

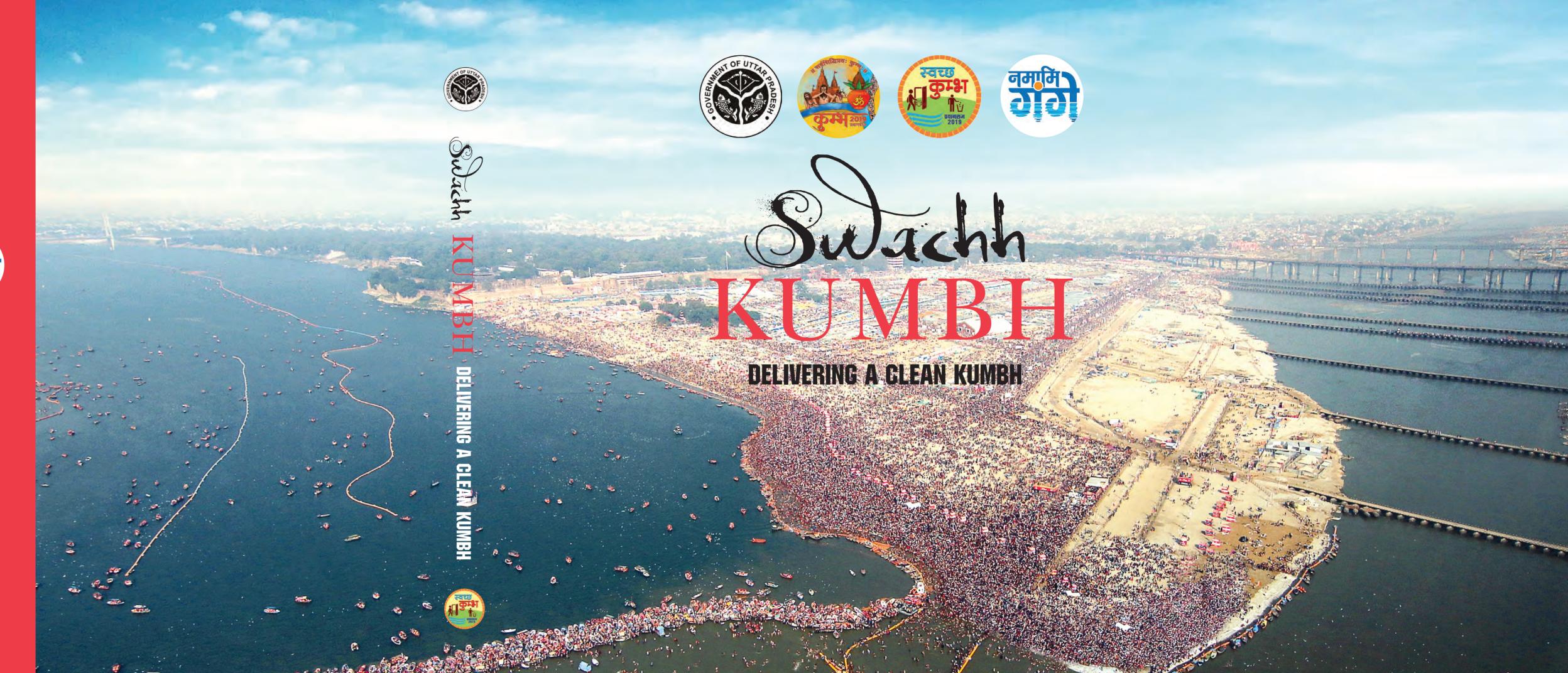






PRAYAGRAJ MELA AUTHORITY















DELIVERING A CLEAN KUMBH

OPEN DEFECATION-FREE GARBAGE-FREE ODOUR-FREE

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CONTENTS



NN'DIE DDECINENT'C VICIT



HON'BLE VICE PRESIDENT'S VISIT



HON'BLE PRIME MINISTER'S VISIT 42



VISIT OF HON'RIF PRIME MINISTER OF MAURITIUS





THE BEGINNING — WHAT IS SWACHH KUMBH?





PAINT MY CITY



SANITATION PILOT PROJECT MAGH MELA 2018

127



SANITATION ALL THE WAY KUMBH 2019



INDUCING 17 BEHAVIOURAL CHANGE



INTEGRATED COMMAND CONTROL CENTRE



CITY SANITATION

195

KUMBH LOGO

The Kumbh 2019 logo reflects the soul of Kumbh – spirituality, rituals, traditions and cultural customs. Ensconced in a pale yellow globe, it portrays tangible symbols like the confluence of the three rivers – the Ganga, the Yamuna and the mythical Saraswati – saints and pilgrims. The *kumbh* with the Om symbol signifies the mythological *kumbh* (jar of nectar) that Lord Vishnu whisked out of the grasp of the asuras or demons during the Samudra Manthan or the churning of the ocean. The verse 'Sarva Siddhipradha Kumbha' encapsulates the significance of the event and the *tapobhumi*, Prayagraj. A unifying icon for various activities around the event, it mirrors the vision of 'Divya Kumbh–Bhavya Kumbh' and depicts the spirit of the Kumbh Mela, the world's largest human gathering.



SWACHH KUMBH LOGO

A separate logo, independent of the Kumbh logo, was created for Swachh Kumbh to signify the focus and primacy accorded by the top leadership to the issue of cleanliness in the Kumbh Mela. The logo was developed using a crowd-sourcing model. People participated in the logo development process in large numbers and with great enthusiasm. The Swachh Kumbh logo currently in use was chosen after detailed deliberations. 'Swachhta' at the Kumbh meant primarily ensuring an effective toilet system, odourfree environment, no-fly area, garbage disposal facility and adequate public participation. River skimming, sewage treatment through STPs, bio-remediation and geo-tube methods were supplementary. The brief, therefore, was to highlight the spirit of Swachhta, depicting the major activities – symbols such as toilets and garbage disposal management. The Swachh Kumbh logo, which depicts sanitation activities, has distinct shades of green and blue. The two colours signify environmentfriendliness and the cleanliness of the sacred rivers, respectively. Maroon is the colour for all Swachh Kumbh activities.

The Swachh Kumbh logo was launched by Yogi Adityanath, Hon'ble Chief Minister of UP, in the august presence of Shri Ram Naik, Hon'ble Governor of UP, Hon'ble Mr Justice DB Bhosale, the then Chief Justice of Allahabad High Court, and many other dignitaries. Swachh Bharat Mission and Namami Gange were the donor partners.





United Nations Educational, Scientific and Cultural Organization



Intangible Cultural Heritage

Kumbh Mela (the festival of the sacred Pitcher) is the largest peaceful congregation of pilgrims on earth, during which participants bathe or take a dip in a sacred river. Devotees believe that by bathing in the Ganges one is freed from sins, liberating her/him from the cycle of birth and death. Millions of people reach the place without any invitation. The congregation includes ascetics, saints, sadhus, aspirants-kalpavasis and visitors. The festival is held at Allahabad, Haridwar, Ujjain and Nasik every four years by rotation and is attended by millions of people irrespective of caste, creed or gender. Its primary bearers, however, belong to akhadas and ashrams, religious organizations, or are individuals living on alms. Kumbh Mela plays a central spiritual role in the country, exerting a mesmeric influence on ordinary Indians. The event encapsulates the science of astronomy, astrology, spirituality, ritualistic traditions, and social and cultural customs and practices, making it extremely rich in knowledge. As it is held in four different cities in India, it involves different social and cultural activities, making this a culturally diverse festival. Knowledge and skills related to the tradition are transmitted through ancient religious manuscripts, oral traditions, historical travelogues and texts produced by eminent historians. However, the teacher-student relationship of the sadhus in the ashrams and akhadas remains the most important method of imparting and safeguarding knowledge and skills relating to Kumbh Mela.

Inscribed in 2017 (12.COM) on the Representative List of the Intangible Cultural Heritage of Humanity

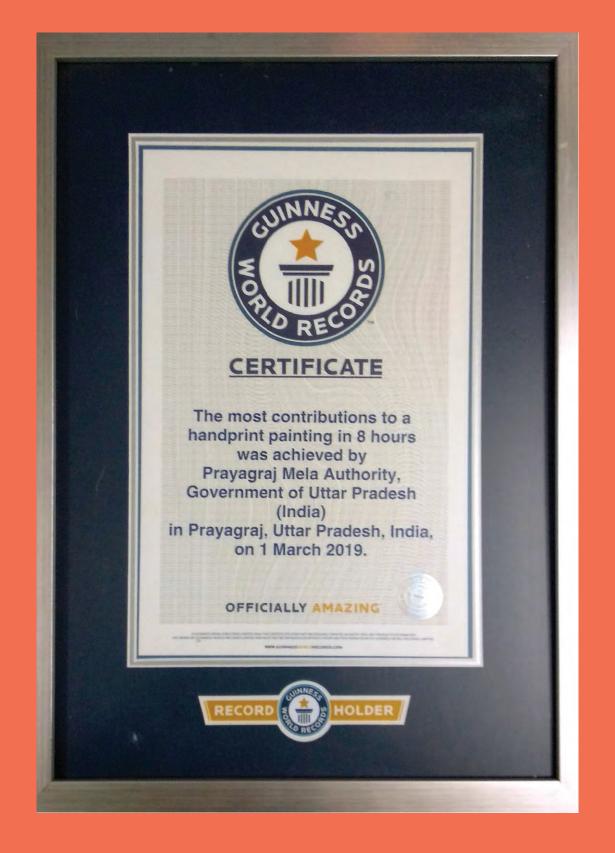


The Guinness World Record for the world's biggest sanitation and waste disposal mechanism with the 'most people sweeping the floor' at multiple locations at one point of time was demonstrated by 10,000 sanitation workers in a cleanliness drive during Kumbh Mela 2019. Organized by the Prayagraj Mela Authority, it was a fitting culmination to the Swachh Kumbh initiative and, according to Mela Authority Chairman Dr Ashish Kumar Goel, to the 'two years of hard work, planning and effective execution of an ambitious and unprecedented project'.





The Guinness World Record for 'most contributions to a handprint painting in 8 hours' was a community engagement activity in which people from all walks of life and from around the world participated. As part of the Paint My City campaign, a 60ft canvas was hand-impressed by 7,664 people, breaking the previous record of 4,675 handprints, held by South Korea.





The Guinness World Record for the 'largest parade of buses' was for the spectacular parade of a 500-bus fleet during the Kumbh Mela that was rolled out to demonstrate the efficient traffic plan during the fair. The saffroncoloured buses of the Uttar Pradesh State Road Transport Corporation (UPSRTC) covered a distance of over 3.2km on NH 19 between Sahson and Nawabganj toll plazas. It broke the earlier record of 390 buses held by Abu Dhabi.



The *karmyogis* of Kumbh include the Swachhagrahis and sanitation workers. These people have made the clean Kumbh the talk of the whole world with their dedication to keeping the Kumbh neat and clean. It was a huge responsibility to keep the temporary arrangements of the Kumbh clean: 20–22 crore people visited the Mela in the span of 4–5 weeks. My friends, you have all proved that nothing is impossible.

Brothers and sisters, I had the opportunity to meet such *karmyogis* a few days back. These are my brothers and sisters who were responsible for keeping the Kumbh clean for the last few weeks. They got up early in the morning and slept late at night. They were busy picking up garbage throughout the day, cleaning the toilets and the whole place. These people were quietly doing their chores without hoping for any praise, or without catching anyone's attention. In Delhi, however, I received accounts of their dedication to cleanliness and their hard work from many who met me. I saw that people were full of praise for the cleanliness of the Kumbh even in the media. The true recipients of this praise are you people, my brothers and sisters, who have been dedicated to the task of cleanliness.

Brothers and sisters, in every human being's life, there are a few occasions when the moment shapes the individual. Some of these moments become memorable and unforgettable. For me, this is one such moment; the moment when I offered my gratitude and washed the feet of some of those people who have been responsible for keeping the Kumbh Mela clean. This moment will remain with me for my entire life. Their blessings, their affection and the good wishes of you all will stay with me for all time. I wish to serve you and receive your blessings exactly like this.

Friends, you all did not hesitate to put in your best to make 'Divya Kumbh' or divine Kumbh a 'Bhavya Kumbh' or a beautiful Kumbh. No one can imagine how my brothers and sisters in charge of cleaning must have toiled to clean the place where there were 20,000 garbage bins and more than 1 lakh toilets. However, it was their hard work that this time, the Kumbh was widely hailed as a clean Kumbh. Every worker is worthy of appreciation for making the massive arrangement of keeping the Kumbh clean and managing it effectively. There has been an announcement today of a fund for the appreciation of people who were engaged in cleaning services. This fund guarantees assistance to people engaged



in the cleaning services during their and their families' hour of need. This is, in a way, a token of the nation's appreciation and gratitude for your services.

Friends, the clean Kumbh is being held at a time when the whole nation is celebrating the 150th birth anniversary of Mahatma Gandhi. Gandhiji had expressed his desire for a clean Kumbh almost a hundred years back, when he visited the Kumbh at Haridwar. The Swachh Bharat or Clean India campaign is striding towards its goal with the support of the people of this nation. We are moving towards achieving the target of declaring an open defecation-free country by 2 October this year. I think that all of you Swachhagrahis and sanitation workers at Prayagraj Kumbh Mela have emerged as a great source of inspiration for everyone in the country (in this mission).

Brothers and sisters, whenever the cleanliness of the Kumbh is discussed, the serious issue of keeping Mother Ganga clean also comes to mind. For the past one and a half months, I have been trying to gauge the attitude of the people through social media. Today, I have experienced it myself. I had come to Prayagraj before but never found the waters of the Ganga so clean. Friends, the clean water of the Ganga is also a testimony to the aims and execution of the Namami Gange Mission. As a part of this mission, 32 drains carrying sewer water to the Ganga were stopped. Sewage treatment plants were set up so that polluted water was treated before being released into the Ganga.

Friends, the government is determined to make the mission a success. Many volunteers have joined the Namami Gange project and financial assistance has also been made available to the mission. Two days back, I also made a small contribution to the mission. I donated the amount of ₹1.3 crore that I received as part of the Seoul Peace Prize to this mission, since I did not want to keep it for myself. In the last 4 years, whatever gifts I have received as the Prime Minister, I have auctioned them and utilized the money in the service of Mother Ganga.

- HON'BLE PRIME MINISTER SHRI NARENDRA MODI

on Swachh Kumbh, delivered on 24 February 2019 at Kumbh Mela, Prayagraj



The Prime Minister of India envisaged and mentored a series of mega events of historic importance in Prayagraj Kumbh 2019, one of which was named Swachh Kumbh and was intended to ensure cleanliness. The world's strongest leader, our Prime Minister, Shri Narendra Modi ji, has arrived here today on this platform to felicitate the sanitation workers – who, as the backbone of the cleanliness mission, made it superbly successful – and I would personally and on behalf of everyone present here like to welcome him to the sacred land of Prayagraj. The occasion reminds me of a line by the great national poet, Ramdhari Singh Dinkar, who wrote, 'Pen, you felicitate him today.'

The level of magnificence that Prayagraj Kumbh has reached this time was envisaged by a prime minister who has dedicated his whole life to the cause of the nation. Soon after we formed the government in Uttar Pradesh, he asked me to undertake the task of organizing Kumbh 2019 in a manner and scale never seen before. From time to time, he kept reiterating that Kumbh Mela needs to be both secure and clean. Enthused by his words, we started tailoring many of our events and campaigns accordingly.

Inspired by such guidance, we started our journey formally on 16 December 2018 with Ganga Pujan. Today, as we witness more than 22 crore people taking a dip in the sacred Triveni at Kumbh Mela, I have no hesitation in asserting that Uttar Pradesh will cross the most formidable hurdles in conducting these mega events successfully. It was remarkable that the Prime Minister himself kept enquiring about the facilities extended to the pilgrims and the visitors to Kumbh, kept sharing his concern about their security, and inspired us to push the boundaries. This was one part. The dedication of 22,000 sanitation workers and village volunteers (Swachhagrahis) and 12,000 security personnel marked other crucial milestones in the Mela. If not for both of these, Swachh Kumbh and Surakshit Kumbh would have remained schemes on paper only. Though our Prime Minister has been going to the border around Deepawali to meet jawans and boost their morale, this is the first time he has taken time out specifically to come to Prayagraj to thank and felicitate sanitation workers, Swachhagrahis and security personnel. This kind of visit by the Prime Minister to Prayagraj is the first such visit ever.



Hon'ble Chief Minister Yogi Adityanath feeding seagulls during a boat ride at Sangam

We all know that after becoming Prime Minister in 2014, our Hon'ble Prime Minister would have received several gifts during his official visits in India and abroad. Twice he has auctioned these gifts and donated the total sales proceeds, amounting to ₹12 crore, to the Namami Gange Mission, for the cause of cleaning Mother Ganga. As a result of several such acts of sacrifice and dedication, Mother Ganga has been pleased to appear before us as impeccably clean. We are beholden to the Prime Minister for bringing Bhagirath before us to save Mother Ganga, by introducing the Namami Ganga Mission. You all must have observed during Kumbh Mela that no one this time has been found to be complaining about the cleanliness of the Ganga, or about the purity or the paucity of its water.

We all are filled with pride that our noble Prime Minister has been honoured with some of the most coveted international honours and awards such as the UN's Champion of the Earth and the Seoul Peace Prize. The Prime Minister has donated the cash components of these awards, amounting to ₹1 crore 40 lakh, to the Namami Gange Mission, thereby expressing his noblest sentiments for Mother Ganga.

Brothers and sisters, when politics is oriented towards the service of the nation and the motherland, the highest ideals are achieved and today we observe all of that in the actions and sentiments of our Prime Minister. Today, on behalf of the 22 crore people of Uttar Pradesh, I feel extremely privileged to welcome the Hon'ble Prime Minister of Bharat Varsh, who has arrived here to specifically thank and felicitate the soul of Kumbh – its sanitation workers, Swachhagrahis and security personnel.

> - HON'BLE CHIEF MINISTER YOGI ADITYANATH on the occasion of Swachh Kumbh, Swachh Abhaar function



HON'BLE PRESIDENT'S VISIT

religious and spiritual activities, but also the January 2019 was the first by a president to the participation of both Indian and foreign Kumbh since the visit of President Rajendra

Prayagraj Kumbh Mela 2019 witnessed not only Ram Nath Kovind's visit to the Kumbh Mela on 17 dignitaries. The Hon'ble President of India Shri Prasad in 1953. The Hon'ble President and his













wife, Savita Kovind, participated in Ganga Pujan in the Sangam area with Hon'ble Uttar Pradesh Governor Shri Ram Naik, Hon'ble Chief Minister Yogi Adityanath, Hon'ble Deputy Chief Minister Shri Keshav Prasad Maurya and Hon'ble Health Minister Shri Siddharth Nath Singh, among others. During his visit, Hon'ble President Shri Ram Nath Kovind also inaugurated the three-day Gandhian Resurgence Summit at the Parmarth Niketan camp in the Kumbh Mela area and unveiled the 30ft-high statue of revered Vedic sage Bhardwaj Muni in Prayagraj city. Describing the Kumbh as an important part of India's spiritual and cultural heritage, the Hon'ble President said that he was happy that the event coincided with the celebrations of the 150th birth anniversary of Mahatma Gandhi.

HON'BLE VICE PRESIDENT'S VISIT

During his day-long visit to the Kumbh Mela on 16 only successful in projecting India's magnificent

February 2019, Hon'ble Vice President Shri M 'soft power' to the world, but also helped Prayagraj Venkaiah Naidu described it as 'the biggest cultural develop into a historical tourist destination. While event and one of the greatest wonders of the felicitating Kumbh Sewa Mitras at the Yuva world'. He said that Kumbh Mela 2019 was not Kumbh Sammelan, the Hon'ble Vice President









asserted that people's participation was indispensable to achieving the goals of the Namami Gange Mission and Swachh Bharat, especially during the Kumbh, when crores of people gather to offer prayers to River Ganga. Highlighting the relevance of Kumbh, the Hon'ble Vice President said that since rivers sustain us like divine nectar or ambrosia, they are divine and must be worshipped. At the Kumbh, the Hon'ble Vice President also addressed the Kiva Kumbh Mela, whose purpose was to present the ancestral cultures of the world in one dance, song and prayer

for the protection of holy rivers.

