
Water Pollution as an Environmental Hazard to Life and Response from the Legal System of Pakistan

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Abstract

Water is one of the basic and key sources for the survival of living organisms on the face of earth. On the base of water availability with the passage of time the demand for water has been increased to a High level, and this increase has resulted in worsening the quality as well as the quantity of fresh and portable water supply in the state. Fresh and portable water as a valuable thing causes apprehension being a depletable resource due to the ecological problems connected to its debasement. Preservation of the portable and accessibility to the quality water resources nevertheless, is with the passage of time became the challenge of the day as we are faced with many serious environmental issues. May be, its due to that reason that in our societies the protection of water is not that much appreciated due to the availability of water resource. This this paper is aimed to highlight the current position of water pollution in Pakistan and to assess the adverse impact of the water contamination on the people of Pakistan.

Key Words: Water Contamination, Healthy Environment, Life and Water-born Diseases.

Background

This one of the most admitted fact about the human beings, that a human being always consume nature and is dependant on the nature and natural resource and in reverse it does nothing new but exploit and contaminate nature for his leisure and temporary settlement. In Pakistan we have the same situation, people move from one place to another, in the result of which there is unnecessary pressure on the natural resources of that locality. The effects of global warming are coming out with more intensity this time and it is no wonder that the main reason for this is the increasing and unjustified interference of man in the nature. No matter whether it is the movement of stars and galaxies in the vast air space, the attractive scenery of trees, mountains and rivers, the charming and melodious sound of birds, or the order and discipline in the life of different kinds of animals, it says in a very clear and concise way that the Creator of the universe has created all these thing in a very complete and comprehensive in terms of balance and order in a very flawless manner. At the same time, this merciful Lord also directed that do not disturb the balance of the nature. But what to say about the human beings, his greediness by nature, he messed up the natural arrangement of this beautiful and balanced mother earth in such a way that countless social, economic and environmental issues started appearing on daily basis. The sad reality is that this lethal effect of pollution is not limited to the rural areas of the state it has also covered the urban locality which is the key part of the state. This is not new, just like other nations of the world Pakistan is also facing mist of air water and other types of pollutions.

Research Objectives and Methodology

The study is aimed investigate interrelationship among Environment, Life and Law with special focus on adverse health impacts of water pollution on human in general and the citizen of our beloved state in specific. The research shall further analyse the possible role which the law can play in order to minimize the potential hazard. For the purpose to the above mentioned objectives empirical data consisted of primary data (cases laws, court proceeding data collected from interviews etc.) and secondary (printed materials such as books, published articles etc.) are consulted. Due to lack of availability of relevant data on the issue in hand main focus was on personal observation and on civil and criminal jurisprudence in Pakistan data so collected scientifically categorised and carefully analysed in major themes.

Introduction

In Pakistan, infant mortality is so high that one child out of every ten does not live to see their first year. Diarrhea is the leading cause of mortality of Pakistani children under the age of five. Pneumonia and tuberculosis are also main

causes of death of Pakistani adults. Diseases that are easily spread from one person to another are a major factor in the creation of the diseases. Measles, pertussis, poliomyelitis, diphtheria, and tetanus cause the deaths of thousands upon thousands of Pakistani new-borns and pre-schoolers every year. Likewise, thousands upon thousands of youngsters are rendered helpless, blind, or otherwise handicapped as a result of a variety of diseases. It reveals that there are around 1.9 million persons with radiologically active tuberculosis, of which approximately 250,000 are confirmed cases. Seven percent of children under the age of five are affected by severe protein-energy malnutrition (PEM). According to data published by the Statistical Planning Committee, waterborne diseases account for about 30% of all medical cases and 41% of all deaths in Pakistan. This demonstrates how dangerous Pakistan's environment is for human habitations.

