

INCORPORATING CULTURAL CONTEXT INTO WATER MANAGEMENT: INDIA EXCHANGE

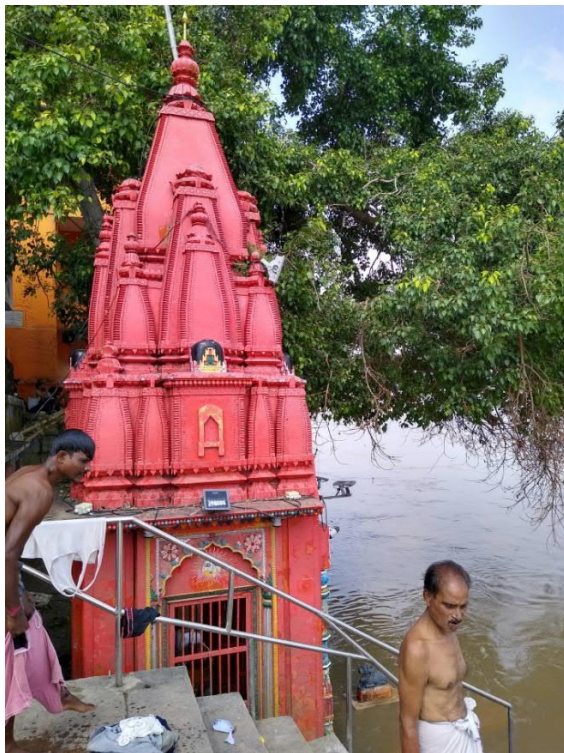
Shannon Davies ^{1,2,3,4}

1. *Environmental Engineer, AECOM, Newcastle, NSW, Australia*
 2. *NSW Young Water Professional of the Year 2021, Australian Water Association*
 3. *Australian Water Association, Newcastle Sub-committee*
 4. *Engineers Australia, Newcastle WiE committee*
-

ABSTRACT

In India, bathing in the River Ganga (Ganga) is said to wash away your sins. This should provide additional motivation to ensure raw sewage doesn't continue to be discharged into the river. However, understanding the societies' perception of any public health risk this poses must be considered alongside the locals' well-established view that 'Mother Ganga' is self-purifying. It's beliefs and customs such as this that cannot be ignored when considering water management in India, and which dictate how governments and organisations are best placed to initiate change.

Photographs 1 & 2: Varanasi Ghats, Uttar Pradesh, India, September 2019



As water professionals, what we do is inherently connected and intertwined with community and culture. Helping communities reconnect their own relationships with water is imperative. India has been doing this for years, with the National Mission for Clean Ganga drawing upon the cultural connection to water in their community consultation programs. This is also already underway in New Zealand, with the concept of Te Mana o te Wai encouraging the country to put freshwater first.

Summarising learnings from a professional exchange between Australia and India, this paper highlights the complex relationships between water, religion, culture and politics and makes comment on how the learnings may be applied to the current context in New Zealand.

KEYWORDS

Culture, community engagement, Te Mana o te Wai, rivers, water management, wastewater

PRESENTER PROFILE

Shannon is a bold and adventurous environmental engineer, with a vision for a sustainable water future for all people. Over the last 10 years she has fostered meaningful outcomes within water operations, process design and strategic planning, inspiring collaboration across continents and cultures. Shannon works within AECOM's water team in both Newcastle, NSW and Rockhampton, QLD, Australia. Shannon's passion for growth has seen her volunteer and work in India, and actively contribute as a volunteer for various organisations. Her contribution to the water industry saw Shannon named as the Australian Water Association's NSW Young Water Professional of the Year, 2021.

INTRODUCTION

This paper follows learnings from a six-month professional exchange between Australia and India. It provides an example of the way in which the complex relationships between water, religion, culture and politics impact water projects, and makes comment on how the learnings may be applied to the current context in New Zealand.

This paper has been adapted from a speech given at the opening of the Australian Water Association Young Water Professionals Conference 2020, held in Brisbane, Australia.

BACKGROUND

With a desire to understand the challenges faced in the developing world and how I could contribute, I first travelled to India in 2018 to participate in a short volunteering program for the social enterprise 'Pollinate Energy' (now Pollinate Group). During this time, I was welcomed into homes within slum communities in Bangalore, conducting interviews to determine the impact of Pollinate's products (including water filters), and conducting market research on potential products (including observing toilet and sanitation conditions).

In 2019, I moved from my hometown of Newcastle, NSW, Australia to spend six months based in Gurgaon (New Delhi Region), India. After spending the previous eight years working with water and wastewater systems and projects within an Australian context (specifically within the Hunter Region), I set out to India with a simple goal; to experience something different.