In the presence of representatives from Mexico, Colombia, Paraguay, Chile, Peru, the Netherlands and Brazil, among other countries, Shri M Venkaiah Naidu highlighted the need to evolve social behaviour that was compatible with nature. He said that such behaviour, if in consonance with *prakriti* or nature, would be *sanskriti* or culture. The Hon'ble Vice President, accompanied by Hon'ble UP Governor Shri Ram Naik and Hon'ble UP Health Minister Shri Siddharth Nath Singh, also visited the holy Sangam to offer prayers.





HON'BLE PRIME MINISTER'S VISIT TO FELICITATE THE SANITATION TEAM

The Prayagraj Kumbh Mela created history on 16 December 2018, when Hon'ble Prime Minister Shri Narendra Modi performed Ganga Pujan, a formal worship of River Ganga that traditionally precedes the commencement of Kumbh Mela – a first by a prime minister in the history of the Kumbh. During this visit, he met representatives of various religious and spiritual organizations, attended a photo session at a special selfie point in Arail Ghat, visited the Swachh Kumbh exhibition, unveiled 366 projects and inaugurated the new terminal of Prayagraj Airport. The Hon'ble Prime Minister also visited Akshayvat and declared it open for public darshan.

Hon'ble Prime Minister Shri Narendra Modi visited the Kumbh Mela twice. During his second visit, he not only took a holy dip, but also felicitated sanitation workers by washing their feet





The high point of Kumbh 2019, however, was when, at a felicitation ceremony in the Mela area on 24 February, the Hon'ble Prime Minister, in a rare gesture, washed and wiped the feet of *safai karamcharis* as an acknowledgement of their service to millions of pilgrims and visitors at the Mela. 'These are my brothers and sisters who were responsible for keeping the Kumbh clean for the last few weeks. They got up early in the morning and slept late at night. They were busy picking up garbage throughout the day, cleaning the toilets

and the whole place. These people were quietly doing their chores without hoping for any praise, or without catching anyone's attention. In Delhi, however, I received accounts of their dedication to cleanliness and their hard work from many who met me. I saw that people were full of praise for the cleanliness of the Kumbh even in the media. The true recipients of this praise are you people, my brothers and sisters, who have been dedicated to the task of cleanliness,' Prime Minister Modi said in his speech on 24 February 2019.

Hon'ble Prime Minister Shri Narendra Modi at Swachh Kumbh exhibition at Kumbh Mela







VISIT OF HON'BLE PRIME MINISTER OF MAURITIUS

Indian dignitaries visited the 2019 Kumbh Mela. Mauritius Shri Pravind Jugnauth who paid a day- @UNESCO in 2017'. long visit to the Kumbh.

Accompanied by his wife, he led a 25-member delegation from Mauritius on 24 January. He took a holy dip in the sacred waters of the Sangam and even performed aarti in the presence of Shri Narendra Giri, the president of the Akhil Bharatiya Akhada Parishad, at the Bade Hanuman Mandir. He also visited the sacred Akshayvat and took a round of the Mela area.

Prayagraj after attending the Pravasi Bharatiya Divas (PBD) in Varanasi, was full of praise for the Mela arrangements, the unique spiritual experience of the Kumbh and the cleanliness of both the Mela area and the waters of the Sangam.

Kumbh 2019 was also an emotional journey for the more than 2,300 other Non-resident Indians Affairs General (Retd.) VK Singh guided them who participated in the PBD. Immediately after the conclusion of the Divas, the PBD convention Gram and Kala Gram. would tweet, 'It's over to @PrayagrajKumbh! After

Apart from the President, Vice President and the successful conclusion of #PBD2019, the Prime Minister of India, numerous foreign and Pravasis travel to take dip in the Ganges at the #KumbhMela, which has been inscribed on the list One of them was Hon'ble Prime Minister of of "Intangible Cultural Heritage of Humanity" by

The Mauritian PM, who led them, thanked the Indian government and Hon'ble Prime Minister Shri Narendra Modi for linking the PBD with the Kumbh and making their visit to India doubly fruitful. The entire entourage visited the Sangam, Hanuman temple, Akshayvat, Saraswati Koop and the Integrated Command Control Centre (ICCC) to understand the logistics involved in the successful execution of what is arguably the largest human The Mauritian Prime Minister, who visited congregation in the world. Amazed by the foolproof arrangements, mesmerized by the spirituality and fascinated by the display of vibrant human diversity in one place, they were effusive in their praise for the government, especially the 'unprecedented' cleanliness of the Mela area.

> Hon'ble Union Minister of State for External around the Mela area, which included Sanskriti





Prayagraj is an ancient city that has been significant for thousands of years. The city has seen civilization after civilization, ruler after ruler. It was central in ancient Hindu scriptures and was an important Buddhist, Mughal and then British centre. That is true of many places in India but Prayagraj is astounding in the fact that its many lives can still be sensed and even experienced, side by side, inspiring awe. Perhaps it can be said that, like its name, the city is both ancient and modern at the same time.

Situated on the confluence of three rivers – the Ganga, the Yamuna and the mythical, underground Saraswati - Prayagraj is called 'Teerthraj' or 'the king of all tirthas'. The Rig Veda, the Puranas, the Mahabharata, the smritis, the shastras, Sriprayagmahatmya Shatadhyayi and many other ancient Hindu scriptures make innumerable references to the sanctity of Prayag. The annual Magh Mela and the 12-yearly Kumbh Mela are extant elements of the city's centuries-old spiritual lineage and potency. It is said that the trinity of Brahma, Vishnu and Shiva successfully conducted their yagnas here, hence the name Prayag – 'pra' for 'prakrishta' (great) and 'yag' for 'yagna' (Vedic consecration ritual). It is said to be the birthplace of Brahma, Som and Varun (the reference can be traced to the 'Aadi Parva' of the Mahabharata) and was once described as the abode of 88,000 rishis. One of the holiest objects in Prayagraj is the purported Akshayvat, a banyan tree that is said to still exist in the precincts of the Allahabad Fort. It is said to be an ancient banyan that was the only thing that survived the 'Mahapralaya', the great deluge from which Lord Vishnu started recreating the world. Lord Shiva is also said to have performed the tandava, the dance of the cosmic cycle of creation, preservation and dissolution, near this holy tree. The tree finds mention in the Matsya Purana and the Ramayana (Rama, Lakshmana and Sita are said to have rested beneath it), and Jain Tirthankara Rishabha is said to have performed tapasya (austerities) underneath

Besides being the seat of Lord Vishnu, Prayag has also been the seat of some of the most influential Hindu saints. One of them is Maharshi Bhardwaj, the father of Dronacharya, the guru of the Pandavas and Kauravas, who, along with his students, is credited with creating the sixth book of the *Rig Veda* and contributing to the Puranas. The Puranas record that Yayati, the first king of the





Pauravas (an ancient Indian dynasty) left Prayag and conquered the Saptasindhu, or the entire site of the fort of Jaichand of Kannauj; and world. His five sons, Yadu, Druhyu, Puru, Anu and Turvashas, became the progenitors of the main tribes of the Rig Veda.

part of the Kuru dynasty of Hastinapur, and later, Kaushambi near Prayag became the seat of this dynasty, making this city the centre of post-Vedic culture and a major centre of Hinduism. According to historians, the Prayag region has been a part of the Mauryan and Gupta empires, and of the Kushan and Kannauj empires. Scattered around Prayagraj even today are sites and ruins that underscore its primacy as an administrative and religious centre in ancient times - Kaushambi, a thriving Buddhist centre and the

Chandra dynasty; the medieval site of Kara, the Shringverpur, an ancient site discovered later.

FOUNDING OF ALLAHABAD

In ancient India, the Vatsas of the Doab became Chinese traveller Hiuen Tsang has mentioned his visit to Prayag and the Kumbh Mela, as well as the Akshayvat and the temple where it was found, in his memoirs. In the turbulent period when plunderers and rulers from West Asia coursed through the Indian plains, there was probably a prosperous city at or near Prayag. However, Mughal rule gradually steadied, and according to the Akbarnama, the Mughal emperor built the fort there between 1574 and 1583. Some accounts say he was impressed by the strategic, and some say the spiritual, location of the confluence. He called seat of the Vatsas; Pratisthan Pur, capital of the it Illahabas, or 'the abode of Allah'. Eventually,







Akbar's son Salim, later known as Jahangir, became the sovereign in the region. The city saw turbulence within the Mughal administration but remained in Mughal hands till the mid-eighteenth century. The East India Company by then wanted the fort and city for its strategic location, and signed a treaty with the then Mughal emperor Shah Alam II and the Nawab of Awadh. After a brief period of Maratha rule, when the Mughals and British both vied for control of Allahabad, it passed into British hands in 1801, from the Nawab of Awadh, to whom it had been ceded. The fort was turned into a garrison for British troops, and remains an ordnance depot for the Indian Army till date.

THE KUMBH MELA

The Kumbh Mela is also a celestial occasion for sages, seers, sadhus and ascetics from different parts of the country, and the institutions they represent, to converge at the Mela site to exchange their learning and wisdom and also share the same with the pilgrims. Routine activities of devotees at the Kumbh Mela include the holy dip in the sacred river, the acts of head shaving (mandan), offering to ancestors (tarpan), fasting (upvas), memorial (shradh), and donation (daan). Their self-improvement efforts can be observed in snaan and daan; the ancestor worship efforts are expressed through pind daan, tarpan and shradh, and the larger devotion to celestial beings translate into japa-tapa and yagna.

The timing of the Kumbh Mela is based on a complex astrological calculation where the alignment of the stars determines the time and place of the Kumbh in one of the following four river sites: Haridwar, Prayagraj, Nashik and Ujjain. When Jupiter is in Aries or Taurus and Sun and Moon in Capricorn, the Kumbh takes place at Prayag on the day of Amavasya. These riverside festivals, and the city that springs up around them





are attended by millions, making the Kumbh Mela the largest religious gathering, perhaps also the oldest, and the largest temporary city in the world. Invariably, every Hindu connects to the Kumbh Mela celebration, not through any formal discourse or indoctrination, but on the strength of narratives passed down from past generations in the form of cultural artefacts such as drawings and paintings, and above all, stories woven around the celebration of Kumbh. The Kumbh is also an attraction for the religious discourses available there. The pilgrims listen to them, return to their homes and disseminate the stories that they have heard and learnt to their friends and extended families. These stories also inspire the young to

parents and forefathers. Many are fascinated by the sadhus who have renounced all worldly pleasures and goods, including garments, and wander around completely naked, covered by ash.

Pilgrims seek the blessings of revered saints who visit the Kumbh Mela with their entourages. The Kumbh thrives on the lived experiences of pilgrims, sadhus and religious leaders, who carry the traditions of this age-old celebration as a form of human capital. Passed down through generations, the Kumbh has rightfully achieved the status of a must-experience event for tourists as well. Among the popular religious practices, the principal one is the holy dip or the shahi snaan. It establishes the order of precedence among akhadas follow the traditions and aspirations of their for the bath during the auspicious period at the





confluence of the rivers. The Kumbh Mela gets its worldwide reputation as a mega event not only because of the sheer number of people who attend the fair for a variety of reasons, but also for such a widespread display of the cultural traits of a nation which is bound by ties of faith and tradition.

THE KUMBH SAGA

There are many stories about why the Kumbh is celebrated on earth. The one that is most famous is related to Samudra Manthan or 'the churning of the ocean'. Once, Lord Indra, while riding his elephant, came across the short-tempered sage Maharishi Durvasa. The sage offered Indra a special garland given to him by Lord Shiva. Indra accepted it and placed it on the elephant's trunk, but the elephant threw it on the ground. The sage was livid and cursed Indra and all the devas with the loss of all their strength, energy and fortune. Subsequently, when all the devas lost their power, the asuras invaded and defeated them. Following this, the devas went to the trinity of Brahma, Vishnu and Shiva with their problems. The trinity listened to their plight and suggested that the only way to end the curse was by drinking the amrit or 'the nectar of immortality' that was hidden in the depths of the ocean of milk, the Kshir Sagar. However, that required churning the entire ocean. Since the devas had lost their strength, Lord Vishnu advised them to establish a truce with the asuras to facilitate such a churning. The gods accepted the conditions of the asuras and made a treaty with them to form a partnership to churn the Kshir Sagar and find the amrit or the pot of nectar that guaranteed immortality. Lord Vishnu transformed himself into a tortoise (his Kurma avatar) to provide support to Mandar Mountain, which was used as the base for the churning, and the divine snake Vasuki served as the rope. Vasuki's front end was held by the asuras and the



tail-end by the devas. Thus began the titanic churning. Lord Shiva's throat turned blue (giving him the name Neelkantha) after he consumed the venom, *halahal*, which first emerged from the churning. Lakshmi (the goddess of wealth), whom Lord Vishnu took as his consort, appeared next.

Several celestial and invaluable objects emerged from the churning, including Kamdhenu, the wishfulfilling cow; Ucchaishrava, the horse; Airavat,

the multi-tusked elephant; apsaras; and Sura, the goddess of wine. Among other noteworthy objects to emerge during the churning of the Kshir Sagar were Kaustubha Mani, the invaluable gem which adorned Lord Vishnu; Ardhachandra, which Lord Shiva placed on his forehead to counter the effect of the poison he had swallowed; and the conch Panchjanya and the bow Haridhanu, which were taken by Lord Vishnu. These objects were divided

Night view of the Kumbh Mela area illuminated by LED lights



between the asuras and devas amicably, by consensus. The last to appear was Dhanvantri, the celestial physician, holding the pot of nectar, the Kumbh, in his hands.

However, when the *amrit kumbh* (the pot containing the nectar) emerged during the churning, Indra's son Jayant flew away with it. The asuras followed him and tried to overpower him, which resulted in a fierce battle that lasted 12 days. According to the story, during Jayant's flight, a few drops of nectar fell at four places on earth – Prayag, Haridwar, Ujjain and Nashik – and hence, the Kumbh Mela is organized at these four places. Since the fight lasted for 12 days and one day of the gods is equivalent to one human year, the Kumbh comes to the same city every 12 years. The Kumbh Mela at Prayagraj is different from the melas at the other venues in many respects.

This is the only place where *kalpvas* is practised. According to the Vedas, a *kalp* means a period equal to the total number of years in the four yugas – Satyuga, Tretayuga, Dwaparyuga and Kalyuga. Observing *kalpvas* at the Triveni Sangam in *Magh* for one month is supposed to be equivalent to doing *tapasya* for an entire *kalp*.

The Kumbh has been recognized globally as the only phenomenon of its kind. It is the largest peaceful gathering in the world, and considered the world's largest congregation of religious pilgrims.



KUMBH CITY

3,200 hectares planned on a grid pattern

300km roads with chequered plates

1,200 premium tents for tourists

Ganga Pandal with a capacity to accommodate 10,000 people for mega programmes

4 contemporary convention halls with state-of-the-art facilities for each zone

20 mobile recharge counters

20 self-sustaining sectors with integrated offices and markets

22 pontoon bridges

Public accommodation, with a capacity of **20,000** beds

Pravachan Pandal for religious and spiritual programmes

2,000 ATMs, 3 forex counters and 20 bank branches

2,000+ free Wi-Fi zones

FROM AMBITION TO REALITY

DR ASHISH KUMAR GOEL, Divisional Commissioner, Prayagraj, and Chairman, Prayagraj Mela Authority



The story of Swachh Kumbh human endeavour and its accomplish inconceivable and humongous which I was fortunate to witness as it unfolded before me during Kumbh Mela,

2019. At a time when the country was gripped in the 'Swachh Bharat' fervour – that had not only aspired to eliminate open defecation through the construction of household-owned and community toilets but had also induced our society for behavioural change for a Clean India – it was a grave challenge for our team to even attempt an open defecation-free Kumbh Mela, the largest human congregation on earth.

Initially, about 150–180 million pilgrims were anticipated to visit the Kumbh Mela in a span of 49 days (the actual count was close to 240 million) with about 30 million of them expected to mark their presence on peak days. This estimate excluded the 1.5 million population of Prayagraj. Besides, the Hon'ble Chief Minister had also shared his vision to transform this mega fair into 'Divya Kumbh-Bhavya Kumbh'. Hence, designing a comprehensive sanitation architecture that could cater to such a large human congregation with zero margins for error had become a pressing prerequisite in the planning of Kumbh 2019.

Kumbh Mela open defecation-free and, two, devising a robust Solid Waste Management (SWM) plan. Therefore,

sanitation facilities were planned in a systematic way. using modern technological tools and keeping in mind all the distinct components of these challenges, which included liquid-waste disposal – from toilets to treatment facilities – and solid-waste disposal – to waste treatment plants at the disposal site - as well as drainage management. As the task was humongous and sensitive, the team was extremely circumspect from the very beginning and great attention was given to details. Even before the procurement process could commence, rigorous brainstorming regarding the possible designs and processes to be used for toilets and urinals, their estimated number, user-friendliness, septic tank requirements, interior lighting, odour control, and the mechanism for ensuring round-the-clock interior and exterior cleanliness was carried out. Once this was over, the other challenge was to find suitable vendors who could perform this gargantuan task with reliability.

The Magh Mela, 2018, became a rehearsal ground to test various assumptions and a pilot project was run for testing the efficacy of experiments in the sanitation plan to be carried out later in Kumbh Mela 2019. During Magh Mela, around 4,000 public toilets based on different designs and deployed after rigorous brainstorming. Broadly, two types of toilets were built in the mela area – septic tank-based-toilets along the lowlying land to prevent the sludge from percolating into the river (suction process was used to evacuate and clean them regularly) and soak-pit toilets away from river bed. There were two major challenges before us: Making the The vendors mandated to build these toilets, were required to maintain them and keep them odor free. This not only gave results by containing open defecation, but

also boosted the Mela team's confidence, whereafter research scientists of Bangalore University and Swachhagrahis (volunteers) were trained and motivated to carry out the bigger tasks for Kumbh University.

In the area of solid waste management again, one sector of the Mela – the most crucial one around the Sangam nose – was targeted for experimenting with modern SWM techniques which prevented the solid waste from touching the ground during transportation. Mechanized and manual road sweeping, garbage transfer from tipper to compactor and thereon to disposal and treatment site was done in seamless manner. Solid waste disposal chain began with garbage bins, customized for the Mela, installed at a distance of 50 meters all along Mela roads, in vending areas, inside camps, near ghats, and in circulation areas of the Mela. Each garbage bin had liner bag, so that garbage collection could easily be contained and transferred to tipper vehicles, with minimum chance of spill over. Sufficient number of dustbins, tippers and compactor vehicles were used for this seamless solid waste management process. This experiment was also successful and gave us further confidence for using this methodology for upscaling in Kumbh Mela 2019.

