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Water Pollution: Its Ethical Aspects and Management

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Abstract: *The Earth is one but the world is not. We all depend on one biosphere for sustaining our lives. Up till now all groups of people, every country, strive for continued existence and wealth with modest regard for its impact on others. Water, the common symbol of humanity, valued and respected in all religion and culture has also become a symbol for social equity (General Conference of UNESCO, 1997). Ordinary moral ethics in water use and water management should be accepted as applicable in all geography, in all stages of economic growth and for all point in time. We need to recognize that in implementing these principles there can and will be different strategies and methods, which will be appropriate for different situations. However, the ethical principles, which inform such policies, will be consistent throughout the world. there is a need to expand and connect new technologies for conserving, harvesting, transporting, recycling and safeguarding our water resources. We must ensure that once these innovative systems and practices have been successfully developed, they are widely disseminated and the participating process is able to assess their relevance for other areas. Most of the earth has been built and rebuilt and today the fundamental need of water managers is for an ethic of ecological design and not only preservation.*

Keywords: *Water management/ Environment/ Water ethics/ Water ethics approaches*

I. INTRODUCTION

Water, the regular indication of mankind, regarded in all religions and conventions, has additionally turned into a sign for collective value. Normal moral standards in water utilize and water administration ought to be acknowledged as pertinent in all geologies, in all phases of monetary development and forever. Access to clean water and acceptable cleanliness is a rising emergency for some parts of the world. In excess of one billion individuals are in expecting of clean water, and 2.6 billion need access to fundamental cleanliness. Water concentrated farming, assembling, and land utilize hones all through a significant part of the globe are drawing down or pollute groundwater at a stunning rate. Water is dynamic, tricky, decided hotspot for the human moral and religious creative ability. When we discuss the logical and building parts of water, we ought not to dismiss the way that water is likewise an indispensable wellspring of creative significance, which maintains our organic life as well as our creative energy and quality. No culture or custom known to us is unconcerned with it. It is an indication of filtration, resurrection, and compromise, even as it is likewise a wellspring of ill will and struggle. Water, with its nearby association with fruitfulness and life, figures profoundly in religious and mystical perspectives of for all intents and purposes all people groups. There is a prototypically two sided viewpoint to the manner in which water is spoken to and envisioned in many conventions.

II. WATER POLLUTION

A. Key Facts

- 1) Water supplies are falling while the demand is dramatically growing at an unsustainable rate, and over the next 20 years, the average supply of water worldwide per person is expected to drop by a third. Over 1.5 billion people lack ready access to drinking water and, if current consumption patterns continue, at least 3.5 billion people, nearly half the world's projected population will live in water-stressed river basins in just 20 years."Asian rivers are the most polluted in the world, with three times as many bacteria from human waste as the global average. These rivers have 20 times more lead than those of industrialized countries.
- 2) Water is changing into scarce because of higher pollution levels and surround degradation. Contamination denies as several as 3.3 billion individuals access to scrub water provides. In developing countries, associate degree calculable ninetieth of sewer water is discharged directly into rivers and streams while not treatment. Every year there are concerning 250 million cases of water-related diseases, with roughly five to ten million deaths.
- 3) One cubic decimeter of waste material pollutes concerning eight liters of fresh water. An estimates shows that 12,000 km³ of contaminated water worldwide, that is over the overall quantity contained within the world's 10 largest watercourse basins at

any given moment. Therefore, if pollution keeps pace with increment, the planet can effectively lose 18,000 km³ of fresh by 2050 – nearly nine times the overall quantity countries presently use every year for irrigation that is by far the largest consumer of the resource.

B. Some Other Facts

- 1) Fresh water on earth is only 2.5% of the total water when 70% of the earth's surface is covered by water.
- 2) Around 70% of industrial waste is dumped to water.
- 3) 80% of the water pollution is caused due to domestic sewage.
- 4) More than 6 billion pounds of garbage, mainly plastic end up in the oceans every year.
- 5) The contaminated water is the main cause of various diseases such as cholera and typhus.
- 6) 15 million children under the age of five years die every year from diseases caused by drinking contaminated water.
- 7) On average 250 million people succumb each year from diseases caused by the contaminated water while according to the World Health Organization and UNICEF almost 2.5 billion people lack access to valuable health conditions.
- 8) The nuclear crisis created by the tsunami of 2011, unleashed 11 million liters of radioactive water into the Pacific Ocean.
- 9) The same tsunami debris created islands totaling 70 kilometers in length which float in the ocean.
- 10) Asia has the highest number of contaminated rivers than any other continent, mainly of bacteria from human waste.
- 11) Almost two million tons of human wastes are exposed daily to water.
- 12) The Ganges river in India is considered the most polluted river in the world and contains dirt, garbage, dead animals and humans.
- 13) Underground Bangladeshi water is contaminated with arsenic, which is highly toxic, poisonous and carcinogenic.
- 14) 20% of groundwater in China which are used as drinking water contaminated with carcinogens.
- 15) In America 40% of rivers and 46% of the lakes are polluted and unsuitable for swimming, fishing or any other activity.

