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ILTA
Since 1950

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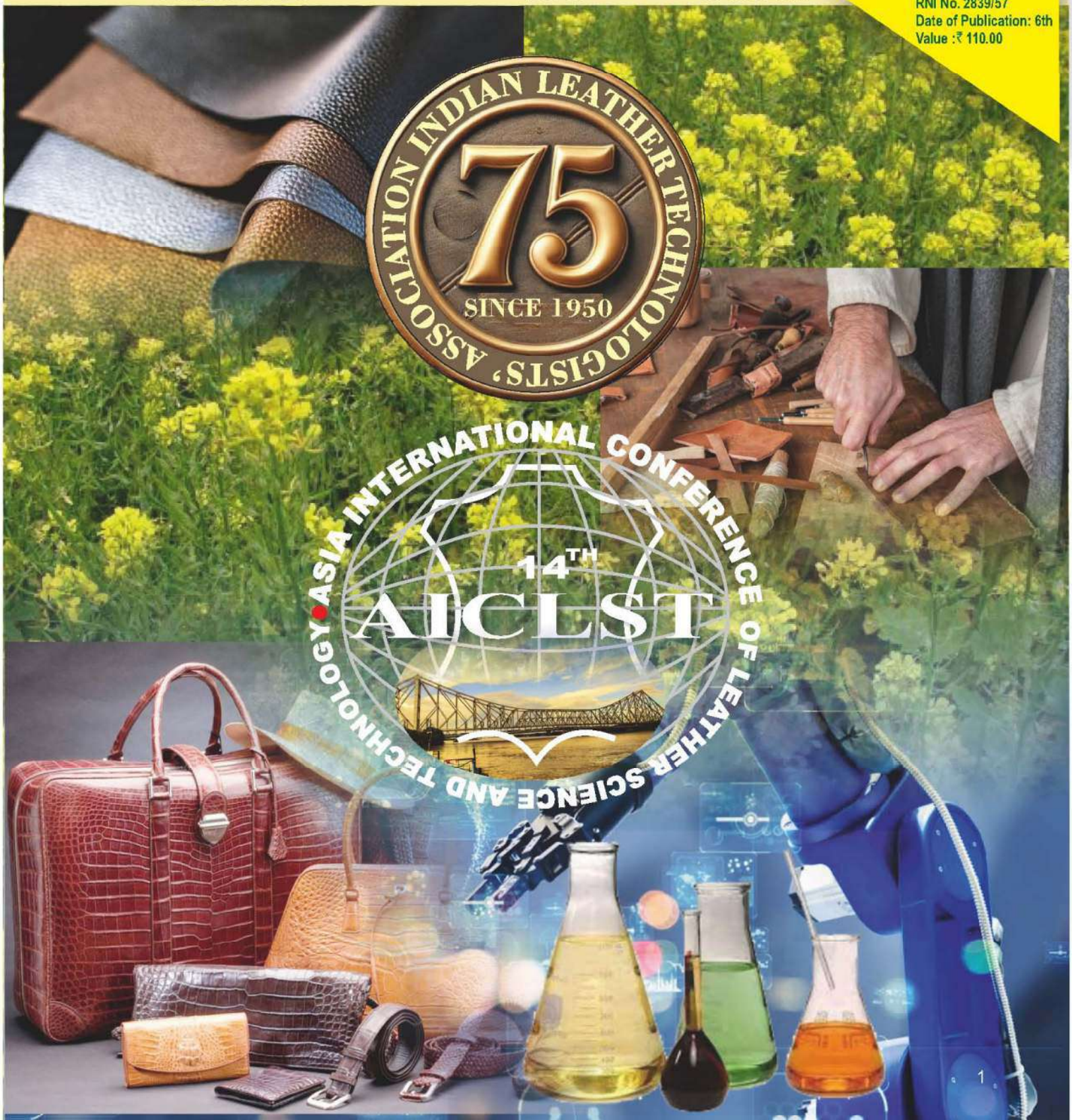

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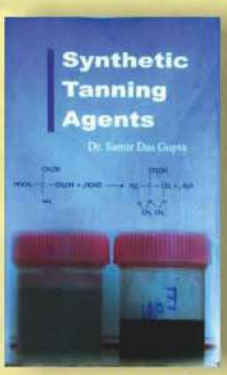

Title of the Book
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Author
Prof. B. M. Das

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ILTA
Since 1950

Indian Leather Technologists' Association
[A Member Society of International Union of Leather Technologists' and Chemists

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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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(Member Society of International Union of Leather Technologists and Chemists Societies)

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4. Mr. Aniruddha De
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Mr. Rajvir Verma
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INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION (ILTA)

(Member Society of International Union of Leather Technologists and Chemists Societies)

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1) Estate Management Sub-Committee :-

Co-Ordinator : Mr. Bibhas Chandra Jana

2) Regional Activities Sub-Committee :-

Co-Ordinator : Mr. Pradipta Konar

3) Finance Sub-Committee :-

Co-Ordinator : Mr. Aniruddha De

4) Project in Calcutta Leather Complex Sub-Committee :-

Co-Ordinator : Mr. Susanta Mallick

5) Membership Sub-Committee :-

Co-Ordinator : Mr. Abhijit Das

6) Seminar & Workshop Sub-Committee :-

Co-Ordinator : Mr. Satyanarayan Maitra

7) HRD & Social Welfare Sub-Committee :-

Co-Ordinator : Mr. Ratan Chowdhury

8) JILTA Sub-Committee :-

Co-Ordinator : Dr. Goutam Mukherjee

9) Digitalization of ILTA Publications Sub-Committee :-

Co-Ordinator : Mr. Kunal Naskar

10) Platinum Jubilee Celebration Sub-Committee :-

Co-Ordinator : Mr. Asit Baran kanungo

11) 14th Asian Congress (AICLST) Sub-Committee :-

Co-Ordinator : Mr. Arnab Jha

12) LEXPO Sub-Committee :-

Co-Ordinator : Mr. Asit Baran Kaunugo

JOURNAL OF INDIAN LEATHER TECHNOLOGISTS' ASSOCIATION (JILTA)

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Leather Fraternity 75 years of service to the International

Public Debt for Nations

Public debt refers to the total financial obligations of a country's government, including bonds and other securities. This debt can be sourced both domestically and internationally. Issuing public debt is a crucial tool that governments use to fund public expenditures and address budget shortfalls. To facilitate comparison between countries and assess a country's effective debt burden, public debt is typically measured as a percentage of Gross Domestic Product (GDP). Below is a list of the top 10 countries that will have the highest public debt-to-GDP ratio in 2025, according to our panel of analysts.

Japan is the country expected to have the world's highest public debt-to-GDP ratio this year, 242%. This high debt burden is relatively recent: In 1990, the ratio was only around 50% of GDP. However, that figure has subsequently surged due to aggressive government spending aimed at reviving an economy stalled by the collapse of the asset-price bubble in the early 1990s. Successive administrations have launched expansive stimulus packages, including substantial infrastructure projects and extensive social welfare spending, to combat persistent deflation and low growth. Moreover, a rapidly aging population has amplified expenditures on healthcare and pensions, significantly adding to the debt burden. Interestingly, despite these immense obligations, Japan's debt does not tend to disrupt its economy, as it is largely held by domestic investors and institutions, including the Bank of Japan, which in turn maintains low borrowing costs. Nevertheless, Japan faces long-term vulnerabilities from rising debt-servicing costs if interest rates increase; our panelists are indeed forecasting higher interest rates going forward. This could crowd out crucial investment in growth areas. Thus, while manageable in the short term, Japan's public debt still poses long-term risks to economic stability. Focus Economics Consensus forecast is for Singapore's public debt to be 173% of GDP in 2025. However, this high figure is due to intentional government policy rather than economic distress. Singapore strategically issues domestic debt to foster financial market development, particularly to support the mandatory savings scheme (Central Provident Fund). Unlike most heavily indebted countries, Singapore consistently maintains budget surpluses and substantial foreign reserves, resulting in virtually no actual fiscal strain; the government does not use debt financing to cover budget deficits or operating expenses. Consequently, unlike traditional high-debt scenarios elsewhere, Singapore's elevated public debt is neither problematic nor economically limiting; instead, it reflects the country's prudent and strategic financial management.

Eritrea's public debt—estimated by Focus Economics panelists to clock in at 210% of GDP in 2025—is so high partly due to prolonged military conflicts, including war with Ethiopia in 1998–2000 and the more recent Tigray conflict. Continued mandatory military service has also diverted labor and investment from productive sectors, severely limiting economic diversification. Additionally, Eritrea's restrictive economic policies, such as tight state control over industries and limited private sector engagement, have undermined growth, constrained revenue generation and increased reliance on external borrowing from China and other bilateral creditors. Eritrea's international isolation, intensified by past sanctions and diplomatic tensions, further hamper opportunities for debt relief or debt restructuring. Consequently, the country's high debt level is a critical economic constraint, stalling long-term development, exacerbating poverty and perpetuating the nation's dependency on external financial assistance. Partly for this reason, Eritrea is and will continue to be among the world's poorest nations in per capita terms.

Greece's public debt became so elevated primarily because of decades of unchecked government spending, widespread tax evasion and structural inefficiencies in the economy. These weaknesses were dramatically exposed during the 2008 global financial crisis, plunging Greece into severe recession and forcing multiple international bailouts accompanied by stringent austerity measures. The resulting debt crisis severely impinged Greece's economic performance, causing a prolonged period of recession, high unemployment and declining standards of living in the early to mid-2010s. Since the pandemic, Greece's

public debt burden has tumbled by over 50 percentage points amid strong economic growth and prudent fiscal policy, but is still expected to be among the highest in the world in 2025 at 149% of GDP. Encouragingly, this sharp downward trend is expected to persist in the coming years, with the country's public debt-to-GDP ratio forecast to converge towards the Euro area average over the next decade. However, the debt burden will continue to require careful fiscal management and will constrain Greece's ability to implement expansionary fiscal policies.

Italy's elevated public debt results from decades of sluggish economic growth, structural inefficiencies and consistently high government spending on pensions and social welfare programs. During the European debt crisis of the 2010s, Italy was one of the countries most at risk—one of the so-called PIGS—despite never requiring a formal bailout. The combination of weak GDP growth and elevated spending demands will keep the budget deep in the red and Italy's public debt high in the coming years; Focus Economics current Consensus forecast is for a public debt-to-GDP ratio of 138% in 2025. Italy is arguably the euro area's weakest fiscal link, given the country's elevated public debt forecasts combined with the economy's sheer size.

Sudan's public debt is forecast to be 128% of GDP in 2025. This figure is more than double the average for emerging markets, and results from prolonged internal conflicts, economic mismanagement, international sanctions and the devastating economic impact of South Sudan's secession in 2011, which drastically reduced oil revenues. These factors forced Sudan to rely heavily on external borrowing to finance budget deficits, fueling chronic economic instability. The debt burden significantly limits fiscal space, in turn restricting investment in critical infrastructure, public services and economic diversification, thus hindering growth and development. While recent international engagement and debt relief initiatives have begun addressing Sudan's debt challenges, the country remains highly vulnerable. Persistent political instability—including the devastating civil war that has played out since 2023—and limited economic reforms continue to make it difficult for the government to manage its debt burden.

Bahrain's public debt-to-GDP ratio roughly tripled between 2012 and 2023, with the surge attributed to several factors. The 2014–2016 collapse in global oil prices reduced hydrocarbon revenues, exacerbating fiscal deficits as a result. Rising military and security spending in response to regional instability further strained public finances, while initiatives to diversify the economy necessitated substantial public investments. In 2018, Bahrain received a USD 10 billion financial support package from neighboring Gulf countries, conditional upon implementing fiscal reforms, including the introduction of a value-added tax (VAT). Despite these measures, Bahrain's public debt remains a concern and is expected to rise further as a share of GDP in the coming years; for 2025, Focus Economics panelists pencil in a reading of 131% of GDP. The government's aversion to substantially raising taxes, coupled with rigid social spending demands in order to ensure social stability, will stoke public debt going forward.

The Maldives' public debt has escalated significantly in recent years. This surge is partly due to extensive borrowing for ambitious infrastructure projects, such as the China-Maldives Friendship Bridge and the expansion of Velana International Airport. Additionally, the Covid-19 pandemic severely impacted the tourism-dependent economy, which contracted by a third in 2020, requiring increased government expenditure to mitigate the downturn; in the same year, the fiscal deficit swelled to more than a fifth of GDP. The country will remain at risk of debt distress going forward, with heightened debt servicing costs projected to average around USD 600–700 million in 2025–26. That said, strong tourism revenue and foreign financial support—particularly from India, which late last year announced a bailout package for the archipelago—should aid financial stability. Our Consensus is for the public debt-to-GDP ratio to be 125% of GDP this year.

