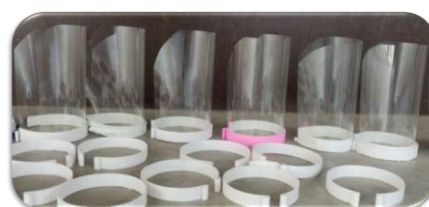
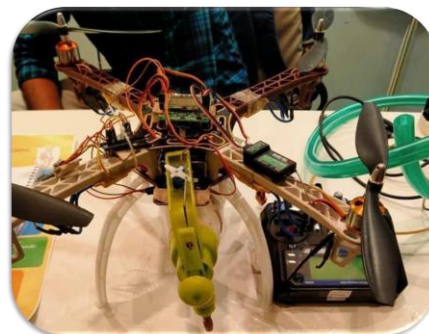


*COVID-19:
RESILIENCE &
CAPACITY
BUILDING OF
SCHEDULED
CASTE AND
SCHEDULED
TRIBE
COMMUNITIES
AT GRASSROOTS*



सत्यमेव जयते

*SEED DIVISION
DEPARTMENT OF SCIENCE AND TECHNOLOGY
GOVERNMENT OF INDIA
NEW DELHI*

COVID-19: RESILIENCE & CAPACITY BUILDING OF SCHEDULED CASTE AND SCHEDULED TRIBE COMMUNITIES AT GRASSROOTS

The novel coronavirus has created a major universal health pandemic challenging the existing health systems and swiftly crippling the economies and livelihood options around the globe. Though there is no discrimination, the ability to withstand the attack of COVID-19 and to overcome the distress varies from the rich to the poor, from the haves to the have nots. The people from marginalized communities are impacted disproportionately because of the lockdown announced on 25 March 2020. There has been a significant disruption in livelihood options and economic conditions of the Scheduled Caste (SC) and Scheduled Tribe Communities in the remote and far-flung areas of the Country. Migrant labourers who have managed to return created an additional burden at household level. Apart from social discrimination, these communities, particularly women and children are quite vulnerable to such disasters owing to pre-existing health challenges or difficulties in accessing care, compromised dietary practices, poor affordability, low educational levels and the lack of awareness.

The Science for Equity Empowerment and Development (SEED) Division of the Department of Science and Technology (DST) has been providing grant-in-aid support to several S&T enabled Voluntary Organizations (NGOs) and knowledge institutions (KIs) for a long time for the holistic development of SC and ST communities in India under the Schemes Scheduled Caste Sub Plan (SCSP) and Tribal Sub Plan (TSP). The NGOs and KIs had implemented several S & T projects directed towards addressing the basic day-to-day needs of the people that increase the adaptive capacity and resilience to emerging problems of livelihood systems and brought into practice innovative approaches towards creating opportunities for *sustainable development* through application of S&T. Thus SEED Division has a mandate of Delivering Science led Solutions and Development of Location Specific Appropriate Technologies for Creation and Improvement of Sustainable Livelihoods, primarily for enabling vulnerable sections of the society. The Division has also implemented various location specific coordinated programmes involving NGOs and KIs and has set up Science Technology and Innovation Hubs for inclusive developed of SC and ST.

Therefore, over the years, a robust, PAN India network at grassroots level has been developed and these organizations with their direct approach and relations with SC and ST communities strengthen the efforts of the Government to link with the communities for healthcare and social services and implement effective response, recovery and resilience strategies to best share. The NGOs and KIs has responded aptly in time to

ground reality and has taken utmost care of the people including the SC and ST communities in their catchment of operation designing approaches tailored to the unique needs of a given community. Several NGOs and KIs as advised by SEED Division has tweaked the objectives of the project to create resilience and improve the livelihoods of the communities.

The NGOs and KIs supported under the SCSP and TSP Schemes of DST are responding on the ground with food (dry ration and hot cooked meals), Personal Protective Equipment (PPE), development of innovative tools and techniques and designing framework for protecting the existing livelihoods and creating alternate livelihood options in the States of Andhra Pradesh, Haryana, Himachal Pradesh, Kerala, Maharashtra, Manipur, Odisha, Rajasthan, Tamil Nadu, Tripura, Uttarakhand, Telangana and West Bengal. The network has approximately reached 70,000 SC people and 26,000 ST people in the above states. Relief material was provided 60,000 people and sanitizers to 36,000 people. 500 awareness and training programmes covering approximately 35,000 people were conducted and 56,000 masks were distributed. The STI hubs at Hyderabad and Jaipur had come up with innovative 3D printed face shield using Fused Deposit Modeling. The face shields were distributed among the frontline health workers like doctors, health workers and police personnel. 25,000 such face shields are being made. The livelihoods of 12,000 households were protected/augmented with various S&T interventions in the fields of agriculture, aquaculture, collection of NTFP and other non-farm activities. The relief and rescue measures also saw development of novel technologies for containment of COVID-19, rejuvenation of livelihood activities and for creating resilience in the Post COVID time.

