

Tannery Industry and Environmental Security in Bangladesh: A Socio-Legal Analysis

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ABSTRACT

The goal of this study is to look at how Bangladeshi tanneries contaminate the environment from a social and legal standpoint, and to suggest some solutions to the problem. Though tannery industry is one of the biggest industries of Bangladesh which has a huge impact on our economy, large amount of tannery wastes dump into the rivers as well as land that have made an inhabitable situation for the living people of those areas. To go through and calculate the probable solution, the authors have studied a lot of literatures, articles, journals, online newspapers and portals, blog writings, academic sites and national and international environmental laws. They have used the qualitative research method and content analysis technique to compile all the data and analyze them properly. In consequences of the study, the authors have found that the wastes of the tannery factories of Bangladesh produce as chrome tanning is most commonly employed in underdeveloped countries due to its cost-effectiveness and speed and eject tons of wastes without any purification management and the environmental security of Bangladesh is in grave danger and so, strict implementation of laws and social contributions are needed.

KEYWORDS: *Environment, Environmental Security, Tannery, Climate Change, Global Warming*

1. INTRODUCTION

About 15,000 BC, the Ice Age came to an end as the Earth's climate warmed up.² Evidence from the Greenland ice cores suggests that average temperature rose by as much as fifteen degrees Celsius in a short span of time.³ As global warming led to increasing animal populations and a much greater abundance of wild plants and foods, this warming seems to have coincided with swift rises in human populations. Though this phase was reversed at around 14,000 BC, after 9600 BC, global temperatures rose again, and it is called the Long Summer by Archeologist Brian Fagan.⁴ So global warming and climate change are happening for a very long time and those are occurring for both natural and man-made situations.

²Acemoglu, Daron, and James A Robinson. n.d. *Why Nations Fail*.

³ ibid

⁴Fagan, Brian M. n.d. *The Long Summer*.

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Like other countries, Bangladesh is also facing the effects of climate change due to world's industrialization race as well as its own man-made pollutions and the overall environmental security of Bangladesh is at high risk.

Bangladesh, a South Asian⁵ riverine country which was liberated after a blood-shedding Liberation War has become a developing country of GDP \$864.883 billion.⁶ The Bangladeshi economy relies on its

⁵"The World Factbook". 2021. *Web.Archive.Org*. https://web.archive.org/web/20150402090633/https://www.cia.gov/library/publications/the-world-factbook/wfbExt/region_sas.html.

⁶Ezez. 2020. "Report for Selected Countries and Subjects". https://www.imf.org/en/Publications/WEO/weo-database/2020/October/weo-report?c=513,&s=NGDP_RPCH,NGDPD,PPPGDP,NGD

enormous human resources, rich agricultural soils, industries, and abundant water resources.⁷ Agriculture accounts for 13.1 percent of GDP and 28.5 percent of GDP are represented by industry and employ 20.5 percent of the total workforce. Among the industries, the tannery industry is a major industry and one of the export units for earning currency. The first tannery in what is now Bangladesh was set up sometime in the 1940s at Narayanganj by a businessman R.P. Shaha.⁸ The tannery was later relocated to Dhaka's Hazaribagh district. There were 30 tanneries in Dhaka in 1965. The 30 tanneries were purchased by the Bangladesh government after the independence of Bangladesh. There was a major change in the sector in the 1970s. Since 2019, around 155 tanneries were moved to the 200 acre Tannery Industrial Estate in Savar (selected in 1994 for shifting) in efforts to save the Buriganga River which has been polluted due to industrial waste dumping from manufacturers.⁹ On the other hand, Bangladesh is recognized to be one of the countries which is most vulnerable to climate change.¹⁰ Natural calamities, such as floods, tropical cyclones, tornadoes, and tidal bores occur almost every year.¹¹ That is why the authors were concerned about the impact of tannery wastes on environmental security of Bangladesh.

