SIGMA Foundation Annual Report 2023-24

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 with the initiative of Dr. M. N. Roy, the Founder-President of the organization. Keeping that in mind its Mission and Vision, the organization is engaged in various activities towards wellbeing of the people, particularly the women, children and the marginalized.

SIGMA Foundation has specialization in many dimensions of social, economic and environmental development. Its area of expertise includes Monitoring & Evaluation of various projects in the fields such as Child Rights and Protection, Public Health and Nutrition, Gender, Education; Water Supply, Sanitation & Hygiene (WASH) including Water Quality Management and Water Conservation, Climate Change and Environment Management, Disaster Management and so on. Moreover, SIGMA Foundation too has proven its excellence in (i) Rural Governance, Decentralize Planning and Poverty Alleviation, (ii) Urban Development, particularly in the sphere of Solid & Liquid Waste Management, (iii) Application of Geographic Information System (GIS) and Satellite Data, Real Time Monitoring using IOS/Android application and web-applications of projects and events and using IOT and sensors for delivery of services such as drinking water supply, (iv) Analyses of big data generated through program MIS and its interpretation for decision support. The other important streams are project implementation and its facilitation and providing capacity building support in those sectors. We also take up research and provide consultancy services for implementation of projects in the said sectors.

The head quarter of the organization is at Kolkata. It has a branch office at Aurangabad in Maharashtra for coordination of our activities in Maharashtra. The organization has the experience of working in 21 states of the country namely Assam, Bihar, Andhra Pradesh, Chhattisgarh, Delhi, Goa, Gujarat, Himachal Pradesh, Jharkhand, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Odisha, Punjab, Rajasthan, Tamil Nadu, Telangana, Uttar Pradesh, Uttarakhand and West Bengal.

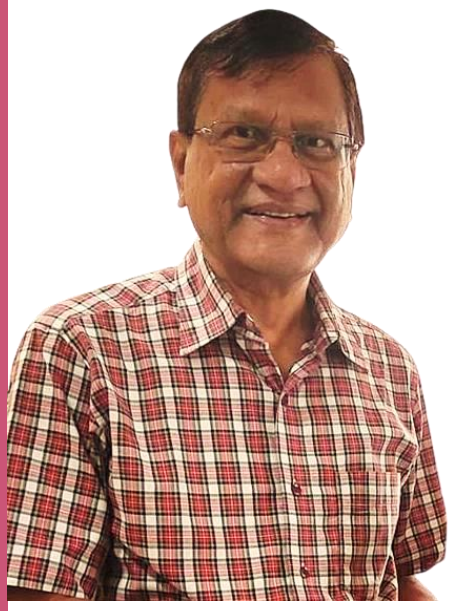
From the President

"The year 2023-24 has been a mixed experience for SIGMA Foundation. We have taken up eight new projects and the total number of our projects has increased to 78 at the end of the year, which is the 7th year of our functioning. We have got the scope to work with four new partners on various themes, which deepened our knowledge and expertise. We also got opportunity to work in two more states namely Goa and Uttarakhand, which puts our presence in 21 states of the country.

One major development during the year was that SIGMA Foundation has been granted registration under the FCRA by the Ministry of Home Affairs, Government of India. This has opened our door to work in collaboration with agencies abroad or agencies working in India using foreign currency. We also received approval of a grant from Sign of Hope, an organization based in Germany, to take up a project on water security.

We faced a setback in total turnover which came down to below INR 1.5 crore, much lower than the turnover of the last few years. We also faced the problem of recovering our claim against work done, which is one of the reasons for shortfall in turnover.

We are hopeful that we shall be able to overcome the set back and shall be able increase our turnover in the coming years."



Dr. M.N. Roy, IAS (Retd.),

President- SIGMA Foundation

Our Vision & Mission

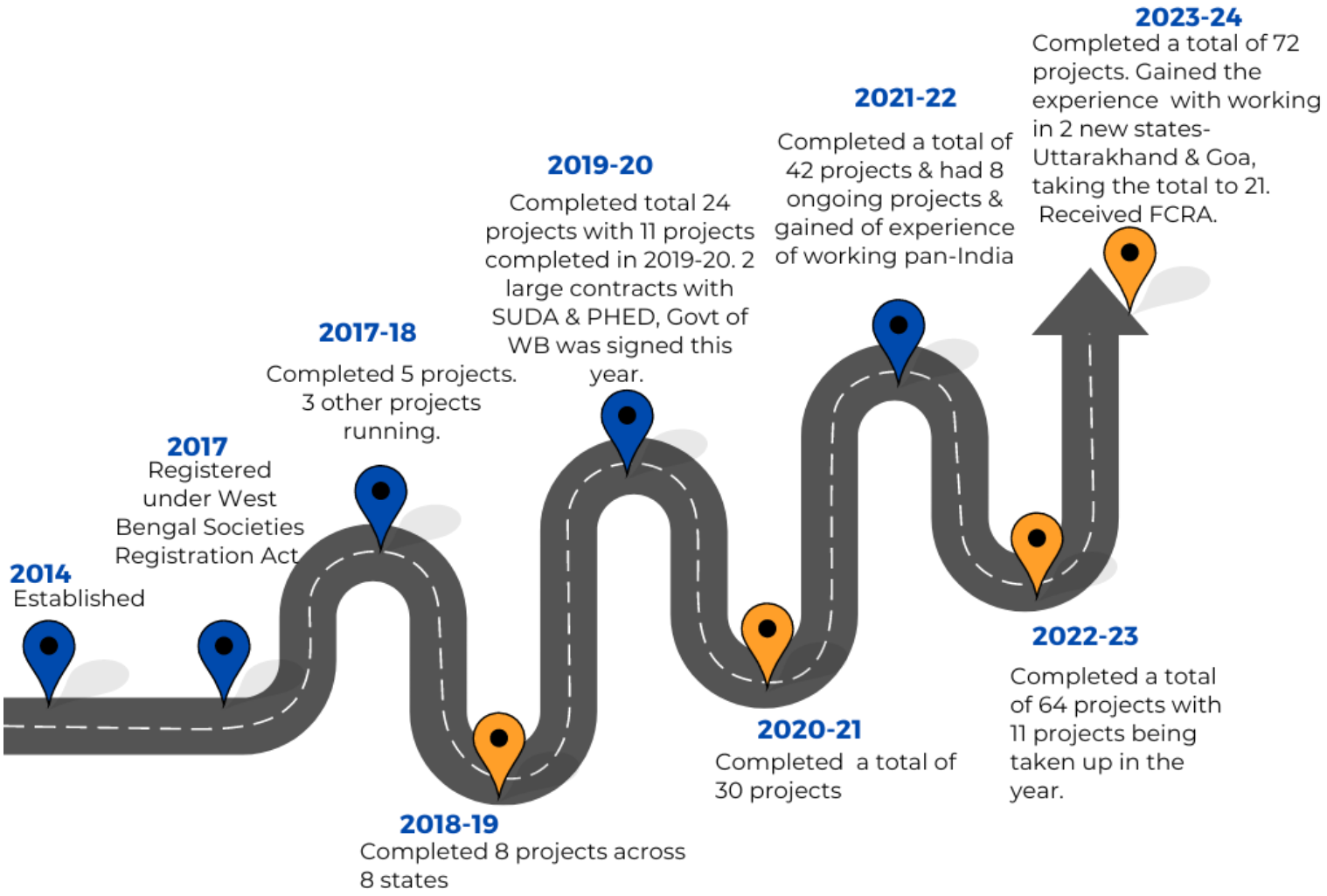
Our Vision

Improvement in governance of public institutions & social enterprise for sustainable transformation of society towards more equality and inclusiveness.

