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# THE RETURN FROM WATER SCARCITY TO ABUNDANCE:

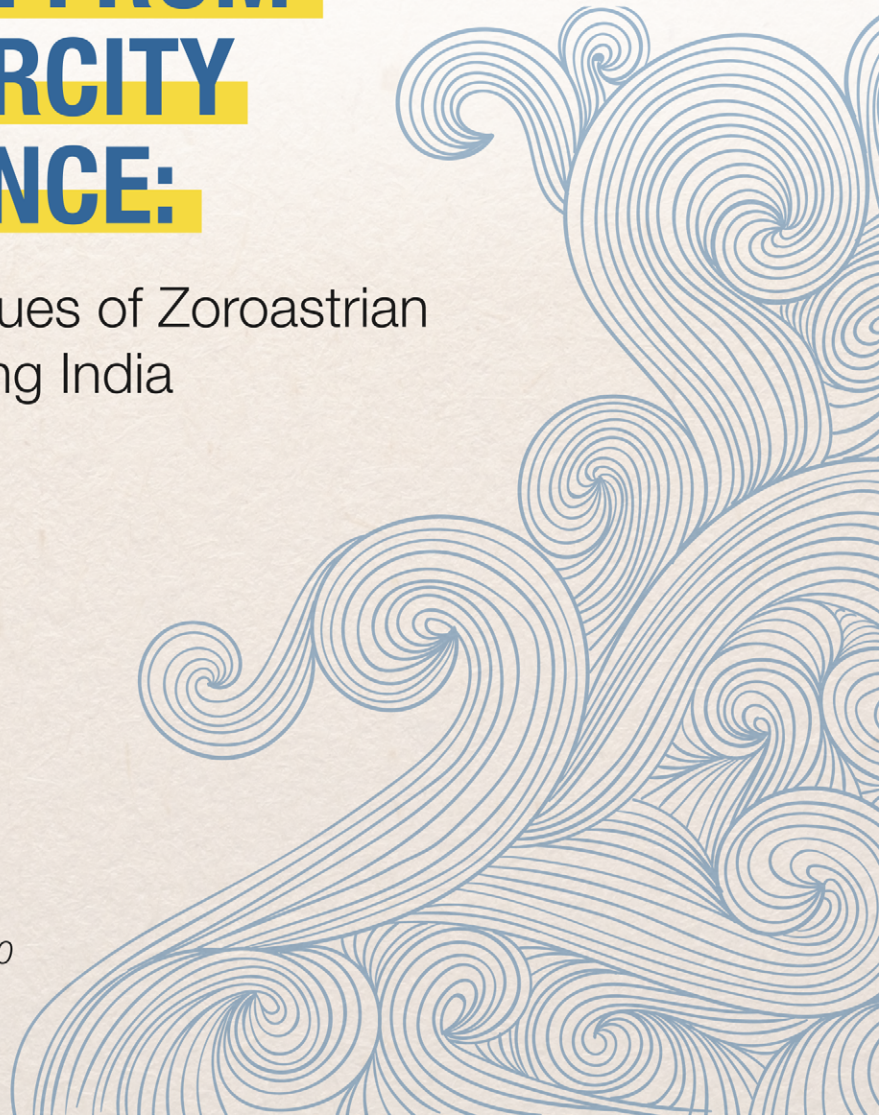
Distilling the Core Values of Zoroastrian  
Wells for an Urbanising India

