schemes (PWSS) from PHED to Gram Panchayats/Village Water and Sanitation Committee (GPWSC/VWSC). This process of transfer of PWSS from PHED to GPs/VWSCs has been started from 2015 and still it is going on in different parts of West Bengal as well as in India. Since almost two years have been passed after such hand over process was started and more schemes are likely to be handed over in future, it has been felt necessary to assess the status of functioning of the handed over schemes as well as the how those are being maintained and operated. A study for assessing the status of functioning of the PWSS handed over to the VWSCs compared to which are being operated by the PHED of was assigned to SIGMA Foundation through competitive bidding. The objective of the study was to find out if any impediment exists within the water supply system at the village level and also to suggest appropriate measures to improve the performance of VWSCs if needed.

The study was completed on time and report was submitted to the PHED. A presentation on key findings was made before the key officials including the Principal Secretary, PHED





## 9. SBCC Capacity Strengthening for WASH in Assam

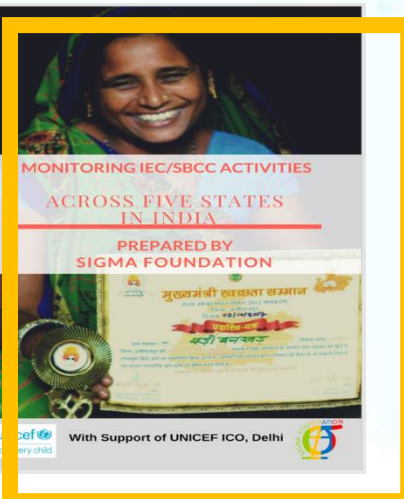


PHED Assam mobilized the Swachhgrahis in large number and they were supposed to carry out SBCC activities at the village level. Several problems have been faced in utilizing them efficiently and one critical gap was to train them on the 2<sup>nd</sup> generation IEC/SBCC. Govt. of Assam decided to create a pool of competent trainers in a cascading mode. UNICEF Assam Field Office agreed to support the project and SIGMA Foundation was selected as the partner through tendering. 36 State Level Master Trainers (SMTs) and District Level Master Trainers (DMTs) from 6 districts were to be trained by SIGMA Foundation along with development of a Manual for Training of Swachhgrahis in Assamese. Total 36 SMTs were provided residential training for 5 days at Don Bosco Institute of Management by the resource persons from SIGMA Foundation. Total 87 DMTs were also trained in two batches through 3 days residential programme in two batches.



SIGMA Foundation has successfully completed the task. A Competency Building framework was prepared and the trainees were judged on their enhancement of capacity as trainers through assessing their skill before and after the training. The state has also been provided with a Swachhgrahis Management Framework. The ground level scenario was also parallelly captured by the SIGMA officials from field visits. The master trainers were advocated on the subject focussing on appropriate IEC/SBCC tools to induce the desired practice amongst the students. Secondly, to advocate about the fact that school children can be used as a very effective communication channel to convey the appropriate IEC/SBCC message from school to household.

## 10. Monitoring IEC Activities Across Five States of India



Government of India (GOI) has launched the Swachh Bharat Mission (SBM) on October 2014 for making the country free from open defecation (ODF), by the 2nd October 2019. Well-developed Information, Education and Communication (IEC) and Social and Behaviour Change Communication (SBCC) strategies, planning and their effective implementation has been identified as the key to the success of any long-term effort to eliminate entrenched unsafe behaviours and bring about new social norms. MDWS, GOI requested UNICEF India Country Office (ICO) to make an assessment of the status of planning and implementation of the IEC/SBCC plans.

UNICEF ICO agreed to support the study in 5 states and identified SIGMA Foundation as the partner. UNICEF ICO also wanted to make an assessment of status of ODF sustainability in two districts where they had extended substantial support. There was also a need to develop a monitoring framework for the IEC/SBCC activities. Thus, the three main activities under the project were:

- A) Assessment of the SBM – IEC/SBCC plans for 2018-19 made by 5 selected states namely, Assam, Madhya Pradesh, Maharashtra, Rajasthan and West Bengal
- B) Develop a Monitoring framework for the IEC/BCC activities.
- C) Development of a IEC/SBCC Monitoring Framework.

A study on the status of access and usage of toilets and ODF sustainability in 2 UNICEF focus districts (Maldah and Durgapur) were carried out and the results were assessed.

The studies were completed and in each of the two districts 50 primary and 10 upper primary/secondary schools have been studied which has given the team a good exposure on the status of WASH in schools, related issues and the team has developed an edge for taking up studies on school WASH. The reports have been submitted.



## 11. Quick Assessment Study on Mission Antyodaya GPs

National Institute of Rural Development and Panchayati Raj (NIRDPR) took up a project of quick assessment of Mission Antyodaya GPs. Mission Antyodaya, an accountability and convergence framework has been designed for transforming lives and livelihoods on measurable outcomes addressing various forms of deprivation of rural households. 37 key indicators have been identified and baseline was collected and uploaded and provisional ranks have been assigned based on the performances of GPs out of a total score of 100. Pairwise study of Mission Antyodaya GPs which scored more than 80 points and GPs with less than 50 points were done in four states namely, Chhattisgarh, Madhya Pradesh, Maharashtra and West Bengal. In the four states 6 such pairs of GPs were selected.







The project deliverables were:

Quick assessment report on Mission Antyodaya GP pairs. The report consisted of the status of indicator-wise achievements by utilizing the human and financial resources comparatively focusing on the study objectives. The base line data was compared with the current situation by field visit and followed by analysis of the data and preparation of state specific reports.

The report was delivered to NIRD & PR.