Our Mission

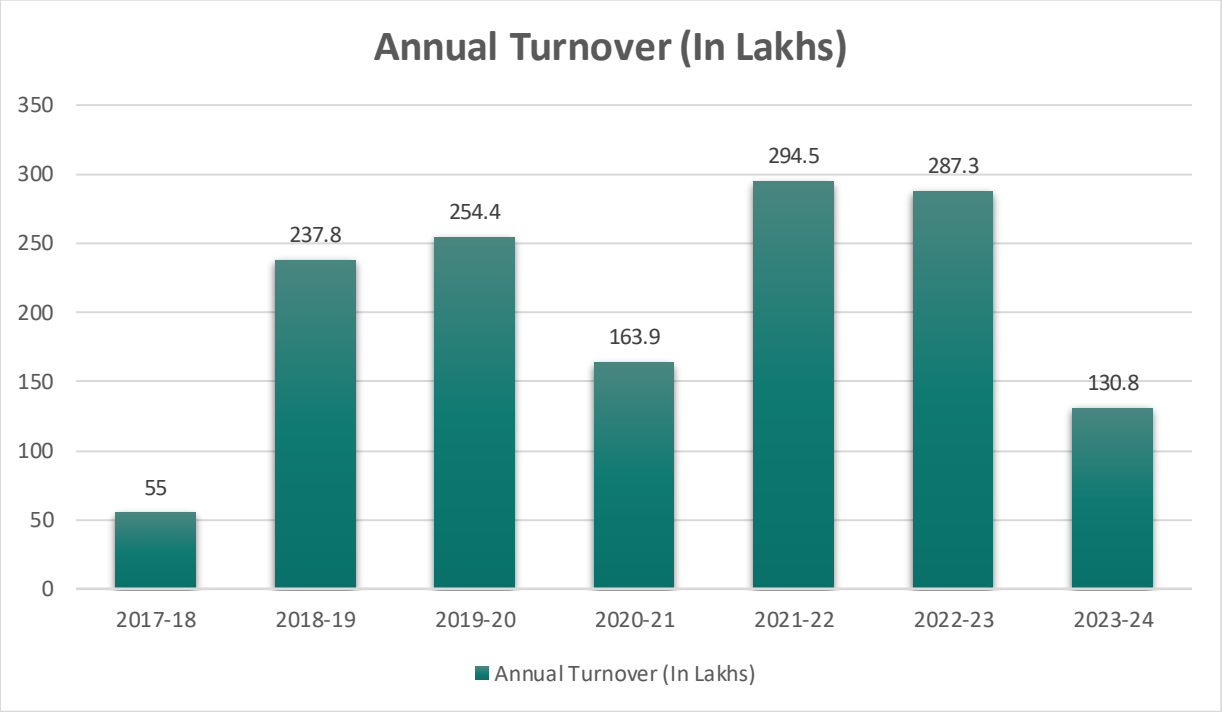
1. **To sustain learning, enhance professional competence and maintain ethical standard to become one of the best organisations of the country for monitoring & evaluation in the field socio-economic development & environment management.**
2. **To be driven by latest knowledge & technology for implementing projects with excellence for enhancing well-being of the people.**
3. **To relentlessly work for the well-being of the people with equality & inclusiveness.**

Our Journey

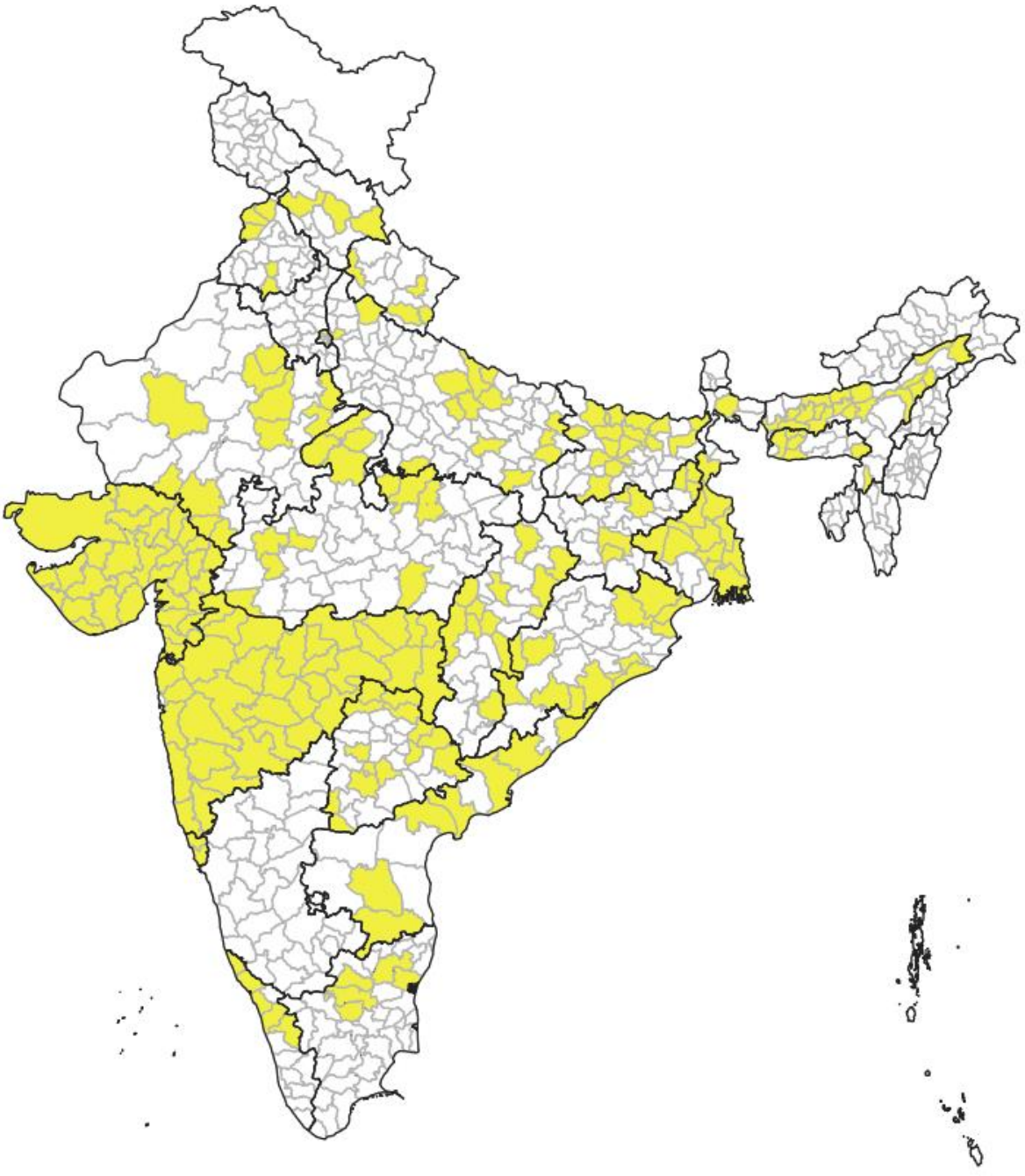

2014
Established
2017
Registered under West Bengal Societies Registration Act
2017-18
Completed 5 projects. 3 other projects running.
2018-19
Completed 8 projects across 8 states
2019-20
Completed total 24 projects with 11 projects completed in 2019-20. 2 large contracts with SUDA & PHED, Govt of WB was signed this year.
2020-21
Completed a total of 30 projects
2021-22
Completed a total of 42 projects & had 8 ongoing projects & gained of experience of working pan-India
2022-23
Completed a total of 64 projects with 11 projects being taken up in the year.
2023-24
Completed a total of 72 projects. Gained the experience with working in 2 new states- Uttarakhand & Goa, taking the total to 21. Received FCRA.

Our Sectoral Expertise

Financial Statement



Our Footprints



We have worked across 21 states & 242 districts

Evaluation Projects taken up during 2023-24

1. Suraksha: Strengthening Child Trafficking Prevention Pathways

Client name: North East Diocesan Social Service Society

This baseline study was conducted for Project Suraksha, a pilot initiative conceived by Catholic Relief Services and implemented by North East Diocesan Social Service Society in Sorupani Gram Panchayat, Golaghat district, Assam to combat child trafficking in the state. The project envisaged interventions at the levels of the adolescents, their parents, and the community. The expected result of the project was that the vulnerable children in the ages 12-17 years and their family members would improve resilience to mitigate the risks of trafficking. The study aimed to assess the status of the risk factors of child trafficking, keeping in mind the proposed interventions to mitigate the risk through the project. The assessment was conducted by SIGMA Foundation in January and February 2024.

A mixed method approach was used for the assessment. The sample was collected from 3 purposely selected villages within the Sorupani Gram Panchayat. Eleven adolescents were selected from each village following a random process. Quantitative data was collected from a total of 33 adolescents (18 boys and 15 girls in the age group 12 -17 years) and 34 parents (18 fathers and 16 mothers) from the households to which the adolescents belong. Two sets of questionnaires, one for the adolescents and the other for the parents, were prepared and data was collected using CAPI developed for each questionnaire. Qualitative data was collected from a member of the Gram Panchayat, two school teachers (one male and one female) and one member of the Village-Level Child Protection Committee.