**WATER SEEKERS'**  
FELLOWSHIP | 2020



**Berjis Driver**

*Water Seekers' Fellow 2020*





# The Return from Water Scarcity to Abundance:

Distilling the Core Values of Zoroastrian Wells  
for an Urbanising India

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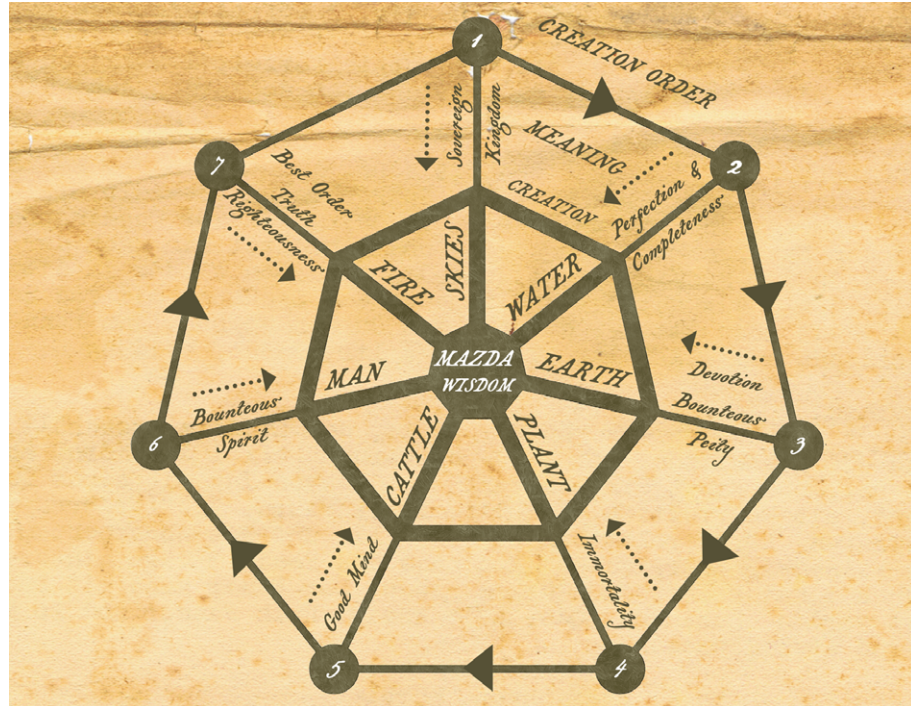


Fig. (Above): A 23rd generation Zoroastrian Priest praying at the Bhikabehram Well, Greater Mumbai

## BACKGROUND

The origins of Zoroastrianism trace back nearly 3500 years to 1500 BCE through the 'first teacher' Spitama Zarathustra who was immortalised through his hymns. These were known as the Gathas, which revealed the existence of an all-knowing, eternal Lord of Wisdom, Ahura Mazda (Mistree 2020).

It is said that the holy spirit of Ahura Mazda, Spenta Mainyu, remains eternally conflicted with its hostile counterpart, Anghra Mainyu. To vanquish his adversary, Ahura Mazda created the material world of the seven creations: sky, water, earth, plants, cattle, humans, and fire. It is believed that the spiritual quest of mankind is tied to the preservation and promotion of the seven creations of Ahura Mazda. The teachings and philosophy of Zoroastrianism are widely observed to have acted as a major influence on Judeo-Christian and Islamic beliefs.



Source: Author

Fig.(Above): Impression of the coastal town of Udvada, Gujarat

## ARRIVING ON THE SHORES OF BHARAT

In search of peace and sanctuary, followers of the oldest-revealed religion of the world arrived on the shores of India in 936 AC (Mistree 2010), fleeing oppression, conversion, and genocide in their ancient Iranian homeland. Zoroastrian communities continue to thrive in small clusters scattered across major cities and villages across the world, with the most predominant clusters in Gujarat and Greater Mumbai, Maharashtra, that contribute significantly to preserving Zoroastrian identity. The Zoroastrian community in India has made invaluable contributions to nation-building, trade, commerce, finance, and industry. These contributions exemplify the ethos and ethical legacy of a community that is driven by actions based on their most sacred and simplistic tenets: Humata (good thoughts), Hukhta (good words), and Hvarshta (good deeds).



Source: Wikicommons

Fig. (Above): Udvada Atash Behram, 1905



Photograph Source: CSMVS, Dinodia.com (1952)

Fig. (Above): Over 82 years since fountains were first introduced, whole or part of finance required for establishing water structures was provided by prominent Zoroastrian figures, even in the case of the famous Flora Fountain.

Zoroastrian pioneers were characterised by their philanthropic and charitable works in erstwhile Bombay. Works around water and water charity were encouraged, as it is considered to ease the salvation of the soul<sup>1</sup>. In this regard, wells arguably became the most common and traditional of works to be executed. A deeply rooted reverence towards the waters also reflected in the adoption and provision of rainwater harvesting systems and drinking water facilities like Tankas and Pyaavs, in Bharuch, the villages of Gujarat, and erstwhile Bombay, respectively. Wells however, remained predominant and were consecrated in the sanctity of many Parsi homes and fire temples, with water being drawn not only for rituals but also for domestic use. Udvada, a coastal settlement in Gujarat, home to the oldest surviving fire temple in the world called Udvada Atash Behram, was recorded having over 1,000 wells (Hathiram 2013). Many of these wells were in Parsi residences or alongside main roads for the use of the general population.