This great learning from the Magh Mela, 2018, was applied in Kumbh Mela, 2019. A total of 1,22,500 toilets, including 20,000 urinals were deployed with special focus on septage management involving Sewage Treatment Plants (STPs) to prevent untreated STPs were made operational and they not only treated the sewage from the city and the Mela area, but also from upstream Ganga using Bio-remediation and Geo-Tube technologies. Monitoring and maintenance were done by Swachhagrahis through mobile App, linked to a control room. This ICT Control Room made the entire operation of toilet maintenance and cleanliness extremely efficient. Odour control was done with the help of a solution developed by the endeavour in terms of sanitation.

applied in the field by students of Allahabad

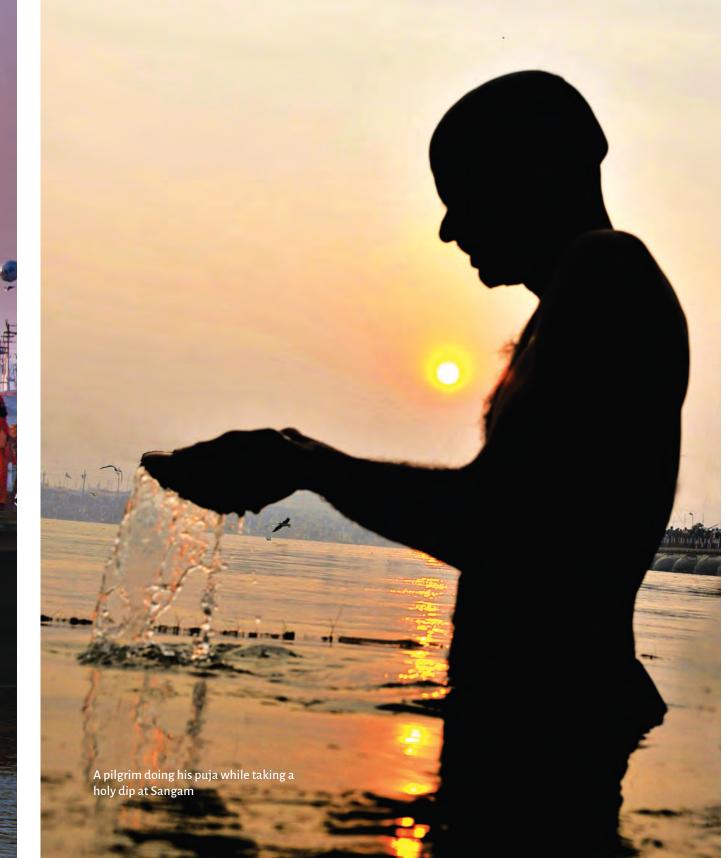
For solid waste management, 20,000 sanitation workers, 1,500 Swachhagrahis, 20,000 garbage bins, 120 tipper vans, 40 compactors, river trash skimmers, 5 STPs, along with bio-remediation, and Geo-Tube technologies were deployed on-site. Over 36 lakh liner bags were put to use thrice a day for one garbage bin. For liquid waste, toilets were drained through a suction method by 250 suction vehicles employed for the purpose. Jet spray cleaning was done by the vendors on a regular basis to keep these toilets clean.

Besides, in order to make the entire Mela area a No-Fly-Zone, the vector control unit of the Health Department did the periodic hot fogging.

It is pertinent to mention that none of the plans could have fructified unless a good team was in place. And we were fortunate to have the best of officers posted for Kumbh 2019. The teamwork between mela administrators, consultants, volunteers, saints, officials from health department and Panchayati Raj departments, and the tremendous support from the general public as well as media really paid off.

The government lead by Hon'ble Chief Minister, gave us a lot of liberty to identify and execute the best possible sanitation models with no budget constraints. This turned out to be a big enabler as we could design and implement the best possible sanitation architecture inducing cultural and behavioural water from getting discharged into the rivers. Five change. Even our Prime Minister, during his visit to Kumbh Mela on 24th February – where he had come for a special Swachh Kumbh event and had honored the Swachhagrahis - applauded the successful sanitation initiatives taken by the Kumbh Mela team. The journey which commenced with an objective to establish an accountable mechanism for keeping the Kumbh Mela 2019 clean, culminated with the world appreciating it as an example of unparalleled human



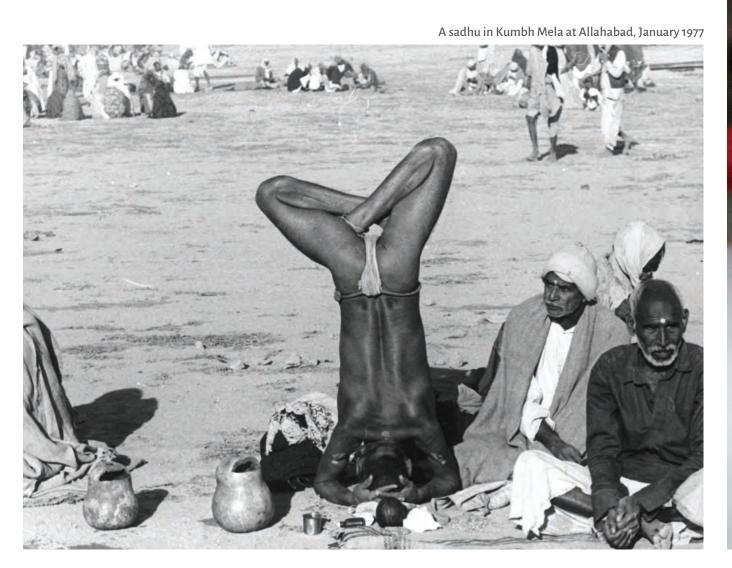


71 WHAT IS KUMBH MELA?

HISTORY

The Kumbh Mela finds mention in mythological accounts in the Vishnu Purana, Mahabharata, Hiuen Tsang, wrote about an 'age-long festival' and Harsha gave away all his possessions at the Mela and returned to his capital wrapped only in a single Shankaracharya started the Kumbh Mela in the eighth century CE to facilitate the meeting of holy of the event.

men from different regions and to mobilize Hindus to protect their religion. The earliest historical texts that refer to the Kumbh Mela are Khulasatut-Bhagavad Gita and Ramayana, and believers Tawarikh (1695 CE) and Chahar Gulshan (1759 CE). consider the event to be ageless. However, the Mughal emperor Akbar renamed Prayag as recorded history of the Mela tells us that it has been Illahabas, which later became Illahabad and then held continually since the Gupta period, which was Allahabad. The fort he built there remains at one from the 4th–6th century CE. The Chinese traveller, end of the Kumbh Mela ground. Until British rule, the management of the Kumbh Mela was in the 'King Harsha's generosity'. He explained how King hands of the akhadas or congregations of priests of different Hindu persuasions who oversaw the collection of taxes, policing and judicial duties. The piece of cloth. A popular view is that Adi British government's intervention in the Mela, although controversial, instilled order in the conduct





74 SWACHH KUMBH

In 2017, UNESCO included the Kumbh Mela on the Representative List of 'Intangible Cultural Heritage of Humanity' during its 12th session, which was held in Jeju, South Korea. The inclusion in the list was on two counts: One, it is the largest peaceful congregation of pilgrims on earth and two, the knowledge and skills relating to the Kumbh Mela are transmitted through the gurushishya parampara (teacher-student relationship) by saints and sadhus teaching their disciples about traditional rituals and chants. The Kumbh Mela encompasses ancient rituals and traditions and living expressions. These include the practises, representations, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated with different communities including sadhus, religious leaders, and even the common man without any religious affiliation but simply partaking in the ritual on the basis of individual choice. The Kumbh Mela is the living reality of millions of Indians living around the sites, and pilgrims travelling to the sites from distant places.

The wealth of knowledge passed on over time and through generations of believers and practitioners, largely on the basis of an oral tradition, is worthy of the accreditation it has received from UNESCO. Although the Kumbh Mela has sustained itself on the basis of the faith and the beliefs of millions of practitioners, the status accorded by one of the world's most reputed cultural organizations certainly underlines its distinction.

An estimated 120 million people visited the Maha Kumbh in Allahabad in 2013 over a 2-month period, including over 30 million on a single day – on 10 February 2013. It is estimated that 150 million people visited the Kumbh in 2019.

The Magh Mela 2018 became a rehearsal ground to test various assumptions and a pilot project was run to test the efficacy of experiments



in the sanitation plan to be carried out later, in Kumbh Mela 2019. During the Magh Mela, around 4,000 public toilets based on different designs were deployed after intensive brainstorming. Broadly, two types of toilets were built in the Mela area – septic tank-based toilets along low-lying land to prevent the sludge from percolating into the river (the suction process was used to evacuate and clean them regularly) and soak-pit toilets farther away from the riverbed. The vendors assigned to build these toilets were required to maintain them and keep them odourfree. This not only contained the incidence of open defecation but also boosted the Mela team's confidence; thereafter, 'Swachhagrahis' (volunteers) were trained and motivated to carry out the bigger tasks for Kumbh 2019.

In the area of Solid Waste Management (SWM), again, one sector of the Mela – the most crucial one, around the Sangam nose – was chosen for experiments with modern SWM techniques, which prevented solid waste from touching the ground during transportation. Mechanized and manual road sweeping, garbage transfer from tipper to compactor and thereon to disposal and treatment site was done in a seamless manner. The solid-waste disposal chain began with garbage bins, customized for the Mela, installed at a distance of 50m all along the Mela roads, in vending areas, inside camps, near ghats and in the circulation areas. Each garbage bin had a liner bag, so that garbage could easily be contained and transferred to tipper vehicles with minimum chance of spilling. A sufficient number of dustbins, tippers and compactor vehicles were used for this seamless SWM process. This experiment was also successful and gave the administration the confidence to upscale this methodology for the Kumbh Mela 2019.

This great learning from Magh Mela 2018 was applied to Kumbh Mela 2019. A total of 1,22,500





toilets, including 20,000 urinals, were deployed, with a special focus on septage management, wherein the septage was evacuated and transported to Sewage Treatment Plants (STPs) to prevent untreated water being discharged into the rivers. A total of 250 suction vehicles were deployed for septage evacuation. Apart from the

installed STPs, 2 temporary sites with geo-tube technology were also operationalized to cater to the needs of the Mela. These activities were monitored and supervised by health department officials with the support of 1,500 Swachhagrahis through a smartphone application, which was linked to a control room. Odour control was

managed with the help of a solution developed by the research scientists of Bangalore University and applied in the field by students of Allahabad University.

For SWM, 20,000 garbage bins, 120 tipper vans and 40 compactors were deployed at the site. Over 28 lakh liner bags were put to use during the Mela period, with each garbage bin evacuated thrice a day. To keep the ghats clean, special teams and river skimmers were engaged to clear the river of flotsam.

As the construction work of STPs in and around the city was underway, it was decided that all the untapped drains emptying into the Ganga across the state and into the Yamuna in Prayagraj would be tapped and treated temporarily for the Mela duration. Bio-remediation, geo-tube and in situ technologies were used to treat these drains, with satisfactory results. Pilgrims, in general, were very appreciative of the quality of river water during the Mela period.

A bird's-eye view of Kumbh Mela area showing the city of tents and people thronging pontoon bridges

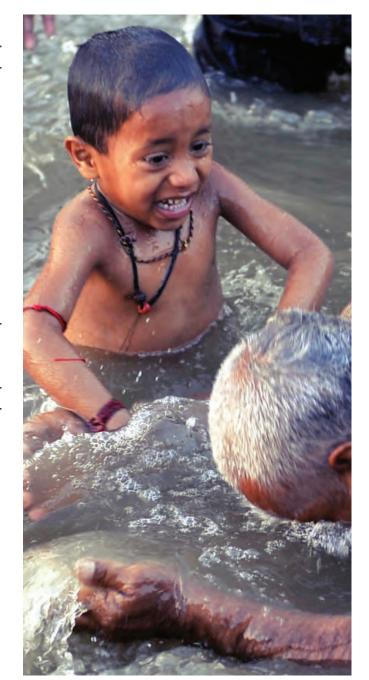


It is pertinent to mention that none of these plans would have fructified without teamwork. And the local administration had the best of officers during Kumbh 2019. The teamwork between Mela administrators, consultants, volunteers and officials from the health and Panchayati Raj departments delivered stupendous results. The tremendous support from the various religious bodies, the general public as well as the media kept the Mela administration motivated to realize the ambition of a Swachh Kumbh.

The government, led by the Hon'ble Chief Minister, gave the local administration a lot of liberty to identify and execute the best possible sanitation models. This turned out to be a big enabler as it could design and implement the best possible sanitation architecture, inducing cultural and behavioural change. The Hon'ble Prime Minister visited Kumbh on 24 February, and presided over a special Swachh Kumbh event and applauded the efforts made by the Mela team. He especially honoured sanitation workers and volunteers who had contributed towards the realization of a Swachh Kumbh. The journey, which commenced with the objective of establishing an accountable mechanism for keeping Kumbh Mela 2019 clean, culminated with the world appreciating it as an example of unparalleled human endeavour in terms of sanitation.

(Right) The bathing of Nagas at Sangam on a particular day and time is called *shahi snaan*.

View of one of the *shahi snaans*



To make youngsters understand the tradition, elders make it a point to bring children to Kumbh Mela from a very early age







As the largest mass gathering on the planet, the Kumbh Mela is an event of incredible magnitude but presents equally sizeable difficulties. About 240 million people visited the Kumbh Mela in 2019. Increased crowd density leads to unhygienic conditions and, combined with exposure to environmental pollutants, paves the way for easy transmission of pathogens. Hence, an effective collection and waste transportation system equipped with modern infrastructure, scientific liquid-waste management and adequate toilet facilities were key to ensure cleanliness. Therefore, sanitation and waste management were the top priorities from day one.



DEPLOYMENT OF TOILETS AT KUMBH OVER THE YEARS



2001 21,002 toilets

2007 22,070 toilets

2013 33,000 toilets

2019 1,22,500 toilets

MAJOR CHALLENGES IDENTIFIED DURING KUMBH 2013

- Pollution of River Ganga due to improper sanitation strategy and disposal of sewerage/septage
- Bad publicity as a tourist destination for Prayagraj, Uttar Pradesh and India across the world
- Foul odour in the Mela area leading to a substandard pilgrim experience
- Vector- and fly-breeding leading to significant risk of epidemic
- Overflowing containment chambers leading to nonoperational toilet units
- Contamination of ground water by ill-designed containment provisions
- Hardships to women, *divyaang* (differently abled) and elderly people during basic daily ablutions
- Human handling of waste, MSW (Municipal Solid Waste) accumulation in the Mela area and incidences of littering



INTEGRAL COMPONENTS OF SWACHH KUMBH



Adequate deployment of toilets and urinals



Swachhagrahis: The sanitation volunteers



SWM



Septage Management



24x7 digital monitoring of waste management operations



IEC/BCC activities



But before creating a comprehensive sanitation architecture, it was important for the authorities to understand what was done in the earlier Kumbh Melas. In 2001, 14 circles managed cleanliness in the Mela by deploying 40–50 gangs per circle. A total of 21,002 toilets were installed for the pilgrims, of which the majority were deep-trench toilets. The focus was on deploying adequate public urinals for visitors. Over 2,000 urinals were deployed across the Mela premises. Sanitation workers kept the toilets and urinals clean and functional and precautions were taken to ensure there was no foul odour during the Mela. A total of 48 flag areas with barricading were identified for defecation within the Mela area.

In 2006-07, during the Ardh Kumbh Mela, the health department managed sanitation services using 19 circles. A total of 429 gangs were deployed to keep the Mela area clean and sanitized as against the plan of 480 gangs in the preparation phase. There were an average of 20–25 gangs per circle depending on the requirement. As many as 22,070 toilets were installed in 2007 in the Mela area to curb open defecation. In addition to the public toilets, deep trench-based toilets were also installed. Additionally, over 500 urinals were deployed at key points and places of public interest during the Mela.

Efforts were made to ensure regular maintenance of toilets. Lime powder, bleaching powder and malathion, etc., were provisioned to check any foul odours. Furthermore, 3,908 temporary pits were constructed for garbage collection within the Mela area. In each circle, tractors were provisioned for the transport of garbage to the designated dumping yards outside the Mela area.

Planning waste management for Kumbh Mela 2013 was piecemeal and lacked synchronization across the various components of solid- and liquidwaste management. Open disposal of solid waste



was widespread and open defecation was a major challenge during the Maha Kumbh Mela in 2013. A total of 33,000 toilets and an additional 5,000 public toilets were deployed during the Mela. Over Mela 2019 provided both a unique as well as a 7,000 sweepers were employed by the Mela Authority to manage and dispose of garbage. However, a lack of the right waste-handling equipment translated into large heaps of garbage being burnt at various places.

Kumbh Mela 2019 thus were planned in a comprehensive way, taking into account the context of religion and the psychology of pilgrims. SWM were given maximum attention. However, designing foolproof architecture for toilets and garbage management, vector control, managing disinfection and performing epidemiological

analyses were not easy. In addition to that, making potable and clean drinking water available to all was also a colossal task. Nevertheless, Kumbh challenging prospect to demonstrating the state's commitment towards sanitation and public health. Sanitation, infrastructure as well as behavioural change were the primary focus areas under the Swachh Kumbh banner and as a result, seers and Learning from the past, sanitation facilities for visitors reported distinctly improved sanitation services as an outcome of a combination of unprecedented arrangements.

Exhaustive planning and conceptualization of The two biggest concerns of open defecation and waste management, deployment of adequate dustbins and toilets, seamless and efficient waste evacuation system, round-the-clock smart monitoring of service delivery, adoption of an environment-friendly odour-management strategy





A Swachh Kumbh pledge was signed by the then Hon'ble Governor of UP Shri Ram Naik and Hon'ble Chief Minister of UP Yogi Adityanath, in the presence of Hon'ble Mr Justice DB Bhosale, the then Chief Justice of the Allahabad High Court, and other dignitaries. This increased the commitment and accountability in the endeavour.

Sanitation was divided into three segments -Swachh Kumbh, Sundar Kumbh and Behavioural Change – to enhance the pilgrims' experience. Technological solutions were employed to achieve these. Toilets had user-friendly designs, sewage disposal was environment-friendly, and transportation of solid waste was seamless. The Magh Mela 2018 became a testing ground for various plans and assumptions and a pilot project was executed to test the efficacy of various experiments in the sanitation plan to be carried out later in Kumbh Mela 2019. During Magh Mela, around 4,000 public toilets based on different designs were deployed after rigorous brainstorming. Broadly, 2 types of toilets were built in the Mela area – septic tank-based toilets along low-lying land to prevent the sludge from percolating into the river (the suction process was used to evacuate and clean them regularly), and soak-pit toilets farther away from the riverbed. The vendors mandated to build these toilets were required to maintain them and keep them odour-free.

SWACHH KUMBH

Eventually, over 1 lakh toilets, a robust Information and Communication Technology (ICT)-based system to monitor and ensure their cleanliness, proper on-site and off-site septage management, and cesspool operation and odourmanagement technologies were planned to keep the Kumbh Mela area clean. The aim was to make the entire Mela area open defecation-free.

Moreover, keeping in mind the Prime Minister's





flagship Swachh Bharat Mission, which aims to keep the entire country clean, the Prayagraj Mela Authority also decided to place toilets in each parking area for the convenience of pilgrims. The health department was tasked with procurement of toilet units that met the requirements of the various parking areas and to also ensure that these toilets and accompanying infrastructure were of good quality. Besides setting up toilets and the needed infrastructure, the health department also ensured the deployment of trained personnel to ensure the cleanliness of the parking lots as well as the regular servicing of toilets so that they were always in sanitary, usable condition.

During the Kumbh Mela 2019, 20,000 safai karmis were deployed to keep the Kumbh area clean and maintain the sanctity of the land. The karmis worked round the clock and were assisted in their endeavours by a group of 1,500 Swachhagrahis who helped in instigating behavioural change and best practises. All over the Kumbh were placed 20,000 dustbins with liner bags and there was a concerted effort to encourage visitors to dispose their waste only in these bins. More than 1.22 lakh toilets were deployed to ensure it was an open defecation-free and odourfree Kumbh and the overall initiative was the largest deployment of toilets, dustbins and SWM ever in a mass-gathering event. Moreover, all the drains flowing into the Ganga were either diverted to sewerage treatment plants or were treated by bio-remedial geo-tube techniques to ensure the river remained clean for the crores of pilgrims visiting the Kumbh for the holy dip. The initiative turned out to be a resounding success as it made Kumbh 2019 one of the cleanest mass gathering childcare centre (started by the Government of events in recent history.

aesthetics, hence the Paint My City campaign was also run. Under this campaign, 6 agencies got

together and painted around 20 lakh sq. ft of public walls to enhance the splendour of this holy city. The city walls were aesthetically painted to showcase the numinous significance of the Kumbh Mela through the hues of mythology. Besides, LED vans, hoardings and banners were deployed to deliver messages on public participation and contribution towards cleanliness. Since behavioural change was the key to ensuring a Swachh and Sundar Kumbh, around 2,000 Swachhagrahis – village-level volunteers under the Swachh Bharat Mission – were employed to motivate people to use toilets and reduce open defecation. Team-building exercises were conducted in the Mela area to help people involved in the process understand various things. Apart from this, the use of modern, cleaning equipment for toilet cleaning and waste handling was also introduced to minimize the occupational hazards of sanitation activities.