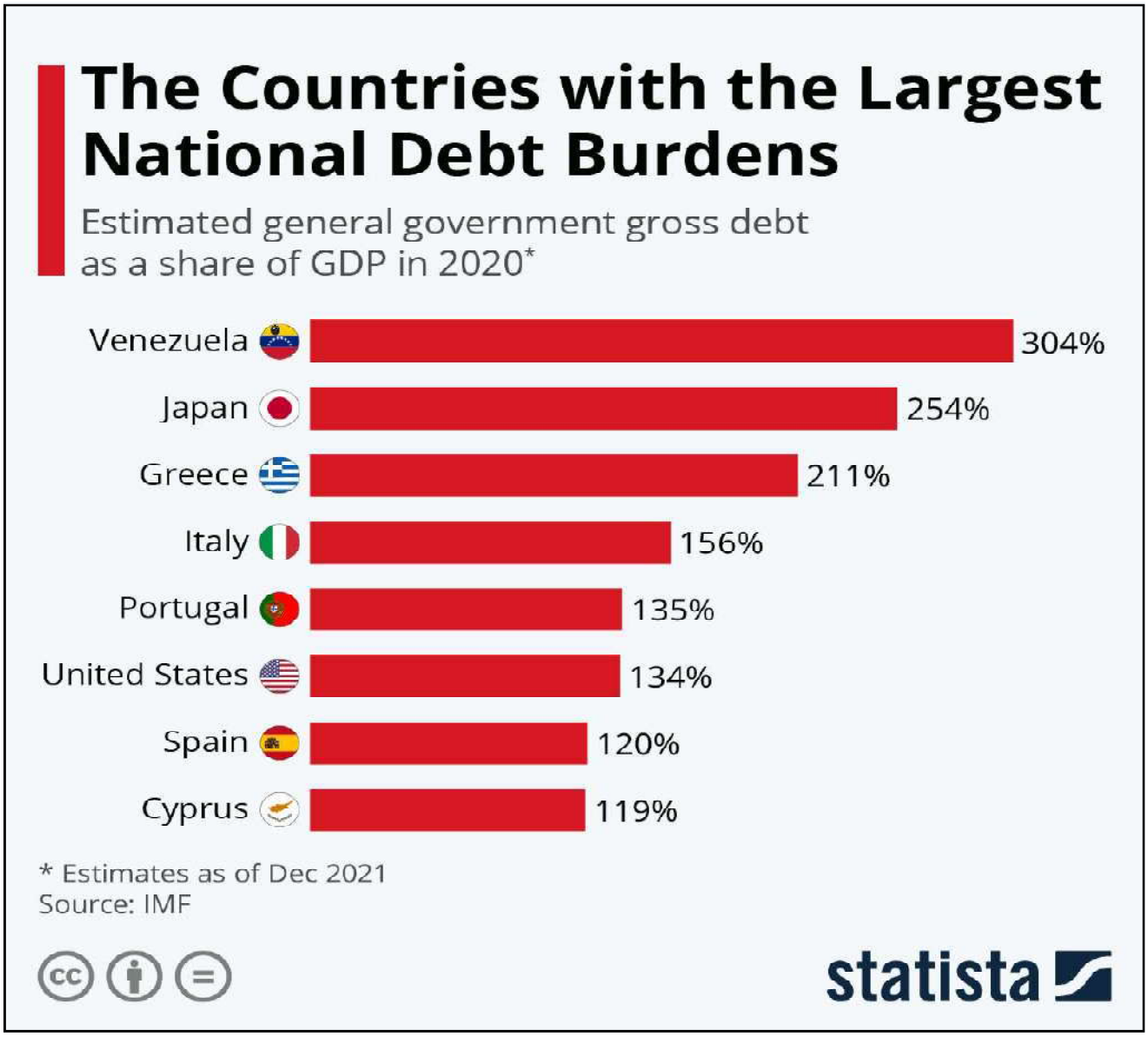
The United States' public debt has sharply increased so far this century due to frequent tax cuts, rising entitlement spending and policy responses to the Global Financial Crisis and the Covid-19 pandemic. Higher entitlement spending is linked to the aging population and rising healthcare costs associated with programs like Medicare and Medicaid. The country's debt burden is currently manageable, as the dollar's status as the global reserve currency keeps borrowing costs low and ensures strong market demand for U.S. Treasury bills. However, the need for Congress to periodically raise the debt ceiling to allow more borrowing creates uncertainty; without the periodic re-rating of the ceiling, the federal government would be forced to cut back spending or default on debt. The new government under Donald Trump is attempting to hack away at public spending through the new Department of Government Efficiency. For all the media hype surrounding the department, cuts to date are likely small and several cost-saving measures are already being challenged in the courts. For now, Focus

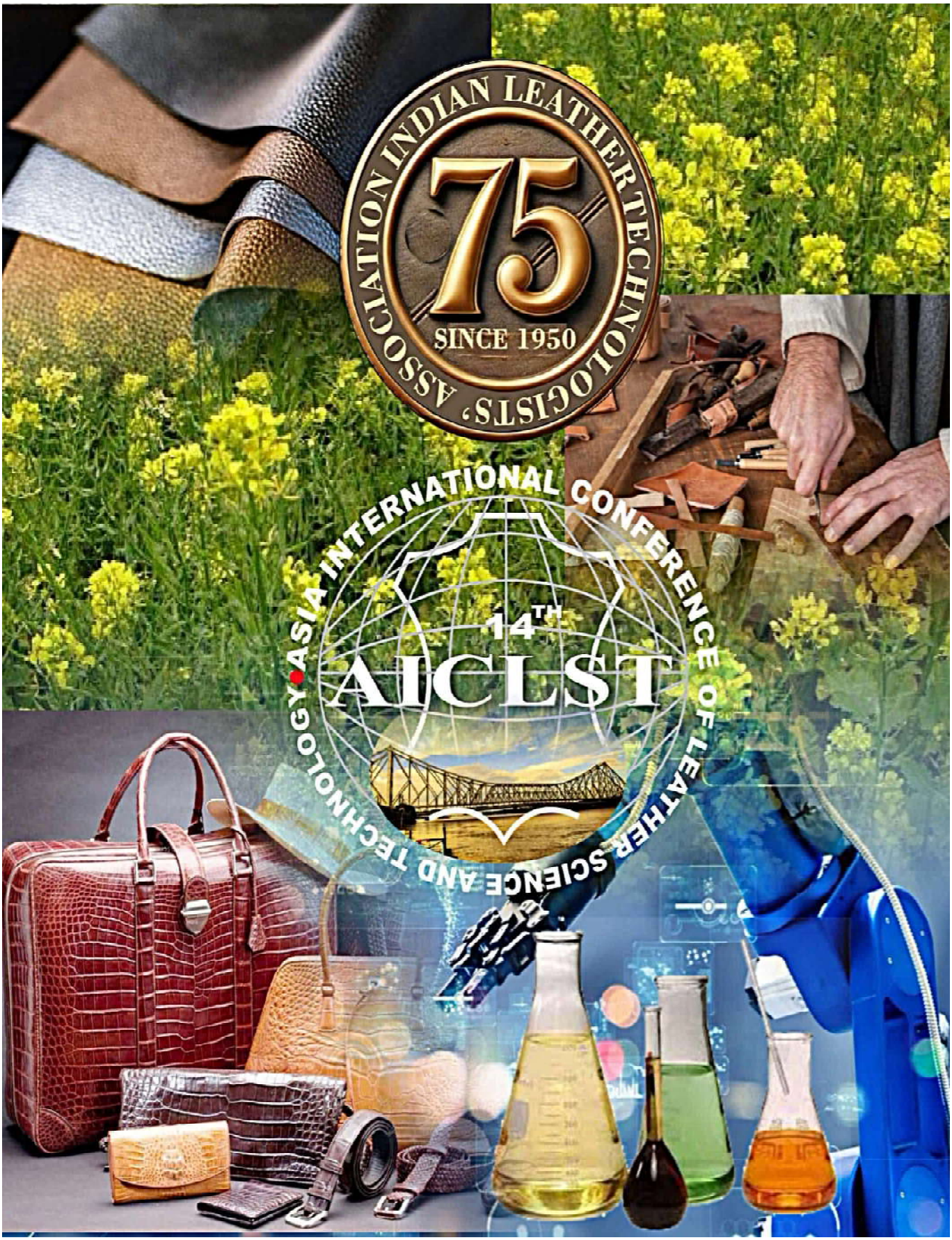
Economics panelists continue to forecast the U.S. to run the largest deficit in the G7 in the coming years, and for public debt to remain on an upward trend as a share of GDP, reaching 124% of GDP this year.

Since 1975, France has consistently run budget deficits, leading to a steady accumulation of public debt. Sluggish economic growth, a generous welfare state and the public's aversion to any form of fiscal consolidation—often manifested in violent protests such as the Yellow Vest movement—have all contributed to persistent fiscal shortfalls. The 2008 global financial crisis and the Covid-19 pandemic further exacerbated this trend, with the latter prompting extensive government spending to support the economy. The country currently has one of the largest fiscal deficits in the EU; in 2024, France was reprimanded for flouting the bloc's rule mandating a deficit of less than 3.0% of GDP. The new government of Francois Bayrou has pledged mild budget consolidation in the coming years, though this would not be enough to put a dent in France's public debt pile. Focus Economics Consensus is for the public debt-to-GDP ratio to be 116% in 2025 and to rise towards 120% by the end of the decade, posing risks to financial stability.

Goutam Mukherjee

Dr. Goutam Mukherjee
Hony. Editor, JILTA




ASSOCIATION INDIAN LEATHER TECHNOLOGISTS,
75
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ASIA INTERNATIONAL CONFERENCE OF LEATHER SCIENCE AND TECHNOLOGY
14TH
AICLST

From the desk of General Secretary

14TH PROF. MONI BANERJEE MEMORIAL LECTURE

The event was organized at 03.00 PM (Registration begins at 02.00 PM) on Tuesday the 18th March, 2025 at Seminar Hall – 19A, The Science City, J B S Haldane Avenue, Kolkata – 700 046.

After delivering the introductory speech, Mr. Susanta Mallick, General Secretary, ILTA, invited the following to garland the portrait of Late Prof. Moni Banerjee.

1. Mr. Arnab Kumar Jha, President, ILTA
2. Mr. Tapas Choudhury, Senior Member of ILTA
3. Mr. Aloke Kr. Basu, Senior Member of ILTA
4. Mr. Dhiman Saha, Senior Member of ILTA
5. Mr. Shome Nath Ganguly, Hon'ble Speaker of the day
6. Mr. Gopal Chatterjee, Mrs. Maitreyee Chatterjee & Dr. Chandana Banerjee (Sarkar), family members of Late Prof. Moni Banerjee
7. Mr. Arindam Halder, Representative from CFTC, Budge Budge
8. Mr. Rinsten Dorjee, Representative from FDDI
9. Mr. Pradipta Konar, Representative from Solidaridad
10. Mr. Tapan Nandi, Representative from ILPA
11. Ms. Sufia Tabassum, Winner of Prof. Moni Banerjee Memorial Scholarship from GCELT, Kolkata

After garlanding session, Mr. Arnab Jha, President, ILTA and Mr. Shome Nath Ganguly, Consultant & Technical Advisor, were requested to take their seats on the dais and Mr. Jha was requested to deliver the Welcome Address. Mr. Jha in his address briefly recalled the life history and achievements of Late Prof. Moni Banerjee and welcomed all the participants.

Name of the recipients of Moni Banerjee Memorial Medals then declared and medals & certificates were handed over to them as stated below: -

1) Mr. Abeer Saifi, Topper, Diploma in Footwear Manufacture & Designer Course Examination, 2024, Central Footwear Training Institute, Agra, U.P., was unable to attend (his Medal & Certificate will be sent by speed post).

2) Mr. Amarta Sen, Topper, B. Des. in Footwear Design & Production Examination, 2024, Footwear Design & Development Institute, Kolkata Campus, received the Medal & Certificate from Mr. Arnab Kumar Jha.

3) Ms. Sarah Mullamithawala, Topper, B. Des. in Fashion Designing Examination, 2024, Footwear Design & Development Institute, Kolkata Campus, received the Medal & Certificate from Mr. Shome Nath Ganguly.

4) Ms. Kavinmalar M A, Topper, B. Des. in Leather Goods & Accessories Design Examination, 2024, Footwear Design & Development Institute, Kolkata Campus, received the Medal & Certificate from Mr. Arnab Kumar Jha.

5) Miss Tithi Das, Topper, Diploma in Leather Goods Technology Examination, 2024, Central Footwear Training Centre, Budge Budge, West Bengal, received the Medal & Certificate from Mr. Shome Nath Ganguly.

6) Mr. Suvam Adhikary, Topper, Diploma in Footwear Technology Examination, 2024, Central Footwear Training Centre, Budge Budge, West Bengal, received the Medal & Certificate from Mr. Arnab Kumar Jha.

7) From the year 2023 a Scholarship in the name of late Prof. Moni Banerjee has been introduced. A selection committee consisting of three members with Prof. (Dr.) Sanjoy Chakraborty, Principal, GCELT, Mr. Gopal Chatterjee, Son-In-Law of late Prof. Moni Banerjee and Mr. Susanta Mallick, General Secretary, ILTA was formed for the purpose.