<sup>1</sup> Also considered culturally important in the predominant cultures of Hinduism, Christianity, Islam, and Judaism.

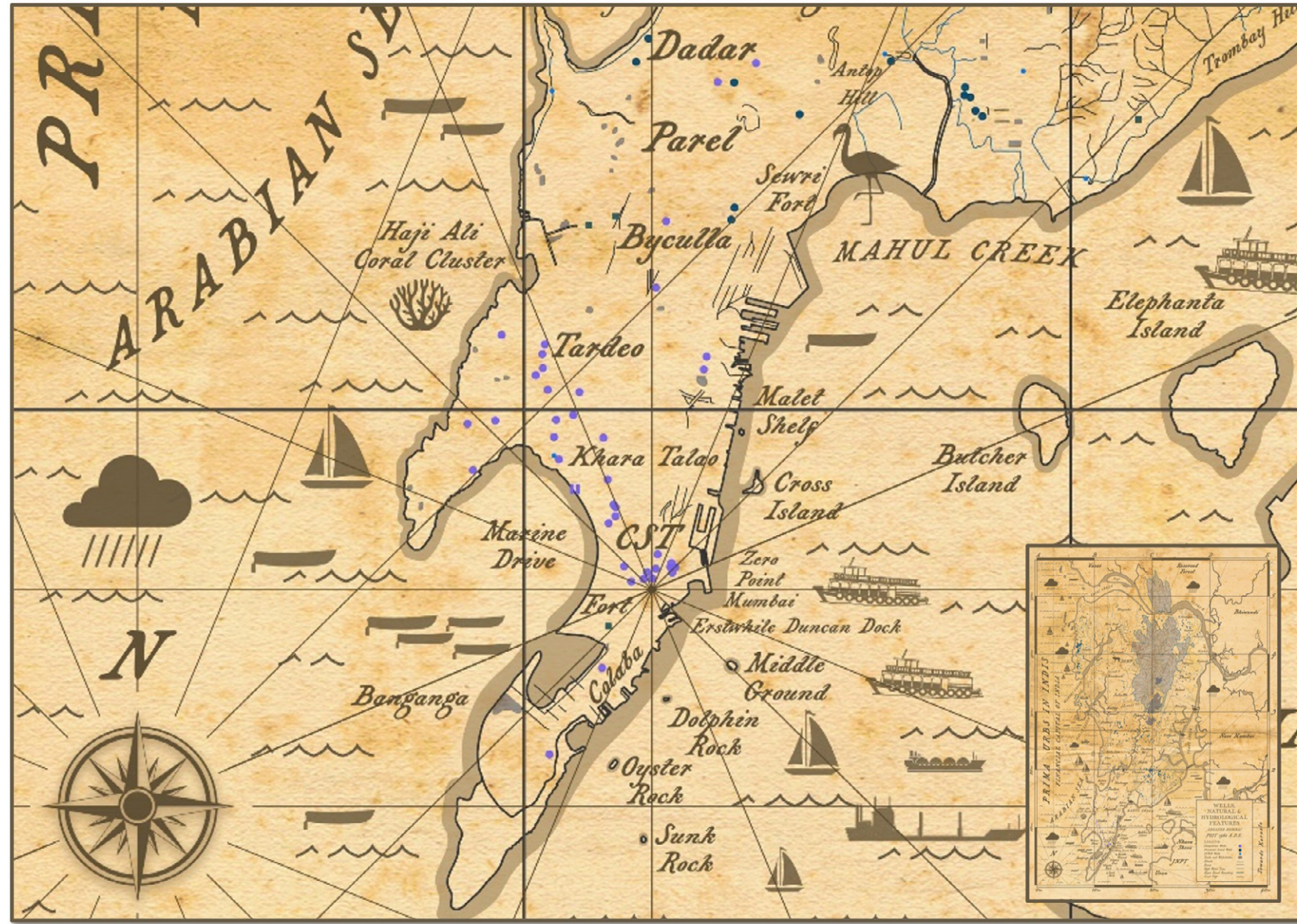


Fig. (Above): Map indicating location of Zoroastrian wells in Greater Mumbai as prepared by Author

Information Source:  
Survey of India Open Series  
Maps and the Sanctioned  
Development Plan 2034

However, in recent times of climate change, the mounting dangers of groundwater exploitation, vulnerability to urbanisation, encroachment, surface-sealing, and CoVID-19 have exacerbated water scarcity in the Indian urban context. While these are challenges, they also present opportunities for groundwater recharge.