III. PRINCIPLES OF WATER ETHICS

Different ways of conceptualizing what water is and how human beings should use it have different ethical implications. Understanding water supplies as commodities to be bought and sold, and as property to be controlled unilaterally by certain individuals or groups, has different implications for fulfilling the ethical principles (such as human rights and social and environmental justice) than does understanding it as a fragile ecosystemic component of an ecosystem commons upon which we all depend in myriad ways. Taken together the ethical values of efficiency, equity, and stewardship can form a basis of a set of ethical principles that can normatively guide water management and public health policy. Additional principles of water ethics will be based on procedural and decision-making process values, such as democratic governance rights, active participation, transparency, accountability, and public-private collaboration and partnership. Implementing these ethical ideals and obligations in practice is shaped by a number of factors: Who participates in the decision-making process?

With above ethical orientations and practical considerations in mind, we offer the following principles of water ethics.

A. The Principle of Equal Respect for Human Dignity

This rule requires the gathering of essential needs and the advancement of human wellbeing and prosperity. It fuses the basic idea behind the structure of all inclusive human rights. This is an essential guideline of general wellbeing morals; when understood in social terms, the idea of human pride isn't inconsistent with deference for different animals and for nature and in this way is key to ecological morals too.

B. The Principle of Equity and Proportionality

Addressing the necessities and advancing the wellbeing of all people is vital, yet value and proportionate reaction are required notwithstanding constrained assets to offer need to minimal well off, those most promptly in danger, and the individuals who are made defenseless by past segregation, rejection, and weakness.

C. The Principle of Solidarity

Regard and value ought to be sought after with acknowledgment of the cutoff points of every individual's capacity to decide the states of their own lives and of our common interdependency, and dependence on outside help, care, and help. The idea of solidarity and reliance applies in a social setting, among human people and gatherings, yet it applies with equivalent significance and

reverberation in an environmental setting, among human and biotic networks. In water morals, solidarity helps us to remember what might be called our "upstream and downstream reliance."

D. The Principle of the Common Good

This rule requires the acknowledgment of circumstances in which the quest for balanced personal circumstance by every individual prompts results that are unreasonable and unsafe to the interests of all people included. The human interests served by water and by the biodiversity water makes conceivable are regularly not all around served by social methodologies of individual intrigue boost, for example, those cultivated by libertarian property rights. Water and the innovations of its usage regularly present "catastrophe of the house" type situations, for which a conceptualization of water as a typical asset and feasible water use as a typical decent gives the morally suitable reaction.

E. The Principle of Right Relationship or Responsible Stewardship

The standards of solidarity and the benefit of all call for aggregate activity in relationship to general wellbeing and water the executives. The guideline of right relationship tends to the substantive substance and impacts of such aggregate activity. The mindful strategy is firmly tied with the real properties and conditions of what is being reacted to. On account of general wellbeing, for instance, inability to accurately recognize a pathogen and the organization of the mistaken antibody or medicine would comprise general wellbeing and therapeutic misbehavior; the correct connection between the doctor and the pathogen and the natural realities of the patient had not been set up. Additionally, the unsustainable utilization of an aquifer or the natural corruption of a watershed and its needy biological communities are types of ecological negligence. They don't build up right connections between the people who use and influence water with fake development and innovation, from one viewpoint, and the particular organic, concoction, and physical substances of water, on the other.

F. The Principle of Inclusive and Deliberative Participation

Similarly as the guideline of right relationship and mindful stewardship tends to a substantive moral standard for the substance of general wellbeing and water the executive's strategies, so the rule of interest tends to the qualities inborn during the time spent policymaking and basic leadership. Frequently the systems and foundations of vote based administration are particular and depend on dealing and intrigue boost methodologies by ground-breaking, efficient, and very much spoken to gatherings. This kind of administration and basic leadership may not be appropriate to the security, preservation, and impartial circulation of normal merchandise. Increasingly sufficient administration systems, from a moral perspective, include a deliberative and participatory process set apart by straightforwardness, all inclusive access to data, comprehensiveness, and individual and network strengthening with the goal that all may exploit the open data and the participatory chances.