In 1994 the Government Commission on Environmental Security adopted a declaration stating, "*Environmental security¹² is the protection of the natural environment and vital interests of citizens, society, the state from internal and external impacts, adverse processes and trends in development that*

threaten human health, biodiversity and sustainable functioning of ecosystems, and survival of humankind¹³." Also Climate change refers to significant changes in global temperature, precipitation, wind patterns and other measures of climate that occur over several decades or longer¹⁴ and Global warming refers to climate change, which causes lower air temperatures to rise on average. Global warming may have several different factors, but human activity, specifically the release of excessive quantities of greenhouse gases, is most frequently associated with it.¹⁵ Moreover, pollution is the introduction of harmful materials into the environment¹⁶ for which global warming is at its pace. There are negative impacts on some elements such as ecosystems, food security, coastal areas, industries, human health, water resources etc. for pollution and global warming. For all of these, our environmental security is being breached everyday at a harmful rate. That is why the authors were concerned about the impact of tannery industries on the environmental security of Bangladesh.

2. Objective of the Study:

As the authors decided to analyze and scrutinize the impact of tannery industries and tannery wastes on the environmental security of Bangladesh, the main objectives of this study were:

1. To describe the present scenario from sociological and legal perspective of the tannery industry of Bangladesh.
2. To analyze the waste management systems of the tanneries of Bangladesh.
3. To identify the how and which elements of the environment are being polluted.

PDPC,PPPPC,&sy=2018&ey=2025&ssm=0&scsm=1&sc=0&ssd=1&ssc=0&sic=0&sort=country&ds=.&br=1.

⁷2021. <https://import-export.societegenerale.fr/en/country/bangladesh/market-sectors?>

⁸"Assaignment-Partb.Docx - Part B 1 Discuss The Importance Of Tannery Industry In The Economy Of Bangladesh Set Up Of Tannery Industry In Bangladesh | Course Hero". 2021. *Coursehero.Com*. <https://www.coursehero.com/file/70224418/assignment-partbdocx/>

⁹"Bangladesh Leather Industry – From Hazaribagh To Savar - Lightcastle Partners". 2019. *Lightcastle Partners*. <https://www.lightcastlebd.com/insights/2019/05/27/bangladesh-leather-industry-from-hazaribagh-to-savar>

¹⁰"Report: Flooded Future: Global Vulnerability To Sea Level Rise Worse Than Previously Understood". 2019. *Climatecentral.Org*. <https://www.climatecentral.org/news/report-flooded-future-global-vulnerability-to-sea-level-rise-worse-than-previously-understood>

¹¹Alexander, David. 1993. *Natural Disasters*. Dordrecht: Kluwer Academic Publishers.

¹²Hough, Peter. 2014. *Environmental Security*.

¹³Ezez. 1994. . Google.com. <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwi2z4ia6YruAhVHwzGhQx1CioQFjAOegQICAC&url=https%3A%2F%2Fwww.tandfonline.com%2Fdoi%2Fpdf%2F10.1080%2F09557570802452920&usg=AOvVaw1ybxXPdzeRA9sqhcY7u5ox>

¹⁴Science and Climate. 2021. *Climate Change Terms and Definitions - Science and Climate*. [online] Available at: <<https://climatechange.ucdavis.edu/science/climate-change-definitions/>> [Accessed 23 August 2021].

¹⁵Web.mit.edu.2021. *Global Warming - Definition*. [online] Available at: <<http://web.mit.edu/12.000/www/m2010/finalwebsite/background/globalwarming/definition.html>> [Accessed 23 August 2021].

¹⁶Society, N., 2021. *pollution*. [online] National Geographic Society. Available at: <<https://www.nationalgeographic.org/encyclopedia/pollution/>> [Accessed 23 August 2021].

4. To analyze the national and international environmental laws and which provisions are being violated.
5. To recommend some solutions for the tannery industry to ensure the environmental security of Bangladesh.

3. Literature Review:

The entire tannery industrial activity comprises a number of actions that are hazardous to the environment due to large contribution of chromium pollution. Despite having two types of tanning methods which are vegetable tanning uses tannin (a class of polyphenol astringent chemical), present naturally in the bark and leaves of many plants and chrome tanning usually uses chromium in the form of basic chromium sulfate, more than 90% of global leather production of 18 billion sq. ft. is through chrome-tanning process (Sundar et al. 2002). Several chemical chemicals are employed in the soaking, tanning, and post-tanning processes of hides and skins, according to ImamulHuq (1998). The most chemicals used embrace metallic element sulphite and basic metal sulfate together with non-ionic wetting agents, bactericides, soda ash, CaO, ammonia sulfide, sal ammoniac and enzymes. Others are metallic element bisulphate, metal mineral, NaCl, H₂SO₄, acid, metal formate, baking soda, vegetable tannins, syntans, resins, polymer, dyes, fat emulsions, pigments, binders, waxes, lacquers and methanol. Numerous forms of processes and finishing solvents and auxiliaries are used, still (Huq, 1998) concerning forty significant metals and acids are used for process raw hides (UNIDO, 2005).

