Innovations

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Executive Summary

Cashless Village Palnar (Dantewada)

Background/ Initiatives Undertaken

- Gram Panchayat Palnar, made **first cashless panchayat** of the state
- All shops enabled with **cashless mechanism** through Ezetap PoS, Paytm, AEPS etc.
- **Free Wi-Fi** hotspot created at the market place and shopkeepers asked to give 2-5% discounts on digital transactions
- **"Digital Army"** has been created for awareness and promotion – using Digital band, caps and T-shirts to attract localities
- Monitoring and communication was done through **WhatsApp Groups**
- Functional high transaction Common Service Centers (CSC) have been established
- **Entire panchayat** has been given training for using cashless transaction techniques
- **Order were issued by CEO-ZP**, Dantewada for cashless payment mode implementation for MNREGS and all Social Security Schemes, amongst multiple efforts taken by district administration
- GP Palnar to also facilitate cashless payments to surrounding panchayats

Key Achievements/ Impact

- Empowerment of village population by building confidence of villagers in **digital transactions**
- Improvement in **digital literacy** levels of masses
- Local festivals like communal marriage, traditional folk dance festivals, inter village sports tournament are **gone cashless**
- **1062 transactions,** amounting to **Rs. 1.22 lakh,** done in cashless ways

Cashless Village Palnar (Dantewada)

Background

Palnar is a village located in Kuakonda Tehsil of Dakshin Bastar Dantewada district in Chhattisgarh. It is well connected with a decent all weather road to the block head quarter Kuwakonda (15 km) and to National Mineral Development Corporation (NMDC) township. Prior to this initiative Palnar had no banks/ATMs and there was no internet accessibility. Residents of Palnar village as well as security personnel posted in the area had to travel more than 10 km in order to withdraw money from ATM and about 34 km to Dantewada for opening a bank account. With the onset of demonetization, relevance of Digital Financial Literacy (DFL) increased many folds and district administration chose Palnar as a model for promoting cashless transactions.

Approach Adopted

Under this initiative multiple efforts were taken by district administration. An order was issued by Chief Executive Officer – Zilla Parishad (CEO-ZP), Dantewada for implementation of cashless payment mode for MNREGS and all social security schemes.

Technology Enablement

District Administration (DA) engaged BSNL for establishing a Wi-Fi hotspot zone at Palnar. The connectivity was established in December 2016, and the entire shopping area of Palnar was provided with free Internet Service. Ezetaps were installed instead of conventional POS machines considering the kind of infrastructure available. Micro ATMs were established for remote payments through RuPay card, Aadhaar Enabled Payment System (AEPS), Digi Dhan, UPI (BHIM) etc.

Handholding Support

Leveraging support from banks and public representatives of the area, DA made efforts to ensure that every Jandhan account holder received RuPay cards, and that Aadhar seeding is done. By organizing special camps during weekly markets DA ensured distribution of RuPay cards to the account holders. NOCs and Aadhar details were obtained from un-seeded account holders by field staff. Shop keepers were extensively trained by teams and bank officials on handling the Ezetaps devices.

Awareness Generation

Meetings were conducted regularly to convince public representatives, shop owners and general public of Palnar about the needs and benefits of digital transactions. Public representatives undertook the responsibility of convincing surrounding villagers by conducting meetings during hot bazars. Localized audio and video campaigns and Nukkad Nataks were designed for public awareness. A Digital Army was created within the villages using digital band, caps and T-shirts to attract local people. Digital Doots spread the message of digitization and created awareness about cashless transactions.

Impact

The key outcomes of the project are highlighted below:

- The initiative has been successful in empowering villagers and in building confidence for digital transactions.
- Digital literacy in the village has increased and the community has moved towards making cashless transactions.
- Cashless transactions are being made as part of communal marriages, traditional folk dance festivals, inter village sports tournament, etc.
- 1,062 cashless transactions amounting to Rs. 1.22 lakh have been carried out.

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Executive Summary

Comprehensive Education Development (Sukma, Chhattisgarh)

Background/ Initiatives Undertaken

- An Education city has been established in the **district headquarters** in 100 acres of land, with a capacity of **4000 children** and a **residential facility for teachers and students.**
- It has **close proximity to the hospitals** where **transportation facilities** are also available
- Facilities/Initiatives in the Education city include:
  - **Science education:** Science park, Portable planetarium, IGNITE awards, Mobile science lab
  - **Co-Curricular education:** Ullas summer camp, Kala Utsav, Smart classes, Mobile computer lab, football and archery academy, art and culture academy under Gyanodaya
  - **Teacher development:** Vidyalay Darpan, Samvaad, professional learning communities, Gunvatta monitoring system
  - **Pre-primary elementary education** – Gyanodaya: back to school initiative for out-of school children
  - **High school Education** – Aarohan is a coaching facility for Engineering and Medical entrance exams
  - **Higher & vocational education** – skill development and livelihood centre
  - **Career building & guidance** – Navi Disha is coaching for professional courses
- Funding was obtained **under Government schemes and CSR fund**

Key Achievements/ Impact

- **After 3 months, 1,000** out-of school children from interior villages enrolled for Back to School Program in Gyanodaya
- **6,000** children are benefited through Ullas
- Through Vidyalay Darpan, **936** school teachers were given training for Model School Concept
- Compared to the previous rankings of 25/26, Sukma has been ranked **12th** under State Level 3R Assessment Survey
- **1,300** youth have been trained for number of courses like accounting, BPO, sewing, bamboo handicraft etc.