The 6-month placement was part of AECOM's Early Professional Exchange Program. I joined AECOM's team of over 300 people navigating the challenges of providing water and wastewater services to over 1.3 billion people (WorldOMeter, 2021). My role predominantly consisted of assisting with wastewater treatment projects for the Government of India. This included the management of design, rehabilitation, operation and maintenance of three new, and six existing sewage treatment plants (STPs) and associated infrastructure within the city of Prayagraj, Uttar Pradesh. I was involved in reviewing the process design, environmental management plan and provided advice to guide the development of a strategic asset management plan.

Whilst I certainly gained further technical insight into wastewater treatment technologies and processes, the most valuable lessons I received during my time in India related to understanding a culture different from my own. I gained insight into the resultant implications for how water is managed. Whilst the technical theory remains all but the same (water still flows downhill); understanding the complex relationships between water, religion, culture and politics required patience, an open-mind and asking lots of probing questions. This paper shares personal revelations during my time in India, and how the lessons may be applicable to water, wherever we are in the world.

Photograph 3: Shannon Davies on a site visit to Numayadahi STP, Prayagraj, Uttar Pradesh, India



Photograph 4: Locals bathing in the Ganga in Rishikesh, Uttarakhand, India



WATER AND CULTURE IN INDIA

In one of the world's fastest growing developing nations, not only is the scale of projects enormous, but everything is adapting and developing at an incredibly ambitious pace. The National Mission for Clean Ganga (NMCG) is a Government of India initiative tasked with cleaning up the River Ganga (or Ganges as it is commonly known in the west). The Ganga begins high in the Himalayas and meanders through five Indian states all the way to Bangladesh. It is considered the 'life-line' for 43% of India's population (which is 43% of over 1.3 billion people) (National Mission for Clean Ganga, 2021).

Figure 1: Indicative map of the River Ganga (reproduced from Das, P & Tamminga, KR 2012)



The complexities involved in implementing NMCG's massive pipeline of work cannot be fully understood without first understanding the cultural context. First and foremost, the river Ganga is considered a god of Hindu worship. Personified and feminine, 'she' is considered the mother of gods, affectionately known as 'Mother Ganga'.

Photograph 5: The river Ganga, taken from Kaudiyala, Uttarakhand, India



I was working with the team assisting the Government of India on sewage treatment plant projects within the city of Prayagraj (previously known as Allahabad), Uttar Pradesh. This city is located at the holy 'Sangam'. 'Sangam' is the Sanskrit word for confluence, so this is where the rivers Ganga, Yamuna and mythical Saraswati join; a popular place amongst Hindu devotees as a pilgrimage

and holy festival destination. This holy Sangam is one location used for the popular 'Kumbh Mela' festival, which usually attracts up to 20 million people. The drawcard of the festival is the chance to participate in a mass ritual bathing. People travel from all over India to participate.

It is a well-established belief amongst Indian Hindu's that bathing in the River Ganga (the god, 'Mother Ganga'), is said to wash away all your sins. This applies at any time of the year, however, has particular significance when undertaken as part of the ritual gatherings. I was told the participation is roughly equivalent to almost the whole population of Australia gathering at one site over a one-week

Photograph 6: Shannon Davies at the holy 'Sangam', Prayagraj, Uttar Pradesh, India



period. Once source estimates that the 2013 Kumbh Mela saw 120 million visitors to Prayagraj over a two-month period (Justin Rowlett, 2016). The population influx during this time is at least 13 times the usual population of the rural city. Unsurprisingly, the STPs are not designed to cope with this additional load.

The accommodation capacity of the city is also overloaded during this event, so most people camp near the riverbank. The local government is then tasked with the additional challenge of disposing of a large amount of human waste, close to a water body and where the sewer reticulation system is not available. This truly highlights an

example of how due consideration of cultural values within water planning and operations cannot be avoided in India. With mass ritual bathing being so ingrained within society, there is additional motivation to ensure raw sewage is not discharged into the river.

Photograph 7: Local markets at the holy 'Sangam', Prayagraj, Uttar Pradesh, India



Photograph 8: A friendly (and holy) cow joins the locals bathing at the holy 'Sangam', Prayagraj, Uttar Pradesh, India



This is no small task. The project in this city involved blocking off drains currently discharging raw sewage into the Ganga, laying new sewage infrastructure in developed areas where it is currently non-existent, upgrading six existing treatment plants, and building three new ones.