It's been reportable that solely concerning two hundredth of the massive range of chemicals employed in the tanning method is absorbed by animal skin, the remainder is free as waste (Mohanta et al. 2010). Hazaribag, a major working area in the Asian country, consists of more than 200 tanning factories, typically producing approximately 7.7 million liters of liquid waste and 88 million solid waste. The direct discharge of those wastes has contaminated the bottom and surface water with perilously high concentrations of metal, additionally as atomic number 48, arsenic, and lead (Bhuiyan, et al. 2010). Current estimates indicate that these tanning plants process more than 60,000 tons of rawhide and rind annually, and about 95,000 liters of untreated wastewater are discharged outdoors daily, creating a vibrant River Buriganga (Rusal et al. 2006). On October 07, 2020, the DoE team visited a leather tanning factory, found contamination of all surface drainage channels and fined them. The BSCIC said that they might not manage pollution as

tanners discharging unwanted wastes to the treatment plants for his or her lack of technical instrumentality whereas tanners goddam the BSCIC for not operational the central effluent treatment plant properly to avoid wasting value (NewAge Bangladesh, 2021).

As specified by WHO, more than 8,000 workers in the Hazaribag tanning factory suffer from gastrointestinal, dermatological, and alternative diseases, and ninetieth of this population die before the age of fifty (Maurice, 2001). Unprocessed tannery effluents are released into water sources (Favazzi, 2002; Verheijen et al., 1996) which is the major source of pollution of Buriganga. The sewer water generated is characterized by a high chemical Oxygen demand (COD), biological Oxygen demand (BOD), Total dissolved solids (TDS), Total suspended solids (TSS), metal (III) and phenolic with high pH scale, strong odor and dark brown color (Durai and Rajasimmam 2011; Suganthi et al. 2013; Dixit et al. 2015). other than high organic content, work wastewater (TWW) jointly contains varied nutrients like gas and phosphorus which is able to cause eutrophication of water bodies (Rai et al. 2005; Durai and ruleasimmam 2011; Raj et al. 2014). in addition, the dark brown color of effluent hinders the method by obstruction the daylight penetration and it's therefore hurtful to aquatic life (Aravindhan et al. 2004; Rai et al. 2005; Kongjao et al. 2008; Mwinyihija 2010; Durai and Rajasimmam, 2011). The high concentration and low biodegradability of pollutants gift in TWW could be a major reason for serious environmental concern (Di Iaconi et al. 2002; Schrank et al. 2009). So, proper treatment of TWW is required prior to its final disposal in the environment. The CEPT technology removes nearly all chromium (98.7–99.8%) and provides an effluent that has no effect on the receiving water bodies (Haydar and Aziz, 2007). Besides, Yoganand and Umapathy (in press) have applied an inexperienced methodology for the recovery of metal (VI) from TWW exploitation recently synthesized quaternary ammonia salt and reported 99 creative activity of metal (VI) from TWW. Many microorganisms have developed detoxification and respiration mechanism exploitation serious metals and therefore become proof against it (Ezaka and Anyanwa, 2011). In addition, the AOPs (Advanced Oxidation Processes) are used to treat the secondary treated wastewater and therefore known as tertiary treatment (Audenaert et al. 2011). Moreover, several processes like Aerobic Treatment (Insel et al. 2009), Anaerobic Treatment (Durai and Rajasimmam 2011; Mannucci et al. 2014), Physico-Chemical Treatment Approaches, Emerging Treatment

Approaches (G. Saxena et al. 2016.) are used to reduce toxicity.

It is clear from this extensive study of the research that chromium is extremely harmful to human health, wildlife, and the environment (soil, water, sediments plants and etc.). There are a variety of ways to remove chromium from tannery effluent, and some treatment methods removed nearly all of the chromium from the wasted liquor. Typically, these technologies are complex, costly, and energy-intensive.

