

## JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION (JILTA)

JUNE, 2018

VOL.: LXVIII

NO.: 06

RNI NO.: 2839/57

REGD.NO.: ISSN 0019-5738

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Communications to Editor through E-mail :  
jiltaeditor@gmail.com; admin@iltaonleather.org

Cover Designed & Printed by :

M/s TAS Associate

11, Priya Nath Dey Lane, Kolkata - 700 036

Published & Printed by :

S. D. Set, on behalf of Indian Leather Technologists' Association

Published from :

Regd. Office : 'Sanjoy Bhavan', 3rd Floor,  
44, Shanti Pally, Kasba, Kolkata - 700 107

Printed at :

M/s TAS Associate

11, Priya Nath Dey Lane, Kolkata - 700 036

Subscription :

Annual	Rs.(INR)	400.00
Foreign	\$ (USD)	45.00
Single Copy	Rs.(INR)	50.00
Foreign	\$ (USD)	4.00

All other business communications should be sent to :

Indian Leather Technologists' Association

'Sanjoy Bhavan', 3rd floor, 44, Shanti Pally

Kasba, Kolkata - 700 107, WB, India

Phone : 91-33-2441-3429/3459

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mailto:ilta@rediffmail.com

Web site : [www.iltaonleather.org](http://www.iltaonleather.org)

Opinions expressed by the authors of contributions published in the Journal are not necessarily those of the Association

## JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION (JILTA)

Indian Leather Technologists' Association is a premier organisation of its kind in India was established in 1950 by Late Prof. B.M.Das. It is a Member Society of International Union of Leather Technologists & Chemists Societies (IULTCS).

The Journal of Indian Leather Technologists' Association (JILTA) is a monthly publication which encapsulates latest state of the art in processing technology of leather and its products, commerce and economics, research & development, news & views of the industry etc. It reaches to the Leather / Footwear Technologists and the decision makers all over the country and overseas.

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Black & White	Rs. 5,000.00/-
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Colour Insert (One side) (Provided by the Advertisers)	Rs. 5,000.00/-

#### Full Page / per annum

Front inside (2 <sup>nd</sup> Cover)	Rs. 96,000/-
3 <sup>rd</sup> Cover	Rs. 84,000/-
Back Cover	Rs. 1,20,000/-

### Mechanical Specification

Overall size	: 27 cm X 21 cm
Print area	: 25 cm X 17 cm

Payment should be made by A/c. Payee Cheque to be drawn in favour of :

Indian Leather Technologists' Association  
and Payable at Kolkata

Send your enquiries to :

Indian Leather Technologists' Association  
'SANJOY BHAVAN'  
3rd floor, 44, Shanti Pally, Kasba, Kolkata – 700 107  
Phone : 91-33-24413429/3459, Telefax : 91-33-24417320  
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# Varying Prices are sores to all of Us – an International Look



In April, commodity prices recovered some of the ground lost in the previous month, when prices for a wide range of commodities, especially base metals, plunged following U.S. President Donald Trump's decision to impose tariffs on aluminum and steel imports, as well as fears of an all-out trade war between China and the United States. Commodity prices rose an aggregated 2.0% month-on-month in April, contrasting March's 1.9% decline. Energy was the main driver of April's rise, followed by base metals. While they increased, prices for agriculture and precious metals recorded only small gains in the month.

Energy prices benefited from the ongoing rally in oil prices because of a combination of limited oil supply, strong demand and geopolitical risks. Participants in the OPEC oil cap deal continue to deliver, with compliance levels well above 100%, while resilient global growth is translating into strong demand for oil. Moreover, in April, fears that the U.S. would reinstate economic sanctions against Iran also boosted oil prices. On 8 May, following Trump's announcement that the U.S. would effectively withdraw from the Iran nuclear deal, oil prices rallied even further. The decision could lead Iran to reduce oil supply in a context of a tight global oil market and fuel political instability in the Middle East, in which around one-third of the world's oil production is concentrated.

Base metal prices are slowly stabilizing following a plunge in March due to the imposition of tariffs on aluminium and steel imports by the United States. A softer tone adopted by both China and the United States is easing concerns about a full-scale trade war between the two countries, and recent data suggesting that the global economy is sailing smoothly bodes well for base metal prices. Moreover, on 30 April, Trump extended tariff exemptions on aluminium and steel by an extra month, to 1 June, for Canada, the European Union and Mexico. In the case of Argentina, Australia, and Brazil, tariffs were lifted permanently. In April, base metal prices benefited from higher aluminium prices as the U.S. threatened to impose sanctions on Russia's largest aluminium producer, which would tighten global supply. Prices for base metals stabilized in April following a plunge in March, which had represented the worst performance in over two years. March's decline in base metal prices mostly reflected concerns about a potentially full-blown trade war between the United States and China, which consumes roughly half of most base metals. Prices for base metals rose 1.9% month-on-month in April, contrasting March's 3.4% decrease.

Aluminium and alumina prices led the recovery in base metal prices as Rusal, the world's largest aluminium producer outside of China, was targeted with sanctions by the U.S. in early April in response to what the U.S. called Russia's "malign activities". In recent days, however, the U.S. softened its tone, stating that it would consider lifting sanctions on

aluminum giant Rusal if billionaire Oleg Deripaska cedes control of the company. Meanwhile, U.S. steel prices continued to climb in April as the implementation of tariffs on steel imports will boost domestic prices. Conversely, iron ore—a key component in the production of steel—led price declines in the base metal group due to fears that U.S. tariffs would generate oversupply in the steel market outside the country, trimming demand for iron ore. Higher scrap usage in China to produce steel is also exerting downward pressure on iron ore prices.

Analysts polled by Economists foresee that base metal prices will continue to recover toward the end of the year as strong global growth, especially in China, will shore up demand for industrial metals. Moreover, signs that China and the United States could start negotiations to end trade disputes is also boosting sentiment. Analysts foresee base metal prices rising 2.4% in Q4 2018 from the same quarter in 2017. Base metal prices are seen again expanding 2.4% year-on-year in Q4 2019.

## Base Metals Historical Price Data

	2012	2013	2014	2015	2016
Aluminium	2020.88	1845.86	1867.48	1663.69	1604.6
Alumina	433.69	426.39	421.3	387.42	320.71
Copper	7954.23	7330.44	6863.26	5508.57	4871.3
Nickel	17522.38	15022.53	16897.92	11834.73	9596.5
Lead	2062.45	2139.23	2095	1787.3	1866.99
Zinc	1948.16	1910.09	2162.01	1929.03	2092.83
Tin	21099.76	22272.66	21878.75	16053.44	17960.96
Iron Ore	131.83	136.58	97.34	55.82	58.61
Steel (USA)	656.57	630.49	657.79	462.25	517.96
Steel (Europe)	659.47	614.28	568.37	420.18	439.66

Precious metal prices continue to fluctuate in tandem with geopolitical risks, while agricultural prices are climbing due to solid demand and concerns over supply. Prices for precious metals rose for the first time in three months in April as mounting geopolitical risks boosted demand for safe-haven assets such as gold and, to a lesser extent, silver. As a result, precious metal prices rose 0.4% on a month-on-month basis in April (March: -0.8% mom).

## Strong demand and supply concerns continue to propel prices

The rally in agricultural prices seen in Q1 extended to April on the back of strong demand for industrial usages, food supplies and animal feed. Moreover, bad weather in some key producing areas such as Argentina and Western Africa, as well as a slow start to the planting season in the United

States, are also propelling agricultural prices. U.S. farmers are increasingly concerned about the ongoing tit-for-tat trade war between China and the U.S., as it could lead the Asian country to reduce imports of some U.S. agricultural products, namely soybeans. China currently buys more than half of U.S. soybean exports, and a sharp reduction in Chinese purchases of the legume would send prices down.

Agricultural prices grew 0.8% on a month-on-month basis in April (March: +3.9% mom). Five out of the eight agriculture commodities tracked by Focus Economics saw price gains in April, with cocoa recording the largest increase, followed by wool. Conversely, prices for coffee, cotton and wheat fell in the month. Sugar prices declined for the fifth consecutive month in April as a record crop in India is keeping the sugar market oversupplied.

Fears of supply shortages and strong demand for agricultural products will continue to add upward pressure further down the road. Our panel of analysts forecasts a 18.5% annual increase in Q4 2018. Agriculture prices are seen expanding a robust 5.2% year-on-year in Q4 2019.

## Agricultural Historical Price Data

	2012	2013	2014	2015	2016
Corn	698.6	598.06	397.77	361.72	343.92
Soybeans	1454.53	1419.78	1250.72	936.31	968.21
Wheat	749.42	699.94	578.22	481.76	431.09
Cocoa	2390.93	2441.23	3064.48	3136.98	2893.27
Coffee	175.1	122.21	171.43	132.27	137.88
Cotton	74.43	79.63	73.38	61.47	64.13
Sugar	21.54	17.69	16.99	13.43	18.08
Wool	1088.33	1071.7	1047.33	1198.43	1293.69

Gold prices benefited from rising geopolitical tensions including trade disputes between China and the United States and fears that Trump would reinstate economic sanctions against Iran. That said, strong economic growth and rising inflation expectations in the United States sparked concerns that the Federal Reserve would accelerate its tightening

cycle, exerting downward pressure on gold prices. Along with heightened geopolitical tensions, silver prices were also supported by strong industrial usage of the commodity. Palladium and platinum prices both ended lower again in April. Palladium prices had been volatile in recent weeks on speculation that the U.S. would enact additional sanctions on Russia, the world's largest supplier of palladium. In turn, platinum prices had been negatively affected by demand shifting away from diesel-run cars to gasoline or electric-powered vehicles.

Increasing political instability globally will continue to put upward pressure on precious metal prices, especially gold and silver. Moreover, industrial demand for palladium, platinum and silver is expected to remain strong this year due to robust global economic activity. Analysts polled for this month's survey see precious metal prices for Q4 2018 rising 3.2% from the same quarter in 2017. The panel sees precious metal prices increasing 3.2% year-on-year again in Q4 2019.

## Precious Metals Historical Price Data

	2012	2013	2014	2015	2016
Gold	1668.69	1410.71	1265.83	1159.8	1248.54
Silver	31.14	23.82	19.07	15.71	17.15
Palladium	643.47	725	803.44	690.55	614.03
Platinum	1549.48	1485.41	1383.61	1051.85	987.37

In this month's survey, analysts polled by Focus Economics expected commodity prices to rise 5.0% in Q4 2018 from the same period in 2017, mainly due to higher energy and agricultural prices.

Further down the road, analysts predict that lower energy prices, especially for oil, will drive growth in global commodity prices to slow. The Consensus view among commodities experts is that commodity prices will increase 2.6% in annual terms in Q4 2019.

*Goutam Mukherjee*

**Dr. Goutam Mukherjee**  
Hony. Editor, JILTA

## *From the desk of* General Secretary



### **Condolence Meeting on 3<sup>rd</sup> May, 2018**

A Condolence Meeting was arranged jointly by ILTA, GCELT and Alumni Association of GCELT at 06.30 PM on Thursday the 3<sup>rd</sup> May, 2018 at the Conference Room of GCELT to pay respect to the departed souls of Rathin Das and Bimalendu Majumdar who left for their heavenly abodes on 12<sup>th</sup> March and 28<sup>th</sup> March 2018 respectively. Both were life members of ILTA.

As per request of Mr. Asit Baran Kanungo, Vice President, ILTA one minute's silence was observed to pay respect to the departed souls.

Above was followed by garlanding of the portrait of the deceased members by the following :-

Susanta Mallick, Asit Baran Kanungo, Kaushik Bhuiyan, Arijit Chakraborty, Alokesh Roy, Shiladitya Debchoudhury, Tarak Saha, Subir Dutta, Analdyuti Bhattacharjee, Keshab Ch. Mondal, Bibhas Ch. Jana, Amit Mondal, Indranil Bhattacharya, Rajkumar Dey, Santosh Mukherjee and Jiban Dasgupta.

Those who spoke a few words in respect of either or both the deceased members remembering their personal association includes the following:

Jiban Dasgupta, Asit Baran Kanungo, Susanta Mallick, Alokesh Roy, Tarak Saha and Shiladitya Debchoudhury.

Sri Rajat Das, elder son of late Rathin Das who attended the function spoke at length about his late father elaborating on his activities and philosophies particularly during the last 4/5 years of his life.

### **68<sup>th</sup> Foundation Day Celebration**

Above will be organized on Tuesday 14<sup>th</sup> August, 2018 at Freya Design Studio, ILPA Leather Goods Park, Calcutta Leather Complex, Bantala. Registration from 10.00 Hrs. Lunch will be served on the occasion.

Individual Invitation Cards with more details will be posted in due course.

Members wishing to avail transport arranged by ILTA for to & from journey from ILTA office to Bantala must register their requests over telephone no. 2441-3429 / 2441-3459 latest by 08.00 PM on Thursday 9<sup>th</sup> August, 2018. The transport will leave ILTA Office at 08.45 AM on the day of the programme.

**You are requested to :-**

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- b) Kindly mention your **Membership No. (If any)** against your each and every communication, so that we can locate you easily in our record.



**(Susanta Mallick)**  
General Secretary

ILTA

**Executive Committee Members meet every Thursday  
at 18-30 hrs. at ILTA Office.  
Members willing to participate are most welcome.**



# Rawhide To Fashion: Sustainable Development Inside Leather Production In West Bengal

Dibyendu Bikash Datta<sup>1\*</sup> and Sanjib Kumar Das<sup>2</sup>

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## Abstract....

The worldwide manufacturing activities of leather and leather goods had moved from developed countries to developing countries, where lower labor and production costs are a comparative benefit. Throughout the years the Indian leather industry has experienced a radical change from being a mere raw materials exporter to a value-added leather product exporter. India has made modest moves to establish itself as an important producer of leather and leather goods but several important technological and ecological issues that have arisen are of concern. These require basic consideration on part of the government and industry if India is to depend on leather production as a major support for its sustainable development. The concerns include the availability of quality raw hides and skins, modernizing existing plants, intensification of leather and leather goods research and development and managing pollution caused by the manufacture and tanning of leather. This article briefly examines the issues and provides some recommendations for how these technological and environmental concerns can be incorporated into an overall policy of sustainable leather production.

**Keywords:** sustainability; environmental; leather; degradation; tanning; hazardous waste.

## 1. Introduction

The leather is one of the most widely traded commodities globally. The growth in demand for leather is driven by the fashion industry, especially footwear. Apart from this, furniture and interior design industries, as well as the automotive industry also demand leather. The leather industry has a place of prominence in the Indian economy in view of its massive potential for employment, growth, and exports. The Indian leather industry consisted of around 42000 small-scale industry units, accounting for over 75% of total manufactures and employing over 2.5 million workforces in which 30% are women [1] and a large part (nearly 60 – 65%) of the production is in the small/micro sector [2]. This shows that how many

lives are dependent on this sector in terms of earnings. Leather and production of leather products are mainly centered in southern, northern and eastern India. The biggest leather exporter in the country is Tamil Nadu with a share of 43% of the total country's share whereas other states which have tanning industry are West Bengal, Uttar Pradesh, Punjab, Karnataka, Andhra Pradesh, Haryana, and Delhi [3].

In the last few years, the industry has not shown encouraging growth as it has recorded an approximate average growth of 6% over last 12 years with leather and of 4.6% over the last 10 years in leather products. Growth is almost negligible if we talk in terms of inflation. Among the Indian leather exports, products made from goat contributed to 60%, from cow 20%, from Buffalo 15%, from sheep 3%, and from others 2% [1].

Indian livestock population consists of 21.23% buffaloes, 37.28% cattle, 26.40% goats and remaining 12.71% sheep, pigs and others whereas the world's livestock population is 29.87% cattle, 19.04% goats, 51.09% pigs and others [4]. Bovine hide production has, over several decades, expanded in the developing countries while it contracted in the developed countries. Generally, 50% of bovine hides and approximately 40% of sheep and goat skins are processed into footwear, while remaining is used for the production of garments, furniture, and travel goods.

