

# Social Innovation Practices In Sustainable Waste Management: Case Study Of Successful Social Enterprises In Ahmedabad

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**Abstract:** This paper aims to understand the role of social enterprises in social innovations that facilitate, promote or challenge the environmental sustainability in the city of Ahmedabad. In order to realise its aim, the present research adopts a qualitative case study approach to understand the social innovations adopted by social enterprises for environmental sustainability. For the present study, three successful social enterprises in Gujarat were selected by using purposive sampling and in-depth interviews were conducted. The selected social enterprises have all been in operation for an extensive period and have acquired significant recognition for their contribution in achieving sustainable social change at local, national and international level. The cases are "Ekam Eco Solutions", "Let's Recycle" and "Waste-Pro". After the interview, the cases were analysed with respect to different factors such as motivational factors, entrepreneurial journey, support and challenges in managing social enterprise and the contribution towards environmental sustainability which in turn helps in achieving sustainable development goals. The findings of the study also discuss the level of social innovations adopted while designing, developing and using services/products for target groups. The findings of the study reveal that protecting the environment is paramount for the survival of mankind and therefore, only when the environment is looked after, can mankind survive. Thus, the study provides a theoretical and practical contribution to the role of social innovations implemented by social enterprises and offers useful reflections for policy makers and social innovation education.

**Index Terms :** Social Entrepreneurship, Social Innovation, Environmental Sustainability, Waste management

## 1. INTRODUCTION

The topic of social innovation is not new. It has attracted the attention of civil society organizations and scholars from different disciplines and witnessed the growing body of academic literature in sociology, economics, management studies and other interdisciplinary studies (Pol and Ville, 2009; Olsson and Galaz, 2012; Haxeltine et al., 2017). Further, policy makers also recognised social innovation as an option to find solutions to issues arising out of economic crisis, social problems and failure of welfare state (Borzaga & Bodini, 2012, p. 3). In view of this broad interest, the European Commission defined the concept of social innovation as follows: "Social innovation can be defined as the development and implementation of new ideas (products, services and models) to meet social needs and create new social relationships or collaborations. It represents new responses to pressing social demands, which affect the process of social interactions. It is aimed at improving human well-being. Social innovations are innovations that are social in both their ends and their means. They are innovations that are not only good for society but also enhance individuals' capacity to act." (European Commission, 2013a, p. 6) In order to obtain a better understanding of social innovation, it is useful to embed it within established innovation theory, with a particular focus on how innovation is supposed to affect social outcomes. Adopting social innovation practices contribute to a social enterprise's competitiveness as providing service of a sustainable nature is a bigger for such enterprises than maximising profits for its shareholders. For Schaltegger et al., (2016), business activities are responsible for many environmental and social problems; therefore, concerns towards sustainability are of very important. Similarly, Dyck and Silverste (2018), believe that, the world's awareness of social and ecological crises has grown, and thereby necessitating adoption of more sustainable lifestyles. In order to achieve sustainability in terms of social enterprise services and growth of their organizations, they have to work as per their vision and adopt social innovations continuously. Szekely

and Strebel (2013) define sustainable innovation as the creation of something new that improves performance in the three dimensions of sustainable development: social, economic and environment. Such improvements are not limited to technological changes, but also include changes in processes, operational practices, business models, thinking, and business system. Hansen et al. (2009) developed a model known as Sustainability Innovation Cube (SIC) which will help us in evaluating the effects of sustainable social innovations. This model includes Triple Bottom Line dimension which focus on social, economic and environmental effects of innovations. Second dimension of model is life cycle which relates to effects of technologies or products in different stages of life cycle. The third type of innovation dimension is effects of business models. Through the three dimensions of Hansen et al. model, we can identify practical implications for the social enterprises in order to adopt social innovations by integration of sustainable development, considering the needs of stakeholders and using sustainable business models to expand the market for these innovations. Bocken, Short, Rana and Evans (2014) proposed eight sustainable business model archetypes, which were further grouped under three dimensions of technological, social and organizational innovation. This particular archetype provides proper mechanisms and solutions that can contribute to sustainability, especially create value from the waste, maximise benefits from waste material and energy efficiency, to adopt business strategies to society and environment and to develop a scale of solutions for waste management. Table-1 illustrates the model:

Innovation	Archetypes	Definition
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Technological	To maximise material, and energy efficiency; To create value from waste;	To do more with fewer resources, reducing residues, emissions and pollution. To reduce environmental impacts and increase business resistance, by indentifying resource limitations associated to non-renewable resources and current production system.
Social	To deliver functionality instead of ownership; To adopt a leadership role; To encourage sufficiency;	To provide services that meet users' needs, without physical products. Proactive involvement with interested parties, in order to ensure long-term health care and welfare.
Organizational	To adopt businesses to society and environment; To develop a scale of solutions;	To prioritize the delivery of social and environmental benefits, instead of maximising economic profits (i.e. the interested party's value), through a close collaboration between the company and local communities and other interested parties.

## 2 REVIEW OF LITERATURE

The term, "social entrepreneurship" is a fairly new concept, particularly within the realm of academic research. Austin, J, Stevenson H, & Wei-Skillen J (2006) defined it as an entrepreneurial activity with an embedded social purpose. It's widely recognised as a global phenomenon, addressing basic needs of society which are neglected in the race for development in the mainstream. Reis (1999) suggest that social entrepreneurship implies applying well established business practices to the operation of non-profit organisations. As cited in Borzaga and Defourny, (2001); Davidsson, P., & Henreksson, M. (2002), the process of entrepreneurship includes four main components; recognition of opportunity, development of the solution to the problem, actualization of the solution, and harvesting. Another important feature of social entrepreneurs is they use social innovations, design products or services to meet the unmet needs of target groups or consumers who may be willing or able to pay (Scholtz, (2010), Mishra, S.,Tolia, M., and Ambati, N. R. (2016). The innovative product they bring to the market must serve underserved needy or market and the price ratio must be attractive and accessible (Christensen et al., 2006; Hart, 2005) and function efficiently as per the requirement of beneficiary group (Prahalad, 2005). Further Narracott and Norman (2011) study found that social entrepreneurship business models with human-centered design will enable scaling up of business while providing service at low cost and thus allowing the poorest of the poor to have access to waste management and sanitation facilities. Narracott described in his study how the low income groups in Ghana were able and willing to pay for sanitation services designed by social enterprises. However, from the Indian point of view, the British Council Report (2016) findings show that out of 498 social enterprises, 40% of these organizations have the objective to enhance environment sustainability, specifically waste management system and to provide better quality of life. This is because waste management is one of the contemporary challenges posed to

mankind and ergo, a number of national and international organizations are for innovations through social entrepreneurship. The environmental factor is one of the major elements in the emergence of social entrepreneurship (Sharir and Lerner, 2006). And the relation among environment and social entrepreneur is very significant in the society (Mair and Marti, 2009; Townsend, 2008). Basically, the objectives of the entrepreneurs to support food and water shortages, reduce environmental pollution, decay and sustainability by developing and employing innovative and affordable technologies (Larson, 2011; Shepherd and Patzelt, 2011). There are various authors who have studied about environmental sustainability, and recognizing the need to use natural resources effectively (Epstein and Buhovac, 2014; McMullen, 2011). Further, Falck and Heblich, (2007) argued that, corporate social entrepreneurship move towards society and environmental responsibilities. Especially in the western countries, social enterprises focused mainly on environmental awareness towards conservation. Vickers (2010) found that, social enterprise environmental activities in the UK were mainly centred around recycling and encouraging the sustainable use of resources (42% of those with environmental goals), but also included improving urban environments (29%), conservation goals (23%) and raising environmental awareness (20%). Hashimoto (2016) studied on SWaCH and INORA which is social entrepreneurship. The study argued that to improve waste pickers working conditions, an incorporated approach should be adopted. The coordinated approach will consolidate waste pickers. Citystrong waste administration program and monetarily manageable social business enhance together. The said study delineates clashes between private associations and waste pickers union. Without considering the mix of waste pickers union to the general population framework, the expanding generation of waste in Pune and the absence of consistency in government's intercession in tending to the issue is leading towards privatization of strong waste administration. Zaman, (2012) studied zero waste management and did two case