In keeping with the dignity of labour, Kumbh 2019, for the first time, witnessed the establishment of residential facilities for sanitation workers, which included provision for food and schools (for the children of labourers). It was observed that when sanitation workers would come to the Kumbh Mela for 3-4 months, their children were forced to leave school as the parents were not in a position to leave them behind. Therefore, it was for the first time that the state government took the initiative and arranged for the schooling of these workers' children so that their education did not suffer. In fact, the Hon'ble Chief Minister himself visited these places during inspections to ensure that there was no compromise on the children's education. Similarly, Anganwadis, a type of rural India in 1975 as part of the ICDS or Integrated Bhavya Kumbh was also linked to beauty and Child Development Services programme to combat child hunger and malnutrition) that provides basic healthcare, nutrition education and

supplementation, as well as preschool activities, was also established.

demonstrating the national commitment to sanitation and public health. Even by a very conservative estimate, at least 200 tonnes of solid waste was expected to be generated in the Mela area every day. On busy days, this figure was estimated to reach 500 tonnes. Therefore, an effective waste collection and transportation system equipped with modern equipment, scientific liquidwaste management, and adequate toilet facility was imperative to maintain cleanliness.

On 16 December 2018, a month prior to the commencement of Divya Kumbh-Bhavya Kumbh, Hon'ble Prime Minister Shri Narendra Modi graced Prayagraj to review Mela preparations. He accorded time to the Swachh Kumbh exhibition that demonstrated the various measures employed to make Kumbh 2019 a swachh (clean) one. Innovative and technological solutions were introduced on a large scale to make Kumbh 2019 a zero open defecation-event and this was off an ambitious initiative like Swachh Kumbh.

SWACHH KUMBH

ably exhibited through the show. Since swachhata (cleanliness) holds great significance in Prime The Mela was a challenging platform for Minister Modi's policies, he was apprised of various schemes that were rolled out for a Swachh Kumbh, including the 1,22,500 toilets and urinals constructed in the Mela area. Demonstrations were given of how septic tanks in riverbank areas prevented septage from seeping into the river and how suction machines sucked out septage and transported it to the nearest sewage treatment plant. The Prime Minister was particularly impressed by the use of ICT in toilets for better maintenance and feedback.

> It was only fitting that the third Guinness World Record attempt allowed around 10,000 safai karmis to take centre stage and successfully set a record (in a new record category) by sweeping continuously for 2 minutes across 5 venues: Lal Marg (Sector 1); Lal Marg (Sector 2); Sangam Lower Marg; Sankat Mochan Marg; and Kailash Puri Marg. The successful attempt was a testament to the unity, coordination and discipline that went into pulling









PREVENTION IS BETTER THAN CURE

VIJAY KIRAN ANAND, IAS, Mela Officer, Prayagraj Mela Authority



Mela. sanitation was the most critical issue. It was also a significant guiding principle for the administration and,

therefore, divided into three segments - Swachh Kumbh, Bhavya Kumbh and Behavioural Change – to enhance the pilgrim experience. From toilets to garbage management, providing potable and clean water, vector control, disinfection and epidemiological analysis, each detail was taken care of. Forty compactors and 120 tippers ensured timely, effective and efficient disposal of waste.

The Mela area was made vector-free by to ensuring a swachh and bhavya Kumbh. employing over 30 Hot Fogging Machines. Userfriendly puff-body toilets, ICT-based monitoring tools for ensuring cleanliness in the 1,22,500 installed toilets, technology-based solid-waste disposal system with ergonomically designed equipment for waste collection and transportation, seamless transfer and transportation of waste and a choice architecture to encourage behavioural change were the key initiatives that made this Mela a successful event. Over 20,000 dustbins and liner

millions from bags were also used for this purpose. Operation and maintenance of these facilities during the converging in Prayagraj Mela period were done with the help of Swachhagrahis or village volunteers under the Swachh Bharat Mission. An ICT-based monitoring system was developed for sanitation workers to reach a spot in minutes and thus ensure timely cleanliness of toilets and on-site and off-site septage management. Besides continuous jet sprays to keep the area free of flies, a specially developed chemical also ensured an odourless environment around the clock.

> With the Kumbh Mela being primarily about the ritual bathing at the Triveni Sangam, a large force of men and giant river trash skimmer machines were deployed to keep the river water clean. Finally, it was behavioural change that held the key Approximately 1,500 Swachhagrahis motivated people to use toilets and reduce open defecation. LED vans, hoardings and banners also delivered messages on public participation and contribution towards cleanliness.

A robust monitoring mechanism, backed by a motivated team and suitable technologies, was put in place as per requirements. We hope we have made a breakthrough in terms of identifying the right interventions in mega mass gathering events.

KUMBH 2019: FACTS AND FIGURES

Daily waste generation: 200-500MT/day

1,22,500 portable toilets for open defection-free Mela

Pilot study: Eco-friendly septage containment and odour-management solution for the toilet units

120 tipper vehicles were circulated 4–8 times a day

Garbage bins were installed every 251

20 total sectors in the Mela area

40 solid-waste portable compactors (2 per sector)

120 tippers for round-the-clock garbage collection

20,000 dustbins, one every 25m

toilets and give them a finishing touch.

Workers worked round the clock





















(Top) The Swachh Kumbh pledge signed by dignitaries; Hon'ble Chief Minister Yogi Adityanath during a review of awareness programmes for a Swachh Kumbh (Above) People from all walks of life taking the Swachh Kumbh pledge on different occasions

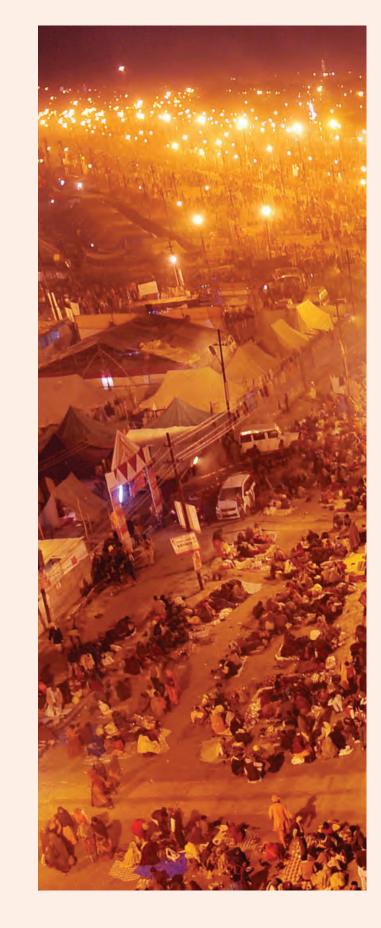
(Facing page: Top) Hon'ble Governor of UP Shri Ram Naik, Hon'ble Chief Minister Yogi Adityanath and other dignitaries during the launch of the Swachh Kumbh logo (Facing page: Bottom left and right) Hon'ble Governor of UP Shri Ram Naik, Hon'ble Chief Minister Yogi Adityanath signing the Swachh Kumbh pledge



A cross-section of people taking the Swachh Kumbh pledge on World Toilet Day







SWACHH KUMBH STORY OF INNOVATIONS

SALONI GOEL

Kumbh Mela 2019 has been recognized for its unprecedented organization, centred on an enhanced user experience, making it the most inclusive and visited event ever. A key ingredient in this was cleanliness and sanitation. The Swachh Kumbh campaign was manifested as an open defecation-free, garbage-free and odour-free Mela. Prime Minister Shri Narendra Modi, in his address to PIOs during his visit to South Korea in February 2019, commended it by saying that the event created a milestone in sanitation. He opined that the accomplishment had demonstrated the nation's will to achieve *swachhta* in the face of age-old indifference and even dejection.

What worked? What changed the narrative? What brought about this transformative impact across the broad spectrum of stakeholders? Was it provision of adequate sanitation infrastructure? Round-the-clock services? Or a system design that enabled and encouraged active participation of service providers and receivers? Actually, it was a combination of all these.

Provision of adequate sanitation facilities was crucial. The requirement was estimated by factoring in the expected peak footfall on main bathing days. Hence, the number of public toilets was raised to more than ten times the number provided in previous events. Even dustbins were procured in larger quantities to provide one at every 50m. Moreover, toilets and dustbins were located at frequent, periodic and predictable intervals along roads for easy access. Modern

toilets were procured for an improved user experience. Toilets were provided with lights and latches to enable safe operations, especially for women visitors. One in every 10 public toilet was designed for the differently abled.

Having provided the sanitation infrastructure, the challenge was to ensure that it remained well serviced every hour, every day. Sanitation workers were equipped with jet spray machines to enable effective and efficient cleaning. A solid-waste system that depended on garbage collection in bin liner bags was designed for zero-contact waste handling. Garbage evacuation from the Mela area was done with the help of tipper and compactor vehicles. Vehicle movement routes and schedules were followed strictly to ensure prompt removal of all waste from the Mela area. The toilet stench was treated using an eco-friendly, innovative solution developed by researchers from Bangalore University. The solution was prepared at the site and applied to all public toilets and facilities. This lab-to-field scale-up was a unique intervention. Above all, an IT-based system was developed and adopted to monitor sanitation services 24x7. The feedback was collected by village volunteers and shared with implementation partners for corrective

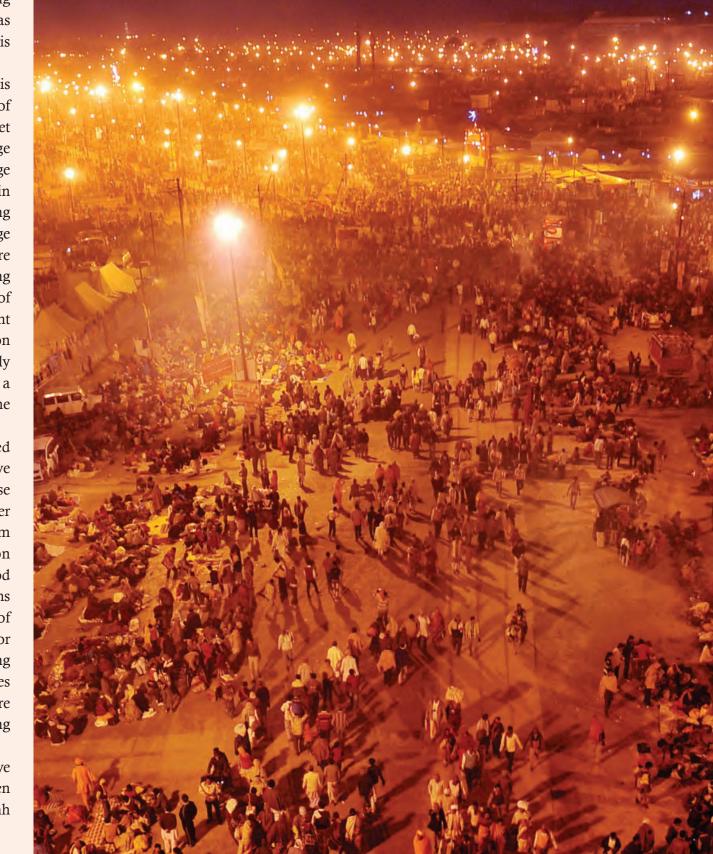
Users during the Kumbh readily adopted the use of sanitation facilities. The deliberate sanitation architecture, including provision of sufficient toilets and dustbins, their visible placement at regular and predictable intervals, and ensuring

they were well-serviced, was critical for ensuring that most visitors used the facilities. This was supported by active engagement of Swachhagrahis in helping visitors walk the last mile.

Above all, sanitation interventions during this Kumbh were designed to minimize the risk of environmental pollution of rivers and land. Toilet discharge was either directly sent to sewage treatment facilities through an existing sewage network wherever it was available, or collected in impervious septic tanks and transported using suction tanker vehicles. Two additional sewage treatment units using geo-bag technology were installed for the purpose, in addition to existing STPs in the city. This was the first instance of adoption of a comprehensive sewage management in a temporary tent city. The solid-waste collection system ensured that all garbage was effectively removed from the Mela grounds and sent to a dedicated treatment facility at the outskirts of the

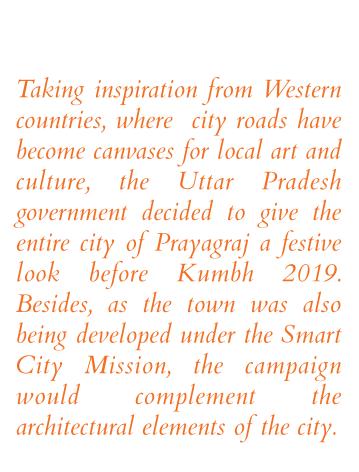
The planning of these interventions started during Magh Mela 2018, when an effective sanitation pilot was demonstrated. Based on these learnings, the scale-up plan was developed after multiple brainstorming sessions with core team members. Actual ground implementation commenced in October 2018, after river flood waters had receded from the Mela grounds. Plans included detailed layouts for the locations of sanitation infrastructure, as well as route maps for work allocation. An extensive database covering all implementation partners was created. Roles and responsibilities, processes and systems were detailed and communicated in multiple training sessions, which ensured robust accountability.

Swachh Kumbh was enabled by comprehensive sanitation interventions. Its achievement has been a historic step in realizing the dream of a Swachh Bharat.





PAINT MY CITY







As the Kumbh is a place where millions of pilgrims come to absolve themselves of their sins and get peace of mind, the content on these walls was expected to evoke contentment and happiness, considering the festival mood of the Mela. Subtle, beautiful and awe-inspiring pictorial messages that depicted the religious, spiritual and scientific connotations of the Kumbh, besides the city's mythological background, cultural diversity, social awareness and heritage were thought to be appropriate for this theme. Nothing provocative, obscene or negative was chosen for depiction.

A decision was taken to paint the entire city in varied hues under the campaign 'Paint My City', which would showcase the spirit of Kumbh Mela. A testing ground was set up in the form of a small pilot project during Magh Mela 2018 with the help of university students, who were invited to share their designs. However, realizing the magnitude of the work, professionals were roped in later. The initial funding came from Namami Gange, the Government of India's ambitious National Vishnu's advice, the devas agreed to take their

Mission to Clean the Ganga, which became the main sponsor, and the UP tourism department.

The most important themes of this project were the depiction of India's and Uttar Pradesh's cultural heritage, the historical legacy of the city, and the narrative behind the genesis of the Kumbh. However, the Kumbh legend formed an integral theme. As described in the Vedic literature, the power of the devas was diminished because of a curse by Maharishi Durvasa. Hence, they lost to the asuras, who were led by Bali. In a bid to find a solution, they approached Lord Shiva, who directed them to Lord Vishnu. The latter asked them to churn the Kshir Sagar (the Primordial Ocean of Milk) in what is termed as Samudra Manthan, to produce the amrit or nectar.

Since the devas didn't possess the strength to do so on their own, Lord Vishnu asked them to seek help from the asuras. Mandar Mountain became the fulcrum, and Vasuki, the king of serpents, the rope for the churning. Once again, on Lord



Street art projects on more than 20 lakh sq. ft of space across Prayagraj

On 3 December 2019, #PaintMyCity was No. 3 on Twitter's top India trends



Over 5,000 artists,
6 agencies and several
professionals and student
volunteers helped turn the
entire city into an art gallery





position at the tail-end of the serpent. Hence, the asuras, who wanted to hold the head, had to deal with Vasuki's toxic breath. During the churn, Mandar began to sink, so Lord Vishnu took the shape of Kurma, a giant turtle, to support it on his back.

In the early stages, the churning produced the (Lord Vishnu in disguise) agreed to give the nectar deadliest poison, halahal, which was drunk by Lord Shiva, turning his neck blue and giving him the name Neelkantha. A few drops of poison fell to the ground and were licked by creatures like scorpions and snakes, which thereafter became venomous. Among other gifts that initially emerged from the churning were Kamdhenu (a wish-granting cow, which was taken by Lord Brahma and given to the sages); Airavat (an elephant that went to Lord Indra); and Uchchaishravas (a seven-headed horse, which was given to Bali). The ever-flowering Parijat tree was taken by the devas to Indralok. After 1,000 years, with Lord Shiva and the day the Kumbh officially

Dhanvantri appeared with the pot of nectar.

When the amrit kumbh (the urn containing the nectar) emerged during the churning, Indra's son Jayant flew away with it. The asuras followed him and tried to overpower him, which resulted in a fierce battle that lasted 12 days. Ultimately, Mohini to everyone, but decided to first serve it to the devas. The plan was to finish it before it reached the asuras. However, an asura disguised as a deva managed to drink the nectar. Before Lord Vishnu could decapitate him, some drops trickled down to his stomach, and so he did not die. His head became Rahu, and his body, Ketu.

The Paint My City campaign captured all the elements of this tale as well as the religiosity of the Kumbh. Lord Shiva, given his crucial role in the Manthan, became the obvious motif. The significance of Maha Shivratri, a day associated



ends, inspired the painters to depict legends and

the Bade Hanuman Mandir and adjacent buildings near Sangam, the street art shows Lord Hanuman, a devotee of Lord Rama and Goddess Sita, for obvious reasons. The Manthan and its various elements, including the entire narrative, are visible at several sites - New Mela Office, Naini Central Jail, GT Jawahar Flyover, and others. There are visual depictions of the churning, featuring Kurma, Mandara and Vasuki, and, at some sites, Lord Neelkantha. Various personalities and spaces. objects that emerged from the Manthan, including Dhanvantri with the nectar pot, and Mohini, are there for pilgrims to see.

The campaign also depicted the Saptarishis, the mind-born sons of Lord Brahma, who attained semi-immortal status. Each of these sages, who are assigned to guide the human race during their lifetimes, lives for a Manvantra, or 3,06,720,000 earth years. They include Rishi Atri (known for discoveries of great sacred mantras), Rishi Bhardwaj (author of Ayurveda, master of advanced military arts, father of Dronacharya, the guru of the Pandavas and Kauravas), Rishi Gautam (credited with authoring many hymns in Mandala 1), Rishi Jamdagni (father of Parashurama, the sixth avatar of Lord Vishnu), Rishi Kashyap (author of Kashyap Samhita, a classical reference book in the field of Ayurvedic paediatrics, gynaecology and obstetrics), Rishi Vashishtha (Rajguru of the Surva Vansh whose scripture, Yoga Vashista, provides content and context to the questions Lord Rama asked when he was disenchanted with the world), and Rishi Vishwamitra (the only seer who rose to the

SWACHH KUMBH

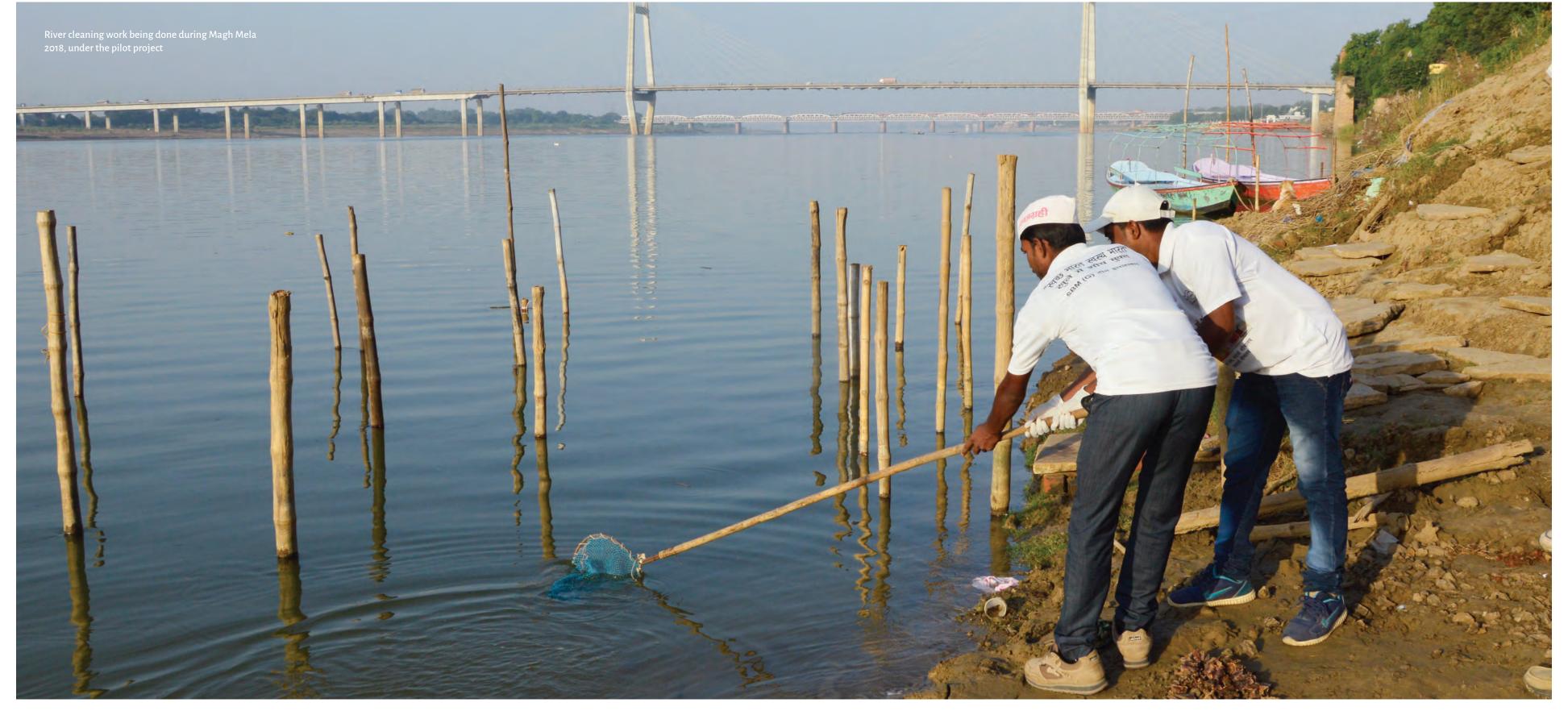
position of a Brahmarishi through sheer merit).