Comprehensive Education Development (Sukma, Chhattisgarh)

Background

Comprehensive Education Development initiative in Sukma is aimed at providing education to all, beyond any ideological clashes. Post Salwa Judum movement in 2005 and the resultant backlash by the Maoist resulted in a number of challenges and poor levels of education in Sukma district. Accessibility and re-development of destroyed educational infrastructure was one of the major challenges. The number of out of school children had increased drastically and there was a low motivation among students and teachers. To overcome challenges of low quality education and lack of monitoring support, a Comprehensive Education Development Plan (CEDP) was implemented.

Approach Adopted

The strategies adopted under CEDP are highlighted below:

- Target group was identified in collaboration with security forces, government agencies and community level influencers using participatory approach.
- Children belonging to habitations with Left Wing Extremism (LWE) activities were relocated to education facilities in district headquarters.
- Teachers from inaccessible locations were engaged and collaboration was done with external technical experts.

- Funding was established through Left Wing Extremism –- Integrated Action Plan (LWE-IAP), District Mineral Fund etc. CSR funding was obtained from NMDC and Essar Group.
- For land allotment and work execution, interdepartmental coordination was done which led to the decision of setting up of Education City and Education Hubs.

Facilities Provided

Facilities provided to students in the Education city include:

- Science Education: Science park, Portable Planetarium, IGNITE Awards, Mobile Science Lab
- Co-Curricular Education: Ullas Summer Camp, Kala Utsav, Smart Classes, Mobile Computer Lab, Football and Archery Academy, Art and Culture academy under Gyanodaya
- Teacher Development: Vidyalay Darpan, Samvaad, Professional Learning Communities, Gunvatta monitoring system
- Pre-primary Elementary Education – Gyanodaya: back to school initiative for out-of school children
- High School Education – Aarohan: Coaching facilities for Engineering and Medical entrance exams
- Higher & Vocational Education – Skill development and livelihood centre
- Career Building & Guidance – Navi Disha: Coaching for professional courses)

Awareness Generation

Awareness was generated through cultural and community engagements in Ullas summer camp and Kala Utsav. High tea event called Samvaad was organized with teachers from interior of villages to discuss about success, challenges and replication of best practices across the district. Collaboration was done with security forces in order to increase the outreach. Collaterals like brochures, pamphlets and banners were also used at key locations. ‘Sukma Ta Ma Ta’ radio was used to reach out to community members.

Impact

The key outcomes of the project are highlighted below:

- 1,000 out-of school children, from interior villages, enrolled in school after attending a 3 month Back to School Program in Gyanodaya.
- 6,000 children were benefited through cultural and community engagements initiatives like Ullas summer camp to get exposure and training in various creative activities.
- 936 school teachers were given training for Model School Concept through Vidyalay Darpan.
- Sukma ranked 12th from the previous rankings of 25/26 under State Level 3R (Reading, Writing and Arithmetic) Assessment Survey.
- 1,300 youth were given training for a number of courses like accounting, BPO, sewing, bamboo handicraft etc.

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Executive Summary

Early detection and screening of breast cancer (Thrissur)

Background/ Initiatives Undertaken

- A wearable device developed to be used for **early detection of breast cancer in females**, which a mammogram may fail to detect (size less than 1cm and young women with dense breast tissue)
- It causes **no pain or radiation exposure** compared to mammogram
- Women are required to wear the device for only **15-30 minutes**
- The data from the vest is acquired in **data acquisition system**. With **graphical user interface**, doctors can easily see the images and find the abnormality in breast along with the approximate location
- **Accredited Social Health Activist (ASHA)** workers were associated to take this system to community level for initial screening of breast cancer
- The **results can be analyzed by the Public health centre doctors** or any specialized doctors by wireless communication system
- The device is **economical** with approximate cost of development - INR 1.5 lacs
- The device is **easy to use, portable and works on battery**
- The developed breast cancer detecting wearable device can be handled by operators with **basic computer literacy** and **minimum technical training**

Key Achievements/ Impact

- **Mass screening** for breast cancer in females is possible through a low cost device
- Women do not get exposed to any **radiation or pain infliction**
- **For both, thermal sensor device and mammogram,** more than 97% similarity was found in diagnostic results, obtained for **volunteers and patients**

Early detection and screening of breast cancer (Thrissur)

Background

In India, breast cancer ranks first in occurrence among the various types of cancers found in women. One of every two women diagnosed with the disease lose their life. Early detection of breast cancer can lead to 100% cure but there is lack of technical expertise and existing methods for detection such as mammography, ultrasound scanning etc. are expensive. Procedures, such as mammography, are painful and carry an additional risk of exposure to radiation. Also, inconsistency is observed in early detection of breast cancer among young women. Women have to travel to hospital for screening and privacy is often a major concern.

