

Social Entrepreneurship and Developing Skills as Mechanisms for Eradicating Manual Scavenging

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Abstract: Manual scavenging remains as one of the worst human rights violations in India even though laws exist to protect people from it and the Constitution ensures their safety. The analysis in this document evaluates social entrepreneurship together with skill development as operational tools to eliminate this dark practice. The research investigates state-supported rehabilitation initiatives through Self Employment Scheme for Rehabilitation of Manual Scavengers (SRMS) and NAMASTE scheme that focus on alternative livelihood opportunities through financial backup and skills development. The paper demonstrates community entrepreneurship and Bandicoot robotic capabilities which combine to eliminate manual work through automation and create respectable employment opportunities for previous scavengers. Apart from NGOs and cooperatives the study examines their efforts to draw community involvement and provide psychosocial support. This research based on socio-legal principles through field investigations demonstrates economic training together with business establishment provides viable alternative income while confronting caste-based power systems that preserve manual scavenging. Finding show that enforceable laws must merge with inclusive policy frameworks and local problem-solving initiatives to sever the fundamental bases of this practice. The paper ends by suggesting ways to expand these models through cooperation between public and private organizations.

Keywords: Manual Scavenging, Social Entrepreneurship, Technological Innovation, Skill Development, Rehabilitation and Empowerment

I. INTRODUCTION

Although, manual scavenging persists as a disgraceful violation against human dignity since workers physically clean dry latrines and sewers by hand in 21st-century in India. Even though manual scavenging remains illegal under multiple laws starting with the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act 2013, this practice shows that only using laws is inadequate for its prevention. Manual scavenging inflicts its worst effects on Dalit communities because it arises from caste-based discrimination and socioeconomic marginalization and it creates long-lasting poverty and social stigma.

Holistic change has taken place from maintaining welfare-based rehabilitation services toward empowerment-based rehabilitation models since recent times. Social entrepreneurship together with skill development has established itself as fundamental tools for this paradigm transition. The local community and social technology integration together with direct community participation allows social enterprises to create enduring survival alternatives that differ from overt state management approaches. Through these alternative models' manual scavengers gain economic avenues and develop a sense of dignity as well as inclusion and personal empowerment. Both the Self Employment Scheme for Rehabilitation of Manual Scavengers (SRMS) and the National Action for Mechanised Sanitation Ecosystem (NAMASTE) provide state support through vocational training, financial backing and mechanized sanitation systems.

The study investigates the place where legal standards meet unique social innovations along with economic development strategies which target manual scavenging elimination. The research examines how skill development strategies with social entrepreneurship functions to destroy structural limitations which enable marginalized groups to obtain decent work opportunities. The research uses examples from the field and policy examinations along with grassroots-oriented practices to prove that important legal barriers need local solutions to eradicate this practice. This paper supports an increasing group of scholars who advocate for rights-based and rehabilitative approaches that address social justice needs to end manual scavenging practices.

II. GOVERNMENT INITIATIVES

The Government of India launched specific targeted programs to eliminate manual scavenging and provide social and economic recovery support to people forced to perform this dehumanizing job. A combination of laws against manual scavenging remains insufficient to break this inheritable social job so these programs focus on providing employment

benefits alongside educational assistance and machine acquisition with welfare services to help social integration for affected communities. The Self Employment Scheme for Rehabilitation of Manual Scavengers (SRMS) serves as a flagship program that NSKFDC executes to provide financial services to manual scavengers across India under the supervision of the Ministry of Social Justice and Empowerment. The Self-Employment Scheme for Rehabilitation of Manual Scavengers (SRMS) provides sustainable recovery opportunities for identified manual scavengers along with their families through programs for self-employment. [1] The scheme delivers a single financial payment of ₹40,000 to every beneficiary that helps them through their transition period. As part of this scheme beneficiaries receive training at no cost which includes a monthly stipend payment of ₹3,000. Through the scheme manual scavengers receive up to ₹3.75 lakh of capital subsidy to pursue self-employment projects. The initiative provides both low-interest loans and together with these loans' beneficiaries obtain funding to start small enterprises that lead to financial independence and personal dignity.