The high rate of industrialization in Pakistan is a major contributor, but other factors, such as poor and unreliable water infrastructure, widespread hunger, and crowded living quarters, all play a role in the high death toll. The high death toll in the country is a direct result of the lack of clean, easily transportable water, which is made even more dangerous by the widespread usage of powdered milk packs. Over 80% of children under the age of 5 are affected, and this is in part due to an inadequate water pipe infrastructure.¹ On the one hand, poor nutrition causes anaemia² and other blood disorders, and on the other, it boosts the efficacy of environmentally assimilated and other diseases. Other infections, like influenza and pneumonia, tend to flourish in areas with slightly colder weather, and the cyclical nature of temperatures, humidity, and rainfall plays a significant influence in this.

However, in densely populated urban regions, inversion of temperatures at cities' industrial hubs causes massive pollution, raising the risk of respiratory illnesses and deaths. Environmental infection, diet, and genetic make-up are all intricately connected. Recent efforts in Pakistan have focused on mitigating these life-threatening environmental threats, but more needs to be done. The RHC Rural Health Centre, sanitary engineers, inspectors, and other personnel shall be there to see the human health from every angle and shall submit the reports to the authorities in the light of which steps shall be taken, despite the fact that things are moving in the direction of adopting the preventive measures, health policies are adopted, and it gives emphasis on the preventives measures of pollution in the state and goes to the root level. While it's true that Pakistan's government has few resources to devote to reducing pollution and ensuring the safety of its citizens, addressing the country's most pressing environmental problems must be a top priority. The people of Pakistan face a number of major environmental threats; we've highlighted some of the most critical ones here.

Marine Pollution

One quarter of this globe is made up of dry land, while the other three quarters are made up of water resources. It is impossible to conceive of there being life without water. Water makes up around sixty percent of a human's body. Water makes up 80-90% of an acidic flower's dry weight, compared to 40% of a tree's, 80% of milks, and 90% of aquatic plants.³ There are three states of water that can be found in this universe: gas, liquid, and vapour. In addition to precipitation, water can be found on the surface of the earth and in underground reservoirs. The total volume of water present on the surface of the world is approximately 1455 x 106 cubic kilometres.

When it is necessary to do so, the ice from the glacier is melted. If all of the ice's reservoirs were turned into water, an estimate suggests that the water level in the ocean would rise to a depth of 80 metres. Considering the hydrological cycle, the designer of this universe ordained such a system of water in which water from the earth's surface, rivers, drains, streams, lakes, seas, oceans, and herbages enters into the global earth through the evaporation process, and then after that, it became dense and formed clouds. When the weight of the clouds becomes too much for the atmosphere to support, the precipitation that results clouds, hail, snow, and so on falls to the ground. The process of evaporation then begins once more, and this continues in a never-ending chain as the hydrological cycle is kept going.

It is impossible to dispute the reality that water is a precious gift. Water is a vital component in the maintenance of living things. Any sort of water can be consumed in a variety of natural and unnatural activities, as well as industrial and agricultural endeavours. There is no way to obtain water that is 100 percent clean from natural resources, nor is it required for day-to-day activities. Humans can manufacture pure water in laboratories for a minimal cost. Only three percent of the world's total water reservoirs contain potable water, while the remaining 97 percent of the water is salty and cannot be used for human consumption because of its high salt content. The world does not even have access to 3% of the world's desert water. On the poles of these bodies, there is a concentration of ice containing 2%

¹ KDA (1981), "Environmental Pollution: a report on the current status of diseases in Pakistan 1981.

² Anaemia is the deficiency of red blood cells in the blood. This is attributed to man environmental elements.

³ A report was published by the government of Pakistan in 2004, the brief of the water pollution in Pakistan

water. The amount of water that Mother Nature has made available to humans and all of her other creations, in the shape of rivers, seas, springs, and so on, is just 1%.