Approach Adopted

For women with dense breasts or a cancer size less than 1cm, a mammogram fails to provide conclusive results. Hence for such cases, a thermal sensor probe based wearable device which can map breast skin temperature with high accuracy has been developed by C-MET. It is based on rationale that the cancer tissue is at a slightly higher temperature than the normal tissue.

Functioning of Device

Women have to wear the device for only 15-30 minutes. 2D analysis software has been developed with graphical user interface which allows doctors to easily view the images and find abnormality in breasts along with the approximate location details. Similar to BIRADS (Breast Imaging-Reporting And Data System) score in the case of mammogram, a scoring system coined as Breast Thermogram Analysis and Reporting System (BTARS) is also incorporated in the analysis system. BTARS can classify abnormality into 5 categories from normal to highly suspicious cases. Women who are screened can then be asked to undergo further diagnostic methods depending upon the level of abnormalities observed.

Organization Structure

This is a joint project between C-MET, Centre for Development of Advanced Computing (C-DAC), Thiruvananthapuram and Malabar Cancer Centre (MCC), Kannur and is funded by MeitY. C-DAC will be developing the data acquisition system for the wearable device and MCC is involved in carrying out clinical trials.

Handholding Support

The system can be operated with minimum training and is user friendly for clinicians. Any Accredited Social Health Activist (ASHA) worker, after training, can take this system to community level for initial screening of breast cancer.

Awareness

Till date clinical trials on more than 200 volunteers and 75 patients have been carried out at MCC using this device and further trials are underway. The Community Oncology Department of MCC is conducting regular cancer awareness programmes in Kerala. In the next phase, C-MET is planning for volunteer trials across India.

Impact

The key outcomes of the project are highlighted below:

- Mass screening is possible through this low cost portable device

- The device ensures privacy and does not cause any pain or exposure to radiation
- The device is economical as the cost of the developed device is Rs. 1.5 lakhs which is 1/100th of the cost of current digital mammogram machines

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Executive Summary

Farm Pond On Demand (Maharashtra)

Background/ Initiatives Undertaken

- **“Farm pond on demand”** was announced by Hon. Chief Minister with the objective of **providing protective irrigation** to **overcome water scarcity** and **make Maharashtra a drought-free state**
- The beneficiary application and participation is done **online** through **Aaple Sarkar** for **greater transparency** which ensures **unbiased and quick selection (Avg. TAT of 15 days)**
- The **subsidy amount** is received by the farmer **within 7 days** through **DBT (Aadhaar-seeded accounts)** after construction of the farm pond

Key Achievements/ Impact

- More than **1.5 lakh applications** have been received out of which more than **85 thousand applications** have been approved
- **15,000 Farm ponds** have been built covering land of **22,500 hectare area**
- On an average, there is **2x increase in the yield per farmer** and it takes **7 days for receipt of payment** after photo-upload
- This initiative has helped in **improvement of water availability in Rabi Season**, thereby **improving the yield** and **assuring protective irrigation**
- The initiative has also helped in **improvement in water table**, **change in crop-pattern** (from Soyabean, Tur to Cucumber, Bitter gourd, Lilys etc) and **supplementary income through pisciculture**

Farm Pond On Demand (Maharashtra)

Background

Hon'ble Chief Minister, Shri. Devendra Fadnavis, announced the ambitious "Farm pond on demand" program with an objective of providing protective irrigation to overcome water scarcity in the State. Farmer suicides was a major concern and the focus was to enable preparedness of the State for handling drought situations. Vidharbha and Marathwada were the main targets under this initiative.

Approach Adopted

A user friendly online form was developed to enable efficiency and transparency in the farm pond application process. The overall process involves the following:

- Online Application: An application for the farm-pond is made online by the farmer through the Aaple Sarkar Portal
- Committee Approval & Site Selection: This application is reviewed by the relevant Taluka-level agricultural committee and the approval/rejection is communicated to the farmer.
- Construction of Farm Pond: After site selection by Agriculture Assistant, farm-pond is constructed by the farmer.
- Receipt of Subsidy: After construction of farm-pond, the agriculture assistant uploads a photo and the farm-pond is GIS mapped. Subsidy is received in the farmer's bank account within 7 days.

- Third Party Evaluation: A third party evaluation is conducted by college students through Unnat Maharashtra program to boost transparency.

Awareness Generation

For generating awareness and increasing coverage, hoardings, TV ads, print ads, advertisements on back panels of buses, radio jingles etc were used. A special episode on the scheme was aired as part of Janata Durbar series on Doordarshan. The period between March to May was crucial to undertake publicity under this scheme, as it is the season when Rabi crops have been harvested and Kharif season is yet to begin. Thus, the farmer has time to construct farm ponds.