The joint effort between the Ministry of Social Justice and Empowerment and the Ministry of Housing and Urban Affairs operates NAMASTE Scheme (National Action for Mechanised Sanitation Ecosystem) as a major intervention. The national NAMASTE scheme launched in 2022 seeks to modernize the Indian sanitation sector while removing hazardous manual sewer and septic tank cleaning operations. [2] Through this scheme the program identifies sanitation personnel followed by skill development initiatives and safety equipment distribution and financial support and health protection benefits. The program adopts machines for sewer jetting and robotic equipment as main tools to transition sanitation work from manual to mechanical processes in order to minimize health hazards and deaths in dangerous sanitation work. As a part of its mission Swachh Bharat utilizes its infrastructure-building tasks to fight manual scavenging through the promotion of sanitary toilet facilities. Under SBM the removal of dry latrines serves as prevention because it eliminates the requirement for human waste cleaning activities. [3]

People from Scheduled Castes and Scheduled Tribes together with manual scavengers can acquire micro-enterprises through funding support provided by the Stand-Up India Scheme and the Pradhan Mantri MUDRA Yojana (PMMY). The programs seek to establish entrepreneurial capabilities and financial independence which removes the need for people to depend on caste-based occupations. [4]

The Central Sector Scheme for Rehabilitation of Manual Scavengers operates benefits for manual scavengers' children through education programs including pre-matric and post-matric scholarship systems along with coaching and livelihood programs. Educational scholarships serve as crucial instruments which enable students to overcome caste-based occupations by providing them with educational empowerment. [5]

The total elimination of manual scavenging remains impeded because of execution difficulties together with unsuccessful identification processes along with social discrimination against beneficiaries. Multiple government programs now usher in a fundamental societal change as they transition from welfare programs towards empowerment methods to enhance the dignity alongside equality and possibilities for India's disenfranchised populations. [6]

III. TECHNOLOGICAL INNOVATIONS

Modern innovations represent a crucial component in eliminating manual scavenging because they offer usable automatic solutions which protect both worker safety and human dignity standards. Genrobotics a Kerala-based social enterprise founded to eliminate manual scavenging has developed the Bandicoot Robot as a major technological breakthrough in this field. Genrobotics exists to confront India's sanitation emergency through smart robotic solutions which eliminate the dangerous involvement of humans. The Bandicoot robot designed by Genrobotics serves as their signature product to sweep through manhole openings and sewer systems along with enclosed sanitary areas that usually need human entry. [7]

The Bandicoot robot features robotic arms with multiple functions which replicate human hand decisions during operations that occur in risky underground environments. These robotic attachments effectively collect waste material with standardized efficiency thus reducing personnel contact to harmful substances. The robot integrates night-vision cameras to do its tasks in total darkness so the operator gets live video transmission. The system provides enhanced oversight and command capabilities through safe monitoring which happens directly from surface level positions. The system provides easy controls so operators from different experience levels can operate it successfully despite a lack of technical expertise. [8]

The main characteristic that sets Genrobotics apart from traditional technological enterprises exists in its dual mission of rehabilitation and inclusivity. The enterprise works directly on supporting technology development in addition to supervising formal training sessions for manual scavengers. This training curriculum provides essential technical instruction about the Bandicoot robot for technical skills that enable users to maintain and operate and solve problems

with it. The training programs Genrobotics provides turns former sanitation workers into robotic technicians because it provides them with both technical skills and economic independence along with dignity and renewed purpose. [9] By placing people at the forefront of innovation to social justice the model helps manual scavenging victims take an active part in eliminating this practice.

The Bandicoot robot successfully integrates into sanitary service operations across various Indian cities such as Thiruvananthapuram, Mumbai, Hyderabad, and Chennai. The expensive field operations of the robot showed both its successful performance capabilities alongside its achievement in eliminating dangerous manual work tasks. [10] Sanitation personnel across these cities have observed better workplace safety and increased job contentment as well as decreased vulnerability to health issues like respiratory conditions and skin infections. Government agencies and urban local bodies are adopting the Bandicoot robot because it shows great promise as a better replacement for conventional sewer cleaning techniques.