Based on the findings of another piece of research, water reservoirs hold 97% of the total amount of water in the world. The remaining 2% of water can be found in glaciers and icebergs, while the last 1% of water can be found in the air in the form of fog, vapours, and other such things. The total area of all of the world's oceans is calculated to be 363 million square kilometres. God has put in place an automatic system to maintain the cleanliness of the water, and as a result, the water in the oceans, seas, streams, rivers, and springs all remain clean to a certain extent. But man, the driving force behind nominal progress, has upended this system of nature as a result of his peculiar acts, and now he is upset for the purpose of acquiring clean water. The term "water pollution" refers to the condition in which harmful contaminants are found in water supplies. Water that has been polluted is not fit for human consumption. There are both natural and unnatural factors that contribute to the contamination of water supply.

Responsible Source of Water Contamination

The Physical It encompasses things like the temperature, smell, saltiness, taste, and colour of the water, among other things.

The Chemical; It refers to acidity, dissolved gases, salts, and a variety of chemical substances. The scales that are used for the measurement of this pollution are known as the chemical oxygen demand and the biochemical oxygen demand.

The Biological; Signify the capacity of water to support the continuation of life (germs, microscopic animals, and plants etc.). In microscopic animals, bacteria that can cause disease are at the top of the food chain. Viruses and spores, on the other hand, can contribute to environmental pollution. Algae and fungus are both examples of microscopic water plants.

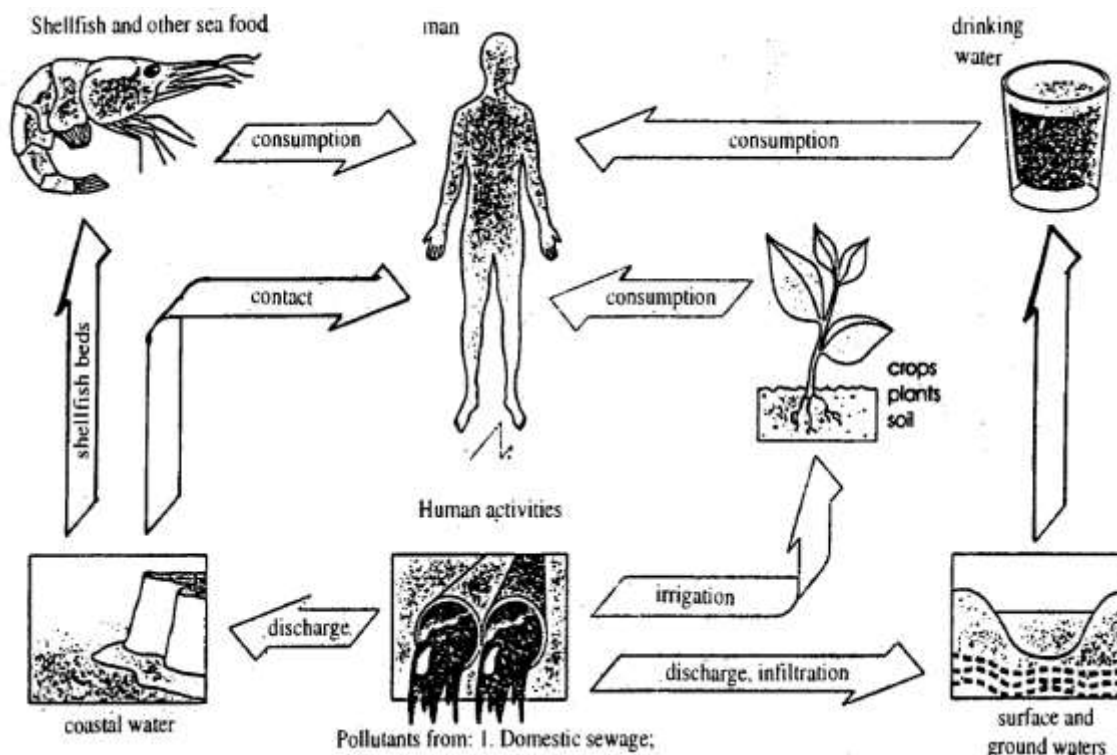
The Groups Causing Pollution; the substances that contribute to water contamination can be broken down into two categories:

The Soluble Pollutant; this category includes all substances and gases that can be completely dissolved in water. Because of this, it is not possible to remove these contaminants from dirty water using straightforward physical processes; rather, in order to purify the water, one must turn to chemical processes. Keep in mind that water is a universal solvent, which is an important point to keep in mind. In addition to the soluble nature of salts composed of calcium, sodium, potassium, ferrous, and magnesium, this category also includes the solubility of gases such as nitrogen, oxygen, carbon dioxide, and hydrogen.