## 12. Time and Work study of Gram Panchayats

National Institute of Rural Development and Panchayati Raj (NIRDPR) took up a project for assessing the workload of the GPs across the country to find out the types of human resource requirement for the GPs in different states. This was to be achieved by conducting “Time and Work study of Gram Panchayats” in some GPs selected from each state, based on certain criteria set by the NIRD&PR. SIGMA Foundation was given the responsibility of taking up the study in West Bengal and Himachal Pradesh. The data was collected as per the following Schedules developed by the NIRD&PR

- i. Schedule 1: State Information Schedule
- ii. Schedule 2: Schedule on Gram Panchayat Profile
- iii. Schedule 3: GP function profile
- iv. Schedule 4: Process Mapping of Gram Panchayat Functions
- v. Schedule 5: GP Functionaries Schedule
- vi. Schedule 6: Time and Work Observation Worksheet
- vii. Schedule 7:

- ❖ Focus Group Discussion (FGD) with GP Employees
- ❖ FGD with elected representatives of the GP
- ❖ FGD with NGOs and other institutions working with PRIs in the State and
- ❖ 3-4 FGDs with citizens, one of them being a SHG

The data collection was followed by analysis of the data and preparation of state specific reports. SIGMA Foundation was given the responsibility of preparation of reports followed by field survey in West Bengal and Himachal Pradesh as partner of NIRD&PR. The study was completed and the report was submitted.



# PROJECTS IN PROGRESS

**Developing Capacity Towards Concurrent Monitoring and Supportive Handholding to Govt. of Maharashtra to sustain ODF Status of Rural Maharashtra with Identification of Bottlenecks and Developing Enabling Environment**

Client: UNICEF, Maharashtra

Start date: 15.2.2018

**1.**

**Strengthening GPDP/Panchayat Initiatives and Knowledge Management in Maharashtra**

Client: UNICEF, Maharashtra

Start date: September 2018

**3.**

**Strengthening PRIs in Bihar – Building Institutional, Systemic and Technical Capacities**

Client: UNICEF, Bihar

Start date: November 2018

**5.**

**Everyone Forever - Water Services and Systems Strengthening: Rajnagar and Khoyrasol Blocks of Birbhum District in West Bengal**

Client: Water For People, India

Start date: 18.03.2019

**7.**

**Strengthening Decentralized Planning in Rajasthan**

Client: Deloitte Touche Tohmatsu India LLP

Start date: July, 2018

**2.**

**Stakeholder Consultation Training and Monitoring activities as part of the ODF Sustainability and ODF Plus Communication Strategy and Campaign being developed for JWT for UNICEF**

Client: WSSO (PHE Dept., Assam) and UNICEF, Assam

Start date: October, 2018

**4.**

**Rural ODF Sustainability study for West Bengal**

Client: UNICEF, West Bengal

Start date: November, 2018

**6.**



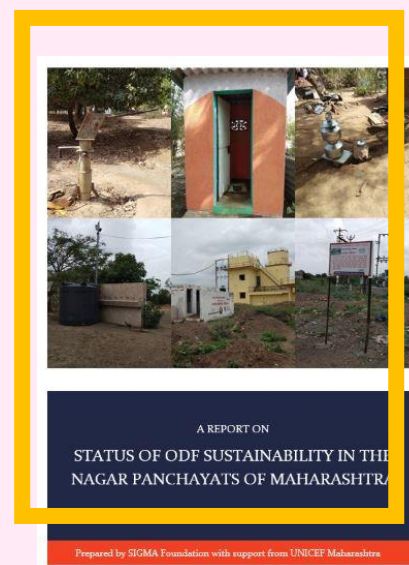


# 1.

## **Developing capacity towards concurrent monitoring and supportive handholding to Govt. of Maharashtra to sustain ODF status of rural Maharashtra with identification of bottlenecks and developing enabling environment**

SIGMA Foundation has started supporting the government of Maharashtra in the field of WASH. The support includes monitoring of the progress of SBM(G) through rapid field surveys with special focus on use of toilets and change in sanitary and hygiene behaviour as well as critically looking into the issues of ODF sustainability with improvement of public health indicators. The project area covers 12 districts and 18 Census Towns of Maharashtra. All the districts of Aurangabad Division and the districts of Chandrapur, Palghar, Nandurbar and Amravati are included for conducting regular field visit and collection of both household level and GP level data and to analyse those for giving feedback to the Zilla Parishads as well as the state authorities, i.e., the WSSO and Water Supply and Sanitation Department of the Government of Maharashtra. Each district was to be visited at least once in a quarter and two GPs and 10 to 15 HHs in each GP was to be visited at random to assess ground realities. 20 out of those 39 Census Towns of the districts covered under the project were also to be surveyed regularly to understand the problem of sanitation and waste management in the non-municipal towns. The data captured was also be analysed to gain knowledge about the issues of sanitation in such areas and suggesting possible measures in overcoming those problems. The IEC activities being performed at the block and GPs and its impact on ODF sustainability was to be also monitored in order to motivate the families for constructing and using the IHHLs. Visits to a few schools, ICDS centres, health sub-centres and PHCs was to be made and the findings were to be shared with the implementing agency as Fact Sheets.

A web-enabled system with GIS backbone (hosted at [mh.swachhgaon.in/watsan](http://mh.swachhgaon.in/watsan)) has been developed to guide the field officials by displaying the analyzed result on status of sanitation across all the blocks of the state for planning appropriate interventions by respective authorities of the state. The main motive of the initiative is to help all the officials up to block level to go through the web-based analysis on a regular interval, know their performances in comparison to others, internalize the reasons behind any shortfall and to plan for taking specific actions for improving performances.