Since the city has been the intellectual and political hub of the country for over a century, political and literary personalities were also given space in this art campaign. The list covered Saints and ascetic orders were also painted at Mahatma Gandhi, Subhash Chandra Bose, Atal locations of religious significance. On the walls of Bihari Vajpayee, Madan Mohan Malaviya and many others. E-rickshaws, flyovers, pillars under bridges and hostel buildings were all were used as canvases. Today, Prayagraj is a beautiful city, completely transformed and lively with artistic paintings, plants and flowers across its length and breadth. Each nook and corner seems to welcome one and all. And, long after Kumbh 2019 is over, Paint My City will continue to live in the minds of all who see the amazing, wondrous art in its public









Magh Mela 2018 was used as a platform for a pilot project to prepare for Swachh Kumbh in 2019. Many novel sanitation and solid-waste interventions that would be introduced in Kumbh 2019 were successfully tested during the Magh Mela. Precise details were worked out, such as provisioning thick strings to tie liner bags to the tops of dustbins to prevent the river breeze from blowing them away.

The Magh Mela pilot project included sanitation management drills. Swachhagrahis were trained and motivated to create awareness and monitor jobs. The most noteworthy initiative during the Magh Mela was the non-microbial odour-management solution approved by USEPA (United States Environment Protection Agency). This innovative initiative was appreciated by the Hon'ble Chief Minister, Hon'ble Governor, Hon'ble Chief Secretary and other officials who visited Magh Mela 2018.

SUCCESSFUL PILOTS AT MAGH MELA 2018

- Provision of overflow pit and suction before peak days
- Efficient toilet structure increased containment capacity
- Seamless SWM operations
- Use of bin liner bags for waste collection









The Prayagraj Mela Authority and all other stakeholders were determined to make Kumbh Mela 2019 a prestige project in the Gol's swachhta campaign. Waste management initiatives, combination of physical infrastructure for solid- and liquid-waste management and behavioural change activities were the game-changers in this endeavour. To live up to its theme of Swachh Kumbh, Surakshit Kumbh (Clean Kumbh, Secure Kumbh), the stakeholders used lessons from previous experiences. Considering the mammoth effort required, a budget of ₹234 crore was sanctioned to fulfil two primary objectives.



Even urinals of different types were made for the

convenience of pilgrims

These two objectives were:

- Clean Ganga and Clean Mela
- Zero open defecation and adequate toilet facilities

Before Kumbh 2019, efforts were made to ensure that devotees accessed a clean river.

The following projects were undertaken in Prayagraj under the Swachh Bharat Mission and Namami Gange:

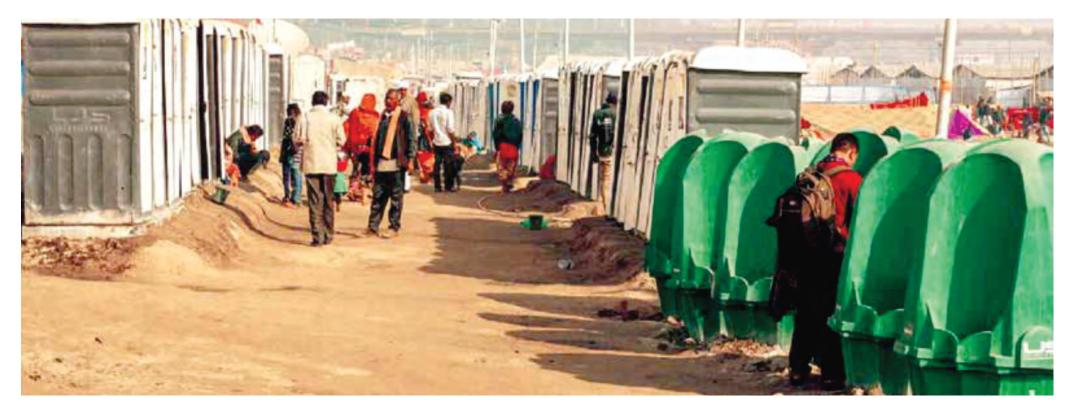
- Using bio-remediation to clean 45 drains that meet River Ganga upstream in Prayagraj
- Setting up of District Ganga Committees with the sole aim of Ganga rejuvenation
- Repair/rehabilitation/construction work at 94 ghats
- Cleaning the Ganga's tributaries

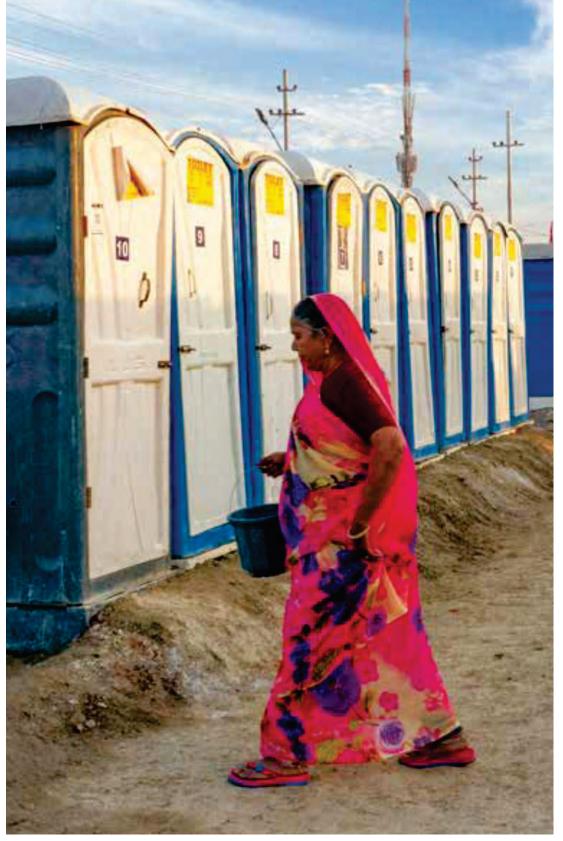
In addition, a task force called the Ganga Task
Force was trained by the environment department
and UP Pollution Control Board to promote ecotourism and spread awareness among comp
schoolchildren and local people on the sources of area.

pollution and their adverse impact on the Ganga.

The Mela Authority wanted to ensure that the Mela area remained clean throughout, and so it was imperative to plan and ensure availability of adequate eco-friendly toilets and dustbins, waste treatment plants and sanitation workers. The Mela was getting greater national and international visibility due to concerted government efforts and social media, and the promise of even more international visibility was a tempting opportunity that led to a commitment to sanitation at all levels.

Further, to minimize litter and garbage on the streets, a total of 20,000 dustbins were proposed to be placed along roads and ghats, circulating areas and inside camps and vending areas. An unparalleled plan was put together to position dustbins in such a manner that no visitor had to walk more than 25m to dispose of garbage. For effective collection and transportation of garbage, 120 tippers (6 in each of the 20 sectors) and 40 compactors were made operational in the Mela area.









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INITIATIVES TAKEN BY THE HEALTH DEPARTMENT

- Spraying of water in the Mela area to check dust clouds
- Restriction of vehicles in Mela area to control air pollution
- Polythene-free Mela area
- 95 million litres of drinking water per day
- 5,000 drinking water stand posts
- 200 water ATMs, 150 water tankers, 100 handpumps
- 1 central hospital with 100 beds
- 2 infectious disease hospitals
- 9 hospitals with 20 beds each in different sections
- 150 ambulances and 1 air ambulance in the Mela area
- 6 advanced life support ambulances
- 10 motorized river ambulances
- 2,000 medical staff
- 40-bed trauma care facility



Mass gatherings can potentially expose people to a range of health risks - the primary being water-borne diseases. The entire focus during Kumbh 2019 was, therefore, on mitigating this risk through 24x7 supply of drinking water. Potable water, tested often, was made available to over 20 lakh kalpvasis and crores of visitors at 5,000 drinking water stand posts, 200 water ATMs, 100 handpumps and 150 water tankers serviced by a 900km pipeline. Prayagraj Kumbh 2019 will also be remembered for a long time for its charitable endeavour, Netra Kumbh. Inside a grand pandal in Sector 6, 400 ophthalmologists performed over 10,000 cataract operations and distributed more than 1,00,000 free spectacles. Over 5 lakh people also received free eye check-ups.

Prayagraj has multiple hospitals, equipped with new wards and upgraded medical equipment. Apart from these, Kumbh 2019 also boasted 22 hospitals with more than 450 beds, 150 ambulances and 2,000 medical staff in the Mela precincts. State-of-the-art motorized river ambulances, advanced life support ambulances, an air ambulance and a 40-bed trauma care facility were also in place to deal with emergencies such as stampedes, accidents or other disasters.





State-of-the-art motorized river ambulances, well-equipped hospitals in the Mela precincts,
Netra Kumbh services and 24x7 supply of drinking water – everything was arranged inside the Mela area



MISSION: A HEALTHY KUMBH

DR AK PALIWAL, Additional Director, Health and Family Welfare

Mass gatherings can expose people to a range of health risks including stampedes and accidents, besides posing complex public challenges such as crowd control, management of health services and public security. The health department's focus was on mitigating such risk factors. The primary risk being water-borne diseases, measures were taken to provide drinking water 24x7 to over 20 lakh kalpvasis and crores of visitors. The figures spoke for themselves – 5,000 drinking water stand posts, 200 water ATMs, 150 water tankers and 100 handpumps! This was ensured through a 900km pipeline that had already been laid. The potability of water was continuously checked via watertesting. To deal with emergencies, motorized river ambulances, advanced life support ambulances, an air ambulance and a 40-bed trauma care facility were also in place.

But before commencing even our planning, we referred to past documentation. The Harvard study of 2013 helped greatly because it provided insight into the various things that could not be done in 2013. Besides, we also spoke to a number of experts with experience of earlier Kumbh Melas, and they guided us in preparing a flawless plan.

After much brainstorming, we understood that there were a couple of issues that needed to be resolved. For instance, we needed to stop the practice of manual scavenging of faecal matter because it was one of the reasons for many

diseases. For that, an open defecation-free Mela was very important. The other important goal was keeping the entire Mela area as clean as possible and leaving no scope for the breeding of mosquitoes and flies, the carriers of all diseases. So we divided the entire Mela area, spread across 3,200 hectares, into 36 circles, with one malaria and filaria officer deputed in every circle. The officer in-charge was assisted by field workers. Thirty-three small Hot Fogging Machines were used in the camp areas and 3 large Hot Fogging Machines were deployed in the open areas in the Mela. This had a significant impact on making the entire Mela area a vector-free zone.

But all this wouldn't have been possible without proper and regular monitoring of the tasks assigned to various people. Hence, we had made a WhatsApp group, probably the largest I know, because there were 15,000 members in that group! It was such a busy group that we were receiving a message almost every 15 seconds. Moreover, we had developed a team sheet that included the very last worker. This meant that we knew about the work of each and every worker deployed in the Mela area.

Another method we employed in order to keep the entire Mela area disease-free was asking the sanitation workers to first collect the garbage instead of trying to sweep it. This method also contributed immensely.

KEY HIGHLIGHTS OF SOLID AND LIQUID WASTE MANAGEMENT EFFORTS DURING KUMBH 2019

Toilets located at predictable and strategic locations along roads, ghats, vending and open defecation hotspots

Vendors managed the operation and maintenance of toilets (cleaning staff as well as equipment)

Scientific odour-management using internationally approved solution

Cleaning of toilets with jet spray machine to minimize water usage and manual handling

ICT-based monitoring of toilet maintenance and collection of user feedback at key locations

Provision of septic tanks to enable containment and daily desludging into STPs/bio-remediation tanks

Deployment of 1,500 Swachhagrahis to monitor waste management operations and BCC triggering

Colour coding of toilets for easy identification; numerous posters, pictorial depictions, signages, etc.

Adoption of modern practices for toilet cleaning and garbage handling ensured zero contact of waste with human hands

Role of WASH in supporting human health was broadcast to more than 10 per cent of the nation's population through 'Paint My City' campaign, outdoor media messaging and sanitation mascots

Efforts ensured doubling of pre-Kumbh market supply capabilities. Advantages of enhanced capacity would be reaped by all subsequent large-scale events in the country

Employment avenue for the Swachhta Sena comprising sanitation workers and Swachhagrahis

COORDINATING FOR A SAFE KUMBH

ARUN KUMAR, Senior Consultant in Public Health

My mandate in the Kumbh Mela was to coordinate with Nagar Nigam to facilitate a seamless process flow in solid-waste disposal. A total of 120 mini-tipper vehicles, 40 compactor the cement factory. The remaining solid waste was heavy vehicles with drivers, cleaners and helpers from Nagar Nigam were deployed to ensure the seamless flow of the process. At one end of the process, branded plastic and steel garbage boxes were installed at every 50m with tie-able black liner polythene bags. These garbage bins were filled with garbage and waste thrown in by the public and the dirt and wastage swept up by the sweepers. A total of 120 mini-tipper vehicles made 4–8 rounds a day to collect garbage from these 20,000-plus garbage bins to carry and transport it to the 40 compactor heavy vehicles, which made solid blocks out of the collected garbage and carried them to the garbage treatment site at Baswar, 20km outside the city. At the Baswar site, maintained by an NGO, Hari Bhari, the garbage was first spread out on the ₹500 each as daily wages through direct-benefit ground to allow the moisture to evaporate.

Then, on a conveyer belt, the garbage was packed food. segregated and shredded through shredding

machines in a mechanized manner. Refuse-derived fuel (RDF) was extracted from the treated garbage and used in furnaces for power generation and in sent to landfills. Here, leachate is extracted and treated through bio-remediation since it is hazardous and should not be allowed to seep into the groundwater. The NGO Hari Bhari does the treatment, marketing and selling in this process.

As far as challenges in Solid Waste Management (SWM) are concerned, the primary one was the mind-boggling number of outside visitors, who have no sense of ownership of the city and leave behind all kinds of garbage such as excreta, urine and food leftovers. It was also a challenge to keep the morale of sanitation workers high. Most of the workers came from neighbouring states like Bihar, eastern Uttar Pradesh, Jharkhand and Madhya Pradesh. They were given free accommodation, transfer, crèche facility, and reasonably decent









ERGONOMINC DESIGN OF VEHICLES FOR SEAMLESS OPERATIONS

The solid-waste disposal system was based on the ergonomic design of tipper and compactor vehicles, intended for smooth, seamless waste collection and transportation. The system was piloted successfully during Magh Mela 2018 and is almost on the same level as the SWM methods of developed nations. It is designed to ensure that waste transfer and transportation from dustbins happens without the garbage coming into contact with human hands or the ground.

A total of 120 mini-tipper vehicles made 4–8 rounds a day to collect garbage from over 20,000 garbage bins. They carried and transported them to 40 compactor vehicles, which made solid blocks of the collected garbage and carried them to the garbage treatment site at Baswar, 20km outside the city. As described earlier, at the Baswar site, the garbage was first spread out on the ground so that the moisture evaporated and it became dry.

Next, using a conveyer belt, the garbage was segregated and the segregated garbage was shredded through shredding machines. Refusederived fuel (RDF) was extracted and used in furnaces for power generation and in the cement factory. The remaining non-biodegradable solid was sent to landfills. The Baswar facility is maintained by an NGO called Hari Bhari.

Different pictures of a Solid Waste Processing Unit









NAMAMI GANGE: A PARTNER IN CHANGE

Namami Gange, a flagship programme of the National Mission for a Clean Ganga, extensively supported the sanitation infrastructure and services during the Kumbh Mela. Namami Gange provided financial support for several initiatives like the deployment of toilets, urinals, dustbins and also the bio-remediation of the 45 drains flowing into the Ganga and the Yamuna.

The success of Kumbh 2019 was also largely due to the clean, unpolluted waters of River Ganga. This marvel, achieved through sustained planning under the Namami Gange project, not only enhanced the quality of water before the commencement of the Mela, but also provided support to Kumbh Mela authorities to ensure a *swachh* Kumbh. The project extended financial assistance to the tune of ₹113 crore for 27,500 toilets and 20,000 urinals; ₹3.6 crore for 16,000 dustbins and liner bags; and ₹16.68 crore for public outreach/IEC activities, including the Paint My City campaign.

The Namami Gange project also ensured bioremediation of drains through bio-remediation/phyto-remediation for 6 months and mass awareness activities by Ganga Praharis, Ganga Vichaar Manch and Ganga Task Force. A slew of measures were undertaken for sanitation as well as checking outflow of sewers into the Ganga, all at a cost of about ₹250 crore. More than 40 big drains, which egressed directly into the river, were checked and treated through bio-remediation and polymer-based techniques to provide clean water for Kumbh 2019.

Ganga Praharis with dignitaries at the National Mission for Clean Ganga pavilion; Ganga Praharis line up during the inauguration of the Namami Gange pavilion in Kumbh Mela area



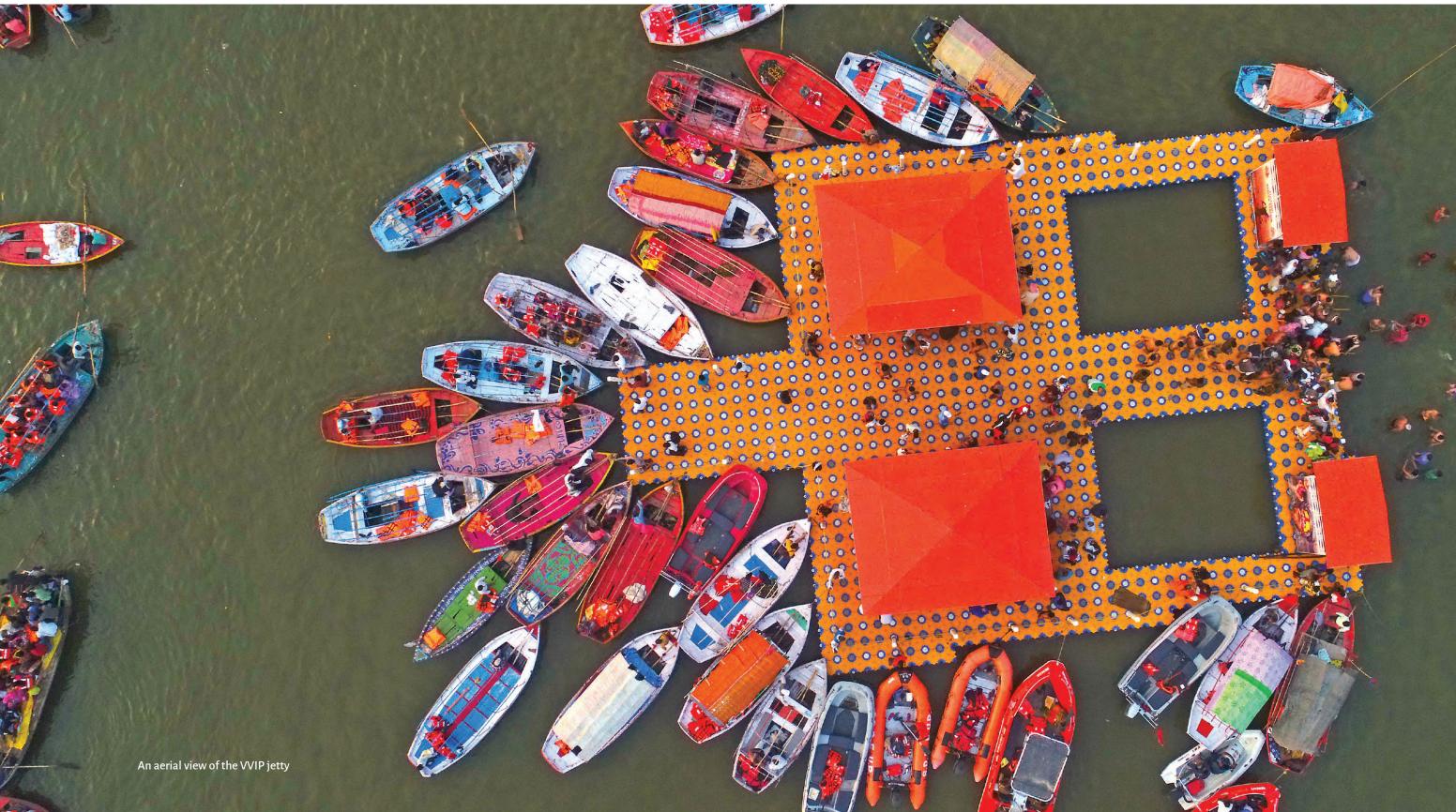


ensuring SWM and sanitation at the Kumbh, with the construction of 27,500 toilets, 20,000 urinals and 1,60,000 dustbins. During the Kumbh Mela, the Namami Gange pavilion, located at the main draw and widely acclaimed both for its design and promoted public awareness and participation of clean the water of Lote Haran drain on the Jhunsi villagers, religious groups; youth and local communities in the Clean Ganga Mission also staged a lyrical presentation on River Ganga.