Impact

The key outcomes of the project are highlighted below:

- 15,000 farm ponds have been built under this initiative covering 22,500 hectare area
- On an average there is average approximately 2x increase in the yield per farmer
- On an average it takes 7 days for receipt of payment after photo-upload.
- This initiative has helped in improving water availability in Rabi season, thereby improving yield and assuring protective irrigation.
- The initiative has led to improvement in water table, change in crop-pattern (Soyabean-Tur to Cucumber, Bittergourd, Lilys etc.) and generation of supplementary income through pisciculture.

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Executive Summary

Integrated Solid Waste Management and Generation of Power from Waste (Jabalpur, Madhya Pradesh)

Background/ Initiatives Undertaken

- Government of Madhya Pradesh is aimed to **effectively manage the solid waste**, through regional landfill concept
- Clusters of Urban Local Bodies (ULBs) were formed with a total of **26 clusters covering 378 ULBs**
- **Larger ULB is chosen as a lead member** and **smaller ULBs** within a distance of 50-80 km are selected as **cluster members**
- The **regional landfill site is situated in the lead member town**
- Municipal **solid waste from member ULBs** is transported for further **processing and disposal at the regional landfill site**
- Using this approach, minimum total waste is around 150 TPD and goes up to 1000 TPD
- **Katondha Power Plant**, Jabalpur is first integrated solid waste management plant with a **per day capacity of 11.4 MW**
- **Technology was used for effective implementation**, including **GPS** for monitoring SWM vehicles, **RFID** for monitoring of bins, **sensor** for waste treatment operations, **drone** for monitoring operations at landfill site, grievance redressal through **mobile application** and **control room** to monitor all SWM activities

Key Achievements/ Impact

- Three clusters, namely **Jabalpur, Katni & Sagar,** are operational
- All the towns of Jabalpur, Katni & Sagar clusters are clean
- **7 to 8 MW of energy** is being produced at Jabalpur **'Waste to Energy'** plant
- **Decline in vector borne diseases** has been witnessed
- **Behavioral changes** among citizens in effective waste disposal

Integrated Solid Waste Management and Generation of Power from Waste (Jabalpur, Madhya Pradesh)

Background

Conservation of clean and healthy environment is one of the prime concerns for every city and town of the country. The Integrated Solid Waste Management (ISWM) project at Jabalpur, Madhya Pradesh was initiated by Government of Madhya Pradesh, in accordance with Municipal Solid Waste (MSW) rules.

Approach Adopted

Government of Madhya Pradesh decided to implement Solid Waste Management (SWM) across all ULBs in an integrated manner by forming clusters of ULBs on Regional Landfill Concept. Clusters were designed considering the logistics and optimization of waste for making it financially and operationally viable. To leverage financial support as well as technical competency, the project was implemented through PPP mode. The scope of the private operator includes primary collection (door to door), secondary collection, transportation, segregation (if required), waste processing and final disposal in a scientifically developed landfill. Regional landfill is situated in bigger ULB of each cluster. Waste from other ULBs is brought to lead town or satellite town for transportation, processing and final disposal. Energy produced from the waste at Katondha Power Plant, Jabalpur, is purchased by MP Power Management Company.

Awareness Generation

Jabalpur Municipal Corporation conducted campaigns for generating awareness and eliciting support from citizens through public workshops, billboards, distribution of pamphlets and other publicity material. The corporation also conducted other Information Education and Communication (IEC) related activities through social media and workshops in schools for explaining the importance of scientific waste management.

Impact

The key outcomes of the project are highlighted below:

- Three clusters namely Jabalpur, Katni & Sagar have become operational and all towns of these clusters are clean. This has resulted in a decline in vector borne diseases.
- A behavioral change has been observed among citizens in effective waste disposal.
- 7 to 8 MW of energy is being generated at Jabalpur 'Waste to Energy' plant.

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Executive Summary

Rural Solid Waste Management (Tamil Nadu)

Background/ Initiatives Undertaken

- This is a **low cost and high impact solution for Solid Waste Management** (SWM) in rural areas.
- MGNREGS workers called as **"Thooimai Kaavalars"** (cleanliness guard) go **door to door for collection of waste.**
- **Segregation of biodegradable and non-biodegradable waste** is done.
- Biodegradable waste is dumped into compost pits and non-biodegradable, non-recyclable waste is dumped into landfill site.
- Three pits are created for each cluster and **one worker is engaged for every 150 households.**
- Post segregation, **bio-degradable waste is converted to manure** and **shredded waste plastic is used for laying BT Roads.**

Key Achievements/ Impact

- **1.16** lac metric ton (MT) of garbage was disposed in **9,000 pits.**
- **2,835 MT** of recyclable plastic and other waste materials were sold generating a revenue of **INR 73.04 lac.**
- **Compost** produced from the bio-degradable waste were sold for **INR 57.33 lac.**
- **1,045 MT** of non-recyclable waste was sent to sanitary landfills.
- Shredded plastic waste of **615 MT** has been utilized in laying of **841 km length of BT roads.**
- The initiative enhanced health profile of the community and helped to prevent diseases and epidemics.

