

Terraforma: A Critical Study of the Impact of Indus Water Treaty on the Ecosystem of Indus Basin through the Lens of Pakistani Literature

Abstract:

*This article highlights how Pakistani authors are responding to the importance of preservation of natural paths of water, exploring how these paths have been affected by water distribution treatises and how it causes the suffering of both human and nonhuman parts of the ecosystem. Although the loss was mutual, the loss of humans remained at the center of discussion and they were the ones getting compensation and alternative habitats while nonhumans remained in the background. Pakistani writers are not only foregrounding the misery of nonhumans but also extrapolating the consequences for human beings. They are arguing that the interdependency of the human and nonhuman parts of the ecosystem has made the negative consequences seep through the human lives too, thus making it a mutual concern. However, the anthropocentric ideology never allowed humans to take serious actions to preserve what is left and to mitigate the damage already done. Water has been the center of environmental debates since the commencement of a wave of environmental awareness in the eighteenth century (Mascarenhas 2007; White et al 2010; Vanderwarker 2012; Schaider et al 2019). This article is going to focus only on the Indus Water Treaty (1962) which divided the river waters between two nation-states India and Pakistan, thus causing a great havoc to the ecosystem of region Punjab where all these rivers flow. I chose the novel *Pani Mar Raha Hai (Water is Dying 2018)* by Amna Mufti, which is a magical realist novel based on the impact of the Indus Water Treaty on the drying riverbed of Beas and humans indifference towards nonhuman victims of the deteriorating ecosystem. Drawing upon the idea of Anthropocene Age and the Great Acceleration by Paul*

Crutzen, Will Stiffen and John McNeill, I use the term 'terraforma' as used by Joseph Masco to elaborate the human desire to bring geomorphic changes, and his term 'fallout' to explicate the role of Indus Water Treaty as 'an unexpected supplement' to apocalyptic environmental crisis 'that is in motion, causing a kind of long-term and unexpected damage'.

Keywords: Fallouts. Terraforma, IWT, Indus Basin, Water Crisis, Ecosystem

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The aquifers, lakes and river basins which are shared by two or more countries are called the transboundary waters. The fluidity and vigor of these waters do not allow any nation state to divide their natural resources, benefits and the power of giving life. But the political conflicts between the countries, the economic and energy crises of the region, the growing need of water for the growing population can spark conflict within or across borders. Hence, a supranational approach to manage transboundary water division is needed which fulfills all the demands 'based on legal and institutional frameworks and shared benefits and costs'. There are 263¹ Transboundary Lake and river basins covering almost half the Earth's surface, having 145 States territory in these basins, and 30 countries lying entirely within them. There are approximately 300 transboundary aquifers, upon which almost 2 billion people depend. Therefore, the importance of a peaceful water distribution treaty can be judged and the extent of the vulnerability of both humans and the climate to any change in the water supply can easily be estimated. It is important to note that approximately 295 international water agreements were negotiated and signed and 37 incidents of acute conflict over water, since 1948.

Indus Water treaty (1960) is one of the agreements discussed above. It was signed between India and Pakistan and brokered by the World Bank. The agreement established and delimited the rights and obligations of both countries concerning the use of the waters of the Indus River system. Originating from southwest Tibet, The Indus River streams through both Kashmir and Pakistan, draining into the Arabian Sea. It is joined by several notable partners in plains of Pakistani Punjab, like Jhelum, Chenab, Ravi, Beas, and Sutlej rivers. It has been used for irrigation purposes from ancient times but modern irrigation systems were introduced by British raj in 1850's. Canals were built, revived and modernized, but the division of the basin into two politically contrasting nations in 1947, bifurcated the region in such a way that the headworks remained in India, while rivers and canals flowed through Pakistan. From a standstill agreement of

¹ Information retrieved from <https://www.unwater.org/water-facts/transboundary-waters/> at 21st May, 2022.