ANDHRA PRADESH

The network of NGOs and Knowledge Organizations supported under the SCSP and TSP Programmes had played a significant role in containment of COVID-19 outbreak through various relief and rescue operations. The interventions had benefitted 10,000 SC and 8,000 ST population in the districts of Chittoor, Guntur, East Godavari, West Godavari, Srikakulam, Vijayanagaram and Visakhapatnam districts.

1. Immediate Interventions for Containment of COVID-19

1.1 Distribution of Sanitizers and Face Masks



The Science Technology and Innovation Hub established at Sri Vishnu College of Engineering for Women (SVCEW), Bhimavaram has prepared 1000 liters of sanitizer as per WHO guidelines (Isopropyl alcohol 99.8%, Hydrogen peroxide 3%, Glycerol 98% and Sterile distilled water) and 10,000 masks. Masks were distributed to 10,000

people, sanitizer to 5000 people and gloves to 2000 people in Palakole, Undi, Narasapuram towns and its nearby hamlets in Anakoderu, Annavaram, Bethapudi, China Amiram, Kovvada, Kumudavalli, Taderu, Tundurru, Vempa, Yenamaduru, Gollavani Tippa, Ramayana Puram etc. The masks and sanitizers were distributed to 700 SC households (2000 beneficiaries) under the STI Hub in Bhimavaram. Face masks and Sanitizers were also distributed to 10,000 people belonging to SC communities in Guntur and Chittoor districts and ST people in tribal belts of Visakhapatnam, Vijayanagaram, Srikakulam and West Godavari districts by various NGOs.

1.2 Creation of Awareness on COVID-19.

A total of 250 awareness programmes were conducted in the areas of project implementation for creating awareness related to preventive measures, health and hygiene, importance of social distancing, symptoms & treatment facilities for COVID-19. The organizations had also promoted use of *Aarogya Setu App* and *Ayurvedic Upay*. These programmes had approximately benefitted 10,000 SC/ST population. Awareness programs on COVID-19 through Community Radio (90.4 FM) were conducted by

SVCEW in Telugu language covering 50 villages in a radius of 12 km in West Godavari district. Tribal Welfare Society, Chittoor has created awareness by beat of drum about Covid-19 in local language of Lambadi and distributed the brochures in regional language Telugu, among the tribal villages in Chittoor district. About 1000 brochures have been distributed. ASHA organized awareness camps in 19 villages of Ramavaram, Koderu and Mukunuru Grama Panchayaths of Chintur Mandal, East Godavari district of Andhra Pradesh and emphasized on observing social distancing norms in collection of Minor Forest Produce and during implementation of works related to MGNREGA.



Social distancing norms at work and Brochures for Creating Awareness

2. Interventions for Economic Resilience during Outbreak



The women SHG's formed by various organizations were trained in making of masks as per the guidelines issues by the Office of Principle Scientific Advisor, Government of India. The masks are being sold at Rs.3/- to Rs.5/- per piece and each member of SHG on an average is stitching 60

masks per day, thus creating a livelihood opportunity for many SC women.

The field teams of Laya, Visakhapatnam facilitated contact with government trading agencies, private traders and collection depots to enable collection of local produce directly from the farmers and marketing of NTFPs collected by the Tribal population during the outbreak. A total of 6709 families across 185 villages in Srikakulam and Vijayanagaram districts have benefited from this intervention.

HARYANA

1. Immediate Interventions for Containment of COVID-19

1.1 Distribution of Face Mask and Sanitizer



Kundan Welfare Society (KWS), Gurugram is engaged with local SC community as well as migrant labors in the NCR Region of Gurugram and Manesar for production of reusable cloth masks. The women SHGs in the surrounding areas were trained in making of sterilized cloth masks. 5000 such face masks along with sanitizers were distributed in Gurugram, Manesar

and Mewat Regions. 500 such masks were also provided to Department of Science and Technology, Government of India also.

HIMACHAL PRADESH

1. Immediate Interventions for Containment of COVID-19



Society for Technology and Development (STD), Mandi has initiated a campaign to fight COVID-19 in Sadar, Ballah and Sunder Nagar blocks of Mandi district by providing training on production of handmade 2-ply reusable cotton masks through women SHGs. 12 SHGs belonging to SC Communities (60 women) and distributed 6000 masks were distributed. The organization has developed low cost alcohol based hand sanitizer technology in technical consultation with National Botanical Research Institute (NBRI), Lucknow. The sanitizer has been prepared as per guidelines of WHO with Isopropyl Alcohol and Aloe Vera, a locally available bio-resource. Members

of farmer groups based in Nagwain were trained in making this hand sanitizer. The sanitizer was also distributed to local banks, PDS shops, shopkeepers and villagers.