The consumption of leather products primarily depends upon the price level, income and consumer preferences [5] and these factors reflect more because of the rapidly changing ownership during recent years. India is endowed with 12.93% of the world's leather production of hides/skins. The country ranks second in terms of footwear and leather garments production in the world and accounts for 9.57% of the world's footwear production [6].

## Export Highlights of Indian Leather Industry

India's leather industry has grown drastically, transforming from a mere

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raw material supplier to a value-added product exporter. There has been increasing emphasis on its planned development, aimed at optimum utilization of available raw materials for maximizing the returns, particularly from exports. Total leather and leather good exports from India stood at INR 9.46 billion during April-June 2017 as against INR 9.53 billion in the corresponding quarter of last year [7]. During April-June 2017, the major markets for Indian leather products were US (14.66%), Germany (11.22%), UK (10.05%), Italy (7.03%), Spain (4.63%), France (5.15%), Hong Kong (4.52%), UAE (5.04%), China (3.09%), Netherlands (3.05%), Poland (2.23%) and Vietnam (1.88 %). At 47.54%, footwear (leather and non-leather) and footwear components accounted for the lion's share of leather exports in April-June 2017, followed by leather goods and accessories with 23.34% share, finished leather with 16.77% share, leather garments with 9.79% share and saddlery and harness with 2.56% share. Per capita, footwear consumption in India is expected to increase up to four pairs, while domestic footwear consumption is expected to reach up to five billion pairs by 2020 [8].

## Leather Industry in West Bengal

West Bengal is one of the country's leading states for export of finished leather goods and accounts for almost 25% of the country's leather exports. There are 538 manufacturing industries in the state producing leather goods [9]. Throughout the state, the industry generates almost 10 lakh jobs. According to the Council for Leather Exports (CLE), the turnover of the leather industry in the state is around INR 13,000 crore and the quantum of exports of leather and allied products is INR 5,500 crore. As much as 15% of India's total leather export is from Bengal. The Government of West Bengal has set up state-of-the-art integrated leather complex on the eastern fringe of Kolkata spreading over 1100 acres, where a large number of tanneries located earlier within the city precincts have shifted and new investment interest has been generated. The leading players in the sector include Bata India Ltd, one of the leading and the most popular shoe brands in the country selling around 60 million shoes and exports around 3 million footwear each year. Khadim Group is another prominent player in the footwear industry in West Bengal and has 183 franchised outlets across the country. The eastern region leather sector hopes to make a major contribution to the target of INR 1000 billion set for 2020 thereby fulfilling national and state priorities and increasing its share as a major foreign exchange earning sector [10].

## 2. Purpose of the Study

Instead of having considerable heterogeneity, the Indian leather industry is striving to achieve its best. It is one of the most unnoticed sectors and very few researchers have been conducted in this area till now. Because of the heterogeneity existing in this sector and also due to the fact that sustainability has become an unavoidable factor for any industry nowadays, it becomes essential to analyze the several issues and factors regarding sustainability that can facilitate as well as slow up the attainment

of sustainability in the Indian leather industry. The present research study aims to analyze the sustainability strategies of West Bengal in the Indian leather industry to gain insights into their efforts and progress in generating economic, social and environmental values.

## 3. Literature Review

The three major external factor; Environmental Regulation, Quality Standard and Stiff Foreign Competitions are substantially influencing the export prospects of the firms of Indian leather industry [11]. Leather industry has significant economic influence; however, it suffers from the negative impact due to environmental pollution caused by tannery wastes produced during leather processing processes. Indian leather is associated with poor quality in the international market. The better the quality of rawhide, chemicals, and machinery, the better the quality of the finished leather. Only in the higher quality product segment, there is potential for getting a better price for "environment-friendly" leather. The problem with high-quality products is that they require high expenditures in all parts of the process.

India's ability to produce and export environmentally friendly leather goods depends on a number of factors. These include the cost and availability of environmentally friendly technologies and production methods, availability of resources to adopt these technologies and competency of the institutions responsible for monitoring and enforcing environmental standards. The fact that many of them cannot afford to use the higher quality chemicals and the newer machines further force many Indian tanneries into the low-quality trap for standardized products where price competition is stiff.

The leather industry has been identified closely with the generation of air, liquid, and solid waste pollution. This has created a negative public image and therefore tanneries are expected to invest in effluent treatment plants as well as in other forms of waste disposal. In advanced countries, in order to meet the regulations set for pollution control, the industry is forced to invest heavily in pollution abatement.

Socio-economical specificity and environmental impact of various leather processing activity are of considerable interest in supporting the sector towards sustainable development. Based on this observation and having as objective, learning on sustainable development of the Indian leather industry seem important for understanding.

### 3.1. Sustainable Development

The term 'sustainable development' first appeared in an official document signed by thirty-three African countries in 1969, under the auspices of the International Union for Conservation of Nature (IUCN). In the same year, the Environmental Protection Agency was set up in the United States whose guidelines have had a huge impact on developing theories

and practice in global environmental policies. The law that constituted the NEPA (the National Environmental Policy Act from 1969), defined sustainable development as: 'economic development that may have benefits for current and future generations without harming the planet's resources or biological organisms'. In 1798, Thomas Malthus published his 'An Essay on the Principle of Population' where he set out his famous 'theory of population'. This theory states that the population tends to grow quicker than resources. This is true today in an overpopulated world where resources are exploited even further. The planet has no time to regenerate [12].

These two aspects are what characterized the important 'Brundtland Report' produced by a commission led by Dr. Gro Harlem Brundtland, published in 1987. This document was also referred to as our Common Future, elaborated by several countries for the United Nations in order to warn about the negative environmental consequences of economic development and globalization, which tried to find possible solutions to the problems caused by industrialization and population growth. Sustainability is the development that satisfies the needs of the present without compromising the capacity of future generations, guaranteeing the balance between economic growth, care for the environment and social well-being [13].

The report defines sustainable development as meeting 'the needs of the present without compromising the ability of future generations to meet their own needs'. As we can see, since 1798 to present, solutions have been sought for the same problems, which are ever more serious and clear. For the first time, a concept had been established to relate humanity's development with the need to manage resources in the best way possible. This meant a very important change in terms of sustainability, mainly ecological. It also represented something extremely important - framing it in the economic and social context of human development.

For the first time, we seem to have understood that the world is not as limitless as we thought. With the introduction on the concept of sustainability and sustainable development that once and for all, we have understood the need for global approaches and solutions; all problems are interconnected and they must be dealt globally since the problems themselves are global. Natural resources are running out, pollution knows no borders, there is a palpable and irreversible loss of biodiversity and there are proven effects of climate change. If we do not undertake a rapid change towards more sustainable development, there could be catastrophic consequences in the not-too-distant future. Today, sustainability tries to secure present needs without compromising the future generations. It is an integration of three essential pillars: environmental, social, and economic value forms (Figure 1).

i) Environmental value forms: At the environmental level, sustainability prevents nature from being used as an inexhaustible source of resources and ensures its protection and rational use. Aspects such as environmental conservation, investment in renewable energies, saving water, supporting

sustainable mobility, and innovation in sustainable construction and architecture, contribute to achieving this environmental sustainability on several fronts.

ii) Social value forms : At the social level, sustainability can foster the development of people, communities, and cultures to help achieve a reasonable and fairly-distributed quality of life, healthcare, and education across the globe. The fight for gender equality, especially in developing countries, is another aspect which in coming years will form the basis of social sustainability.

iii) Economic value forms : Sustainability focuses on equal economic growth, that generates wealth for all, without harming the environment. Investment and an equal distribution of the economic resources will strengthen the other pillars of sustainability for a complete development.

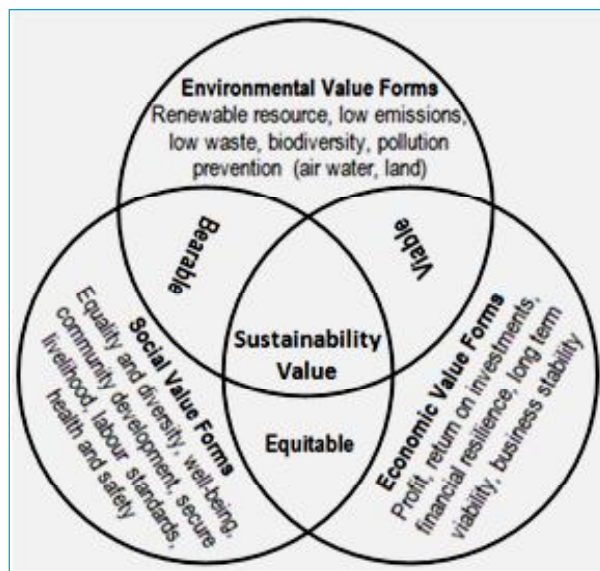


Figure 1: The three pillars of sustainability- economic, social, and environmental value forms

## 3.2. The Sustainability Footprint – An Integral Approach

To achieve a sustainable footprint in the leather industry, it is essential to take a close look at the role of ecology in the value chain of leather. There are four key elements in the production of leather that should be grouped together to provide a sustainable footprint concept, viz. carbon, water, resources and toxicological footprint [14, 15].

i) Carbon Footprinting has appeared as a strong and popular indicator of the greenhouse gas intensity of any activity or organization. It is estimated that alternative solutions in tanning could reduce carbon footprint by as much as 15%.

ii) The Water Footprint will continue to grow in importance in the coming years because the efficient use of water is one of the key challenges of this century. The pressure is on innovation for new technologies and

chemicals in order to provide more water efficient processes for the production of leather.

iii) The Resource Footprint covers many aspects as it touches on different resources employed in the leather production. The raw stock is the single most important and valuable resource in the production of leather. Every attempt to increase the value added by upgrading low-quality leather, eliminating waste in the cutting of patterns, reducing waste products, or lowering the costs of tanneries results in an immediate benefit. The resource footprint also covers the efficient use of chemicals based on regenerative raw materials and optimized production processes in tanneries, including, for example, lower energy consumption.

iv) The Toxicological Footprint addresses the use of harmful substances in the production of leather, the restricted substance list, the management and handling of harmful substances, legal requirements, the demands of specific industries/ brands, as well as product and process safety. The aim of the toxicological footprint is to minimise the levels of harmful substances used in the production of leather and ideally to eliminate them. This includes ZDHC (Zero Discharge of Hazardous Chemicals) campaign and the new VOC (Volatile Organic Compounds) regulations.

### 3.3. Adoption of Waste to Wealth Approach

Regardless of the leather used as by-products from the production of meat, the need is to evaluate if there is an alternative use for animal skin generated from this industrial production. Animal skin which does not go into the leather production ends up in incineration or landfill, which reduces the added value of the overall process. Animal skin can be processed into gelatin or collagen products, but not all of the waste that is generated by the livestock industry can be processed into valuable products. Theoretically, it would also be possible to produce biogas, but efficiencies are low and the needed infrastructure is missing.

Hides should be marketed in order to contribute to the overall added value in production. If this were not the case, meat producers would have to pay for the disposal of the skin, and this would increase the overall cost of meat production.

Animal skin is an organic material and, theoretically, 99% of it can be processed into useful products. The products that can be made from animal skin mainly include leather, dog chews, sausage skins and cosmetic products. The animal skin has to be seen as a sustainable material, and for this reason, the leather made from it should be viewed as being just as sustainable. The focus then has to be on the process of transforming the animal skin into the leather product and achieving this in a sustainable way.

### 3.4. Creating a Favourable Business Environment

Some of the key challenges faced by the Indian leather industry include poor ranking in the ease of doing business, quality adherence and delivery compliance, lack of innovation and technology focus on footwear

components, absence of large-scale investments and environmental issues. The power problems faced by the companies due to the shortage of power supply from state utilities also adds to the challenge. It is perhaps because of these reasons that India has failed to draw interest from foreign investors in the leather industry. Foreign Direct Investment (FDI) into the Indian leather sector was just INR 1000 crore during the 15 year period 2000 to 2015. Foreign capital has played a key role in the Vietnamese industry comprising of footwear and leather products such as bags.

The State and Central Government in India need to introduce investor-friendly policies. Foreign capital will not only create job opportunities in the Indian leather sector, it will over time also bring in skills and technical know-how which can benefit the entire domestic industry. Foreign capital can step in as the engine of growth. The inflow of foreign investment in the Indian leather industry, while aided by liberal FDI policies of the Government of India, also faces competition from small low-cost countries in South East Asia. Thus, quality of infrastructure available in the country, as well as innovative investment policies will help to differentiate India as a manufacturing location for investors. Some of the key measures required are:

- Introducing special package for the international companies to set-up units in India, and even possibly help in developing new leather clusters.
- A single window clearance for land acquisition and all statutory compliance for all sectors, including leather.
- Various leather associations in India along with the CLE and the Government should organize road shows in target markets.
- Engage actively with US Organizations like FDRA (Footwear Distributors and Retailers of America) and large corporations to include India as a strategic sourcing partner.

### 3.5. Moving towards Verified Certifications

A World Bank's Enterprise Survey of leather shows India (only 7% of the firms surveyed have quality accreditations) has performed poorly in comparison to Vietnam (35% of the firms surveyed have quality accreditations) and Pakistan (28% of the firms surveyed have quality accreditations), both of which have more number of firms having accreditations such as ISO (International Organization for Standardization), NEQS (National Environmental Quality Standards), etc. Most of the firms across the globe including India have limited knowledge and awareness of the quality standards that are to be followed to be competitive in the international markets. Further, there are many quality standards being enforced by European markets like REACH (Regulation on Registration, Evaluation, Authorisation, and Restriction of Chemicals) for chemicals used in the leather tanning process, which need to be

followed by companies in order to supply to these markets. The manufacturers have to successfully emphasize the environmental soundness of the product in the information to the buyers since major attention is being paid to the increasing role of the environmental regulations. At the same time, because the tanning industry needs natural resources, chemical products, and energy, environmental sustainability becomes a fundamental aspect of leather production. Companies strongly committed to ecological principles should be a norm in the industry in order to ensure long-term economic, environmental and social sustainability. The tanneries' commitment to environmental sustainability can be confirmed by some important international product certifications assumed on a voluntary basis.

### 3.6. Sustainability in the Leather Supply Chain

In the research report 'Sustainability in the leather supply chain', Ernst & Young assesses the sustainability issues in the leather supply chain with a focus on the effects/risks and relevant trade flows for the Dutch leather market, however it provides a comprehensive set of data relevant to all companies seeking to enhance their knowledge of the global leather supply chain.

The research consists of three parts. Part one addresses the main trade flows and trends in the leather supply chain. Part two describes the main processes used in the different phases of the supply chain and outlines the global sustainability issues that can occur. Part three identifies which of the global sustainability issues occur in ten selected countries: India, Pakistan, Bangladesh, China, Vietnam, Indonesia, Thailand, Brazil, Uruguay, and Egypt.

The report provides a good overview of the global leather supply chain and clearly identifies issues that companies dealing in leather should be aware of. It is evident that internationally more attention has been given to the environmental issues of leather production both from organizations and governments. Even though the report identifies the social human right issues, all the good practice cases address environmental issues. The findings of the local research are presented in factsheets which are a good point of departure for companies that wish to assess the risk they might encounter when sourcing from countries in these countries.

The tanning industry is an important segment of United Nations Industrial Development Organization (UNIDO) technical assistance in promoting sustainable development. In the late 90s a number of studies dealing with various cleaner tanning methods, including the widely used paper The Scope for decreasing pollution load in leather processing, were prepared to support different forms of training activities (shop-floor demonstrations, pilot plants, national and regional workshops etc.).

In the meantime a lot of practical experience has been gathered, some new tanning technologies developed and implemented and some new challenges have also emerged. Since proper training is an essential

precondition for modern, sustainable leather processing, it is felt that a single, comprehensive paper on cleaner leather technologies, rounding up and updating earlier papers, could be of great help in training and capacity building activities.

