



Technological Interventions and Rehabilitation Frameworks for Eliminating Manual Scavenging

R. Dhivya¹, Dr.B. Someswara Rao²

¹Research Scholar, VEL Tech school of Law, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi, Chennai, Tamil nadu

²Research Supervisor, Professor & Head of the Department, VEL TECH School of Law, Vel Tech, Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Avadi, Chennai, Tamil Nadu

Email ID: vtd1075@veltech.edu.in¹, drsomeswararaob@veltech.edu.in²

Abstract

The practice of manual scavenging is an ongoing and historically deeply rooted type of risky work, which is a manifestation of structural inequality, discrimination based on caste, and systemic failures in governance, regardless of the bans and policy declarations to eliminate it. This paper analyzes the application of technological interventions and the rehabilitation systems as complementary and interdependent measures towards the sustainable eradication of manual scavenging. It states that although mechanization, automation, redesigning infrastructure and digital technologies of governance are needed to ensure that there is no direct contact of the human waste with humans, the technology amount is not enough to resolve the social, economic, and psychological aspects of the practice. The study positions the manual scavenging in its historical and structural backdrop and presents how poor planning of sanitation and social exclusion have continued to promote unsafe work intergenerational. It is critical of emerging sanitation technologies like mechanized sewer cleaning systems, robotics, decentralized wastewater treatment, and preventive infrastructure design, as well as evaluates the drawbacks of these technologies in the lack of institutional capacity and social protection. It further highlighted the significance of combining technological innovation and holistic rehabilitation through the prioritization of the concerned societies in skill building, formal jobs, and inclusive governance. It comes to a conclusion that the eradication of manual scavenging permanently can only be achieved through a holistic model of technological modernization in tandem with social transformation that not only ensures not only better sanitation but also dignity, equity, and livelihood sustainability in formerly marginalized groups.

Keywords: Discrimination; Elimination; Manual Scavenging; Mechanization; Sanitation Technology.

1. Introduction

Manual scavenging remains one of the most egregious contradictions of the contemporary discourse of development with technological progress and the development of the economy coexisting with practices that are simply the violation of human dignity. Manual scavenging continues to reveal the disjuncture between the ideal of constitution, the law and social realities in everyday life. It is not merely a sanitation problem but a multidimensional one, with caste oppression, labor exploitation, failure of public health, and lack of governance. Manual scavengers are habitually subjected to conditions that are life threatening such

as toxic gases, infectious diseases, and physical assault among others, which usually cause early death. In addition to physical suffering, the practice causes severe psychological trauma, which strengthens social ostracism and stigmatization in the self. Over the last few decades, governments and international agencies have come to realize that manual scavenging can only be eradicated through a paradigm shift in the way policies are enacted to be preventive and transformative. Technological interventions have the potential of eliminating human involvement in risky sanitation activities, whereas rehabilitation systems are designed to reinstate



dignity, agency, and socio-economic security of the community. These two dimensions are however often treated separately, which diminishes their efficacy. Without rehabilitation, technology can result in economic displacement and without technology rehabilitation will not remove the causes of the hazardous labor. An integrated and holistic approach is thus necessary. This study highlights that eradication of manual scavenging should be seen as a process of social change over a long period and not a policy goal of short term nature. It needs long-term investment, institutional responsibility and cultural transformation. Through the analysis of technological interventions and rehabilitation structures, the research proposes innovation, guided by ethical considerations and social justice, as a source of dismantling highly established mechanisms of exclusion. The final objective is not merely to stop practising as a manual scavenger but to empower the affected people and societies to engage in all aspects of social, economic and political life, on an equal footing. It is not that the rapid technological advancement has not brought change to the sanitation systems around the world; but this change has never been fairly shared, and the historically unrepresented communities remain locked in perilous and dehumanizing modes of work. Manual scavenging does not exist because it is technically impossible, but in a complicated unity of social apathy, economic exploitation, and institutional inertia. This paradox indicates the necessity to refocus sanitation as a problem of human rights and infrastructural service tightly coupled to the notions of dignity, equality and citizenship. On the public health level, manual scavenging is a silent epidemic. The occupants of this practice experience chronic exposures to pathogens and toxic gases, as well as unsafe working conditions and which lead to high rates of respiratory diseases, skin diseases, musculoskeletal diseases, and early deaths. These health burdens are not just limited to individuals, but to families and communities, reaffirming poverty and exclusion cycles. However, these occupational hazards are rarely recognized and properly addressed by the public health systems, which can be viewed as a wider tendency towards neglect that has its origins in social stratifications.