# 2.

## **Strengthening Decentralized Participative Planning (DPP) in Rajasthan**

Government of Rajasthan is in the process of strengthening the decentralized participatory planning process in the state under a World Bank assisted project. The work has been assigned to Deloitte Touche Tohmatsu India LLP (Deloitte). Deloitte has identified SIGMA Foundation as a partner in the project and Dr. M. N. Roy, President of SIGMA Foundation is the team leader for this project. The main activities under the project are:

- 1) Study and document the existing function DPP (a) the present framework for DPP in Rajasthan; (b) the abilities of and practices and processes (including the planning tools) followed by the community/s for DPP and project management; (c) the Government organisational structures involved in DPP, their responsibilities and assessment of their effectiveness; (d) the reporting and monitoring mechanism; and (e) linkage of the District Plans with the State Budget.
- 2) Based on the study, identify the gaps constraining the effectiveness of DPP in terms of preparation, implementation and monitoring (GAP analysis).
- 3) Suggest Roadmap (to be) required consolidating the progress made thus far and to strengthen the gaps identified. This will include good practices and lessons learned from other jurisdictions implementing DPP, different execution modalities, resource application and M&E of progress.
- 4) Develop an upgraded/modernized State Decentralized Participatory Planning Framework, including the planning work flow by building upon the existing system. Hold dissemination workshops, in consultation with GOR, to obtain the views of the local self-governments, state officials of departments dealing with DPP, public representatives and other stakeholders.
- 5) Conduct pilots to establish and operationalize the suggested Framework and the planning workflow to produce a District Plan across one district and demonstrate the use of participatory tools such as GIS, Geo-ICT and use of Plan Plus/e-Panchayat software. The processes will include demonstration of visioning exercises, mapping of activities and financial resources, preparation of micro plans, thematic consolidation and integration of plans, approvals and linkage with the state budget and subsequent monitoring modalities.

Deloitte team has been assisted by SIGMA Foundation to make an AS IS assessment of decentralized planning in India. Dr Roy as the Team Leader of the project had interactions from time to time with officials of Panchayat Dept. and Finance Dept. of the Govt. of Rajasthan and with officials concerned of the World Bank. The team is being assisted to develop a Decentralized Planning Framework covering all the tiers of Panchayats and the urban local bodies of the state.

# 3.

## Strengthening GPDP/Panchayat Initiatives and Knowledge Management in Maharashtra

UNICEF Mumbai has been working with Rural Development Department, Government of Maharashtra (RDD, GoM) for more than a decade to strengthen the decentralized processes. RDD GoM requested UNICEF to (a) support a study on Gram Panchayat Development Programmes (GPDP) b) to support SIRD and RGSA cell in the conceptualization of Peer Learning Centres, and c) to support the state government by developing the concept/framework for single registry for a GP.

SIGMA Foundation was selected as a partner to carry out those activities because of their expertise in the in the field of local governance and decentralized planning and it is also experienced on conducting studies on functioning of Panchayats in more than one state as a partner of the National Institute of Rural Development & Panchayati Raj, Govt of India.

The partnership between SIGMA Foundation and UNICEF is focussing on the following areas:

- i. Study of GPDP on the ground and ways for strengthening the process
- ii. Conceptualisation of Peer Learning Centres & development of a web Portal for sharing research, information and innovation
- iii. A conceptual framework for developing a single registry focusing Panchayats

An Inception Report has been delivered. Desk based analysis of GPDP in Maharashtra has been completed. Questionnaires for the survey has been pre-tested and finalized. Survey of 264 GPs across 12 districts of the state has been completed. Data analysis has started. The proposed Panchayat Knowledge Management Centre has been conceptualized and discussed with the Principal Secretary of the Rural Development & Panchayat Dep't, Govt. of Maharashtra and officials of UNICEF for their feedback.





# 4.

## **Stakeholder Consultation Training and Monitoring activities as part of the ODF Sustainability and ODF Plus Communication Strategy and Campaign being developed by JWT (Creative unit of Hindustan Thompson Associates-HTA) for UNICEF**

Government of West Bengal (GoWB) is determined to achieve sanitation and water safety across the state. After the declaration of ODF, the current need is to sustain that status. Social and Behaviour Change Communication (SBCC) strategies including IEC campaigns have played a decisive role in the achievement of ODF status.

The GoWB requested UNICEF for technical support to develop evidence-based communication strategy and a tool kit with bilingual communication material package in Bengali and Hindi to support communication processes promoting ODF sustainability in the districts which have already achieved it.

UNICEF has appointed Hindustan Thompson Associates Limited-Creative Unit of JWT as the communication agency for the development of a communication strategy and a tool kit rolling out the same along with a Monitoring Framework for the same.

JWT has appointed SIGMA Foundation. The responsibilities of SIGMA Foundation included:

- 1) To facilitate State Level Consultation (with Policy Makers and Community Representatives) to discuss gaps in understanding of ODF sustainability and challenges in practicing/maintaining sustainability; identify specific actions and communication requirements
- 2) Develop a comprehensive IEC/SBCC monitoring plan for the IEC tools developed by JWT
- 3) Facilitation of the Capacity Building of ToTs workshop using the Capacity Building/Training module

A Monitoring Framework for IEC/SBCC related to ODF sustainability and ODF Plus activity was developed in consultation with the stakeholders, carrying out research based on secondary data and conceptualizing an evidence-based monitoring framework for IEC/SBCC for ODF sustainability





# 5.

## Strengthening PRIs in Bihar – Building Institutional, Systemic and Technical Capacities

This project is aimed at strengthening the Gram Panchayats to become strong institutions of local government and to sensitize those bodies on various issues of child development so that they improve basic services for the children. Various departmental functionaries at the field level would also be sensitized so that they can leverage the Gram Panchayats for improving their departmental services, particularly those related to human development and alleviation of poverty. In this backdrop, several areas of interventions have been identified in a meeting between the Pr. Secretary, Panchayati Raj Department (PRD), Govt. of Bihar and UNICEF on the 17th July 2018. This was followed by detailed discussions between UNICEF and SIGMA Foundation officials and it was desired that SIGMA Foundation would share a plan for formative development and implementation phases until December 2019 with details of activities to be taken up during the year 2018.