The key findings of the study revealed that out of the three life skills namely, (i) interpersonal skills, (ii) personal skills and (iii) cognitive skills which were evaluated, the score of the adolescents was the lowest for cognitive skills. The level of awareness on child trafficking and likely response to situations of the sample adolescents were also captured. Awareness of the adolescents as well as of the parents were found to be critical areas of interventions.

2. Baseline Study and Training Need Assessment of Anganwadi supervisors and Anganwadi workers for implementation of targeted counselling during 1000 days window

Client name: North East Diocesan Social Service Society

In early 2020, ITC Limited's Social Investment Programme "Mission Sunehra Kal (ITC MSK)" initiated a project titled "Accelerating Reduction of Child Malnutrition through System Strengthening for Frontline Delivery of Nutrition Services" to support the Department of Social Welfare, Government of Assam in its efforts to reduce child malnutrition level. ITC MSK's implementation partner, YouthInvest Foundation worked closely with the Integrated Child Development Scheme (ICDS) in two districts of Kamrup and Darrang to implement a technical assistance strategy that supports and strengthens existing government initiatives to reduce malnutrition. Based on this experience, an MoU was signed with the Directorate of Women & Child Development, Government of Assam which proposed to scale up the same approach in the districts Hailakandi, Dhubri, Darrang, Barpeta, Goalpara, Udalguri, Baksa, and Kamrup Rural using the digital application "Swasthya Mitra" and other counselling aids through system strengthening. The focus was on strengthening the home visits by the Anganwadi Workers for targeted counselling and strengthening the ICDS Sector for better monitoring at the hotspot areas. SIGMA Foundation was entrusted to conduct a baseline study which had two different parts. In the first part, the study enquired about the distribution of underweight, Severe Acute Malnutrition (SAM), and Moderate Acute Malnutrition among children under five years of age the weighing efficiency status; and what is the behaviour of caregivers regarding food and feeding practices of children under two years. In the second part, a training need assessment was done which was aimed at understanding the knowledge gaps among Anganwadi Workers and Anganwadi Supervisors (AWS) on food and feeding practices that influence the mothers regarding the feeding of under two children, skillsets required by them to deliver targeted counselling services and what is existing knowledge and skills of AWSs to provide supportive supervision to AWWs.

While the first part of the study was conducted through interviews with the mothers/caregivers of children aged 0-23 months using structured questionnaires, the second part used structured questionnaires to collect data from the AWWs and AWSs. Qualitative data was collected from AWSs through Focus Group Discussion (FGD).

In each of the districts mentioned above, 40 households were visited to survey as mentioned in the first part of the study, totaling 320 households. On the other hand, 10 AWSs and 20 AWWs were interviewed in person in each district and 518 AWSs and 11533 AWWs were reached through online questionnaire. One FGD was conducted with the AWSs in each of the 8 sampled districts.

While most of the caregivers (98%) were aware of the importance of colostrum as the first food for a newborn, 81% were aware of the duration of exclusive breastfeeding, and 70% were aware of the importance of feeding diversified food to children. However, awareness about malnutrition was found to be quite poor among the caregivers as only 47% were aware of malnutrition, and so was awareness about the need for complementary feeding as only 42% of the respondents knew about the issue. While 75% caregivers reported that the household was visited by AWW during the preceding month, only 39% of them mentioned that the AWW provided counselling on the child's weight and height growth trajectory by showing the growth chart.

The AWSs and AWWs were found to lack adequate knowledge about issues like Minimum Dietary Diversity (MDD) as only around 43% of them were aware of it. Similarly, only 29% AWWs had correct information on frequencies and quantities to be fed to children of various age groups, viz. 6-8 months, 9-12 months, and children above 12 months of age as per Infant and Young Child Feeding (IYCF) recommendations. Some neglect was evident regarding AWWs visits to pregnant women as only 36% of AWWs reported that they visited pregnant women during all three trimesters.

Overall, the study highlighted that there exists ample scope to improve the services provided under the ICDS, and improvement in knowledge regarding early childhood feeding practices is crucial at a time when the country is reporting a huge proportion of its 0-5 population as undernourished.

3. Endline of Strengthening implementation of Rashtriya Kishor Swasthya Karyakram (RKSK) Program in Bhadrak district, Odisha

Client name: Centre for Catalyzing Change (C3)

There is need to ensure that the large adolescent population in India (253.2 million) reach their full potential for the growth and development of the country. This idea is embedded in the launch of the Rashtriya Kishor Swasthya Karyakram (RKSK) programme of the Government of India, under the 'National Adolescent Health Strategy' 2014, which recognizes the need for holistic development of the adolescents. RKSK is built on the learnings from previous iterations of adolescent health strategies by addressing the current and anticipated needs for good health and well-being of adolescents in six priority areas – nutrition, sexual and reproductive health (SRH), mental health, non-communicable diseases (NCD), substance abuse and injuries and violence (including gender-based violence). The RKSK intervention is driven by a core team of adolescents, known as Peer Educators (PE), who are trained to

support their fellow adolescents in the said six areas, and work in close conjunction with the frontline workers like ASHAs, AWW and ANMs. RKSK is implemented by the state Health & Family Welfare department in selected districts. Bhadrak is one such district of Odisha where RKSK is being implemented.

Centre for Catalyzing Change (C3), a leading NGO, has been facilitating implementation of RKSK in Bhadrak district. Under the project, 5,500 Peer Groups have been formed with adolescent boys and girls in the age group of 10-19 years, and 178 Adolescent Friendly Clubs (AFCs) have been formed whose members meet at Health Sub Centre of that area each month. The key activities undertaken by C3 under the project are:

- Facilitating and supporting PEs to form adolescents' groups at village level.
- Supporting PEs for conducting peer education sessions in the group.
- Supporting monthly meeting of AFCs.
- Facilitating Adolescent Health Day (AHD) session with proper planning and assessing the quality of AHDs on sample basis using checklist and reporting to Block and District officials associated with implementation of the RKSK.
- Participation in AFC meeting at Health Sub Centre to support ANMs in conducting meeting and documentation
- Enhancing adolescent boys' and girls' knowledge about and access to health and nutrition services and linkages to various schemes (AFHCs, WIFS, MHS etc.)

There was a need for conducting an Endline evaluation to know the progress from the beginning of the project, when a Baseline was conducted. C3 engaged SIGMA Foundation to carry out the Endline evaluation.

A mixed method approach was followed by collecting both quantitative and qualitative data. For the quantitative data, the sample size was 800, considering a 95% level of significance, 5% margin of error and a change of 10% in the main outcome from the prevalence rate of 10%. This was divided equally among adolescent boys and girls. The sample size considered in the Baseline was 400. In addition, the Endline collected qualitative data by conducting 8 FGDs of parents of the adolescents and 28 KIIs with various stakeholders like (i) Peer Educators (8), ASHA (4), Anganwadi Worker (4), ANM (4), Block Coordinator RKSK (4), Medical Officer-in charge of CHC (1), District Coordinator RKSK (1) and Officials of C3 (2). Four Case Stories of adolescents were also documented. The primary survey started after receiving the approval of the Institutional Review Board (IRB). The survey was conducted during the period 27th May to 29 the June 2023. To ensure quality of data collection, a dashboard was developed to automatically reflect progress of survey and display some of the key indicators to be derived on a real-time. The report was submitted to C3 team.

4. Baseline Survey: MUKTI South Asia. Project to reduce cross border child sex trafficking and re-trafficking of survivors in India, Nepal and Bangladesh

Client name: ECPAT Luxembourg

The baseline survey was conducted in association with SFC Social Development Forum, a partner organization of SIGMA Foundation, for the MUKTI South Asia project. The project is funded by the U.S. Department of State's Office to Monitor and Combat Trafficking in Persons. The project is being implemented by ECPAT Luxembourg and its partners in India, Nepal, and Bangladesh. The study sought to gain comprehensive understanding of the responses to cross-border trafficking of children for sexual exploitation and identify existing gaps and challenges in anti-trafficking efforts. The study's results are intended to help design effective strategies and interventions, support targeted advocacy for national and local legislation, and provide a foundation for monitoring benchmarks detailed in the project's performance framework.

The study was assigned to SFC Social Development Forum, a partner organization of SIGMA Foundation and the study was conducted by members of SIGMA Foundation and SFC Social Development Forum. The assessment covered five states in India (Delhi National Capital Region, Goa, Jharkhand, Maharashtra and West Bengal). In Nepal, the project supports country-wise survivor assistance, however, for field work, two districts (Sindhupalchok and Surkhet) were selected. In Bangladesh, two districts, Jashore and Satkhira, covering the project area, were included in the study. The field work in Nepal and Bangladesh was conducted by an organization named Progress Ink. SIGMA Foundation did the entire data analysis and report writing along with design of the study.