   Miss Sufia Tabassum, Student of B.Tech., Leather Technology stream of Govt. College of Engineering & Leather Technology, Kolkata, was nominated as the recipient the Prof. Moni Banerjee Scholarship, 2024-25. She received the award from Dr. Chandana Banerjee (Sarkar) & Mr. Arnab Jha.

Mr. Mallick thereafter requested Mr. Arnab Jha to greet Mr. Shome Nath Ganguly, Speaker of the day with a flower bouquet.

Mr. Jha then introduced Mr. Shome Nath Ganguly to the gathering and requested him to deliver the 14th Prof. Moni Banerjee Memorial Lecture titled "***Footwear Industry of West Bengal***". On conclusion of the lecture, Mr. Ganguly was presented a Memento and Citation by Mr. Susanta Mallick & Mr. Arnab Kumar Jha.

Mr. Susanta Mallick then proposed the Vote of Thanks to the Speaker, Members, Faculties and Students of GCELT, CFTC, CFTI & FDDI and dignitaries from the industry. He also paid heartfelt thanks to the family members of Late Prof. Moni Banerjee for their kind presence and participation in the event and also the Science City authority for their kind support to organize the event in their Seminar Hall as the Venue. Wishing a bright future to the award winners, Mr. Mallick requested all present to proceed to outside of seminar hall for tea & refreshments.

More than 100 participants joined the program.

The whole program would be available on the YouTube Channel, Facebook Page and website of ILTA soon.

DETAILS OF VARIOUS SUB-COMMITTEES FOR THE TERM 2024-2026

The Executive Committee of ILTA in it's 566th Meeting held on 18th October, 2024 have proposed to form sub-committees to conduct various future activities during the term 2024-2026. However, in the 567th Meeting held on 5th December, 2024, the Executive Committee of ILTA have finalized forming of various sub-committees along with their Co-ordinators & Members. Details of the Committees are as follows :

1. Estate Management Sub-Committee:

Co-Ordinator	Members
Mr. Bibhas Chandra Jana	Mr. Keshab Chandra Mondal
	Mr. Laxminarayan Sahoo
	Mr. Aniruddha De

Scope to assignments

a) Statutory obligations – Building maintenance, Electrification, Generator, Fire Safety, Lift etc.
b) Property Tax related matters
c) Beautification of ILTA Building
d) Building related all works including tenants

2. Regional Activities Sub-Committee:

Co-Ordinator	Proposed Members
Mr. Pradipta Konar	To be selected from concerned Regional Committees

Scope to assignments

a) Activities in regions to activate the Regional Committee
b) Bank Account in region
c) At least One Memorial Lecture per region
d) Open Regional Office

3. Finance Sub-Committee:

Co-Ordinator	Members
Mr. Aniruddha De	Mr. Kaushik Bhuiyan
	Mr. Laxminarayan Sahoo
	Mr. Keshab Chandra Mondal
	Mr. Bibhas Chandra Jana

Scope to assignments

a) Tenants related matters
b) To manage the tenants and their timely payment

c) To reduce our financial dependency on rent & interest
d) To find other source of income like advertisement in JILTA, sponsorship for our events etc.

4. Projects in Calcutta Leather Complex Sub-Committee:

Co-Ordinator	Members
Mr. Susanta Mallick	Mr. Keshab Chandra Mondal
	Mr. Pradipta Konar
	Mr. Abhijit Das
	Mr. Kunal Naskar
	Mr. Kanak Kumar Mitra

Scope to assignments

a) To buy a land approx. 2,000 sq. mtr. in Leather Complex
b) To prepare a project report with our activities for this project
c) To work with GCELT to install a common facility center in the heart of the leather complex in TTSC building
d) To make an auditorium for holding our events & also of others for numerous activities
e) To take up activities for the welfare of our members at the Leather Complex

5. Membership Sub-Committee:

Co-Ordinator	Members
Mr. Abhijit Das	Mr. Bibhas Chandra Jana
	Mr. Dipayan Adhikary
	Mr. Amit Kumar Mondal
	Mr. Kunal Naskar
	Mr. Ajay Kumar Mishra

Scope of Assignments

a) To increase Membership Strength with effective members
b) To increase the Life Membership Fees
c) To collect Company Membership – to reach more to the industry
d) Annual Fee for Ordinary Membership to be revised

6. Seminars & Workshops Sub-Committee:

Co-Ordinator	Members
Mr. Satyanarayan Maitra	Mr. Suprabhat Jatty
	Mr. Amit Kumar Mondal
	Mr. Ajay Kumar Mishra

Scope of Assignments

a) One event per month on relevant topic by ILTA alone or jointly with other Associations / Organizations / Institutes etc. should be organized
b) Re-structuring the Memorial Lectures Venues

7. HRD & Social Welfare Sub-Committee:

Co-Ordinator	Members
Mr. Ratan Chowdhury	Mr. Kaushik Bhuiyan
	Mr. Abhijit Das
	Mr. Dipayan Adhikary

Scope of Assignments

a) Motivational Lectures for Career Building – speech by managerial people
b) Practical Knowledge Enhancement – speech by industry people
c) At least, one lecture per month on the above topics
d) Medical Camp, Health Talk, Medical Workshop
e) Employment Cell
f) A permanent space in the Leather Complex for our members to interact and to hold business meets etc.

8. JILTA Sub Committee:

Co-Ordinator	Members
Dr. Goutam Mukherjee	Mr. Jayanta Chaudhuri
	Mr. Diganta Ghosh

Scope of Assignments

a) Effective Editorial Board
b) Peer Review Committee
c) Upgradation of Content
d) More interesting for readers including Industry & Economics
e) Advertisement for JILTA to make it economically self sufficient

9. Digitalization of ILTA Publications Sub-Committee:

Co-Ordinator	Members
Mr. Kunal Naskar	Mr. Ratan Chowdhury
	Mr. Dipayan Adhikary

Scope of Assignments

a) All Publications of ILTA
b) Restructuring our website

c) Uploading of all our activities in the website
d) Digitalization of all Books & JILTA, for all Libraries, Institutes, Association etc.

10. Platinum Jubilee Celebration Sub-Committee:

Co-Ordinator	Members
Mr. Asit Baran Kanungo	Mr. Arnab Jha
	Mr. Susanta Mallick
	Dr. K. J. Sreeram
	Dr. S. Rajamani
	Mr. N. R. Jagannathan
	Dr. Swarna V. Kanth
	Mr. Pulok Mazumder
	Mr. J. P. Saraswat

Scope of Assignments

a) Advance Planning for 75th Foundation Day Celebration.
b) Curtain Raising Program of the 14th AICLST
c) All other related jobs regarding the Year-long celebration program.

11. 14th Asian Congress (AICLST) Sub-Committee:

Co-Ordinator	Members
Mr. Arnab Jha	Mr. Asit Baran Kanungo
	Mr. Susanta Mallick
	Dr. K. J. Sreeram
	Dr. S. Rajamani

Scope of Assignments

a) Details Planning for Asian Congress & execution
b) Finding out the Venues
c) Fixing the Dates of the congress
d) Other Logistic activities regarding organizing the event.

12. LEXPO Sub-Committee:

Co-Ordinator	Members
Mr. Asit Baran Kanungo	Mr. Tapan Nandi
	Mr. Aniruddha De
	Mr. Bibhas Chandra Jana

Scope of Assignments

a) Explore possibilities of holding any fare like LEXPO which will be attractive for common people and will meet our objective to promote the industry.

14TH ASIA INTERNATIONAL CONFERENCE ON LEATHER SCIENCE & TECHNOLOGY (AICLST)

ILTA is going to organize the 14th Asia International Conference on Leather Science & Technology (AICLST) in the year 2026 at Kolkata, India.

ILTA will also organize it's Platinum Jubilee Celebration in 2025.

Planning and details of both the programs will be shared in due course.

HEALTH CARE BENEFIT FOR ILTA MEMBERS

ILTA has taken an initiative to introduce Health Care Benefits for all the Members of the Association in collaboration with M/s Narayana Health, Kolkata. Initially the scheme is applicable for the members of Eastern Region only as the Pilot Project.

For benefits and other details about this project, you may kindly follow the HRD Corner.

DIGITALIZATION OF ILTA PUBLICATIONS

ILTA is going to launch a digital platform for availing all its publications including Text Books, JILTA and other publications online.

Work on this project is under process. The details of the same will be published very soon.

IDENTITY CARD FOR LIFE MEMBERS OF ILTA

The Executive Committee of ILTA has decided to issue a unique Plastic Identity Card to all the Life Member of ILTA against their Membership.

Hence, all the Life Members are advised to send the following information through official Email ID - **admin@iltaonleather.org** and/or WhatsApp No. - **9432553949** to ILTA office as soon as possible.

1) Name of the Member (In capital letter)
2) Full Residential Address of the Member
3) AADHAR No. of the Member
4) Blood Group of the Member
5) A HD quality Photo of the Member
6) Mobile No. of the Member
7) Email ID of the Member

YOUTUBE CHANNEL & FACEBOOK PAGE OF ILTA

You are requested to kindly **Like** & **Subscribe** the official YouTube Channel of ILTA namely **ILTA Online** and **Follow** the FaceBook Page of ILTA namely **Indian Leather Technologists' Association** to get regular updates on the activities of our Association.

You may find all the Lives / Video recordings of different Seminar, Symposiums & Webinars on both of these Social Media Channels along with our website **www.iltaonleather.org** time to time.

PUBLISH YOUR TECHNICAL ARTICLE

Faculties, Research Scholars and Students of various Leather Institutes may wish to publish their Research / Project papers in an Article form in this monthly technical journal, JILTA.

We use to offer an honorarium of Rs.1,000/- per article / per issue, against any article selected for publication.

Interested author may sent their paper (in MS Word format) along with a PP Photograph and Contact details like Email, Mobile etc. to our email IDs: **admin@iltaonleather.org** / **mailtoilta@rediffmail.com**

Members are requested to :-

a) Kindly inform us your '**E-Mail ID**', '**Contact No**', & '**Current Address**', through E-Mail to **admin@iltaonleather.org** / **mailtoilta@rediffmail.com** or over Telephone Nos.: **24413429 / 24413459**. This will help us to communicate you directly without help of any outsiders like Postal Department / Courier etc.

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

RECEIVING PRINTED COPY OF JILTA EVERY MONTH

We have started to post Printed copy of JILTA from April' 2022 to members and all concerned as it was before Covid period. Simultaneously we have been sending the e-copy of JILTA through email also to all the concerned receivers.

If you are not receiving JILTA by Post or through email, may please verify your Postal Address and/or Email Id with our office at the earliest.

General Secretary and the Members of the Executive Committee are available to interact with members at 18.30 hrs, at our Registered Office on every Thursday

Snapshots of 14th Prof. Moni Banerjee Memorial Lecture


PROF. MONI BANERJEE
MEMORIAL LECTURE
14th
PROF. MONI BANERJEE
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MEMORIAL LECTURE
14th
March 2025

Debashis Chakraborty (Babua)

(19th March' 1957 - 5th March' 2025)

Debashis Chakraborty (Babua), a well-known leather technologist and a pleasing personality, was born on 19th March, 1957 at his native town Kolkata.

In 1978, he passed Footwear Technology from CFTC, Agra and thereafter, joined Dayalbagh Institution as Apprentice for 6 months.

After this he returned to Kolkata and started the journey of his Professional Career by serving in various renowned leather firms like Chika Ltd., Rajkissen Radhakissen Mitter & Co., Harman Machinery Sales, N. S. Leather Products Pvt. Ltd. & lastly in Asian Leather Private Limited as QA & QC.

He was a senior member of ILTA where he served as an Executive Committee Member & also, as a successful Convenor of Kolkata LEXPO & Siliguri LEXPO for many years.

He was also served as Committee Member of Calcutta International Club for a long time. During his successful journey, he was associated with many organizations & associations.

He had turned himself a proverbial figure in the leather industry throughout Kolkata. He was a well-accepted man because of his down to earth personality.

Ultimately, he succumbed on the fateful day of 5th March, 2025, leaving behind his wife, only daughter and innumerable admirers.

We pray to almighty to bestow enough courage to his family and near and dear ones to bear with this untimely bereavement and let his soul rest in peace.

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YOUNG LEATHER SCIENTIST GRANT WINNER ANNOUNCED FEB 2025

Winners of Three 2025 IUR Research Grants Announced

The Executive Committee of the IULTCS is pleased to announce the winners of the 2025 IUR research grants to be awarded to two young scientists, under the age of 35. The monetary awards help support the work of young talent in the leather sector.

This is the tenth year of the grants which have been generously supported by the industry. The Selection Committee of the IULTCS Research Commission (IUR), chaired by Dr. Volker Rabe, is pleased to announce the following recipients:

Basic Leather Research Grant 2025

Mr. Zoheb Akhter from LASRA, New Zealand. The title of his project isfl**"Alkaline Hydrolysis of Zeolite and Chrome Shavings: Investigating the fate of their hydrolysate and Undigested Materials"**

Project's main objective is to hydrolyse Shavings (zeolith and chrome tanned) to providing insight into the purity of the hydrolysates, particularly in terms of organic and inorganic content. Furthermore, studying the fate of chrome and zeolites during hydrolysis will reveal the extent to which these tanning agents remain bound to the collagen matrix or are released for assessing the implications of tanning agents on the hydrolysis process.