Consider the holy Indian city of Varanasi – thought to be one of the oldest cities in the world, it lies directly downstream of Prayagraj (location of the project mentioned above). When I visited this city, it was straight after the monsoon, so the famous Varanasi Ghats (steps leading to the edge of the river) were completely flooded, all the way up to the temples and the winding old narrow streets.

Photograph 9: Varanasi Ghats, Uttar Pradesh, India, under water after the monsoonal floods of 2019



These Ghats are where both locals and people from all over India come to cremate the bodies of their loved ones after they die. It is said that if you die in Varanasi your soul will be released from the continual cycle of rebirth (in Hindi, this is to achieve “moksh”).

A major impact of this flooding was that the space available for burning the bodies was limited, and lines of people carrying bodies on makeshift stretchers were forming at the crematorium. Interestingly, the development of new crematoriums

is part of the National Mission for Clean Ganga’s set of projects. Not something we would typically consider a component of water management in western society!

Photograph 10: Local activity in the flooded Ganga river water at Varanasi, Uttar Pradesh, India



I was told that bodies are ideally burnt completely, and then the family releases the ashes into the river. Unfortunately, in places where the space for burning is limited, the bodies are often not burnt completely. These remains are released to the river also. Understanding society’s perception of any public health risk this poses must be considered alongside the locals’ well-established view that the Ganga is self-purifying. It’s beliefs and customs such as this that cannot be ignored when addressing water management in India, and which dictate how governments and organisations are best placed to initiate change.

Across the country, in Mumbai (previously known as Bombay), there are specific challenges again. Mumbai is India’s second most populated city, with over 12.5 million people, and over 20 million in the Greater Metropolitan Area (PopulationU, 2021). It is almost unfathomable to consider how a sewage system would be able to cope with the volume of waste produced by this number of people. It is also recorded as the second most densely populated city in the world (The Times of India, 2018), unsurprisingly due to the substantial volume of urban slum communities.

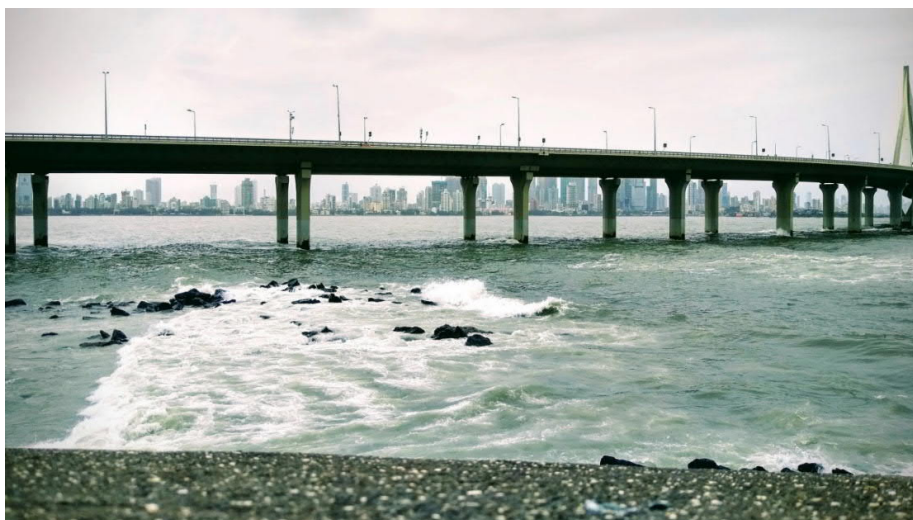
When I was shown around an old wastewater treatment plant, I heard a comment in passing: "slum dwellers have been delaying these upgrades for decades". At the end of the tour I went up to the worker who made the comment and said, "you said *this*, tell me more about that". It seems that the creation of slums on government land adjacent to the treatment facilities has caused delay as the utility no longer has access to the land. In the end, the people cannot be moved, this is their home.

I was told that the likely solution in the end would be to simply 'reclaim land'. This is a common practice in Mumbai, where land is 'reclaimed' by filling in an area that was previously sea or mangroves to create more land, purely to accommodate the rapidly expanding population. These issues are of course entwined within public debate around topics of equity, environmental protection, and economic progression. This experience served as

Photograph 11: Mahalaxmi Dhobi Ghat and surrounding community, Mumbai, India



Photograph 12: View of the Bandra-Worli Sea Link Bridge and Mumbai city, from Bandra West, Mumbai, Maharashtra, India



a stark reminder that politics, as always, plays a large role in water and urban development everywhere you go.

Further examples of the cultural relationship between people and water in India can be readily seen wherever you visit the country (bathing, ceremonies etc.). However, having the opportunity to live and work alongside local communities allowed me to develop a deeper understanding and respect for a way of life that has evolved over centuries.