In addition to traditional cleaner technologies topics such as pollution sources/loads, water management, hair-save liming, low or ammonia-free deliming, chrome management, low organic solvents finishing, solid waste management etc., this comprehensive study addresses virtually all issues relevant for performance and successful tanning operations: tannery Environmental Management Systems (EMS) Corporate Social Responsibility (CSR), Restricted Substances Lists (RSL), Energy Considerations, Mechanical Operations, Occupational Safety and Health at workplace (OSH), Carbon Footprint (CF) and Life Cycle Analysis (LCA) which are so often the subject of extensive debates in various international fora and media [16].

## 4. Discussions

### 4.1. Evolution of Leather Industry in West Bengal

The history of the leather industry in West Bengal dates back to 1910s when an enterprising gentleman named Shri B. M. Das, a graduate in Chemistry, got involved himself in the tanning process of leather. Soon he established the Bengal Tanning Industries at Kolkata in the year 1910. The Britishers were quick to follow the trend and imported machinery from England to start National Tanning Company Limited and started manufacturing finished leather. Prior to this, mainly raw hides and skins were exported from Kolkata to countries like Italy, Spain etc. Establishment of these two leather processing units marked the beginning of export of finished leather from Kolkata. In the year 1940, before independence, some Chinese population migrated to the city and got involved in tanning and shoe manufacturing job. Soon, they set up their own tanneries in the city. They mostly started operating from Tangra. Gradually the activity spread and more and more local persons started establishing tanneries and got into the business of making finished leather [17].

During 1972-73, Government of India set up the Sitaramaya Committee which emphasized on the significance of exporting value-added leather products instead of wet blue and semi-finished leather. Implementation of the recommendations of this Committee has literally marked a revolution and emergence of the Kolkata leather cluster. A large number of leather goods manufacturing units was established during this time. One of the major export markets for value-added leather products from India at that time was former Union of Soviet Socialist Republics (USSR) and after it broke up, other European countries emerged as the main market for the Indian producers [18].

Another important milestone in the journey of the leather footwear industry in Kolkata was the establishment of the Czech company, Bata Limited. They started manufacturing shoes from Batanagar in 1936 and



subsequently, Batanagar and Kolkata became the hub of all footwear activities. Gradually the industry shifted to other parts of the country like Kanpur, Delhi, Agra, and Chennai.

The Calcutta Leather Complex (CLC) as set up by the Government of West Bengal on the eastern fringe of Kolkata with the objective of making it a hub of leather and leather products manufacturing units. All the tanneries earlier operating in Kolkata shifted their manufacturing facility in the CLC.

The evolution of artistic heritage leather craft of Santiniketan dates back to the period of Shri Rabindranath Tagore, a Noble Laureate poet, novelist, noted philosopher, humanist, and a social reformer. Shri Tagore founded the Visva-Bharati University in Santiniketan. With his influence, his son Rathindranath Tagore and daughter-in-law Protima Devi devoted their time for rural development work. Along with Andrew Karpale, they initiated a craft wing in this University. Pally Sangathan Vibhag of Visva-Bharati University played a major role in fostering the creation of leather handicrafts units here. The renowned artist Shri Nandalal Bose also took initiative to develop the leather crafts at Santiniketan. Shilpa Sadhana, a local organization, also supported the development of the local economy by promoting innovative handicrafts made by local crafts-persons. In the year 1923, Shri Sushen Mukhopadhyay founded Amar Kutir Society. Gradually, it came under the limelight for making quality leather products and other handicrafts items. As a result, a distinctive art deco-style of Santiniketan evolved integrating Indian taste, creativity, traditional techniques and modern appeal [19].

## 4.2. Present Status and Sustainability Challenges

The focal supply chain consists of breeders, slaughterhouses, tannery, and manufacturers. They all have social, economic and environmental challenges providing employment to 300,000 people in the state's leather industry.

When the Hon'ble Supreme Court of India directed the tanneries of Kolkata be located beyond the city limits so as to reduce pollution in the residential areas, the creation of the Leather Complex became imperative. The Government of West Bengal conceived the CLC project in the early 90s of the last century. It was planned as an integrated complex, housing all activities relating to the leather industry in a modern and environment-friendly manner. The CLC is a unique case of relocation of a polluting industry in India. The tanneries in the complex form a major section of activities.

The government has already taken various steps to develop the CLC in Bantala in the district of South 24 Parganas about 16 kilometers from Kolkata on the eastern side of the Eastern Metropolitan Bypass. During 1997-2003 the State Government acquired the plot at a cost of Rs.18 crore with an initial project cost of Rs.158 crore to develop the infrastructure of CLC. The CLC was finally inaugurated on June 30,

2005. The leather complex is spread across 1,100 acres; 970 acres are available for leather activity, of which 202 acres have been dedicated to tanneries.

A Technical Training and Service Centre recently built at an investment of Rs 14 crore having installed Italian machinery worth INR 13.3 crore is ready for operations. The government has invested Rs 3 crore for intensive plantation over 50 hectares with major and arterial roads being repaired. The leather complex has a tannery solid waste co-digestion-cum-bio gas generation unit being piloted by the Central Leather Research Institute (CLRI). A new industrial cooperative representing 300 micro leather units has been formed for settlement in the complex as micro, small and medium enterprises cluster.

The underground water availability for extraction had been assessed at 35 million liters' a day. The Indian Leather Products Association (ILPA) has taken the initiative to set up a common sewerage treatment plant for leather goods manufacturing units.

All processed and domestic wastewater from the tanneries are treated in a Common Effluent Treatment Plant (CETP). Common effluent treatment plant (CETP) not only helps the industries in easier control of pollution, but also act as a step towards cleaner environment (Figure 2). The complex has four CETPs with a total capacity of 20 million litres a day. The treated effluent is then discharged into the Karaidanga Stormwater flow. It has seven pumping stations, a common chrome recovery plant, illuminated internal roads, a footwear design, and development institute, four power substations and a facility to provide drinking water. The chromium bearing effluent is separately treated and chromium is recovered for reuse in the process. The government had proposed to create and develop more infrastructure under the mega leather cluster of Indian Leather Development Programme [20].

The land use pattern in CLC is as follows:

- Tanneries: 202 acres
- Leather goods units/ footwear units/ manufacturing units: 72.57 acres
- Raw material Mart, Chemical units, By- Product Units: 61.30 acres
- Public Utility Area viz. Hospital, Housing, School etc.: 67.17 acres
- Special Economic Zone (SEZ): 110 acres

CLC promises to be the greatest example of synthesis in objectively uniting the compelling needs of development - (growth-progress-employment-equitable distribution and sharing graded benefits all round) on one hand, and creation of environment-friendly and pollution free

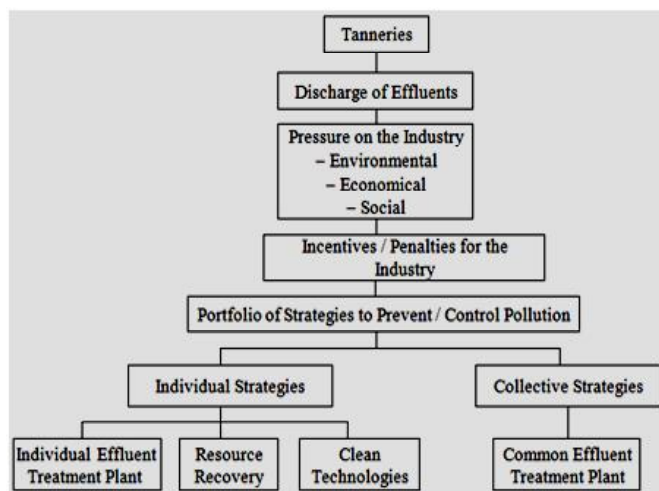


Figure 2: CETP as an institution

#### 4.3. The Need for Relocation

Public interest petition (No/3727/1985, M.C Mehta vs. Union of India and others) was filed before the Supreme Court of India praying for the closure of the existing tanneries of Kolkata unless effective steps were taken for control of pollution to an acceptable level. Because of the dearth of space for establishment of the waste-treatment plant in the old tannery complex, the Supreme Court of India instructed the Government of West Bengal in 1996 to close down the tanneries in Tangra, Tiljala and Topsia area and to shift them away from the city. Consequently, the CLC was set up at Bantala with the following unique features:

- (i) The site fulfilled the basic requirements of having adequate water supply and appropriate water bodies for carrying treated wastewater for disposal,
- (ii) Availability of 1000-1200 acres of land for locating the various installations,
- (iii) Proximity to existing tannery clusters,
- (iv) A suitable site for the location of CETP with a gradient of land necessary for gravity discharge of effluents from user tanneries.

The tannery clusters of Tangra, Tiljala, and Topsia had come into existence at the time when the city of Kolkata was well away from them and there were few regulations to control environmental and ecological quality along with conservation of resources including water, land, and air. In the absence of such legal instruments, tanneries and other industries sprang up haphazardly without any consideration for environmental protection. During the last few decades, there has been several fold increase in population and the city expanded and encompassed the tanneries and other industries located in these areas.

The land and water resources at Tangra, Tiljala, and Topsia were facing severe environmental threats from the tanning activity which used a huge amount of water from both surface and groundwater sources. The

water supply to the tanneries was partly met by the Corporation of Kolkata and partly by the bore wells located within the tanneries. Considering the location of the tanneries, the modes of disposal of tannery effluent and solid waste to the surrounding land and nearby water bodies, there were all-pervasive stinking odors all over these clusters. The hazardous waste disposal led to health problems for the population living here. An assessment of the existing pollution load under normal circumstances was made by a team of scientists of CLRI at the outlets of tanneries and sources of pollution. The results showed that the pollution level was much beyond the tolerable limits. Discharge of untreated effluents in open drains and dumping of solid wastes in surrounding areas resulted in extremely unhygienic conditions. It was perceived from the beginning that individual effluent treatment plants for each tannery will be too costly as the production units were small-scale ones with no financial and technological strength. Moreover, there was no space available at the then operating area for laying effluent pipelines needed for a CETP for all tanneries or even group of tanneries. The unplanned haphazard development of the city had resulted in tanneries being interspersed with residential and commercial premises. However, besides relocating the tanneries from the densely populated areas of East Kolkata there was a more comprehensive plan to develop the area as an Integrated Leather Hub which was expected to house not only tanneries but also all units of leather making and a plan to set up a Special Economic Zone.

#### 4.4. Analysis of Business Operation

The major conversion process of semi-finished as well as finished leather is through raw hides and skin and the chemical used for the process. It comprises of series of stages for getting the final product. It is obvious that value addition has actually happened here; hence more thrust has to be given for improvement of the semi-finished or finished products. There are 224 tanneries in CLC and 43 tanneries out of them, are exporting finished leather [22].

i) **Raw Material:** Rawhides are the basic raw material for the tanneries. They also use different chemicals to process leather. The traders of raw hides are basically operating in Rajabazar and Colootala. These traders procure hides from different places within the State and also source it from Bihar and Uttar Pradesh. On an average, there is approximately 10-12% wastage in finished leather due to spots, marks, and damages caused by improper handling of the animal and rawhides. The traders of raw hides are generally not that organized. It has been seen that the infrastructure is inadequate for dead animal collection. In many cases there is the rough handling of dead animals, hence every chance of damaging of skin and devaluation of output. However, leather imported from other countries has low wastage which compensates for their higher price and transportation cost. The suppliers of chemicals are basically branded manufacturers and they operate in an organized manner. They have their offices, warehouses at Kolkata and Bantala. Many multinational chemical suppliers operating here.

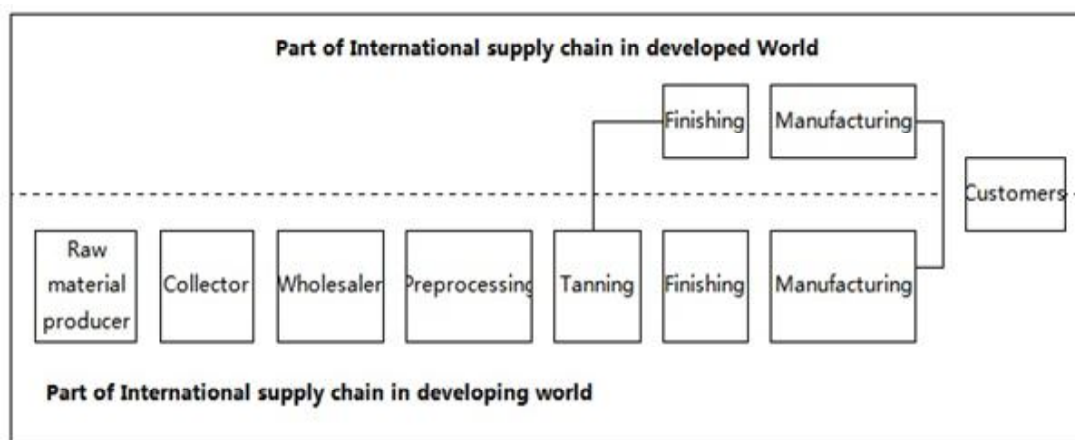


Figure 3: Leather industry supply chain

a) Infrastructure: The manufacturing of leather goods are distributed with micro, small, medium and household units. The infrastructure conditions in the manufacturing centres are not adequate and hygienic. The units located at Kasba Industrial is comparably having better infrastructure. The presences of micro-level units are at Topsia, Tangra, Kasba, Barasat, and Sodepur. CLC is having Leather Park for tanneries and leather goods. A total of 438 relocating tanneries have received leasehold land at the CLC and 138 new tanneries have purchased land directly from the Build-Operate-Transfer party at market rate. Out of these, 365 relocating and 98 new tanneries have received No Objection Certificate (NOC) for Consent to Establish from West Bengal Pollution Control Board (WBPCB). Out of the 365 relocating tanneries, 222 relocating tanneries have received NOC for Consent to Operate. 71 out of 98 new tanneries have also received NOC for Consent to Operate. The CLC project is deemed to be the largest Integrated Leather Complex in the world. Many of the leather product manufacturing units have shifted and a few are yet to relocate.

b) Tanners and tannery: The Collins Dictionary defines a tanner as one who 'converts the hides into leather using various tanning agents, including vegetable tannins, chromium salts, fish oils, or formaldehyde'. It is the first stage of the leather making process where with the use of chemicals, raw hides and skins are converted into semi-finished and finished leather. This process involves various stages and there is a value addition to the product at every stage of operation. The sub-processes have some activities as soaking, tanning, and dyeing with high environmental impacts. For instance, tanning has several environmental impacts:

- Salt: 60–70% of which is used for preservation gets into the wastewater [23].
- Energy use, mainly through transport: greatly increases the product carbon footprint for leather. Energy savings could be achieved through a concentration of actors in the leather supply chain [24].

- Chemicals, including chromium III and VI, are essential to tanning. Alternatives such as vegetables, synthetic material or aldehyde cannot fully replace chromium. Other required chemicals include aluminium, which can be toxic to fish and plants [25,26].
- Water use.

The infrastructure facilities are still developing in this Complex. It is important to mention here that tanning process is basically water intensive and easy availability of water is a major advantage for the industry located here at Bantala. Tanneries generally supply finished leather to the product manufacturing units and some of them also export finished leather. There are tanneries which process leather upto the 'wet blue' stage and many tanneries process 'wet blue' leather into finished leather. Some of the large leather goods manufacturing firms also have their own tanneries. A few of the tanneries are also available on rent where one can process leather by taking it on a rental basis. Tanning is generally considered to be a polluting industry and a couple of developed countries have imposed restrictions on this sub-sector. As a result of this, many tanneries have ceased operating in those countries and this has facilitated setting up of new tanneries in countries like Indonesia, Thailand, India, China, and Bangladesh. This exodus has led to increased opportunities for the developing countries and at the same time, there is fierce competition amongst these countries to capture the regional and global market so far finished leather is concerned. The CETP operating here is basically managed by the Calcutta Leather Complex Tanners' Association (CLCTA). The technical assistance is provided by the CLRI. Individual tanneries also have pre-treatment facilities.

c) Design Studio: FREYA– a unit of ILPA Infrastructure Development Foundation, set up at the initiative of the National Leather development Programme (a UNDP-assisted unit of the Government of India) in 1997, Freya is the first of its kind Leather Goods Design Studio in Asia. Freya is a not for profit centre operation without Government funding. The



modern Design Studio with a Common Facility Centre provides global design capabilities and design solutions to the manufacturers that caters to the demands of the domestic and international market. It provides a broad spectrum of services to micro, small and medium scale leather goods manufacturers.

ii) Technology: The tanning process is divided into three stages namely pre-tanning, tanning and post-tanning. Pre-tanning and tanning operations involve chemical processes while post-tanning operation mostly involves mechanical operations for finishing of leather.