Professor Mike Redwood Sustainability/ Environmental Grant 2025

Dr. Yudan Yi from Jiaxing University, Chinafl**"A cationic amphiphilic acrylic copolymer for metal-free eco-leather production: Integration of re-tanning and fat-liquoring".** The general objective is to develop a cationic amphiphilic copolymer with re-tanning and fat-liquoring dua

The general objective is to develop a cationic amphiphilic copolymer with re-tanning and fat-liquoring dual function, which can be utilized in post-tanning process to produce eco-friendly metal-free leather with high performance and the ability to save leather chemicals, reduce the discharge into wastewater, and shorten the processing time.

Leather Machinery/Equipment Grant 2025 Will not be awarded this year Dr. Volker Rabe congratulates the winners and thanks all participants who submitted proposals. He emphasizes the strong innovative power and talent of the industry. He also acknowledges the contributions of the reviewers and the generous support of the sponsors Tyson Leather (basic leather research) and Leather Naturally (sustainability/environment). The IULTCS looks forward to the valuable insights from these projects and wishes the award winners continued success in further developing industry knowledge.

(https://iultcs.org)

LEATHER TECHNOLOGY TRAINING MATERIALS

Leather technology self-study modules available to download

The loss of much tradition-based training in leather technology – such as the impending closure of ICLT – is a matter of concern and can have serious effects that extend across the global leather sector. Nevertheless, in

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line with the shift toward distance learning, there are two existing and updated studies available (free of charge) to help address these eventualities and minimise the impact of such closures.

The author of these studies is Richard Daniels who hast brought his vast wealth of knowledge and experience from a lifetime working in the global leather industry together and has spent many, many months creating these studies for the benefit of the industry.

The first is entitled “Leather: AN INTRODUCTION”, providing information for people who need background information on the subject, or simply want a clear understanding for general interest.

The second, entitled “Leather: AN OVERVIEW OF MANUFACTURE”, is a more advanced study in 10-sections, and intended to support those who wish to become leather technicians. These are designed for individual study and self-training, but they are also viewed within formal education as supports at introductory and intermediate levels respectively.

Moreover, they are suited for reference purposes, and as part of distance learning packages. As two complementary volumes, they comprise around 45,000 words, enhanced with more than 450 images and industrial photographs. Using a format that combines concise text with supporting images, these studies are designed for clear understanding.

This information is available for use, including in-house training, or dissemination by any company or organisation which wishes to promote better leather-related understanding. All of the content is available free of any charge.

Approved and reviewed by IULTCS, SLTC, ALCA, COTANCE and UNIDO, these studies are now available for download via their respective web sites.

(https://iultcs.org)

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Newsleather

Stay curious, informed and connected

Edition 4, 2025

Welcome

This is the fourth edition of our scientific newsletter, dedicated to providing the latest updates on research, regulatory developments, technology, and standard methods in the leather industry.

In this issue, we have a peer review article on a LCA (Life Cycle Assessment) of the leather industry published at Discover Sustainability. The work was compiled by Leather Naturally and Spin 360. Our Sustainability Committee Chair Kim Sena and I are co-authors of the paper.

The paper can be downloaded through the link or QR Code below.

Please share your comments and suggestions to secretary@iultcs.org

Kind regards,

Dr. Luis A. Zugno, editor

Sustainability - Kim Sena

Message from Kim Sena, IUS Chair

Sustainability is an unavoidable topic in the modern world. Humanity and its supply chains must adjust to the reality that the balance between the resources we use and the ability of Earth to regenerate them is clearly

negative. As part of very relevant value chains, the leather industry has been going through a surge of new data and information on its externalities. Nevertheless, it has long needed comprehensive and up-to-date studies on the environmental impact of leather production. Different studies have been published in the past, but mainly due to the lack of comprehensiveness failed to represent the entire leather segment.

This paper addresses these gaps by conducting an extensive Life Cycle Assessment (LCA) using modern methodologies and data from 56 studies across 16 facilities in 11 countries. The study covers various types of leather, such as automotive, shoe, upholstery, and goods, providing a global perspective. Key findings highlight that the farming stage significantly impacts most environmental categories, and there's a need for better data on raw materials and processing. On the other hand, some environmental impacts were lower than previously thought, providing some important insights. This research is crucial for leather manufacturers, as it identifies areas for improvement and highlights data gaps that, if addressed, could lead to more reliable and useful LCA results. The insights gained can guide the industry towards more environmentally friendly production methods, continuously positioning leather as a responsible material alternative for the future.

The paper can be downloaded here: https://rdcu.be/d9fe0

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Newsleather

Stay curious, informed and connected

Edition 5, 2025

Welcome

This is the fifth edition of our scientific newsletter, dedicated to providing the latest updates on research, regulatory developments, technology, and standard methods in the leather industry.

NOTE: This newsletter is in English, Spanish and Portuguese. One version after the other.

In this issue, we are excited to feature an exclusive interview with an expert in the field of collagen. We are honored to have Mr. Serhat Ugur Başyiğit as our first interviewee. Mr. Serhat began his career in the leather industry before transitioning to focus on the production of high-quality collagen products. Today, he manufactures collagen products in Türkiye, exporting them worldwide. In this interview, Mr. Serhat will share valuable information on the classification of collagen products and provide insights into the close relationship between the leather industry and the collagen market.

Please share your comments and suggestions to secretary@iultcs.org

Kind regards,

Dr. Luis A. Zugno, editor

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IULTCS INTERVIEW

Lifeline: Serhat Ugur Başyiğit holds a degree in Leather Engineering from Ege University in Türkiye, with over 30 years of experience in the leather and collagen industries. His career has focused on pioneering sustainable and innovative uses for the hides and skins, with a particular emphasis on developing high-quality gelatin and collagen products for food, pharmaceutical, and industrial applications. As the founder of Gelner Gıda A.Ş. and Lucas Ingredients, he has spearheaded initiatives that bridge the gap between traditional leather processing and modern collagen applications. have 9 Patent applications and Industrial designs with his brother Servet Başyiğit.

IULTCS Question 1: When we say that hides are converted to collagen, what does this mean? What are the typical product categories?

Serhat: The transformation of raw materials can be classified within a value pyramid framework, starting with the base using leather by-products (trimming scraps, shavings, sanding dust, etc.). The other pyramid levels use hides and skins. This pyramid is structured as follows in the Figure 1 and detailed on the Table 1:

Fig. 1 Value pyramid for leather byproducts and collagen. As production volumes decrease while ascending the pyramid, the added value and need for specialized knowledge increase. This underscores the strategic importance of collagen-based products in the global economy

Level	Products	Details
Base Level – Uses leather by-products	Organic fertilizers and animal feeds	High in volume, low in added value, includes organic fertilizers with high nitrogen content and animal feeds (fish and poultry feeds)
Technical Gelatin and Industrial Applications	Gelatin derivatives, adhesives, technical products	Not suitable for human consumption, sourced from tannery by-products
Food-Grade Products	Gelatin, functional collagen	Intended for food use, produced to high-quality standards suitable for human consumption
Dietary Supplements and Medicines	Collagen peptides, hard and soft capsules	High-value products used in sports nutrition and health supplements
Medical Applications	Bioactive collagen peptides, wound dressings, medical-grade gelatin	
Bioengineering Products	Artificial human skin, bio-inks, vaccine stabilizers	Derived from ultra-pure collagen

Table 1: Details of the value pyramid

IULTCS Question 2: Today it is estimated that 300 million cow hides are produced/year and 15 to 20% are used for collagen. In your opinion is this a good approximation?

Answer Serhat: This estimate is accurate for the pre-COVID era, as gelatin manufacturers primarily relied on by-products from the leather industry, such as trimmings and splits from hides processed for leather. This accounted for approximately 15-20% of the total hide production.

However, the COVID-19 pandemic brought about an unprecedented shift. Leather experienced its greatest downturn in history as demand for leather goods plummeted during global lockdowns. Many raw hides were discarded due to lack of demand, while prices for hides fell significantly.

In contrast, the dietary supplement sector, including collagen peptides, experienced explosive growth as consumers focused more on nutrition and health. This shift dramatically increased the demand for collagen-based products. The abundance of raw hides post-COVID allowed manufacturers to expand beyond by-products and process entire hides for gelatin and collagen production. This also encouraged new entrants to invest in large-scale facilities for collagen production.

In the coming years, the demand for leather goods is expected to rebound, driven by trends such as the renewed interest in natural materials. This poses a potential challenge for the new collagen and gelatin producers who have become heavily reliant on hides as their primary raw material. Balancing the demand for leather and collagen products will be critical for the sustainability of both industries. Currently, it is estimated that between 25% and 30% of hides are processed into collagen.

Collagen is a broad term that encompasses various food-grade products, including both gelatin and hydrolyzed collagen peptides.

IULTCS Question 3: What is the future of the collagen market? Is there potential to double or triple collagen production?

Answer Serhat: As highlighted in the value pyramid discussed earlier, collagen's applications are becoming increasingly diverse and evolving towards higher value-added products. This trend is expected to shape the future of the collagen market in several ways.

In summary:

- The future growth of lower-value products will be closely tied to the leather industry and its raw material supply. An increase in the production volumes of relatively inexpensive gelatin and collagen products would be a clear indicator of a struggling leather industry
- In Türkiye, Latin America and Asia a more sustainable and competitive model is emerging, driven by efforts centered around large-scale bovine leather tanneries. These models involve facilities where the by-product of one process serves as the raw material for another. This integrated approach is proving to be a more resilient investment strategy, with potential for long-term success
- High-value applications, particularly in bioengineering and medical fields, are likely to expand rapidly due to innovation and increasing demand for advanced materials

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- The overall market could see substantial growth, with potential for doubling or tripling production in certain segments, particularly those that leverage cutting-edge technologies
- Today South America accounts for 35-40% of the total collagen market followed by Asia with 25-30% and Türkiye with 5-10%

Thus, the collagen market's future will depend on balancing traditional uses with emerging high-value applications, each influenced by different market forces and technological drivers.

IULTCS Question 4: Please explain the trend and factors that influence collagen prices?

Answer Serhat: The collagen market prices have decreased significantly since 2019. Figure 2 illustrates the price changes.

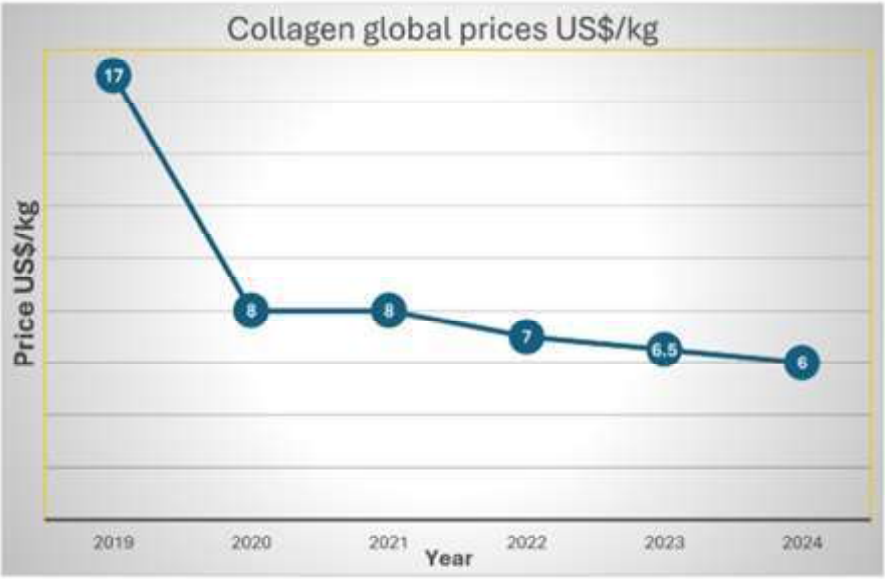

Figure 2: Collagen prices from 2019 to 2024 (US$/kg)

The main factors contributing for recent price reduction are:

- Post-COVID raw material surplus: the pandemic resulted in an oversupply of raw hides as the leather industry slowed down.
- Increased production capacity: new investments, especially in South America, Asia, and Türkiye, have led to a surge in collagen production

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- Market Competition: The rapid growth of the collagen market attracted many new entrants, intensifying competition and driving prices down

While demand for collagen products, especially in supplements, has risen, the oversupply and expanding production capabilities have kept prices low. This trend highlights the complex dynamics of the collagen market, where lower prices do not necessarily reflect a lack of demand but rather a shift in supply and competition.