## THE SIGNIFICANCE OF ZOROASTRIAN WELLS AND WATER INNOVATIONS

As water is believed to be brimming with positive spiritual energies and life, it is left to rest undisturbed during the period of the night, when the forces of evil are most active. Therefore, Zoroastrians do not carry out any intensive water activities at night. According to tradition, a priest draws and discards water thrice from the well early in the morning. Each draw signifies the expulsion of bad thoughts, bad words, and bad deeds. Water for use is drawn from the fourth pull.

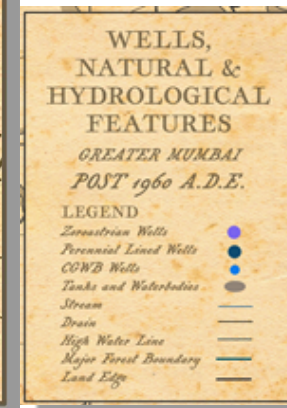
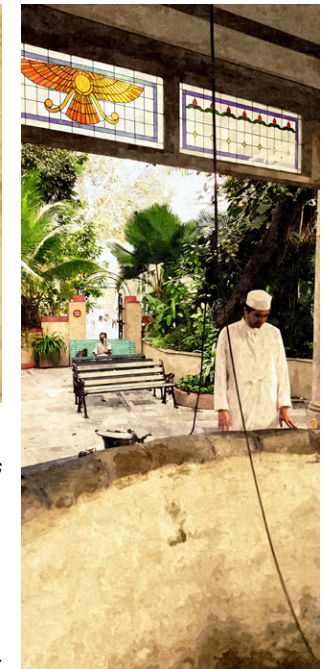


Fig. (Above and Right): While facing wells, Zoroastrians often pray to the Yazata Aredvi Sura Anahita, the daughter of Ahura Mazda who is entrusted with protecting the waters and liquids within various creations.



Source: Author

Another Zoroastrian belief is ensuring that water remains ever-flowing, reflects in the traditional Persian Qanat water harvesting system. The system consists of a network of underground canals that transport water from highland aquifers to low-level surfaces with the help of gravity (Middle East Institute 2014). It is believed that this system was utilized by Cyrus the Great in Pasargadae during the Achaemenian empire period (549-330 BCE). The palace flooring harnessed the cooling effects of a Qanat system as a microclimate control measure during the summers. Similarly, during the winter season, water passing underneath the palace flooring was heated to maintain optimal thermal comfort.

As wells draw their volume from groundwater dynamics, it adheres to the ever-flowing belief too. Wells, established in cities like Greater Mumbai, had a wall constructed from brick, stone, concrete, or other finishing materials but shared no common form, height, or shape. However, there is a particular common provision to be accounted for, i.e., natural light. Sunlight and water form a synergistic spiritual bond, which, if observed even at a scientific level, relates to maintaining optimal water quality through the exposure of microbes to UV light. Additionally, the architectural design provision of a niche or ledge as part of the inner well wall or as an individual casing for housing oil lamps is also made so that water remains perpetually exposed to light, come nightfall.

## THE JOURNEY FROM THE WELL TO THE TAP: A ZOROASTRIAN NARRATIVE

In the mid-17th century, the decline of Surat as a centre of trade saw the migration of Zoroastrians to Bombay (Shirgaonkar 2011). Almost half a century later, the first fire temple of Bombay, Seth Banaji Limji, was established inside the erstwhile Fort George.

Sixteen years later, a traveling Bhikaji Behram ventured on foot from Bharuch to Bombay and dug out a freshwater well for fellow travelers at the south end of Cross Maidan near the edge of the sea.



Source: Dwivedi, S., Mehrotra, R. (2001). Bombay: the cities within. New ed. Bombay: Eminence Designs Pvt. Ltd.