Environmentally educated and morally dependable water the boards are fundamental for general wellbeing and are important to anchor these assets for future ages of all living things. Deciding in favor of protection is fundamental even with our vulnerability in regards to the territorial effects of a worldwide temperature alteration and numerous different factors in current life. How would we guarantee that we consider our ecosystemic and intergenerational duties satisfactorily?

Maybe a decent place to begin is for every one of us to concede the accompanying truth: "I am absolutely needy upon nature including its shocking capacity to give crisp water. This is reliance so profound that it keeps up my life and that of each other living animal, not conclusively, but rather minute to minute, breath to breath, and on account of water from taste to taste. This acknowledgment of reliance prompts a second truth, in particular that I am absolutely in charge of keeping up that nature which so abundantly accommodates life." This acknowledgment involves an exceptionally solid moral responsibility.

To help an arrangement of ecological manageability and preservation every individual must esteem their very own solace and comfort, as well as the prospering, decent variety, and excellence of nature. To live in sound biological communities is more fulfilling and satisfying than to live in undesirable ones.

IV. WATER POLLUTION V/S ETHICAL APPROACHES

A. Ecofeminism

Ecofeminists have provide you with more than one strategies for expertise the contemporary worldwide nation which include the polluted waterways. In addition, all ecofeminist theories agree that underlying component is the separation of lifestyle from nature. However how did this occur? Many ecofeminists, like carolyn service provider, believe the separation is due to the scientific revolution. "Where nature was formerly visible as alive, with the medical revolution, and maximum significantly the works of

francis 1st baron beaverbrook and rene descartes, nature became increasingly viewed as a machine which can be analyzed, experimented with, and understood via purpose” (light and holmes 277). due to the fact the clinical revolution regarded nature as entirely extrinsic, animals have been now not visible as sentient beings but as a substitute components of a well-customary gadget or on a smaller scale the machine itself. so the usage and destruction of our creatures and ecosystems is “not taken into consideration to be unethical, however as a substitute a judicious use of sources” (mild and holmes 278). the idea of the use of our planet as a device or a device explains the large dumps, the logging sites, and mining sites. Waterways are visible as a tool to decrease our waste (out of sight out of thoughts). By using doing this stuff, we are generating assets and decreasing waste which blessings our consumer society. we're pleasurable our want and desires from “nonliving” matters that are right here for our disposal so there may be not a private or emotional reference to the herbal international, and as long as this keeps we are able to by no means be capable of take the necessary steps to culturally exchange.

Different ecofeminists sense the separation happened in historic times when people made a spiritual transition. They sense the worship of goddesses promoted the idea that nature and fertility had been sacred which conveyed the concept that nature and men had been same. Quickly guys worshipped the “sky god” and nature changed into his introduction. The position of the male changed into then improved above all else creating a hierarchy with nature at the bottom. The hierarchy separated subculture from nature. Nature is then considered as underneath guy and taken into consideration the male’s introduction so that they do with it as they please. if it’s handy to simply sell off your waste in a lake, its adequate, we’re above nature.

B. Anthropocentric

Anthropocentrism is believed by means of many to be that principal hassle in environmental ethics and the basis cause behind our ecological issues. Anthropocentrism is the belief that human beings are the single most essential entity on this planet and that our wishes out weight all others (harris). Many shield the idea of anthropocentrism and kingdom that the health and sustainability of our environment may be very critical for human properly-being and survival, yet we nevertheless maintain destroying our planet. We do have situation for our properly-being, however it is handiest our nicely-being and at that very second. Its miles apparent that we do not take care of our destiny generations and hold to pollute our ecosystems, for this reason lowering our resources such as fresh water. So as for the idea to be useful for our environment we will need to modify our definition of well-being and recognition sustaining our resources or the consequences can be devastating.