The interventions have been planned in terms of three broad thrust areas, described as three outputs:

Output 1: The first set of activities will increase capacity on field and community-based approaches to child responsive GPs. These set of activities will explore the possibility of making the Gram Panchayats of Bihar more responsive to the needs of children.

Output 2: Activities that are aimed at enhancing technical capacities of PRIs stakeholders at state, district and GP levels. These set of activities will improve the technical capacity of the PRI stakeholders, so that they will be able to perform better at the tasks assigned to them. Stakeholders such as Executive Assistants and GP Mukhiyas will benefit from these set of activities.

Output 3: The third set of activities will improve and strengthen the PRIs by strengthening the policy level leadership. These set of activities will strengthen the apex training institution at the state level and issue advisories on behalf of the various relevant line departments.



To ensure all these developments the project is divided into two phases with the first phase started from November 2018- March 2019 and the second phase from April 2019-January 2020. As of the first phase of the study is concerned two deliverables have been submitted: (a) Draft advisory to be issued jointly by Department of Panchayati Raj and relevant line departments and (b) Efficacy assessment on ongoing GPDP interventions in Vaishali have been completed.

## 6.

### **Rural ODF Sustainability study for West Bengal**

West Bengal has made very good progress in providing access to sanitation through Mission Nirmal Bangla (State contextualized Swachh Bharat Mission – Grameen) launched by the Govt. of India. The IHHL coverage of West Bengal has reached 96.3% as on 5<sup>th</sup> October, 2018 while the corresponding figure at the Baseline was 50.4%. the current challenge for the state like many other states of the country, has shifted to universal use, operation and maintenance of toilets on a sustainable basis, adoption of hygienic behavior by everyone in both domestic as well as in public life as well as mainstreaming of second-generation sanitation components into the current sanitation program. Ensuring sustainability of ODF status and achieving higher standards of sanitation and hygiene, termed as ODF Plus, through various interventions will thus require adoption of appropriate strategy by the State Government while the approach for the development of the strategy will require to examine past sanitation programmes in WB including the ongoing SBM (G) and their impacts: assessing current ODF scenario, gaps and strengths in terms of processes applied, different stages of ODF S and ODF Plus the various districts have currently adopted, gaps in technical options, capacity building, policy requirement etc.

UNICEF, West Bengal state office has come forward to provide technical support in this endeavor of the State Government and they have identified SIGMA Foundation, an organization with specialization and experience in the WASH sector, as partner for providing technical support. The following are the expected results from the project-

1. Assessment of gaps and strengths of current state contextualized SBM (G)/ MNB implementation
  - a) In depth Review of literature
  - b) Pre-consultation with various stakeholders
1. Support system strengthening through development of State strategy on ODF sustainability.
3. Dissemination and finalization of strategy through a consultative State level Workshop with all Sate and District stakeholders.

After relevant in-depth review of literature and in consultation with various stakeholders, the final report has been prepared and submitted to UNICEF, West Bengal.

## **7. Everyone Forever - Water Services and Systems Strengthening: Rajnagar and Khoyrasol Blocks of Birbhum District in West Bengal**

WFP India Trust has invited proposals from relevant organizations for undertaking a Baseline Study related to Water Services and reflect access (quantity and quality), reach (especially gender and excluded groups) and infrastructural gaps (functionality of systems) in 15 Gram Panchayats - GPs (5 GPs of Rajnagar Block and 10 GPs of Khoyrasol Block). The results from the baseline survey will be used to implement water initiative program in Rajnagar and Khoyrasol Block, Birbhum district. The prospective agency will engage with Water for People India towards development of this study.

The objectives for engaging an agency for Baseline survey are:

### **Water and Sanitation Services: -**

- i. Assessment of Water infrastructure and facilities (availability and condition) in all the government aided primary, upper primary/ high/ schools and Ashramshalas and all Anganwadi Centres.
- ii. Sanitation facilities in Anganwadi centres and schools (drinking water, handwashing stations, toilets and with running water facilities)
- iii. Awareness for key behaviours such as safe water storage and handling, waste water management, home based water treatment and Handwashing at five critical times
- iv. Asset analysis of water points to assess three different risk areas (age of the water system, functionality of water system, physical state of components of the water system)



### **Capacities of Local Institutions**

- i. Existence, awareness of roles and responsibilities, functionality and engagement of local level institutions – Panchayati Raj Institutions and its sub committees such as Village Water and Sanitation Committees, water user committee, school level committees (School management committees, student-based groups) in terms of Water and Sanitation management.

### **Synergies and Collaboration**

- i. Review of available secondary data on WASH.
- ii. Document the existing government schemes for collaboration and linking communities and school with safe water services to the provisions and systems for operation and maintenance
- iii. Role of other development partners in Birbhum and areas of collaboration to ensure efficiencies.
- iv. Discussion with the local government departments (service authorities) on management, financing, monitoring and operations and maintenance of water and sanitation facilities.

The work has been assigned to SIGMA Foundation. The desk review of available secondary data based on which the strategy for the study will be designed has been completed during the few weeks left before the closure of the financial year.

An Inception Report comprising of sample size and methodology, finalised areas of enquiry, final questionnaires have been shared with Water for People. The field survey will start after the election in the district is over during the next financial year.