Under the project, the Uttar Pradesh Jal Nigam

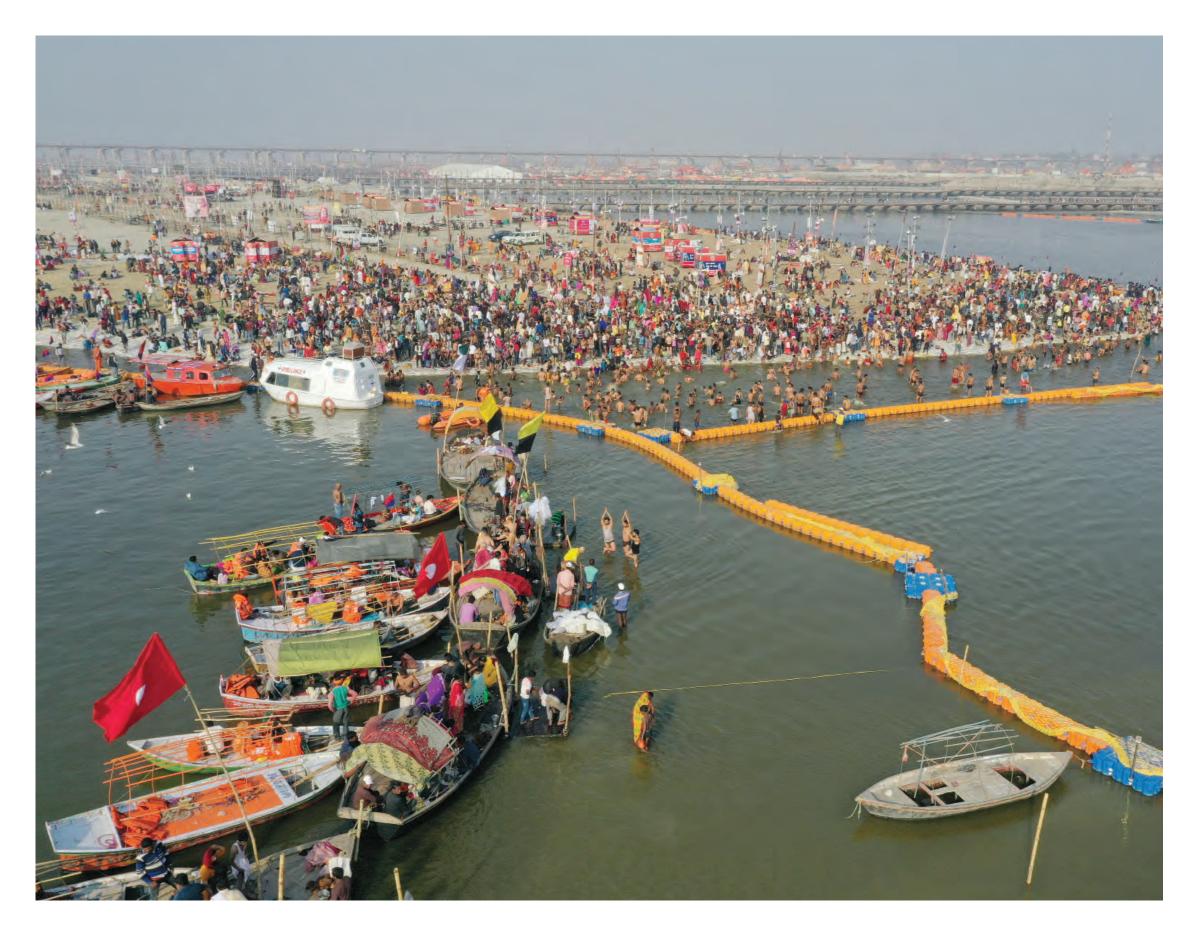
Namami Gange also undertook projects for also treated the sewer waters of Arail, Salori, Mawaiya, Lote Haran and Rajapur drains. Several new Sewage Treatment Plants (STPs) were set up in Prayagraj and the satellite towns of Jhunsi, Naini and Phaphamau, in addition to the project entry point from the city side of Sector 1, was a big of cleaning 21 ghats in the Kumbh Mela area. For the first time in the world, a special technique for the substantive information on initiatives. It called Geosynthetic Dewatering Tube was used to side of River Ganga. Another unique piece of technology, trash skimmers, were deployed for scooping out floating waste on the river.











SOLID WASTE MANAGEMENT

ergonomic design of equipment for seamless waste collection and transportation. The architectural design was chosen to encourage behavioural change and develop sound garbage-disposal practices.

It was designed to ensure that waste transfer and transportation from dustbins happened without garbage coming into contact with human hands or the ground.

The solid-waste disposal chain began with garbage bins customized for the Mela, installed at a distance of 50m all along Mela roads, in vending areas, inside camps, near ghats, and in the circulation areas of the Mela. Each garbage bin had a liner bag with strings on the ends so that garbage collected could easily be contained and transferred to tipper vehicles, with minimum chance of spills.

As many as 120 branded tipper vehicles as the SWM methods of developed nations. circulated 4-8 times a day along the designated

154 SWACHH KUMBH

The solid-waste disposal system was based on the routes, which had garbage bins placed along the road, to collect garbage. Tipper vans transferred these garbage bags to compactor heavy vehicles. The vehicles' route was drawn and pasted on the windscreens of these vehicles for greater

> The perfect alignment of tipper vehicle design with compactor design made the transfer process seamless. The compactors would compact the garbage collected from tipper vehicles, and carry them to the garbage treatment site at Baswar, located outside the city. Drivers were supplied by Nagar Nigam and were imparted suitable training. The Nagar Nigam also supplied supervisors and provided vehicle maintenance. Plus, the vehicles were cleaned every week.

The system was piloted successfully during Magh Mela 2018 and was almost on the same level







WASTE GENERATION STAGE

Waste generation: Street sweeping waste and solid waste from all tent structures (200–500MT of waste generated daily)

RIMARY COLLECTION & **TRANSPORTATION**

Street sweeping and collection from bins (20,000+ bins across 20 sectors)

Transportation done on 120 tipper vehicles (Tata Ace)

SECONDARY COLLECTION AND TRANSPORTATION

Waste from tipper vehicles was transferred to the compactors and taken out of the Mela area

ASTE DISPOSAL

Entire waste collected from the Mela was transferred to **Baswar Solid Waste Treatment Plant**

MANAGING WASTE FOR **KUMBH AND BEYOND**

UJJWAL KUMAR, IAS, Municipal Commissioner, Prayagraj Nagar Nigam

All the work required to ensure cleanliness, hygiene and availability of potable water was executed by the Nagar Nigam. Since all Kumbh pilgrims would also pass through the city, efficient management of community toilets and bathing areas was part of our plan. Sulabh areas were developed as bathing areas. Since open defecation is a social and environmental problem, we had ensured that there was no open or designated area for it. We were also expecting to benefit from the Community Laid Total Sanitation (CLTS) method. It has been in use under the Swachh Bharat Mission (Gramin) in most villages for 5 years now, in the form of a campaign to induce behavioural changes.

Swachhagrahis were deployed in the Mela area to induce people to use toilets instead of defecating in the open. And, while the responsibility of sanitation in the Mela area was of the Mela Authority, collection and disposal of solid waste was managed by Nagar Nigam, which deployed 40 compactors and 120 mini-tippers.

toilets were the basic amenities that the Nagar Nigam was expected to provide and it left no stone bylanes in the vicinity of the Mela grounds.

Our mandate was also to ensure supply of manpower and material for these purposes. In line with these objectives, the Nagar Nigam fortified

itself with tippers, compactors, sweeping machines and hook-loaders. As many as 3,286 sanitation workers were deployed by the Nagar Nigam for keeping the city clean and another 2,538 were added later, to enable work in three shifts. These workers were supervised by 90 supervisors.

We started early and identified the garbage dumping spots in vacant plots and open spaces. Cleaning of nalas and nalis became a daily affair. Fogging, lighting, road cleaning using jet spray machines, disposal of construction and demolition debris, and clearing all approach roads to Prayagraj became our daily mission.

A total of 200 community toilets were built in city areas. Additionally, 6 Pink Toilets were made exclusively for the use of women. A total of 500 garbage dumping spots and 1,961 garbagevulnerable points were identified before visitors arrived. On the regulation front, in about 10 months preceding Kumbh Mela 2019, a total of ₹12.14 lakh in fines were imposed on violators of plastic use guidelines. Cattle catchers caught 7,165 Street lights, potable water, clean roads and stray cattle; stray dogs were isolated; and special measures were taken to remove dead animals.

Furthermore, 'Kabad-Se-Jugad' became the unturned in making them available even in the tiny catchphrase and 'Tea-For-Trash' plus recycling temple garbage to make agarbattis caught citizens' attention. The result of these actions is for everyone to see. Prayagraj city took a massive leap forward in its look and feel due to Kumbh 2019.



SETTING BENCHMARKS

SAMUEL PAUL, IAS, Chief Development Officer, Prayagraj

As the CDO of Prayagraj, I was entrusted, besides other developmental tasks, with the task of establishing Swachh Bharat Mission infrastructure in Prayagraj district, especially in outlying areas in and around the approach roads to Prayagraj city. The task included installation of handpumps, digging *nalis* for drainage, identification of garbage dumping areas, removal of unauthorized hoardings and removing encroachments on public spaces. The task was tedious, requiring constant inspection, as it ruffled several feathers locally, but a unity of vision at the top really helped.

A team of 500 able-bodied young village volunteers (Swachhagrahis) were initially engaged to monitor or supervise the sanitation work progress and to raise awareness on the need for swachh practices such as use of enclosed toilets, segregation of garbage, use of garbage bins and eschewing the use of plastic bags. Later, the figure of Swachhagrahis rose to over 1,500, with a reserve of 200. Two domain experts from the Tata Trusts were roped in to train these Swachhagrahis in a 5-day workshop.

morale high was the major challenge. The Swachhagrahis Attendance Mobile App, with GPS

and QR code, came in handy. A Public Toilet Complex (PTC) App was used to get feedback about the odour status, lighting, cleanliness, door lock, etc., from the Swachhagrahis, which was conveyed promptly to vendors and health workers for necessary action. The Swachhta kit containing torch, whistle, branded jacket, shoes, etc., were given to the Swachhagrahis and accommodation was provided to 1,500 of them in 6 locations. A wholesome food packet from Bikaner Sweets was supplied to them and they were paid a daily wage of ₹500 through direct online transfer to their bank

A number of IEC programmes, like nukkad nataks, theme songs, hoardings, and LED messages were developed to raise awareness. A swachhta war room was raised. Actually, all these experiments were carried forward from the pilot project during Magh Mela 2018, which were then standardized and scaled-up for Kumbh Mela 2019. Though each and every member of my team contributed, I would like to make special mention of Panchayati Raj Officer Ashutosh and Zila Swachh Bharat Training the Swachhagrahis and keeping their Prerak Anjelina of Tata Trusts, who worked diligently to make the programme successful.

TOILETS - A MISSION REALIZED

With previous editions of the Kumbh Mela being riddled with sites of open defecation, the authorities were clear on their policy of zero tolerance for open defecation during Kumbh 2019. To facilitate the same, an adequate number of toilets was provided. Kumbh Mela 2019 saw deployment of more than 1.22 lakh eco-friendly toilets. A total of 43,512 community toilets were installed in the Mela and 20,000 in the parking and approach areas. Around 40,000 toilets were installed inside the spiritual and religious camps within the Mela area. Additionally, 20,000 urinals with septic tanks ensured that there was no open urination in the Mela area.

This number was the highest ever in the history of the Kumbh Melas or in any other mass gathering in India. Furthermore, over 6,000 toilets were installed to provide better facilities to government officials engaged in Mela work.

An Expression of Interest (EOI) was sought from interested and eligible vendors in the industry by the Prayagraj Mela Authority to learn about the various types of toilets available. That was followed by a technical presentation detailing the latest innovation and technology in toilets by interested vendors. Based on the EOI and corresponding technical presentations, a detailed and comprehensive analysis of the available options and their feasibility for the Kumbh was prepared.

TYPES OF TOILETS USED

- Type 01 Toilets (with septic tanks) made of Fibre Reinforced Plastic (FRP)
- Type 02 Toilets (with soak pit) made of FRP
- Type 03 Urinals (with septic tank) made of FRP
- Type 05 Prefabricated steel toilets (with septic tank) made of MS framework
- Type 06 Prefabricated steel toilets (with soak pit) made of MS framework
- Type 07 Tentage (kanath) toilets (only superstructure) deployed within the camps in the Mela area
- Type 08 Tentage (kanath) toilets with both super- and sub-structure
- **Type 09 Tin toilets with sub-structure**



The findings of this analysis of available toilets were presented to the Apex Committee (chaired by the Hon'ble Chief Secretary of Uttar Pradesh) on 2 May 2018. In-principle approval was given for Model-3, which was a rent-all model. The total budget sanctioned for deployment of toilets was ₹218 crore. The National Mission for Clean Ganga (NMCG) and GoUP were the budget sanctioning authorities for toilets at Kumbh Mela 2019.

The procurement of toilets was undertaken in 12 packages and witnessed participation from a total of 30 vendors across the country. The bidding followed a three-stage selection process, which allowed the empanelment of multiple vendors and ensured adequate quality in operation and maintenance of toilets. The first stage was selection based on the eligibility criteria, wherein bidders were screened based on experience of similar projects executed in the past and the financial capacity to take up similar large-scale deployment of toilets along with their operation and maintenance.

After this first shortlisting, the bidders were screened by the Tender Evaluation Committee based on their physical demonstration, qualitative approach and methodology of service delivery. Only those technical bids that achieved a minimum score of 60 per cent were considered qualified and eligible for the opening of financial bids. All the bidders that qualified the technical evaluation formed a Panel of Shortlisted Bidders. The financial bids of only the shortlisted bidders were opened and evaluated. The bidder with the lowest financial quote was considered L1. All the shortlisted bidders who agreed to match the least cost were empanelled for a term of 1 year.

All the vendors who were taken onboard for Kumbh Mela 2019 were bound by strict contractual terms to ensure not only cleanliness and routine maintenance of the toilets but also that sludge disposal mechanisms were in place with



provision of ICT-based monitoring mechanism

and cleaning of the septic tanks, including the safe disposal of their contents and maintenance of the

adequate frequency of cesspool operations,

Additionally, in the interest of keeping Kumbh Mela 2019 odour-free, all vendors were mandated to deploy clean technology for toilet sanitation and odour removal using a non-microbial, environment-friendly, advanced oxidation process as per USEPA (United States Environmental Protection Agency) or equivalent guidelines. This would ensure speedy odour removal within 10–15 minutes and degradation of toilet waste within 24

While FRP and kanath toilets were common to Kumbh, this Mela saw, for the first time, the deployment of environment-friendly, disabledIt was ensured that even the urinals were absolutely clean

friendly and easy to maintain prefabricated steel toilets. To ensure easy and proper disposal of sewerage, many toilets in Sectors 1, 2 and 3 were connected to a central sewer network.

To monitor the vendors' on-ground progress, a Swachhta Sena was formed comprising sanitation workers and Swachhagrahis. Septage management was ensured through round-the-clock operations and over 250 cesspool vehicles were deployed to transfer the sludge to STPs for treatment and further use.

THE SANITATION VOLUNTEERS

As part of the plan, Swachhagrahis were deployed to monitor the cleaning activities for each toilet and urinal block in the Mela area and simultaneously educate the pilgrims about using sanitation infrastructure installed under Swachh Kumbh. With the objective of achieving an open defecation-free Kumbh, the deployment of Swachhagrahis was essential and they played a vital role in the implementation of Swachh Kumbh initiatives.

There were a total of 1,500 Swachhagrahis from across the state engaged in the Kumbh Mela under the aegis of Swachh Bharat Mission (Gramin). Swachhagrahis were volunteers who were trained on sanitation issues and challenges. Prior to the Mela, each of the Swachhagrahis were given intense training on how to monitor the operation and maintain the toilets deployed in the Mela. They used an ICT-based monitoring app managed through a handheld device through which the operation of all the community toilets deployed in the Mela area were checked twice a day. This was based on the reports generated every day and there was a mechanism to inform and instruct the concerned sanitation supervisors in the respective sector to address any issues raised by the system.

The Swachhagrahis were given a kit containing items that were essential for field operations. This

included jackets, whistles, water bottles, etc. They were distinctly visible around the Mela, creating a buzz around the proper usage and safeguarding of sanitation infrastructure and services. In addition, there were 30 Ganga Praharis engaged in conducting activities by Wildlife Institute of India under the National Mission for Clean Ganga's Namami Gange programme. They were deployed at the ghat area and helped senior citizens in reaching nearby toilet blocks. The Ganga Task Force, also formed under the Namami Gange programme, conducted awareness campaigns throughout the Mela period to inform and encourage pilgrims to use the sanitation infrastructure and services provided by the Mela Authority.

Round-the-clock monitoring of toilets was done by sanitation workers





ICT CONTROL ROOM MONITORING

The ICT Control Room made the operations of toilet maintenance and cleanliness extremely efficient. A mobile application, designed to work in Hindi, was loaded on mobile devices. A QR code was assigned to each public toilet and affixed accordingly in each Public Toilet Complex (PTC).