Genrobotics represents the growing movement of integrating technological innovation with social entrepreneurship to solve complex social challenges in society. Genrobotics successfully proves that when robotics technology matches with community development practices it becomes a major social reform catalyst. [11] The technological solution addresses sanitation work issues while simultaneously giving power to communities who have been overlooked thus making manual scavenging elimination possible in reality. The Bandicoot robot symbolizes social progress by embodying dignity together with hopes for building an egalitarian society. [12]

IV. ONGC FOUNDATION'S CSR INITIATIVE

Through its Vijayawada Corporate Social Responsibility (CSR) project the ONGC Foundation makes crucial progress toward technical solution implementation and all-inclusive rehabilitation in the fight against manual scavenging across India. To address the emergency requirement of replacing harmful manual cleaning work ONGC formed alliances with local stakeholders to develop robotic watering systems designed for sewer and manhole maintenance. This initiative supports both the Swachh Bharat Abhiyan and the mission to protect sanitation workers' human dignity and safety during work by eliminating denied employment opportunities caused by social stigma and health dangers. [13]

The robotic scavengers deployed via this initiative come with user-friendly controls and ergonomic handling features in combination with simple operating designs. Industrial robots maintain complex systems yet robotic machines remain easy to use therefore working simultaneously for sanitation workers without prior skills in digital or mechanical fields. Built-in training assistance functions as a key ONGC robot feature because it delivers step-by-step operational guidance to users when they work. The built-in training functionality provides manual scavengers with a smooth transition into sanitation work related to modern technology which decreases educational barriers during vocational reintegration. [14] The programs of ONGC Foundation support sanitation personnel in two ways: through robot deployment and by implementing a comprehensive worker welfare initiative. The project runs educational programs which teach both local inhabitants and workers about the risks of manual scavenging along with the advantages of using mechanized sanitation services. The educational sessions work to end negative stereotypes about former manual scavengers because they demonstrate their skills and capabilities as workers. [15] Regular medical screenings evaluate the health conditions of sanitation workers who experience long-term health issues from their toxic chemical exposure along with waste contact. Training hospitals create a positive relationship between residents and official representatives along with treating current medical complications.

As part of the initiative the PPE (Personal Protective Equipment) kits containing gloves and surgical masks and safety shoes along with protective uniforms are distributed to all sanitation workers. The PPE kits act as temporary safety measures until total waste automation becomes possible for locations which have yet to implement robot deployment setups. [16] The ONGC initiative demonstrates how organizations can transition beyond welfare programs to achieve lasting systemic improvements in worker welfare.

One of the most outstanding aspects emerges from how this initiative combines skill-building methods with decent employment opportunities. The training program enables sanitation workers to obtain robotic scavenger operation skills which changes their societal status from pitied figures to innovative contributors. The program increases both economic opportunities and self-assurance and social standing for these workers. [17] Through its Vijayawada initiative the ONGC Foundation demonstrates that public sector enterprises can use CSR financing to create technology-based positive social effects that unite technological progress with human development objectives. These programs demonstrate how other businesses and municipal entities can eliminate manual scavenging through their replicable solutions making the elimination of manual labor both a legal requirement and moral duty that needs creative solutions. [18]

V. COMMUNITY-DRIVEN MODELS

Legal reforms combined with technological progress are necessary for getting rid of manual scavenging yet community-driven processes prove vital when confronting the embedded social and psychological elements of this dehumanizing practice. Garima Shakti Sangathan in Madhya Pradesh serves as an outstanding example that demonstrates how grassroots entrepreneurship can change society when people gather together for progress. The Halcrow Foundation together with Karuna supports this initiative that helps ex-manual scavengers find new occupations while restoring their worth as individuals and social members. [19]

Garima Shakti Sangathan functions based on the belief that social reintegrating efforts require simultaneous economic empowerment for all members. Through membership of the cooperative structure women gain independence in their life course by becoming participants in income-generating activities. Members of this organization work within their cottage industry through two notable activities: garment production along with incense stick manufacturing. The chosen activities serve dual purposes since they yield economic stability and bypass social stigma that would normally restrict the women based on their caste or work. [20]