REFLECTIONS AND LEARNINGS

Towards the end of my 6-month placement I was closer to understanding the special connection the people of India have with water. After bathing in the River Ganga myself (further upstream close to the holy city of Rishikesh), I began to understand

what makes this river so special. Not only is the Ganga water absolutely essential to life in India, but the river is also a force in itself to be respected. You can see and feel her power. There is an energy to

Photograph 13: Shannon Davies and a friendly dog along the banks of the Ganga at Kaudiyala, Uttarakhand, India



these places. Staring through the gap in the mountains at this majestic river I thought to myself, 'Mother Ganga, I will happily worship and protect you'. I found I had renewed motivation to work on the projects that would help conserve and nourish this magic.

What I experienced was an emotive reaction. I believe the world would greatly benefit if every person could have an experience that evokes emotion towards a water body, and as a result feel drawn to protect it. Many of us have already experienced this; only the way in which we experience it, the meaning we attach, and the stories we tell to explain the phenomenon may differ.

The people of India have a long history of understanding that a river can have intrinsic value, in this case as a feminine god. I believe a parallel can be drawn between this value and the concept of Te Mana o te Wai in New Zealand, whereby a water body is known to have value in and of itself.

Helping communities reconnect with their own relationships with water can lead to positive outcomes. I've seen it in action in India, with the National Mission for Clean Ganga drawing upon the cultural connection to water in their community consultation programs with an aim to clean up the Ganga for future generations. This is a momentous undertaking. Historical exploitation through years of excessive usage and pollution has left the Ganga in quite an unfortunate state. Its water quality deteriorates as it moves downstream through heavy industrial towns, overpopulated cities, and numerous pilgrimage locations. More than three quarters of the wastewater that enters the Ganga is currently untreated.

Whilst there has always been great public respect for the Ganga, this respect had extended to the belief that the Ganga is all powerful and self-purifying. The downside of this view is that it does not provide an incentive for humans to truly reflect on the negative impact we can have on such an incredible, forgiving force. However, it is intertwined within a belief system and culture which has developed

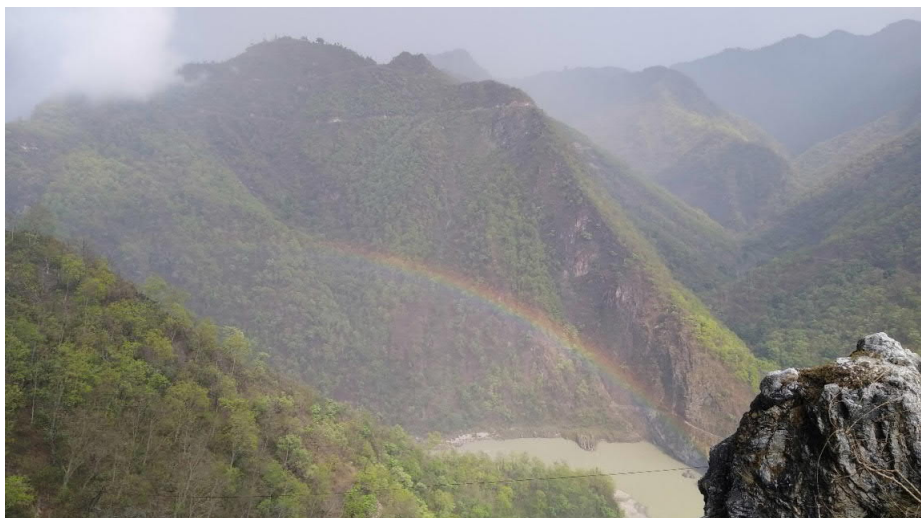
over centuries, and which cannot and should not be dismissed. We also know it to be true.

Natural river systems have the incredible ability to 'self-purify' through nature's own regenerative processes. It is the incredible load we are

now asking them to purify as a result of expanded human population that overwhelms the natural system. So instead of dismissing a long engrained cultural value, India is tasked with engaging all stakeholders to feel passionate about giving 'Mother Ganga' a helping hand.

I was fortunate enough to have the opportunity to join the National Mission for Clean Ganga's celebration of World Environment Day. This was a celebration of the many projects completed so far and recognition of the mammoth task still at hand. The images shown during the celebration focused on people; highlighting the cultural value of the Ganga and allowing the audience to better understand the social impact of these projects. The NMCG has long understood that getting the community involved and evoking emotion within people is vital to protecting our most valuable resource.