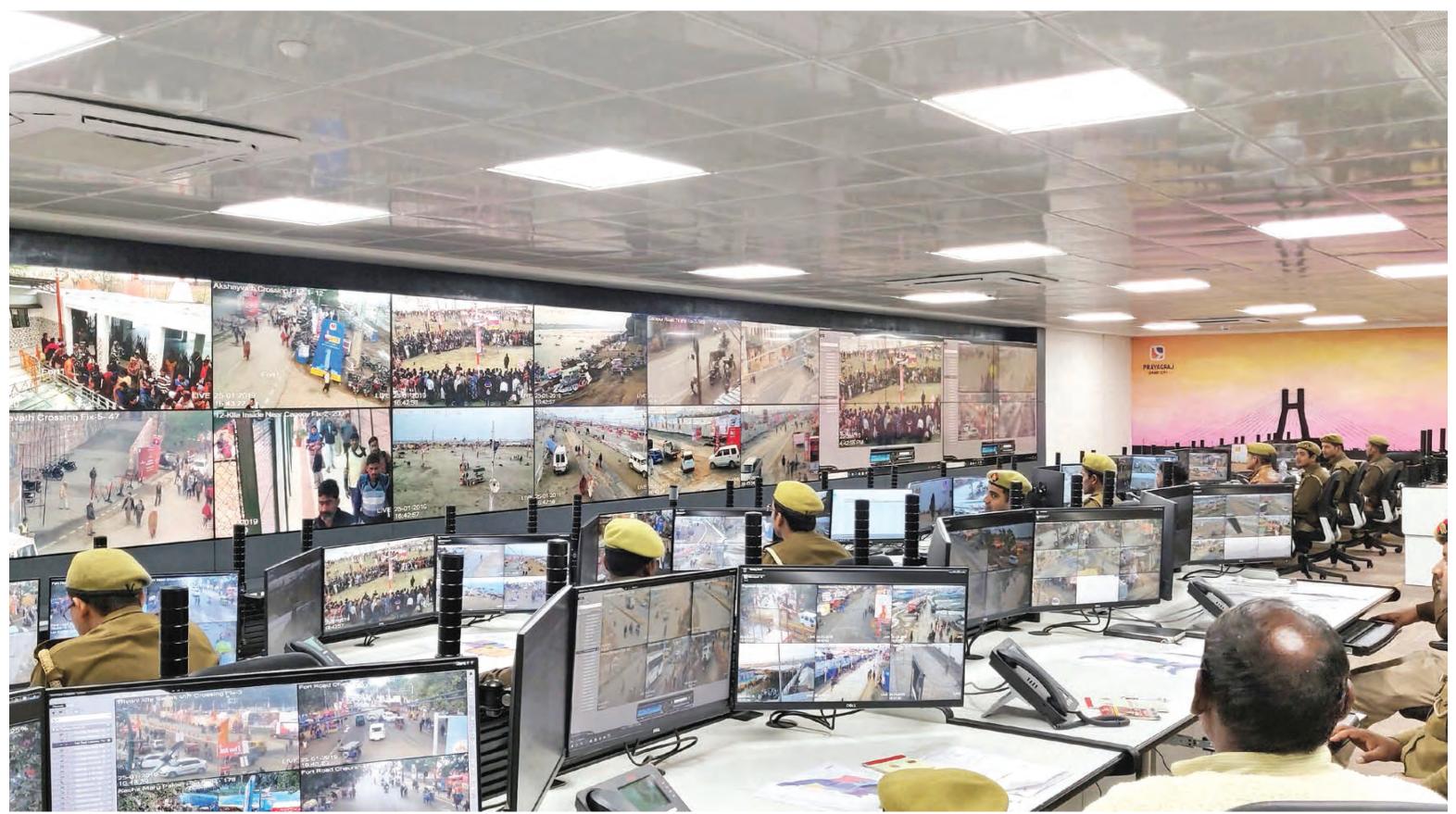
Swachhagrahis were trained to use the mobile app and mandated to provide feedback twice a day. They visited PTCs, scanned the QR code and provided feedback on each of the 8 parameters of maintenance. The Swachhagrahis also had the option of uploading photos and submitting these for action. An automated message was thus generated which would be passed on to the There was a single diktat of the Chief Minister of concerned supervisor and vendor for necessary Uttar Pradesh to the concerned officials on ground action. If not addressed by the next shift, the matter was escalated for remedy and vendors were rivers Ganga and Yamuna. An extensive sewer penalized for non-compliance.

Following were the salient features of the ICTbased monitoring mechanism:

- Mobile-app-based interface for easy access by volunteers
- QR coding of toilets
- Periodic monitoring of service benchmarks for toilets and urinals
- GPS-based vehicle tracking system for easy tracking of vehicles engaged in SWM
- Centrally managed control room for feedback and response

SEWER TREATMENT & SEPTAGE MANAGEMENT

zero – no untreated water shall be poured into the network of over 800km of unlined drains and



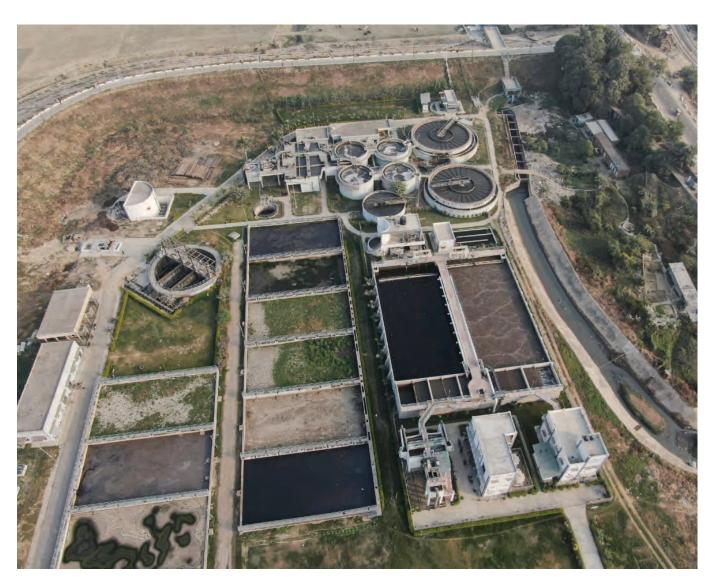
200km of piped drains was laid. Over 250 cesspool vehicles were hired to empty the septic tanks provided with all the toilets located within 200ft of the riverbed. The collected septage was treated at the Sewage Treatment Plants (STPs) in the city. Temporary bio-remediation plants were also set up in the Mela area. City sewage and sewage received from freshly laid sewer lines in the Mela area were all treated in the STPs before being released into the river or river canals. Sewage from other drains or nalas was similarly treated through bioremediation and geo-tube technologies before release into the river.

Septage management was ensured by the Jal Nigam through 250 evacuation tankers provided by vendors, health and tourism departments, which evacuated septage and carried them to STPs for treatment. As soon as the septic tanks were full, these tankers would evacuate the septage through a connected pipe that operated on the suction principle.

Since Kumbh Mela 2019 was divided into 20 sectors spanning about 3,200 hectares, arrangements were made to cover all the sectors. In Sectors 1 and 2, a permanent sewer of 8.5km was laid to transfer the toilet waste of the Mela to Alopibagh Sewage Pumping Station (SPS), while for Sectors 3 and 4, there was an arrangement to take the generated septage to the Daragani SPS through a sewer line in the Mela area. This was treated in Rajapur STP.

Toilet waste generated in Sectors 6–8 was discharged into manholes on trunk sewer to Salori Sewage Treatment Plant (STP) and treated there, while toilet waste generated in Sector 5, and in up by GPCU, UP Jal Nigam, Prayagraj, established in Sector 9 (2mld or million litres a day) and in Sector 17 (1mld).

Faecal sludge was passed through geo-tubes after flocculation and odour-control measures. The



An aerial view of one of the Sewage Treatment Plants used to process liquid waste

effluent was received in another lined pounding from where it was transported to Naini STP for final treatment and disposal. Geo bags were dried on-site and once they were dried, sludge was taken out from the bags and given lime (un-hydrated) treatment to destroy Helminth eggs, the infective agents for the worm disease known as helminthiases. Once the temperature rises to 550 Sectors 9–17, was treated in 2 temporary STPs set degree Centigrade, the sludge could be cocomposted with farm refuse and cow dung. Thereafter, it could be used as manure.

> After this process, the geo bag could be cut open and its material could be recycled by the firm for the manufacture of geo synthetic bags, which

eventually could be reused. The land where treatment activities took place was also treated with lime for disinfection. Toilet waste generated from Sectors 18–20 was brought to Naini STP, where it was treated and finally disposed of safely. For this facility, an inlet of STP was created to unload septage.

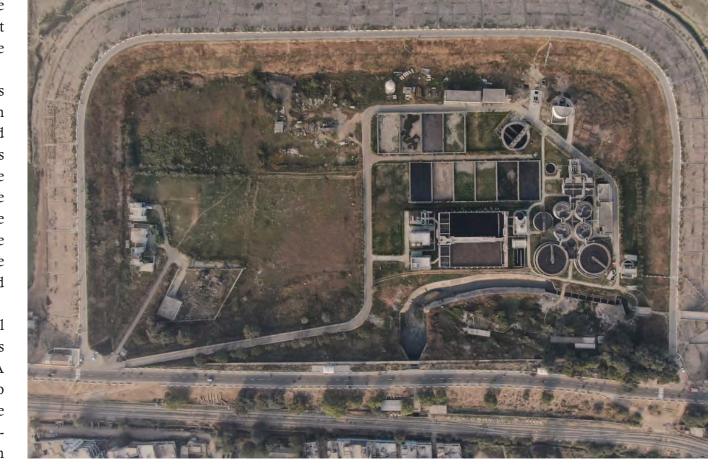
Various measures were taken for the treatment of untapped drains. While 35 drains were treated using bio-remediation, 5 major polluting drains were treated using geo-tubes. Six other drains were treated by the National Environmental Engineering Research Institute in situ, and 10 small drains were tapped and treated using upflow filters. As the number of people living in the Mela area was high, septage generation was also high. Hence, 2 facilities were used to treat septage that was beyond their capacity by using special measures. At Rajapur STP, around 100mld sewage was treated against 60mld installed capacity, while at Salori STP, 55mld septage was treated against 43mld installed capacity. This was made possible by addition of bio-remediation and enzymes.

Proper disposal of sludge from the septic tanks and soak pits was planned in the uninstallation phase. The pits were treated using bleach and malathion, an insecticide that reduces the chances of fly breeding and other epidemics. The contractual arrangement with vendors spelt out the process of proper uninstallation of toilets before the release of their last payment. The vendors were instructed to ensure promptness in the uninstallation and to follow all prescribed guidelines.

The post-Kumbh sludge and garbage disposal plan and strategy, as outlined above, was constantly being monitored on the ground. A decentralized monitoring mechanism was used to monitor uninstallation in each sector by the respective sector magistrates, sector sanitation incharges and the team deployed by the health

department. Efforts were made to ensure that the vendors cleared all leftovers of liquid or solid waste before the release of the last payment. Health department sanitation workers were on a mission to clear all debris and transport the same to the Baswar plant for further processing.

However, despite all these innovative measures, the team responsible for septage management faced a number of challenges. Handling disposal of garbage at drains/outfalls was one of them. The dumping of waste needed to be addressed for that. The other one was that the disposal of the sludge generated at the geo-tube site was taking longer than expected. Since Melas are an annual feature at Prayagraj, a permanent FSTP at the New Jhunsi STP site is required to address these challenges in



58 SWACHH KUMBH

HITTING THE BULL'S EYE

DR SHIVASHAKTIVEL, Scientist, Bangalore University, and Consultant for Odour-free Kumbh

One of the major challenges in ensuring Swachh Kumbh Mela, where more than 1.14 lakh toilets including urinals were installed – involving more than 24 crores of visitors – was to ensure an odour-free environment. The challenge was addressed by a scientist from Bangalore University, Dr Shivashativel, whose pathbreaking research in the area contributed majorly in keeping the Kumbh Mela area free of odour. Dr Shivashaktivel, whose pioneering no-profit work received wide acclaim in media, shared his experience with the book research team thus: 'The answer came in the form of a solution I was researching for long, which was based on ozone-mixed peroxide injected in water and mixed with a catalyst – an organic compound of uric acid and mythyl mercaptan – in the proportion of 3:1.

'The lifetime of the effectiveness of the solution is very little, but its mixing with ozonized peroxide helps its shelf life to last for 18–24 hours. The solution was meant to address both (1) odour or bad smell in Kumbh Mela area and, (2) disable pathogen transfer to human body on contact so that diseases do not travel. Application-wise, 500ml of the solution was applied per urinal, both in its pot and the catchment areas around it. In every toilet, 2 litres were poured in the septic tank and toilet-seat areas.

'To make this solution on a mass scale, 20 different plants were set up in 20 sectors in the Kumbh Mela. Forty-three chemists were hired and 4 engineers monitored their operations. Every one of them were given training on how to make and handle the bottling, and then handling them. Swachhagrahis, students, and scientists worked hand-in-hand.'



AIMING AT SUCCESS

ANANTA PRASAD, Consultant, EY

Swachh Kumbh 2019 arrangements encompassed 5 major distinct components: (1) Liquid-waste disposal – from toilet and urinal installation and maintenance to its treatment and dismantling; (2) Solid-waste disposal – ranging from sweeping to waste treatment at disposal site; (3) Riverbank cleaning – sweeping, plucking, to skimming; (4) Drain management – STP, bio-remediation, geotubing; (5) IEC – awareness raising activities.

For solid waste, mechanized and manual road sweeping, garbage collection in liner bags, and garbage transfer in tipper to compactor, garbage treatment at site is the defining sequence adopted in Kumbh Mela. As many as 36 lakh liner bags were put to use thrice a day for 1 garbage bin. More than 20,000 garbage bins were installed in the Kumbh Mela area. A total of 120 tipper vehicles hopped from one point to another garbage bin point in 20 sectors. Each sector had 2 compactor heavy vehicles which would compact the solid waste. Hari Bhari segregates, treats, markets, and sells. A manpower force of 11,400 was deployed in a unit of a gang, which typically consists of a couple.

For liquid waste, a total of 1,25,000-plus toilets, including 20,000 urinals were constructed, of which 50 per cent were the septic tank variety, which were emptied through suction method employed by 250 suction vehicles. Away from the riverbank, 42,500 of community toilets in the Mela area were the septic tank variety, made of either steel or fibre, which could be emptied through suction. Within the premises of religious camps however, soak-pit toilets, surrounded by Kanaths, were installed. Primarily meant for self-cleaning, these were maintained by the vendor and the health department. A total of 20,000 tin toilets were constructed on the approach to parking. Besides, a total of 20,000 urinals with septic tank were constructed. One cleaner was responsible for the maintenance of 10 toilets and 10 cleaners had 1 supervisor. Similarly, 20 urinals had 1 cleaner each and each set of 10 such cleaners had 1 supervisor.

Jet spray cleaning was done by the vendor. For odour management, a scientist from Bengaluru, Dr Shivashaktivel has patented an organic solution, which had a consumption of more than 1 litre a day for 1 toilet.

Monitoring of maintenance and cleaning of toilets and urinals was done by Swachhagrahis through a mobile app, linked to a control room. Eight-point parameters were adopted for monitoring, maintenance and cleaning, which were carried out by a health worker or the concerned vendor.





DOING WHAT IT TAKES

PK AGARWAL, GM, Ganga Pollution Control Board

The Chief Minister of Uttar Pradesh had given a single-line directive that untreated sewer drains shall not be allowed to flow into the Ganga-Yamuna rivers. Also, that sewer water, originating both from authorized or unauthorized colonies shall not be discharged into the sacred river untreated. The above directions were complied with via Sewer Treatment Plant (STPs), bio-remediation, and geo-tube technology. Fifty-three of such drains were treated in Prayagraj.

In STPs, sewer digestion was done through aerobic (oxyzen) and anaerobic (without oxyzen) process to attain 30 Biological Oxygen Demand (BOD) for discharge of water in the river and 50 BOD for discharging water on ground for irrigation and other purposes. Septages generated in toilets were transferred through suction machine to a tanker, which carried it to the STP for treatment; and segregated the septage into compost and dischargeable water for use in irrigation.

Bio-remediation is a waste-management technique that involves the use of organism to remove or neutralize pollutants from the contaminated site. In this process, very small living organisms called microbes clean up contaminated soil ground water or surface. Bio-remediation stimulates the growth of certain microbes that breaks down hazardous substances into less toxic or non-toxic substances.

In geo-tube treatment, acid run-off from this material is collected in sediment ponds, which is treated and pumped through geo-tube containers.

ODOUR CONTROL

SWACHH KUMBH 2019 DERIVED

LEGITIMACY FROM THE FACT THAT IT WAS AN ODOUR- OR FOUL-SMELL-FREE MELA. THANKS TO THE JOINT RESEARCH CONDUCTED BY THE **BANGALORE UNIVERSITY AND** ALLAHABAD UNIVERSITY, ITS **SOLUTION OF APPLYING AN ORGANIC COMPOUND IN SEPTIC TANKS, TOILET** SEATS, AND URINALS PROVED SUCCESSFUL. FOR ODOUR MANAGEMENT, A LITRE OF WATER-MIXED ORGANIC SOLUTION WAS APPLIED TO TOILET SEATS EVERY DAY, WHICH WAS SUPPLIED BY THE VENDOR. **TOILET VENDORS WERE ALSO**

MANDATED TO PUT 1 LITRE OF
SOLUTION EACH DAY IN PITS TO KEEP
THEM ODOUR-FREE. SOLUTION
PRODUCING PLANTS WERE SET UP IN
ALL 20 SECTORS OF THE MELA. TO
ENSURE A MOSQUITO- AND FLY-FREE
ENVIRONMENT DURING KUMBH,
EFFORTS UNDERTAKEN UNDER VECTOR
MANAGEMENT GREATLY HELPED
REDUCING INCIDENCES OF
COMMUNICABLE DISEASES IN THE
KUMBH AREA.

METICULOUS PLANNING

GC DUBEY, Chief Engineer, JAL NIGAM

For the Kumbh Mela, apart from ensuring the supply of drinking water 24x7, Jal Nigam was also responsible for watering chequered plates on roads and routes and disposal of used water in the Mela area. It was also responsible for the prevention of discharge of sewage water into the Ganga. Hence, special focus was given to providing ample drinking water. Approximately, 900km of pipeline was laid to provide drinking water. Care was also been taken to ensure that all waste discharge drains in Prayagraj were connected to STPs so that no untreated water was discharged into the rivers. Wherever treatment facilities were not available, on-site treatment facilities were installed.

Besides, our task was also to ensure that untreated sewage water did not flow into Ganga—Yamuna Rivers. Water testing for quality check was yet another task. The sewer drains (nalas) originating from Naini, Phaphamau and Jhunsi were treated through STP, bio-remediation, and geo-tube technology. Besides Jal Nigam and Ganga Pollution Control unit, NEERI and NACOF played crucial roles in the sewer-treatment exercise.

Kumbh Mela 2019 was hailed as the cleanest Technical 95 per cent was passed through the ever, because the whole area, besides other thermal surface to create fumes which killed reasons, remained mosquito-free and fly-free, mosquitoes. Hot Fogging was a daily routine in thanks to some extraordinary measures - called vector management – that were taken to make it happen as such. The Mela area was divided into 36 circles with 1 malaria and filaria officer each, Fogging Machines were used in the camp areas, and 3 large Hot Fogging Machines were deployed in the 3 main open areas in the Mela. Malathion

which the fogging team had to get user-satisfaction certification every day.

A fly-free Mela was achieved because of the prefabricated toilet super-structure, which was assisted by field workers. Thirty-three small Hot regularly cleaned. Flies just could not get a natural habitat to breed or to feed. Maintenance of high cleanliness standards, supervised by Swachhgrahis through the use of a mobile app, and executed by

sanitation workers and vendors, left no scope for flies to gather and feed on excreta and urine. ICTbased monitoring of cleanliness of toilets including their prompt jet spray deep cleaning helped majorly. Insecticide spray in vulnerable areas and in garbage collection pockets had a multiplier effect.

RIVER SKIMMING

Riverbank cleaning was undertaken massively for 25km long ghats along both sides of the rivers.

Dedicated cleaners were engaged for cleaning ghats manually with proper skimming equipments while 2 River Trash Skimmers patrolled the banks regularly to clear the puja offerings and other debris from the water.

Besides dedicated cleaners and mechanized river skimmers cleaning the riverbanks, a number of voluntary campaigns were initiated along the riverbanks, in which students, schoolchildren and other volunteers enthusiastically participated.







Swachh Kumbh team-building exercises in the Mela area helped achieve the goals of Swachh Kumbh and Nirmal Ganga

BEHAVIOURAL CHANGE ACTIVITIES

IEC activities in Kumbh had been not only to create awareness, but also to conduct innovative aimed at what is called Behavioural Change on a habits, cleanliness and hygiene habit, and building ownership amongst the citizens of the city as well

Swachh Kumbh involved, among other activities, building of the event identity for its proper branding in the form of separate logo symbolizing training and motivational programmes. They Swachh Kumbh. The making of the Kumbh Logo was crowd sourced. The Chief Minister, the variety of public interest issues, including toilet Governor of Uttar Pradesh and the Chief Justice of the Allahabad High Court launched it. They community engagement by raising a sense of also launched the Swachh Kumbh Pledge in another event organized for the purpose. A video as visitors for Kumbh. IEC programme for the titled 'Shraddhalu Kumbh', a number of jingles









Hon'ble Chief Minister Yogi Adityanath during an inspection in Prayagraj

that were on-air on the theme, and a series of walk and run events helped generating the right momentum.