Therefore, manual scavenging has to be eliminated not only as a sanitation reform measure but also as a measure which promotes health equity. Manual scavenging is a symbol of growth without justice economically. Urbanization, construction of infrastructures, and real estate have intensified the need for sanitation services, although the labor that provides them is undervalued and informalized. The lack of formal contracts, safety assurances, and social protection makes it possible to carry on exploiting the vulnerable workers. To eliminate this contradiction, a development model that internalizes social costs and puts human welfare above short-term economic efficiency is to address the issue. With technologies being aligned to inclusive labor policies, a way out can be seen to achieve a balance between economic growth and ethical responsibility. Introduction of advanced sanitation technologies has created a hope that manual scavenging can be driven to extinction altogether. Nevertheless, technology has to be integrated into a larger social context in order to make a significant change. Technological substitution can lead to reproduction of inequality in new forms without rehabilitation and social reintegration. The displaced workers due to mechanization can find themselves in other low-skill jobs that are equally unsafe, which keeps them in an economically vulnerable situation. Thus, the introduction puts technology not as an end, but as a way to empower human development and social change. [1-3]

2. Historical and Structural Roots of Manual Scavenging

The historical origins of manual scavenging can be traced to the presence of strict regimes of social stratification, which allocated some types of work to individual communities to which those roles were imposed using violence, stigma, and exclusion. Sanitation work became hereditary in many of the societies especially those in South Asia where people had minimal chances of taking an exit. Such jobs were not pursued but dictated and rationalized by religious, cultural, and social standards that dehumanized the workers and legalized exploitation. This institutional force provided a continuous flow of inexpensive labor to meet the cleaning demands and relieved the rest of the society of the ethical duty.



These inequalities were also solidified through colonial city planning where cities were expanded without the allocation of sanitation facilities that were inclusive. Open drains, dry latrines, and poorly designed sewer systems increased, and they were so dependent on manual labor to maintain them. Following independence, despite the introduction of constitutional protections and social justice legislation, sanitation facilities did not evenly spread, especially in informal settlement and rural locations. The priorities in development tended to prefer the visible city modernization projects to the fundamental sanitation reforms, and this continued to keep the same unsafe systems which had to be remedied manually. Replacement of dry latrine cleaning with septic tank and sewer cleaning was not an indication of progress but the escalation of risk. Employees were subjected to narrow areas, poisonous gases like hydrogen sulfide and methane, and abrupt flooding and now suffered many deaths. However, such deaths were seen to be accidental as opposed to system failures. Social stigma made sure that these losses were not publicly discussed. It is important to understand that manual scavenging is a structural phenomenon and not a choice of an individual. It brings out the influence of the state, society, and markets in perpetuating the practice. A change can not be realized with solely technological or legal interventions without the dismantling of these structural foundations. The process of addressing history is thus not an issue of going back to the past but rather acknowledging the processes that still repeat injustice today. Manual scavenging is not a random event or isolated occurrence, it is the product of historically created systems of exclusion that have institutionalized the processes of assigning demeaning work to certain groups of people. The continued existence of the practice indicates how caste-based and class-based hierarchies, which define access to resources, education, and work, survive. The hierarchies do not just work by enforcing blatant discrimination but also by institutional forces that make some kinds of labor to be invisible and disposable. The analysis of the concept of manual scavenging would therefore involve the historical study of the way social power is organized and

preserved. The sanitation systems that were in use in the pre-modern times were very labor intensive, and the labor became stigmatized due to social classification as opposed to technological need. Sanitation work became institutionalized in the systems of heredity occupation over time, providing a slave pool of labor. These arrangements were institutionalized by colonial governments through the development of urban centers without investments in commendable sanitation systems. Instead of abolishing the exploitive systems of labor, colonial rule depended on them to be efficient in costs, further enshrining occupational division. [4-6] This was inherited into the post-colonial era where rapid urbanization was faster than infrastructural reform. The legal systems, which were established after independence formally disapproved of caste-based discrimination, but this was not applied evenly. In insanitary planning, often the emphasis was placed on conspicuous improvements in development at the expense of structural change, so insanitary latrines and unsafe sewage systems remained. Informal settlements tend to be occupied by marginalized communities and were not included in the overall infrastructure planning, so the default solution was still manual intervention. These geographic disparities overlapped with social injustices which contributed to the connection between marginalized identity and risky work. Replacement of dry latrine cleaning with sewer and septic tank work was a change in form but not in substance. As the modern sanitation systems lowered the observable dirt, it brought about new threats due to the overcrowding and fumes. The fatalities caused by sewer cleaning were usually treated as accidents instead of being perceived as foreseeable consequences of systemic negligence. Where compensation systems were in place, they were unsatisfactory and inconsistent, which further solidified the expendability of working lives. The structural analysis of the problems shows that manual scavenging still exists as a problem due to the diffusion of responsibilities among various actors, such as municipalities, contractors, households, and informal employers. This dispersion enables every actor to evade responsibility as they enjoy cheap labor. Legislation against manual