The Glue, Gum like Pollutant; the ability of these contaminants to react with water and produce colloids is one of their defining characteristics. The groups of integers are referred to as colloids. These individuals are responsible for giving the hand the sensation of chewing gum. Compounds such as aluminium hydroxide and ferric hydroxide are examples of elements that fall within this category. It is impossible to separate these pollutants using only physical means.

The Insoluble Pollutant; these contaminants are insoluble in water, and as a result, they sink to the ocean floor after a period of time. In reality, these are the insoluble particles of organic wastes and clay and other substances that have become suspended in the water. Regrettably, out of a total population of 5.3 billion people, 1.5 billion do not have access to the blessing that is clean water. According to a poll that was conducted in 1988, 53% of the population of Pakistan has access to clean water (this number increases to 80% in cities but only 40% in villages for human use). The World Health Organization has identified the following imitators of various components that are found in water that is intended for human consumption:

Aside from the characteristics that have already been highlighted, the pH of water ranges from 6.5 to 8.3. In addition, there is a threshold that cannot be exceeded for odourless components.



Industrial, Agricultural and Domestic Contribution

Local Compacted / Liquid waste Material

The term "trash produced by household sources" refers to a wide variety of materials, including human dross (both solid and liquid), unclean water from bathrooms, solid and liquid wastes from kitchens, and other supplementary items. Due to the fact that these filthy materials are not subjected to any sort of treatment in our nation and are instead permitted to flow freely via gutters, drains, streams, rivers, and oceans, they are the primary factor in the transmission of diseases. There are a variety of organic and inorganic substances contained in sewage, which can be beneficial to the process of earth restoration. Chemicals derived from nitrite and sulphate can be considered to be among the beneficial compounds. The greatest possible fertiliser for agricultural use can be obtained through the processing of sewage that has been cleaned. However, treatment of dangerous chemical compounds and other materials that cannot be dissolved in water is also an essential necessary step.

Diseases that developed as a direct result of unclean water claimed the lives of sixty percent of Pakistan's young people. 0.2 million children under the age of 5 years old pass away as a direct result of diarrhoea, while annually 54 million individuals are severely impacted by this disease. In a similar vein, around thirty percent of disorders affecting the digestive tract are caused by wastewater. Garbage harbours the vast majority of pathogenic microorganisms, including viruses, bacteria, protozoa, and worms, amongst others.⁴ Because of this, the waste will get everywhere, and a tent of sickness will form wherever it reaches, whether on the surface of the soil, below the ground, or within the water. In the future, these diseases will encircle humans and animals through plants, crops, underground wastewater, and aquatic life; as a result, man will have to dig wells for himself using his own two hands. Dross is produced at a rate of around 250 kilogrammes per person in our country on a daily basis. It takes 20 kg B.O.D. every day, per individual, for the body to process the waste and urine that is produced. According to this information, Pakistan generates around 13 million tonnes of trash annually, and 0.85 million tonnes of B.O.D. are necessary for the decomposition of this waste.

The rate of pollution in metropolitan regions is relatively high when compared to the rate of pollution in other parts of the state. Every year, approximately over two million metric tonnes of waste are generated, approximately half of which is dumped into bodies of water. In 2002, just 55% of the country was covered by sewerage systems. This percentage is still quite low. In a similar vein, wherever they are located, they are either extremely close to an area

⁴ Muhammad, S., A.,(1996), Problems And Prospects Of Urban Environmental Managrrmnt In Pakistan, the Pakistan Development Review, Part 2, p- 511.