study analysis, one from Australia and another from Bangladesh. The author argued that waste management through social entrepreneurship is an opportunity to add to socio-economic and environmental benefits in society and minimizing inequity. Besides, creating job for local people, it also provides a platform to share ideas, promote environment best management practices and exchange functional products. In this model, the organizations act as a service provider to the community by recycling, reusing, repairing, composting and retailing goods to local people and circulating the material flow within society for a longer time period. Another example of social innovation adopted by social enterprises in waste management is Terra Cycle, they work on recycling waste in US. It was founded in 2001 by Tom Szaky (Ambani, P., Szaky, T., and Adebisi, B., 2015). The idea behind the organization is to increase recycling rates of the world's discarded waste remains, as it is posing a challenge to available resources and the health of our planet. The organization has also developed proprietary recycling processes for waste streams from potato chip bags to cigarette butts and it further mobilizes individuals to collect previously unrecyclable waste and incentivizes corporations to sponsor recycling of the new waste streams. As of till 2012, the achievements of the organization are over 80,000 tons (2.5 billion units) of waste diverted from landfills or incineration, between 40% – 80% carbon savings on up cycled and recycled products. Evidence from Indian reports indicates that there are several social enterprises which have entered into waste management, sanitation market and providing services to the poor (Ramani et al. 2012; Sijbesma et al, 2010). These organizations are well-known for their role in promoting and diffusing social innovation products among the deprived sections of the society. Thus, they are actively engaged in the creation of and promotion of waste management, sanitation products and services. Addressing waste management problems with the help of social innovations designed by social enterprises contributes to the realization of sustainability and global sanitation goals which can generate a wide range of positive social, economic and environmental impacts. But unfortunately, there is a dearth of research in the field of social entrepreneurship in the waste management sector. Based on a review of studies, the researcher has tried to relate the adoption of social innovation practices to the performance of social enterprise through the following theoretical framework. Further, by adopting Bocken, Short, Rana and Evans (2014) theoretical model to the current study to evaluate social innovations of selected social enterprises in order to analyse the following dimensions: create value from the waste, maximise benefits from waste material and energy efficiency, to adopt business strategies to society and environment and to develop a scale of solutions to waste management and adoption of a leadership role.

### 3. RESEARCH METHODOLOGY

The present research investigates how waste management social entrepreneurs develop and integrate social innovations successfully? Secondly, it also aims to answer and to explore the nature of social innovation integration of social enterprises in addressing environmental issues and achieving sustainable social change at local, national and international level. Many scholars suggest that "inductive method" is especially useful for exploring the role of sustainable social innovation adopted by social enterprises, where there is dearth of research and which is considered to be as its nascent stages (Parkhe, 1993;

Perrini et al. 2010). The study adopted a qualitative case study approach and recognised successful social enterprises which are working in waste management in the city of Ahmedabad, Gujarat, by using purposive sampling. The cases were selected after identifying their strength in terms of experimenting with sustainable social innovation practices. Three issues were especially taken into consideration: the nature of sustainable innovative practices adopted by social enterprises in waste management; business management strategies used in order to reach maximum number of target groups and also, the impact created by social enterprises contributing towards environmental sustainability. Based on this search criterion, three cases were selected. They are Ekam Eco Solutions, Waste-Pro, and Let's Recycle. The data for the study was collected during the year 2018 for two months. Each social enterprise was studied for 20 days on an average and in addition; the researcher also included various stakeholders from each social enterprise. The in-depth interviews conducted with respondents lasted between 60 to 120 minutes. The case narratives of the study and transcribed in-depth interviews were analysed using various coding techniques. Further, the researcher derived several concepts and categories from the different codes from narratives. This data analysis process was highly iterative (Corbin and Strauss, 1990). And at the end the data was analysed based on multiple perspectives emerging from different themes which were presented in findings and discussion of the study.

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## 3 RESEARCH FINDINGS

### Ekam Eco Solutions

Ekam Eco Solutions Pvt. Ltd. ("Ekam") is a social enterprise established in May, 2013. It is born out of desire to provide ecological solutions in the area of water conservation, sanitation and sustainable habitat and nutrient recovery. Ekam has identified the gaps not only in innovation and developed various products or innovative solutions, but also aims to enhance the sustainable livelihoods and sanitation conditions of target beneficiaries in both rural and urban areas. Currently the social enterprise is having branches in Delhi, Ahmedabad, and Mumbai.