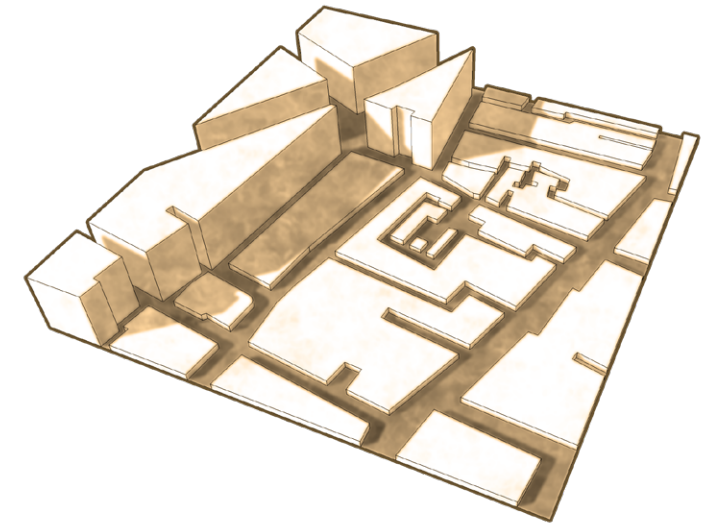
Fig. (Above): Travelers passing by the erstwhile Oval Maidan close to Bhikabehram well.



Fig. (Above): The almost 300-year-old Bhikabehram Kua, as photographed in 2019

In the late 19th century, Maneckji Sett ni Wadi and surrounding areas were observed to have one of the highest densities of wells per square kilometer in the Island City. These were areas of socialisation, activity, and assembly that seamlessly merged into the built environment of the wadi, with wells remaining open to the sky and a part of chowks (courtyards) or street edges.

A cluster of smaller constructions arranged with an open-to-sky space that had wells, alongside those already on the peripheries of existing buildings and street edges.



Source: As prepared by Author using information from Shirgaonkar (2011)

Fig. (Above): The erstwhile built form of Maneckji Sett ni Wadi

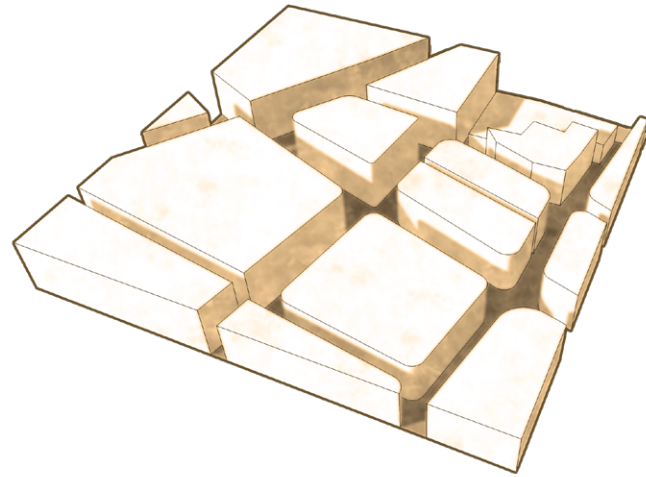
Between 1869 and 1897, the Bubonic plague hit Bombay. To minimise infection risk, all public wells and tanks were sealed at the time. However, one was allowed to remain open by the authorities: Bhikabehram Kua. The efficient management of Bhikabehram Kua was the key reason behind why it could continue its operations. This enabled the Kua to serve water





Fig. (Above): A Romanticisation of Life with wells in the Wadi of Maneckji Sett inside the erstwhile Fort

even in truly difficult times. However, most dug wells and tanks in the aftermath of the plague saw declination in use due to the fear of waterlogging and the spread of disease. Statutory enactments that followed post-independence addressed water purely from an institutional and spatial lens, overlooking socio-cultural significances. An overemphasis on improving centralised systems pushed the concept of wells to the periphery of urban policy dialogue.



Source: As prepared by Author using information from Shirgaonkar (2011)

*Fig. (Above): Built Form Transition of Maneckji Seti ni Wadi: Apartment-type dwelling units based on the Pagri rent system were eventually constructed over sealed dug wells.*

Gentrification escalated post-independence and led to an eventual detachment of the sense of urban 'place' wells generated. With a lack of initiative to retain their purpose, most of them were filled and built over. The case of alterations to the built-form of Maneckji Seti ni Wadi reflects this as seen above. Since the past decade, however, CGWB (2013) noted that groundwater development in the city was poor due to the low-yielding nature of aquifers. Additionally, the concern of seawater ingress due to over-extraction and that regarding



*Fig. (Left): Impression of the Kalbadevi Locality of Bombay during the Epidemic*

Source: Wikimedia Commons



Source: Author

*Fig. (Above): Urban Gentrification (1920-2020) and the Loss of Wells, Maneckji Seti ni Wadi as of 2020.*

quality which arises from untreated sewage discharge, heavy metal industrial effluent discharge, domestic consumption increase, commercial exploitation for construction and by hotels; remain apparent. 3,950 dug wells and 2,514 borewells are still considered operational for supplementary uses by CGWB (2013), even after the BMC and GoM prohibited the use of dug well and pond water citing health concerns. Where their purpose has changed, it is observable that wells have continued to sustain. Even after social protocol adaptations were brought about by the current CoVID-19 pandemic, the well water at Bhikhabebram continues to be utilized safely for drinking purposes.