People were also sensitized about proper and safe use of hand sanitizer, hand wash, maintaining social distance and wearing face masks.

KERALA

Kerala is the first state in India to get a COVID 19 patient. Several organizations implementing projects for the holistic development of SC people had made significant contribution in containment of the pandemic, delivering relief and rehabilitation measures for building resilience among these communities.

1. Immediate Interventions for Containment of COVID-19

1.1 Distribution of Face Mask, Sanitizer and Awareness Creation

- Mitraniketan had distributed masks, sanitizers and hand wash material to 1000 SC people in the nearby villages of Thiruvananthapuram.
- Centre for Innovation in Science and social Action (CISSA) Thiruvananthapuram had distributed masks to 1250 SC households in Thiruvananthapuram.
- Malabar Social Service Society Kannur has developed a demonstration video on ‘How to make sanitizer at home’, ‘How to make cloth mask’ in vernacular language has been made and circulated among the SHGs

2. Interventions for Economic Resilience during Outbreak



fermentation and solar drying which will act as an alternative source of income to the rural families during COVID-19 outbreak

- Jobs were provided to 208 unskilled workers in agriculture and allied sectors for farm operations during the phase 2 of the lockdown by Mitraniketan. Women SHG's were trained in stitching of masks as an alternate source of livelihood during the period.
- Malabar Social Service Society is promoting traditional food preservation techniques such as salting, pickling,

MAHARASHTRA

The interventions in Maharashtra had benefitted the SC and ST Communities belonging to some of the most affected districts like Pune, Aurangabad and their adjoining areas. 315 SC and 6919 ST households were benefitted through the immediate interventions for containment of COVID-19. It is proposed to rejuvenate the livelihoods of 5724 households and 28620 people through long term interventions. Pottery, Diary, Agriculture and allied activities were promoted during the outbreak for creating resilience.

1. Immediate Interventions for Containment of COVID-19

1.1 Development of Low Cost Body Sanitizer Booth



The Science Technology and Innovation (STI) Hub, Dr. Babasaheb Ambedkar Marathwada University (BAMU), Aurangabad has fabricated a *low-cost body sanitizer booth* for installation in the villages. This machine is equipped with the sanitizer pressure pump along with a basic controller. It also consists of one Motion sensor to sense the position of individual for optimized spraying. The spraying action can be accomplished by using 4 Micro sprinklers. Whenever the person enters into the chamber, the Motion Sensor sense the and sends signal to controller to actuate pump and spray the sanitizer for a given duration (can be programmed). Due care has been taken that sanitizer should not harm the sensory organs like eyes, nose, etc.

1.2 Distribution of Sanitizer and Face Masks

The Science Technology and Innovation Hub, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad has prepared 500 liters of Hand Sanitizer constituting 70% thanol, Glycerine, Hydrogen Peroxide, Turmeric and Aloe vera extract has been prepared in collaboration with Mahalakshmi Ayurvedic Hospital, Aurangabad for distribution in Chilkalthana Block of Aurangabad district, Maharashtra. 500 ml of sanitizer to 150 families was distributed which will be later expanded to all the villages. A low cost automatic (sensor based) hand sanitizer dispensing system was also developed. Anubhav Pratishthan Trust (APT) Khopoli, Raigad has provided masks to 634 ST families. MPCC Trust has purchased 80 face shields from Vigyan Ashram Pabal and distributed to doctors,

nurses, ASHA, Anganwadi and dairy workers of the project areas in Khed block. 400 Cotton masks were distributed to farmers who are visiting milk dairy of the field area.




Herbal Sanitizer and Automatic Sanitizer Dispensing System developed by STI Hub, BAMU

Mask distribution to Tribal Community

1.2 Creation of Awareness on COVID-19.

An E-reference book App containing information of Do's and Don'ts in line with guidelines issued by M/o H&FW and M/o AYUSH has been made and be published on BAMU website and DST SEED STI HUB website. A database on information and messages advised by government are prepared in Marathi Language and publishing on University Website.



World Health Organization

It is clearly stated that entire information of this handbook has been collected and compiled from World Health Organization Website-

<https://www.who.int/>

with sole intention of creating awareness about COVID-19 pandemic. Users of this handbook are requested to regularly visit WHO and Govt. of India official websites for updates.