C. Care Ethics

Care ethics is an animal ethic based totally upon emotional feeling particularly sympathy discussed by josephine donovan. As opposed to selling kant’s ideal of rationality (deontological ethics) which states that animals deserve respect because they are rational beings, she feels the road to morality and justice is through empathy and sympathy. She states that sympathy “includes a workout of the ethical creativeness, and severe attentiveness to another’s fact, which requires strong powers of statement and attention, in addition to facilities of assessment and judgment. Its miles a depend of looking to fairly see some other’s global, to apprehend what every other’s experience is” (fellenz 177). Thru information comes more value.

The fundamental concept is attempting to see things from another’s attitude or putting yourself in their footwear. John a. fisher, stated it flawlessly, “a sympathetic resourceful construction of some other’s truth is what is required for the right moral reaction” (fellenz 179). With the aid of sympathizing with the animal or aquatic creature one is extra willing to deal with them with respect and less possibly to pollute its home because we might no longer want that for ourselves. this is going to expose that bonding with our herbal international can in the long run lead to an active position in protective our surroundings due to the fact it is instinctive to defend something you care about. Via becoming aware about an animal’s plights and emotions, you create a non-public attachment to animal, for this reason seeing them as something extra than a useful resource as a substitute a creature just like yourself. “the organism [then] comes to intend something to 1 as precise [and] irreplaceable [as an] individual” (fellenz 191). However, mercer, every other who believes in care ethics, claims that “‘sympathy’ has regard for ‘the opposite’ entirely in respect for his capacity to experience and to go through... the sympathetic agent have to be a ‘thinking and feeling being’ and the object of sympathy have to be ‘at least a sense being’” (fellenz 183). Mercer’s concept seems to distinguish animals and human beings based totally upon rational competencies accordingly emphasizing a gap between animals and human beings. Even though animals’ capability of rational idea and emotion is debatable, it's far impossible to argue that they cannot experience pain, so mercer remains inclined to experience sympathy closer to creatures in a experience ultimate the space he seeks to create. Further, it absolutely disregards the flora aspects of the environment and best permits us to experience sympathy for feeling beings or animals.

V. CLEANING INDIA'S POLLUTED RIVERS

In excess of 38,000 million liters of waste water enters into the major rivers, water bodies and even permeates into the ground each day. A Central Pollution Control Board (CPCB) report of 2015 drew out the way that 61,948 million liters of urban sewage is produced once a day in India.

Be that as it may, the urban communities have an introduced sewage treatment limit of just 38 percent of this. As a general rule more than this sum goes untreated into the streams or water bodies as the treatment limit of real sewage treatment plants (STPs) in the nation is around 66 percent of the introduced limit according to CPCB discoveries of 2013. Thus, in excess of 38,000 million liters of waste water goes into the real streams, water bodies and even permeates into the ground each day.

Well beyond this there is mechanical affluent.

The information on the crude sewage from country regions isn't accessible. In April 2015, CPCB issued headings to all the state contamination control sheets/contamination control boards of trustees in the nation for setting up of STPs in their particular states with the goal that untreated sewage does not enter the waterways. Similar headings were additionally issued by CPCB to every one of the 69 civil specialists of metropolitan towns and capital urban areas in October 2015. Crores of rupees have been siphoned in for cleaning streams under the Center's National River Conservation Plan (NRCP), Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Smart Cities Mission projects of the Ministry of Urban Development and the "Namami Gange" under Ministry of Water Resources, River Development and Ganga Rejuvenation (MOWR). Service of Drinking Water and Sanitation (MDWS) is dealing with the sanitation ventures for towns close Ganga alongside MOWR. The Ministry of Environment, Forest and Climate Change has so far discharged Rs 2,066.98 crores for execution of different contamination reduction activities and STPs of limit 2,446.24 million liters for each day (MLD) under NRCP. Till March 2017, around Rs 7,000 crores was spent just to clean the Ganga, as noted in a request of the National Green Tribunal (NGT). The states are likewise getting money related help with the type of advances and allow that are authorized by outside offices. The concerned subjects and common social orders have moved the courts on numerous occasions to spare waterways from contamination.

In March 2017, Uttarakhand pronounced Ganga and Yamuna as living elements feeling that this will preserve and restore the streams quicker. In any case, in July, the Supreme Court remained the request observing its lawful and managerial implications.