A mixed method approach was adopted for collecting both quantitative and qualitative data. The sample was selected using purposive and snowball sampling techniques from the study locations. Quantitative data was collected using a structured questionnaire from vulnerable girls in the age group (> 10 and < 18), survivors of child sex trafficking who are now under 25 years of age and community level stakeholders. In all three countries, 491 girls were interviewed.

Among them, 375 were vulnerable girls and 116 were survivors of child sex trafficking who were asked additional questions on their experiences related to rescue and post rescue support received to facilitate their reintegration. A total of 233 community level stakeholders of several categories were also interviewed using a different questionnaire. The responses were analyzed using statistical software for working out baseline indicators and finding causal factors to enable identifying possible interventions in preventing trafficking of children.

As part of the qualitative data collection, lived experiences of 20 identified child sex trafficking survivors were captured through case narratives. Fifteen focus group discussions were conducted with mothers of vulnerable children to get insights on the household and community level child protection issues. Further, in-depth interviews were undertaken with 92 district/ state/ country level officials, NGO representatives and the key persons of the implementing partners of the project in the three countries. Qualitative data was analysed by coding responses into themes and sub-themes for narrative analysis.

The study highlighted the complexity of the multidimensional factors associated with cross border child sex trafficking. These included factors which pushed children to leave home for unknown destination under false impression and the pulls that operated in various forms to lure vulnerable children to fall in the trap of the traffickers. There were other factors which functioned at personal level, community level and systemic level in terms of effectiveness of the government machinery and activities of the NGOs in protecting the children from being trafficked. While many of these factors were structural and embedded in the existing social hierarchy, economic deprivation and cultural practices and were difficult to address in a short period. There were other problems which could be mitigated by designing certain interventions. The study also observed lapses in delivery of services to the rescued victims reflecting gaps in implementation of declared policies in extending care and support to the trafficked victims. Since the objectives of the MUKTI South Asia Project were on strengthening protective network to prevent child sex trafficking and improving the services which the survivors receive during rescue and subsequent processes, appropriate recommendations were made keeping in mind the cross-country source-destination dynamics of the phenomenon of sex trafficking of children.

5. Assessment of Sangha Facilitation Centres in delivering land records related services

Client name: Gram Niyojan Kendra (GNK)

The study was conducted for Gram Niyojan Kendra (GNK) in partnership with State Rural Livelihoods Mission (WBSRLM), West Bengal and Landesa, one US based NGO. The project was initiated in 2016 when Landesa launched the Women's Land Literacy (WLL) programme as a tool to bridge the gap in women's knowledge about land governance and recordation services offered by the government by leveraging the strong women SHG network in the state and their GP level cluster, known as Sangha. The scaling of the WLL programme generated demand within the rural communities to update their land records and subsequently led to the establishment of the Sangha Facilitation Centers (SFCs) in the state. The SFC is a land records related service delivery facilitation centre that is managed and run by women SHG members, selected by the Sangha and trained in WLL to act as the service provider of the SFCs. WBSRLM, in early November 2023, decided to establish at least one SFC in all the 341 blocks of the state. With this backdrop, it was considered appropriate to conduct an assessment to understand the extent to which WLL promotion and subsequent operationalization of SFCs are yielding benefits in

terms of their ability to satisfactorily deliver land recordation related services to the people, particularly the small and the marginal farmers.

The key objectives of the assessment were to:

1. Examine how the process of WLL implementation by the Sangha acts as a foundation for establishing the Sangha-run SFCs.

2. Identify the extent to which rural people in the catchment area of the SFC are aware of the SFC services and interested in utilizing what it offers.

3. Analyse the causal factors that help explain the variations observed in functioning of the SFCs across the state.

4. Generate an understanding of the overall level of satisfaction and suggestions for improving SFC functioning including generating demand for services to sustain SFCs.

The study covered three districts of West Bengal representing different regions - Jalpaiguri (northern region), Birbhum (middle region) and Hooghly (southern region) of the state. A total of 12, 10 and 8 SFCs were studied from these districts respectively. Ten stakeholders along with the potential service recipients, associated with functioning of the SFCs were mapped for collecting qualitative data. The stakeholders included SFC service providers, members of the Sangha Board of Directors, the Panchayat Pradhan, functionaries of WBSRLM and Land Reform & Refugee Relief and Rehabilitation Department among others. A total of 84 in-depth interviews and 24 focus group discussions were conducted.

Some of the key findings of the study revealed that the WLL training had successfully transferred knowledge on land rights and land ownership among women, which historically remained a domain of the male members of the family. The cadre of trained SHG women now manage the SFCs as an economic enterprise to provide multiple services related to updating land records through an online medium. The performance of SFCs in terms of average number of cases handled per month varied widely. Examination of the association of performance of the SFCs with different factors like (i) demand, (ii) capability of the service provider, (iii) inputs such as infrastructure and (iv) support from the SFCs showed that capability of the SPs was most strongly correlated with performance (correlation coefficient 0.56 at 1% level of significance). Demand and support from the SFCs are also significant factors in improving performance of the SFCs.

6. Landscape Study for Gender Integration in Foundational Literacy Across six states of India

Room to Read (RtR), has been running the Scaling-up Early Reading Intervention (SERI) program in six states of the country since 2015 with the support of the United States Agency for International Development (USAID). The states where the SERI program is implemented are Uttarakhand, Uttar Pradesh, Rajasthan, Madhya Pradesh, Chhattisgarh, and Telangana. Using the experience of this long and effective intervention, RtR is trying to delve into other important issues related to the early stages of schooling. It conducted a Landscape Study for Gender Integration in Foundational Literacy for which SIGMA Foundation was engaged. The study had the following objectives (i) to understand the implicit and explicit gender biases that teachers and school leaders bring to the classroom and school, (ii) to observe and analyze gendered teaching practices in schools and their impact on girls' learning experience, (iii) to find out the children's perception/experience of the gender unequal practices propagated by educators, (iv) to know whether there is a difference between children's perception and experience of discrimination against the gender unequal practices that the educators are propagating, and (v) to recommend ways to mitigate gender discrimination practiced against girls and to help them enhance their school experience and participation.

The study was conducted in 15 schools across 4 districts of each of the said six states, and a total of 90 schools were visited under the study. Though the study used mixed methods, it predominantly adopted qualitative methods with open-ended questions. In each school, two teachers, including the head teacher/teacher in charge, were interviewed to understand their implicit beliefs and biases and gender stereotypes and explicit assumptions about gender biases in terms of their role/practices that reinforce gender stereotypes. The entire process of school functioning during the visit was captured through a semi-structured observation tool, which included the way children come to school, their activities during assembly, leisure, mid-day meal, and of course in the class rooms. A play-based activity in the form of a read-aloud story-telling session was also conducted with a group of approximately 10 children from classes 1 and 2 in each school with equal representation of boys and girls. The story read out to them was about the activities children of a school performed during the annual day of their school; during the post-read-aloud session, students of the school under the study were asked questions and prompted to understand their perceptions and experiences in their school scenario and the degree of gender stereotyping they face in their day-to-day school activities.

The study revealed a continuity of gender-based perceptions and practices across home and school environments. While the children showed their reluctance to play with their peers from the opposite sex, they had their own set of preferred games depending on their sex. Both boys and girls adhered to gendered norms prescribed by their parents at home and teachers at school, and expectation of their peers at school in their game choices. On the other hand, the schools were found to reinforce gender normative behaviors through delegation of responsibilities, gender segregation during assembly and classroom settings, etc. Perception of majority teachers was that the boys performed better in mathematics and girls perform better in language although evidence from large scale data does not support such difference. The acceptance of girls as physically weaker individuals by both boys and girls, without challenge from teachers, underscores a broader societal acceptance of gendered perceptions of physical abilities and masculinity as a way for domination of girls.

While boys were portrayed as unruly or aggressive, girls were praised for obedience and empathy. Even the expectations of the teachers from the opposite sexes differed. Girls were expected to be well-dressed, well-mannered, empathetic, and nurturing, aligning with societal expectations of femininity. In contrast, boys were expected to be serious, hardworking, career-oriented, and financially independent, reinforcing traditional notions of masculinity as providers and leaders.