Photograph 14: The River Ganga flowing through the foothills of the Himalayas, as viewed from a road stop location near Kaudiyala, Uttarakhand, India



When I returned from India to Australia, I tried to think about how my learnings could be applied in an Australian setting. I was already aware that my local water authority understood the importance of reminding communities how essential water is to our lives. This is evident with Hunter Water's highly successful 'Love Water' campaign, which includes images of local people and how they use water to continue to drive water conservation.

I also found myself reflecting on why, after gaining so much insight into the historical roots of water and people in India, I didn't have a good grasp of Australian Aboriginal and Torres Strait Islander connections to water. There are various initiatives within Australia which aim to incorporate First Nations' cultural values in water management initiatives. I have now set myself a personal goal to learn more about these initiatives and consider the role I can play to ensure these are integrated into common practice.

BROADER APPLICABILITY

The New Zealand water industry has already embarked on a period of change. The 'Three Waters Reform' aims to provide a mechanism for improved holistic management of drinking water, wastewater and stormwater across the country. The success of the program into the future will be heavily reliant on the level of engagement across all partners. The reminder to focus on collaboration and mutual understanding has never been more imperative. As I found in India, there may not be a 'one-size fits all' solution.

It is also a time of responsibility and opportunity. The responsibility is on every water professional to learn about the specific needs and values of the varied communities that they engage with. Here and now, there is the opportunity to consciously shape how this evolves and forms best practice. I would also advocate that New Zealand has both the opportunity and responsibility to share its learnings of this process with the rest of the world.

The concept of Te Mana o te Wai is encouraging the country to put freshwater first. As this becomes more engrained within common practice in New Zealand, I would hope that these reflections could serve as a timely reminder to ensure deep understanding goes hand in hand with implementation of new policy. Just as I was able to have an experience which allowed me to understand a connection to water outside of my own cultural context, I hope that both non-Māori New Zealand people and all global citizens are able to learn, embrace and realise their own emotional connection as well.

As is applicable in all political contexts, the need for all levels of government and communities to work together to achieve outcomes can be challenging. However, we must maintain motivation to tackle these challenges head on, given the future of our most valuable resource is at stake.

CONCLUSIONS

Each of us are connected to water; it is the common thread of all civilisations. This is a deep connection which has evolved over centuries. It might look different based on where you are located, as it has seeded from the complex development of civilisations, religion, conflicts, urbanisation, and natural events. I would say the key message I took away from my India exchange experience, was that understanding a community's connection to water is a key step for success in any project. To achieve this, we need to step out of our comfort zones, and start asking questions.

Enabling communities world-wide to recognise their own special connection to water will be key to a sustainable water future for all. The first step is to strive to understand rather than assume; only then can collaboration be productive. This understanding prompts a deeper respect for natural resources and the people who depend on them.

In essence, what I am describing is to ensure we apply 'human centered design' to the complex problems our industry faces. The most technically correct solution may not always be the best solution. We cannot learn and act in silos. As water professionals, what we do is inherently connected and intertwined with community and with culture. This holds true wherever we are in the world. In all cases, we have a responsibility to learn about the specific needs and values of the varied communities that we are working with.

So, set yourself a goal. What can you do to better understand the water-culture connection in your area? Take action to ensure this connection is well known, celebrated and incorporated into all aspects of water management. Your contribution will help shape the future of the water industry in New Zealand and across the globe.

ACKNOWLEDGEMENTS

I would like to acknowledge and thank the AECOM team in India for providing me with the opportunity to learn about their culture.

REFERENCES

Das, P & Tamminga, KR (2012), 'The Ganges and the GAP: An Assessment of Efforts to Clean a Sacred River', *Sustainability*, vol. 4, no. 8, pp. 1647–1668, accessed from <<http://dx.doi.org/10.3390/su4081647>>

Justin Rowlatt (May 2016), 'India's dying mother', viewed 03/07/21, accessed from <<https://www.bbc.co.uk/news/resources/idt-aad46fca-734a-45f9-8721-61404cc12a39>>

National Mission for Clean Ganga, Ministry of Jal Shakti, Department of Water Resources, River Development and Ganga Rejuvenation, Government of India (2021), 'Ganga Basin: Location', viewed 25/06/21, accessed from <<https://nmcg.nic.in/location.aspx>>

The Times of India (2018), 'Mumbai is the world's second most densely populated city', viewed 25/06/21, accessed from <<https://timesofindia.indiatimes.com/world/mumbai-is-worlds-second-most-densely-populated-city/articleshow/63529149.cms>>

PopulationU (2021), 'Mumbai Population', viewed 25/06/21, accessed from <<https://www.populationu.com/cities/mumbai-population>>

WorldOMeter (2021), 'India Population', viewed 25/06/21, accessed from <<https://www.worldometers.info/world-population/india-population/>>