A. Pollution Levels

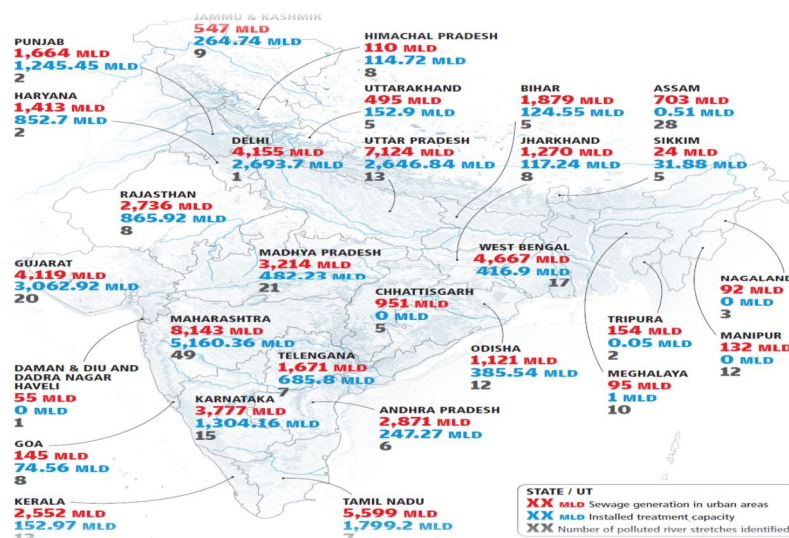
Still contamination level in waterways of India has not appeared indication of enhancement. Around 302 dirtied stretches on 275 waterways have been accounted for as of late (See 'Degree of contamination'). The best five states appearing number of dirtied stretches are Maharashtra, Assam, Madhya Pradesh, Gujarat and West Bengal. Assessed dirtied riverine length is 12,363 km, which is right around multiple times the length of Ganga fundamental stem.

B. Extent of Contamination

Spending enormous money, creating awareness and building sewage treatment plants have not helped cleanse India's polluted river stretches. The estimated polluted riverine length is 12,363km, about 5 times the length of Ganga main stem.

The Central Water Commission (CWC) report gives the greatest and least Biochemical Oxygen Demand (BOD) of stream water between 2012-13 and 2016-17—thus an end whether there is any adjustment in contamination drift crosswise over 4-5 years because of usage of various sewerage frameworks is hard to draw.

Information of all out 222 CWC water quality destinations was examined and it was discovered that water quality at 67 areas is past as far as possible. Out of the 67 locales, 14 destinations show BOD in excess of 30 mg/l, falling under extremely contaminated, 12 locales show BOD between 10-30 mg/l and 30 destinations show BOD 3-10 mg/l which are likewise considerably dirtied. Other 11 locales are likewise dirtied demonstrating BOD extends over the allowable dimension. Since cleaning Ganga and its tributaries has dependably been the need for the Central government, henceforth the observing of the contamination of the streams and accessibility of information in people in general area is open.



Yet, the Central government denied any such increment in the contamination trend in the monsoon session of Lok Sabha in 2017 despite the fact that they concurred that there has been ceaseless passage of wastewater from the human settlements and ventures. In 2017, when NGT gave a request because of M C Mehta's appeal to on Ganga contamination, the request record clearly showed that there has been a ceaseless increment in sewage and mechanical gushing entering the river since 2008-09.

Yamuna additionally did not show any development at some stage in the monsoon. The great river isn't even suit for outdoor bathing. The high-quality of river is poorer in 2017 in comparison to 2014 and 2016. In view that 1993, the cleansing of Yamuna is being completed under the Yamuna motion plan (YAP). The critical authorities are supplementing the efforts of the states to reduce pollutants in Yamuna by way of providing economic assistance to Haryana, Delhi and UP in a phased way. The full expenditure incurred on conservation of river Yamuna beneath the yap section I & II is Rs 1,515 crore. Under phase iii, the Japan worldwide cooperation company assisted task is beneath implementation at an anticipated price of Rs 1,656 crore for rehabilitation and upgradation of present STPs (950 MLD) and trunk sewers (forty three kms) in Delhi. In 2016, NGT had given directions to absorb cleaning of the Yamuna below Maily Se Nirmal Yamuna Revitalization Plan, 2017. For this reason, the Delhi Jal Board that appears after water and sanitation of the metropolis has submitted a priority listing of tasks amounting to Rs 1,969 crore to be taken up below phase I of Maily Se Nirmal Yamuna Revitalization Plan, 2017. The results of all these projects to clean Ganga and its tributaries were not satisfactory according to the experts and in September 2017, the Prime Minister handed over the gigantic task of cleaning Ganga to the Minister for Road Transport & Highways, Shipping and Water Resources, River Development & Ganga Rejuvenation Nitin Gadkari. Soon after Gadkari was entrusted with the Ministry, two STPs—one in Haridwar and another in Varanasi—were approved in a public private partnership (PPP) mode at a combined cost of Rs 325 crore. These were the first two agreements with private sector companies to build STPs under an innovative PPP called hybrid-annuity payment model that the government formulated with the help of the International Finance Corporation. Few more constructions of STPs in Uttar Pradesh, Bihar and West Bengal were announced under hybrid annuity. Many acts have been passed by the Parliament to control the pollution of water still, there is an urgent need for preventing our streams, reservoirs, rivers, lakes from being polluted. The government should keep a check on the functioning of reservoirs, streams, lakes and a body should be established to monitor the working of the government.