# SIGMA FOUNDATION IN DIFFERENT EVENTS

19<sup>th</sup> – 23<sup>rd</sup>  
July, 2018 01

Training and Workshop  
on Water Safety and  
Security Plans in Patna

24<sup>th</sup> – 26<sup>th</sup>  
July, 2018 02

Training and Workshop on  
Ground Water Management  
and Governance

22<sup>nd</sup> – 23<sup>rd</sup>  
November, 2018 03

XII World Aqua Congress

28<sup>th</sup>  
November, 2018 04

Workshop on  
Menstrual Hygiene  
Management

15<sup>th</sup>  
December, 2018 05

India-UK Water Centre  
Workshop

11<sup>th</sup> January, 2018 06

ESDA CON 2019, New  
Delhi

13<sup>th</sup> – 15<sup>th</sup>  
March, 2018 07

Release of a Video of  
SIGMA Foundation in the  
Water Conference in Paris

30<sup>th</sup> March, 2018 08

Celebration of World  
Water Day





# 1.

## Training and Workshop on Water Safety & Security Plans in Patna

SIGMA Foundation was invited to share their knowledge in 5-days Training Programme from 19th to 23rd July, 2018 and followed by a 2-days Workshop from 24<sup>th</sup> to 25<sup>th</sup> July, 2018 on developing Water Safety and Security Plans in Patna, organized by Water for People, India and USA. The Objectives of the training programme and workshop was to develop master trainer for providing training to the field level staff and handholding support in developing Water Safety and Security Plan at the village level. On behalf of SIGMA Foundation, *Dr. Debasri Mukherjee*, *Mr. Ganesh Chowdhury* and *Mr. Soumyajit Basu* had attended the training programme and workshop to share their technical knowledge in the field of Water Resource Management. Team SIGMA shared their knowledge and experience on Hydrogeology, Groundwater Recharge techniques, Aquifer Mapping, Water Quality Assessment and Water-related Health issues to ensure water safety and security at the ground level. Dr. Debasri Mukherjee had also shared the status of WASH in Sagar and Patharpratima block of South 24 Paraganas district, West Bengal and Sheohar district of Bihar and addressed what needs to be done for safeguarding the water resources for those areas. Team SIGMA had also shared their views on the effects of faulty toilet construction on the groundwater resource and suggested the appropriate solutions to overcome this challenging issue.



# 2.

## Training and Workshop on Ground Water Management and Governance

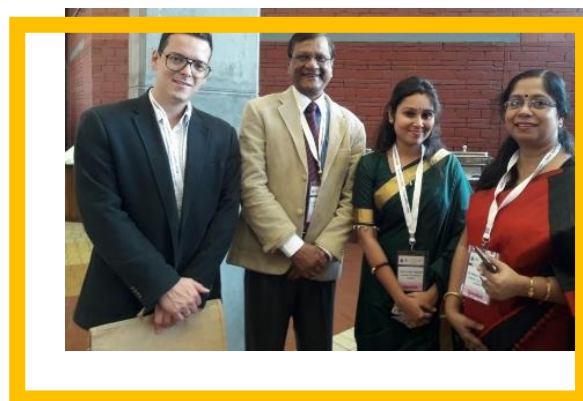
A three days Training on Groundwater Management and Governance in context of West Bengal was organised by ACWADAM supported by Ford Foundation on 24<sup>th</sup>, 25<sup>th</sup>, and 26<sup>th</sup> July followed by a one day workshop (in collaboration with Govt. of West Bengal and PRASARI) on 27<sup>th</sup> July in Hotel Sonnet, Kolkata. The same was attended by Dr. Debasri Mukherjee, Mr. Ganesh Chowdhury, Mrs. Sohini Tarafdar and Mr. Soumyajit Basu. SIGMA officials participated in extensive interactive sessions on various, social, economic & ecological aspects of groundwater, aquifer characteristics & types of aquifer in West Bengal, water quality and participatory ground water management. Dr. M.N. Roy was invited as an eminent speaker in the workshop where he shared his views on convergence of various government departments and strengthening the Panchayat to cater to the water issues of West Bengal.



# 3.

## XII World Aqua Congress

XII World Aqua Congress was organised in India Habitat Centre, New Delhi on 22<sup>nd</sup> and 23<sup>rd</sup> November, 2018 by Aqua Foundation. The International conference and exhibition were themed on Enhancing Water Use Efficiency. On behalf of SIGMA Foundation Dr. M.N. Roy, Dr. Debasri Mukherjee and Mrs. Sohini Tarafdar presented three technical papers in the forum which was published in the journal “Proceedings: XII World Aqua Congress, 2018”. Light was thrown on decentralization of water supply system, water safety & security plan and catalyst development for nitrate reduction in drinking water in context of enhancement of water use efficiency by the officials of SIGMA Foundation.



# 4.

## Workshop on Menstrual Hygiene Management

SIGMA Foundation was invited in a workshop on “Menstrual Hygiene Management: Access Livelihood and Disposal Issues” jointly organised by Fulcrum Hygiene Solutions and UTSA on 28<sup>th</sup> November, 2018 in Rotary Sadan, Kolkata. On behalf of SIGMA Foundation Dr. Baishali Bal, Mrs. Mayuri Sen and Mrs. Sohini Tarafdar attended the program. Interactions were held with Government Functionaries of Department of Panchayat & Rural Development, Public Health & Engineering Department, officials from Howrah Zila Parishad, scientists from ICAR and several national and international NGOs. Mrs. Sohini Tarafdar shared her views on prevalent gender issues in today’s society from the chapters of field level experience of SIGMA Foundation. The way forward for technological upliftment for sanitary disposal of the used menstrual adsorbents were also discussed and exhibited in the workshop.