From raw hides to finished leather there exist three gross stages of leather processing. The second stage includes conversion of raw hides into leather. This tanning stage is the most polluting stage and 80% of industry pollution occurs at this stage. However, actual pollution loads depend upon the levels of environmental standard and the extent of compliance attached with it. The third stage (post- tanning) is a less polluting, labour intensive and high value-added segment.

a) Pre-tanning Stage: First stage (pre-tanning stage) involves production of hides and skins which depends on domestic stock of bovine animals, sheep, and goats. There are six subsequent stages, e.g., desalting, soaking, liming, deliming, bating and pickling under the Pre-tanning Stage. In desalting stage, hides are cured by salt to remove excess water from them. In soaking, the hides are soaked in clean water to remove salt and increase of moisture enable the skin for further treatment. After soaking, liming is done, which primarily removes the hairs, nails and other keratinous matters. After liming, deliming is done; where the pH factor of the collagens is brought down to a lower level so that enzymes can act on it.

Depending on the end use of the leather, hides may be treated with enzymes to soften them in a process called "baiting". Then hides and skins are treated with a mixture of common salt and sulphuric acid so that mineral tanning can be done. This stage is known as pickling. The pollutants are different in each stage of processing (Table 1).

Table 1: Pre-Tanning Stage and Pollutants

Pre-tanning Stages of Production	Pollutants
Salting & Soaking	Salt, hide surface impurities, dirt, globular protein, substances dissolved in water.
Liming	Suspended solids, sulphides, nitrogenous metals.
Deliming & Baiting	Calcium salt, sulphides residuals, degraded proteins and residuals, proteolytic enzymatic agents.
Pickling	Chrome, chloride, and sulphates.

Source: Central Pollution Control Board.

b) Tanning Stage: This stage is known as the highest pollution creating zone. The pollution load from tanning activity has been estimated to be 50% more in weight than that of the hides processed [27]. The tanning in India was done mostly through mineral tanning

methods. In mineral tanning, chromium (chromium sulphate) is used after pickling. Once the desired level of penetration of chrome into the substance is achieved, the pH of the material is raised again to facilitate the process, known as "basification". In chromium tanning, all the chemicals are water soluble but not all are absorbed by hide. Thus the effluent contains a lot of chrome and other fixing chemicals. Apart from that, hexavalent form of chemical (chrome VI) is known to be carcinogenic. Even though most tanneries use chrome III, it can transform into chrome VI when reacting with oxygen under high temperature [28]. On the other hand, the alternative method, i.e. vegetable tanning, where bark and leaves of many plants are used, deposits solid wastes as effluent. Tanning bind to collagen proteins in the hide and coat causing them to become less water soluble and more resistant to bacterial attack. Vegetable tanned hide is also flexible and used in luggage and furniture. Thus the organic process of production is also a pollution creating activity but of less harmful in nature. Table 2 depicts the average pollution load imposed by the tanneries in India [29], where the cleaner technologies could reduce the pollution load in the range between 40-75%.

Table 2: Average pollution load in Indian tanneries [29].

Pollution Parameters	Pollution Load/kg	% reduction due to cleaner technologies
Biological Oxygen Demand (BOD) [5 days @ 20°C]	70	50-60
Chemical Oxygen Demand (COD)	180	60-75
Chloride	270	40-50
Dissolved solids	600	40-45
Suspended solids	100	NA
Sulphides	4	50-60
Total Chromium in terms of Basic chromium sulfate	40	45-50

c) Post-Tanning Stage: After tanning, the hides are split horizontally into an upper layer called the grain and a layer from the flesh side called the split. These layers are separately processed further, sometimes retanned and then pressed for water, stretched and dried. Depending on finishing desired, the hide may be waxed, rolled, lubricated, injected with oil, split, shaved and dried and given surface treatment to give texture, look and shape to finished leather. The post-tanning stage does not involve pollution level at an alarming level.

New machines were introduced in the market and some of the tanneries have upgraded their plant and machinery. As indicated earlier, the tanning process involves extensive use of chemicals and couple of countries has put restrictions on the use of specific chemicals. Consequently, the existing units are avoiding those chemicals and customizing their production process so as to suit the requirements of their buyers. They generally rely on the embedded services provided by the chemical suppliers for technical assistance and use services provided by Business Development Service (BDS) Providers, specializing in leather technology. Foreign

buyers often ask for test reports and the testing is done by the existing testing laboratories like SGS, Testman, ESCAP, and CLRI.

Tanning is a highly energy-intensive process and savings of energy as a result of BDS Project has minimized production cost substantially. Adoption of energy saving practices also has an added advantage of savings in the form of carbon credits. There is scope for improving IT penetration, adoption of ERP in this sub-sector. Private machine suppliers like Sagittarians, Harman provide embedded technical services pertaining to machinery and chemical suppliers like Lamco, BASF and Clariant provide embedded services in the area of chemical processing and introduction of new chemicals.

- i) **Quality:** The leather goods manufactured at Kolkata are basically sold in the overseas market and the manufacturers maintain strict quality norms. Quality control in this sub-sector has two dimensions: (a) quality control in terms of chemicals used in leather production and (b) quality control in the goods manufacturing process. There are specific standards for use of chemicals in the processing of leather and tests are done on the final product. Compliance with standards like REACH is becoming increasingly important. The SGS testing laboratory and Tanning Training and Testing Centre (TTTC) have facilities for REACH testing and certification. For the manufacturing and operational level quality control, standards like ISO 9001, ISO 14000 and SA 8000 are being followed. The design and quality aspects of leather goods have witnessed a lot of improvements due to special drive on quality improvement and design development under the purview of the BDS Project.
- ii) **Environment:** Environmental concern has become an important issue, especially in today's context. In the tannery sector environment has an added significance as a lot of chemicals is used in the process. The industrial effluent that is released here has high chrome - content and other chemical residues. It is mandatory to pre-treat the effluent at the tannery level and then release the same for further treatment at CETP. There is a need to adopt environment-friendly processes like eco-benign for de-hairing of hides which use fewer chemicals. With the support of BDS Project, the existing CETP is being modernized and upgraded with the adoption of latest technology.
- iii) **Human Resource:** The tanning sub-sector is quite old and lots of chemicals are used for leather processing. The quality of finished leather depends on the merit of raw hides and knowledge of appropriate use of chemical and processing. Majority of the workers are engaged on a contractual basis. Some of them get facilities like Employees' State Insurance (ESI) - a self-financing social security and health insurance scheme and medical insurance. Due to excessive use of chemicals and dyes, one has to take precaution while working inside the tanneries. The tanneries generally employ qualified leather technologists to supervise technical operations and suggest

improvement measures. Moreover, embedded services are made available by various machinery and chemical suppliers in case of any technical requirements.

- iv) **Finance:** Tanning is a capital-intensive industry and requires a huge investment in plant and machinery. The term loan is provided by the banks for purchase of plant and machinery and the working capital loan is also available. A few entrepreneurs utilized their own fund instead of taking institutional finance. The raw materials suppliers also provide credit to the tanneries. At times the tanneries purchase hides in cash and this limits their bank transactions.
- v) **Market:** The domestic market primarily consumes the finished leather produced by the tanneries for manufacturing footwear, industrial gloves, and leather goods. Some of the tanneries also export finished leather. The tanneries, usually accept a minimum order quantity of 1000 sq. ft. and a period of 3 - 4 weeks to deliver. The product manufacturers specify the colour and the type of leather for placing an order. The tanneries do not face any significant problem for marketing their final products. At times the demand is higher than the supply thereby creates a demand-supply mismatch. This sometimes causes a delay in delivery of finished leather. Facing stiff competition from Bangladesh and Vietnam on the export of leather goods, the CLE, targets newer markets to increase the trade volume. CLE is the single largest Apex Trade Bodies notified as Export Promotion organization for the Indian leather sector. CLE is setup under the aegis of Ministry of Commerce and Industry, Government of India dedicated for enhancing India's share in global trade and development of Indian leather sector. The major exporting country of Kolkata leather products is Germany, Spain, UK, USA, and some Asian countries.
- vi) **Leather Goods:** Tanneries are the sourcing point for the manufacturer of leather products. Some of the large leather goods manufacturing firms also have their own tannery and use their own leather to manufacture leather-based products. In Kolkata leather cluster, 1436 manufacturing units are operating. In this sub-sector, more than 1200 sub-contracting units locally called 'fabricators-cum manufacturers' are present which produce complete goods or different parts of leather goods for the export-oriented firms. The fabricators are of two types, one who produces goods for bigger firms and others are an exporter. In many cases, the micro-units will cater the need of the domestic market. They are not able to take bulk order due to lack of infrastructure. The products manufactured in these clusters can be categorized as; finished leather, footwear (closed and open), leather goods like wallets, bags, industrial gloves.

## 5. Conclusion

Sustainability is becoming an increasingly important issue in the leather industry. Modern, future-oriented leather production must bring economic

interests, ecological soundness, and consumer benefit into line. Achieving this balance and turning it into a valuable asset for the various stakeholders of the leather industry, the government along with the beneficiaries should plan for a Sustainable Leather Management initiative. The Sustainable Leather Management initiative will act as a holistic concept to tackle the challenges of sustainable development systematically along the entire value chain. It will encompass the entire lifecycle of the leather, with clearly defined development targets in the areas like:

- ® Developing new products and chemical systems whose components are largely based on renewable raw materials and which do not use any substances with critical toxicological properties
- ® Improving processes by reducing energy and water requirements, making more efficient use of chemicals and finding new ways of using by-products
- ® Improving leather properties in terms of sustainability during and after use: longer service life, low leather consumption, and good recycling possibilities.

However, a number of steps have been initiated by the Governmental authorities regarding upgradation of the environment in the area and also for the protection of workers against health hazards. Thus what is required in these areas is the development of sound industrial ecology which will provide a foundation for sustainable industrialization. A corollary objective of industrial ecology is the repair of past environmental damage and restoration of ecosystems.

## References

- [1]. Singh, S. C., & Gupta, D. (2013). Sustainability: A Challenge for Indian Leather Industry. *Journal of Supply Chain Management Systems*, 2(4), 37.
- [2]. Nihila, M. (1999). Marginalisation of women workers: Leather tanning industry in Tamil Nadu. *Economic and Political Weekly*, WS21-WS27.
- [3]. Tewari, M., & Pillai, P. (2005). Global standards and the dynamics of environmental compliance in India's leather industry. *Oxford Development Studies*, 33(2), 245-267.
- [4]. Government of India 19<sup>th</sup> Livestock Census-2012. Krishi Bhawan, New Delhi: All India Report, Ministry of Agriculture, Department of Animal Husbandry, Dairying and Fisheries; 2014. Available at : <http://www.dahd.nic.in/dahd/writereaddata/livestock.pdf> [Accessed on 24 Apr. 2018].
- [5]. FAOSTAT, 2009. Hides and skins. Available at : <http://www.uga.edu/fruit/cashew.html> [Accessed on 24-04-2018].
- [6]. Dixit, S., Yadav, A., Dwivedi, P. D., & Das, M. (2015). Toxic hazards of leather industry and technologies to combat threat: a review. *Journal of Cleaner Production*, 87, 39-49.
- [7]. Gupta, S., Gupta, S., Dhamija, P., & Bag, S. (2018). Sustainability Strategies in the Indian Leather Industry: An Empirical Analysis. *Benchmarking: An International Journal*, (just-accepted), 00-00.
- [8]. Leather Industry in India, 2017. Hides and skins. Available at : <https://www.ibef.org/exports/leather-industry-india.aspx>. [Accessed on 24 Apr. 2018].
- [9]. Roy, C. (2012). A Study on Environmental Compliance of Indian Leather Industry & its Far-reaching Impact on Leather Exports. *Foreign Trade Review*, 47(2), 3-36.
- [10]. Roy, C. (2012). A Study on Environmental Compliance of Indian Leather Industry & its Far-reaching Impact on Leather Exports. *Foreign Trade Review*, 47(2), 3-36.
- [11]. The Indian Leather Products Association (ILPA). Available at : <http://www.ilpaindia.org/home/aboutus> [Accessed on 24 Apr. 2018].
- [12]. Lélé, S. M. (1991). Sustainable development: a critical review. *World development*, 19(6), 607-621.
- [13]. Keeble, Brian R. "The Brundtland Report: 'Our common future'." *Medicine and War* 4, No. 1 (1988): 17-25.
- [14]. Èuèek, L., Klemeš, J. J., & Kravanja, Z. (2012). A review of footprint analysis tools for monitoring impacts on sustainability. *Journal of Cleaner Production*, 34, 9-20.
- [15]. Leather Technology Vision 2035 - CLRI. (2018). Available at : <https://www.clri.org/bpd/technologyvision-2035aug16new.pdf> [Accessed 25 Apr. 2018].
- [16]. Buljan, J., & Kral, I. (2015). The framework for sustainable leather manufacture. UNIDO
- [17]. Bhattacharyya, A. (2008). Swadeshi enterprise in Bengal, 1880-1920. Readers Service.
- [18]. Sujatha, V. (2002). Leather Processing: Role of Indigenous Technology. *Economic and Political Weekly*, 4672-4675.
- [19]. Gupta, U. D. (2010). Using a Poet's Archive to Write the History of a University: Rabindranath Tagore and Visva-Bharati. *Asian Studies*, 14(1), 9-16.
- [20]. Dawn, A., & Basu, R. (2016). A Profile of Industrial Pollution in Kolkata Municipal Corporation Area: The Case of Tanneries. *Transactions Institute of Indian Geographers*, 38(1), 79.

- [21]. Tanneries Case: Calcutta, M.C. Mehta v. Union of India, WP 3727/1985 (19.12. 1996). Available at: <https://www.elaw.org/content/india-mc-mehta-v-union-india-tanneries-case- calcutta>. [Accessed 25 Apr. 2018].
- [22]. Mishra, R., & Pal, S. (2015). Internationalization of Kolkata Leather Cluster: A Case Study. International Conference: Indian Institute of Management Bangalore.
- [23]. Money, C. A. (2005). Addressing salinity in tannery effluents and uses for land irrigation in Australia and India. *World leather*, 18(1), 22.
- [24]. Brugnoli, F., & Kráľ, I. (2012). Life Cycle Assessment, Carbon Footprint in Leather Processing. *Leather International*, 48.
- [25]. Hansen, M. B., Menne, T., & Johansen, J. D. (2006). Cr (III) and Cr (VI) in leather and elicitation of eczema. *Contact Dermatitis*, 54(5), 278-282.
- [26]. Hansen, M. B., Menné, T., & Johansen, J. D. (2006). Cr (III) reactivity and foot dermatitis in Cr (VI) positive patients. *Contact Dermatitis*, 54(3), 140-144.
- [27]. Gjerdåker, A. (1998). Environmental regulations and competitiveness in tannery industry: An example from Santa Croce sull' Arno (Doctoral dissertation, M. Phil thesis in Human Geography, University of Oslo, Norway).
- [28]. Tewari, M., & Pillai, P. (2004). Global Standards and Environmental Compliance in the Indian Leather Industry. *Oxford Development Studies*, 33(2), 245-67.
- [29]. Bosnic, M., Buljan, J., Daniels, R. P., & Rajamani, S. (2000). Pollutants in tannery effluents: International scenario on environmental regulations and compliance. *UNIDO, Vienna*, 1-51.
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# Use of Essential Oils in our Daily Lives

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## INTRODUCTION

Aromatherapy uses the sense of smell (aromas) with the sense of touch (massage) to heal the body, the mind and the spirit. Aromatherapy is a 'branch' of herbal medicine that centers on using fragrant substances, particularly oily plant extracts, to alter mood or to improve individuals' health or appearance. The claimed benefits of aromatherapy range from stress relief to enhancement of immunity and the unlocking of emotions from past experiences'. Essential oils are the 'life-essence of the plants' and can benefit the body greatly whilst being a most enjoyable experience. Essential oils are highly concentrated substances extracted from flowers, leaves, stalks, fruits, roots and also distilled from resins. They are said to contain hormones, vitamins, antibiotics and antiseptics which represent the 'life force', 'spirit', or 'soul' of the plant.