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COVID – 19 Handbook

A Public Awareness Initiative by

DST SEED Science, Technology and Innovation Hub
KUSHAL Activity &
Deen Dayal Upadhyay KAUSHAL Kendra

(Skill Development Department of the University offering UG & PG programme in Industrial Automation and Automobile Technology)



Hand Book on COVID-19

2. Interventions for Economic Resilience during Outbreak

Gramodaya Sangh is working with the pottery artisans at Gadchiroli as well as at Bhadrawati in Maharashtra for creating livelihood resilience among the pottery artisans during the outbreak by spreading awareness about the pandemic and help the artisans carry on their work following social distancing and all other safety measures. Masks and sanitizers have been distributed to 30 artisan families in Gadchiroli and 15 families in Bhadrawati and they have been instructed to work from home. The



Artisans working from home with face masks

raw material for production of artistic pots such as clay mixer, working tools etc., has been provided to them at home so that final material is ready to fire at production center, once the lock down is lifted. Gramodaya sangh is also compensating the wage/ stipend, as financial support, so that they can run their home smoothly. All the artisan's families are in touch with organization through mobile for continuing their pottery activities.



Distribution of silage/fodder

MPCC Trust has taken several steps to help the SC communities in Khed Block of Pune District in Maharashtra for containment of COVID-19 and rejuvenation of livelihood activities while following all safety measures. A commercial animal feed processing unit for providing total digestive nutrients to the livestock has been established and animal feed (1700 kg silage) was distributed to SC 70 families. Steps are being taken to make the village self-sufficient in animal fodder by increasing the fodder quantity and quality within the village itself through measures such as

increasing number of Azolla beds.

3. Long-term Interventions for Resilience of Communities

3.1 Livelihood Activities

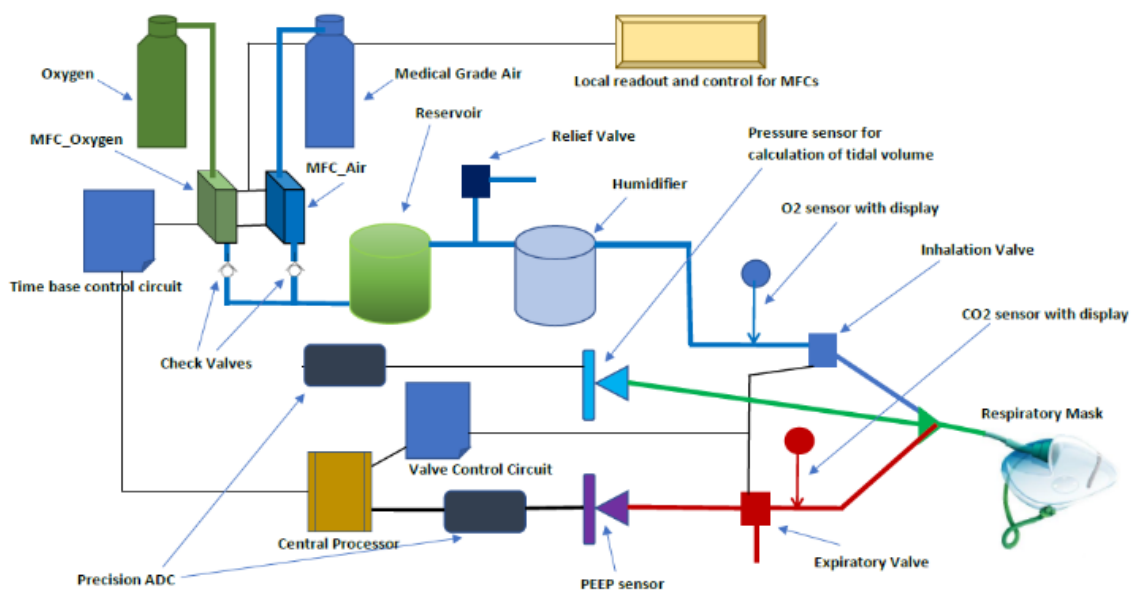
- MPCC had conducted a survey and prepared a database on youth and families returning back to their villages. Reverse migrants have farming background with small

landholdings will be encouraged to sow Kharif crops. Youth are also being encouraged to attend webinar on livelihood options on regular basis and are also being trained on different skills pertaining to agriculture.

- APT had collaborated and converged the activities with CSR activities of Godrej Limited and had initiated a COVID-19 action plan for creating livelihood resilience in 100 tribal hamlets covering 5724 households and 28620 people. APT is also working on technological interventions for rejuvenating natural water resources, sustainable agriculture and livelihoods for tribal community in Karjat block of Maharashtra.