Innovation	Archetypes	Value creation
Technological	To maximise material, and energy efficiency and create value from waste	Ekam's social enterprise product 'Zerodor' which makes a urinal waterless which helps in saving water. Through the other innovations adopted by the organization they can create natural fertilizer through waste generated by human species and increase food grains products and restricts use of chemicals and factories which use them resulting in depletion of environment

Innovation: Ekam aspires to design and create green products that are easy to use and minimize sewage. Banerjee mentioned that "he didn't want to work on conventional sanitation systems but on an ecological and sustainable system. After using the flush, urine and water gets mixed. All this lands up in the river bodies, whether treated or untreated.

Therefore we felt there is a need for an intervention—a system which was eco-friendly, non-polluting, sustainable and saves water”. These small and specific goals give motivation to the members of this social enterprise work towards something bigger that affects the society at large. With these goals they designed various innovative products such as Waterless Public Urinal Kiosk, Green Waterless Urinal, and Self-constructed urinal. Further, by using our products we can work on 29,000 million liters of waste generated by municipal waste can be used as fertilizers for the agriculture sector. Further, the founder also stated that “human waste is excellent for growing tomatoes in your garden as fertilizers. By using creativity and innovative methods we will add the nutrients in human waste to good use. Our products help in reducing the usage of flush”. It was observed that the adoption of modern flush urinal saves water that can quench the thirst of 14 families in Rajasthan for the complete year. Business Management: Other than relying on CSR funds, Ekam, generates revenue by selling the products. The cost for designing these products is very low and design is very simple in nature and constructed with locally available resources. One of the most innovative products designed by Ekam is named Zerodor, which has high demand as it also reduces the cost of design and abuse of resources and creates decomposing baskets for a house to reduce the amount of wastage anywhere and multiple products for each goal. Further, there are a number of companies who are interested in expanding the market for these products and gain more profits. Social Impact: When we look at Ekam’s contribution towards sustainable development, the whole world is their target beneficiaries and getting benefits of their products such as Zerodor, which makes a urinal waterless helps in saving water although our planet is 70% covered in water but usable is very less. The other products of Ekam help in saving water that can be used for other purposes that benefits whole planet. Further, they have products through which one can create fertilizer through their human waste and those natural fertilizers can help in growing plants or vegetables or grains which helps in hunger problem as well as global warming as they promote use of natural products in day to day life which restricts use of chemicals and factories and thereby resulting in depletion of environment and that is an impact they indirectly try to create for the whole world through their products. Therefore, the social impact created by Ekam cannot be restricted only to the benefit of a certain group or individuals because these solutions enable us to protect our whole planet from severe environmental pollutions. Their efforts were recognised and awarded in the category of Social Impact presented by Global Corporate Social Responsibility (CSR) Excellence and Leadership Award 2015.

### Waste-Pro

With industrial revolution and global commercialisation, humans have started abusing the environment and putting their own lives in jeopardy with excessive pollution and waste. One common phenomenon which can be seen on Indian roads of stray animals eating plastic bags in search of food sparked the idea for Ms. Phani Trivedi to address the menace of waste management and start a venture of her own. She has also experienced the inaction of the municipal corporation in treating waste effectively. To address the issue of reckless waste disposal in metropolitan cities of India, Ms. Phani Trivedi came up with the idea of a solid waste management

programme.

Innovation	Archetypes	sustainable waste management / Value creation
Social	To adopt a leadership role; To encourage sufficiency;	This model ensures that green waste like food and paper are scientifically processed and disposed in houses without reaching any landfills or municipal waste disposal areas. Rearing a venture in a male dominated and government-centric sector was not an easy decision for Phani as a woman entrepreneur. She often conducts capacity building programmes, awareness events at various schools, colleges and also professionals and housewives about sustainable livelihoods.