The aroma and chemical composition of essential oils can produce therapeutic and medical benefits through inhalation and absorption through the skin. When inhaled, essential oils are said to stimulate the brain and nervous system. When applied to the skin, they are said to be ingested into the bloodstream. Oil molecules enter the lungs, are absorbed by the bloodstream and produce psychological and physical benefits. The chemical components of essential oils are said to exert specific mind-body effects. Each essential oil produces a different effect depending on which component predominates in the essential oil. Oils can also be blended synergistically to produce a specific therapeutic action or aroma. Synergistic blends are said to often produce increased therapeutic benefits in comparison to oils used independently. In general, a base or carrier oil is used to which the essential oil is added to heal on a holistic level with massage. The oils can also be added to the bath or diffused using burners. There are oils to stimulate, oils to relax, oils for pains and oils for pleasure, oils to work on a physical level, and oils to aid on a spiritual one.

Essential oils have a "spiritual dimension" and can restore "balance" and "harmony" to one's body and to one's life. One of its principles, the doctrine of signatures, holds that a plant's visible and olfactory characteristics reveal its "secret" qualities. For example, because the configuration of the violet suggests shyness, proponents hold that scent of violets engenders calmness and modesty.

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## SMELL - 'THE MOST ENIGMATIC OF SENSES'

All living organisms can detect and identify chemical substances in their environment and the olfactory system is the first of the sensory systems. It is obviously of great survival value, to be able to identify suitable food and to avoid putrid or unfit foodstuff. The basic principles for recognizing and remembering about 10,000 different odours by humans were not understood. A large gene family, comprised of some 1,000 different genes (three per cent of human genes) that give rise to an equivalent number of olfactory receptor types. These receptors are located on the olfactory receptor cells, which occupy a small area in the upper part of the nasal epithelium and detect the inhaled odorant molecules.

Each olfactory receptor cell possesses only one type of odorant receptor, and each receptor can detect a limited number of odorant substances. Our olfactory receptor cells are therefore highly specialized for a few odours. A unique odour can trigger distinct memories from our childhood or from emotional moments positive or negative later in life. A single clam that is not fresh and will cause malaise can leave a memory that stays with us for years, and prevent us from ingesting any dish, however delicious, with clams in it. To lose the sense of smell is a serious handicap we no longer perceive the different qualities of food and we cannot detect warning signals, for example smoke from a fire.

## EXTRACTION OF ESSENTIAL OILS

**Distillation :** It is the most popular, and cost effective method in use today in producing essential oils. In distillation process, the botanic material is completely immersed in water and the still is brought to the boil or steam is passed through the material. During distillation, the volatile liquid (the essential oils) is converted into a vapor and then the vapour is condensed back into a liquid.

**Expression :** Most nuts/seed oils and peel oils are extracted using a 'cold press' method but here oil is forced from the material under high mechanical pressure.

**Solvent extraction :** In this process, volatile solvents are used to extract the oils/resinous material and subsequently purified. It is

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particularly suitable or botanical material that has a very low yield of essential oil, or where it is made up of mostly resinous components which delivers a far finer fragrance than that of distillation, which are called as 'absolute'.

It is the type of plant material that determines which method will be used to obtain the essential oil. The method used for extraction is one of the key points which determine the quality of the oil, since a wrong or wrongly executed extraction, can damage the oil, and alter the chemical signature of the essential oil. Super critical carbondioxide (SCCO<sub>2</sub>) is a great way to extract high quality oils, but the cost involved will be very high.

## TOP TEN ESSENTIAL OILS

### Chamomile (Calming)

Premenstrual pain/tension, indigestion, mildly anti- allergenic, rhinitis, acne, eczema, other sensitive skin conditions and calming.

### Eucalyptus (Antiseptic)

Coughs and colds, bronchitis, viral infections, muscular aches, rheumatic conditions.

### Jasmine (Antidepressant)

"King" of flower oils, emotionally warming, useful for depression, postnatal depression, nervous exhaustion, strengthening contractions during labor, aphrodisiac, produce a feeling of optimism, confidence and euphoria.

### Lavender (Mildly analgesic)

Headaches, wounds, bruises, antiseptic, insect bites, oily skin, acne, swelling, calming insomnia, mild depression.

### Lemon (Antiseptic)

Depression, acne and indigestion, arthritis, high BP, nosebleeds, obesity (slimming), poor circulation, throat infections, anemia, brittle nails, boils, chilblains, corns, cuts, greasy skin, mouth ulcers

### Rose (Antiseptic)

"Queen" of oils, emotionally soothing, uplifts the spirit, sweet and graceful, sore throat and sirius, congestion, puffiness, mildly sedative, insomnia, premenstrual tension/pain, menopause, reduced libido and antimicrobial.

### Rosemary (Mild stimulant)

Useful for physical and mental fatigue, forgetfulness, respiratory problems, asthma, rheumatic aches and pains. It is also used in hair care extensively.

### Sandalwood (Antiseptic)

Excellent for skin care, useful for dry, cracked or chopped skin, acne, calming relaxation during meditation, aphrodisiac.

### Tea tree (Antimicrobial)

Powerful antiseptic, anti fungal and anti viral, anti- infectious, anti-inflammatory, immuno-stimulant, stimulating, purifying, detoxifying, antifungal and antiseptic.

### Vetiver (Mildly sedative)

Useful for arthritis, cleanses the 'Aura' (energy field around the body) to keep out disease, exhaustion, insomnia, nervousness, skin disorders (acne, aging skin), stress and body cooling.

## CARRIER OILS

Carrier oils feed the skin with much needed vitamins and minerals and skin health will show on how quickly the oil is absorbed during massage. When using aromatherapy oils, always add to a 100 % pure cold- pressed virgin vegetable oil.

Almond oil : Relieves itching, dry, inflamed & sore skin, good for all skin types and rich in vitamins.

Apricot kernel oil : Better for aged, sensitive & mature skin.

Grape seed oil : A fine textured oils good for general massage. It has no odour and hence does not interfere with the scent of essential oils.

Jjoba oil : Fine penetrating odourless light oil, effective for mature skin, dryness and dandruff.

Sesame seed oil : A light oil with excellent moisturizing properties and can be mixed with other carrier oils for best results.

Wheatgerm oil : Contains natural vitamin E and therefore feeds the skin, 10% can be added to another carrier oil for treating ageing skin.

## OIL OF BASIL (HOLY)

Scientific name Ocimum basilicum

Method of extraction	Steam distillation
Part extracted	Leaves & branches
Color	Pale yellow
Principal constituents	Linalool, cineole, ocimene, citronellol
Perfumery Note	Top note
Effects	Soothing & relaxing

**Aroma :** Very clear, strong, warming and spicy (clove like character) with balsamic undertone.

**Properties :** Restorative, stimulant, especially for the nervous system. Activates peristalsis, enzymes for poor indigestion and extremely euphoric.

**Uses :** Sharpening the senses, make more alert, increase concentration, for mental focus and clarity to mind.

Nerve tonic may be helpful with fatigue, good for post operations, stimulates person if is very low, depression, colds, migraines/other headaches.

**How to use it :** 10 drops to 1 oz of air care and massage oils, can also be used directly on nerves to enhance absorption by the body. Few drops in a diffuser for blissful treat.

## OIL OF CARDAMOM

Scientific name	Elettaria cardamomum
Method of extraction	Steam distillation
Part extracted	Dried seeds & fruits
Color	Clear to pale yellow
Principal constituents	a-terpinyl acetate, terpinene, 1,8-cineole
Perfumery Note	Middle note
Effect	Soothing & strengthening

**Aroma :** Sweet, hot-spicy, very powerful note. Smells just like the spice commonly used in cooking, a bit exotic, yet soft & fruity.

**Properties :** Warming, comforting, and refreshing. Aphrodisiac, uplifting and soothing.

**Uses :** Aromatic stimulant and carminative, warming the body, relieving pains, lifting mood, improving digestion, improving mental clarity and memory. Extensively used as a flavoring agent in Indian cooking.

**How to use it :** Dilute Cardamom oil in unflavored carrier oil like grape seed or canola oil and use in preparing pastries, sauces, salad dressings and savory dishes.

## OIL OF CHAMOMILE

Scientific name	Matricaria chamomilla
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Method of extraction	Steam distillation
Part extracted	Flowers
Color	Dark blue
Principal constituents	Chamazulene, farnesene a-bisabolol, azulene
Perfumery Note	Middle note
Effects	Soothing & relaxing

**Aroma :** Very warm, sweet, comforting, slightly bitter and some what green & apple like.

**Properties :** analgesic, antibacterial, antiseptic, and digestive stimulant. Great for skin care. Azulene also promotes new skin cell regeneration.

**Uses :** Acne, blisters, boils, colitis, depression, digestive problems, flatulence, gout, headaches, indigestion, irritable bowel syndrome, neuralgia, nervous tension (anxiety and fear), rheumatism and skin conditions (dermatitis, eczema and psoriasis).

**How to use it :** Add 2 to 3 drops to a hot bath for a blissful retreat. Add 2 drops to 1 oz. of olive oil or unscented cream for diaper rash remedy. Not to be used in early pregnancy. May cause skin irritation.

## OIL OF CLARY SAGE

Scientific name	Salvia sclarea
Method of extraction	Steam distillation
Part extracted	Leaf & flowering tops
Color	Clear to pale yellow
Principal constituents	1,8-cineole, b-thujone, borneol
Perfumery Note	Base note
Effects	Relaxing

**Aroma :** Sweet, nutty fragrance & herbaceous.

**Properties :** Antidepressant, anticonvulsive, euphoric, nervine, sedative, aphrodisiac, antiseptic, astringent, bactericidal, carminative, digestive, emmenagogue, stomachic, uterine & nerve tonic.

**Uses :** Great for calming and sedating influence on the nerves, emotions, digestive system, reduces perspiration and has a purifying effect on the body, reducing night sweats, palpitations, irritability, as well as headaches, dizziness & insomnia.

**How to use it :** 10 drops to 1 oz of hair care and massage oils; can also be used directly on nerves to enhance absorption by the body. Do not use sage during pregnancy or if you have epilepsy.

## OIL OF CLOVE BUD

Scientific name	Eugenia caryophyllata
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Method of extraction	Steam distillation
Part extracted	Flower buds
Color	Clear yellow
Principal constituents	Eugenol, b-caryophyllene, nerol
Perfumery Note	Base/Middle note
Effects	Warming

**Aroma :** Sweet-spicy, hot, fresh and peppery, rich, clean, medicinal & powerful.

**Properties :** Stimulating, revitalizing, warming, purifying, eT,lel'gi:zi'Fga,phrodisiac, tonic. Used in minute amoun~s,in:-k1nand hair care, due to possible sensitizing,

**Uses :** Bronc~i~i\*, c?l~s, indigestion, infected wounds, Insect repel1anti'mouth sores, muscle and nerve tension, ~0~\$d1isinfectant & toothache.

**How to use it :** Valuable addition to many aromatherapy blends, use in very small amounts adding few drops to 1 oz. of body care. Highly irritating to the skin, must be diluted to less than 1.0% prior to use. Useful in mouthwash and gargle.

## OIL OF CYPRESS

Scientific name	Cupressus macrocarpa
Method of extraction	Steam distillation
Part extracted	Young needles & branches
Color	Pale yellow
Principal constituents	a-Pinene, terpinolene, delta 3-carene
Perfumery Note	Middle/Base note
Effects	Relaxing & refreshing

**Aroma :** Sweet, balsamic and spicy, very pleasant evergreen aroma, smoky, woody and slightly nutty.

**Properties :** Deodorant, purifying, warming, respiratory tonic, vasoconstrictor, concentration enhancing, reviving, restorative, comforting, protective, soothing, antispasmodic & haernostatic.

**Uses :** Asthma, bronchitis, cough, haemorrhoids, menopause/menstrual symptoms, muscle and nerve tension, varicose veins, rheumatism, treat cellulite, edema, water retention & oily skin.

**How to use it :** Add 10 drops of one of the skin therapeutic blends or 1 oz. of unscented body care. Cypress has antispasmodic properties and is therefore probably best avoided during pregnancy.

## OIL OF EUCALYPTUS

Scientific name	Eucalyptus globulus
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Method of extraction	Steam distillation
Part extracted	Mature leaves
Color	Clear to slightly yellow
Principal constituents	1,8-cineole, a-pinene, globulol, terpinen-4-ol
Perfumery Note	Top I Middle note
Effects	Balancing & stimulating

**Aroma :** Fresh, cooling, camphoraceous, with woody undertones & harsher than other varieties.

**Properties :** Cooling, refreshing, energizing, analgesic, anti-bacterial, anti-inflammatory, anti-neuralgic, antiseptic, antispasmodic, antiviral, astringent, balsamic, decongestant and deodorant.

**Uses :** Air disinfectant, asthma, bronchitis, burns, cuts, decongestant, flu, headaches, insect repellant, muscle aches, rheumatism, sinusitis, skin ulcers, urinary infections, wounds and good germicide.

**How to use it :** 2-3 drops to a bowl of hot water to inhale the fragrant steam or use it in the sauna/steam bath. Not to be used while high blood pressure or epilepsy and can be fatal if ingested.

## OIL OF EUCALYPTUS CITRIODORA

Scientific name	Eucalyptus citriodora
Method of extraction	Steam distillation
Part extracted	Mature leaves
Color	Clear to slightly yellow
Principal constituents	Citronellal, citronellol, geraniol
Perfumery Note	Top/Middle note
Effects	Balancing & stimulating

**Aroma :** Fresh, cooling, camphoraceous, woody undertones & distinct citrus-like soft undertones.

**Properties :** Cooling, refreshing, energizing. Great to deodorize and to keep insects at bay.

**Uses :** Air disinfectant, asthma, bronchitis, burns, cuts, decongestant, flu, headaches, muscle aches, rheumatism, sinusitis, skin ulcers, athlete's foot, fungal infections, dandruff, herpes, insecticide, sores and infectious skin conditions (chickenpox).

**How to use it :** Add 2-3 drops to diffuser or bowl of hot water to inhale the fragrant steam. 5-10 drops per 1 oz oil for massage sore/aching muscles. Not to be used while high blood pressure or epilepsy and can be fatal if ingested.

## OIL OF GERANIUM

Scientific name	Pe/ergonium graveolens
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Method of extraction	Steam distillation
Part extracted	Fresh Leaves
Color	Olive-yellow
Principal constituents	Citronellol, geraniol, 10-epi-g-eudesmol
Perfumery Note	Middle note
Effects	Comforting & healing

**Aroma :** Fresh, herbaceous, powerful. Floral, sweet rose like, green & balancing.

**Properties :** Warming, tonic, balancing, lifting emotions, refreshing and uplifting. Powerful insect repellent, wonderful in skin and hair care ingredient.

**Uses :** Burns, eczema, edema, fluid retention, neuralgia, PMS symptoms (including swollen breasts), poor circulation, rheumatism, tonsillitis, depression, nervous tension and soothes itching skin.

**How to use it :** 10 drops to unscented body care / massage oil. 2 drops to the hair oil or hairbrush to rejuvenate and naturally scent hair and scalp. May irritate sensitive skin, avoid use during pregnancy. Few drops in a diffuser for blissful treat.