Teachers tried to present a balanced approach while discussing gender issues during the interviews which were not corroborated by the actual observations. This reflects deep rooted implicit gender bias among them.

7. Technical Assistance in Implementation of WASH in Community and HCFs in Selected Blocks and GPs of West Bengal

Sub-part- WaSH and CCES in HCFs

Background

Safe WaSH (Water, Sanitation and Hygiene) practices in Health Care Facilities (HCF) plays a critical role in Infection Prevention and Control (IPC) and well-being of the health care providers and those who visit the facilities. Climate change exacerbate these risks by placing strain on sanitation systems in health facilities by compromising service standards and disruption of services leading to increased public health risks. Also, the functioning of the HCFs should be environmentally sustainable. Therefore, there is need for improving WASH-CCES (Climate Change & Environmental Sustainability) services at all HCFs and at the household level. An agreement was signed between UNICEF and SIGMA Foundation on the 29th January 2024 to take up several WASH-CCES related activities in selected 24 HCFs of different categories across three districts of West Bengal namely, Malda, Murshidabad and South 24 Parganas. Community level activities for improving WASH-CCES at the community level were to cover 10 Gram Panchayat (GPs) (4 from Malda and 3 each from the other two districts), which are located around some

of the selected HCFs. There were also some activities to build systemic capacities of the Panchayat & Rural Development Department (PRDD) in the WASH sector. The key activities which could be taken by the 31st March are the following.

A. Health component

Assessment of WASH-CCES status in the HCFs: Two rounds of orientation was held for the research team by experts of UNICEF and the existing indicators (based on Kayakalp and NPCCHH) were reviewed by officials of SIGMA Foundation to prepare for evaluating the status of WASH-CCES in the selected HCFs.

B. GP component

The WASH-CCES status in the 10 GPs were assessed by collecting primary data from households and the village level institutions like schools and AWCs. Structured questionnaire was prepared to interview 16 households from each of the two villages, one with good and the other with poor WASH status in each GP and thus 320 households were covered in the survey. In addition a checklist was prepared to observe status of WASH in school, AWCs and public places as well as general cleanliness of the villages visited. Two CAPIs were developed for that purpose for capturing the data. Some of the key functionaries of the GPs were interviewed and some secondary data from those GPs were collected for assessing their WASH status.

Based on the assessed status of WASH in each GP and the gaps, the GP functionaries were to be trained to internalize their WASH status, climatic vulnerability of services and ways for bridging the gaps through Gram Panchayat Development Plan (GPDP). It was planned to impart a two-days' training to the members and key functionaries of the GP and the VWSC (Village Health & Sanitation Committee) and other stakeholders like the SHG leaders for all the 10 GPs. Accordingly, training curriculum and materials were prepared. However, the actual training was scheduled in the next financial year.

To track the progress of the project, a dashboard was developed which helped to monitor progress in real-time.

TRAINING & CAPACITY BUILDING

Training and guidance on preparation of DPR on Grey Water Management in South 24 Parganas, West Bengal

SIGMA Foundation, was entrusted with the task of imparting capacity building and guidance for DPR preparation on Grey Water Management (GWM) to the GP and Block level Engineers of South 24 Parganas district by the state SBM wing of the Panchayat & RD department. Consequently, the State Sanitation Cell arranged for a Workshop cum training programme on GWM from 08.09.2023 to 25.09.2023 for the four sub-divisions of South 24 Parganas namely, Alipur Sadar, Baruipur, Diamond Harbour and Kakdwip. One two-days' training was organized at each sub-division. On the first day the trainees were oriented on technical aspects regarding selection of land for GWM structures, appropriate technologies, survey techniques and collection of necessary information from villages. On the second day field visits were organized to observe GWM structures constructed and their functioning in managing grey water. GWM structures constructed in 18 blocks namely, Gosaba, Basanti, Bishnupur I, Budge Budge II, Mathurapur I, Mathurapur II, Magrahat I, Magrahat II, Bhangar I, Bhangar II, Joynagar II, Kultali, Sonarpur, Jaynagar I, Baruipur, Namkhana, Pathar Pratima and Kakdwip were covered in the process. Total 138 engineers of the district were trained on GWM through this initiative.

IMPLEMENTATION BASED PROJECTS TAKEN UP DURING 2023-24

1.Implementation of JJM for Darjeeling (hill areas) and Kalimpong districts of West Bengal

SIGMA Foundation is empaneled as an Implementation Support Agency (ISA) by the PHED (Public Health Engineering Department), GoWB for implementation of Jal Jeevan Mission (JJM). It was engaged to function as the ISA in the district of Darjeeling (area under the Hill Council) and Kalimpong in September 2023. Since then, it has performed the tasks of mobilizing the community, making the community aware of JJM, piped drinking water supply services that will be available through the Mission and their responsibilities to own and protect and maintain the infrastructure for supplying water in the village. Household level data was collected and shared with PHED for preparing the Village Action Plan and designing the water supply infrastructure for providing drinking water supply through Functional House Tap Connection (FHTC).

During the year, the following activities were carried out.

Field level activities conducted by SIGMA Field Team:

1) HH survey: HH survey for 320 villages for total 8 blocks under Darjeeling (Hill) and Kalimpong districts.

2) Geo-tagging of Source, Scheme Information Board and Storage structure

3) Training of the members of the VWSCs and GP members. Before that VWSCs were formed in 110 villages. During the formation of the committees the ISA Field Team explained the (a) objectives of this committee, (b) their roles and responsibilities.

3) IEC activities: School level Awareness and Wall Painting have been facilitated by the ISA team.

4) Har Ghar Jal Village Declaration: The ISA team is helping the GP for reporting and subsequent certification of Har Ghar Jal village.

2. Implementation Support Agency for Aurangabad District of Maharashtra

SIGMA Foundation has been working as an Independent Support Agency (ISA) for the district of Aurangabad from October 2021. The period of engagement was renewed in October 2023 for a year and SIGMA Foundation continued to provide support to Aurangabad Zilla Parishad in implementation of JJM in Gangapur Taluka of the district. The task involved strengthening VWSCs by orienting their members and opening their bank account, making people aware on the various aspects of JJM, the service delivery standards, roles and responsibilities of the community in supporting smooth implementation of the project and in maintaining the assets. They were also made aware of issues like water quality by testing their water sources using FTK and little more than 500 Anganwadi workers, ASHA and Jal Surakshaks have been trained on water quality testing. The team also conducted village survey and captured various data including lat-long for preparation of DPR by the Zilla Parishad.

SIGMA Foundation monitored the pipe laying work right from its mark-out and trech excavation, and other processes of installation of the village piped water supply system till everyone in the village got their FHTC (Functional House Tap Connection). About 20,000 FHTCs were provided to the households in 210 villages within Gangapur block with our direct supervision. The team also uploaded the data on E-Jal Shakti website after geotagging the sources, ESR (Elevated Service Reservoir). SIGMA Foundation also helped the DWSM (District Water & Sanitation Mission) in preparing estimates for constructing segregation shed for solid waste management and grey water management in the project villages.

3. SIGMA Foundation to Strengthen Water Security in Jangipara GP, Hooghly

SIGMA Foundation with grants from Hoffnungszeichen | Sign of Hope e.V., Germany has taken an initiative to improve water security of Jangipara Gram Panchayat (which falls under semi-critical block with respect to the groundwater availability as per CGWB data) of Hooghly district, West Bengal. This is the first externally aided project after SIGMA Foundation was registered under the FCRA during the year.

The interventions will include the preparation of a Water Security Plan for the GP, building capacity of the GP to take up activities for sustainable water security, mobilize the community for their participation in Climate Resilient Water Management (CRWM), and demonstration of technology for water conservation, roof top rainwater harvesting, artificial groundwater recharging at a deeper level and recycling of used water. The objective is that the GP can internalize the issues and be able to attain water security with climate resilience and the aquifer drawdown can be arrested through all the said interventions by investing their resources under GPDP and mobilize the households to adopt measures to reduce use of ground water and augment storage of rainwater. Approval of the project has been received in the month of March and its implementation on the ground will start after the election to the Parliamentary Constituencies is over and will be completed by October 2024.

CONSULTANCY BY INDIVIDUAL MEMBERS OF SIGMA FOUNDATION DURING 2023-24

Few consultancy works were taken up by members of SIGMA Foundation having expertise on related fields during the year 2023-24. The organization which assigned such works preferred to have contract with individuals to be identified by SIGMA Foundation because either foreign contribution was involved and SIGMA Foundation did not have FCRA registration till then or convenience of the partner organization. Three such consultancy works were taken up during the year, as briefly mentioned below.