Collagen prices are subject to significant fluctuations, driven by a complex interplay of supply, demand, and external market factors. These fluctuations can be better understood by considering the following elements in Table 2:

Factor	Impact
Raw Material Availability	High leather demand reduces hides for collagen, increasing prices. During downturns, hide availability increases, leading to price drops
Geopolitical and Economic Factors	Global events like pandemics and trade restrictions impact raw material availability and pricing. COVID-19 caused logistics disruptions and a surge in demand for health products
Technological Advances and Production Costs	Advances in extraction and processing methods can influence costs. Innovations require significant investment, causing short-term price hikes but stabilizing prices over time
Shifts in Market Demand	Popularity of collagen in supplements, foods, and cosmetics creates new markets with higher profit margins, increasing competition for raw materials and price volatility
Sustainability Trends	Pressure for sustainable sourcing adds complexity to the supply chain. Compliance with environmental regulations and certification drives up production costs
Regional Differences	Production and demand vary by region. Asia and South America are major hubs due to abundant raw materials and lower labor costs. Regional disruptions can cause localized price spikes
Rising Customer Awareness in Supplements	Consumer awareness of collagen's health benefits has grown, leading to demand for high-quality, branded products, which command premium prices

Table 2: Factors that impact the collagen prices

Collagen prices are influenced by a delicate balance between supply chain dynamics, technological advancements, sustainability pressures, and evolving consumer demands. Rising awareness among supplement consumers has added a premium to high-value collagen products, further contributing to price fluctuations. Long-term stability in the collagen market will depend on addressing these challenges while maintaining sustainable practices and innovation.

IULTCS Question 5: You actively participate in Food Additives fairs like the one in Frankfurt in November 2024. What are the trends for the future of collagen-based products?

Answer Serhat: Humans are inherently complex, and this complexity is also reflected in industry trends. In the collagen sector, we observe a parallel to the so-called "vegan movement" in the leather industry. Fortunately, unlike in the leather industry, where plastics are often proposed as alternatives, the collagen industry has avoided such environmentally problematic suggestions. Instead, plant-based amino acid blends are being marketed as "vegan collagen." However, these products lack hydroxyproline, a key amino acid unique to animal-derived collagen, making their claims of being collagen substitutes scientifically unfounded. This raises questions about transparency and consumer trust.

Combining this observation with insights into industry trends we have them summarized in Table 3:

Category	Details
Clean Label and Sustainability	Collagen remains a leading clean label ingredient, derived naturally and fitting consumer demands for minimal processing. True collagen products maintain a distinct advantage due to their unique amino acid profile, particularly hydroxyproline, essential for skin and joint health
Halal and Kosher Certification	Growing consumer demand for certified Halal and Kosher products has pushed manufacturers to invest in these certifications. This inclusivity broadens market reach and aligns with ethical and sustainable sourcing practices
Functional Foods and Beauty Products	Collagen is increasingly being incorporated into functional foods and beauty products. These innovations cater to health-conscious and beauty-focused consumers, driving strong growth in supplements, beverages, and anti-aging solutions

Medical and Pharmaceutical Applications	The healthcare sector continues to innovate with collagen, particularly in regenerative medicine, wound care, and bioengineering. High-value applications such as bioactive peptides and medical-grade gelatin are key growth areas
Marine and Alternative Collagen Sources	Sustainability efforts have driven interest in marine collagen and other alternative sources, which diversify supply and offer unique properties such as enhanced solubility and bioavailability
Personalized Nutrition and Advanced Delivery Formats	Personalized collagen products tailored to specific health needs are becoming more popular. Innovative formats like gummies, effervescent tablets, and liquid shots cater to consumer demand for convenience

Table 3: Collagen industry trends with details

The future of the collagen market lies in balancing scientific integrity, consumer trends, and sustainable practices. While "vegan collagen" claims may attempt to capitalize on market demand, the scientific advantages of authentic animal-derived collagen remain unmatched. Coupled with Halal and Kosher certifications, clean-label trends, and advanced medical applications, true collagen products are well-positioned for long-term success. Manufacturers who focus on innovation, transparency, and sustainability will lead this evolving market.

IULTCS Question 6: Many tanneries split the hide on lime and use the split for collagen products, while the grain is used for leather products. Other tanneries take the whole hide, remove the hair, and sell it for collagen. In your opinion, will this model continue in the future?

Answer Serhat: The current model of splitting hides in lime and utilizing the splits for collagen while reserving the grain layer for leather products is efficient and has been widely adopted due to its ability to maximize resource utilization. However, whether this model continues in the future will depend on several key factors listed on Table 4:

Category	Details
Economic Dynamics	If demand for leather rebounds, tanneries may prioritize grain layers, reducing splits for collagen production, pushing collagen manufacturers to explore alternative raw materials
Technological Advances	Advances in collagen extraction may allow processing the entire hide, challenging the split-and-grain model
Sustainability Trends	Push for sustainable practices could favor models using the entire hide, reducing waste, improving efficiency
Collagen Market Growth	Growing collagen demand in foods, supplements, medical applications may shift balance towards collagen production
Regulatory and Market Pressures	Stricter regulations on waste management and sustainable sourcing may encourage integrated models

Table 4: Factors that affect the splitting the hides in lime and using the splits for collagen

In my opinion, while the split-and-grain model has been effective, I believe the future lies in integrated systems that balance leather and collagen production. Models where the by-product of one process becomes the input for another, as pioneered in Türkiye and adopted in parts of South America and Asia, represent a more sustainable and competitive approach.

However, if leather demand continues to grow, particularly with trends favoring natural and sustainable materials, collagen producers may face challenges in securing sufficient raw materials. In this scenario, the current model will likely continue, but with adaptations to ensure that both industries coexist and thrive sustainably.

Closing comments from **Serhat:**

I would like to extend my sincere gratitude to the readers of the IULTCS Newsletter for taking the time to explore the evolving world of collagen and its connection with the leather industry. The insights and trends shared here reflect a shared commitment to sustainability, innovation, and collaboration.

As a professional dedicated to advancing these industries, I welcome your thoughts, questions, and ideas. Please do not hesitate to reach out to me for further discussion or collaboration. Together, we can continue to shape the future of these interconnected sectors.

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Thank you once again for your interest and support. I look forward to engaging with you in the future!

Serhat Ugur Başyiğit

**Disclaimer: ** The content presented in this interview is the responsibility of the author alone. Any copyrighted material included in the interview is used at the author's discretion, and IULTCS assumes no liability for any infringements that may occur. IULTCS disclaims all responsibility for the content and use of the information provided in this interview.

Waste Audit

(Part - 1)

Dr. Goutam Mukherjee

Govt. College of Engineering & Leather Technology, Kolkata

ABSTRACT :

The purpose of a waste audit is to gain a detailed understanding of the types and weights of material being generated. Audit results are used to improve the economic and environmental performance of waste management efforts.

There are three major components to the waste audit : A) Preparation B) Sorting, recording, and cleanup C) Analysis and reporting. When undertaking an audit, one person should be designated as the audit coordinator. This person is responsible for preparing and leading the audit. When first beginning to conduct waste audits, it is advisable to seek assistance from regional waste education officers if they are available. The audit coordinator must ensure that all preparations are carried out before participants begin auditing and measuring waste.

Preparations of steps for waste audit are summarized as follows for ready reference :

1) Identify which material streams will be audited. Use the materials stream categorization guide to help.
2) Ensure that the waste is sorted into separate piles based on waste stream, day collected, or source location if auditing specific areas or buildings.
3) Choose an adequate sample size for the audit. The % of waste audited will depend on total waste generation of the organization–larger numbers yield more accurate results.
4) Locate a suitable facility for storing the waste and conducting the audit.
5) Verify the number of participants who will be helping with the audit and obtain the required safety materials.
6) Choose an auditing procedure that best suits the needs of the firm.
7) Obtain the materials required for that method.
8) Conduct a training session with the audit participants. Training requirements will differ according to chosen audit type.
9) Give the people who are data recording the auditing packages and have them review the sheets and ask any questions before sorting begins.
10) Assign groups according to the chosen audit type.

INTRODUCTION :

A waste audit is a systematic process of evaluating and analysing the waste generated by an organization, community, or individual. The goal of a waste audit is to understand the types, quantities, and sources of waste produced, identify areas for waste reduction, and develop strategies for improving waste management practices.

Following are the key summarised steps :

1. Planning and Preparation : Define the scope of the audit (e.g., specific departments, buildings, or areas), set objectives, and establish methods for data collection.
2. Data Collection : Gather waste samples over a set period. This may involve sorting waste into categories (such as recyclables, organic waste, hazardous waste, and general trash) and measuring the weight or volume of each category.
3. Analysis : Analyse the data to identify patterns, trends, and potential problem areas. For example, certain types of waste may be disproportionately high, indicating opportunities for recycling or reducing consumption.
4. Reporting : Compile findings in a report, summarizing key findings, areas of improvement and recommend-dations for waste reduction, recycling, and more efficient waste management strategies.

Corresponding author E-mail : gmclt@hotmail.com / gmgcelt@gmail.com

5. Implementation : Based on the audit results, develop and implement strategies to reduce waste, such as changing procurement practices, improving recycling programs, or educating employees or the public.

Following are the summarised benefits :

- Environmental Benefits : Reduces waste going to landfills, conserves resources, and lowers carbon emissions.
- Cost Savings : Helps identify areas for waste reduction, potentially leading to lower disposal costs.
- Regulatory Compliance : Assists in meeting local or international waste management regulations.
- Improved Sustainability : Enhances overall sustainability efforts by fostering more responsible consumption and disposal practices.

In the context of this discussion, waste is taken as a broad term to include any non-product discharge from a process. Thus, it describes discharges in the gaseous, liquid and solid phases. In the past, waste management has concentrated on end-of-pipe waste treatment; designing waste treatment plants and installing pollution control equipment to prevent contamination of the environment. A different philosophy has emerged in recent times, that of waste prevention and reduction. Now we ask how can we prevent the generation of this waste? How can we reduce this waste? Can we reuse or recover this waste?

This progressive shift from waste treatment towards waste prevention has the following benefits :

- waste quantities are reduced
- raw material consumption and therefore costs are reduced
- waste treatment costs are reduced
- the pollution potential is reduced
- working conditions are improved
- process efficiency is improved

In order to prevent or reduce waste generation we need to examine our process to identify the origins of wastes, the operational problems associated with our process and those areas where improvements can be made.

A waste audit is the first step in an on-going programme designed to achieve maximum resource optimization and improved process performance. It is a common-sense approach to problem identification and problem solving.

A waste audit enables we to take a comprehensive look at our site or process to facilitate our understanding of material flows and to focus our attention on areas where waste reduction and therefore cost saving is possible.

Undertaking a waste audit involves observing, measuring, recording data and collecting and analyzing waste samples. To be effective it must be done methodically and thoroughly together will full management and operator support.

A good waste audit :

- defines sources, quantities and types of waste being generated;
- collates information on unit operations, raw materials, products, water usage and wastes;
- highlights process inefficiencies and areas of poor management
- helps set targets for waste reduction;
- permits the development of cost-effective waste management strategies;
- raises awareness in the workforce regarding the benefits of waste reduction;
- increases our knowledge of the process;
- helps to improve process efficiency.