scavenging tends to spread this piecemeal task, and so does not concern systemic structures, but individual actions. As a result, policy implementation is poor and prosecution is done with impunity. Placing the manual scavenging in this historical and structural context, the research highlights that it is impossible to eradicate it by one intervention alone. The tradition is supported by intertwined networks of social inequality, ineffective urban planning and the exploitation of labor. It should be handled then by structural change in such a way that it reconstitutes the value, organization, and control of sanitation work. [7-10]

3. Role of Technological Interventions in Eliminating Manual Scavenging

Technological interventions constitute a drastic change in the human-reliant sanitation facilities to the automatized and mechanized interventions, which focus on safety, efficiency, and dignity. These technologies are, at their essence, intended to remove human intervention within the risky environments. Sewer cleaning machines, desludging systems using vacuum and high pressure water jetting machines have revolutionized the way sanitation is carried out in most urban areas by eliminating direct contact with waste. These tools can significantly reduce occupational risks and enhance the overall level of sanitation when deployed in a proper way. In addition to simple mechanization, new technologies including robotics and sensor based systems are transforming sanitation management. Sewer robots are capable of moving through sewer lines and identifying obstruction points as well as clearing debris with cutting tools by robots which have cameras. The sensors of gases and real-time monitoring systems give early warnings of dangerous situations and eliminate fatal accidents. Artificial intelligence also supports predictive maintenance, which can help authorities deal with issues before the problem turns into an emergency that requires unsafe manual intervention. The technologies with infrastructure orientation are also significant. Manual scavenging is structurally dependent on the redesign of the toilets, drains and waste treatment systems. Bio-digester toilets and decentralized wastewater treatment systems are some of the technologies which are not

only free of manual manipulation but also help in environmental sustainability through the recycling of waste materials into energy or compost. These inventions support sanitation objectives with other higher magnitudes like resiliency and efficiency of climate and resources. Nevertheless, technology should be put into perspective. The remedies suitable in city contexts with high levels of income might not be applicable in the crowded urban slums or the countryside. Hence, flexibility, cost-effectiveness, and engagement are vital. The role of local innovation ecosystems with the assistance of public investment and research institutions can be significant in the creation of technologies that reflect local spatial and social realities. By transforming technology into a public good instead of a commercial commodity, the opportunities in the technological sector to eradicate the manual scavenging process broaden significantly. Technological innovation offers completely new possibilities in the sphere of sanitation management, opening up a whole new horizons of eradicating the practice of manual scavenging altogether. The current sanitation technologies aim to substitute human interaction with waste materials by mechanical, automatization, and smart monitoring systems. These innovations signify the transition of a labor intensive concept of sanitation to a safety, efficiency and environmental sustainability based system. When applied holistically, they question the notion that hazardous labor is inevitable. Mechanized sanitation equipment has changed the way sewer and septic tanks are maintained by introducing high capacity machines that are able to complete the work that was done by people before. Desludging systems that use a vacuum, robotic cutters and high-pressure jetting machines are able to run under conditions that would kill human beings. These technologies are beneficial to not only reduce the number of accidents that harm workers but also enhance operational efficiency because of the lack of downtime and emergency interventions. Their use demonstrates an understanding that human life cannot be sacrificed to safe sanitation management. The use of advanced robotics and sensor technologies widens the range of safe control over sanitation. Robotic inspection units