1. Process Documentation of ASHA Sangini Project

In 2011 Catholic Relief Society (CRS) took up a pilot project on Reducing Maternal and Newborn Deaths (ReMiND) in the Kaushambi district of Uttar Pradesh. They collaborated with technology innovator Dimagi, Inc and the NHM (National Health Mission) of Uttar Pradesh to develop a mobile-based application for ASHA, and their supervisors. In addition to the rollout of the application, the ReMiND team supported the NHM Uttar Pradesh to train supervisors and their next-level managers on supportive supervision, worked with them to strengthen review mechanisms, and promoted data-based decision-making for adaptive programming. In 2014 the NHM Uttar Pradesh created a new cadre of staff called ASHA Sanginis (CHW supervisors) for improving supervision of the ASHA. Given that these supervisors were recruited from the CHW base, many of them did not have the supervision capacities, and their supervisory skills needed to be improved for the desired level of performance of the CHWs.

In order not to overwhelm the Sanginis with too much information and tasks, in 2014, the Sangini App was developed and 69 Sanginis of the district were trained. Between 2015 and 2017, Sanginis continued to use the App. CRS and partner continued to observe the Sanginis in the field as they used the app to supervise ASHAs and made joint visits with HEOs (Health Education Officer) to help them understand how to observe the Sanginis use the app. During this time, CRS had developed a monitoring tool that included "ASHA Sangini observation checklist" which helped CRS, its partner and government functionaries to systematically observe Sanginis and provide them specific feedback on their supervision. The checklist had indicators related to whether the Sangini had used the supportive supervision app when she had visited the ASHA, whether she had looked at the ASHA diary, and so on, which were captured during field visits by CRS partner. The project could demonstrate improvement in the frequency of the supervision visits to ASHAs made by the Sanginis and also in the quality of supervisions, such as looking at beneficiary coverage, undertaking home visits with ASHAs, and so on.

The ASHA Sangini Scaleup Project was an extension of the ReMiND and the same was implemented in five High Priority Districts (HPDs) of Uttar Pradesh between 2017-18. Following the strong results demonstrated by the project, the intervention was scaled up to across all 75 districts of Uttar Pradesh by NHM, Uttar Pradesh. The project reached out to around 7,058 ASHA Sanginis (recruited out of the targeted 8,013) in training on the CRS-developed ASHA Sangini Supportive Supervision CommCare-based Application. It also strengthened the capacities of 819 Block Community Process Managers (BCPM), 75 District Community Process Managers (DCPM), and 11 Regional Managers (RM) to support and manage the supportive supervision program down to the sub-district level. ASHA Sanginis used the ASHA Sangini Supportive Supervision Application, installed on their NHM-provided mobile phones, to conduct supervisory visits to 155,617 ASHA workers serving a rural population of 186 million.

CRS desired to have a process documentation of the entire project and engaged Dr M.N.Roy through an individual contract. The work was carried out by Dr M.N.Roy and Dr Sanjukta Das and other members of the team also extended support. The documentation involved intensive interaction with the key officials of CRS engaged in the project, attending their review meetings and going through all the project documents to correctly document the processes followed in the scaling-up process. This document will be helpful for scaling up the activities elsewhere in India and abroad. The process documentation has enhanced the capacity of SIGMA Foundation in taking up tasks related to process documentation.

2. An Approach Paper on CRS's Engagement with Gram Panchayats

CRS (Catholic Relief Society) is committed to local leadership strengthening for making development locally-led, which promotes inclusivity and sustainability in development. The vision of CRS, as per Country Plan (CP) 2030, is to reach 10 million people, mostly the poor and the vulnerable for their development in its four priority areas. CRS has identified six focal states (Assam, Bihar, Maharashtra, Odisha, Uttar Pradesh, and West Bengal) where CRS sees the predominance of need, both from the perspective of the issue at hand and need for change at scale. CRS is to leverage the strength of other stakeholders having similar goals to facilitate making the change at scale. Gram Panchayats (GPs), the rural local government in India, provides high potential for CRS' engagement in scaling up local leadership development.

CRS desired to prepare a strategy paper on engaging GPs for meeting their CP 2030 goal. The CP prioritize four key areas namely, Child Protection, Health, Agricultural livelihoods, and Disaster Risk Reduction. The activities in these areas which have good alignment with GP's mandate for localizing SDGs is possible to be taken up by engaging the GPs. To understand the possibility, the modalities, related challenges and how those can be overcome, there was need for developing a strategy for CRS to adopt for taking up their interventions at scale in reaching the desired number of beneficiaries by leveraging the supports from the GP. CRS desired to prepare the strategy paper by an expert.

The task was assigned to Dr M.N.Roy, who is a known expert on local governance and rural development, through an individual contract. Some of the team members of SIGMA Foundation also extended support in preparing the strategy paper, which was submitted to CRS in due course.

India, provides high potential for CRS' engagement in scaling up local leadership development.

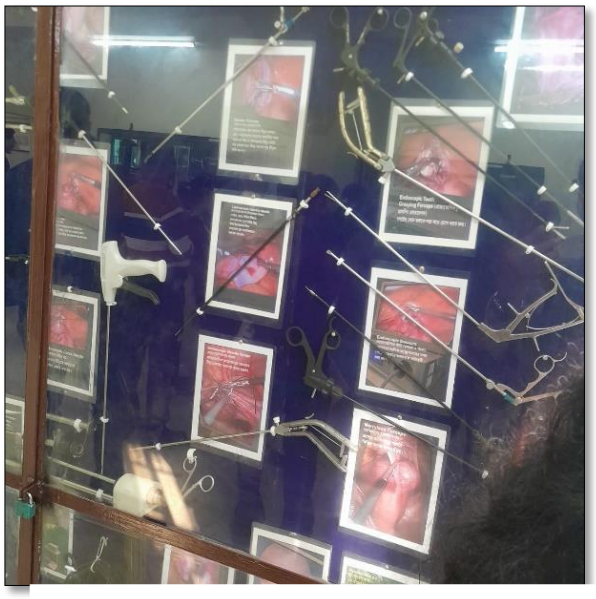
3. SIGMA Foundation extends support to MAMTA-HIMC for installing rooftop rainwater harvesting at 11 government schools in Noida, Uttar Pradesh Gram Panchayats

Er. Srikanta Sau, Assistant Engineer, SIGMA Foundation was engaged as a consultant for MAMTA Health Institute for Mother and Child (MAMTA-HIMC) for the project entitled 'Strengthening WASH Infrastructure at Government School in Noida, Uttar Pradesh'. The objective of the project was to implement rooftop rainwater harvesting systems in different Primary, Junior High, and Composite Schools. A feasibility study was carried out, which concluded that the implementation of RWH systems in Noida can contribute significantly to addressing the issue of depleting aquifers. The need for sustainable water management in public institutions like schools has become increasingly crucial in the face of climate change and growing water scarcity in the city. Rainwater harvesting serves as an effective solution to capture the rainwater and use it either by storing or by recharging it to the ground for improvement of the groundwater level.

Technical survey was conducted in several government schools in Noida for identification of suitable schools for the installation of Rooftop Rainwater Harvesting system. Selection of the appropriate school and type of RWH system to be installed was done based on the different site-specific interventions like soil condition, location of trees, alternative water source, rooftop area, space availability, rainfall intensity and some other location-specific parameters. Based on the field survey, recharge pit with a shaft appears to be a suitable RWH method for the augmentation of the groundwater level.