The main component of this program centers its attention on teaching women both essential skills and financial education. The training provides women with abilities to create, design and package products along with fundamental enterprise management skills that let them work independently and handle their profits appropriately. The cooperative enables its members to access micro-loans and financial aid through their program so entrepreneurs can avoid monetary limitations rather than self-employment. The mutual ownership structure of Garima Shakti Sangathan enables members to share responsibility as well as support which brings additional strength to both the community relationship along with sustaining the enterprise. [21]

The psychosocial effects run deeply through the work accomplished by Garima Shakti Sangathan. The women partaking in the cooperative describe how their self-image and community perception of them has changed for the better. Untouchability labels have transformed into public recognition of their entrepreneurial abilities and artisanal expertise. The modification of social status removes the centuries-old discrimination that dirt work has traditionally generated. Members of the cooperative enjoy a protected environment dedicated to expressing their stories as well as providing comfort and planning actions to enhance their life quality regarding domestic violence and healthcare needs. [22]

The accomplishment of Garima Shakti Sangathan reveals that grassroots rehabilitation methods can achieve enduring success. The initiative shows that previous manual scavengers especially women transition from being helpless victims to community leaders for change. The initiative serves as a model example which demonstrates to other organizations and states that community-based rehabilitation programs focused on dignity and economic independence are more likely to succeed in a sustained manner. [23]

VI. SANIPRENEURS IN CHENNAI

The Chennai Metropolitan Water Supply and Sewerage Board launched an empowering CMWSSB program which turns sanitation workers into “sanipreneurs” through its innovative solution in Chennai. The joint project between CMWSSB and DICCI brings together a radical program that simultaneously restores and gives economic power to manual scavengers. The program provides sewer system maintenance through mechanized ownership options to workers which turns their perception from victim to entrepreneur while establishing economic and social advancement opportunities. [24]

Through the Sanipreneurs program multiple institutions proved their ability to establish sustainable and replicable solutions through collaboration between government agencies and industry organizations and minority groups. A project named Sanipreneurs grants previous manual scavengers the legal right to do business through the automated maintenance of urban sewers that typically employ human workers. Manual scavengers gained the opportunity to start businesses as a result of partnership support from CMWSSB which includes necessary infrastructure and machinery together with operational assistance. [25] Through this initiative they gain ownership status instead of manual labor status in the sewer management sector resulting in their complete societal transformation.

The Sanipreneurs initiative benefits tremendously from training programs provided together by CMWSSB and DICCI. Stakeholders receive business-oriented training in addition to training on mechanized cleaning equipment operation skills through the CMWSSB program. [26] The initiative equips previous manual scavengers with essential business owner skills that develop their capability to oversee financial matters alongside tender procurement and team management responsibilities. Through a model based on ownership participants experience enhanced dignity because they can demonstrate pride for both their work activities and their business operations. [27]

Through the program manual scavengers receive financial assistance they can use for business investment to procure equipment for production as well as maintenance of their business operations. The Dalit community members especially benefit from financial inclusion because they used to lack access to traditional lending markets. The Sanipreneurs program offers low-interest loans coupled with subsidized assistance that enables workers with casual unsafe employment to shift toward respectable dignified work opportunities. [28]

Through its program the organization focuses on developing community power as well as achieving social equality for all members of society. The development of successful Sanipreneurs businesses helps manual scavengers fight against caste-based stigma and social discrimination that controlled their existence. The program breaks down the caste-based system which links manual scavenging to untouchability because it now acknowledges these former manual workers as business entrepreneurs who help develop the city. [29]

Sanipreneurs Chennai demonstrates diagnosis as an innovative model which unites business development with automated waste management systems to eliminate hazardous manual labor. The program permits ex-sanitize workers to own their businesses and independence which provides them both economic sustenance and social empowerment. [30] The innovative governance model through inclusive entrepreneurship has proven that proper support allows marginalized communities to break free from centuries of discrimination and poverty.