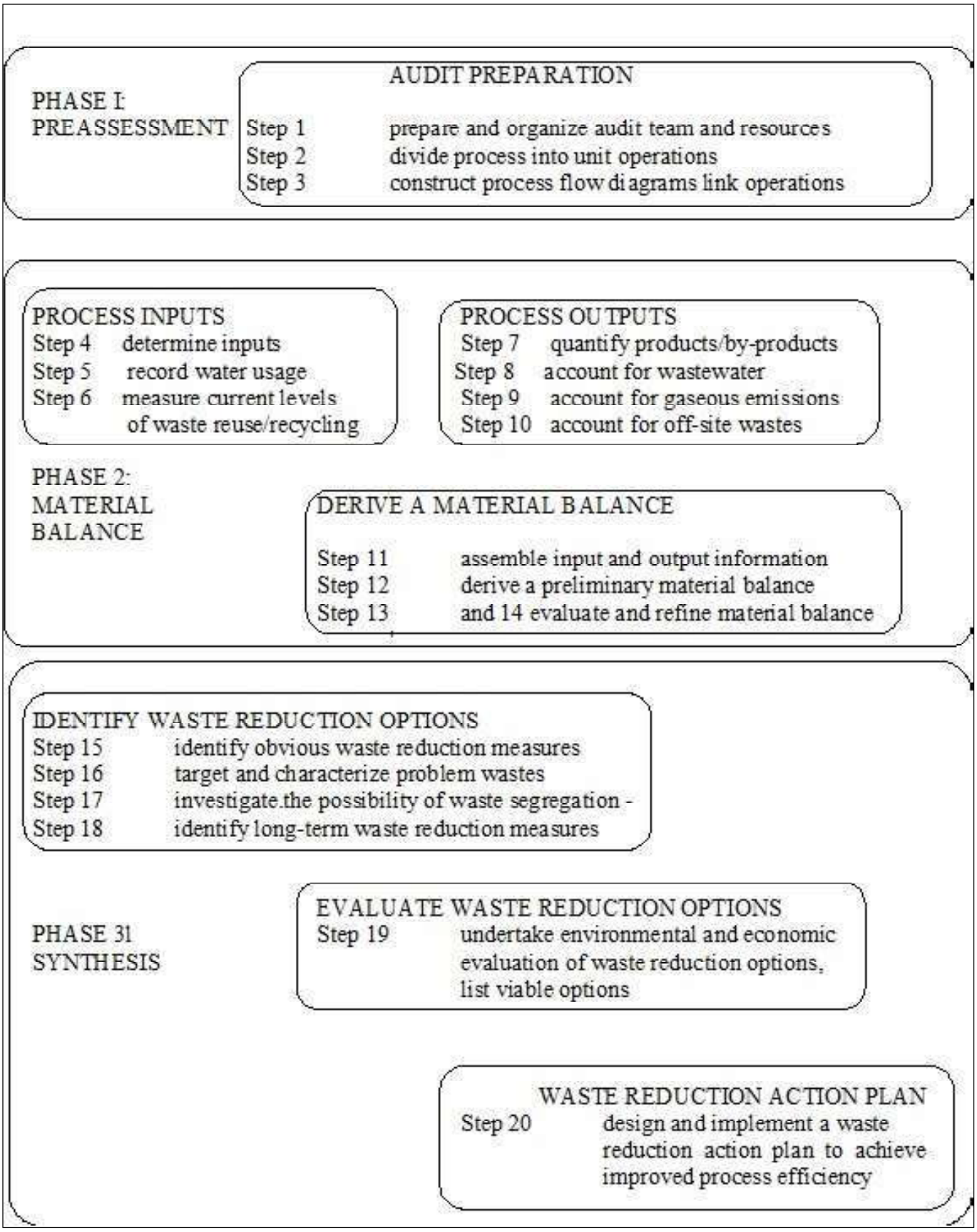
The waste audit procedure can be applied on various scales. A waste audit of a region can indicate problem industries. At the plant level, wastes can be traced to particular processes allowing allocation of treatment charges where necessary; and at the process level the exact origins of wastes can be identified enabling waste reduction measures to be established.

Waste Audit Approach

A waste audit approach leading to the implementation of a waste reduction action plan is illustrated in the form of a flow diagram below.

Few case studies are included to illustrate the wide application of this waste audit and reduction approach.

QUICK REFERENCE AUDIT GUIDE



STANDARD AUDIT PROCEDURE

This part describes a step-by-step approach for carrying out a waste audit. It is designed to be generic to apply to a broad spectrum of industry. The approach comprises three phases; a pre-assessment phase for audit preparation; a data collection phase to derive a material balance; and a synthesis phase where the findings from the material balance are translated into a waste reduction action plan.

It is possible that not all of the audit steps will be relevant to every situation. Similarly, in some situations additional steps may be required. However, the following approach should form the basis of our investigations.

PHASE 1 : PRE - ASSESSMENT

Step 1 : Audit Focus and Preparation

A thorough preparation for a waste audit is a prerequisite for an efficient and cost-effective study. Of particular importance is to gain support for the audit from top-level management, and for the implementation of results; otherwise, there will be no real action.

The waste audit team should be identified. The number of people required on an audit team will depend on the size and complexity of the processes to be investigated. A waste audit of a small factory may be undertaken by one person with contributions from the employees. A more complicated process may require at least 3 or 4 people: technical staff, production employees and an environmental specialist. Involving personnel from each stage of the manufacturing operations will increase employee awareness of waste reduction and promote input and support for the programme.

A waste audit will probably require external resources, such as laboratory analytical facilities and possibly equipment for sampling and flow measurements. We should attempt to identify external resource requirements at the outset of the project.

Analytical services and equipment may not be available to a small factory. If this is the case, investigate the possibility of forming a waste auditing association with other factories or industries; under this umbrella the external resource costs can be shared.

It is important to select the focus of our audit at the preparation stage. We may wish the waste audit to cover a complete process or we may want to concentrate on a selection of unit operations within a process. The focus will depend on the objectives of the waste audit. We may wish to look at waste minimization as a whole or we may wish to concentrate on particular wastes, for example :

- raw material losses;
- wastes that cause processing problems;
- wastes considered to be hazardous or for which regulations exist;
- wastes for which disposal costs are high.

A good starting point for designing a waste audit is to determine the major problems/wastes associated with our particular process or industrial sector. The Rapid Assessment of Sources of Air, Water and Land Pollution published by the World Health Organization (WHO, 1982) is a useful reference for identifying the type and typical quantities of wastes associated with particular industries. For example, Table 1 describes the likely waste quantities for the tanning industry.

Table 1 : Manufacture of Leather and Products of Leather

	Pelp Hair / Chrome Tanning / Finishing	Save Hair / Chrome Tanning / Finishing	Save Hair / Vegetable Tanning / Finishing
Waste Volume (m^3/t of hides)	53	63	50
BOD_5 (kg/t of hides)	95	69	67
COD (kg/t of hides)	280	140	250
Suspended Solids (kg/t of hides)	140	145	135
Total Solids (kg/t of hides)	525	480	345
Total Chromium (kg/t of hides)	4.3	4.9	0.2
Sulphides (kg/t of hides)	8.5	0.8	1.2
Oil and Grease (kg/t of hides)	10	43	33
Total N (kg/t of hides)	17	13	9.2
pH	4-13	4-12.8	2-13

(Source: WHO, 1982)

All existing documentation and information regarding the process, the plant or the regional industrial sector should be collated and reviewed as a preliminary step. Regional or plant surveys may have been undertaken; these could yield useful information" indicating the areas for concern and will also show gaps where no data are available. The following prompts give some guidelines on useful documentation.

- Is a site plan available ?
- Are any process flow diagrams available ?
- Have the process wastes ever been monitored - do we have access to the records ?

- Do we have a map of the surrounding area indicating watercourses, hydrology and human settlements ?
- Are there any other factories/plants in the area which may have similar processes ?

Other general data which can be collated quickly and which are useful orientation material are described below.

- What are the obvious wastes associated with our process ?
- Where is water used in greatest volume ?
- Do we use chemicals that have special instructions for their use and handling ?
- Do we have waste treatment and disposal costs - what are they ?
- Where are our discharge points for liquid, solid and gaseous emissions ?

The plant employees should be informed that the audit will be taking place, and they should be encouraged to take part. The support of the staff is imperative for this type of interactive study. It is important to undertake the audit during normal working hours so that the employees and operators can be consulted, the equipment can be observed in operation and, most importantly, wastes can be quantified.

Step 2 : Listing Unit Operations

Our process will comprise a number of unit operations. A unit operation may be defined as an area of the process or a piece of equipment where materials are input, a function occurs and materials are output, possibly in a different form, state or composition. For example, a process may comprise the following unit operations : raw material storage, surface treatment of components, rinsing, painting, drying, product storage and waste treatment.

An initial site survey should include a walk around the entire manufacturing plant in order to gain a sound understanding of all the processing operations and their interrelationships. This will help the audit team decide how to describe a process in terms of unit operations. During this initial overview, it is useful to record visual observations and discussions and to make sketches of process lawet, drainage systems, vents, plumbing and other material transfer areas. These help to ensure that important factors are not overlooked.

The audit team should consult the production staff regarding normal operating conditions. The production or plant staff are likely to know about waste discharge points, unplanned waste generating operations such as spills and washouts, and can give the auditors a good indication of actual operating procedures. Investigations may reveal that night-shift procedures are different from day-shift procedures; also, a plant tour may disclose that actual material handling practices are different from those set out in written procedures.

A senior employee could give some insight into recurring process problems. In the absence of any historical monitoring this information can be very useful. Such employee participation must however be a non-blaming process; otherwise, it will not be as useful as it could be.

During the initial survey, note imminent problems that need to be addressed before the audit is complete.

The waste audit team needs to understand the function and process variables associated with each unit operation. Similarly, all the available information on the unit operations and the process in general should be collated, possibly in separate files. It is useful to tabulate this information, as shown in Table 2.

Table 2 : Identification of Unit Operations

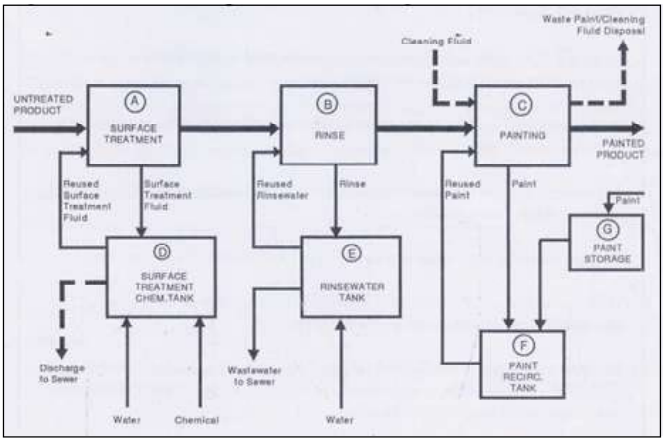
Unit Operation	Function	File Number
(A) Surface Treatment	Surface treatment of metal products 10 m^3 spray chamber, 6 jets, 100 l/min pump	1
(B) Rinsing	Washing metal products before painting	2

Identification of materials handling operations (discussion, automatic, bulk, drums etc.) covering raw materials, transfer practices and products is also an important aspect which could usefully be included in the above tabulation as a prelude to development of a materials balance (Phase 2).

Step 3 : Constructing Process Flow Diagrams

By connecting the individual unit operations in the form of a block diagram we can prepare a process flow diagram. Intermittent operations such as cleaning, make-up or tank dumping may be distinguished by using broken lines to link the boxes. Figure 1 is an example of a simplified process flow diagram for a metal finishing process.

Figure 1 : A Process Flow Diagram for a Metal Finishing Process



For complex processes prepare a general flow diagram illustrating the main process areas and, on separate sheets of paper, prepare detailed flow diagrams for each main processing area. The printed circuit board manufacture case study shows how this can be done (Case Study 3).

Now we must decide on the level of detail that we require to achieve our objectives. It is important to realize that the less detailed or larger scale the audit becomes, the more information is likely to be lost or masked by oversimplification. Establishing the correct level of detail and homing in on specific areas is very important at an early stage.

Pay particular attention to correcting any obvious waste arising out of continuous process which can be reduced or prevented easily, before proceeding to the development of a material balance (Phase 2). By making simple changes at this early stage, the resultant benefits will help enlist the participation and stimulate the enthusiasm of employees for the total waste audit/ reduction programme.

Summary (Phase 1) :

- At the end of the waste audit preassessment stage the audit team should be organized and be aware of the objectives of the waste audit.
- Plant personnel should have been informed of the audit purpose in order to maximize co-operation between all parties concerned.
- Any required financial resources should have been secured and external facilities checked out for availability and capability.
- The team should be aware of the overall history and local surroundings of the plant.
- The scope and focus of the waste audit should have been established, and a rough timetable worked out to fit in with production patterns.
- The audit team should be familiar with the lawet of the processes within the plant and should have listed the unit operations associated with each process. Sources of wastes and their causes should also have been identified.
- It should be possible to draw process flow diagrams highlighting those areas to be covered in the waste audit.
- Any very obvious waste saving measures which can be introduced easily should be implemented immediately.
- The findings of the Phase 1 investigations could usefully be presented to the management in the form of a brief pre-assessment report in order to reaffirm their commitment into the next phase.

.....To be continued in the next issue

ANNOUNCEMENT

ILTA LAUNCHED HEALTH CARE BENEFIT FOR ITS MEMBERS

Indian Leather Technologists' Association (ILTA), a member society of IULTCS and a pioneer organization in the field of leather industry, has now tied up itself with the hospital the Narayana group for Eastern India with a view to giving Indoor, Outdoor and Medical testing services to all of its registered (both life and ordinary) members at concessional rates.

Offer & Discount :

1. **OPD Service:** 10% discount on Doctor's Consultation, Prevailing Health Check-ups available at hospital, day care procedures, Investigations except outsourced tests.
2. **IPD:** 5% on total IPD billing as per prevailing hospital tariff excluding medicine / consumable / implant / outsource & blood bank services. (Not applicable on insurance cases/ Govt scheme / ESIC and any other schemes & promotional package or offers & discounts).
3. **Ambulance:** As per Availability & as per Narayana Health ambulance policy & charges.
4. **Payment Terms:** Payment should be only in Cash Mode, Debit Card, Credit Card, NEFT/RTGS/ IMPS. No cheques shall be accepted.

These facilities will be extended to its existing members (both Life & Ordinary) only. Six family members including spouse, two children (below 25 years) and dependent parents will be entitled to avail these facilities. The persons concerned may contact Mr. Bibhas Chandra Paul, OSD, ILTA (Mob. No. 9432553949) and / or Mr. Subha Paul, Assistant Manager - Payor Relation, Narayana Health (Mob. No. 8334847000) for further details.

ILTA will issue a Health Card in favour of each Member. Thus, Members are requested to collect the prescribed application format to avail this facility either from ILTA Office or through email.