3.2 Health and Hygiene

Ventilator for Acute Respiratory Syndrome Diseased (ARSD) Patients: A low cost ventilator (Ventilator for ARSD Patients –1) that offers Continuous Positive Pressure Ventilation for rural medical units, to be used for first respondent, till the patient is ensured with authorized pulmonologist is proposed to be developed. In this highly optimized unit there will be a sterilized reservoir (> 20L) attached to an oil free compressor. Stored air from the reservoir will be supplied to the patient NIV mask through a programmable timer-controlled inhalation/ exhalation change over valve to ensure a close control of Tidal Volume. A key unit of this ventilator will be the precision pressure control line going to the changeover valve unit to ensure extreme low possibility of baro-trauma. The proposed ventilator offers (i) Assisted Positive Pressure Ventilation (APPV) and (ii) Continuous Positive Pressure Ventilation (CPPV)



Schematic diagram of Ventilator for ARSD patients

3.3 Skill Development Trainings

During the lockdown period, it has been recorded that above nearly 1.5 Lakh people from Bihar, Jharkhand, Madhya Pradesh and West Bengal working in 4800 medium and small scale industries in Aurangabad and Jalna had migrated back (reverse migration) and there will be a he demand for skilled labour and workers in and around Industries in Aurangabad. The STI Hub plans to create a directory of manpower requirement at various levels at these industries and create job opportunities for villagers by training them in the relevant skills.

ODISHA

1. Immediate Interventions for Containment of COVID-19

1.1 Distribution of Face Mask, Sanitizer and Awareness Creation

- Rashtriya Seva Samithi (RASS), Koraput and Social Action for Rural Community (SARC) Samalpur has conducted awareness camps to 454 people and distributed masks and sanitizers were to 370 SC people.
- Strishakti has conducted awareness activities in the tribal villages of 4 Gram Panchayats of Odapada block of Dhenkanal district in Odisha through posters in local language. Strishakti has so far distributed 3000 masks to ST people in Ghatipiri, Govindprasad, Kottam and Kalang.



Awareness programmes on COVID-19 conducted by RASS, Koraput

2. Interventions for Economic Resilience during Outbreak

- 44 SC migrant labour were trained and engaged as farm labourers and marketing linkages were provided to 10 SC farmers for selling the farm produce by RASS, Koraput.
- Members of women SHGs in Ghatpuri and Govindaprasad Gram panchayats have been trained by Strishakti on face mask production and each women are earning Rs.180/- per day for 60 masks.

PUNJAB

1. Immediate Interventions for Containment of COVID-19

1.1 Distribution of Face Mask, Sanitizer and Awareness Creation

- The Science Technology and Innovation Hub, Chitkara University, Rajpura apart from supplementing the relief activities of the University is contributing towards creation and telecasting of several awareness programs on COVID-19 through Community Radio 107.7 FM. Several other aspects pertaining Paddy procurements by farmers and safety precautions in Mandi, broadcasting the message of Prime Minister of India, Chief Minister Punjab and other important information from Govt. of India and Govt. of Punjab are telecasted from time to time during lock down period.



Chitkara Radio
107.8FM

2 hrs • 🌐

Radio Chitkara brings Punjab Mandi Board's Appeal to be safe from Corona virus

As the purchase of Rabi season is going to start, the Board has appea... See more



Chitkara Radio
107.8FM

26 mins • 🌐

Radio Chitkara will bring PM Shri Narendra Modi's address to the nation on 14 April 2020 (Tuesday) at 10 am .

... See more



- The STI Hub distributed hand sanitizers and face masks to 2000 beneficiaries under STI Hub selected for interventions in Patiala and Rajpura Blocks in Patiala District.

RAJASTHAN

The Science Technology and Innovation Hub established at JECRC University, Jaipur has complemented the activities of State Government in the rescue and relief operations for containment of COVID-19. The University has conducted several awareness and capacity building programmes in Jaipur and Sanganer blocks, especially in Sitapura, Goner, Vidhani, Mohanpura, Khajalpura and Pipla villages.

1. Immediate Interventions for Containment of COVID-19

1.1 Development of 3D Printed Face Shields



The STI Hub had developed an innovative Personal Protection Equipment (PPE) – low cost 3D Printed Face Shield (Rs. 400/- per unit) in compliance with the guidelines of WHO & ICMR. 500 face shields have already been delivered to doctors in SMS Hospital, Jaipur. Production of 25,000 face shields is under progress. Masks and sanitizers were supplied to 1000 SC population in Goner, Akodia, Pipla, Khajalpura and Mohanpura villages. Work on low cost sanitization chambers and

chlorinated sprinkler systems is under progress for post COVID-19 safety measures.

TAMIL NADU

Nearly 25,000 SC population were benefitted through the immediate interventions taken by Kalasalingam University Srivilliputhur, Shri AMM Murugappa Chettiar Research Centre (MCRC) Chennai and Centre for Social Development (CSD), Kanyakumari. The Science Technology and Innovation Hub established at Srivilliputhur Block, Tamil Nadu proposed to develop technologies for post-covid livelihood resilience in agriculture and geo-polymer based technologies.