which have cameras and gas sensors are able to monitor the conditions in the sewer in real-time, which prevents the need to react to crises with preventive maintenance. Robots can process information to forecast congestion and structural malfunctions, which will minimize the risk of unsafe scenarios. These technologies move sanitation governance out of the reactive realm of sanitation management to the predictive realm of governance. The redesign of infrastructure completes the shift to mechanization with the handling of root causes. Maintenance-oriented sanitation systems minimize the need to have invasive intervention. Decentralized wastewater treatments, bio-digesters and twin-pit latrines reduce the build-up of dangerous waste and ensure environmental sustainability. Technological interventions have been specifically useful in highly populated or constrained resource environments where they are hard to sustain through centralized infrastructure. Technological abandonment is a result of inadequate procurement without training, maintenance planning and accountability. In addition, technology should be social. Focusing on the communities that are impacted in the operations and management of technology makes innovation a means of empowerment and not a means of exclusion. Therefore, technology is essential in not only eradicating dangerous work but also the rebranding of sanitation work as a skilled, dignified and socially appreciated undertaking. [11-13]

4. Limitations of Technology -Driven Approaches

Although the use of technology is inevitable, failure to social plan and instead over-rely on technology may lead to unintended outcomes. Inequality in the distribution of technological benefits is one restriction. The more affluent cities tend to be equipped with superior equipment, and disadvantaged neighborhoods still use outdated systems. This spatial injustice supports the social hierarchies that are in place, and jeopardizes the universal eradication measures. The other challenge is the institutional capacity. Acquisition of machines is inadequate unless the local governments have trained staff to operate, maintain and manage the

machines. In numerous situations, costly equipment is under used or inoperative because of poor maintenance and absence of technical expertise. Also, the lack of unity in governance arrangements tends to lead to a lack of responsibility over the sanitation services and this undermines accountability. Economic interests are also a hindrance. Mechanization can be opposed by contractors and other unscrupulous companies that are accustomed to getting low-cost manual labor. Informal labor arrangements enable the employers to escape safety laws and social security provisions, which provides reason to keep employing unsafe activities. The adoption of technology can be surface-level in the absence of stringent practices and formalization of labor. Above all, technology-driven solutions usually overlook the human aspect. Manual labor is substituted by mechanization without any rehabilitation, and the former worker can be left without a new job. This may intensify poverty and push them into other types of exploitative work. Thus, technology needs to be integrated into a wider social context that puts the welfare of people over the efficiency of operations per se. Technology-based institutions have been found to have significant limitations in implementing technology-based methods of sanitation despite their transformative potential. Among the greatest issues is the disparity in technological infrastructure as this is frequently reflected in the socio-economic differences that are already present. Advanced sanitation facilities are more likely to be installed in urban centers and the rich neighborhoods whereas the informal settlements and rural areas continue to rely on the old systems. This unequal access discourages societal eradication initiatives and supports spatial and social marginalization, which permits manual scavenging to continue in marginalized areas. Limitations on institutional capacity potential also decrease the efficiency of technological interventions. Local governments are often poorly equipped in technical skills to run, service and maintain modern sanitation equipment. In most instances, machines end up being in a poor condition occasioned by a lack of training, ineffective maintenance funds or a divided administrative accountability. In cases where



equipment fails, authorities can turn back to manual labor as a short term means of solution, thus continuing to promote unsafe procedures. This cycle emphasizes capacity building and long term planning as well as procurement. Technology is also adopted based on economic incentives. The short-term cost of manual labor can be less than mechanized labor, especially in the informal labor market where safety measures are not strictly imposed and other social security responsibilities are not well implemented. Lack of accountability mechanisms may encourage contractors and other privately operated companies to resist mechanization to maintain profit margins. This opposition shows how the unfettered market logic may be detrimental to moral and social goals. There are also technological design limitations that should be taken into consideration. Most machines are created to be used in standardized urban patterns and can hardly perform in narrow lanes, overcrowded settlements, or rough landscapes. In the absence of adaptive design and local innovation, such technologies cannot meet the realities of high-density informal set ups where manual scavenging is most widespread. Moreover, the use of imported or proprietary technological solutions may introduce high costs and decrease in sustainability. The lack of attention to the human dimension may be considered the most important restriction. Whenever technology substitutes human labor and does not accompany rehabilitation processes, laborers can be affected economically and socially displaced. Vulnerability may be further exacerbated by the loss of livelihood due to lack of alternative opportunities driving people to engage in other forms of exploitative labor. Technology should thus not be seen only as a technical solution but as a larger social change agenda that lays emphasis on human welfare and equity. [14-17]