Besides, outdoor advertising platforms such as billboards, bus queue shelters, backlit panels, LED vans with screens showcased Kumbh Mela and its *swachhta* messages richly. Swachh Kumbh had become a sort of on-going campaign, involving several related activities and events in Uttar

Pradesh, more so in Prayagraj. A series of events had been organized, like the Shram Daan on Gandhi Jayanti, World Toilet Day, and a series of ghat cleaning events, among others. The Kumbh Mela Authority in Prayagraj conducted several workshops for Swachhagiris to brief them about various Swachh Kumbh arrangements in Kumbh 2019, taking feedback and suggestions from them, and even selected team leaders from them as well.

In one such workshops held in Chandra Shekhar Azad Park in October 2018, 78 Swachhagiris participated from adjoining blocks.

Further, Kumbh Mela Authority, on the eve of Hand Wash Day, launched Swachh Kumbh Champ Campaign on 15 October 2018 to demonstrate the Authority's commitment to a Swachh Kumbh and Swachh Bharat. The campaign aimed to involve and encourage citizens of Prayagraj in the Swachh Kumbh activities.

School and college students, government officials, cooperatives, NGOs and other educational institutions got involved, and it created a 10-pointer Swachh Kumbh commandment called #MeforSwachhKumbh for all to follow. The purpose of the campaign was to identify Swachhta Champions from amongst citizens/organizations/institutions, based on their activity, approach, or methodology. The campaign subjects included the following themes:

- 1. Innovative and engaging way of garbage hot-spot beautification through wall painting, plantation, etc.
- 2. Successfully implementing waste segregation at household/community level.
- 3. Converting waste to manure at household/community level.
- 4. Re-using waste to make items of use, decoration, etc., like paper bag, cloth bag.
- 5. Promoting cleanliness and hygiene through engaging way in schools and communities.
- 6. Handwash, awareness regarding use of toilets, etc.
- 7. Involved in cleaning-up of public spots, tourist spots, railway and bus stops and statues, etc.
- 8. Involved in ghat cleaning and ecoconservation of the Ganges.
- 9. Involved in the upliftment of the plight of sanitation workers.

- 10. Involved in creating awareness on the subject of cleanliness by organizing events.
- 11. Other activities that make a difference in the life of people through practice of cleanliness.

HUMANIZING MEASURES FOR FOOT SOLDIERS

Kumbh Mela 2019 was a great break away from the past. It was a humanizing experience for sanitation workers in that this time neither they carried night soil on their head, nor did they carry or handle putrefied garbage manually. It added a great deal of dignity to their work.

A number of measures were introduced to sustain the high level of motivation of the 15,000plus sanitation workers. Welfare measures were taken in terms of introducing creche services maintained through Anganwadi, ration cards, free accommodation, free medical services, direct online wage transfer, and safety equipments such as raincoat, gloves, etc., for the sanitation workers. The result was that sanitation workers contributed spiritedly and there was no discontentment or strike or threat to stop work over any payment or any facility. The icing on the cake was the extraordinary and unprecedented act of grace shown by Hon'ble Prime Minister Shri Narendra Modi who, by washing the feet of a few sanitation workers as a token of appreciation and gratitude during his visit to Kumbh Mela on 24 February 2019, acknowledged the contributions of sanitation workers and Swachhagrahis in ensuring Swachh Kumbh.

PRIMARY SCHOOLS & ANGANWADIS AT KUMBH

In Prayagraj Kumbh 2019, for labour brought in from outside and their children, the Mela Authority set up 5 temporary primary school centres in Sectors 2, 7, 10, 13 and 19 each in the Mela area. In such schools, arrangements were





Hon'ble Chief Minister Yogi Adityanath along with Hon'ble Deputy Chief Minister Shri Keshav Prasad Maurya and Hon'ble Minister for Health Shri Siddharth Nath Singh during an inspection in Prayagraj

made to run classes from Classes I–V in separate classrooms. Provisions were also made for kitchen, store room, separate toilets for boys and girls, classroom chowkidars, office, and teachers' room in these schools.

Admitted children were given midday meals, free books, free woollen pullovers, school furniture, stationeries such as copies, pencils, whiteboard, and marker. For beautification of schools, an attractive gate was created, flowerbeds were laid, and Kumbh branding was done. Besides, coloured

pictures of renowned personalities were hung on walls, and arrangements were made to keep these premises clean by deploying 2 garbage bins each. For each school, arrangements were made for 5 temporary teachers, 1 manager and 2 cooks for preparing midday meals. A total of 405 beneficiaries were admitted to these schools.

Anganwadis: In the same sectors of the Mela area, as explained above, 1 Model Anganwadi each was set up in an area of 16x8ft. A total of 275 children between 3–7 years; 333 children between

3–6 years; 125 pregnant ladies; and 51 teenaged girls were admitted to these Anganwadis.

Arrangements were made for their shelter, kitchen, store, manager's room, office, and separate toilets for boys and girls. ICDS-run facilities were created in terms of providing chairs, slate, chalk, health monitoring and weighing machines, and provisions for morning snacks and hot food. For pregnant women, arrangements were made for a health check-up, vaccination, etc. Each Anganwadi centre was beautified with designed

flexes displaying educational information on fruits, vegetables, flowers, birds and domestic animals.

Various community programmes were organized in these centres such as Godbharai, Annaparasan, Ladli Diwas, and Mamta Diwas among others. Two Anganwadi workers with 2 assistants, and 1 social worker were earmarked to supervise each centre. The concerned Child Development Officer was put on duty to oversee the implementation effectiveness.

Community-building exercises to induce behavioural change before Kumbh 2019







INTEGRATED
COMMAND
CONTROL
CENTRE

As a part of the ambitious Smart City Mission, Prayagraj was selected in the third round of the selection process. Among several other initiatives that were identified to transform this spiritual city into an advanced ICT-based centre, the establishment of the Integrated Command and Control Centre (ICCC) was the foremost step. Not many know but the purpose of ICCC was not confined to managing the city operations during Kumbh Mela 2019. In fact, when functional at its full scale, ICCC was envisioned to provide a technological solution to the various facets of the city's management, including real-time monitoring of its security, traffic and other utilities.

Cameras on the crossings were installed in a way that

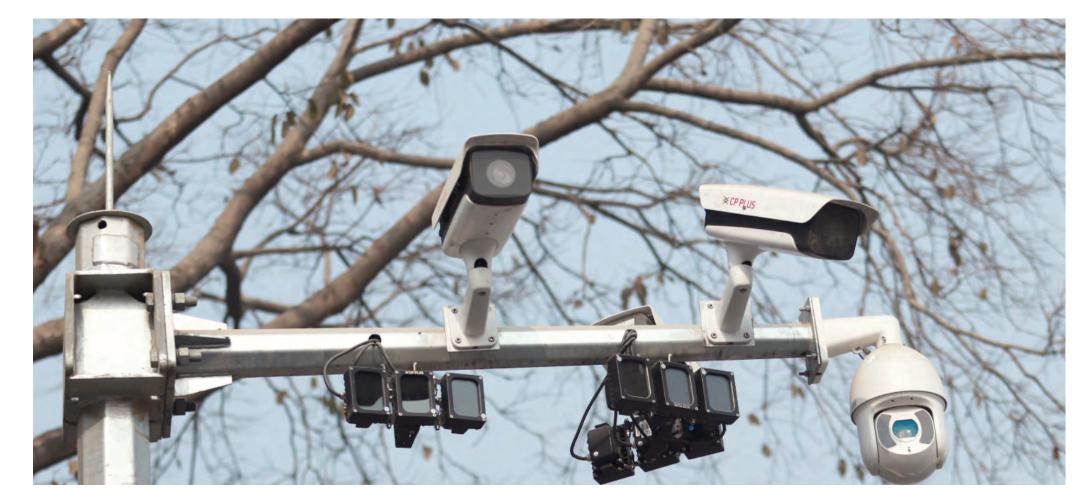
they gave a 360-degree view

Developed with the total project cost of over ₹246 crore, the entire ICCC project was divided into 2 phases. Considering the management challenge that was before the administration in terms of managing Kumbh Mela 2019, Phase 1, which was supposed to cover the integration of Kumbh Mela work with the city area for monitoring and assisting the pilgrims, was made operational within a record time frame of 5 months. However, Phase 2 and other ICCC operations covering a wide range of citizen services will be completed post-Kumbh Mela.

In Phase 1, the first and foremost CCTV Surveillance System to support police operations in maintaining law and order of the city was installed. This system produced real-time alert in case of an incident and informed the Radio Police

team and first responders on the field. Real-time surveillance helped in improving the responsiveness through assistance to emergency services and fast turnaround time, thereby addressing the threats from terrorist attacks and aiding for investigation. For deterring, detecting and dealing with criminal activities, 1,103 CCTV cameras at 268 strategic (442 CCTV cameras in 127 locations in Kumbh Mela area and 141 locations Prayagraj Smart City area) were installed. However, post-Kumbh Mela, all the 442 CCTV cameras installed in the Mela area were relocated into the city.

During the Kumbh Mela, for monitoring camera feeds, 3 teams of 20 police personnel (for 8-hour shift at each viewing centre) at ICCC were set up for round-the-clock monitoring. Altogether, 120





people were trained for this purpose. A corridor-wise segregation of the Mela area, which was linked to 13 Police Radio telecommunication grids, was done and each personnel entrusted with the task to sit in the control room was taken for a field visit first to understand the place he/she was monitoring. Besides, a war room, which had representatives from each department and was linked to an emergency radio grid, was also developed to expedite the communication process.

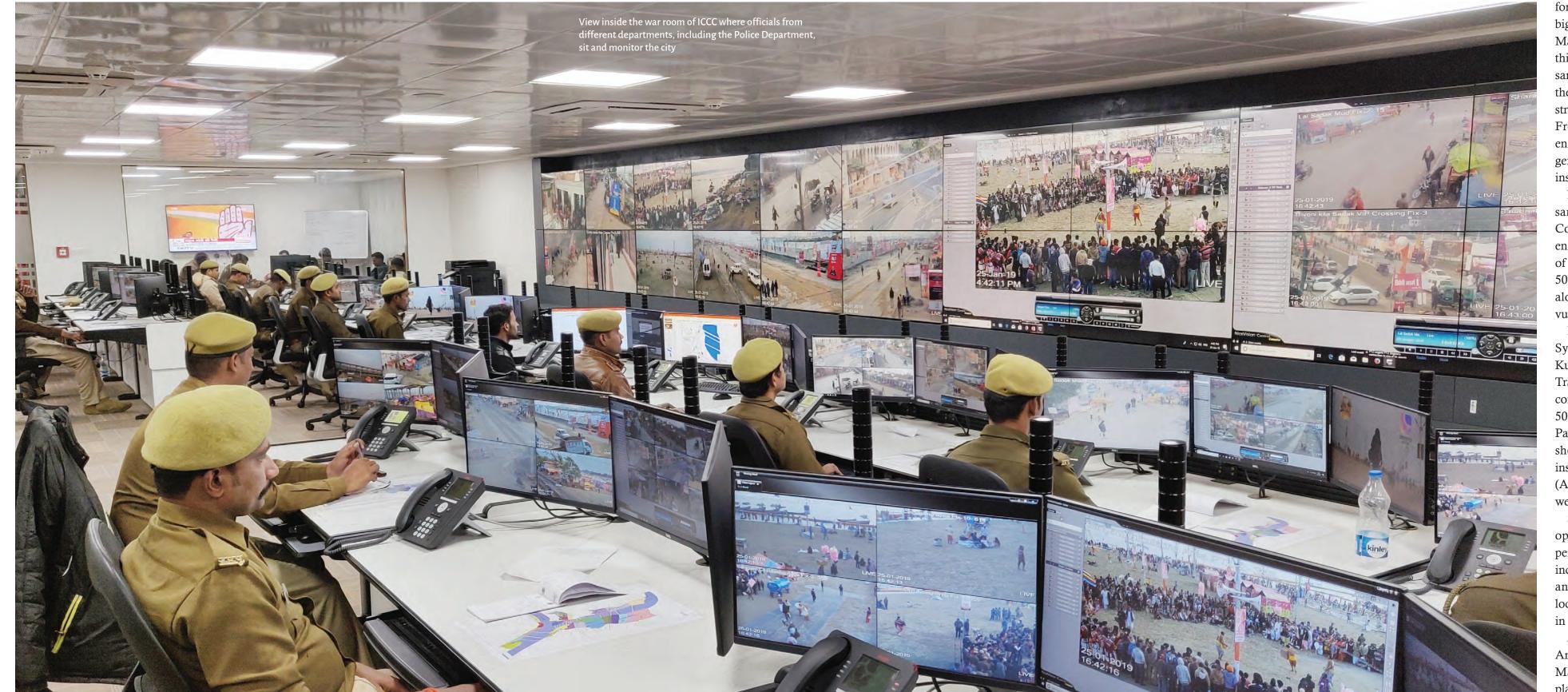
Geo-mapping of the entire Mela area with coordinates plotted on Google maps to assist police response vehicles (PRVs) during emergencies was another initiative taken with the help of ICCC, which turned out to be extremely advantageous. UP Dial 100 was integrated with the Mela Helpline No. 1920, to create alerts and a 30-seater 24x7 call centre was also run for the entire Mela period to assist pilgrims in the best way possible. All the monitoring and call management was done from ICCC. Over 90 people were trained (8-hour shift each) for this purpose. This initiative

particularly yielded a lot of result as the call centre was able to troubleshoot about 3 lakh queries during the entire Mela period.

Besides, for improved Intelligent Traffic Management System that can help in traffic efficiency and decrease the travel tme by reducing vehicle congestion on roads through optimized signalling and improving the safety of commuters, 23 traffic junctions were identified strategically to be installed with an Adaptive Traffic Control System (ATCS)-based Traffic Signals during Kumbh Mela in Phase 1. Placement of 40 Variable Message Signboards for dissemination of information related to traffic for Kumbh Mela was another big step in that direction. Post-Kumbh Mela, 24 additional such junctions were installed and thereafter centralized controlling in all 47 traffic junctions was ensured.

To capture traffic violators, 18 strategic traffic junctions were covered with Red Light Violation Detection (RLVD) systems. This empowered traffic police with 30 e-challan handheld devices





for on-site challans to traffic violators. The second big step was taken in the direction of Solid Waste Management (SWM) to keep the city clean and for this around 500 GPS devices were installed in sanitation vehicles for real-time monitoring of their movement. Even 500 bulk generators were strategically identified and installed with Radio Frequency Identification (RFID) tags and to ensure the collection of waste from these bulk generators, about 20 sanitation vehicles were installed with RFID readers.

Moreover, to ensure the field attendance of sanitation workers, Prayagraj Municipal Corporation was provided with 100 Aadharenabled Biometric Attendance devices in Phase 1 of the project. Post the Kumbh Mela, an additional 500 bulk generators were installed with RFID tags along with the installation of cameras at 50 vulnerable garbage points in Phase 2 of the project.

Besides, installation of Crowd Management System to analyse the crowd density during Kumbh Mela on an experimental basis in Phase 1, Transit Management System for provisioning of convenient public transport services with proposed 500 CCTV cameras for 250 city transport buses, Passenger Information System (PIS) for 20 bus shelters and 3 bus terminals along with the installation of Automatic Fare Collection System (AFCS) for city bus transport services in Phase 2 were also envisioned.

Smart Urban Solutions to cover holistic city operations from a single-window monitoring perspective, a multitude of Smart Urban Solutions including Smart Parking for multilevel car parking and environmental sensors for 28 strategic locations were also to be integrated with the ICCC in Phase 2 of the project.

Advanced Video Analytics with supportive Artificial Intelligence System for SWM, Traffic Management and Citizens Safety were also planned for Phase 2 of ICCC project. Few of the 1,137 CCTV cameras at 26 locations

40 Variable Message Signboards

Video Analytics for crowd management

34 mobile towers, 43 traffic junctions with Adaptive Traffic Control System (ATCS)

Automatic vehicle number plate recognition system

192 SWACHH KUMBH

Live streaming of events on website and mobile app

Website links between UP
Police/Mela
Authority/Railways/Roadways
Facebook page, Instagram
account and Twitter handle

Automation or public distribution system GPS devices on sanitation vehicles

key analytics which would be run on the CCTV cameras are graffiti and vandalism detection, debris and garbage detection by keeping a track on the cleaning of streets and bins to litter detection, parking violation, speeding vehicle, accident detection; 'Vehicle of interest' tracking by colour, speed, number plate, helmet detection on a 2-wheeler, unwanted/banned vehicle detection, wrong-turn detection; human classification, loitering detection, person collapsing, gesture recognition, and behavioural biometry.

Apart from these, 2 Data Centres as a part of Phase 1 at Municipal Corporation Prayagraj (MCP) and Kumbh Command & Control Centre were also established along with Cloud-based Disaster Recovery Centre managing the operations of Kumbh and Prayagraj city areas. The Data Centre has the capability of recording and storing video feeds for 15 days during Kumbh Mela and 30 days post-Kumbh Mela. Ten per cent of the total CCTV camera feeds considered for flagged incidents would be stored for 90 days.

However, post-Kumbh Mela, 1 Data Centre at ICCC will be established along with Cloud-based Data Recovery for city operations which would include the migration of partial infrastructure of the Data Centre being established at Kumbh Command & Control Centre. Besides, 2 dedicated and interconnected command and control centres. manned with 20 operators each, have also been established for Kumbh Mela and Prayagraj city operations, out of which ICCC will provide a platform with the ability to receive, intelligently correlate and share information to predict better outcomes. Additionally, a 30-operator call centre with Kumbh Mela Helpline No. 1920 has also been set up at Kumbh-ICCC for enriching the pilgrims' experience during the Mela period. The call centre, which is integrated with 'DIAL 100' for

emergency response services, would operate in 3 shifts and would be operational 24x7. Apart from this, 4 Viewing Centres at strategic locations were also set up for localized monitoring of the Kumbh Mela activities.

With the help of ICCC, it was for the first time that a command and control mechanism was put in place in Kumbh Mela 2019. Making the best use of that as against the entry allowed to the ghats from several points, this time access points were controlled from the ICCC, which were fed with information from over 1,100 cameras tracking the movement of people and vehicles. This technological solution also empowered the authorities with a video management system and video analytics which could be used for automatic number plate recognition and red light traffic violation detection.

In fact, on the main bathing days, especially on Mauni Amavasya which witnessed over 60 million people taking a holy dip at Sangam, over 450 Pan Tilt Zoom (PTZ) surveillance cameras helped the security forces manage the crowd by holding them up at separate spots for about 50–60 minutes, which was primarily done to prevent too many people from gathering at a particular point. Whenever the density of crowd exceeded 3 people per square metre, a soft alert was triggered to commence evacuation. However, if the figure crossed 5 people or more per square metre, it signified emergency as the crowd density indicated conditions for a stampede.

Besides the dense crowd counting, the cameras were also capable of recognizing faces, which was a plus point and could be used to identify criminals. However, this technology was not put much to use. The success of a disaster-free Kumbh Mela can be attributed to the blend of contemporary technologies like Artificial



Intelligence with the needs of millions of pilgrims and tourists in the form of Smart Solutions.

Post-Kumbh Mela, various services being provided to various departments including Police, Traffic, Electricity, Smart Street Lights, Water,

Transport Services, e-Governance and Waste Management would be integrated and operated from a fully functional ICCC in Phase 2 of the project.





During the Kumbh Mela, Prayagraj witnessed a highest-ever floating population. This additional burden brought about a major sanitation challenge during Kumbh Mela. Hence, the Municipal Corporation prepared an extensive City Sanitation Plan to address the issues and challenges that occured during the Kumbh with an objective to provide better pilgrim experience. As part of the plan, a number of areas were strengthened with additional budget and human resource allocation to each of these items.