Rural Solid Waste Management (Tamil Nadu)

Background

The primary objective of Solid Waste Management (SWM) systems project in rural areas of Tamil Nadu, is to make the villages cleaner and greener. Till 2015, there was no established universal model for implementation of SWM in rural areas. The untreated waste and garbage dump yards were becoming a breeding ground for vector borne diseases. In order to overcome these challenges, the Govt. of Tamil Nadu decided to provide basic minimum infrastructure facilities in villages, which are cost-effective and necessary for safe collection and disposal of waste. For this purpose, Rs.110 crore were allocated for implementation in 2,000 Village Panchayats (VPs) during 2015.

Approach Adopted

Village Panchayat is the nodal unit for planning and implementation of this project. To overcome manpower issues, MGNREGS workers were engaged as *Thooimai Kaavalars* (TK)/(Protectors of Environment Clean Guards) at the rate of one worker per 150 households. They are involved in door to door collection, segregation and transportation of waste to dumping site. TKs are provided with Uniforms and tricycles/push-carts. In order to maintain clean and tidy streets, garbage collection bins are provided in the street junctions prone for garbage dumping.

Segregation of Waste

Solid waste is segregated into biodegradable and non-biodegradable waste categories before disposal. The final disposal of solid waste is processed without contaminating ground water, surface water and ambient air quality. This requires working space for segregation and storage of recyclable waste. Segregation cum storage sheds are provided at cluster level or near the disposal points. Weighing machine is kept in these sheds to measure the weight of waste collected per day per worker.

Processing of Waste

Two pits for composting and one pit for sanitary landfill are dug up under MGNREGS. A protective layer of plastic sheet is provided in the sanitary landfall pit to avoid risk of ground water pollution. Shredding and cleaning/sieving machines have been provided at block level for further processing of plastic waste. The shredded plastic is used in laying BiTuminous (BT) roads.

Monitoring

A daily attendance sheet has been prescribed for each TK. The worker has to get the signature of 10 households from the street allotted and get it duly attested by Village Poverty Reduction Committee (VPRC) member. One among the MGNREGS workers has been nominated as worksite supervisor, for monitoring the daily attendance, weighing the garbage collected etc. Basic orientation training on SWM activities is given to block level officials and also the functionaries in VPs.

Awareness Generation

A detailed order for provision of budgetary support and convergence of various schemes at State level has been issued by the Government. To generate awareness, media campaigns, consultations with Government functionaries and general public were undertaken. TKs are integral part of village life now. While collection of waste, they blow their whistle. Young, old, men and women, everyone knows about them and their work.

Impact

All the 12,524 Village Panchayats of Tamil Nadu are covered under this initiative. The initiative has lead to creation of much cleaner and greener surroundings with consequential health benefits. Economic activities for SHGs include selling of vermi-compost, selling of scrap which are of economic value and selling of shredded plastic waste to District Rural Development Agencies (DRDA) for laying BT roads. The key outcomes of the project are highlighted below:

- 1.16 lakhs MT of garbage is disposed off in 9,000 VPs
- 2,835 MT of recyclable plastic and other waste materials were sold by VPs generating a revenue of Rs. 73.04 lakhs.
- Compost produced from the bio-degradable waste was sold for Rs. 57.33 lakhs.
- 1,045 MT of non-recyclable waste was sent to sanitary landfills.
- Shredded plastic waste of 615 MT has been utilized in laying of 841 km length of BT roads
- For collection, transportation and segregation of waste, employment is provided to over 65,000 MGNREGS workers.

Solid Waste Management (SWM) Systems in rural areas of Tamil Nadu is studied by 10 States involved in Clean Ganga Project. An advisory is issued by MoRD and MDWS to other States for replication of this model.

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Executive Summary

Solar Urja Lamps Project (Dungarpur)

Background/ Initiatives Undertaken

- Solar lamps project was initiated under the aegis of **IIT Bombay, Rajasthan Grameen Aajeevika Vikas Parishad** (RGAVP) and **district administration**, to provide an economic and sustainable solar lighting solution.
- It focuses on development of solar enterprise**,** for which women Self Help Group **(SHG) members are trained and mentored to become solar entrepreneurs.**
- IIT Bombay provided overall technical and management support as part of **Million SoUL program.**
- RGAVP helped in implementation of initiative through **4 SHG - Cluster Level Federations (CLFs).**
- **150 women** participated in a **10-day** training for **solar lamps assembling, repairing and marketing.**
- A **Solar Module Manufacturing Plant named DURGA** (Dungarpur Renewable Generating Association) is being set up to meet local demands of solar energy.