ILTA IS ON THE WAY TO DIGITAL PLATFORM

Indian Leather Technologists' Association is now set for digitalization of its all publications. The members and non-members alike are eligible for this facility. The association has been publishing number of books on leather & footwear technology since inception. Also, the Association has a great collection of number of articles from renowned personalities & scientists of leather fraternity worldwide which has been publishing in our only technical journal namely "Journal of Indian Leather Technologists' Association (JILTA)".

All the above facilities will be available to all the interested peoples on digital platform through the official website of the Association very soon.

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Leather vs Synthetic in Shoes

Debabrata Chakrabarty

Footwear Technologist & Consultant, Hosur, Tamil Nadu

Leather and synthetic materials each have their own advantages and disadvantages when used in shoes. Here's a comparison to understand better and use wisely :

➢ **Advantages of Leather Over Synthetic**

1. **Durability** – Leather is more durable than most synthetic materials, making it ideal for long-term wear.
2. **Breathability** – Leather allows air circulation, reducing sweat and odor buildup.
3. **Comfort** – Over time, leather molds to the shape of the foot, offering a custom fit.
4. **Aesthetic Appeal** – Leather has a premium and elegant look that improves with age.
5. **Eco-Friendliness** – High-quality leather is biodegradable, unlike many synthetic materials that contribute to plastic waste.
6. **Repairability** – Leather shoes can be polished, conditioned, and even repaired more effectively than synthetic ones.
7. **Absorbent** – Leather absorbs feet sweat fast and dries off fast making it the most permeable material which is strong as well as robust in all conditions.

➢ **Disadvantages of Leather Over Synthetic**

1. **Cost** – Leather shoes are generally more expensive than synthetic alternatives.
2. **Maintenance** – Requires regular cleaning, conditioning, and polishing to maintain its appearance and longevity.
3. **Water Sensitivity** – Leather can absorb water, leading to stains and potential damage unless treated.
4. **Weight** – Leather shoes tend to be heavier than synthetic ones, which can affect comfort for some users.
5. **Ethical Concerns** – Since leather comes from animal hides, some consumers prefer synthetic options for ethical reasons.

Here's a detailed comparison of **leather vs. synthetic materials** across different types of shoes :

1. Formal Shoes (Office, Dress, Business)

Feature	Leather	Synthetic
Appearance	Luxurious, elegant, and develops a rich patina over time.	Often looks glossy but lacks the depth and richness of leather.
Durability	Lasts for years with proper care.	Wears out faster, prone to cracking and peeling.
Comfort	Molds to the foot for a custom fit over time.	May not conform to the foot as well, leading to discomfort.
Breathability	Natural pores allow air circulation, reducing sweat.	Less breathable, causing heat buildup and odor.
Water Resistance	Absorbs water unless treated; requires maintenance.	Often water-resistant but less durable when exposed to moisture over time.
Maintenance	Needs regular polishing and conditioning.	Easy to clean but cannot be restored like leather.
Cost	Expensive but worth it for longevity.	Cheaper but needs frequent replacements.

Corresponding author E-mail : sumiinternational36@gmail.com

➢ **Best Choice :**

- **Leather** for premium, long-lasting formal shoes.
- **Synthetic** if you need a budget-friendly, low-maintenance option.

2. Casual Shoes (Loafers, Sneakers, Everyday Wear)

Feature	Leather	Synthetic
Style	Classic and premium look.	Available in trendy designs and colors.
Comfort	Becomes softer and more comfortable with wear.	Lightweight but may lack flexibility.
Durability	Long-lasting with proper care.	Wears out quickly with daily use.
Breathability	Better airflow, reducing sweat and odor.	Traps heat, leading to more perspiration.
Flexibility	Naturally adjusts to foot movement.	May feel stiff and less adaptive.
Weather Resistance	Absorbs water unless treated.	Water-resistant but may degrade faster in extreme weather.
Price	More expensive but a long-term investment.	More affordable, but frequent replacements add up.

➢ **Best Choice :**

- **Leather** if you want style, durability and comfort ovetime.
- **Synthetic** for trendy, budget-friendly and easy-care casual shoes.

3. Sports Shoes (Running, Training, Athletic Use)

Feature	Leather	Synthetic
Weight	Heavier, which may slow down performance.	Lightweight, ideal for running and agility.
Flexibility	Less flexible, takes time to break in.	Designed for movement and flexibility.
Breathability	Good airflow but may not be as cool as mesh-based synthetic shoes.	Often made with breathable mesh for maximum ventilation.
Durability	Strong and long-lasting but can stretch out over time.	High-tech synthetic materials offer good durability for sports.
Water Resistance	Absorbs moisture unless treated.	Many synthetic shoes are water-resistant or quick-drying.
Price	More expensive, especially premium brands.	Affordable options available, but some high-end synthetic sports shoes can be costly.

➢ **Best Choice :**

- **Synthetic** is preferred for sports shoes due to its lightweight, breathability, and flexibility.
- **Leather** is rare in athletic shoes, but some premium sneakers use it for a mix of durability and style.

4. Boots (Work, Hiking, Fashion)

Feature	Leather	Synthetic
Durability	Extremely durable, can last for years.	Less durable, especially in harsh conditions.
Weather Resistance	Can be waterproofed with treatment.	Many synthetic boots are fully waterproof.
Comfort	Molds to foot shape over time, improving comfort.	Often has built-in cushioning but may not last long.
Protection	Strong, resists punctures and abrasions.	Good for mild conditions but can tear easily.
Breathability	Natural pores allow airflow, reducing sweat.	Less breathable, leading to odor buildup.
Flexibility	Stiff at first but softens with use.	More flexible from the start but can lose shape.
Price	Expensive but a long-term investment.	Budget-friendly but needs more frequent replacements.

➢ **Best Choice :**

- **Leather** for long-lasting work boots, hiking boots, and premium fashion boots.
- **Synthetic** for lightweight, waterproof, and affordable options.

Final Verdict

Shoe Type	Best for Leather	Best for Synthetic
Formal	Luxury, durability, breathability.	Budget-friendly, low maintenance.
Casual	Classic style, comfort, durability.	Trendy, affordable, easy-care.
Sports	Rare in sports shoes.	Lightweight, breathable, flexible.
Boots	Heavy-duty work, hiking, long-lasting wear.	Waterproof, lightweight, budget-friendly.

Here are some **specific brand recommendations and material treatments** for each shoe type :

1. Formal Shoes (Office, Dress, Business)

Best Leather Options

- **Premium :**
  - **John Lobb** (Ultra-luxury)
  - **Church's** (Classic British craftsmanship)
  - **Alden** (American handmade quality)
- **Mid-Range:**
  - **Allen Edmonds** (Goodyear welted, durable)
  - **Loake** (British classic formal shoes)
  - **Meermin** (Affordable luxury from Spain)
- **Budget-Friendly (India) :**
  - **Bridlen** (Goodyear welted, great quality for price)
  - **Hush Puppies** (Comfort + durability)
  - **Red Tape** (Good for everyday office wear)

Best Synthetic Options

- **Clarks** (Affordable and stylish)
- **Bata** (Budget-friendly, reliable)
- **Woodland (some models)** (Casual-formal hybrids)

Material Treatments for Leather

- **Polishing** – Use **Saphir Medaille d'Or** for premium shine.
- **Conditioning** – **Leather Honey** or **Bickmore Bick 4** for longevity.
- **Waterproofing** – Use **Saphir Dubbin Grease** or **Collonil 1909 Supreme Protect Spray**.

2. Casual Shoes (Loafers, Sneakers, Everyday Wear)

Best Leather Options

- **Premium :**
  - **Gucci** (Luxury leather sneakers & loafers)
  - **Common Projects** (Minimalist leather sneakers)
  - **Tod's** (Luxury driving shoes & loafers)
- **Mid-Range :**
  - **Cole Haan** (Comfort-driven casual leather shoes)
  - **Florsheim** (Classic leather loafers)
  - **Bridlen** (Great Indian brand for loafers)
- **Budget-Friendly :**
  - **Red Chief** (Indian brand, durable)
  - **Metro Shoes** (Affordable & stylish)
  - **Lee Cooper** (Casual leather shoes with rugged styling)

Best Synthetic Options

- **Adidas Originals (Stan Smith, Superstar)**
- **Nike (Air Force 1, Court Vision)**
- **Puma (Casual sneaker line)**

Material Treatments for Leather

- **Leather wipes** – For quick cleaning (like **Jason Markk wipes**)
- **Suede protector spray** – If you choose suede loafers (**Crep Protect Spray**)

3. Sports Shoes (Running, Training, Athletic Use)

Leather is rare in sports shoes because it's heavier and less breathable. Most athletic shoes use high-tech synthetic materials.

➢ **Best Synthetic Sports Shoes brands :**

- **Premium :**
  - **Nike Vaporfly/Alphafly** (Elite running shoes)
  - **Adidas Ultraboost** (High-comfort, stylish)
  - **On Running** (Swiss-engineered, great cushioning)
- **Mid-Range** :
  - **Asics Gel-Kayano/Nimbus** (Best for long-distance comfort)
  - **New Balance 990 series** (Excellent all-rounder)
  - **Puma Nitro series** (Affordable performance)
- **Budget-Friendly** :
  - **Skechers (GoRun series)** (Soft cushioning)
  - **Campus Shoes** (Affordable sports shoes)
  - **Sparx (By Relaxo)** (Entry-level training shoes)

Material Treatments

- **Odor Control** – Use **Dr. Scholl's Odor-X Spray**
- **Shoe Inserts** – **Sof Sole Airr Orthotic Insoles** for added comfort

4. Boots (Work, Hiking, Fashion)

Best Leather Boots

- **Premium** :
  - **Red Wing (Iron Ranger, Moc Toe)** (Work + heritage boots)
  - **Danner (Mountain Light)** (Hiking + everyday rugged wear)
  - **Wolverine 1000 Mile** (Stylish heritage boots)
- **Mid-Range** :
  - **Timberland Premium Boots** (Stylish + durable)
  - **Blundstone (Chelsea boots)** (Great for all-day wear)
  - **Clarks Desert Boots** (Casual, everyday leather boots)
- **Budget-Friendly (India)** :
  - **Woodland** (Classic rugged boots, but heavier)
  - **Red Chief** (Affordable work boots)
  - **Bata Power** (Basic hiking boots)

Best Synthetic Boots

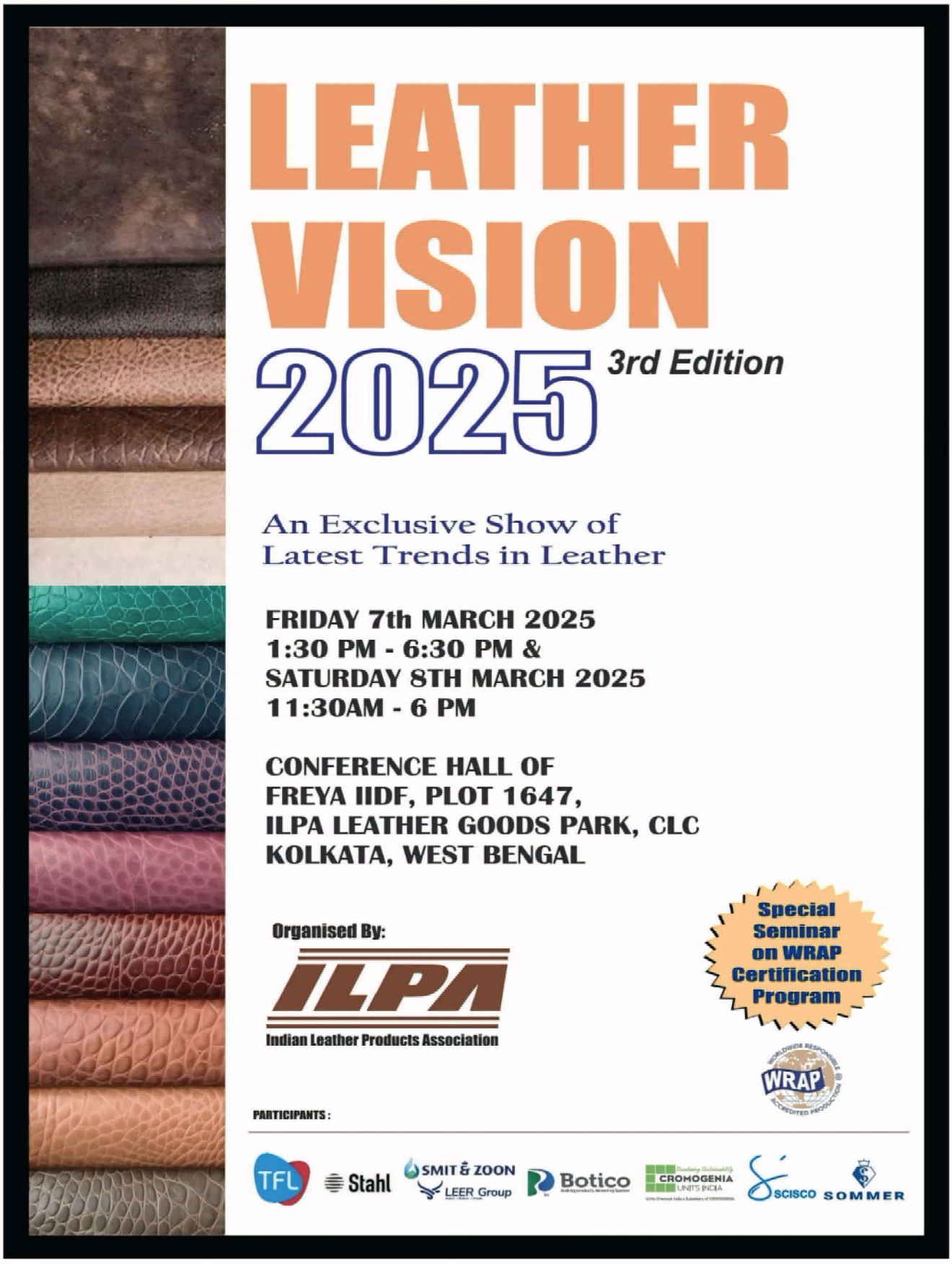
- **Columbia (Waterproof hiking boots)**
- **Decathlon (Quechua Trek series)**
- **Merrell Moab (Trekking boots with synthetic + leather mix)**

Material Treatments for Leather Boots

- **Waterproofing – Obenauf's Heavy Duty LP** for leather boots
- **Weatherproofing – Nikwax Fabric & Leather Proof** (for hybrid boots)

Final Takeaway

- **Go for leather** in **formal, casual, and boots** if you want durability, comfort, and a premium look.
- **Choose synthetic** for **sports shoes** or if you want lightweight, waterproof, and budget-friendly options.