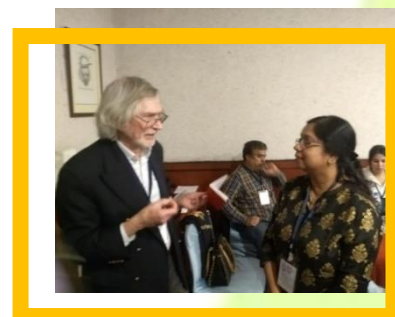




# 5.

## India-UK Water Centre Workshop

The India UK Water Centre (IUKWC) is a virtual Joint Centre between the Ministry of Earth Sciences (MoES), Govt of India and the Natural Environmental Research Council (NERC), UK; hosted by the Indian Institute of Tropical Meteorology in India and the Centre for Ecology & Hydrology in the UK. IUKWC implemented its first set of Grassroots Field Exposure Initiative (GFES) from 13<sup>th</sup> December to 15<sup>th</sup> December 2018 in Kolkata. It was aimed to promote the assimilation of local knowledge and users experiences to progress the concept of co-production and co-design and facilitate user feedback into science and policy. The theme of the event was “Water Quality and Source Protection: Management of Arsenic and Fluoride in groundwater together with the catchment scale management of industrial pollution”. This event was being jointly coordinated by IITM Pune, IIT Kharagpur along with James Hutton Institute and Centre for Ecology and Hydrology UK with the technical support of Ex-Prof. J. MacArthur University College of London, Dr. Richard Allan, James Hutton Institute, Scotland and Dr. Majoj Tiwari, Indian Institute of Technology (IIT) Kharagpur, West Bengal. On behalf of SIGMA Foundation Dr. Debasri Mukherjee attended the workshop and shared her thoughts on water quality scenario in West Bengal context. Dr. Mukherjee clearly stated the mitigation measures of fluoride affected districts in West Bengal especially Tapan and Gangarampur block of Dakshin Dinajpur where Public Health Engineering Department (PHED) is supplying safe drinking water in 482 villages and 1,547 habitations. In context of arsenic affected blocks of Habra-I, Habra-II and Gaighata in North 24 Parganas, PHED is supplying water in 327 rural mouzas and 799 habitations. Application of ARPS, IRPs and CPP models at the quality affected areas in West Bengal were also clearly discussed in this event.



# 6.

## ESDACON 2019, New Delhi

SIGMA Foundation got the opportunity to present the paper on “Environmental Enteropathy (EE)” which was jointly written by Dr. Debasri Mukherjee and Dr. M.N.Roy during the ‘INTERNATIONAL CONFERENCE on Human Health and Sustainable Development Global Environmental Challenges’ at JNU New Delhi, on the 11<sup>th</sup> of January 2019. This conference was technically and financially supported by Ministry of Environment, Forest & Climate Change GOI, ESDACON, JNU, CSIR NEERI and Metropolitan University San Juan PR, USA. Dr. Debasri Mukherjee presented a paper on Environmental Enteropathy which was closely associated with the poor sanitary status and high incidence of stunting status in India.



A brief of the paper is presented here: India has the highest incidence of stunting in the world and recent studies have shown causal relationship between stunting and Environmental Enteropathy (EE), a subclinical condition of the small intestines. EE may explain the fact that sanitation and water have greater association with child growth than with reductions in diarrhoea and biological plausibility for this causal pathway is high. Uttar Pradesh has the highest incidence (65%) of stunting of children below 5 years followed by Jharkhand (59%), Bihar (57.3%) and Assam (40.6%). All these states had low coverage of access to toilets till 2014 and although IHHL coverage has improved recently but use of toilets and cutting the oral-faecal route through hygienic practices are far below what is desired. At the same time, these states have low coverage of piped water supply and there is little surveillance of bacteriological quality of water. Only 3% drinking water samples have been tested to know its quality in Uttar Pradesh, 17% in Jharkhand, 24% in Bihar and 29% in Assam (IMIS Report, MDWS, 2017-18). Sanitary Survey of the water sources to assess the risk of contamination of the sources have also been very poor. Unsafe water and lack of sanitation are known to contribute to the diarrhoeal diseases. However, EE being asymptotic there is little knowledge of the incidence of children living in such condition. Improving status of sanitation and hygiene as well as water quality and its monitoring in an integrated manner is the need of the hour to reduce prevalence of EE. There is also need to mobilize the people which requires empowered Panchayats, which are still very weak institution. This paper analyses the status of all these factors which hang together and suggest a convergent approach to address the issues for wellbeing of the children of India.



# 7.

## **Release of a Video of SIGMA Foundation in the Water Conference in Paris**

European Union organised a Water Conference on the 13<sup>th</sup> to 15<sup>th</sup> March in Paris, France where SIGMA Foundation got the opportunity to release a video on water through French Embassy. This video covered the following issues as per Embassy's requirement: Sustainable Development Goal 6 (SDG – 6) has laid a specific target to be achieved by 2030 in order to ensure safe drinking water for everyone. The goal is to achieve universal and equitable access to safe and affordable drinking water for all, improve water quality and its surveillance and strengthen participation of the community for improving water and sanitation management. India faces problem of both availability of potable water on a sustainable basis and water quality. The per capita water availability in India was 5177 m<sup>3</sup> per year in 1951 which has now got reduced to below the water stress level (1700 m<sup>3</sup> per capita/year) of 1341 m<sup>3</sup>. The forecast is that the same will go down to 1140 m<sup>3</sup> per capita by 2050, which is below the threshold for crisis.