4. Methodology:

This paper relies on qualitative data to understand the rationality for the tannery industry, their waste management systems, current situation of how those tanneries are polluting the environment as well as violating the laws in Bangladesh. Through content analysis, secondary sources have been used to support the literature and develop a more objective understanding of the phenomenon of environmental security in a country context as well. Secondary data analysis primarily included newspapers, journals, articles, books, internet publications, online journal and articles, online opinionated write-ups like blogs, national and international provisions and online archives of governmental and non-governmental organizations. To establish the standpoint and find some recommendations, the authors went through the facts and circumstances of the impact of tannery industry on the environmental security of Bangladesh. That is why they used content analysis technique and snowball sampling process to search and got the answer.

In the matter of ethical issue, the authors collected their necessary data from news reports, articles, publications and legal acts. They also referred the information and their sources correctly as well as according their format and so the ethical issues of the qualitative method were fulfilled.

5. Recognizing the Current Situation of the Tannery Industry of Bangladesh:

Though tannery business started from 1940s, this industry has now developed and become one of the most valuable sector for national economy. Tanning is known as a chemical treatment of raw skins and hides of animals to produce leather. It requires a process that permanently changes the protein formation of skin, making it more resistant and less susceptible to decomposition. The method of tanning involves 5 distinct stages: Pre-Tanning, Tanning, Selecting, Dressing and Finishing. Each one of these

processes is complicated and requires many steps.¹⁷ Details are given below:

5.1. Stage 1: Pre-Tanning

Trimming: Cutting, selecting and dividing the hide.

Curing: Removes water from the hides and skins using a difference in osmotic pressure.¹⁸

Soaking: Washing in water around 12-24 hrs. To remove impurities and folds from the hides.

Liming: Hair and stratum are removed and an answer of lime (calcium hydroxide) and metal chemical compound is applied to melt and enhance the hide for softness and suppleness required for upholstery animal skin.¹⁹

Dehairing: uses lime, Sodium sulphide, Sodium sulfite (Na_2SO_3), Calcium hydrosulfide, Dimethylamine (CH_3)₂NH to remove hair follicles.

Deliming: Removal of alkali from the pelt and the consequent deswelling of the fibers using Ammonium chloride or Ammonium sulfate (NH_4)₂SO₄.

Bating: Enzymatic digestion-the process of bating-achieves additional removal of protein content loosened by liming. Sterile enzymes based (origins: pepsin and trypsin in dog dung and fowl droppings were used once upon a time; causing a soft smooth and silky grain).²⁰

Pickling: Pickling increases the acidity of the hide to a pH of 3, enabling chromium tannins to enter the hide more receptive to tanning. Salts are added to prevent the fibers from swelling. For preservation purposes, fungicides and bactericides are used.²¹

5.2. Stage 2: Tanning

This is the method that turns leather into pre-tanned hide. Typically, mineral tanning is achieved with alkaline chrome-3 salts. It penetrates the hide very rapidly (24-48 hours).

5.3. Stage 3: Selecting

¹⁷info@ae3studios.com, AE3. 2021. "The Tanning Process". *Keleen Leathers*. <https://www.keleenleathers.com/the-tanning-process/>.

¹⁸"Leather Tanning Process - Global Leather". 2021. *Global Leather*. <https://globalleathers.com/leather-tanning-process/>.

¹⁹En.kimyasal.boun.edu.tr.2021. *deliming and bating*. [online] Available at: <<http://en.kimyasal.boun.edu.tr/webpages/courses/leathertechology/deri16.htm>> [Accessed 23 August 2021].

²⁰ ibid

²¹"Pickling - Wwww.Leather-Dictionary.Com - The Leather Dictionary". 2021. *Leather-Dictionary.Com*. <https://www.leather-dictionary.com/index.php/Pickling>.

Excess water from the hide is removed after tanning. Hides are then categorized according to the volume and position of natural characteristics and defects.

5.4. Stage 4: Dressing

Dressing the hides involves the following:

Shaving: Hides are given a uniform thickness.

Dyeing: Dyes are added to color leather.

Re-tanning: To change the physical characteristics of the leather to suit its final application, additional tanning substances are often applied.

Setting: A process which removes creases and excess water mechanically.

Drying: Spread hides are dried on large frames or vacuum-dried.

Trimming: Removing the rough and ragged edges.