that supplies water or to water resources, both of which ultimately lead to the contamination of water. The amount of dirty water that is produced in Pakistan is equivalent to about 70% of the human use of water. Because polluted water can contain any type of trash, including waste from industries, a higher level of B.O.D. is required for the water to be purified. An estimate suggests that the amount of dirty water produced in Lahore each day is 250 million gallons, whereas the amount produced in Karachi each day is 350 million gallons. Only 40 million gallons of wastewater are treated each day in Karachi, whereas only 15 million gallons of wastewater are treated each day in Islamabad. The leftover quantity is discharged into bodies of water such as oceans, rivers, and streams. One of the primary reasons for this is that urban areas generate two different kinds of waste: solid waste and liquid waste. These two types of waste, along with the water used in the kitchen and the water used for washing dishes, are the primary sources of water contamination, which in turn leads to the spread of dangerous diseases and serious risks to human life. The problem might be understood by considering the fact that numerous hospitals are reporting cases of ailments that are of a gastro-intestinal type 26.30.⁵

Industrial Pollution

If we make a careful analyses it will become very clear that one of the major cause of environmental degradation in Pakistan is the industries, we are having industrial setup in the country to the alarming level and above all unplanned. Environmental problems constitute one of the major concerns in contemporary times such as environmental pollution, climate change, depletion of natural resources and biodiversity loss etc. all of the environmental changes have emerged us with one of the biggest challenges that human beings are confronted with globally. These environmental changes are certainly due to human intervention, in other words we can say that the human induced factors for instance the industrialization, development of modern transport and communication use of modern appliances etc. have led to these environmental deteriorations. There is constant interaction between human beings and the environment; just like the human interaction changes the environment, in the same way the environmental factors play a significant role in shaping social phenomenon. Hence we can say that environmental problems constitute an area of study with in sociology. One of the social factors that shaped the sociological thought was the industrial revolution, and the industrial revolution also led to a series of developments which were responsible for environmental changes or degradation.

Chemical Medicines Use

The unnecessary and over use of agricultural pesticides are also one of the real threat and vital factor for water contamination. Scientifically this fact is proved that the chemical water subsists more as compare to the ordinary water and this water further mixes up with the ground water and causes further deterioration and victimizes anything that comes in its way. Pakistan has been declared as Fifth of the most dangerous country which facing some serious environmental problems. According to the IPCC world must comply with the issued code otherwise they will face huge environmental consequences in terms of dearth, unprecedented heat, drought, flooding and food insecurity. Pakistan is faced with the mist of rising temperature on yearly basis which exposes the people of Pakistan with extreme difficulties in terms of agricultural products. Even in April 2016 we have recorded April as one of the hotter month of the year and recording 50.0 degree centigrade at Nawab Shah. Special focus is given on the South Asian countries under the IPCC's report and this also a fact that despite of all these warnings the responses for solving the issue by the governments are not satisfactory. Here it become very that the real cause of this issue is the excessive emission of green of greenhouse gases into the atmosphere, and after all, the question is what is the reason for such a huge emission of these greenhouse gases; whether it the combustion of inorganic fuel and above all why is this happening; is this due to the instability of global economies or un-balanced consumption of natural resources. The element increases water contamination to the extent that it pollutes everything which comes into contact with it, among these one is sulphuric Acid which is also added to the list of prohibited medicines (Dichloro Diphenyl Trichloroethane).

Fluoros hydrocarbon and phosphoro hydrocarbon compounding is a non-biodegradable one with a long lasting impact. It survives for a sufficient length of time in the water which is underground as compare to any other compound and more lethal. These compounds have a dual impact for instance they are very deadly for the marine diversity in the sea and above the sea that are considered the worst enemy of animals and human beings as well. Above all they remain inside fish or other marine animals and as soon as human consume fish or other sea food; it become to show the it ill effects and results in serious diseases⁶.

⁵ This was given in a report, "Government of Pakistan Report 1998."