VII. ROLE OF NON-GOVERNMENTAL ORGANIZATIONS

The human rights of manual scavengers receive essential advocacy from Non-government organizations (NGOs) because these people face discrimination in India. Non-profit groups like Sulabh International and Safai Karamchari Andolan and Navsarjan Trust have worked intensively to educate people about manual scavenging while leading active operations to remove the practice from existence. The combination of advocacy work with social justice interests as well as technological developments alongside policy reforms in multiple organizations leads to substantial improvements in the conditions of manual scavengers throughout India.

The main strategy of these NGOs involves technology promotion to replace human labor in dangerous sanitation duties by offering contemporary solutions. [31] Sulabh International together with other organizations led the development of modern sanitation technologies like Sulabh Toilet System and mechanized sewage cleaning systems that drastically eliminate manual work in sewer systems and septic tanks. These NGOs support the adoption of modern technology which enables direct health risk mitigation as part of their strategy for creating dignified employment opportunities for manual scavengers.

Through their continuous work these NGOs have established links between manual scavengers and available social security schemes. [32] Basic social protection systems have historically refused to admit manual scavengers so they remain exposed to poor health risks and face poverty and social isolation. Safai Karamchari Andolan along with other government bodies collaborates through advocacy networks to achieve legal reforms that integrate manual scavengers into social security schemes PMJDY, APY, and PMSBY. Access to these schemes offers crucial financial assistance with retirement security in addition to healthcare benefits and seeks to eliminate the long-lasting poverty that has affected manual scavengers throughout the years. [33]

The Navsarjan Trust together with other NGOs has initiated social audits and awareness campaigns which both expose manual scavengers' situations while encouraging societal change. These educational efforts operate across urban and rural environments to teach the overall public together with authorities about the unlawful and cruel nature of manual scavenging. [34] NGO media campaigns have produced significant public discussion and media coverage about the subject which forced local governments into prompt responses. The effectiveness of government initiatives for manual scavenger rehabilitation is monitored through social audits which confirm that scheme funds properly support the intended individuals. [35]

The organizations run their programs through empowerment and rehabilitation methods beyond simple advocacy work. Non-government organizations teach manual scavengers advanced occupational skills and deliver psychological service alongside trade education to let them build new career paths. [36] Through their work NGOs enable the preservation of dignity by providing routines which connect these individuals to their communities where they gain both meaning and self-appreciation. [37]

Nationalist Groups have played an essential role in fighting manual scavenging activities across the country. [38] The organizations Sulabh International together with Safai Karamchari Andolan and Navsarjan Trust lead the battle against manual scavenging through their work in policy development and advocacy coupled with technology promotion and community support programs to create a fairer future for those who perform manual scavenging.

The ongoing dedication of these organizations inspires better practices which establish a model for society-wide struggles against social discrimination. [39]

VIII. CONCLUSION

Manual scavenging as a practice exists as a major human rights violation in India because of its strong connection to caste-based discrimination and social injustice. Technology development together with community engagement programs alongside NGO projects have resulted in significant progress toward eliminating this practice. Through Genrobotics' Bandicoot robot along with the Sanipreneur program and Garima Shakti Sangathan based in Madhya Pradesh India has achieved two essential outcomes which include sustainable income opportunities and social care for former manual scavengers. NGOs including Sulabh International and Safai Karamchari Andolan and Navsarjan Trust work to press for policy improvements while both elevating public understanding about this issue and ensuring proper access to social security services in order to boost the outcomes of rehabilitation programs.

The total elimination of manual scavenging depends on a combination of legal enforcement with technological development and community engagement together with social and economic support. The government needs to strengthen its implementation methods by establishing continuous monitoring and responsibility tracking systems. Strategic partnerships between public entities and private organizations along with corporate social responsibility options enable large-scale implementation of these solutions.

We need to advance our legislative systems while teaching affected populations essential skills and fight for institutional reform of attitudes along with government policies. Every person should enjoy equal rights together with dignity and opportunities as manual scavenging stops becoming an acceptable social practice.

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