1. Immediate Interventions for Containment of COVID-19

1.1 Distribution of Face Mask and Sanitizer.



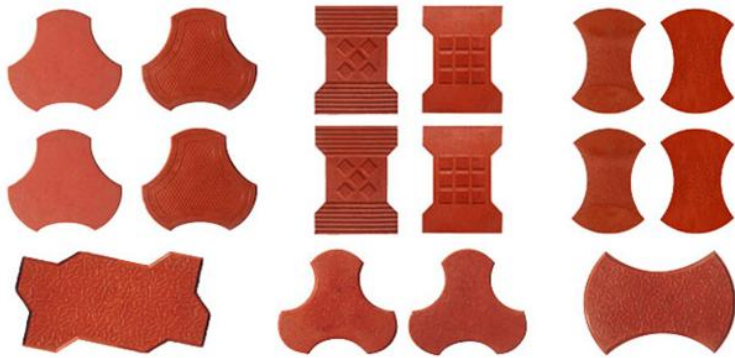
Foot operated Sanitizer

25000 SC people belonging to Srivilliputhur block of Virudhunagar district, Kanchipuram and Kanyakumari blocks were distributed face masks and sanitizers. A Foot operated hand sanitizer dispenser was developed by Kalasalingam University (KU) so that the sanitizer could be used without touching the bottle with hands. By pressing the pedal with a foot, the bottle would dispense the liquid. This device is mainly designed for use in public areas like, hospitals and big companies, where a large number of workers are employed. Bottles of different sizes from 250 ml to 1 litre could be fixed. A model was installed at Madurai Collectorate and several other places like hospitals and village panchayat offices. The cost of the device is ₹5,000.

2. Interventions for Economic Resilience during Outbreak

- MCRC, Chennai has been training women through videos on making face- masks with materials available at home and production of traditional plant based sanitizers (with neem leaves, turmeric, salt etc.). The moringa farmers at Karur were advised to produce moringa powder and distribute to the people as it has high nutritional value which will boost their immunity. Arrangements are being made to get Spirulina from the producers (NGOs, trained by MCRC under DST supported backyard Spirulina cultivation project) for distribution among the beneficiaries as nutritional supplementation. The entrepreneurs involved in Azolla production are advised to produce Azolla and distribute to those who have cows, so that azolla is available as food supplement to the cows at a time when the regular fodder is in short supply. All these activities are being carried out as a rural enterprise model. The livelihoods of 500 SC farmers are thus protected from the impact of outbreak
- Women were trained by the STI Hub at KU in stitching of masks as per the guidelines of Government of India. This has soon become an enterprises and women are now sending masks to nearby towns and cities.

- The SC women in the STI hub were involved in manufacturing of Geopolymer based floor tiles and roof tiles maintaining all the norms of social distancing during lockdown 2.0 as a livelihood activity.



Geopolymer based floor tiles and roof tiles manufactured at KARE – STI Hub

3. Long-term Interventions for Resilience of Communities

3.1 Livelihood Activities

The STI Hub at KU propose to develop the following technologies to create livelihoods and to overcome problems that were posed (expected to be continued) during outbreak. The interventions are selected in such a way that the raw materials are available in plenty in the area and these activities will also impart technical skills to migrant labours who at a later time may return back to towns for jobs

1. Geopolymer based low cost readymade quarantine chamber for COVID-19 patients
2. Utilization of biocompatible polymers for preparation of eco-friendly innovative mask containing antimicrobial herbal extract
3. Production of eco-friendly, biodegradable, antimicrobial tableware using of sugarcane Bagasse
4. Preparation of low cost herbal-based hand sanitizer as per World Health Organization (WHO) recommended standards

TELANGANA

The STI Hub at MLR Institute of Technology, Hyderabad funded by DST for development of Scheduled Caste Communities through Science and Technology interventions has been a front runner in relief and rescue operations for combating and containing COVID-19. Apart from donating an amount of Rs.30,00,000/- to the State Government of Telangana as a part of Institutional Social Responsibility, the STI Hub had

demonstrated its capabilities to develop and demonstrate appropriate technologies for fight against COVID-19. The STI Hub along with other faculty of the Institute has till now reached 29,362 people in Rangareddy, Hyderabad and Medchal districts including 9112 SC people belonging to Nuthankal, Bandamadharam, Goudavalle, Dundigal, Railapur, Srirangavaram and Jawaharnagar villages in the catchment of STI Hub. The salient activities carried out under the STI Hub are given below.