1947, to the Inter-Dominion Accord of 1948, nothing resolved the problem of water between two political enemies, till the World Bank agreed to become arbitrator of the dispute and decided to fund the project. After six years of talks, Indian Prime Minister Jawaharlal Nehru and Pakistani President Mohammad Ayub Khan signed the Indus Waters Treaty in September 1960. According to this treaty the waters of the three western rivers—the Indus, Jhelum, and Chenab—were given to Pakistan and those of the eastern rivers—the Ravi, Beas, and Sutlej— were consigned to India. Bank also provided the funding for building of dams—notably the Tarbela Dam on the Indus River and the Mangla Dam on the Jhelum River-, link canals, barrages, and tube wells. This treaty saved Pakistan from the water crisis which India was trying to create because of political reasons by controlling headworks. The World Bank contributed to the treaty both by being arbitrator and financier of the project. It also established a Permanent Indus Commission, with a commissioner from each country which maintained a channel for communication. This commission remained helpful in resolving questions about implementation of the treaty along with providing a mechanism for resolving disputes.²

The positive political side of the treaty and its benefits to the human population of both the countries remained a subject of discussion for a long time in history, and even now, the polemics of its flaws address it with a political approach. Even when the debate is apolitical, it is indubitably anthropocentric. This reminds us of the term ‘the Anthropocene Age’ which was introduced by Paul Crutzen, who dates its commencement from James Watt’s invention of steam engine. By this term, he means the massive impact of human centered activities which are leading to geomorphic changes, equaling major geological events in its magnitude. The important point to note is that the period in which

² The Indus Water Treaty is a matter not only of political and geographical but environmental importance. The information used in this article is gathered from many news articles and reports and is part of common knowledge. for one example, see <http://www.gee-21.org/publications/pdf%20files/Conflictsbetweencountriesvol.3Jan.2004.pdf> retrieved on Feb 12, 2024.

these water division treaties are being signed (including IWT) and implemented is the same- mid-twentieth century- which Will Steffen, John McNeill and Crutzen name as ‘the Great Acceleration’³ as the second stage of the Anthropocene Age. Libby Robin explains this in her words: “We have recently entered a new geological epoch, the Anthropocene. There is now considerable evidence that humanity has altered the biophysical systems of Earth...”⁴. The exploitation of natural water bodies and efforts to diverge the natural water paths is perhaps the most dangerous human intervention in realms of Nature which can and is causing serious hazards to natural geological arrangements.

Water has been the center of environmental debates since the commencement of a wave of environmental awareness in the eighteenth century⁵. Its importance as a salient component of life itself, either human or nonhuman, placed it at the center of discussion in debate whether it was political, geographical, biological, or environmental. Now it has become the matter of more concern not only because of its natural vital importance but also due to the growing peril of the water crisis. The peril is bigger in the South Asian region where not only environmental but also economic and political conditions are not promising enough to be able to resolve the problem.

The intersection of water, environmentalism and postcolonialism has been being discussed since 1980’s by river ecologists, political historians and postcolonial environmentalists. The study of canal system of India and its impact on human and nonhuman environment is being discussed by the same theorists, specifically in terms of irrigation system of Indian subcontinent⁶.

³ Will Steffen, Paul J. Crutzen, and John R. McNeill. “The Anthropocene: are humans now overwhelming the great forces of nature.” *Ambio-Journal of Human Environment Research and Management* 36, no. 8 (2007): p. 614-621.

⁴ Libby Robin. “The Eco-humanities as literature: a new genre?” (2008): p. 290.

⁵ Mascarenhas 2007; White et al 2010; Vanderwarker 2012; Schaider et al 2019, are some of the instances where water has been centralized in environmental debates.

⁶ The sensitivity of the South Asian geopolitical region draws interests of researchers all over the world to salience of the matter over a long period of

In the recent years the relationship of globalism of ecology and environmental humanities; the Ecocriticism and the global south; indigenous, modern and post-colonial to nature and how these relations are affecting each other have been a subject to study for researchers⁷. They have discussed the long term and catastrophic challenges like climate change, deforestation, development, pollution and proto-capitalism and talked about regions and their relation with the environment. There are scientific and political studies, focusing on the relation of the nonhuman population of disputed regions like Indus Basin with not only the water bodies but the dry riverbeds and floodplains have been impacted by political hysteria among two nation-states controlling the Indus Basin. Amidst this huge field of study there is a gap where environment and literature intersect to create an argument about how the nonhuman environment- both living and nonliving- is being and could be affected by this mega political projects like IWT that is disturbed the natural habitat of living creature of fresh water bodies and destroyed the intricate balance between living and nonliving environment.