Key Achievements/ Impact

- **83 women** got employed as a part of SoUL project called **The Solar Sahelis.**
- **5 solar shops** were established by women and **19 Solar Saheli** were trained as solar entrepreneurs, for after sales service and sale of other solar products.
- **Revenue of INR 80 lac** was generated with a **profit of INR 32 lac.**
- **Average income of each women employed under the initiative is Rs. 5,000-6,000** per month.
- **40,000 Solar lamps** were assembled, sold and maintained over 4 months.
- Community is **using lamps for study, cooking, milking, going to field, social gatherings, etc.**
- **Ministry of New and Renewable Energy (MNRE), GoI** has funded the project to provide solar lamps to 70 lakh students across Bihar, Uttar Pradesh, Assam, Odisha and Jharkhand.

Solar Urja Lamps Project (Dungarpur)

Background

Solar Urja Lamps (SoUL) project was initiated under the aegis of IIT Bombay, Rajasthan Grameen Aajeevika Vikas Parishad (RGAVP) and District Administration, to provide an economic and sustainable solar lighting solution to the villagers of Dungarpur, Rajasthan. Due to hilly terrain and scattered habitation, the cost of electricity transmission is very high in this region. The initiative focuses on providing green and environment friendly lighting solution to each household at a reasonable price, so that school going children can study in uninterrupted manner, and women in the area can also earn from the process and enhance their livelihood.

Approach Adopted

4 Self-Help Group Cluster Level Federations (CLFs) in Dungarpur district were engaged in different capacities such as managers, assemblers, distributors and service providers for repair and maintenance of the lamps. District administration played a crucial role of bringing together all stakeholders and providing handholding support to them.

Training

IIT Bombay provided a 10 day training to 150 women of the CLFs.

- Technical training was provided to the women for assembling of the solar lamps.
- Distribution training was also provided for distributing the

lamps. This included training on marketing and advertisement tools.
- Repair and Maintenance training was also given as the lamps have a warranty period of 6 months.
- Some selected women were trained to work in their own shops/house for repairing. 5 Solar shops were established by women and 19 Solar Sahelis were trained as solar entrepreneurs, for after sales service and sale of other solar products.

Funding

Idea Cellular provided financial support to IIT Bombay. Price of each solar lamp is Rs. 550, of which Rs. 350 is subsidy provided by Idea Cellular. For consumer the price per lamp is Rs. 200, of which Rs. 55 is given to IIT Bombay and Rs. 65 is the cost of operation for CLF. Thus, CLF earns a profit of Rs. 80 per lamp.

Distribution Activities

- Phase I: 3 blocks where CLF had a strong presence were selected and the lamps were distributed in 180 villages. The women reached to the targeted village 2-3 days in advance and educated the villagers about the benefits of the solar lamps by using pamphlets and sound campaigns. The actual distribution was done by hiring of tempo/mini-trucks by the women and providing delivery at the destination
- Phase II: Distribution was expanded to cover other blocks of the district and was also done at the school level, wherein the distributors visited schools and convinced the principal, teachers and students about the benefits of the solar lamps.

Awareness Generation

Campaigning was done across the district at both, school and household, levels. Distributors participated in meetings of Village Organizations (VOs) for promoting and generating awareness about the project. Few days prior to distribution, distributors visited schools for promotion. Sound campaigning, pamphlets were some of the other techniques used for promotion across various villages.

Impact

The key outcomes of the project are highlighted below:

- 40,000 Solar lamps were assembled, sold and maintained, over a period of 4 months. The entire community is benefited and is using lamps for study, cooking, milking, going to field, social gatherings etc.
- 83 tribal women, engaged as part of the project, are now able to earn Rs. 5000-6000 per month.
- Revenue of Rs. 80 Lakh is being generated with a profit of Rs. 32 lakh.
- Based on the success of SoUL project, the Ministry of New and Renewable Energy (MNRE), GoI has funded project to provide solar lamps to 70,00,000 students.
- SoUL project is now moving towards a new height in Dungarpur through solar panel production house named DURGA (Dungarpur Renewable Generating Association). The Bhoomi Poojan was done on 26th Jan 2017.

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Executive Summary

Spectrum Harmonization and Carrier Aggregation

Background/ Initiatives Undertaken

- The initiative aimed to re-arrange the scattered radio frequency carriers adjacent to each other and to make them **continuous through Harmonization**
- Harmonization **created larger blocks of spectrum** with each telecom service provider and freed up spectrum used by guard bands, separators etc. for use of signal propagation
- **Doubling the size of spectrum block** with incremental capex **helped to serve almost four times more customers**
- **Spectrum freed up** by this process was **allocated, at market** determined prices, through auction
- Spectrum was made available through **auction in several areas** where there was scarcity

Key Achievements/ Impact

- **36.25 MHz additional spectrum** was freed up in 800 MHz band and **197 MHz of additional spectrum** was freed up in 1800 MHz band
- **Incremental value of additional spectrum** which was carved out in harmonization done in 2016, is **INR 35000 crore**
- This initiative enabled **service providers to introduce new technologies** like LTE, 4G to provide higher data rates & broadband speeds
- **Provided consumers with improved quality of voice service** by increasing spectrum block sizes. Triple win for Telecom service providers, government and consumers