1. Immediate Interventions for Containment of COVID-19

1.1 Distribution of Sanitizers and Face Masks

500 3D printed face shields (visors) were manufactured using Fused Deposition Modelling and distributed to front line health workers and police personnel. 3023 face masks and 5365 bottles (250 ml each) were distributed among SC Communities.



3D printed face shields (visors)

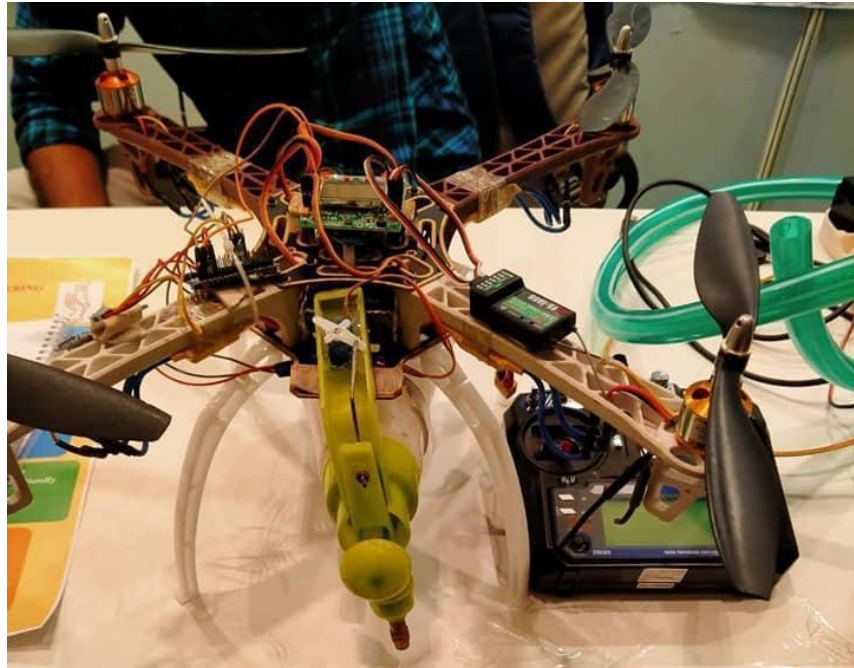
1.2 Technologies for Sanitization and Disinfection.

1.2.1 Wireless UVC Solutions for Large Area Sanitization: Keeping in view of difficulty in sanitizing large areas manually or through sprayers. The wireless UVC, controlled by mobile app developed by BridgeThings startup of MLR Institute of Technology can be further scaled up for sanitizing, Public transportation, Hospitals, Commercial Buildings, surface & air sanitization, Toilets, Escalators etc.

1.2.2 Drones for disinfestation: A prototype of a drone has been fabricated for disinfesting the containment zones without manual presence thus eliminating the requirement of PPE and other protective gear. The drone can carry up to 20 liters of disinfectant. The Drone can also be used for agriculture and surveillance applications.



Wireless UVC



Drone

2. Long-term Interventions for Resilience of Communities

2.1 Livelihood Activities

The STI Hub proposed to develop rural enterprises for extraction of cold pressed oils involving reverse migrants and develop small farm machinery like multifunctional mini power tiller and semi-automated pesticide sprayer “AGROBOT” for agriculture applications which will help small and marginal farmers. These activities will be converted as social enterprises for sustainability.

TRIPURA

1. Immediate Interventions for Containment of COVID-19

North Bengal Institute of Rural Technology(NBIRT), Tripura has developed mechanical foot operated handwashing system using bamboo and waste plastic containers. A number of these handwashing systems have been installed in schools and communities and can be a game changer in fighting COVID19 in Rural areas as it is cost effective and portable. NBIRT is also planning to integrate it with an herbal sanitizer which is made from extracts of different locally grown herbs having anti-microbial properties. This would be promoted as an entrepreneurial activity in future. NBIRT is proposing to develop a UVC based Solar Powered Disinfecting system with a focus on developing handheld/portable

disinfection device for objects and static space disinfection system powered by Solar energy



Hand washing system installed at a ration shop and in market place in Tripura

UTTARAKHAND

1. Immediate Interventions for Containment of COVID-19

Himalayan Environmental Studies & Conservation Organization (HESCO), Dehradun, working in tribal belt of Jaunsar-Bhabhar region, Chakrata block in Dehradun district of Uttarakhand has created awareness among tribals in Chakrata region about the preventive measures through creation of physical distance and use of masks, sanitizers and soaps on a regular basis. The community has been trained to make masks and hand soaps using locally available materials. HESCO has raised leaders within the farming community to help farmers to connect with organized market for better return and also to provide transportation facilities to farmers. The entire activities approximately benefit 200 ST population.