⁶ Luqman, 2013, The Environmental Issues in Pakistan, [online] available at :

Marin Pollution

If in the sea as we have mentioned above, if the volume of these ingredients increases then so will be the adverse impact on the marine organism as well. Water quality in Karachi has been witness as very polluted for the reasons that there exist the following problems namely; the industrial setup, waster from factories, from house-holds and other effluents coming out of ships near the coastal areas. There exists an imminent danger to the marine diversity from these effluents as well as from human being who takes away more the 16 hundred trolleys of fish per day.

If in sea water the volume of the above mentioned ingredients increase then it will provide improper environment for the aquatic life. Water of Karachi beach is extremely polluted because it contains materials, local, industrial and domestic waste and effluents of sea ships etc., in very high amount than normal. Therefore danger is adjoined to the survival of marine life. Besides these fish capturing 15000 trolleys and boats discard oil and wastes into the sea

One of the responsible factors for sea contamination is oil and other factors which comes out during this process The most probable answer might be that global economy is primarily based on coal, oil and gas, perhaps all the paths of economic development and stability passes through this same path. This the main reason that regardless of the fact whether it is individual, institution or a state becomes part of the same race, in the greed of getting more and more of wealth derogates from the just and unjust means and use of nature and natural resources which ultimately led to this lethal and vulnerable conditions of mother planet. In the Karachi City near the shore of Shereen Jinnah more than 600 tankers of oil lefts dirty and goes directly to the sea.

Multifarious liquefied, compact and semi-lequid waste material are disposed off and brought from the city side to this coastal areas leads to bring it at the extreme level of contamination. The rapid rise of the global temperature is disturbing our sleep pattern as the health researchers suggest that an average body demands for a comparatively cool environment for proper sleeping which is becoming difficult day by day due to the extreme hot temperature and the study suggests that for proper sleep it is necessary that the surrounding temperature must be less than our body temperature. Pakistan is constantly ranked as one of the most climate change affected country of the world and the people of Pakistan belonging to different region are faced with drastic climate change affects such as flashed flooding as a result of abrupt glacier melting, high heat-waves, rise in sea level, food shortage, people migration and water scarcity. The most alarming fact is that it is not coming slow, it with further aid fuel to the fire and will result in further deterioration as Pakistan has become the 6th most climate change affected state of the world and facing further environmental risks.

Water-Borne Ailments

The diseases attributed to waste of contaminated water can be broadly divided in 5 categories;

- a) First and the foremost known is Dysentery, Gastro-enterity, typhoid and other infectious disseises.
- b) There are other illnesses causing by washing hands from contaminated water like, sabies, leprosy, conjunctivity and other eye diseases.
- c) Guineas-worms and schistosomiases.
- d) Contaminated water is responsible for spreading diseases through insects living in those water such as mosquitoes.
- e) And contaminated water supply is one of the main source causing direia through pipes and hook work etc.⁷.

To provide for the real number of people suffering from water-born diseases in Pakistan in the moment would be not the exact one but this is one of the most sade side of the picture that every second Pakistani is living a very hazardous life surrounded by Cholera, Cancer, Typhoid and other lethal diseases.⁸ This contaminated water is responsible for the death of 1.7 million people of Disabilities and reportedly Diarrhoea and Typhoid takes away the life of about 90,000⁹.

Relevant Environmental Laws

Constitutional Reference

Fresh, healthy and safe water is one of the most basic right of each and every citizen of Pakistan protected under Article 9 and 14 of the Grand Norm respectively. Furthermore, this right was further authenticated in land-mark

<http://smediaworker.wordpress.com/2013/01/19/environmental-issues-in-pakistan/> [accessed at 2014].

⁷ This report was given by ESCAP, 1984.

⁸ The 10 leading causes by broad income group, Saturday, January 19, 2013.

⁹ Todays news Islamabad, Thursday, January 05, 2015, [online], available at: <http://www.thenews.com.pk/Todays-News-6-85963-250000-child-deaths-occur-annually-in-Pakistan-due-to-unsafe-water>, [accessed at February 2014]

judgement give by the apex court in *Shehla vs WAPD*. and portable water is the basic right of every citizen of Pakistan, this right is protected under Article 9 read together with Article 14 of the Constitution of Pakistan 1973. Article 9 is interpreted by the Supreme Court of Pakistan in *Shehla Zia vs WAPDA* case.