The situation is getting aggravated for both unsustainable drawl of ground water as well as erratic rainfall due to climate change. In last 18 years, India has experienced 13 rainfall deficit periods and also experienced heavy rainfall within short duration in part of the country due to global warming. According to Central Groundwater Board, out of 5,723 Groundwater Assessment Unit- 839 units have been over exploited, 550 units have been semi-critical and 226 units have been critical due to overexploitation for agricultural and industrial purposes. The Annual Replenishable Ground Water Resource for the entire country is 433 billion cubic meter (bcm). Keeping 34 bcm for natural discharge, the Net Ground Water Available for utilization for the entire country is 399 bcm. Significantly, groundwater recharge plays an important role in context of water sustainability in India, which mainly depends on rainfall, infiltration capacity, industrial activities and climate change. With decreasing recharge and increasing extraction of groundwater, India experiences groundwater shortfall in a large part of the country. As per report of the Niti Aayog, India, 21 cities of India are likely to run out of groundwater by 2020. The report also clearly said that 24 out of 29 states in India have been facing the crisis and the situation is going to get worse in the years ahead. It may be mentioned that India is at the top of the ten-water scarcity country for reports are available. At the same time, groundwater in India is facing huge chemical contamination like Arsenic, Fluoride, Nitrate, Salinity and Iron. As per IMIS Report of Ministry of Drinking Water and Sanitation (MDWS) GOI 2017-18, out of 29 states, 15 states are affected by Arsenic, 21 states by Fluoride, 19 states by Nitrate, 18 states by Salinity and 25 states are affected by Iron contamination causing sever health affects like arsenicosis, fluorosis, blue baby syndrome etc. Around 70,000 habitation in India are suffering from water quality problem. Only 54% of the rural households have access to tap water (IMIS, 2016-17) and 85% of water supply is groundwater based and largely not treated as per uniform drinking water quality protocol. As per the SDG-6, safe water has to be piped into the premises of all the households by the year 2030. Thus, there is a huge gap in reaching piped water supply. Further, the existing piped water supply system have been found to be not running so efficiently leading to loss of water and financial resources in many states. There is need for improving efficiency of functioning of the piped water supply system. India also faces high incidence of bacteriological contamination of water, which is resulting in several water borne diseases, particularly for the children. 20 Indian States are moderate to severely affected by Faecal coliform and E.coli. As per IMIS report of the Government of India 2017-18, 233,148 drinking water sources are contaminated. Further, lack of good sanitary practices, unscientific disposal of waste, poor septage management, lack of protection measures of the sources as well as no or improper treatment of water as well as lack of awareness of the people are huge challenges in providing safe water for consumption.





**What is to be done:** immediate action is needed to tackle this nation-wide problem:

- i. The main solution is to identify the recharge zone and put in place arrangement for extensive groundwater recharge along with monitoring the same with cost effective technology and participation of the community.
- ii. Participatory Groundwater Management for optimum use of water in agricultural and improving crop yield per unit of water. There is also need for equal and unbiased distribution of water.
- iii. Safety of drinking water being very critical there should be effective water quality monitoring & surveillance system for which although protocol is there but huge gap in capacity is a major challenge. The water quality monitoring labs should be strengthened with trained human resources and putting in place Good Lab Practice Model (GLPM) for ensuring quality of the test results.
- iv. Development & Application of cost-efficient technology for arsenic, Fluoride, Nitrate Iron and Salinity mitigation.
- v. Require Sanitary protection to measure the flow of contamination and possible precaution to control the contamination.
- vi. Create awareness through Application of IEC/SBCC at the community level.
- vii. Need large scale training programme for water safety and security on a sustainable basis in Indian context.

## 8. Celebration of World Water Day, 2019

SIGMA Foundation took a stride forward to leave no one behind by celebrating “World Water Day 2019 themed leaving no one behind” at the grassroot level with the community cluster of FSP, SOS Children’s Village, Kolkata (slum areas of Rajarhat and Narayanpur). The initiative was led by Dr. Debasri Mukherjee, Dr. Sabari Bandopadhyay and Mr. Soumyajit Basu. The Team focused on generating technical as well as behavioural awareness about water safety and security amongst the community. SIGMA Foundation took an initiative to take science to grassroot level by intriguing the concept of reduction in ground water table and recharge of aquifers amongst the community to make water security a mass movement in rural Bengal. A successful brainstorming session was organised in the community throwing a light on faecal oral transmission of diseases, public health and role of local governance. On-site demonstration of water quality check of the slum area was performed with Germany made FTL (Lobibond Tintometer) supported by Bharti Chemicals.





# **LIST OF PUBLICATIONS**

## **by team members**

1. **“Challenges in Decentralized Water Supply Management: Lessons from West Bengal”**. Dr. Debasri Mukherjee and Dr. M.N. Roy. World Focus (Peer Reviewed) Research Journal. October 2018. ISSN 2230-8458, EISSN 2581-5083, U.S. Library of Congress No. 80910345. Series 466.
2. **“Preparatory Approach of Water Safety Plan to Enhance the Water Use Efficiency in Rural Sector”**. Dr. Debasri Mukherjee. XII World Aqua Congress International Conference Proceeding Book (Edited by Dr. Sanjay Rana-Impactor factor is 2.250). November, 2018. Page: 116-128.
3. **“Environmental Enteropathy (EE): A Critical Challenge in Indian Public Health”**. Dr. Debasri Mukherjee and Dr. M.N. Roy, International Conference on Human Health and Sustainable Development Global Challenges. ESDA Proceeding No. 3378, January 2019. Page: 76.
4. **“Improving Disinfection Method & Monitoring Bacteriological Quality of Water-Lessons from West Bengal”**, Dr. Debasri Mukherjee and Dr. M.N. Roy. Accepted Abstract (Abstract Code 4313981) on 5th February 2019 by International Water Association (IWA) Edinburg Conference from 10-14th June, 2019, UK (Full length paper is going to publish under ISSN series and IWA Book of ‘Water’).
5. **“Karl Marx: Nineteenth Century Memories and Reflections”** a book edited by Mr. Debraj Bhattacharya published in June, 2018.
6. **“Exploring Marxist Bengal”**, a chapter length afterword has been written by Mr. Debraj Bhattacharya for the paperback edition during the year to be printed in June, 2019.
7. **“SDG – 3: Ensure Health and Well – Being of All ”**. Dr. M.N. Roy. Sustainable Development Goals and Panchayats (edited by Rajesh Kumar Sinha, 2018). Rawat Publications. PP:72-96.

**8. “Electronic Technology and the Changing Dynamism of Governance”.** Dr. M.N. Roy. Governance and Governed: Multi-country Perspectives on State, Society and Development (edited by Madhusree Sekhar, S. Parasuram, Ruth Kattumuri,). 2018. Springer Nature. PP: 169-186.