5.5. Stage 5: Finishing

A variety of surface coating techniques such as padding, spraying or roller coating are used in the finishing process. Then there are mechanical processes such as buffing, staking and embossing.²² After the war of liberation in 1971, the Bengalis, one after the other, set up about two hundred tanneries in Hazaribag. Domestic demand for leather footwear and goods was around 160 billion BDT, according to the Leather Goods and Footwear Manufacturers' and Exporters' Association of Bangladesh (LFMEAB), but 40 percent of the demands were met by imports of goods from abroad. The leather industry, the second largest export-earning industry in the world, is experiencing an ongoing decrease in export earnings.²³ In the five months of fiscal year 2018-19, export earnings from leather and leather goods decreased by 16.11 percent to US\$434 million, which was US\$518 million in the same timeframe last year, according to data from the Export Promotion Bureau (EPB). According to EPB numbers, exports of leather, leather goods and footwear were USD 1.08 billion in fiscal 2017-18. Bangladesh exported \$1.23 billion worth of leather and leather products in 2016-17, compared with \$1.16 billion in the previous fiscal year.²⁴ Over the five months of the current fiscal year, export income from leather & leather goods decreased by 16.11 percent. It

shows, therefore, that the sector is not experiencing strong and remarkable growth.

The tannery industries of Bangladesh were situated in Hazaribag from the beginning, but the government had decided to move those factories to Savar to save Buriganga from pollution. The project was approved at a meeting of the Executive Committee of the National Economic Council (ECNEC) on 16 August 2003.²⁵ The work was supposed to be completed in 2005. But it did not end at the appointed time. A leather industrial city has been set up on 200 acres of land at Hemayetpur in Savar. 155 factories will be set up in 205 plots in Shilpanagar.

6. Impact of Tannery Wastes on the Environment of Bangladesh:

Bangladesh's leather and tanning industry consists of two sub-sectors: the manufacture of leather products, including tanning and shoes. They produce all kinds of leather, from wet blue to finished leather, and leather-based merchandise starting from baggage and belts to shoes.

In these industries, animal hides are converted into leather through many complicated processes which are the main reason of environment pollution. More than 100 chemicals are used in the various processing stages include Sodium sulfide, lime powder, ammonium sulfate, Sulfuric acid, chromium sulfate, sulphonated and sulfated oils, formaldehyde, pigments, dyes and anti-fungus agents which play a key role in the emission of poisonous effluents into the environment. Wastes resulting from this processes (Pre-Tanning, tanning, selecting, dressing, finishing) are air, solid and primarily liquid.

Hydrogen sulfide (H_2S) and ammonia (NH_3) are the major gases released into the atmosphere. If atmospheric air contains 20 ppm concentration of H_2S gas and 5 ppm concentration of NH_3 , it causes death of a man due to its poisonous effect. The effluent water of tannery contains dissolved and undissolved organic and inorganic solid substances. In tannery wastewater, chromium salts, phenolic, tannins, and organic debris, among other pollutants, are regularly released into the environment. These pollutants pose a threat to aquatic life as well as human health. The low pH of tannery effluents causes erosion of water carrying system. Large pH fluctuations and high BOD value can cause harmful effects on living entities. On the opposite hand, inorganic pollutants of Cr wealthy work wastes to

²²info@ae3studios.com, AE3. 2021. "The Tanning Process". *Keleen Leathers*. <https://www.keleenleathers.com/the-tanning-process/>

²³Akter, Akhi&Mahfuz, Mir. 2018. "An overview of Bangladesh leather industry". Textile News, Apparel News, RMG News, Fashion Trends. <https://www.textiletoday.com.bd/overview-bangladesh-leather-industry/>.

²⁴ ibid

²⁵ The Daily Star. 2021. "ECNEC approves 13 projects with Tk 12,415.79 cr". <https://www.thedailystar.net/country/ecnec-approves-13-projects-tk-1241579-cr-1517344>.

disposal sites cause vital changes to the physico-chemical properties of that setting.

7. Legal Analysis of Environmental Law:

The set of rules, legislation, agreements and customary law regulation however humans communicate with their surroundings is environmental law. Environmental legislation seeks to protect the environment and to set rules on how citizens can use natural resources. Not solely do environmental laws aim to shield the environment from destruction, however they additionally decide World Health Organization (WHO) and below what circumstances will use natural resources. Laws govern pollution, natural resource exploitation, forest conservation, mineral extraction, and animal and fish populations.