According to Joseph Masco, ‘being able to assume a planetary, as opposed to global’⁸ (2016, 309) is rather difficult for anthropocentric ideologists, for whom the betterment of the globe lies in betterment of man. Masco uses the term ‘fallout’ as ‘an unexpected supplement to an event, a precipitation that is in motion, causing a kind of long term and unexpected damage: it is the aftermath, the reverberation, the negative side- effect’⁹. I argue that Indus Water Treaty, as a form of the geo-engineering, which Masco describes through the term ‘terraforming’ of planet earth, has caused so much destruction that its ‘fallouts’ are still visible in the region as climate change, loss of biodiversity, heat wave, and

time. See Ali 1987; Wilson 1989; D’Souza 2006; Weil 2006; Mustafa and Wrathall 2011; Agnihotri 2012.

⁷ See DeLoughery 2015; Slovic et al 2015; Roothan 2020; Cooke & Denny 2021.

⁸ Joseph Masco. “Terraforming Planet Earth.” *The Politics of Globality since 1945: Assembling the Planet* (2016): p. 309.

⁹ *Ibid.*, p.310.

loss of variety of seasons¹⁰. The idea about rivers as just a nonliving flowing entity that needs to be regulated, started being challenged by river ecologists in the late twentieth century who argued that ‘fluvial regimes are complex geomorphologic, chemical and biological processes in motion’. A great debate is going on about the embedment of river flows in ecological contexts and how technological intervention can cause several serious ‘unintended environmental consequences’. The approaches that ignore the importance of ‘flow’ as an entity and treat it as merely linear motion of a nonliving matter and deal with ‘abstraction, diversion and interference’ with water must now acknowledge ‘nonlinear ecological qualities’ of water¹¹. Since, dealing with water as a mute volume of liquid is a flawed concept and needs to be revised as water management practice.

*Pani Mar Raha Hai*¹² (*Water is Dying*) is a novel published recently (2018) by Amina Mufti, who is known as a socially aware writer, and who has penned down a number of novels and TV scripts to highlight gruesome social facts that people tend to ignore. *Pani* is her first environmentally conscious and deliberate effort to raise her voice against the environmental injustice against the nonhuman and nonliving neighbors of humans of Indus Basin. The story is described through some human characters, who like Mufti, are environmentally conscious and aware of the impending danger and can smell the apocalypse in the air. They, conscious of the hazards of anthropocentrism behind terraforming of planet earth, wait and plan for an apocalypse-in the form of floods, wars etc- which will destroy entire human race, and the mutant survivors –who were in forms of merman and mermaids- could regenerate the life on Earth, thus cleansing the Earth from all the human induced disasters. For the characters of Mufti, this apocalypse is not the Day of Judgment, but a revival of all what is lost. Although the novel is interwoven with magical

¹⁰ Ibid., pp 44-70.

¹¹ Rohan D’ Souza. “Hydro-politics, the Indus water treaty and climate change.” In Seminar, no. 626, pp. 26-30. 2011.

¹² Amna Mufti. *Pani Mar Raha Hai* (The Water is Dying). (Faisalabad: Faisal publishers, 2018)

realism, the characters seem to have supernatural powers and people like Irfan, Asrar and Baba jee seem to have a telepathic approach, yet as the novel goes on that all of them are only some conscious humans. The novel talks about the impact of the Indus Water Treaty on the plains of Punjab which was just a small part of an entire endangered globe. The last part of the novel is the most important part which explores the inactivity and indifference of even those conscious humans to the terraforming. Mufti explains that unlike the main characters of the novel, only those conscious human beings can bring a change to the situation who are not only conscious about environmental hazards of geo-engineering which are causing geomorphic disasters, but also actively take part in the process of mitigating the hazards. The novel also implies those transcendentalists, who think that everything is made to be destroyed and only an apocalypse can settle these environmental issues.

Punjab, as Mufti illustrates in her novel ‘is a plain of rivers. The sediments from rivers, hills, grooves, sand mountains etc are everywhere’¹³. Mufti has interwoven the relation between living and nonliving nonhuman environments with such intricacy that their interdependency becomes clear to the readers. She has set her novel in the dried river bed of river Beas, after the Indus Water Treaty assigned the rights of Beas to India, drying the river completely and thus devastating the whole ecosystem which was associated with the flowing water. ‘The piece of land was, when looked from a certain height, it seemed like a huge python, taking respite in a dizzy state’¹⁴. Mufti has recreated this analogy of dried riverbed and the great python so many times to express the interdependency of and interconnectivity of the river ecosystem. The dependence of slithering reptiles on wilderness, water and riverbeds is the fact which is emphasized by Mufti again and again, throughout the novel. This repetition not only helps in creating a rhythm to the magical realism of the novel, making it easy to slip in readers subconscious, but also highlights the importance of this interdependency. The snake which is cared for by Irfan sahib, the

¹³ *Pani Mar Raha Hai*, p.12.