VIII. CONCLUSION

Simplest having a massive wide variety of sewerage projects and STPs will not clean the rivers. An analysis of seventy one towns by using centre for science and environment (seventh country of India's surroundings record – excreta matters) has shown that sewerage systems aren't visible as related to rivers. The analysis says that a bit of "hardware" is established and if the water software does now not have money, the hardware does now not run.

Anyhow incomplete sewage networks, designed without a particular plan for pollution control, do now not clean rivers. Most of the sewerage projects are centralized systems conveyed via pipelines and pumping stations to an STP, in which it is meant to be dealt with and disposed off. Little or no idea is given to the re-use of treated effluents from these STPs. maximum of it mixes with untreated effluents from colonies not related to the sewerage network. The root issues are each programmes—river-cleansing and metropolis infrastructure—continue to be hardware-pushed and marked by way of poor information of the water-sewage scenario. In October 2017, the centre planned to transport from hardware attention to bioremediation technologies for cleaning Ganga at fifty four new web sites. In-situ treatment is simple and smooth-to-operate and does not require essential change of the drain, stated a notice from MOWR. Hence, the centre understood that the centralized device is not the handiest solution and it is able to be supplemented through decentralized techniques. Looking on the long time period of implementation of STPs and their improvement, the ministry is fascinated now in such decentralized revolutionary technology from specific parts of the sector.

It's far essential for all people concerned in water resource management and in public fitness to have a well-reasoned expertise of the moral values and duties that correspond to that importance. within the domain of ethics, questions of scientific information come collectively with factors of cultural that means and perception; questions of conservation, sanitation, and health merchandising come together with questions of justice, fairness, and human rights; questions of sustainability and biodiversity come collectively with questions of democratic governance, regulation, and policy. I nevertheless sense that ethics are the most practical manner to slowly decrease the pollution for no longer just our waterways but additionally our earth. The justification for now not polluting our waterways is that it'll kill the organisms residing there with feelings just like us. Humans are extra inclined to take action whilst feelings are concerned so ethics would be the maximum a success approach. An appeal to a person's feelings is normally greater effective than appealing to a person's motive or morality, so an emotional approach seems the most sensible. Its miles the handiest ethical approach that positioned wishes on our usually developing environmental disaster and proposed a manner to restore it!