*Fig. (Above): Ardha Kua behind Agiyari Lane in Fort, now in the public realm, is regularly frequented by multiple communities - there is no water, but the spiritual essence and sense of place have withstood the test of time.*

## THE DEEPER IMPLICATIONS OF LOST WELLS: AN INTROSPECTION

The journey from the well to the tap reflects both losses and possible opportunities involved in future policy dialogue. In this regard, the following observations are drawn based on the Zoroastrian well experience and sequence of urban development events in Greater Mumbai:

- In the transitions from water procurement to water supply service paradigm, socio-cultural connections with respect to traditional water systems have not only endured the test of time but are also witnessing relative changes in their purpose.
- This must be perceived as an opportunity to aspire for a return to a state of complete potability of or in extension, salvage new purposes resonant to incoming challenges presented by groundwater exploitation, water scarcity, flooding, and unsustainable use.
- Urban development has interfered with inherent land topography and hydrology. It reflects cavalier ignorance through its statutory spatial planning in preserving surface water bodies and conserving groundwater.
- A multiculturalist approach to water charity eliminated societal inequalities in the period of urban growth and development of Mumbai. Alongside prevalent communities of the time, Zoroastrians, by virtue of their actions, played a pivotal role in ensuring the water security of Bombay during periods of scarcity. During water-stressed times, the need for water augmentation inevitably encouraged the voluntary facilitation of greater public space for accessing water reserves from wells and tanks in the private estates and holdings of eminent Zoroastrians.
- Traditional water systems were essential elements responsible for manifesting a unique sense of urban place in the Indian context. Wells have played a significant role in providing a distinct identity and character to the public realm of Greater Mumbai.

- Based on the case of Greater Mumbai, wells and traditional water systems will continue to play adaptive roles in ensuring the water security of Indian cities and villages.

## POLICY RECOMMENDATIONS

### Spatial

- Public awareness with respect to traditional water systems can be increased for democratisation of mapping practices. States can work towards environmental conservation by preparing real-time spatial inventories of all pre-existing land and water features (inclusive of surface, sub-surface, and groundwater sources) at the district scale.
- Retaining the inherent topography of water-sensitive urban areas through the statutory Development Plan and Town Planning Scheme tool.
- Adding environmental benefit valuation to provide the true value of land and water resources as part of existing land revenue frameworks.
- Mandating rainwater harvesting and groundwater extraction guidelines for all coastal settlements and cities to prevent high salinity.
- Maximising water percolation by creating urban surfaces and construction materials policy, aligned with the locational and climatic contexts of Indian cities.
- Physical integration of both natural and artificial blue and green features, inclusive of traditional water systems, fits into the larger globally resonant trend of adopting nature-based solutions for a variety of benefits. Exploring the role of traditional water systems as part of the larger nature-based solutions canvas can help continue long-standing socio-cultural links and a sense of place, often lost in the urbanisation process.

## Institutional

- Redefining sentiments of PPP and CSR initiatives to prioritise water charity by incentivising the private sector to conserve pre-existing traditional water systems as part of acquired land parcels for township and project development.
- Financing integrated development of small and medium towns model and Shyama Prasad Mukherjee Rurban Mission on Research and Development related to the feasibility of wells and tanks as flood prevention, groundwater recharge, and greywater storage adaptations on a case by case basis.

## CLOSING REMARKS

Without groundwater, most Indian cities would remain uninhabitable. As India proceeds on its journey towards water security, the road from scarcity to abundance from the Zoroastrian lens represents a critical opportunity to ensure that larger ecological synergies remain intact. Optimal use of groundwater will be integral for a sustainable future. As climate change and the CoVID pandemic only further continue to increase and expose societal inequalities and management gaps, ensuring measures for urban resilience is very much on the table. The case of Mumbai and the adaptive use and management of wells has shown a truly unique means of achieving water security in periods of conflict.

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