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People, development and tannery: where lies the essential mistake?

Personas, desarrollo y curtiduría: ¿dónde está el error esencial?

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ABSTRACT

Industrial Development commonly creates an ambience of better employment opportunities, better lifestyle, skill development, education, higher GDP, economic development, increased imports, development of technology and so on. But in reality, what it creates is not just limited to it. Every industry from the essential industries such as of iron and steel to the energy-based industry like Thermal power plants to the manufacturing industries like textiles, inspite of being essential, still cause problems concerning environmental to human society. This article attempts to an in-dept introspection of the leather industry and its allies from a perspective of economic development, health, environment and human development in the city of Unnao, Uttar Pradesh. Inspite of the fact leather Industry is one of the major sources of foreign exchange and employment, it has nevertheless unintentionally created employment insecurity, reduced skill development in the population, made the population dependable and poverty-stricken and intentionally harmed the environment that includes land, air and water eventually adversely affecting agriculture and health of the population in the nearby regions.

Keywords: Tannery Industry, Employment, Environment, Health

RESUMEN

El desarrollo industrial comúnmente crea un ambiente de mejores oportunidades de empleo, mejor estilo de vida, desarrollo de habilidades, educación, mayor PIB, desarrollo económico, mayores importaciones, desarrollo de tecnología, etc. Pero en realidad, lo que crea no se limita a eso. Todas las industrias, desde las industrias esenciales, como la del hierro y el acero, hasta la industria basada en la energía, como las centrales térmicas, y las industrias manufactureras, como los textiles, a pesar de ser esenciales, todavía causan problemas ambientales a la sociedad humana. Este artículo intenta una introspección profunda de la industria del cuero y sus aliados desde una perspectiva de desarrollo económico, salud, medio ambiente y desarrollo humano en la ciudad de Unnao, Uttar Pradesh. A pesar del hecho de que la industria del cuero es una de las principales fuentes de divisas y empleo, sin embargo, sin querer ha creado inseguridad laboral, ha reducido el desarrollo de habilidades en la población, ha hecho que la población sea confiable y empobrecida y ha dañado intencionalmente el medio ambiente que incluye la tierra, el aire y el agua finalmente afectaron adversamente la agricultura y la salud de la población en las regiones cercanas.

Palabras clave: Industria del curtido, Empleo, Medio ambiente, Salud

INTRODUCTION

Since the dawn of industrial revolution in Europe, industries have always been characterised by pollution (Akatsu, 2015; Jarrige and Le Roux, n.d.). Air, water and soil have always been the worst affected and most

ignored victims of mankind's path to development. Though, the industrial development is often times characterised by better employment opportunities, better lifestyle, skill development, education, higher GDP, economic development, increased exports, development of technology and so on, the problems associated with them are often times ignored in the light of the prospects they bring to the society and its people. Industries are responsible for value creation (Juraschek et al., 2018). Directly and indirectly, not only economic, but also social and environmental impacts are generated (Juraschek et al., 2018). With its focus to manufacturing and research, industrial development is often viewed as the core of development which in turn could be defined as a process of upliftment and modernisation of commerce, public amenities and public standard of living.

Each of the industry be it Thermal power plants, Hydroelectric power plants, Iron and steel industry, heavy machinery, textile industry, plastic industry etc., however important they are, all create a different set of problems in a specific setting and hence, have a different approach towards their management and mitigation. The problems that they create may not be life-threatening to humans, but do create disruptions in natural procedures and stabilities. Not just the environment, but the people that live around the industry get affected in various ways and means (Kniivila, 2007; J. Campbell, 2021; Rahman, Alam and Velayutham, 2021). Many a times, what prospects an industry creates in the beginning may not get fulfilled in the end. This is due to the fact that sometimes bad effects of the industry surpass the good that it has created. Therefore, the problems associated with the industry should be dealt with not just by some national standards but by how the surroundings reciprocate to it, which can differ from place to place and industry to industry.

This paper essentially deals with one such industry i.e. Leather Industry commonly known as Tanneries, in the District of Unnao, Uttar Pradesh, India in a perspective of development, health, environment and human development. It further focuses on the impact of tanneries on environment and population as well as their interrelationships.