Innovation: She started Waste-Pro in 2011 to treat solid waste in households and industrial set ups. Waste-Pro’s main initiative has been to treat waste in a decentralized manner at its point of generation itself. This model permanently solves the problem of waste generated by industrial units, household establishments and educational institutions on an everyday basis. The waste is treated in the same place it is generated irrespective of whether it is in the garden of a bungalow, or a storehouse of an industry. This prevents the waste from reaching any landfill site, so as to ensure that there is less burden on the already overflowing landfills in India. This model ensures that green wastes like those generated from food and paper are scientifically processed and disposed in house without reaching any landfills or municipal waste disposal areas. The vermin compost generated by way of- the waste disposal model is fit for use in gardens or farms. The difference between Waste-Pro’s green compost model and the organic fertilizers sold commercially is that the commercial materials are processed from the mixed garbage received from municipal corporations. The municipal waste may also contain glass, metal, plastic or electronic waste. In the waste-Pro model, the waste being the compost is created from the waste of that particular industry or household itself is completely organic. Business Management: Rearing a venture in a male dominated and government-centric sector was not an easy decision for Phani as a woman entrepreneur. She kept the failures in check by reminding herself of the passion that inspired her to start the venture in the first place and did not doubt her decision to become an entrepreneur till the first 1000 days of the venture were over. Phani operates her enterprise individually from her home itself, and is yet to hire her first employee. The accounting and product designing requirements are outsourced to specialists. The team Phani usually works with includes labourers & supervisors appointed by the clients themselves. Phani invested all her Provident Fund savings to generate the seed capital for the venture. Products like kitchen waste composting kits are sold to bungalows, farm houses, industries & organic farmers to generate funds. Additionally, earthworms and readymade vermin compost are also commercially sold. The average sale cycle of Waste-Pro ranges from one month to six months. Waste-Pro has made foray into offering tailor-made, on-site solid waste solutions to industries/ individuals and selling of vermin compost to individuals and bulk users (Rao, A.N and Kapadia, K., 2017). The technical know-how for the product is

courtesy Concept Biotech, a solid waste management company operating in Vadodra since the last decade. Social Impact: Waste-Pro social enterprise main vision is giving back what belongs to nature and is the right solution for all environmental problems. The founder of the venture often conducts capacity building programmes, awareness events at various schools, colleges and also professionals and housewives about sustainable livelihoods. In her interview she stated that “the main motto Waste-Pro abides by is to create model projects that are duplicable, sustainable and scalable. Waste-Pro attempts to contribute significantly to the Green Mission, Clean Mission of the State and to act as a change agent in the area of zero waste management”. She also stated that “only when the environment is looked after, can mankind survive, and hence it is important for the current generation to realise the urgency of effective waste management to ensure sustainable livelihoods”. Phani won the best stall award at Vibrant Gujarat 2013 and was officially made part of the stakeholder’s meeting in drafting the new solid waste management rules 2013 of the Ahmedabad Municipal Corporation.

### Let’s Recycle

Let’s Recycle is an Indian social enterprise which was established in 2012 by Mr. Sandeep Patel, CEO of NEPRA Resource Management Pvt Ltd. The mission of Let’s Recycle is to provide solutions to one of the most pressing problems of the world that is climate change. They have identified that this problem can be solved only by integrating principles of environmental sustainability into business activities. Additionally, this enterprise is providing livelihood opportunities to rag-pickers by making them as part of their business activities which in turn helps in reduce cost of waste collection and maximise the venture profits. Thus, this social enterprise is contributing not only in terms of environmental sustainability but it is also adding social and economic value to the stakeholders.

Innovation	Archetypes	sustainable waste management / Value creation
Organizational	To adapt businesses to society and environment To develop a scale of solutions	The venture followed a micro-entrepreneurship model. Moreover, this enterprise is providing livelihood opportunities to rag-pickers by making them a part of their business activity, which in turn helps in reduce cost of waste collection and maximise the venture profits and stakeholder benefits.

Innovation: The invention of Let’s Recycle cannot be considered as something new or something that never existed before. For instance, the venture followed a micro-entrepreneurship model, which works like OLA and UBER. This enterprise would not have its own vehicles to collect the waste, but would instead have developed mobile application, through which work will be allotted to the person who owns the vehicles. Throughout the day the owners of the vehicles get appointments for waste collection and deliver the same to the factories where the enterprise processes it. It was also observed that the venture has another characteristic that is Enterprise Resource Planning (ERP) system which assisted in regulating, tracking and monitoring employees, waste management sites and their activities which made the working system more authentic and efficient. Similarly, the venture also

adopted technologically innovative methods like usage of semi-automatic material recover facility where most of the segregation is done by the machines and quality check is done manually. It shows how the Let’s Recycle venture is continuously adopting the innovations whenever it is seeing something good happening in the market. Hence, it is able to minimize the operational costs of venture and maximize their profits.