REFERENCES

- [1] Jennings, B., Gwiazdon, K., & Heltne, P. (2009). Principles of Water Ethics. Minding Nature: Summer 2009, Vol; 2, No.; 2. Retrieved from <https://www.humansandnature.org/principles-of-water-ethics>.
- [2] G. Dura et al. (2006). Management of Intentional and Accidental Water Pollution. Pp; 311–320. Springer Netherlands.
- [3] Anon. Environmental Ethics @ Rhodes. Retrieved from <http://rhodes-enviroethics.wikidot.com/water-pollution>.
- [4] Anon (2010). "The Effect of Water Pollution on the Environment." Guide to Water Pollution. Retrieved from <http://www.water-pollution.org.uk/environment.html>.
- [5] Marc, F. R. (2007). The Moral Menagerie: Philosophy and Animal Rights. Urbana: University of Illinois.
- [6] Adrian H. (2010). "Anthropocentrism." The Green Fuse Glossary. Retrieved from <http://www.thegreenfuse.org/glossary.htm>.
- [7] Andrew, L., and Rolston H (2003). Environmental Ethics: an Anthology. Malden, MA: Blackwell Pub.
- [8] Anon (2010). Sources of Pollution - Diffuse Pollution. The Foundation for Water Research. Retrieved from http://www.euwfd.com/html/sources_of_pollution_-_diffuse.html.
- [9] Anon (2010) "WATER FACTS AND FIGURES. World Wildlife Fund International. Retrieved from <http://assets.panda.org/downloads/world-waterforumwaterfacts.pdf>.
- [10] Anon (2017). 15 interesting facts about water pollution Retrieved from <https://www.veluda.com/en/blog/15-endiaferon-dedomena-gia-ti-molunsi-tou-nerou-220>.
- [11] Sengupta, S. (2018). Cleaning India's polluted rivers. Retrieved from <https://www.downtoearth.org.in/news/water/cleaning-india-s-polluted-rivers-59877>.
- [12] Furtado, R. (2017). Laws existing in India to prevent and control water pollution. Retrieved from <https://blog.ipleaders.in/laws-existing-india-prevent-control-water-pollution/>.
- [13] Anon (2018). Environmental Laws of India. Retrieved from www.environmental laws of India/Water Act.
- [14] Anon. "Section 24 of the Water Prevention and Control of Pollution Act, 1974". Retrieved from <https://indiankanoon.org/doc/1352031/>
- [15] Nayak, P.L. and Mishra, K. (2014). A Study of Water Pollution. Middle-East Journal of Scientific Research . IDOSI Publications . Vol; 22 (12): Pp; 1760-1770.
- [16] Anon. Ministry of water resources, river development & ganga rejuvenation. Article 262 of the Constitution of India. Retrieved from <http://mowr.gov.in/article-262>.
- [17] Anon (MARCH 1962). A case study of the Damodar Valley Corporation and its projects. *Athens Center of Ekistics*; United Nations Economic Commission. Vol. 13, No. 77, Pp. 145-151. Retrieved from <https://www.jstor.org/stable/43615970>.
- [18] Kumar, M. (2016). Morgenthau's Six Principles of Political Realism. Retrieved from <https://politicsmania.wordpress.com/2016/10/13/morgenthau-six-principles-of-political-realism/>.
- [19] Anon (2018). Ethics: a general introduction. Retrieved from http://www.bbc.co.uk/ethics/introduction/intro_1.shtml.
- [20] Jennings, B. et al (2009). Principles of Water Ethics. Minding Nature: Summer 2009, Volume 2, Number 2. Retrieved from <https://www.humansandnature.org/principles-of-water-ethics>.
- [21] F.N., [Luzma](http://www.humansandnature.org/the-ethics-of-water-governance) (2014). The Ethics of Water Governance. Minding Nature: Spring 2014, Volume 7, Number 2. Retrieved from <https://www.humansandnature.org/the-ethics-of-water-governance>.
- [22] Anon (2018). The Biosphere. Retrieved from <http://www.mstworkbooks.co.za/natural-sciences/gr7/gr7-ll-01.html>.
- [23] Anon (2018). Human Values as Common Ideals and Practical Rules of Behavior. Retrieved from http://www.saibaba.x.org.uk/4/Human_Values_as_Common_Ideals.html.
- [24] Anon (2018). Water issues in developing countries. Retrieved from https://en.wikipedia.org/wiki/Water_issues_in_developing_countries.
- [25] Anon (2018). Water Supply & Sanitation. World Water Council. Retrieved From <http://www.worldwatercouncil.org/en/water-supply-sanitation>.
- [26] Anon (2018). Water and Spirituality. Retrieved From <https://healingearth.ijep.net/water/water-and-spirituality>.
- [27] Sarkar, P.R. (1978). The Present Age and Human Values. Retrieved From <http://proutglobe.org/2011/10/the-present-age-and-human-values/>.
- [28] Rees, J. A. (2017). Religion and Culture. Retrieved From <https://www.e-ir.info/2017/01/08/religion-and-culture/>.
- [29] Anon (2018). Contaminated Water. Retrieved From <http://contaminatedwater.blogspot.com/>.
- [30] Sen, Z. Water Resource Management. Retrieved From <https://slideplayer.com/slide/4558035/>.
- [31] Anon (2018). Environment. Retrieved From <https://doclecture.net/1-7952.html>.
- [32] Anon (2018). 16 Interesting Facts about Pollution. Retrieved From <https://ohfact.com/interesting-facts-about-pollution/>.
- [33] Anon (2010). Water Facts and Figures. Retrieved From <http://factkalki.blogspot.com/>.
- [34] Anon (1999). Factors Affecting Patterns of Water Use. Retrieved From <https://www.nap.edu/read/6031/chapter/5>.



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