**9. “Migration from Other Countries to the Seven Sister States of North Eastern Region of India: Trend and Consequences”,** Dr. Sabari Bandopadhyay. Internal Changes in South Asia: Challenges and Opportunities (edited by Dr. Bibhuti Biswas), India Book Services, New Delhi, 2018

**10. “Combating Corruption, Black Money, and Money Laundering: Issues and Challenges Ahead”** by Dr. B. C. Nirmal, and Dr. Sabari Bandopadhyay (eds), 2018, Satyam Law International

**11. “Development of Catalyst for Nitrate Reduction in Drinking Water for Enhancement of Water Use Efficiency in Water Industry”.** Mrs. Sohini Tarafdar. XII World Aqua Congress International Conference Proceeding Book (Edited by Dr. Sanjay Rana- Impact factor is 2.250). November, 2018. Page: 165-178.

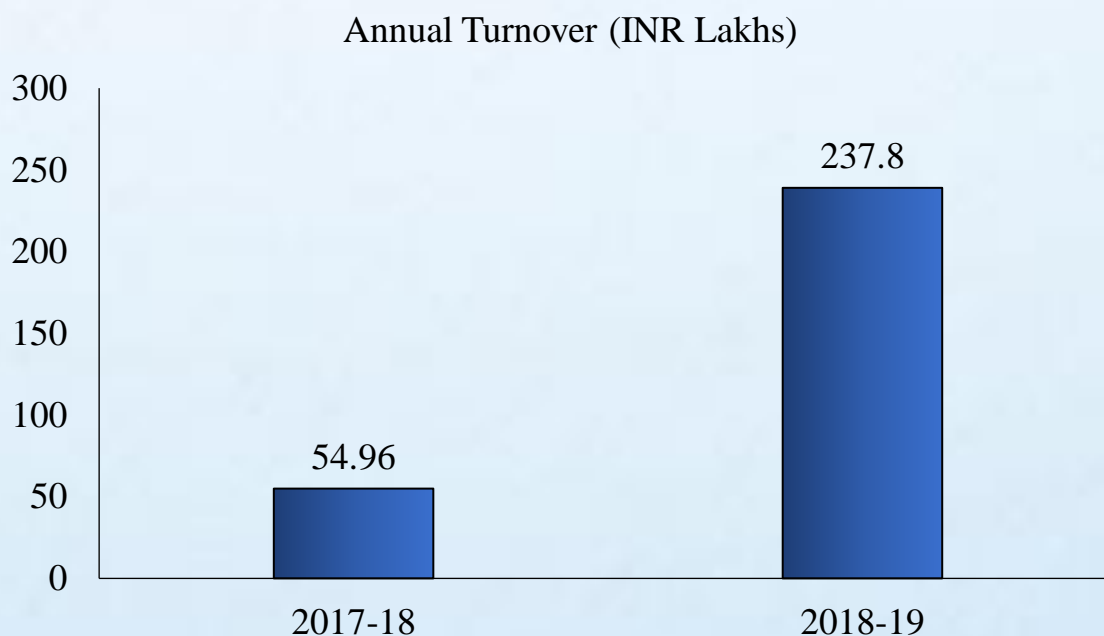
**12. “Geologic and Anthropogenic Sources of Low-Arsenic Groundwater on the Western Bank of River Bhagirathi in Bengal Basin, West Bengal, India”.** Utsab Ghosal, Soumyajit Basu, Utsha Dasgupta and Pradip Sikdar. Accepted Abstract (Abstract ID GRECPIMA-25) on 7th March, 2019 for International Groundwater Resilience to Climate Change and High-Pressure Conference, from May 8-10, 2019. Muğla, Turkey (Full length paper is going to publish under ‘Water’: An Open Access Journal, Impact Factor: 2.069, ISSN 2073-4441, in June, 2019.





# FINANCIAL HIGHLIGHTS

SIGMA Foundation has partnered with various grassroots and international development organisations, international aid organisations and government ministries and agencies in anchoring the agenda of development for making an equitable society. In the FY 2017-18, we had generated an annual turnover of ₹ 54.96 Lakhs whereas in the financial year 2018-19, in partnership with new clients and with the spirit of creativity and innovation, we have reached to an annual turnover of ₹ 237.8 Lakhs. The total value of contract signed in the financial year 2018-19 was ₹ 268.27 Lakhs and the contract value of the financial year 2017-18 which continued in 2018-19 was of ₹ 83.93 Lakhs.



# PARTNERS IN OUR PROGRESS

## ❖ Grassroot Development Organisations

1. Digambarpur Angikar
2. Naihati Prolife

## ❖ International Development Organisations

1. Water For People

## ❖ UN Organisations

1. UNICEF (Assam, Bihar, India Country Office, Maharashtra, Rajasthan, West Bengal)

## ❖ Corporates

1. Deloitte Touche Tohmatsu India LLP
2. JWT
3. Innovius Infotech

## ❖ Government Ministries / Agencies

1. Government of Rajasthan
2. NIRD & PR
3. PHED, Government of West Bengal
4. WSSO, Government of Assam





## PARTNER WITH US

SIGMA Foundation has acquired a wonderful experience of working with various national and international development organisations, corporate organisations and government departments/agencies. It has a team of more than 30 professionals with expertise as well as long experience in Monitoring & Evaluation, application of ICT in monitoring, Real Time Monitoring through Mobile Telephony and spatial analysis using GIS, analyses of big data generated through programme MIS and its interpretation for decision support in the fields of water including hydrogeology, water security, water safety and surveillance for water quality monitoring, Monitoring of Water Supply Systems, Sanitation and Hygiene, Management of Solid and Liquid wastes, Public Health including Nutrition, Maternal and Child Healthcare, Child Protection, Local Governance and decentralized planning, Alleviation of rural poverty, Natural Resources Management, Disaster Management etc. We have been maintaining the highest standards of ethical conduct in our work and try to build a strong and long partnership to achieve positive impacts for our clients. We maintain a stringent deadline in delivering our work to clients at the lowest possible cost, thereby transforming the world for the better. To find more about our nature of work and engagement, write to us at [info@sigma.foundation](mailto:info@sigma.foundation).

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