## OIL OF JASMINE

Scientific name	Jasminum grandiflorum
Method of extraction	Solvent extraction
Part extracted	Flowers
Color	Brown to Golden
Principal constituents	Benzyl acetate, jasmone, indole
Perfumery Note	Mid note
Effects	--

**Aroma :** The "king" of flower oils, emotionally warming, relaxes, soothes, uplifts floral & exotic,

**Properties :** Deeply relaxing, analgesic, sedative, tonic (uterine), anti-depressant, anti-inflammatory, antiseptic, antispasmodic, aphrodisiac, carminative, cicatrisant, expectorant, galactagogue & parturient.

**Uses :** Depression, nervous exhaustion and stress related conditions, produce a feeling of optimism, confidence and euphoria, catarrh, coughs, hoarseness, laryngitis, dysmenorrhoea, frigidity, labor pains, uterine disorders, dry & sensitive skin.

**How to use it :** 10 drops to 1 oz of air care and massage oils, can be used on nerves to enhance absorption, too much could impede concentration.

## OIL OF LAVENDER

Scientific name	Lavandula angustifolia
Method of extraction	Steam distillation
Part extracted	Flowers/flowering tops
Color	Clear to pale yellow
Principal constituents	Linalyl acetate, linalool, borneol, 3-octanone
Perfumery Note	Top / Middle note
Effects	Calming & therapeutic

**Aroma :** Floral, herbaceous, fresh, strong & slightly green-smelling.

**Properties :** The most versatile and use-ful oil around, refreshing, analgesic, antiseptic, diuretic, insecticide, anti-inflammatory, sedative, nervous anxiety, insomnia, melancholy, fear and stress,

**Uses :** Relieving tension, depression, panic, hysteria and nervous exhaustion. Acne, anxiety, bronchitis, burns, catarrh, colds, dandruff, eczema, flu, headaches, insect bites, wounds and sores.

**How to use it :** Few drops to a tissue and inhale or place on your pillow for restful sleep. Few drops to a hot bath, on hair brush for rejuvenation and 5 - 10 drops per 1 oz. of body / hair care oils.

## OIL OF LEMON

Scientific name	Citrus limonum
Method of extraction	Cold pressing/expression
Part extracted	Peel of fruits
Color	Light yellow to red
Principal constituents	Citral, citronellal, d-limonene
Perfumery Note	Base note
Effects	Relaxing

**Aroma :** Lemon oil has a sharp, fresh smell, is pale greenish-yellow in color & is watery in viscosity.

**Properties :** Refreshing, antiseptic, stimulating, anti-anaemic, diuretic, antimicrobial, bactericidal, anti-sclerotic, depurative, haemostatic, diaphoretic, antispasmodic, carminative and hypotensive.

**Uses :** Depression, acne, indigestion, arthritis, high BP, nosebleeds, obesity, poor circulation, rheumatism, asthma, throat infections, anemia, brittle nails, boils, corns, cuts, greasy skin, herpes, insect bites, mouth ulcers, spots and varicose veins.

**How to use it :** Few drops in base cream or carrier oil, in water for mouth ulcers/throat infections. Phototoxic, avoid exposing to direct sun.

## OIL OF LEMONGRASS

Scientific name	Cymbopogon citratus
Method of extraction	Steam distillation
Part extracted	Young leaves
Color	Yellow tone
Principal constituents	Citral, geranyl acetate, methyl heptenone
Perfumery Note	Top note
Effects	Refreshing & toning

**Aroma :** Light, fresh citrus scent with earthy notes.

**Properties :** Astringent, tonic for opening pores, deodorizer, disinfectant, insect repellent, and a digestive stimulant. Antidepressant, antiseptic, bactericide, diuretic and fungicidal.

**Uses :** Colic, fatigue, indigestion, muscle aches and pains, stimulates appetite, refreshing, rejuvenating, brings fresh energy, clears the mind. Popular skin care ingredient for oily, mature and inflamed skin (in moderation). Popular in Asian cuisine.

**How to use it :** Use a few drops in a diffuser, add very sparingly to dishes / teas. 10 drops to 1 oz. massage oil to treat oily skin blend & 1 oz. of unscented body care to help problem skin.

## OIL OF PATCHOULI

Scientific name	Pogostemon cablin
Method of extraction	Steam distillation
Part extracted	Leaves & young branches
Color	Translucent yellow/brown
Principal constituents	a-bulnesene, a-guaiene, a-patchoulene
Perfumery Note	Base note
Effects	Relaxing

**Aroma :** Distinctly herbaceous, strong, musky, sweet, woody, earthy, rich & long lasting.

**Properties :** Antidepressant, antiseptic, astringent, anti-inflammatory, diuretic and sedative, soothing and toning. Excellent for skin care and healing.

**Uses :** Anxiety, cellulite, depression, eczema, increase libido, scar tissue, water retention, protecting chopped/cracked skin, dry/mature or blemished skin. Use on the scalp for dandruff, to scent linen and clothes and to repel fleas & lice.

**How to use it :** Add in low doses to skin and hair care. Add 9 drops to 1 oz. of unscented body care or up to 30 drops to 1 oz. of vegetable oil that is dabbed on sparingly as a perfume, few drops in a diffuser.

## OIL OF ROSE (DAMASCENA)

Scientific name	Rosa damascena
Method of extraction	Hydro distillation
Part extracted	Flowers & petals
Color	Transparent white/green
Principal constituents	Citronellol, geraniol, nerol, phenyl ethyl alcohol
Perfumery Note	Base/Middle note
Effects	Relaxing

**Aroma :** The "queen" of oils, feminine, emotionally soothing, uplifts the spirit, sweet & graceful.

**Properties :** Antibacterial, antiseptic, astringent, antidepressant, antispasmodic, diuretic, sedative, cooling, balancing, calming, toning and heart tonic.

**Uses :** Wonderful skin care oil, aging skin, broken veins, depression, dry skin, headache, insomnia, PMS symptoms, sensitive skin, sore throat, stress and well-being, lasting perfume & insect repellent.

**How to use it :** Add a few drops to a diffuser for a relaxing, feminine aroma, add 2 drops to a hot bath for a blissful retreat. 3-4 drops per 1 oz body care oil, 10 drops to therapeutic blends, antispasmodic and should not be used during early pregnancy.

## OIL OF ROSEMARY

Scientific name	Rosmarinus officinalis
Method of extraction	Steam distillation
Part extracted	Leaves & branches
Color	Clear to pale orange
Principal constituents	1,8-cineole, a-pinene, bornyl acetate
Perfumery Note	Top, Middle note
Effects	Refreshing & stimulating

**Aroma :** Strong, herbaceous, fresh, balsamic scent, powerful & camphoraceous (bit like pine oil).

**Properties :** Refreshing, empowering, mind-clearing, very popular in hair care, skin care and to enhance memory, antidepressant and stimulant.

**Uses :** Bums, cellulite, colds, digestive problems, fatigue, flu, gout, liver and gall bladder problems, oily skin, poor circulation, rheumatism, water retention and wounds.

**How to use it :** Few drops to tissue or a diffuser is great to wake up and get your brain cells going. For hair care 10 drops per 1 oz. of oil or few drops your hairbrush to rejuvenate scalp. Antispasmodic, should not be used during pregnancy/high BP.

## OIL OF SANDALWOOD

Scientific name	Santalum album
Method of extraction	Steam distillation
Part extracted	Mature hard wood
Color	Transparent yellow
Principal constituents	a-santalol, b-santalol, epi-santalol
Perfumery Note	Base note
Effects	Warming & relaxing

**Aroma :** Dry-woody, sweet, warm, exotic, oriental, luxurious, balsamic & deep.

**Properties :** Antiseptic, antispasmodic, astringent, diuretic, anti-inflammatory, expectorant & sedative.

**Uses :** Anxiety, bronchitis, cystitis, fatigue, frigidity, impotence, immune system booster, nervous tension, skin conditions (such as acne, dry skin, eczema), sore throat, stress, urinary infections water retention and traditionally in meditation.

**How to use it :** Add a few drops to a diffuser for a relaxing 'grounding' aroma, 3 drops to a hot bath for a blissful retreat few drops in body care or plant oils, antispasmodic properties and should not be used during pregnancy or in states of depression.

## OIL OF TEA TREE

Scientific name	Melaleuca alternifolia
Method of extraction	Steam distillation
Part extracted	Leaves & young shoots
Color	Clear to pale yellow
Principal constituents	Terpinen-d-ol, 1,8-cineole, a-terpinene
Perfumery Note	Top note
Effects	Cleansing & refreshing

**Aroma :** Very strong and medicinal, spicy-camphorous, warm & healing.

**Properties :** Powerful antiseptic, anti fungal and anti viral, anti-infectious, anti-inflammatory and immune-stimulant, stimulating, purifying, detoxifying, antifungal and antiseptic.

**Uses :** Great skin care oil, age spots, warts, pimples, sunburn, itching from insect bites, chicken pox, etc., dandruff, acne, athlete's foot, blisters, bums, cold sores, mouthwash, immune system booster, urinary tract infections and killing germs.

**How to use it :** 5-10 drops to 1 oz. of unscented body or hair care oil, add 2-3 drops in diffuser, Apply to pimples/warts 2-3 times a day directly.

## OIL OF VETIVER

Scientific name	Vetiveria zizanioides
Method of extraction	Steam distillation
Part extracted	Roots (>15 months old)
Color	Dark yellow to brown
Principal constituents	Vetiverone, vetiverol, vetivene
Perfumery Note	Base note
Effects	Relaxing

**Aroma :** Rich, woody, earthy/mysterious, sweet, satisfying, masculine, warm & comforting.

**Properties :** Deeply relaxing and comforting, find peace of mind, body cooling, aphrodisiac, masking, antiseptic, cicatrisant, nervine, tonic, sedative, vulnerary and antimicrobial.

**Uses :** Cleanses the aura (energy field around the body) to keep out disease, calms and soothes the mind and helps to dispel anger, hysteria, irritability, stress, tension nervousness, skin disorders (acne, aging skin) and art hritis.

**How to use it :** 10 drops to 1 oz of hair care massage oils, few drop in a diffuser, can also be used directly on nerves to enhance absorption.

## OIL OF WINTERGREEN

Scientific name	Gaultheria fragrantissima
Method of extraction	Fermentation and steam
Part extracted	Leaves and branches
Color	Pale yellow to pinkish
Principal constituents	Methyl salicylate, gaultherilene
Perfumery Note	Base note
Effects	Relaxing & relieving

**Aroma :** Sweet characteristic odor, peculiar creamy-fruity top note & a sweet-woody dry out.

**Properties :** Anti-rheumatic, gout and stiffness due to old age, revitalizes and gives energy following muscular pains, particularly good for athletes, antiseptic, diuretic and stimulating.

**Uses :** Rheumatism, headache, fever, sore throat, muscle/joint discomfort, arthritis, cellulite, edema, poor circulation, hypertension, tendinitis, cramps, gout, used in confectionery and soft drinks.

**How to use it :** 10 drops to 1 oz of massage oil, few drops in a diffuser, can also be used directly on site of ache/sprain. Some skins are sensitive, never administer orally and during pregnancy.

## POPULAR MEDICAL TERMS IN AROMATHERAPY

Abortive	Causing abortion, arresting development
Analeptic	Restores vitality and stimulates the functioning of different systems of the body
Analgesic	Removes pain, pain killer
Antibiotic	Combats infection to the body
Antiemetic	Reduces vomiting
Antiphlogistic	Reduces inflammation
Antipruritic	Relieves itching
Antiseptic	That which destroys and prevents the development of microbes
Antispasmodic	Prevents spasms, convulsions, nervous disorders
Antiviral	Controls virus organisms
Astringent	Having the ability to draw together or contract the organic tissues
Balsamic	That which softens phlegm and is healing and soothing
Calming	Tranquilizing
Cardiotonic	Tones up the heart
Carminative	Relieves flatulence
Cholagogue	Increases of bile by stimulating evacuation of the gall bladder
Cholorectic	Stimulates the flow of bile
Cicatrisant	Helps the formation of scar tissue
Cytophylactic	Encourages the growth of skin cells
Decongestant	Releases nasal mucous
Depurative	Combats impurity of the blood and internal organs
Detoxifying	Reduction or removal of toxic properties or poisons
Diaphoretic	Promotes perspiration
Digestive	Stimulates digestion
Diuretic	Aids the production of urine
Emmenagogue	Induces or regulates menstruation
Emollient	Soothing and softening to the skin
Eupeptic	Aids digestion
Expectorant	Assists the removal of secretions from the bronchial tubes

Febrifuge	Combats fever and staves off its return, cooling and reduces high body temperature
Galactagogue	Increases the secretion of breast milk
Haemostatic	Arrests bleeding / haemorrhage
Hepatic	Stimulates and aids the function of the liver and gall bladder
Hypertensor	Lowers blood pressure
Nervine	Reduces nervous disorders
Pectoral	Treats chest troubles, beneficial to the respiratory system
Prophylactic	Prevents disease
Parturient	Helps easy delivery in child birth
Rubefacient	Products inflammation or redness of the skin by increasing flow of blood
Sedative	Soothes an overexcited nervous system
Stimulating	Increases the flow of adrenalin and energy
Stomachic	Digestive aid, gastric tonic
Styptic	Arrests external bleeding
Sudorific	Increases perspiration
Tonic	Improves bodily performance
Vasoconstrictor	Contracts blood vessels
Vasodilator	Dilates blood vessels
Vulnerary	An agent which heals wounds and sores by external administration, arrests bleeding

## References :

- Baser, K.H.C. & G. Buchbauer (2010). Handbook of Essential Oils : Science, Technology and Applications. CRC Press, Boca Raton, London, New York. ISBN 978-1-4200-6315-8
- Schnaubelt, Kurt (1999). Advanced Aromatherapy : The Science of Essential Oil Therapy. Healing Arts Press. ISBN 0-89281-743-7
- Sellar, Wanda (2001). The Directory of Essential Oils (Reprint Ed.). Essex : The C.W. Daniel Company Ltd. ISBN 0-85207-346-1
- Tisserand, Robert (1995). Essential Oil Safety : A Guide for Health Care Professionals, Churchill Livingstone. ISBN 0-443-05260-3

### GST : EXPORTERS HOPEFUL OF A SINGLE FILING FORMAT

The GST Council is likely to consider a long-pending proposal of merging the three GSTR return forms (GSTR 1, 2 and 3) into one which would reduce rejections due to mismatch of entries, bring down the load on the GST network by one-third and expedite refund for exporters.

"The proposal, made by the advisory group to the law review committee of the GST Council, is likely to be weighed at the Council's meeting on Friday," a government official told Business Line.

The advisory group, which has members from industry bodies such as the Laghu Udyog Bharti, Federation of Indian Export Organizations (FIEO), Confederation of All India Traders and private law and tax practitioners, had suggested merging the triplicate comprehensive tax return forms into one consolidated form, in December 2017. But no action was taken since then as the centre did not want to disturb the established processes for GST filing as it feared that things could get from bad to worse.

"Since it has become clear that filing three different forms was leading to mismatch in entries, greater consumption of time and a delay in refunds, the GST Council is expected to seriously discuss the merger proposal," a government official told Business Line.

Exporters are also hoping that their proposal to the government suggesting that the online platform be used for the complete filing process and refund of input tax credit (ITC) would be given a serious thought by the Council.

#### Online platform

"There is a mismatch in the applications that have been filed online and that have been submitted manually. That is why we have requested the government to come on an online platform for complete filing process and refund of ITC, in line with what has been done for the IGST," FIEO Director General Ajay Sahai said.

Sahai said exporters are also looking forward to a positive decision on merger of the return forms, as it would save their time and efforts and also fast track refunds.

Sahai said the GST refund week was quite successful and many of the issues related to IGST refund had been taken care of. "Some refunds have flown in and the liquidity situation for exporters is a little better," Sahai said.

As per rough calculations made by industry, about 25 per cent IGST refunds and 60 per cent of ITC refund is still pending.