MATERIAL AND METHODS

The study is based on field observations and personal interviews of people living around tanneries in Unnao District. The respondents were chosen from the nearby villages and people working in the tanneries. The study is qualitative in nature and perceptive in orientation.

Study area profile: The leather industry is responsible for the manufacture of leather from animal skin and hides using natural or synthetic chemical that displaces water from the interstices between the protein fibres and cements these fibres together (Britannica, 2018). For a long period in the history of India, leather was manufactured from carcass i.e. skin of dead animals and were tanned using natural chemical called *tannin* by a specific community of people. They were also responsible for the manufacture of shoes and other products made by using leather. In the modern times, leather is basically manufactured through a labour-intensive industry and a chemical intensive process. The leather products are manufactured in an industry too, using heavy machinery

and skilled labour. The leather industry occupies a prominent place in the Indian economy in view of its substantial export earnings, employment potential and growth (Goel, 2014). The industry causes an excess strain to land, water, air and soil of the region (Khwaja, Singh and Tondon, 2001; Chandra et.al, 2009; Gowd et. al, 2010; CPCB, 2013; Hashem, Arefin and Jor, 2015; Gupta and Sanyal, 2021).

People report that the development of leather industry in Unnao (26º32'12.9768" N, 80º29'23.8560'' E) is a recent phenomenon, not farther than 30 years. The industry developed as an extension to the leather industry of the Kanpur located on the other side of the River Ganga. Many allied industries of Tanneries such as leather board, fertilizer and units of leather products have also developed in the region. Slaughter houses which provide the basic raw material for the industry have also developed on a large scale which export packaged beef overseas. Their allied industries of pet foods and bone tallow are also present in the area. Not only the tanneries but their allied industries too are a nuisance to the environment and the people living around it (Gupta and Sanyal, 2021). Slaughter houses for instance, emit an excessively unbearable foul odour in the areas they operate in, fertilizer industries burn the leather cuttings, emit not only foul odour but also smoke in excessive quantities. There are three industrial regions in the Unnao, the oldest UPSIDC Eastern Unnao Industrial Area has the most variety of the industries, most of the allied industries are located in this region with leather factories, another Banthar Leather Technology Park (BLTP) is exclusively dedicated to leather manufacturing and Akrampur-Chakrampur Industrial Area, a private area where other industries such as steel, chemical are also present with the Leather Factories. While both the UPSIDC and BLTP have a working CETP each, Akrampur-Chakrampur Industrial Area factories are themselves responsible for the cleaning of the industrial sewage through ETPs before disposal.

RESULTS AND DISCUSSION

Being a labour-intensive industry, a large chunk of male rural workforce is employed in Leather industry to an extent that approximately one male from each household from the nearest villages is employed in the industry. The workers from far off villages working in the industries, live as tenants in the nearby villages. Most of the workers are contractual and are employed through a third party, with no guarantee to the employment. It was found that before the industry came to Unnao, many workers used to go to Jajmau, Kanpur to work in the leather factories. They were later either transferred to the local units or their former workplace was closed down or sought employment in local units in and after COVID-19 lockdown or just transferred for easy commuting. Earlier the industries used to operate day and night with workers working in 8-hour shifts, but due to governmental policies and guidelines, though many tanneries have 7 days a week schedule they do not work for more than 2 shifts and that too with reduced capacities.

The over dependency of the population on leather industry is predominately due to the fact that there is no other means of livelihood for such a large population to work in and agriculture alone cannot sustain such a large population. Agricultural work too has reduced through time. It has happened due to various reasons. Firstly, large fertile agricultural lands were bought from the villages for the industries by promising villagers'

constant employment and electricity. These farmers too now rely on industry for sustenance. Secondly, the agriculture mechanisation has reduced the use of labour in the agriculture. Additionally, there is a widespread problem of stray animals in the villages ranging from domestic cow to wild boar and monkeys, which destroy crops even if the farms are fenced. Due to this, many small farmers are unable to cultivate, their lands remain unused and are depended upon the industries for the livelihood.