Business Management: It indicates that Let’s Recycle social enterprise is financially sustainable from the beginning. It was derived from research findings that currently the enterprise is having 200 employees. Out of them 60 employees will be field in for collecting the waste, around 120 employees will be taking care of segregation and engaged in process of Material Recovery Facility. As reported by the founder “Let’s Recycle creates good working environment where employees feel motivated to work and contribute to the growth of organization. They also provide good opportunities to their employees in terms of professional and career growth”. Further, as also stated that “Rag pickers who are working in my venture are trained all the skills that required to identify the waste, so they are good at carefully handling most hazardous waste products like acid bottles, waste from hospitals, and mobile batteries”. The social enterprise has its own toll free number which can be used by any individual, house hold, and any office to request the enterprise to collect the waste and pay them. This also helps the organiser to receive complaints from the clients with regard to delivery of services and monitoring the employees’ work. In addition to their collaborations with rag pickers, the venture also fixed a particular day-and-time schedules for collecting the waste from clients and other rag pickers. As a result, “currently we are able to collect 50 tonnes of waste per day, which includes food waste, dry waste and bio-medical waste and also waste that purchased from hospitals, hotels, government offices etc, through rag-pickers. Similarly, this enterprise proving services to individual households, retail sectors, hospitals, government institutions, industry, corporate offices etc., by collecting waste from them”. Social Impact: Thus, let’s recycle is able to provide high quality services in terms of waste management to their clients and reducing the environmental problems of the world. Moreover, this venture is able to contribute towards achieving sustainable development by balancing 3P’s, i.e., Planet, People and Profit. Here, we can conclude that the social innovation adopted by Let’s Recycle is not only helping us in achieving environmental sustainability but also addressing the problem of financial exclusion of rag pickers and those who are living at the bottom of the pyramid by creating employment opportunities which in turns increase social value by improving the dignity of the beneficiaries.

## 4 DISCUSSION AND CONCLUSIONS

Sustainable development in any country focusing on economic development alone cannot achieve development, growth in social sector is equally important, because development includes economic growth, social and environmental development (Lundstrom and Zhou, 2011). In our day to day life activities, we generate huge amount of waste from different sources (Kumar et al., 2017). For instance, as reported by World Bank in Urban Development Series, the total amount of waste generated annually worldwide is more than 4 billion tonnes (Hoornweg, et al., 2012). Similarly the cost for waste management activities was also projected that it may increase

from today's annual \$205.4 billion to about \$375.5 billion in 2025 (Mavropoulos et al., 2012). Consequently, Countries are facing problems with ineffective solid waste management and spending lot of money on it (Environmental Law Institute, 2014). Therefore, there is urgent need for cities to upgrade with basic infrastructure and adopt various innovations in order to improve sanitation and waste management system. In this context, it was recognised that the entrepreneurs who are working as non-profit organizations are more focused on the environment because of growing competition for donors and grants (Mori and Fulence, 2009, and Mort, Weerawardena and Carnegie, 2002). On the basis of the presentation of case studies in this study, three concepts were identified as being very important for the success of selected social enterprises. They are 1) Technological knowledge for creating solutions, 2) relentless social innovating, and 3) social entrepreneurial passion. Similarly, as found in the current study, review of studies also supports the view that social enterprises as an institution can implement commercial strategies to maximize improvements in human and environmental well-being, rather than maximizing profits for external shareholders (Robinson and Lo, 2005). Further, Pirson (2008) also states that, social entrepreneurship brings change into the environment, education, economic development, human rights, health, and civic engagement in larger context through impelling social behavior of the society. Nicholls (2006) argued that, environmental preservation and sustainable development are those areas where social entrepreneurship intervenes. Moreover, there are some scholars who focused on how the social entrepreneur helps to enhance the quality of environment by adopting various social innovations (Shepherd and Patzelt, 2011). As found in the study of McMullen and Warnick, (2015), the results of the study reveal that selected social entrepreneurs are working in the area of reducing costs, improving safety, preserving resources, and using natural resources in ways that protect the environment and ensure sustainability of such resources.

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