7.1. International Provisions:

Environmental laws area unit comparatively new in Yankee history. Lawmakers began to pass environmental laws within the twentieth century. The environmental movement began to choose up pace within the Sixties with the bulk of environmental laws associate degree rules being created since that point.²⁶

Molestation was the topic of the primary environmental rules. If one person's use of their property interferes with the employment of their own property by another person, the courts could step in to avoid the nuisance. Nuisance laws have usually developed within the courts through common law rulings. The laws defend an owner from the violation of their right to fancy their own property by another individual or company. Early environmental legislation failed to target protective the total of the environment. They additionally failed to grant someone a stand to sue a bad person if they weren't directly hurt by the actions of the opposite person.

7.1.1. Regulation of Environmental law:

Environmental laws cowl a large vary of topics together with the following:

Air Quality: Air quality laws defend the air from pollution and should embrace measures to shield the air from things like gas depletion.

Water Quality: Environmental laws could defend water from pollution. They will additionally confirm World Health Organization will use water and the

way to handle potential issues like treating waste and managing surface flee.

Waste Management: Municipal waste, risky substances and nuclear waste all fall within the class of waste management.

Contaminant Cleanup: Not all environmental law focuses on preventing pollution. Contamination cleanup deals with addressing pollution when it happens. Laws could embrace protocols for cleanup moreover as civil and criminal social control for polluters.

Chemical Safety: Chemical safety rules manage things like chemical use and chemicals in product like plastic bottles.

Hunting and fishing: Environmental laws could regulate and defend life populations. Lawmakers confirm World Health Organization will hunt and fish and the way these activities area unit regulated.

7.1.2. Major Environmental Legislation:

The first federal environmental law is that the watercourse and Harbors Act of 1889. The Clean Water Act revised abundant of the Harbors Act. The Act made it an offense without a permit to bring waste into navigable waters. The law additionally created it an infringement to change a harbor or city district or otherwise alter a waterway by filling it or excavating it.²⁷

Other important items of federal environmental legislation include:

1. Clean Air Act
2. Clean Water Act
3. Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)
4. Endangered Species Act
5. National Environmental Policy Act
6. Resource Conservation and Recovery Act

7.2. Environmental law in Bangladesh:

Natural resource ownership matters in relation to the ecosystem and how certain resources are directly related to the environment. In this respect, Bangladesh inherited a colonial legal system that promoted feudal ownership, but the 'states' were acquired by the State in 1950. Maximum economic usage of both private and domestic incentives. The idea of 'ownership', on the other hand, remained unfettered; non-privately owned resources are vested and regulated by government entities, sadly, public agencies have become feudal over public resource management not being concerned with the environment or sustainable growth.

²⁷ ibid

²⁶What is Environmental Law? | Becoming an Environmental Lawyer. (n.d.). Legalcarepath.Com. Retrieved January 10, 2021, from <https://legalcarepath.com/what-is-environmental-law/#:~:text=Environmental%20law%20is%20the%20collection,people%20can%20use%20natural%20resources>

The power in the seat was no better than the interest of the colonial rulers in harnessing. Some interested groups observed environmental change in 1960 and realized the sufferings and effects, public consciousness began to rise, and more individuals came to know about the environmental law concept.

Because of various types of pollution and considering public concern, a National Mechanism was created, some NGOs subsequently worked to address environmental issues during 1990, in addition to some precursors of this phase, such as the Bangladesh Environmental Lawyers Association and Bangladesh PoribeshAndolon with their judicial and extrajudicial activism and actions and remedies.

7.2.1. The Constitution of Bangladesh:

Article 18 A- Protection and improvement of environment and biodiversity: For the present and future citizens, the State shall work to maintain and improve the environment, as well as to preserve and safeguard natural resources, biodiversity, wetlands, forests, and wildlife. The Act to Amend the Constitution (Fifteenth Amendment) of 2011.²⁸

There are several environmental laws in Bangladesh. Those are discussed below:

7.2.2. The Environment Conservation Act 1995:

Bangladesh is one of the most environmentally sensitive countries, with the threat of climate change on the one hand and the daily cost of decreasing living conditions on the other. The combatting of the pressing needs of the environment cannot be met without an effective legal framework and its proper implementation (Lubaba, 2019). Therefore, on World Environment Day, this article briefly outlines some of the major legislation which address environmental concerns.