(Source : Amiti Sen – New Delhi, May 3, 2018)

### SECTORAL ACTION PLAN TO BOOST EXPORTS ON CARDS

Keen to take advantage of growing global demand and forecasts of faster rise in international trade in 2018-19, the government has decided to prepare sectoral action plan within the next two days to boost exports.

On Tuesday, during the first inter-ministerial meeting on sectoral export promotion strategy, Commerce and Industry Minister Suresh Prabhu asked officials from across ministries to prepare separate action plan on boosting exports of products being handled by their respective ministries and send it to the Department of Commerce within the next fortnight. The action plan will focus on short-term targets to boost outbound shipment of products, which are achievable within the next two months.

Apart from the two departments making up the commerce and industry ministry, this will apply to Ministries of Electronics and IT, Agriculture, Textiles, Petroleum, among others. Keen on boosting the manufacture of Indian defence equipment, the government has also asked the Department of Defence Production under the defence ministry to submit a plan to improve India's export competitiveness in the sector.

Prabhu also announced that after submission, the findings of the plans will be discussed with export promotion councils, and exporters. A 'Best Exporting Ministry/Dept. Award' is planned as of now.

Official statistics reveal that the export spurt in 2017-18, whereby the country managed to achieve more than \$300 billion worth of outbound trade after two years, was accompanied by a slowdown in export of labour-intensive sectors such as textiles, gems, and leather which have remained among India's strengths. The NITI Aayog has suggested that expanding the basket of products and targeting newer export categories and markets is the need of the hour.

India's share of exports continue to remain high in goods which are less traded and low in goods that are traded more in the world. The government has focused on sectors the export share of which in India's total exports is less compared to the share of the sector in world exports, a senior official said.

On Tuesday, Prabhu said India has engaged with about 150 countries in the last few months to improve bilateral trade apart from creating a task force on special economic zones from where a sizable chunk of exports originate. He said the commerce ministry will tap the external affairs ministry to implement the action plans through India's commercial missions abroad.

Commerce Secretary Rita Teotia said that while there has been a 10 per cent growth in goods exports in the current year, India's share in global trade remained static at 1.7 per cent for merchandise exports and 3.4 per cent for services exports. She pointed out that inadequate focus on fast

emerging markets in Latin America, Africa, and Asia continued to hold back trade growth.

(Source : Subhayan Chakraborty – New Delhi, May 8, 2018)

### **EXPORTS UP 5.2% TO \$25.9 BN IN APRIL; TRADE DEFICIT AT \$13.7 BN**

NEW DELHI : India's exports rose by 5.17 per cent year-on-year to \$25.9 billion in April on back of good show by sectors like engineering, pharmaceutical and chemicals, according to the commerce ministry data.

Imports during the month were valued at \$39.6 billion, up 4.6 per cent over April 2017.

The gap between imports and exports or trade deficit was marginally higher at \$13.7 billion during April 2018 compared to \$13.24 billion in April 2017, the data showed.

Merchandise exports were in negative zone in March 2018.

Major commodity groups showing positive export growth in April on annual basis include engineering goods (17.63 per cent), chemicals (38.48 per cent), pharmaceuticals (13.56 per cent), yarn and handloom products (15.66 per cent) and plastic and linoleum (30.03 per cent).

Non-petroleum and non-gems and jewellery exports in April 2018 were valued at \$19.8 billion as against \$17.7 billion in April 2017, showing an increase of 11.73 per cent, according to the data released by the Commerce Ministry.

Oil imports were valued at \$10.4 billion, up 41.45 per cent over April 2017.

"in this connection it is mentioned that the global Brent prices (\$/bbl) have increased by 35.20 per cent in April 2018 vis-à-vis April 2017 as per World Bank commodity price data," the ministry said.

Non-oil imports during April 2018 were estimated at \$29.21 billion, which was 4.3 per cent lower than non-oil imports of \$30.5 billion in April 2017.

Gold imports dipped by 33 per cent to \$2.58 billion in April. On trade in services, based on RBI data which comes with a lag of a month, the ministry said the outward shipments during March 2018 were valued at \$16.8 billion registering a positive growth of 7.16 per cent.

The services imports were estimated at \$10.2 billion, up 1.35 per cent over March 2017.

India recorded a trade surplus in services sector at \$6.5 billion.

Exports had dipped by 0.66 per cent to \$29.11 billion in March, even as foreign shipments increased by 9.78 per cent for the full 2017-18 fiscal.

Commenting on the data, President of exports' body FIEO Ganesh Kumar Gupta said that the exports data is not encouraging. "Almost all the labour intensive sectors of export including gems and jewellery, leather and leather products, RMG of all textiles, jute manufacturing including floor covering, carpets, handicrafts, agri products and many other sector of exports, dominated by MSME's are in negative territory," he said.

Gupta said that domestic issues including access to credit, cost of credit especially for MSMEs and pending GST refund affecting exports should be seriously looked into as global challenges and increasing protectionism, has also added to the woes of the exporters.

Principal Economist with ICRA Aditi Nayar said the merchandise trade deficit increased modestly with a contraction in imports of gold and precious and semi precious stones, and electronic goods, allaying the impact of higher crude oil prices.

Nevertheless, the continued rise in the crude oil price in the ongoing month does not augur well for the upcoming print of the merchandise trade deficit, she said.

(Source : Millenium Post – New Delhi, May 16, 2018, PTI)

### **THIS CLRI TANNING TECHNIQUE LEAVES CHROMIUM HIDING**

For a hundred years, leather tanneries have been polluting water bodies and soil by discharging billions of litres of highly toxic chromium contaminated water. This is because removing chromium from the waste water is expensive and the leather sector, dominated by small players, cannot afford it. But a cost-effective solution may finally be at hand to solve this problem.

A five-member team of scientists at CSIR's Central Leather Research Institute (CLRI) in Chennai have come up with a path-breaking solution : Waterless Chrome Tanning Technology (WCTT).

WCTT, a process developed a couple of years ago, is seeing a rather gradual adoption in India. About 60 chrome-based tanneries (out of a total of 1,500) are using this patented technology even as it generates interest in Ethiopia, Sri Lanka, Vietnam, South Africa, the Netherlands, New Zealand, Vietnam and Brazil said J. Raghava Rao, Chief Scientist, CLRI, who headed the five member team.

### **Resistance to change**

Resistance to change among traditional tanners is the main reason for the slow adoption, though those who have implemented the technology swear by it.

"This is the best technology for the industry. Our company annually saves about Rs.25 lakh," said AR Manikandan, Technical Manager at Bharat Enterprises in Ranipet, one of the first leather manufacturing units to adopt the WCTT.

"In fact, we recovered the licence fee of Rs. 2.5 lakh in the very first month of deploying the technology," he added.

Chromium is the key to leather tanning. Of the 18 billion sq ft of leather produced globally every year, nearly 16 billion is made using chromium.

India produces about 2 billion sq ft of leather and the tanneries discharge about 20,000 tonnes of chromium.

More than salt and sodium sulphate, chromium is the most dangerous pollutant. When let out, the sludge forms a layer on the soil and prevent percolation of water. The WCTT completely eliminates chromium-bearing water discharge.

"This is the highlight of the WCTT," says P Saravanan, Chief Scientist, CLRI, B Madhan, Principal Scientist, CLRI, and Aravindan Rathinam, a leather technologist, were the other two members of the team that invented WCTT process.

Annually, about 70,000 tonnes of basic chromium sulphate (BCS) is used. The average uptake (absorption) of chromium by leather pelts during tanning is only 65 per cent out of chrome tanning agent offered. This means, 24,000 tonnes of chromium tanning agent remains unabsorbed and gets discharged along with waste water.

### Better absorption

According P Thanikaivelan, Principal Scientist, CLRI, in the WCTT the tanning is carried out without water but with 'simple chemicals' that ensure 100 per cent absorption of chromium by the hide.

"We are hopeful that more tanneries will use this technology. It's just a matter of time," said Rao of CLRI.

(Source : Teraja Simhan – Business Line, New Delhi, May 17, 2018)

### FOOTWEAR DESIGN INSTITUTE TO BE UPGRADED

The Footwear Design and Development Institute (FDDI) is proposed to be declared as an institute of national importance soon. This is going by the Footwear Design and Development Institute Bill 2017 introduced in the Lok Sabha by Commerce and Industry Minister Nirmala Sitharaman on Tuesday.

FDDI was established in 1986 with the objective of providing skilled human resources to the leather sector.

This bill now proposes to empower the institute to improve the capacity and performance with a view to address the shortage of trained human resource. It seeks to establish a Governing Council and empower the institute to grant degrees, diplomas, certificates or any other qualification to students of the institute.

The global footwear market is expected to reach \$220.2 billion by 2020 from the current level of \$198.7 billion.

(Source : Business Line – March 3, 2018)

### TANNERY BODY TO INK PACTS WITH THREE EAST AFRICAN COUNTRIES

The All India Skin and Hide Tanners and Merchants Association (AISHTMA) will sign agreements with three east African countries – Kenya, Tanzania and Uganda – to promote trade and investment partnerships in the leather sector.

AISHTMA will sign memorandums of understanding (MoUs) with Tanners Association of Kenya, and Uganda Leather and Allied Industries Association on March 9 in Chennai at a function to mark its Centenary Year.

The MoUs will be signed in the presence of the delegations led by the respective countries' Industry and Trade Ministers. "East African countries, which are rich in raw materials for leather sector, are looking to India as a partner for development. They have seen Indian leather industry's growth in the past four decades – from less than a billion dollar exports level to \$6 billion," said M Rafeeqe Ahmed, President, AISHTMA.

The agreements will focus on supporting and coordinating activities related to production of quality hides and skins and manufacture of leather and increased value addition on hides and skins for domestic and export markets. Three months ago, a 10-member leather industry delegation visited the three countries and interacted with government officials about the possible investment and collaboration opportunities to develop the leather industry in their countries.

These developments are part of the framework of 'Supporting Indian Trade and Investment for Africa', a South-South Aid-for-Trade Project implemented by International Trade Centre (2015-2020), and funded by the United Kingdom's Department for International Development (DFID).

(Source : Business Line – 8 March, 2018)

### 100 INDIAN TRADERS MAY TAKE PART IN CHINA'S FIRST IMPORT-ONLY FAIR IN NOVEMBER

China seeks to reduce high trade surpluses, may import goods & services worth \$10 bn in 5 years

At least 100 Indian exporters from sectors such as leather, auto components and pharmaceuticals will take part in China's first exclusively import fair which will be held in November with an aim to step up purchases from abroad to stem criticism over running high trade surpluses with many countries. India, for instance, has a staggering trade deficit of about \$58 billion with China.

At a time when it is facing intense trade tensions with the US, China intends to reduce gaps through the first of its kind import-only fair. "China wants to import more and has called all countries to export to it to show that it is using imported items for domestic consumption," said an official, speaking on condition of anonymity.

India's exports to China in the April-February period of 2017-2018 amounted to \$11.5 billion while imports added to \$69.4 billion. China has on multiple occasions promised India to address the high trade imbalance between the two countries.

"China wants to show it, too, is an open country. India will participate in the fair," the official said and added that there's pressure on China from many countries to give market access.

### FOR GANGA TO FLOW CLEAN, INDUSTRY TOLD TO SHUT SHOP

Cleaning the Ganga or backing a thriving export industry on its banks – the Yogi Adityanath government is weighing in favour of the former. While the leather industry of Kanpur is crying foul, the administration is saying it is only getting rid of perhaps the holy river's worst polluter in Uttar Pradesh.

The UP chief minister has ordered that all 264 operational tanneries in Kanpur's Jajmau suburb on the river's bank be closed for three months at a stretch, starting December 15 this year, so as to ensure that "clean and pure" Ganga water flows down to Allahabad for the Kumbh starting January 14.

Further, as per an ongoing plan to shift these tanneries away from the Ganga, the chief minister ordered that the sole sewage treatment plant in Jajmau that caters to these tanneries be shifted to Ramaipur about 20 kilometres away, implying that the industries will too have to relocate there.

"For decades, these tanneries have been contaminating the Ganga and turning the water black. The National Green Tribunal has also been against these tanneries on Ganga banks. It is a big decision by the CM," a top UP government official told ET.

The industry is not impressed at all.

"If I have one word for this — it is disaster," Taj Alam, the president of the UP Leather Industries Association, told ET. He said both decisions, of closing the units for three months and shifting them away to a new location, were "alarming" developments for the leather industry that thrives in Kanpur. "See this is a Rs. 6,000 crore worth of exports industry in the Unnao-Kanpur belt. The domestic industry is of another Rs. 6,000 crore. On one hand, the Union commerce ministry has been pushing us to increase our leather exports and on the other hand, the state government is out to punish us. There is no empirical proof to show we are the biggest polluters of the Ganga," Alam said. Alam claimed also that land at the new location in Ramaipur was still to be allotted to industries, and "we are looking at being out of business for at least a year".

At the centre of the debate is the sewage treatment plant (STP) in Jajmau that needs urgent upgrade for cleaning effluent waste generated by the tanneries.

The chief minister was told earlier this week that while the industries were generating 6.7 MLD effluents, the existing STP had a capacity to treat only 36 MLD and it costs Rs. 17 crore a year to run the plant – the tanneries will now have to foot half of this cost. The CM was also told that Rs. 17.88 crore were needed to immediately repair the plant and a whopping Rs. 554 crore to upgrade the STP to the required levels so that no effluent is discharged in the Ganga. On a suggestion from the UP Environment Principal Secretary, the CM decided the STP be instead shifted to the new location in Ramaipur where the UP government is setting up a new 'Mega Leather Cluster' and IIT Kanpur be involved to deliberate on its upgradation.

Alam said the plan so far was to upgrade the STP to standards of the Central Pollution Control Board, but the latest decision to shift it meant the industry won't have even a year to shut shop in Jajmau and relocate to Ramaipur. "It takes time to build a factory, set up equipment. We provide many jobs — what happens to all that in the interim when business will get shut," Alam asked. He said never before in any Kumbh had all tanneries been asked to shut at a stretch for three months like it has been now. "Earlier, we were always told to be closed for 4-5 days before each of the six bathing days in the Kumbh and that too not fully shut as non-wet operations were allowed. For the first time, we are being told to shut down for three months at a stretch. We have export orders; give employment — what about that," Alam asked.

For the Yogi government, however, what is first on the priority list is a clean Ganga.



## LESSON ON LEATHER GOODS – Part VI

**Shome Nath Ganguly**

Former Principal of Karnataka Institute of Leather Technology

(The purpose of this article is to advise the students as well as artisans engaged in leather goods industry.

Shri Puranjan Mazumder of FREYA helped me to prepare this article)

### BACK PACK BAG



The Backpack Bag is also called Book bag, Kitbag, Knapsack, Rucksack, Pack, or Sack pack. In its simplest form of a cloth sack carried on one's back and secured with two straps that go over the shoulders, but there can be variations. Lightweight types of backpacks are sometimes worn on only one shoulder strap.

Backpack Bags are commonly used by hikers and students. These are often preferred to handbags for carrying heavy loads or carrying any sort of equipment, because of the limited capacity to carry heavy weights for long periods of time in the hands.

In ancient times, the Backpack Bags were used as a means to carry the belongings of a hunter. Hunter generally prefers to carry these types of Bags when they plans to venture prey wild animals. It is an easier way of transport for other materials. In the cases of larger hunts, the hunters would dismember their prey and distribute the pieces of the animal around, each one packing the meat into many wrappings and then into bags which they placed on to their backs. The bag itself would be made up of leather of animal hide and skin and sewn together by animal intestines, which would be woven together tightly to make a sturdy thread-like material.

#### MODERN FRAME

Backpacks in general fall into one of four categories :

- Frameless,
- External frame,
- Internal frame, and
- Body pack.