SOCIAL SERVICE DONE BY SIGMA FOUNDATION DURING 2023-24

Sigma Foundation Supports the Building of a Medical Museum in Joynagar Village, Ghatal Block, West Midnapur District

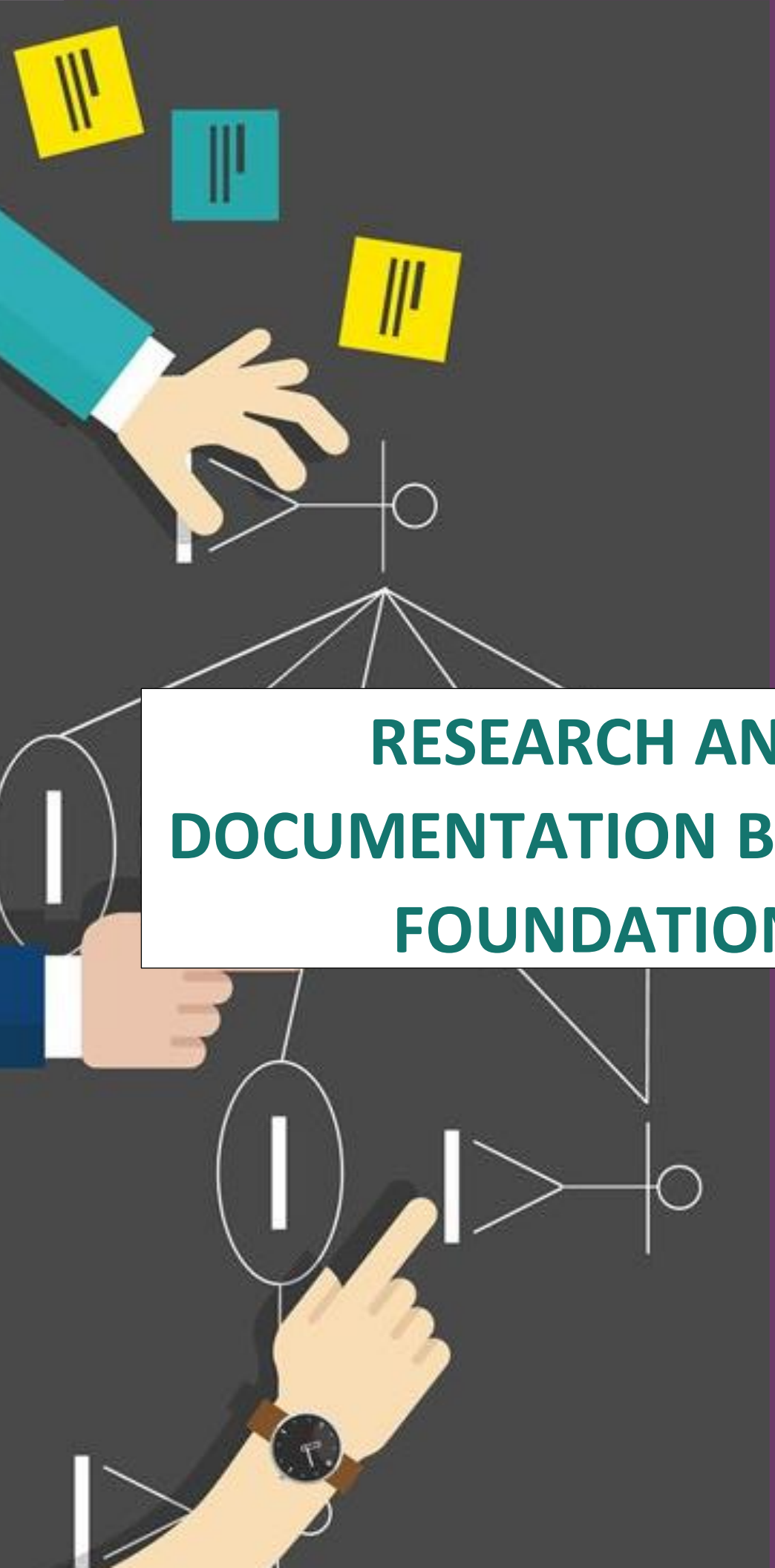


Medical Instruments displayed in the museum

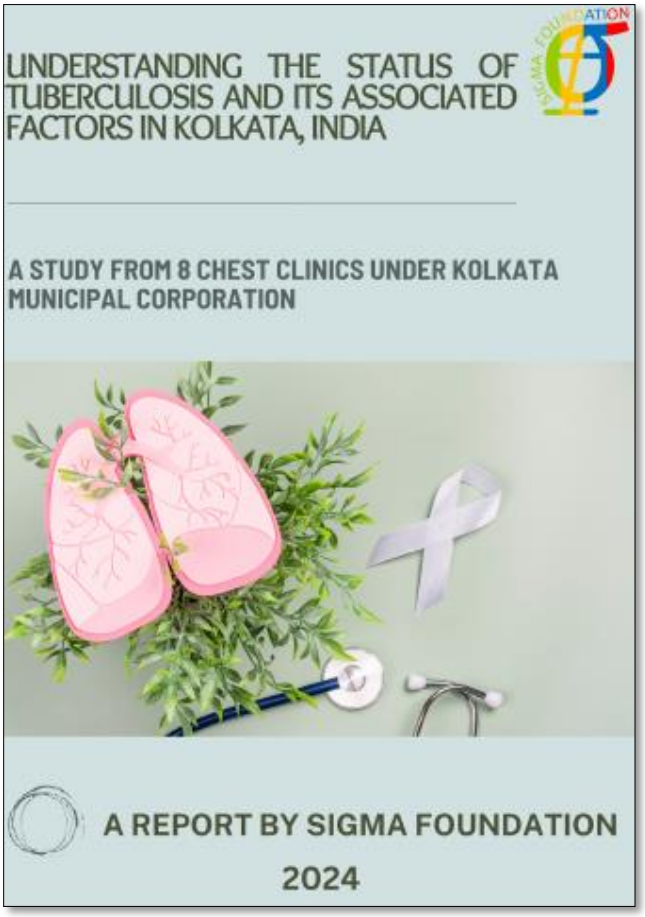
Health messages displayed in the museum

SIGMA Foundation was approached by a philanthropic organization named Joynagar Community Education Society to extend support in their endeavour to establish a Medical Museum in their premises at village Joynagar in Ghatal block of West Midnapur district. As an organization working on public health, SIGMA Foundation helped them by developing display panels covering seven themes of public health like Child healthcare, Maternal healthcare Health, Adolescent health, Nutrition, Proper handwashing practice, Safe drinking water and Environmental cleanliness. There are 206 medical instruments on display in the museum, apart from the said messages and information on history of medical sciences.

The Museum was inaugurated on the 14th January 2014 by Hon'ble Dr Manas Ranjan Bhunia, Minister in Charge of the Water Resources Investigation and Development of the Government of West Bengal. President SIGMA Foundation was also present in the inaugural function. This is perhaps the first or one of the first Medical Museum in any rural areas of the country. Many people including group of students from different schools have started visiting the Museum and the messages on public health developed by SIGMA Foundation are spreading knowledge among all the visitors.



RESEARCH AND DOCUMENTATION BY SIGMA FOUNDATION



The Status of Tuberculosis and its associated factors in Kolkata

TB continues to be a significant public health challenge in India, which accounts for nearly 27% of the global TB burden. According to the report, Kolkata's slum areas, marked by overcrowding, poor living conditions, malnutrition, and limited access to healthcare, act as hotspots for the disease transmission. A comprehensive study has been conducted by SIGMA Foundation on the status of tuberculosis (TB) and its associated factors in Kolkata. 210 TB patients across eight chest clinics under the Kolkata Municipal Corporation were surveyed through a structured questionnaire. The findings of the study highlight key socio-economic, behavioural, and healthcare-related factors contributing to the spread of TB in Kolkata, which is likely to be true for other similar urban areas.

The report found that more women (60%) under 30 years were affected by TB compared to men (26%). However, the burden shifted to men (56%) after the age of 40 years. The economic toll of TB was evident, with 83% of respondents facing out-of-pocket expenses for treatment. Many experienced impoverishments, job loss, and food insecurity due to the indirect costs of the disease. A significant portion of the patients were unaware of how they contracted TB, with more women reporting exposure to infected family members. A good point is that, despite the financial challenges, over 90% of patients adhered to treatment protocols. The report identified smoking, alcohol use, malnutrition, and co-morbidities like diabetes as common risks for developing TB. Social stigma remains a major challenge, especially for men, with 23% of respondents avoiding disclosing their TB status due to fear of discrimination.