The polluting nature of tanneries is evident from the notorious odour that characterizes tanneries and tannery zones (Gupta et al. 2007). People living in the vicinity of the industries complain of bad odour. It is not constantly there, but they experience it if the wind moves in their direction. The odour is very bad and air retains it for a long time. The first rains in the area are yellow in colour i.e. acid rains, turn the roofs black, kill vegetation even the neem trees and harm crops. In addition to this, the Leather fertilizer factories which are not just limited to the industrial regions cause bad odour, gives out a lot of smoke and render air unclean. Azom et al. (2012) has made similar observations concerning the tannery region of Hazaribagh, Dhaka. People and Workers report that most of the industries pump tannery sewage to the groundwater using broad bore wells and heavy motors polluting it to an extent that now it is unfit for human consumption and agriculture. The borings in villages near the industry is of average 100 feet, where too the water has yellow colour, bad odour, and bitter taste and turns red and gives an oily lining if kept for a long time (5-6 hours) (Gupta and Sanyal, 2021).

The Loni river passes very near to the UPSIDC Eastern Unnao Industrial Area and is the recipient of CETP outlet water and water from the tanneries which are not registered to CETP. The outlet from CETP is clean but the same could not said for the sewage from other tanneries. Khan et al. (2019) have found that BOD and TSS of the outlet of Superhouse Tannery 1 were not in conformity with the effluent standards under Environment Protection Act, 1986. Loni water is black in colour and has a very bad odour. Loni Drain near UPSIDC CETP looks deep red in colour in Google Earth images, which is due to the chromium concentration in the backwash. According to the farmers, if the water reaches their fields due to floods, it damages crops and fertility of the soil. Most of the farmers have reported that no fruit or vegetable grows in the soil. If any vegetable reaps unexpectedly, it is tasteless, goes bad early and fetches less money in the market. Only grains could be grown using chemical fertilizers. The water is so much laden with chemicals that, when a cow/buffalo dies in the nearby areas, they sell the hide to the factory and dump the remaining body to Loni. In just three days all of the meat of the animal decays completely with only skeleton remaining which they eventually sell at bone tallow. In many villages, people living near Loni have rehabilitated themselves to farther places. The farms near Loni have been even rendered useless in some cases. Ganjauli, a village Loni passes through, was once famous for her melons, but today no fruits could be grown in the village.

The work in leather industry is divided into two broad categories, as identified by the workers themselves i.e. *Kachcha Kaam* – which comprises of manufacture of leather, from hide preparation to finishing and *Pucca Kaam* – which comprises of the product manufacture from the finished leather. It is a common understanding that *Kachcha Kaam* is unclean, unhygienic, unhealthy but the earning is good on the other hand *Pucca Kaam* is cleaner, requires skill but earning is lower. *Kachcha Kaam* is also more prone to accidents, chemical exposure and occupational hazards (Tyagi, 2018). During the process of tanning, infections can occur due to

contact with the hazard, as the hide or skin serves as a route for a numerous micro-organism i.e. infection due to (Yeasts, tetanus, anthrax, leptospirosis, epizootic aphtha, Q fever and brucellosis) can occur to the workers during the tanning process due to infected hides (Tyagi, 2018). The most dangerous part of modern tanning is handling chromium, which causes a myriad of ailments depending on how it is absorbed i.e. if inhaled, it acts as a lung irritant and carcinogen, affecting the upper respiratory tract, obstructing airways, and increasing the chances of developing lung, nasal, or sinus cancer while if normally absorbed as fine particulate dust, produced when both raw and tanned leathers are buffed, smoothed, and ground up, it causes increased rates of asthma, bronchitis, polyps of the upper respiratory tract, pharyngitis, and the enlargement of the hilar region and lymph nodes (Gayathri and Amrithavalli 2020). Worker's deaths and accidents due to carelessness or machinery malfunctioning may not be common but known amongst the workers. Spillage of chemicals on the workers body, improper drainage of chemicals from the pits, flood the floor, slipperiness due to wet and greasy floor, toxic chemicals and heavy metal exposure are some of the potential concerns associated with workers in tanneries (Karthika, 2020). Workers report that some industries take the responsibility of the accidents and pay for a part of medical expenses but some industries do not contribute to the expenses in anyway. Most of the population does not want to work in *Kachcha Kaam,* but many poor families do so since the wages are higher in the sector. The people working in the *Kachcha Kaam* are predominately the same community of people who originally manufactured leather at home using natural process and made leather products too.