WEST BENGAL

The Science Technology and Innovation Hub established at Sidho Kanho Birsha University (SKBU), Purulia is engaged in rescue, relief and resilience of ST communities of Purulia District. The STI hub is working in close coordination with District Administration (DM & ADM), BDOs of different blocks, CMOH, Doctors of AYUSH Division, Police Personnel and local panchayats. Vivekanand Institute of Biotechnology, Nimpith is developing S&T services for development of SC & ST people in Sunderbans and identifying grass root level Community Based Organizations, particularly in the

eastern India and building their S&T capabilities them for taking up S&T based projects to generate sustainable livelihoods to SC and ST communities post COVID. Details of the activities are given below. The interventions benefitted 1008 ST households and 1200 SC population.

1. Immediate Interventions for Containment of COVID-19

1.1 Distribution of Sanitizers and Face Masks

Hand sanitizer supplemented with Aloe vera extract and lemongrass oil has been prepared as per WHO norms under the aegis of STI Hub. The Women SHGs of Dumurdih, Khuditar, Damodarpur and Bagdishia were trained in manufacturing of face masks. A WhatsApp group of the Tribal Community has been created and the Tribals were trained in these aspects.



Face Masks



Aloe Sanitizer

Hand sanitizer and face mask were distributed to offices of DM, SP, CMOH office, Principals of Schools and Doctors of Purulia Medical College and Hospital, Institute of Mental Care, Ramakrishna Mission, Sainik School, District Science Centre, Bharat Sevashram Sangha, Postal Department and Banking sectors of Purulia. Mask and Sanitizers were also given to general public and tribal communities of Dumurdih, Khuditar, Damodarpur and Bagdishia villages. Soap, Detergent, Sanitizer and Food packets were distributed to ‘Sabar’ community of Damodarpur (90 households), Khuditar (72 families) and to 250 ST households in Hesadih and Chirugora villages (Bagmundi Block). Masks and Sanitizers were also distributed to 600 household of Khedia Sabar Community in Damodarpur and Khitidar villages of Puncha block



Distribution of Masks, Sanitizers and Soaps among the Tribal Community

1.2 Creation of Awareness on COVID-19.

The STI Hub at SKBU Purulia conducted several awareness programmes regarding the importance of social distance, use of Arogya Sethu App and training programmes. Interaction sessions with doctors, prevention measures to be taken to combat COVID-19 through video demonstration to the SHGs and ASHA workers.



Awareness Programme and Interaction Session with Doctors at a Sabar Village

2. Interventions on Health and Nutrition during Outbreak

The STI Hub-SKBU Puruliya has been promoting the unique concept of Immune Villages for boosting the immunity of the people hailing from the tribal belt in Purulia to prevent the spread of COVID-19 in collaboration with the AYUSH Department of Government of West Bengal. Several Ayurvedic herbal products and formulations are made from ginger, eucalyptus oil, clove, turmeric etc that contributes in boosting of immunity and reducing the risk in patients with pre-existing illnesses like diabetes, hypertension, cardiovascular disease, respiratory issues etc. Demonstration of 'Dinacharya' & 'Ritucharya' to the

villagers for boosting immunity by AYUSH Doctors is also being followed. These immunity villages were also distributed free masks, sanitizers, soaps, dry ration and other food items. Eucalyptus oil, Cotton, lemon, Turmeric and Ginger rhizomes, Basil and Aswagandha seeds to were distributed to 25 families (125 villagers) of Baraghutu, Purulia-I which is being turned to be an immune village.



Baraghutu, Purulia-I – Moving towards and Immune Village

3. Long-term Interventions for Resilience of Communities

3.1 Livelihood Activities

- VIB, Nimpith has developed a Mobile App for farmers to get advanced information on weather, soil health, anticipated pest problems, instant solution for respective crops damage/pest attacks, probable market trends to minimize the risk and increase the profitability for agriculture activities after the outbreak. The post COVID-19 activities for rejuvenation of livelihoods include use of selected water bodies for sustainable aqua cultural practices and seed tuber production of elephant foot yam through tissue cultured G1 plantlets – maintaining disciplined movements and ways.



Mobile App for Farmers and Discussions of Post COVID Livelihood Rejuvenation

- SKBU Purulia in collaboration with KVK, Kalyan has organized discussions and virtual meetings with farmers and fishermen of Chirugora, Hesadih, Susnidih, Bersa, Dumurdih and Bamni villages on Crop and Pond management (for aquaculture) for rejuvenation of agriculture and aquaculture activities after the outbreak.
- A work plan for creating resilience and livelihood rejuvenation of Tribals through integrated cultivation of fish and fox nut in relict and abandoned ponds, horticulture, small animal husbandry etc has been framed