A pack frame, when present, serves to support the pack. It distributes the weight of its contents (inside the bag) across the body of a person carrying more appropriately, by transferring much of the weight to the hips and legs. Most of the weight is therefore taken off the shoulders, reducing the chance of injury from shoulder strap pressure (many backpacks equipped solely with shoulder straps can affect the posture of a person carrying more than 14 kg (30 lbs)), as well as being less restrictive of the upper body range of motion. Most backpacks are capable of being closed with either a buckle mechanism, a zipper, or a dry-bag type closure though a few models use a drawstring fitted with a cord lock for the main compartment.

A body pack is a backpack fitted with one or more pockets that are suspended on the wearer's chest and loaded in such a way that the load in the front and the load in the back are close to equal. The majority of the load in a body pack is carried by the hips. The ideal load carrying system should not disturb the wearer's natural posture, balance and maneuver ability. The load must be dispersed onto the skeletal structure in an even manner, and should not produce unbalanced forces on the body.

## Future Trends in Leather Industry

**T.S.K. Mahadevan**

Deputy Director (Retd.) CLRI

### INTRODUCTION :

Leather is an International Commodity as its production and consumption is universal. The conditions pertaining to various factors and parameters differ in different countries and this leads to the concept of differential rates of development or decline in various countries. In addition the agreements arrived at World Trade Organisation the need for liberalisation and globalisation of economy and trading, obviously necessitate the concept of equal accessibility to the leather in various states starting from the raw materials to the finished utility products in various stages without any geographical barriers. The conventional methods of imposing restrictions like protectionism, antidumping, duties, tariff and non tariff trade barriers will be gradually become ineffective very soon and hence a global projection of the scenario will be more appropriate. The disparities noticed at present like low raw material cost, labour cost, technological capabilities and marketing mechanisms will be approaching an equalisation level. Similarly the present impediments to the growth and development of the industry in the developing countries will be overcome shortly. In short the developed nations and developing countries will soon have to operate on a level playing ground and no amount of protectionism, restrictions either on

technical or commercial aspects will affect the emergence of leather and leather product truly as a global trading commodity. The production and marketing of raw materials, semitanned leathers, crust leathers, finished leathers and consumer leather products like shoes, garments and other products will become a Universal activity in almost all the countries. This will ultimately result in survival of the fittest as the future scenario. There may be many instances of mergers, regroupings, relocations etc. leading to the formation of large or giant organisations and disappearance of large number of tiny, small and medium sector units both in national and international level. There will be corresponding readjustments in the allied fields of chemicals, finishing, accessories and components in different countries. As a comprehensive vision may be beyond the scope of the present analysis, a brief view of scientific technical developments can be summarised as follows, as applicable to Indian leather industry.

### LEATHER INDUSTRY - FUTURE TRENDS

Futuristic appraisal of the development of leather industry will have to mainly depend upon the (1) appraisal of the existing situations, (2) the possibility of growth in the related fields and other sciences, and (3) other extraneous influences that may crop



up in future.

Making a review of the existing situation, the facts as at present, are the hides and skins are the main source for leather in the whole world and the supply position is inelastic which means that there is not much scope for a spectacular growth in the production of hides and skins. Coupled with a growing demand, there will be scramble for the available resources by the existing units. A more critical look is necessary regarding better resource generation, mobilisation and utilization. The demand for the leather products itself is growing in relation to the population growth all over the world. The role of substitutes and supplements has to be examined. Regarding the processing materials and techniques, low energy, capital, cost, pollution, higher productivity and quality standards will be the need. Emerging sciences and technologies would have an impact. Alternate uses and alternate markets are to be studied.

The economic pressures and trade considerations between the developing and the developed countries, further impose greater strain on the growth of the industry particularly in the developing nations. Internally, it may reflect on the traditional and small scale industry, equity and employment. The industrial development should be

**The industrial development should be viewed against the set goals of Economics, Equity, Employment, Environment, Energy, Enterprise and Efficiency**

viewed against the set goals of Economics, Equity, Employment, Environment, Energy, Enterprise and Efficiency.

With this background, if one looks at the future development of the industry, one can broadly classify the leather industry's developments under three main categories (1) Resources generation, mobilisation and better utilisation, (2) Development of alternate and improved processes/products and (3) A total re-appraisal of the existing trading pattern to develop new patterns of collaboration and co-ordinated marketing.

## 1. RESOURCE GENERATION / MOBILISATION

The future trends would be

- Organised farms for : Buffaloes, Stall fed goat/pig exotic/furberaing animals/crocodiles.
- New resources : birds like Ostruch, emu.
- Improved collection of fallen animals
- Imported raw hides
- Improvements in processing technologies.
- Organised hygenic slaughter houses for clusters of villages
- Better utilization of animal by-products
- Setting up Animal By-products Corporation



- Export of lean meat, buffalo meat.
- Greater thrust on products manufacture & innovations.
- Greater mechanisation and automation.

## 2. PROCESSES AND PRODUCTS

### 2.1 New Developments in Polymer Technology

Polymers are playing an increasingly significant role in leather processing. The basic components of a leather finish are still pigments, resins, waxes, casein binders and nitrocellulose lacquers, but vinyl finishes, polyurethanes and cellulose acetate butyrate tops are the new comers and will probably

continue to gain importance in the next decade. Apart from technical developments, there are four important factors which will also influence leather finishes. First, the increase in oil prices will lead to the scarcity of some products at commercially attractive prices. Second, legislation in many countries on the use of certain products on the grounds of proven or suspected toxicity coupled with factory safety regulations and fire prevention, will take its toll and some products will go off the market. Third, the handling of industrial

**Polymers are playing an increasingly significant role in leather processing**

waste will be more closely controlled, and fourth and most important will be the demand for cheaper goods.

### 2.2 Water Borne Coats for Leather

One of the major changes will be the tendency to avoid solvent-based materials wherever possible. For surface coating, the leather industry uses upto 3,500 tonnes of solvents annually of which 98% is lost. As solvents become more

expensive, coupled with the fire risk in finishing departments, there is likely to be a major breakthrough in non-inflammable top-coats. Acrylics are the most likely candidates to fill this role, with water based polyurethanes finding some share of the market.

The future of synthetic resins-especially acrylics is assured. They are the most widely used binders for pigments and the possible extension of their use as water based top coats makes their future particularly bright. The disuse of nitrocellulose has been forecast for many years but so many thousands of tons of it have been used on leather during this century that its end-when it comes-is unlikely to be sudden in solution or solvents, its storage life is virtually unlimited, but solutions of it are always a fire risk and its transportation is



not encouraged by shipping companies. Acrylic emissions are the most likely candidates to take over from nitrocellulose lacquers.

### 2.3 New Finishing Technology

Finishes altogether different from the conventional types are the source of a lot of development ideas, some of which may come to fruition in the next decade. The use of foils from transfer paper has a regular place in finishing. Also conventional finishes may be adopted to work on machines which are not in general use in the leather industry. In recent years there has been a great interest in radiation - curable coatings. These coating are prepared from low molecular weight reactive polymers (oligomers) dissolved in vinyl monomers. When these mixtures are exposed to ultraviolet radiation or to electron beams, they are converted into solid coatings within a few seconds or less. Instead of evaporating, the solvent becomes part of the coating. Thus there is no waste of chemicals and no air pollution. Appreciable energy savings are obtained because of the speed of the reaction and the elimination of the necessity for evaporation of solvents. A wide range of coatings can be prepared with properties dependent upon the nature of

the chemicals, reaction conditions etc. The advantages of using radiation curing in the preparation of leather coatings are numerous and such products are likely to replace the conventional coatings in the years to come.

Tanning and finishing techniques will include one step tailor made multifunctional tanning finishing, filling, fatliquoring and dyeing agents, a single class of dye with equal affinity to differently tanned leathers, concentrated dye application, supersonic and isotopic dyeing of leather outer surface to reflect or to retain heat, to shed wrinkles, grease, dust, odour, newer crosslinking agents, use of solid lubricants etc; three dimensional effects by laser embossing continuous photographic printing etc. using of ultrasonic, radiation lasers etc.

### 3. Energy saving processes

In any industry, raw material procurement, manufacturing method and market supply factors all contribute to the cost of the final product. When rationalising and improving production and reducing costs, these factors must be considered carefully. The leather industry should cope up with rising costs by using efficient energy - saving processes in the years to come. This is particularly important to India where the necessity for reducing oil consumption has become a national concern since the





drastic increase in the price of oil occasioned by the oil crisis often as in 1993. The alarmingly swift escalation in the cost of fossil fuels and the anxieties about a possibly speedier depletion of the sources of these fuels than had been expected earlier have necessitated the user to adopt energy saving processes and the harnessing of solar energy for the leather industry. Solar energy has a wider and a narrower connotation. In the wider sense, it includes - besides the sun's heat - wind power, water power and biomass. In the narrower sense, it refers to the collection of solar heat. Experts say that about 1.5 quadrillion (one followed by 24 ciphers) megawatt hours of solar energy arrive at the earth's outer atmosphere every year, which is 28,000 times greater than all the commercial energy which mankind uses at present. The possibilities of greater use of solar energy for tannery processes will be explored and adopted in the coming years.

Processes leading to energy conservation, energy saving, fuel efficiency will receive greater attention

**Processes leading to energy conservation, energy saving, fuel efficiency will receive greater attention in addition to the use of unconventional sources of energy for drying, heating water etc.**

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#### **4. EMERGING TECHNOLOGIES :**

##### **4.1 Chemicals from Renewable resources and Biomass :**

Biomass is a term which encompasses cellulosic residue, including agricultural residues. Because of the decline in proven world reserves of petroleum and natural gas and the rising demand for energy and chemical resources, biomass, organic waste and coal are likely to acquire an increasingly important role as source of aromatics. While the sources can compensate for declining availability of petrochemical based aromatics, research is required to further develop and optimize non-petrochemical processes for producing, recovering and upgrading aromatic

chemicals.

Renewable resources can also serve as a source of aromatic chemicals. Vegetable matter can be fermented to ethanol and this converted to aromatic rich hydrocarbons by Mobile Process.

### GST COLLECTION IN MAY' 2018 DROPE TO Rs. 94,016 Cr.

Goods & Services Tax collections in May declined to Rs 94,016 crore from over Rs 1.03 lakh crore in April, the Finance Ministry said on Friday. As many as 62.47 lakh businesses filed their summary sales return GSTR-3B in May.

The total gross GST revenue collected in May 2018 was Rs 94,016 crore, of which CGST is Rs 15,866 crore, SGST Rs 21,691 crore, IGST Rs 49,120 crore and cess Rs 7,339 crore, the ministry said.

"Though current month's revenue collection is less compared to last month's revenue, still the gross revenue collection in the month of May (Rs 94,016 crore) is much higher than the monthly average of GST collection in the last Financial Year (Rs 89,885 crore). The April revenue figure was higher because of year end effect," the ministry said. The Union government has released 6,696 crore to the states as GST compensation for March 2018, as on May 29.

Therefore, the total GST compensation released to the states for the Financial Year 2017-18 (July 2017 to March 2018) has been Rs 47,844 crore, the ministry said.

"The total GST collection for May 2018 is Rs 94,016 crores, which is higher compared to average monthly collection of Rs 89,885 crores of 2017-18. This reflects better compliance after introduction of e-way bills," Finance Secretary Hasmukh Adhia tweeted.

(The Telegraph – 01/06/2018)

### FISCAL DEFICIT PERSISTS – MARGINALLY OF COURSE

The fiscal deficit for 2017-18 was 3.53 per cent of the gross domestic product (GDP), a tad higher than the revised estimate of 3.5 per cent of GDP. The initial estimate was 3.2 per cent of GDP, while for the current fiscal it is 3.3 per cent. Fiscal deficit is the gap between government expenditure and receipts, which is bridged through borrowings.

According to data released by the Controller General of Accounts (CGA), the revenue deficit was 2.65 per cent of the GDP. In absolute terms, the fiscal deficit was Rs 5.91 lakh crore, or 99.5 per cent of the budget estimate of Rs 5.94 lakh crore. The initial estimate was Rs 5.46 lakh crore.

Economic affairs secretary Subhash Chandra Garg said he did not see any co-relation between oil prices and GDP growth, and the fiscal deficit target would not be changed.

Aditi Nayar, principal economist with Icra, said "tax and non-tax revenues, as well as revenue and capital expenditure, have fallen short of the revised estimates for 2017-18. Disinvestment receipts stood out as the only major category of receipts that surpassed the revised estimate for the year".

Gross tax revenue rose 12.8 per cent, benefiting from the robust expansion in direct taxes as well as the inclusion of Rs 62,600 crore of inflows from

the GST compensation cess. However, indirect tax collection was hit by the inclusion of some taxes for a period of 11 months instead of 12 months after the transition to the GST, she added.

Revenue expenditure expanded 11.5 per cent in 2017-18, while capital spending contracted 9.2 per cent, resulting in a dip in the quality of expenditure. The government's total expenditure for the fiscal was Rs 21.4 lakh crore against the revised estimate of Rs 221. lakh crore

(The Telegraph – 01/06/2018)

### WHAT FACTORS AFFECT YOUR 'CIBIL' SCORE AND WHAT SHOULD TO DO TO MAINTAIN A GOOD SCORE?

CIBIL score is a three-digit number which represents your credit history. The score is calculated on the basis of an individual's credit report which contains his/her credit history.

#### What is CIBIL Score?

CIBIL score is a three-digit number which represents your credit history. The score is calculated on the basis of an individual's credit report which contains his/her credit history. The CIBIL score ranges between 300 and 900. The higher the score the better. If the score is near 900 then there is more chance for banks to grant loans while if there is low score it will be difficult to get loans from banks.

#### Why is CIBIL Score important?

CIBIL score is important because it is used by a lot of credit institutions to check if an individual is credit worthy when s/he applies for a loan. Also, sometimes when a person applies for a visa, authorities ask for the applicant's CIBIL score.

#### Factors affecting CIBIL score:

1. **Credit History:** Credit history carries most weight. 30 per cent of your CIBIL score is affected due to delay in payments.
2. **Credit mix and duration:** Too many loans and credit cards affect about 25 per cent of your CIBIL score.
3. **Credit exposure:** 25 per cent is when the credit limit is increased.
4. **Other factors:** 20 per cent is attributed to other factors.

#### Top rules to maintain a good CIBIL score:

1. Always make your repayment on time.
2. Maintain a healthy mixture of secured and unsecured loans.
3. Avoid making multiple queries regarding loans or credit cards.
4. Check your CIBIL score report regularly.

According to a report by Credit Mantri, if your CIBIL score is between 300-599, then you do not qualify for a loan. If the CIBIL score is between 600-749, although the score is not very high but gives an individual a good chance of getting a loan approved. 750 and above gives you the best chance to get a loan approved from a lender. Also, a person might be able to negotiate a lower interest rate if his/her credit score is good.

### RETAIL AND SERVICES SECTOR RESULT IN HIGHER NON-FOOD CREDIT GROWTH : RBI

The Reserve Bank on Thursday said non-food credit growth accelerated to 10.7 per cent for April as against 4.5 per cent in the year-ago period, led by retail and the services sector.

The non-food credit grew 10.7 per cent to Rs 76,130 billion as on April 27, the central bank said.

The gross bank credit, including the food credit, was up 10.4 per cent during the same period, as against 3.8 per cent in the year-ago period.

The data includes performance of 41 scheduled commercial banks, accounting for about 90 per cent of the total non-food credit deployed, it said.

Loans to both the medium and large corporate were better than the year-ago period, but the sluggishness was visible with growth of only 1 per cent and 3.6 per cent, respectively.

Credit to major sub-sectors such as textiles, engineering, food processing, construction and rubber and plastic accelerated, while infrastructure, basic metal and metal products, chemicals and chemical products, gems and jewellery and cement and cement products contracted, it said.

### -: JILTA :-

Owner: Indian Leather Technologists' Association, Publisher & Printer: General Secretary - ILTA, Published From: 'Sanjoy Bhavan', (3<sup>rd</sup> floor), 44, Shanti Pally, Kasba, Kolkata - 700107, West Bengal, INDIA and Printed From: M/s TAS Associate, 11, Priya Nath Dey Lane, Kolkata- 700036, West Bengal, INDIA