Decrease in life span, kidney stones, gall bladder stones, filaria, gastrointestinal disorders, skin itchiness are very common problems prevalent among population. A 2012 Human Rights Watch report on the health effects of the leather tanneries found that residents in Hazaribagh, Dhaka, Bangladesh reported 31 percent more cases of skin diseases, 21 percent more cases of jaundice, and 17 percent more cases of kidney-related disease compared to the residents in a comparable neighbourhood situated farther away from the tanneries (Al-Muti, 2017). The tannery workers are additionally prone to harmful chemicals (Öry et al., 1997; Sahasranaman, 2000; IUE, 2008; Mittal and Gupta, 2008; Subramani et al., 2010; Hashem et al., 2015; Gayathri and Amrithavalli., 2020). Council of Leather Export defines "Strong and eco-sustainable tanning base" as one of the strengths of Indian Leather Sector, though it could nowhere to be seen in the city (Council for Leather Export (www.leatherindia.org), 2022). Hence, inspite of the fact that the industry is causing problems and no longer a reliable means of employment, none of the villagers actually want them to be closed down since they are entirely financially depended upon them.

The people community which was responsible for the manufacture of leather and its products from the antiquity, were promised bright future and assured employment through education and industries, are today left skill-less, trade-less and dependent. They still do the same work, but today it is no more ecofriendly and they no longer have a job security. A trade which was taught to them through generations is no longer theirs and they are now dependent on the others for their essential needs. The idea of them being inferior, their trade being inferior was encouraged among the society and people, which has today impaired their economic condition to a large extent. On the pretext of encouragement of education to all people and establishment of industries, the original trades and skills of the people communities were compromised.

The original way of leather making was based upon natural chemicals and carcass not the carcinogenic chromium salts and hide and skin from multinational slaughterhouses, it was an industry which catered the population through the population even easily producing customised products. The slaughterhouses too are a major source of pollution.

The people living around the industrial area were promised guaranteed employment and electricity. What they really got was polluted water, unclean air, health problems, no job security, economic dependency and their most important asset – their land was either taken away or is of little use today, the land which is the part of the fertile alluvial plains of Ganga.

The four rivers that surround Dhaka, Bangladesh are biologically dead, and one of the reasons being the tannery sewage (Al-Muti, 2017). While looking the situation from environment front, the easiest way possible seems to shut all the industries down or shift them to some other place. But realistically, either it is not the solution or it will shift the problem to somewhere else. The dependency of the population on the tanneries is something that should be treated with extreme caution. A large unskilled and skilled workforce can face severe unemployment if all the industries are closed down. This solution will create a huge problem itself. Additionally, there will be a loss of the industrial infrastructure that took years to be prepared. It could not be reverted back to the fertile agricultural land it was once before. Nearly 40 percent of the industrial infrastructure in Unnao is already in abandoned condition. It is just there creating nothing. Looking at it on the environmental front, even if the industries are shut down the traces of Chromium may remain in the groundwater for several years, depending on the intensity of water recharge and if any groundwater and soil clean-up procedure is implemented (National Research Council, 1999).

The way forward should be through stricter Governmental regulation and monitoring, replacing the relentlessly polluting industries with regulated industries, utilization of industrial infrastructure, use of eco-friendly and less-polluting technology, improved waste management & treatment, compulsory green belt and encouragement to labour-intensive industry. Hence, the problem needs a holistic planning not only giving emphasis to the environment and health but also to population, skill and commerce