Spectrum Harmonization and Carrier Aggregation

Background

Harmonization of spectrum is aimed at re-arranging scattered radio frequency carriers to make them contiguous. Prior to harmonization, various technologies used by Telecom Service Providers (TSPs) operated with different channeling arrangements and guard band was required to avoid the interference. Harmonization creates larger blocks of spectrum for each telecom service provider and frees up spectrum used by guard bands, separators etc. Under this pioneering initiative, the Department of Telecommunications (DoT) has carried out harmonization exercise for the first time in 800 MHz and 1800 MHz bands.

Approach Adopted

Prior to harmonization, the hardware had a limited availability in a frequency range and its capability had to be taken care of while harmonizing spectrum. TSPs were using these filters as per their historical allocation and convenience. Adjusting frequency allotment within their filter limit was a challenge. Operators were reluctant to replace fixed-frequency tuned hardware due to involvement of additional costs. In order to overcome these challenges, several meetings were held to establish consensus on making spectrum holding contiguous and directions were issued where required. Harmonization was carried out in the 800 MHz & 1800 MHz bands between March 2016 to August 2016. DoT ensured that all mobile operators and defense services, that held large parts of the 1800 MHz band, were on-boarded for enabling harmonization of the bands.

Auction Process

Spectrum freed up by the process of harmonization was allocated at market determined process through auction. Post auction, further re-arrangement of spectrum holdings was done to maintain contiguous blocks.

Awareness Generation

In order to generate awareness, discussions were held with TSPs and Defence services to apprise them about harmonization. TSPs also publicly advertised introduction of new technology for providing better quality of services.

Impact

The key outcomes of the project are highlighted below:

- 36.25 MHz additional spectrum was freed up in 800 MHz band and 197 MHz of additional spectrum freed up in 1800 MHz band.
- Freed up spectrum was auctioned to address gaps in service areas where spectrum was not assigned earlier due to non availability. Incremental value of additional spectrum carved as part of harmonization was Rs. 35,000 crore.
- More contiguous spectrum available to TSPs resulted in an exponential increase in their traffic handling capacity and enabled them to introduce new technologies like LTE, 4G to provide higher data rates & broadband speeds.
- Consumers were benefitted with better speed of data/broadband and better quality service.

The initiative resulted in benefit to all stakeholders i.e. Government, TSPs and consumers in a time bound manner without affecting the operations of Defence services.

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Executive Summary

The Neem Project (Gujarat)

Background/ Initiatives Undertaken

- As a part of the Neem project, Gujarat Narmada Valley Fertilizers & Chemical Limited (GNFC) manufactures neem oil to meet its own requirement for coating urea. The neem oil is also used **to make organic neem cake fertilizer.**
- The main objective is **women empowerment and uplifting of farmers and landless laborers** by generating additional income through **collection of neem seeds and manufacturing of neem soap, pesticide** etc.
- For the production of neem oil, neem seeds are collected by **rural women** and **landless laborers** from SHGs, co-operatives, NGOs, etc. across more than **4,000 villages.**
- **Service Provider Partners (SPPs)** like fertilizer retailers, NGOs, etc., carry out screening, weighing, bagging and temporary storage. They arrange for **transportation to the expeller/extraction unit. Neem seeds** are also accepted directly **from individual collectors**
- Neem seeds are processed at local expeller/extraction units. There are **4 expeller units** across 4 districts and 1 major unit set up at GNFC.
- Forward Integration portfolio includes **Neem Soap, Neem Pesticide, Neem Repellent and De-Oiled Neem Cake.**
- An awareness drive through **493 Krishi Mahotsav** (Agricultural extension) covering around **5,000 villages** was carried out.

Key Achievements/ Impact

- The initiative is generating a direct employment for more than **1.25 lakh rural people** and indirect employment for nearly **50,000 people.**
- Average income has increased from **INR 12,000 to INR 19,000, i.e. 58.3%.**
- **12,000 MT** of Neem seeds and **11 Storage facilities established.**
- **8,000 MT** of Neem Cake & **900 MT of Neem Oil produced.**

The Neem Project (Gujarat)

Background

In May 2015, the Government of India made it mandatory to neem coat 100% of urea. The rationale behind this initiative was to curb pilferage of urea allocated to farmers for industrial use. This is expected to reduce urea consumption by 10% and improve soil fertility of farm soil. In order to fulfil the policy mandate, Gujarat Narmada Valley Fertilizers & Chemical Limited (GNFC) initiated "The Neem Project". As a part of the project, GNFC manufactures neem oil to meet its requirement for coating urea. The task of collecting neem seeds, used for manufacturing neem oil, is allocated to rural women and landless labourers. One of the key objectives of this initiative is women empowerment and uplifting of farmers and landless labourers by providing them opportunities to generate additional income.