Sea water has the following typical configuration

	Components	Volume
1.	PH values	75.84
2.	PH values	6250 mg/liter
3.	Dissolved solid waste	6250 mg/liter
4.	Nitrite	1.5 mg/liter
5.	Fluoride	1.4 mg/liter
6.	Chloride	18950 mg/liter
7.	Sulfate	2665 mg/liter
8.	Sodium	10561 mg/liter
9.	Potassium	380 mg/liter

‘Here the Apex Court Held that by life as provided in the constitution we mean a full and healthy life, it should not be taken into a very strict sense. Rather we must provide a very broad meaning to the word life. Not only to sustain a life but also to enjoy a life and hence coupled with Article 14 of the Constitution’.¹⁰

Similarly Articles 38(d) on of constitution imposes duty on Government is duty bound to provide to the citizens the basic needs of life including uncontaminated and drinkable water.

General Laws

The Pakistan Penal Code (PPC, 1980): Section 277 of PPC deals with the fouling of public springs or any other water source and Section 268 covers water pollution under Nuisance.

Canals and Drainages Act 1873; The Act deal with the natural water resources that are used for public purposes like rivers, streams and lakes, and it also covers the under-ground water channels. According to Section 70 of the Act the Capital Development Authority can send the offender behind the bars of three months. Obstructing, damaging or interfering with water channel is declared an offence under Section 73 of this same Act.

¹⁰*Shehla Zia vs. WAPDA*.PLD(1994).2 (175) SC.

The Factories Act, 1934: Section 14 of the Act bounds the owner of the factories to take proper measures for disposing the waste material of their factories, in case of non-observance they may face fine as well as simple imprisonment.

The Forest Act, 1927: Clear rules are provided under the Act for poisoning water in a forest area, in case of violation of the rules punishment is provided under Section 26(I)

The Sind Fisheries Ordinance, 1980: Section 8 of the Acts provides guidelines that the sewage of the industrial waste must not become harmful for the sea creatures.

Land improvement Loans Act: Under this Act the Government provide free loans for the purpose of improvement of land like storing, supplying distribution of water and cleaning of water supply sources.

Easement Act, 1882: Section 7 and its Illustration (f) and (h) covers the issues of water contamination

Special Law

Water pollution is controlled under the special laws of Pakistan Environmental Protection Act (PEPA 1997). Sections 11 of the Act provides that; “No Person shall discharge or emit or allow to discharge or emission of any effluent or waste or air pollutant or noise in an amount, concentration or level which is in excess of the National Environmental Quality Standards.”

Overcoming Measures

This is an admitted fact that purest form of water neither exists nor can be achieved in any part of the world.¹¹ So the basic purpose and the minimum aim would be to achieve the minimum standard provided internationally. In order to achieve that we must consider the following steps; our purpose is to low down water pollution according to the international recommended level and to make water usable. Few one beneficial processes are discussed;

To be aware is the first step of creating a discourse and while it might be a little late to address this problem, it is never too late. Pakistani government, even though it has been late to the party is not oblivious to the problem. We need to create a sense of emergency not only in our lifestyles but in our discussions and voting preferences only then can we see a future generation of human beings living to its full potential on this planet.

- Pakistan needs to embark a mega solution climate change project and to shift its energy towards clean energy, zero carbon energy, 60 percent of our mix by 2030 and to shift our 30 percent of transport towards electric vehicles.
- If Pakistan has to survive climate change, we need forests in Pakistan. Pakistan needs to head in the right direction to restore its forests and to add new forests into its mix, mangroves are also important as they produce four times the oxygen of a normal tree and absorb carbon dioxide four times.

The government must mobilize the private sector and local communities to grow, plant and protect the saplings they needed to reforest the country and at the same time, offer workers opportunity for further good work.

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