CONCLUSION

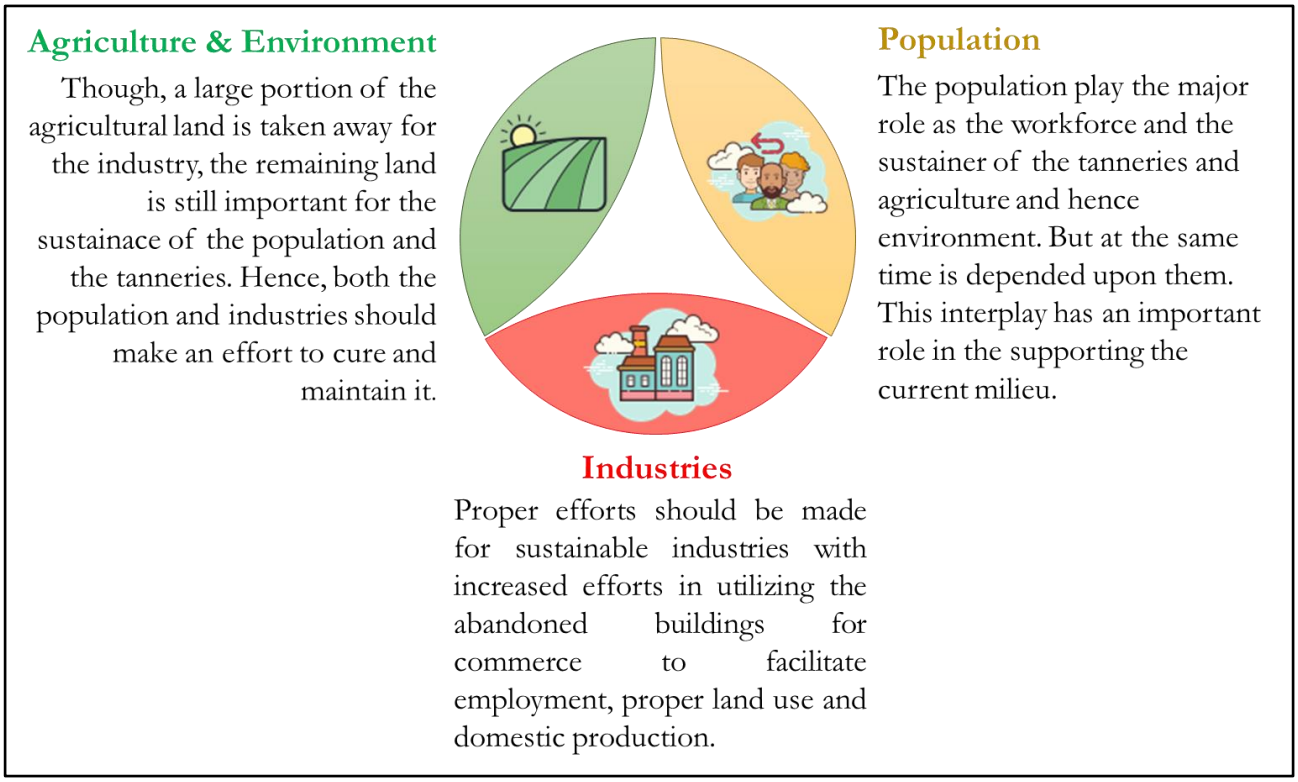

Figure 1

Possibly the most important global challenge of our time is to ensure that our planet remains habitable and still provides enough resources for future generations (Juraschek et al., 2018). Leather has long outgrown in its practical purpose and today is regarded more as a luxury than a necessity, particularly in the affluent West (Goel, 2014). Today India boasts of 13% of world leather production with annual availability of nearly 2.5 billion sq. feet of leather (Council for Leather Export (www.leatherindia.org), 2022). Unnao is just of the many cities that manufacture leather. Many states have at least one leather industrial centre. Uttar Pradesh has four: Kanpur, Unnao, Agra, Saharanpur and NOIDA, though the official sites do not mention Unnao. Today, Leather Industry in Unnao is a very important part of the city, providing not just employment but also an identity. Industrial production and urban factories are an essential part of growing cities, though commonly associated with a negative environmental impact (Juraschek et al., 2018). But challenges that the industry is facing are resolvable till the point when people and industry come together to do so. To avoid a scenario of employment contraction as in High Income Countries, it is imperative to invest in research, infrastructure and new technologies to upgrade the industries, in skills development and training, and in social protection and while doing so, policies and plans for the industries must be coupled with broader policies for advancing inclusive growth and decent work, to facilitate the creation of new jobs in other manufacturing industries and across the entire economy (ILO, 2019). The value and importance of the industrial infrastructure that the city has needs to be realised and worked upon. If not tanneries, many other industries especially agro-industries could be established helping the large unemployed

population and using the existing infrastructure. Remediation and Clean-up of the contaminants from the effected sites should be given immediate importance and encouragement, additionally Stricter Governmental Policies should be reinforced so that minimal further contamination takes place.

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