¹⁴ *Ibid.*, p.12.

snake of Mian Allah Yar's mansion, the snakes of the dried riverbed of Beas, all commemorate the dying biodiversity of the plains of Punjab.

Irfan Sahib, who can be named as protagonist of the novel, is the first person who becomes consciously aware of the hazards that the Indus Water Treaty could cause to the biodiversity of the plains of Punjab. His name Irfan, that means the supreme knowledge and understanding, also implies to the environmentally conscious part of the society, but his response to the sensitivity of the matter, just by resigning to his post and leaving his house to inhabit the dried riverbed, waiting for a miracle to happen that could revert the environmental hazards, is an irony which Mufti has predicted about the environmentally conscious part of Pakistani society. Mufti and her protagonist Irfan narrate the myth of Vishwamitr to explain the desire to terraforma (as explained by Masco). Mufti relates that like Vishwamitr, human beings are unable to cope with the 'fallouts' of terraforming as 'unexpected supplement(s)' to apocalyptic environmental crises, 'causing a kind of long-term and unexpected damage'.¹⁵

The 'mutability' as discussed by Elizabeth DeLoughrey is presented through the production of merman and mermaid in her text. Mufti has drawn a novel 'which is filled with dreamlike, often futuristic scenes' that shifts the center from the human characters to the nonhuman parts of the ecosystem, placing mutability as the interactive place of both human and water creatures. The birth of mermaid species in the novel provides that mutability where both the species can interact and recognize each other's importance in the given system of nature. DeLoughrey argues that 'the discourse of the Anthropocene positions humans as a geological force',¹⁶ but through her strong narrative, Mufti has shifted her focus to the nonhuman world, and she creates a magic, where the

¹⁵ See Joseph Masco p. 44-70.

¹⁶ See DeLoughrey, Elizabeth, Jill Didur, and Anthony Carrigan, eds. *Global ecologies and the environmental humanities: Postcolonial approaches*. Routledge, 2015 for further arguments.

disempowered gets power and takes the charge in his own hand, where, ‘goats become cannibals’, ‘mice start chasing snakes’.¹⁷

Here Mufti strongly puts her argument about the Indus Water Treaty and criticizes the anthropocentric approach of turning wilderness into farming land just to fulfill the lust of human expansion. “Both the countries across borders were trying with all their might to make water available to the most of the land, to turn it into agricultural land, because there were countless sperms of upcoming hungry generations were tingling in their testicles. And they knew that if the ample food was not produced from every field, then these locusts would eat each other... So, under the same fear (though the features of that fear were not clear at that time) the water conflict went on, across the border. The despicable act, of grabbing the river resources, became a part of a seemingly harmless administrative division to fulfill the lusty irrigation project”.¹⁸ Here echoes the concerns of Rohan D’Souza about the nonhuman creatures which were affected by IWT. “Handling and harnessing variability and stochastic flow regimes’, accordingly, have ‘become critical to shaping sustainable approaches towards river management’. The Indus basin, is a compilation of associations ‘between streams, floodplains, the head reaches, aquifers and inevitably the chaotic delta’. ‘The so-called ‘success’ of the IWT has resulted in the relative ecological devastation of the Indus delta’. According to D’Souzas ‘before projects for siphoning flows began in the 19th century, up to 150 million acre-feet of fresh water probably fell into the delta, along with the deposition of close to 400 million tons of nutrient rich fertilizing silt. These immense uninterrupted volumes nourished and sustained a sprawling collection of mangroves, inlets, creeks, estuaries and other wetland ecologies”.¹⁹

The exclusion of the nonhuman world from the Anthropocene discourse is the speciesism that is highlighted by many early environmentalists. This is the concept of not ‘thinking

¹⁷ *Pani Mar Raha Hai*, p. 45.

¹⁸ *Pani Mar Raha Hai*, p. 45.