5. Rehabilitation Frameworks for Sustainable Elimination

The moral and practical basis of any attempt to end the practice of manual scavenging is the rehabilitation structures. They realize that the victims are not just employees who require an alternative job but citizens who deserve justice, dignity and opportunity. The first stage of successful

rehabilitation is the legal acknowledgment of the wrongdoing and liability. Laws should not be prohibitory but proactive in restitution, protection and empowerment. Sustainability revolves around economic rehabilitation. Sustainable livelihoods cannot be replaced by short-term payment. Skill development programmes should be linked to demand, industry and culture. Rehabilitation is consistent with technological change when the former manual scavengers are trained as sanitation technicians, machine operators, or supervisors. In addition to sanitation, diversification in areas of construction, manufacturing, services and entrepreneurship increases opportunities and minimizes vulnerability. Education enhances a multi-generational effect of rehabilitation. By ensuring continuous education to the children in the affected families, the repetition of the occupational stigma is avoided. Adult education improves agency and involvement in the life of the state. Social rehabilitation in the meantime deals with effects of discrimination less evident but just as harmful. The recognition of the injustice publicly, accounts of inclusion, and anti-discrimination efforts contribute to the reconstitution of the general attitudes and minimization of stigma. The health and social security plans identify the long-term expenses of perilous work. The manual scavengers have chronic diseases, disability, and low life expectancy. Extensive medical treatment, retirement, and housing are thus not welfare but reparations of structural damage. Rehabilitation is effective once people are not determined by their former profession but who they want to become and what they are able to do. Rehabilitation frameworks cannot be done away with as far as making sure that when manual scavenging is eradicated, there is a meaningful positive social change. Rehabilitation should be conceptualised as a multi-dimensional and multi-tiered process, which caters to economic protection, social dignity, health, and empowerment, more than a restricted welfare programme. Rehabilitation is, in its nature, a sort of restorative justice that recognizes past harm and tries to fix the effects of it. Economic rehabilitation is at the heart of the process. An alternative to sustainable livelihood should be consistent, respectable, and



market-oriented. The training programs must be directed toward development of skills which results in formal employment, such as in the operation and maintenance of modernized sanitation systems, to work as machine operators, machine maintenance, supervision, safety management, etc. In addition to sanitation, diversification in other areas like construction, manufacturing, services, and entrepreneurship will decrease the reliance in one industry and increase resilience. Credit, cooperative models, and long-term income support in the times of transition are the keys to the stability of an economy. Education is an effective means of interrupting intergenerational exclusion cycles. Adult education increases literacy, confidence, and civic engagement whereas educational support of children averts occupational inheritance. Access to high-quality education, mentoring, and scholarships provide an opportunity to grow up and widen the life options. Rehabilitation through education does not only tackle economic results but also social perception and self identity. Social rehabilitation is about breaking stigma and restoring dignity. The social attitudes that support manual scavenging are so deep rooted such that they demean some type of labor and the individuals involved in them. Social reforms of norms rely on public recognition of unfairness, anti-discrimination movements, and non-discriminatory stories. Community integration programs and leadership development enable the impacted people to engage in decision making activities that define their lives. Health and social security programs acknowledge the physical and psychological long term impact of hazardous sanitation occupation. Extended healthcare, frequent medical examinations, pensions, and housing assistance are all vital elements of rehabilitation based on justice. These actions recognize that what is being spent on the scavenging process goes way beyond the duration of employment and needs a long-term institutional reaction. Rehabilitation only becomes successful when people are no longer characterized by their former job but allowed to follow aspirations with dignity and safety. [18-21]

6. Integrating Technology and Rehabilitation: A Holistic Approach

Technology combined with rehabilitation converts the efforts of elimination into empowerment. Technology is used to be inclusive and not to be shut out when the former manual scavengers are brought to the heart of sanitation modernization. The certification training programs that prepare and recognize the affected individuals as qualified operators open avenues to official employment and social acceptance. Control over technology and resources is also made more democratic through community-owned sanitation enterprises. This integration is enhanced by participatory governance. Engaging the communities that have been affected in planning, monitoring, and evaluation will make sure that the interventions are addressed according to actual needs and not theoretical goals. It also introduces confidence between institutions and a community that has historically been neglected. Combined models indicate that both social justice and operational efficiency are not competitive aims but complementary ones. The combination of the technological interventions and rehabilitation models is the best avenue to the ultimate eradication of the manual scavenging. Instead of approaching technology and rehabilitation as two processes or as sequential ones, the integrated approach pairs innovation with social empowerment. This convergence makes the process of sanitation reform no longer a labor substitution process, but an inclusive development process. Transforming manual scavengers into skilled laborers and technicians would provide a direct connection between mechanization and restoration of livelihood. Professionalization through certification programs, formal employment avenues, improves social recognition and economic stability of sanitation work. When individuals undergoing such transformations turn into the custodians of sanitation technology, they acquire the agency and control over the previously symbolic systems. Community-based sanitation enterprises provide an especially good example. These enterprises provide benefits more evenly and enhance local responsibility by facilitating shared ownership and control of sanitation services. A community involvement in planning and monitoring will make sure that