Approach Adopted

Under this project, neem seeds are collected by rural women and landless labourers across more than 4000 villages. Service Providing Partners (SPPs) carry out screening, weighing, bagging and arrange temporary storage and transportation of neem seeds to expeller/extraction unit for processing. Proper checks and balances are ensured right from collection to extraction through awareness and capacity development by GNFC and the entire process is monitored by more than 100 GNFC officials. The extracted neem oil is then used for coating of urea.

Convergence with other schemes

In convergence with existing State programs for skilling, under Skill Development Mission (SDM), training was imparted to unskilled rural women to manufacture neem soap, neem pesticide, neem repellent and de-oiled neem cake etc. using the excess neem oil produced by GNFC. Neem soap manufacturing unit was set up in GNFC with involvement from women SHGs.

Awareness Generation

The Neem Project was presented in 'Krishi Mahotsavs' for generating awareness. Agriculture Technology Management Agency (ATMA) organized awareness fairs in all the districts of Gujarat for promotion of the project.

Impact

The key outcomes of the project are highlighted below:

- The project has been instrumental in providing job opportunities and acts as a source of additional income for rural women, landless labourers and SPPs.
- More than 1.25 lakh rural people have benefitted from direct employment and 50,000 people have benefitted from indirect income generation.
- Average income of the beneficiaries from INR 12,000 to INR 19,000 i.e., 58.3%
- In November 2016, Ministry of Chemicals and Fertilizers has directed all fertilizer companies to adopt Neem Project in association with GNFC.
- 12,000 MT of neem seeds, 8,000 MT of neem cakes, 900 MT of neem oil have been produced and 11 storage facilities have been established.

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Executive Summary

The WDS Project (Surguja, Chhattisgarh)

Background/ Initiatives Undertaken

- Widowed Deserted and Separated (WDS) women were **identified from remote corners** of the district, through surveys around various segments like General Information, Sources of Income, Health, sanitation and drinking water, Legal aid etc.
- A big team of available personnel from **21 different line departments**, **CSOs, PRIs** and **active members** was formed for this initiative
- WDS women became part of the **Self Help Group (SHG)** and were provided **skill training**
- **Awareness generation camps** were organized and **continuous follow up with WDS women** was done
- **No extra budget** and **no additional human resource** was utilized for this initiative
- **This initiative involved convergence of 68 different schemes,** which provided WDS women **entitlements** and **services,** making them self-reliant

Key Achievements/ Impact

- **As a part of this initiative, 8,998 WDS women were identified and benefited**
- **Following are the benefits provided to these women**
  - **2,196** women found Social Security through pensions
  - **822** women got Housing Security
  - **3,548** women availed better Sanitation
  - **2,426** women acquired Aadhaar Card
  - **2,621** women obtained Labor Card
  - **6,737** women got Insurance Cover
  - **1,218** women got LPG connections
  - **2,491** women benefited from bank linkages
  - **1,587** women got health security

The WDS Project (Surguja, Chhattisgarh)

Background

Vulnerability of women due to death of husband, desertion or divorce is widely prevalent but rarely acknowledged and scantly addressed in India. Situations like these are emotionally shattering, socially marginalizing and economically depriving for women and they are left with children eventually falling into the miserable trap of poverty. This established an immediate need for comprehensive intervention to provide emotional, social, economical and legal support to Widowed/Deserted/Separated (WDS) women and their children.

Approach Adopted

As part of this initiative, WDS women were identified from remote corners of Surguja district. This was done through an empirical survey conducted to locate WDS women and identify their needs. The survey was conducted around segments like general information, sources of income, health, sanitation, drinking water, legal aid etc. Data analysis was done to prepare a case to case intervention plan. Capacity building and sensitization exercise was undertaken, both for surveyors and department officials. A total 8,998 WDS women in Surguja between 18-60 years were identified and covered under the initiative.

Convergence with other schemes

Personnel from 21 different line departments, Civil Society Organization (CSOs), Panchayati Raj Institutions (PRIs) and active members worked towards empowerment of WDS women through benefits under 68 different schemes.

Awareness Generation

District administration has undertaken number of mobilization and awareness camps where information was provided on various schemes, activities and programs of the Government. Participation of opinion leaders, elected representatives, village level functionaries and Self-help Groups (SHGs) was a critical enabling factor in spreading awareness through word of mouth.

Impact

The key outcomes of the project are highlighted below:

- 8,998 WDS women were identified and benefited through this project. Benefits provided to these women include –
  - 2196 women found social security through pensions
  - 822 women got housing security
  - 3548 women availed better sanitation
  - 2426 women acquired Adhaar card
  - 2621 women obtained Labor card
  - 6737 women got insurance cover
  - 1218 women got LPG connections
  - 2491 women benefited from bank linkages
  - 1587 women got health security
- In 2015, the State acknowledged this project's great potential for replication and issued necessary guidelines for prioritization across Chhattisgarh.

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