¹⁹ See Rohan D’Souza, p.6.

like a mountain'²⁰ which Aldo Leopold has argued in his book. Mufti directly poses the question when the characters of two different ideologies confront each other. 'This all happens when you start thinking about what is not yours. You have forests, wilderness, and domesticated animals. They all serve and feed you and do not harm you even having the power to do it. There was a tiny space for snakes, lizards, pigs and for me, just a space of a few inches. You even want to invade that?''²¹

But the most important is the debate which Mufti has put both in the center of her text and the discussion of development. Pakistan, being a post-colonial part of global north, where still the environmental debates are deemed academic elitism, where already 'more important issue' of hunger, poverty, lawlessness, violence and terrorism are here to grapple with, a common reader is unable to understand that why the 'successful' projects like Indus Water treaty should not be hailed as development and prevalence of peace, and what impact can be felt if water as a nonliving volume of a drinking fluid, would be distributed among two already conflicting nations. As water is water, what does it matter if it is the water of Beas, Sutlej and Ravi, or Chenab, Jhelum and Indus? A layman cannot understand the pure academic and scientific debate of what an ecosystem is and how all the components of an ecosystem, whether they are living or non-living are dependent upon each other, and how the destruction or displacement of any of them can lead to the destruction of the whole system. It is difficult to make them 'think like a mountain'. Mufti has come here to answer these technical questions in a very easy way, to make people understand, the destruction of flora and fauna of both the rivers, the one which is being dried up, the second which is being drained to make the first one keep flowing. This is perhaps the most powerful dialogue of the novel between Irfan sahib and his wife Shahida:

Beas was not flowing already, it joins Sutlej in India, and here it's just a small stream.

²⁰ See Aldo Leopold's book of the same title for further discussion.

²¹ *Pani Mar Raha Hai*, p. 46.

No Shahida. River should not dry up. You know what happens when a river dries?

Rivers will not dry, you were saying that you will build some link canals, and send the water of western rivers to eastern rivers...

No, Shahida. It is not possible. River flows with its own water. See, here is my arm, my veins, my arteries. My blood flows in them. I have my own blood group, my own blood composition. Whatever the extent of love we both share, if my blood is drained and all your blood filled my body, what would happen? Both of us will not survive. Even if we could, till when will you keep me alive by transfusing your blood? What will we be able to do instead of this transfusion? Think Shaihda, think. The person who has someone else's blood in his body, and the person who is continuously transfusing blood to another human, will they both be alive? Will you call it a life?²²

Towards the end of the novel, Mufti opens up about the experience of being an environmentally conscious person and how it is important to make a connection among them and what sufferings they are undergoing due to them being aware of the dangers ahead.

We are neither anyone's enemy nor friends. We are just those people whose human lust has ended... We are in double damnation. We have to endure double damnation every time... once when it falls on earth and second when we realize that it is going to fall.²³

At the end Mufti laments the inactivity of even environmentally conscious people who are just conducting long conversations, taking up individual efforts and doing nothing collectively to make a big change in the anthropogenic induction of disasters and having zero role in mitigating the effects of what is already done. She has criticized those people who think that all this is inevitable as

²² *Pani Mar Raha Hai*, p. 63.

²³ *Ibid.*, p. 145.

everything is leading to a destruction which is already decided. She differentiates this inactivity and indifference from the faith as she thinks that it is not God who has done the damage, it is the human, so he must take the responsibility and stop waiting for a divine apocalypse which will destroy everything but save humans.

Humans just cater this hope that he will keep destroying everything and God will end this destruction through an apocalypse and save human species somehow. It was an illusion. Everyone is waiting for everything to be alright one day. Water will return, everything will be alright and their species will survive...²⁴

I conclude that the mega projects like the Indus Water Treaty must be revisited with a non-anthropocentric lens, where the whole ecosphere must be kept in context before taking any major decision. Waterbeds are the precious sites of biodiversity which are vital for the ecosystem of Punjab. Both the nations and global ecologists must collaborate to rethink better options to save the environment from this structural violence. Although the political scenario where both the countries have not even spared glaciers from their lust of land, the future is not promising, yet the warnings of an apocalypse which will not save any particular race can lead to open a discussion. Mufti and other writers of the region are contributing towards issuing these warnings.

²⁴ Ibid., p. 188.