technological solutions are context sensitive and receptive to lived realities. These participatory models also instill trust between institutions and communities who have historically been neglected. Policy coherence is also necessary in integration. Formalization of sanitation services should be accompanied by rehabilitation benefits so that workers would move to a secure job, having a safety standard and social security. Information systems that monitor the movement of technology, employee involvement, and the rehabilitation findings are effective in fostering transparency and responsibility. As an institutionalization of elimination takes place, the attempts can be tough to resist a political and administrative change. Finally, the holistic approach sees technology and rehabilitation as complementary to each other. The technology eliminates dangerous work, and with rehabilitation, people who have traditionally suffered under injustice are not left behind in the modernization process. They both transform sanitation into a place of decency, expertise and social appreciation. [22-25]

7. Institutional and Governance Responsibilities

Organizations determine the failure or success of elimination efforts. There should be a strong political will, sufficient funding, and rational policy framework. The inter-departmental coordination makes sure that the policy of sanitation, labor, health, and social justice operates in unity. Clear surveillance and autonomous assessment discourage formal conformity and, instead, encourage accountability. Civil society, academic and the private sector partnerships boost innovation and oversight. Nevertheless, the state should remain with the major responsibility and elimination activities should not be motivated by profit that should be guided by people. Finally, the effectiveness of the governance defines whether elimination is irreversible or can be reversed again. The institutions are decisive in determining the results of elimination efforts. Sound governance systems make sure that technological and rehabilitation projects are carried out in an effective, fair, and sustainable manner. To implement the legal directives into practice, political commitment is required especially in the distribution of resources and accountability. Co-ordination among the

departments is vital because the sphere of manual scavenging overlaps with the sanitation, labor, health, housing and social justice policies. Lack of unification in governance leads to loopholes where there are clear gaps of responsibility and where abuses continue. Coherent policy frameworks and responsibilities enhance execution and monitoring. Capacity building is needed in local governments so as to handle complex sanitation systems. Procuring, maintenance, and data handling, and community involvement training are all effective ways to improve institutional effectiveness. Symbolic compliance is avoided through transparent monitoring mechanisms and independent audits are used to enhance continuous improvement. The civil society organizations are crucial in advocacy, awareness, and independent evaluation, which complement the state work. Governance should also deal with power relations in the sanitation labor markets. Regulation of contractors through formalization of employment, safety standards and enforcement minimizes exploitation. Elimination becomes legitimate and sustainable when human rights are given priority by institutions in addition to efficiency.

Conclusion

The abolition of the manual scavenging determination tests the societal readiness to equality and human dignity. Technological interventions offer the tools to eliminate human beings in the dangerous work, and rehabilitation frameworks promise that the past victims of injustices would not be left behind. The combination of these strategies in a holistic, rights-based method can eliminate the centuries-old structures of exclusion. The actual victory of elimination does not rest in the lack of manual scavenging per se but in the existence of dignity, the opportunity and justice to everyone. Ending the practice of manual scavenging is an immense challenge to the social obligation to justice, equality and human dignity. The technological interventions can give the means to eliminate the human being in the dangerous, unsanitary work but cannot make a long-term difference alone. The frameworks of rehabilitation are predominant to deal with the historical, economic and social aspects of the practice



making sure that the people affected are empowered and not displaced. Sanitation reform is redefined as a process of social transformation that involves the integration of technology with rehabilitation. It also recognizes that the practice of manual scavenging is not only an issue of technical failure but also a structural inequality. Innovation can be used in a way that matches justice to ensure that societies break the system of exclusion that has been deeply established and provide opportunities and dignity. Even the real achievement of elimination is not just in the lack of manual scavenging, but in the existence of inclusive institutions, balanced infrastructure and empowered communities. When the technology is used to benefit the people and the governance to administer justice, the elimination of manual scavenging will not only be possible, but irreversible.

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