The report calls for a multi-pronged approach to curb the spread of TB in Kolkata. This includes addressing underlying socio-economic conditions, enhancing healthcare infrastructure, promoting awareness, and reducing the stigma associated with TB. With the right interventions, the burden of tuberculosis can be significantly reduced, improving health outcomes for affected populations. The study was funded by SIGMA Foundation and was carried out with the approval and support of the Kolkata Municipal Corporation. The full report has been shared with them for possible interventions

PUBLICATIONS & PRESENTATIONS BY MEMBERS OF SIGMA FOUNDATION

Publications

1. **"Groundwater and Climate Smart Agriculture: a Reflection from West Bengal, India"** by Dr. M.N.Roy, Dr. Sanjukta Das, Ritaban Mitra and Dr. Debasri Mukherjee. Published in Mitig Adapt Strateg Glob Change (2024) 29:45, Springer Nature B.V. 2024. https://doi.org/10.1007/s11027-024-10137-1

Overexploitation of groundwater for irrigation is an increasing risk, which is being exasperated by climate change. This has important implications for food security and livelihoods, particularly for rural households. An analysis of primary data collected from a few blocks in West Bengal, a reveal that there is limited adaptation to climate change despite awareness and the coping mechanism adopted is lowering the bore-well depth to access water, leading to unsustainable use of groundwater. The paper takes a stock of some of the key solutions to move the farmers towards adopting climate smart agriculture, with a special focus on water resource management. The paper also examines the emergence of water markets, and provide some fresh perspectives on the same. The paper also discusses the importance of 'gender-smart' approaches, extension services, ownership of local government and community participation in ensuring adaptation of climate resilient water management. Overall, this study provides a broad understanding of the issues at stake to make climate smart agriculture viable in India.

2. **"No water, no job? Water scarcity, marginal farmers and livelihoods in Eastern India"** by Dr. Sanjukta Das, Debojyoti Majumdar and Dr. M.N.Roy. Published in GeoJournal (2024) 89:11. https://doi.org/10.1007/s10708-024-11002-z

The study finds that water inaccessibility causes incomes of marginal farmers to fall by as much as 24%–37% in the region, due to which farmers are resorting to mala daptive practices, like unsafe migration. The paper underscores the need to account for a climate led structural transformation of the economy and provide support for the marginal farmers who stand to lose the most. The paper can be accessed at https://link.springer.com/article/10.1007/s10708-024-11002-z

3. **Decentralized Water Governance: Mobilising Community towards Sustainable Development Goal-6 by 2030.** Dr. Debasri Mukherjee and Dr. M.N.Roy. World Focus (Peer Reviewed) Research Journal: COP 28 UAE-Climate Change and Global Warming. January 2024. ISSN 2230-8458, E-ISSN 2351-5063, US Library Congress No. 909/0345.

Abstract: To fulfil the Goal 6 of the SDG, India needs to pay much attention on security and safety of drinking water, optimal Operation & Maintenance, decentralization of management of piped water supply system with improved governance, surveillance of the water quality and strong community engagement. The goal is far from being fulfilled and with climate change the problem is getting worse. This paper shows the inter linkage of relevant factors, which hang together and suggest a convergent approach for ensuring water security and safety through a scientific assessment with decentralized management and strong engagement of the people.

4. **"Self-Sufficient Community Run Water Supply Scheme at the Foot Hills of Himalayas: Swajaldhara Piped Water Supply Scheme, Sisodangi Gulma Tea Estate, Darjeeling".** Dr. Debasri Mukherjee, Dr. M.N. Roy, Er. Sohini Tarafdar, Rupam Mandal, Kabirul Islam. EverythingAabout Water E. Journal. Special Annual Issue December 2023. PP: 28-30. 15th A Collector's Edition Case Study. https://www. Eawater.com/emagazine.

Abstract: The Swajaldhara scheme was launched by the Department of Drinking Water Supply & Sanitation (DDWS), Government of India (GOI) as a reform in the water sector. This allows establishment of village-based schemes with involvement of the Panchayats and the community. Installation of one such scheme was facilitated by the NGO, Child in Need Institute (CINI) in the Sisodangi area of the Gulma Tea Estate in Siliguri, West Bengal, India in the year 2008. The project aims to provide not only clean drinking water but also sanitation facilities and healthcare to the communities living in the area. The activities included installation of water treatment plants, construction of water storage tanks and the laying of pipelines to distribute water to the households. Overall, the Swajaldhara project has helped to improve the living conditions of the people in the Sisodangi area, and has provided them with access to basic amenities of clean water and sanitation facilities. The Swajaldhara Pipe Water Supply Scheme at Gulma Tea Estate has made a notable difference in the lives of the community. It has provided them with reliable access to clean water, improved health outcomes, and alleviated financial burdens. The major changes include the lessening of waterborne disease, enhanced hygiene practices, better overall health and well-being, and increased availability of water for domestic and livelihood purposes in the community.

5. **"Association of Insanitary Practices and Faecal Sludge Management with Drinking Water Quality: A Lesson Learnt from Sheohar District, Bihar".** Dr. M.N. Roy, Soumyajit Basu, Sohini Tarafdar & **Dr. Debasri Mukherjee.** Sept-Oct 2023. Published in National Symposium on Sustainable Waste Management (NSSWM-2019) Abstract Proceeding Book- ISBN: 978-93-5361-940-4 (eBook). The full length paper is published in *The Journal of Solid Waste Technology and Management* **(formerly *The Journal of Resource Management and Technology*)**, published by International Society of Waste Management, Air and Water (ISWMAW). Vol 49, issue 3, 2023. Journal doi: http://doi.org/10.5276/jswtm/iswmaw Issue doi: http://doi.org/10.5276/jswtm/iswmaw/492. pp-253-260.

Presence of faecal coliform in drinking water is a major public health concern in many countries. It is critical to know how faecal coliforms find ways to the drinking water. The common causes are believed to be poor sanitary practices and unsafe faecal sludge management. This paper examines the presence of such causal factors in drinking water, found to be contaminated with faecal coliform, through a field survey in Sheohar district of India. Secondary data on sanitary status of the region was collected followed by collection of primary data on structure of toilets constructed and sanitary practices from households and village level institutions through a questionnaire-based survey. Ground water samples used for drinking in the surveyed villages were tested for presence of E-coli using Compartment Bag Test kit following WHO norms. It was found that even after reaching near universal coverage of toilets, there have remained many pathways to contaminate the ground water. The findings have important implications on proper implementation of sanitation and drinking water supply programmes and steps to be taken to avoid contamination of ground water with faecal coliform even after an area has been declared as open defecation free. This will also help to identify the risk factor for designing water & sanitation safety plans to ensure water quality and improve public health and nutrition.

Paper Presentations

1. **"Sustainable Development Goals and WASH in Gram Panchayats of India: An Exploratory Study on Gram Panchayat Development Plan, 2023-24" presented by Dr. Sabari Bandyopadhyay, Economist SIGMA Foundation.**

Presented at the 44th IASP (Indian Association for the Study of Population) Conference, 2023, on "1.4 Billion Aspirations, One Sustainable Future: Unfolding India's Path to Development", organized jointly with the Centre of Excellence on Public Health Nutrition, Department of Humanities and Social Science, National Institute of Technology Rourkela, Odisha, held in November 8-10, 2023 at National Institute of Technology Rourkela, Odisha,. The objective of the study was to examine the GPDP of different Gram Panchayats across the country. The major findings of the paper were (i) GP plan outlay on the WASH sector mostly centering around the creation of infrastructure as well as operation and maintenance. Although hand hygiene-related infrastructure was conspicuous by its absence(ii) Capacity building, IEC, and awareness campaigns have also not been prominent in GP Plan. The paper concluded that Capacity building of the GP members as well as employees is urgently required to improve their knowledge of GPDP GPDP should be more and more participatory GP own fund may be used for low-cost activities like an awareness program after the post-pandemic era.

2. **"Strengthening Sanitation System in the Rural Areas in Post-Pandemic era: A Study on Gram Panchayat Development Plan (2022-2023) of Some selected GPs of Different States of India" presented by Dr. Sabari Bandyopadhyay, Economist SIGMA Foundation.**

Presented at International Conference on "Contextualising Health in Social Sciences: Global and National Perspectives", organized by Sharda School of Humanities and Social Sciences in collaboration with Indian Association for Social Sciences and Health (IASSH), Held on 15-17th March 2023, at Sharda University, Greater Noida. The objective of the study was to examine the Gram Panchayat Development Plan 2022-23 for the selected GPs focusing on sanitation-related activities included in the GPDP. The major findings of the paper were (i) Per GP Plan outlay INR 1.2 crore whereas per GP outlay for Sanitation sector INR 8.2 lakh. Per GP total number of activities in the annual plan was 33.4 and the corresponding figure for Sanitation sector was 6.6. The study concluded that (i) Capacity building of the GP members as employee urgently required to improve their knowledge of GPDP. (ii) Planning under GPDP should be more participatory.

Get in touch with us

+91 33 4007 6685 / +91 33 2324 2077

info@sigma.foundation

http://www.sigma.foundation/

AI-171, 1st Floor, Street No. 29, Action Area-I, New Town, Kolkata-700156

https://www.linkedin.com/company/sigmafoundation/

https://bit.ly/44s9PuYsigmafoundation

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