7.2.3. The Environment Court Act 2010:

This Act serves as the foundation for the creation of the Department of Environment, the appointment of the Director General (DG), the conduct of Environmental Impact Assessments, and the designation of Ecologically Critical Areas. The Environment Conservation Rules are laid out under the Act, outlining the standards of the air, water and other components of the environment.²⁹ The Act has

been criticized for allocating overly broad powers to the DG, leaving the "national interest" and "good faith" loopholes and leaving them without the requisite professional training of the officials involved, insufficient sentencing and dumping them.³⁰

8. Findings and Recommendations:

After analyzing all the reports, data and relevant journals, we can say that tannery effluents are ranked as the highest pollutants due to their adverse effects on environment. Though vegetable tanning is environment friendly and biodegradable but chrome tanning is mostly used in developing countries for cost effective manner and fast process. Small factories use repurposed chemicals from larger industries, making them more risky and vulnerable for both workers and the environment. Besides, the factories who conserve and process the leather into various types of products do not play by the rule book of the Government and constantly break the regulations and produce huge amount of wastages. In order to address these issues, multiple bodies must work together to protect the environment. The authors have some suggestions regarding this issue:

1. Every tanning industry should construct an effluent treatment facility to reduce the toxicity and negative consequences of their pollutants.
2. Government has to improve the checks and balances in place to ensure that tannery effluent emissions into surface water do not exceed the legal limit.
3. Though there are laws and regulations on how the leather industry should proceed their works, they are not willing to maintain those. So law enforcement agencies are needed to be strictly conduct surveillance and make necessary steps when any law is broken.
4. Institutions like universities, colleges can innovate relevant green technology, develop green industrial processes, and raise awareness by hosting seminars and symposiums.
5. Aerobic Treatment, Anaerobic Treatment, Physico-Chemical Treatment, Emerging Treatment should be applied to remove chromium toxicity.

²⁸ An Overview of Environmental Laws of Bangladesh. (n.d.). Retrieved January 10, 2021, from <https://www.thedailystar.net/law-our-rights/news/overview-environmental-laws-bangladesh-1753360>

²⁹ Lubaba, Tahseen. 2019. "An Overview of Environmental Laws of Bangladesh". *The Daily Star*. [https://www.thedailystar.net/law-our-](https://www.thedailystar.net/law-our-rights/news/overview-environmental-laws-bangladesh-1753360)

[rights/news/overview-environmental-laws-bangladesh-1753360](https://www.thedailystar.net/law-our-rights/news/overview-environmental-laws-bangladesh-1753360).

³⁰ An Overview of Environmental Laws of Bangladesh. (n.d.). Retrieved January 10, 2021, from <https://www.thedailystar.net/law-our-rights/news/overview-environmental-laws-bangladesh-1753360>

9. Conclusion:

There has been a significant change from industrialized to mature leather industries in recent years. Countries such as Bangladesh and India have been motivated by strict environmental regulations in the leather tanning process consists of multiple batch phases connected with the leather tanning process. Consumption of significant quantities of freshwater as well as liquid and solid waste production. While tanning can be done according to various methods, most of the leather is obtained. With chromium salts as the agent for tanning. Wastewater is distinguished by a substantial organic load. And remarkably high inorganic compound concentrations such as chromium, chloride, ammonia, Sulfide as well as sulfate. This poses a threat to the leather industry's potential sustainability with a Nontariff barriers, including environmental concerns and Eco criteria originating from major export markets, are increasing in number and layers. There are 113 tanneries in Bangladesh that produce 180 Hides and skins of millions of square feet each year, but most of them do not have effluent treatment plants. They produce approximately 20,000 m³ of tannery waste and 232 tons of solid waste per day. In spite of Quantifying the use of resources such as fossil fuels, other types of oil, water and other forms of energy, During various activities, chemicals and the release of waste water, air pollution and solid waste. It has become increasingly essential to produce leather in Bangladesh. A valuable method to measure the Life cycle analysis (LCA) is an environmental responsibility associated with a product, process or operation that is a management method involving the identification and quantification of the input and output flows of the product. Processes; reuse of resources and materials and release of waste into the atmosphere. Studies on Leather related environmental impacts have not been carried out in Bangladesh for leather so far. Supply chain for manufacturing.

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