LEATHER
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The 3rd Edition of Leather Vision 2025

The 3rd edition of *Leather Vision 2025*, organized by the Indian Leather Products Association (ILPA) in collaboration with the extraordinary team at Freya IIDF, was a resounding success. The event, held on 7th and 8th March 2025 at Freya Design Studio, Plot 1647, Zone 9, ILPA Leather Goods Park, Bantala, Kolkata 743502, attracted nearly 540 industry professionals and students from the Leather and fashion industry, making it one of the most impactful events in the leather sector this year.

Industry Showcases and Networking

The event provided a fantastic platform for the renowned Leather Chemical Manufacturer named **TFL, Smit & Zoon, Scisco, Stahl, Botico, Units Chemical, Sommer** to showcase their latest products and innovations at the Leather Vision 2025. The total display were highly praised, and the interactions between industry professionals, exporters, and tanners were particularly valuable. These discussions facilitated helpful exchanges that will contribute to the future growth of the entire Leather sector.

Involvement of Design Students

As part of the initiative to inspire and encourage the next generation, business entrepreneurs, designers, & students from various design institutes like **NIFT, FDDI, ILEAD, CFTC Budge Budge, GCELT** were invited to engage with the world of leather. A significant highlight was the fashion show organized by the students of **CFTC Budge Budge and FDDI**, where they showcased their creative talents. Their innovative designs and impressive craftsmanship received widespread appreciation from the industry professionals in attendance.

Seminars and Lectures

The event also featured a series of seminars and lectures over the course of two days, providing valuable insights for both students and industry professionals.

One of the standout moments was the lecture by renowned industrialist **Mr. Tapan Nandi**, who shared his vast experience and journey in the leather industry. His speech inspired and educated the attendees, shedding light on the challenges and opportunities in the industry.
Another key speaker was Professor **Chatrapati Dutta**, the Principal of the Government College of Art & Craft, Kolkata. He shared his extensive knowledge and creative experiences with the students, specifically focusing on the intersection of Fashion and Artificial Intelligence (AI).

The seminar, organized by SGS, titled *"SGS Sustainability Services for Leather and Leather Product Industries"*, was a major highlight of the event. The seminar was highly informative and successfully addressed key issues surrounding sustainability in the leather industry.

The seminar organized by *Worldwide Responsible Accredited Production (WRAP)* was an excellent session that provided crucial insights into the WRAP certification program and its benefits. As a global leader in promoting ethical and sustainable practices in the manufacturing sector by adopting the WRAP certification..

International Women's Day Celebration at Leather Vision 2025

As part of the 3rd edition of *Leather Vision 2025*, ILPA took the opportunity to celebrate **International Women's Day** on 8th March by recognizing the contributions of the prominent women entrepreneurs in the leather industry. The event served as a platform to honor the achievements of these trailblazing women who have made significant strides in the industry.

ILPA felicitated **Ms. Samira Azhar**, the founder of **Crescent Expo Syndicate Pvt. Ltd.**, and **Ms. Bhavna Belani**, the founder of **Gaurav Lederwaren**, for their outstanding contributions to the leather sector. Both women have been instrumental in driving innovation and setting high standards in the industry.

Looking Ahead

With the tremendous success of the 3rd edition, there is great anticipation for the next edition of *Leather Vision 2025*. The event has proven to be an excellent platform for education, networking, and innovation in the leather and fashion industries. We wish everyone involved continued success and look forward to a bigger and even more successful event next year.

OPERATIONAL GUIDELINES OF ADEETIE (ASSISTANCE FOR DEPLOYING ENERGY EFFICIENT TECHNOLOGIES IN INDUSTRIES AND ESTABLISHMENTS)

ADEETIE Scheme will facilitate MSMEs in adopting energy-efficiency measures through interest subvention and handholding. The handholding includes Investment Grade Energy Audit (IGEA) based Detailed Project Reports (DPRs) and Monitoring & Verification. The Scheme is a Central Sector Scheme.

Eligibility

1) Micro Small and Medium Enterprises (MSMEs) registered under Udyam portal of Ministry of Micro Small and Medium Enterprises (MoMSME), operational in identified 60 clusters in energy-intensive sectors of Brass, Bricks, Ceramics, Chemicals, Fisheries, Food Processing, Forging, Foundry, Glass & Refractory, Leather, Paper, pharmaceu-tical, Steel Re-Rolling, and Textiles will be eligible for the scheme.
2) Micro, Small and Medium Enterprises seeking loans from Banks and Financial Institutions would be eligible for an interest subvention.
3) Loan amounts ranging between Rs 10 lakh to Rs 15 Cr will be eligible.
4) Debt funding up to 75% of the project cost will be eligible.
5) The projects that achieve a minimum 10% energy savings and sustain it during the scheme period will only be eligible to receive annual interest subvention.

Ineligibility

1) Interest subvention will be available only for loans availed for new projects (energy efficient technology) and will not be available for projects already implemented or to the projects benefited under other schemes or refinanced.
2) Beneficiaries whose loan accounts have been declared Non-Performing Assets (NPA) are not eligible.

Benefits

1) Interest subvention will be provided at the rate of 5% for micro and small enterprises and 3% in the case of medium enterprises.
   a. The interest subvention will be paid only for three years irrespective of loan tenure.
   b. Interest subvention will be credited to the loan account of beneficiaries through Lending Institutions.
2) The scheme will provide technical support in preparation of IGEA based DPRs through Certified Energy Auditors (CEA), Certified Energy Managers (CEM) and Energy Auditing Firms. The scheme will reimburse up to Rs.1,00,000 per IGEA based DPR, if the project is approved by any Lending Institution.
3) Energy auditors will undertake Monitoring, Reporting and Verification (MRV) of the projects. The expenditure on MRV will be borne by Bureau of Energy Efficiency (BEE).

Institutional Framework

1) **Steering Committee (SC)** will be chaired by Additional Secretary, Ministry of Power (MoP), comprising Department of Economic Affairs (DEA), MoMSME, as members, and Director General (DG), BEE as convenor of the Committee. The Chair may co-opt other members as required. The Committee will monitor and review the scheme implemen-tation.

2) **Implementation Committee** (IC) will be chaired by Director General, BEE and comprising representatives from State Designated Agency (SDA) concerned, Central Nodal Agency (CNA) and Director, Ministry of Power as members. The Chair may co-opt other members as required.

3) **Technical Committee (TC)** will be chaired by DDG, BEE comprising representatives of MoMSME, and two subject matter experts nominated by DG BEE and Director, BEE as convenor. The Chair may co-opt other members as required. This committee will recommend the IGEA based DPRs for financing and accept the MRV reports.

4) **Project Management Unit** (PMU) shall be engaged by MoP through BEE which will assist in implementing the scheme and preparation of DPRs. Further BEE shall engage CEAs, CEMs and Energy Auditing Firms to conduct investment grade energy audits and Monitoring, Reporting and Verification (MRV). PMU will be supervised by **Implementation Committee** for its functioning.

5) **Central Nodal Agency (CNA)-** Suitable financial institution shall be empanelled as CNA to channelize the interest subvention amount to the lending institutions and for monitoring the progress of loan disbursement.

6) **Lending Institution -** Any scheduled commercial bank, Public Financial Institutions and Non-Banking Finance Companies (NBFC) may be the Lending Institution.

7) Annual assessment of energy savings achieved by the MSMEs post deployment of energy efficient technologies under the scheme would be carried out during the operational period of the scheme.

Implementation Process

1) Scheme Portal (end-to-end) will be developed by PMU. The portal serves :

   - Registration of MSMEs desirous of availing benefits of scheme
   - Submission of IGEA based DPRs
   - Approval of IGEA based DPRs
   - Submission of loan applications to lending Agencies
   - Approval by lending Agencies
   - Assessment of energy savings and submission of MRV reports
   - Release of subvention amount by BEE to CNA
   - Disbursal of subvention amount by CNA to loan accounts of beneficiaries with respective lending agencies.
   - Grievances redressal, Financial Audits, Reporting and other associated activities.
   - Repository of scheme related data.

2) Awareness campaigns would be organised in the identified clusters by BEE with the assistance of PMU.

3) Interested MSMEs would register on the Scheme Portal with their submission of expression of interests (EoI) for energy efficiency projects.

4) Technical Committee will scrutinize the EoIs for suitability and recommend for IGEA based DPRs.

5) Technical Committee will guide MSMEs to submit the proposal for financing after preparing IGEA based DPRs.

6) Baseline specific energy consumption would be established for each beneficiary MSME.

7) The Bank/FIs will update the status of the sanctioned loan on the scheme portal.

8) On successful financing of the project, the MSMEs shall immediately proceed with technology implementation.

9) After implementation of the project, MSMEs shall submit the project completion certificate to the Bank/FI and PMU.

10) After completing the verification of the implemented project by Bank/FI, lending Bank/FI will raise the interest subvention claims on the scheme portal for each project.

11) MRV will be carried out on a regular basis to confirm the energy savings and its sustainability with respect to the baseline data post deployment of energy efficient technologies under this scheme. Upon successful achievement of energy savings, interest subventions will be released by BEE to the beneficiary loan account through CNA

12) Any increase in interest amount due to delay in loan repayments by beneficiary shall be borne by beneficiary themselves.

13) Lending Institutions will share details of loan disbursement status, repayment made by beneficiaries, interest paid and interest subvention claims to CNA/PMU through the Scheme Portal.

14) Implementation Committee will examine the claims submitted by lending Institutions on sample basis and recommend the aggregated Demand Note to BEE for release of interest subventions to CNA.

15) No applications for new enrolment under this Scheme will be accepted from eligible MSMEs after 31st March, 2028.

16) Interim Impact assessment of scheme will be carried out after FY 2026-27 by third party to prepare and submit an interim report by FY 2027-28. Final assessment will be carried out after FY 2027-28 by the third party.

17) Dispute redressal under the scheme will be handled by the Implementation Committee and the decisions of Steering Committee shall be binding on all the parties.

18) A detailed guideline will be issued separately by BEE in consultation with the Steering Committee.

Implementation Period

The implementation period of the scheme shall be from 2025-26 to 2027-28. Committed liability of the scheme shall be up to 2030-31.

Funding

1) The Government Budgetary Support on interest subvention will be limited to Rs 875 crores. Out of this, at least Rs 613 Crore shall be allocated to micro and small enterprises and up to Rs 262 Crore shall be allocated to medium enterprises.
2) The total expenditure of the scheme for IGEA based DPRs shall be Rs 50 Crore, with a maximum cost per IGEA based DPR of Rs 1.0 Lakh.
3) PMU fee will be restricted to 2% of the budget outlay of Rs 925 Cr.
4) The expenditure on MRV will be borne by BEE from its internal revenues.
5) Cost of onboarding CNA for the scheme, Awareness Campaign, and other implementation charges will be borne by BEE.

ASIA EXPECTED TO PRESENT THE FASTEST GROWTH IN FOOTWEAR PRODUCTION

In the latest World Footwear Business Conditions Survey we asked our panel of experts about the region which will experience the fastest growth in footwear production over the next five years. Asia ranked first. Africa was listed as a potential emerging hub.

Note - This survey took place by the end of 2024, before the announcement of several tariffs by the United States.

When asked which region they expect to experience the fastest growth in footwear production over the next five years, 66.4% of respondents overwhelmingly identified Asia as the leading region. This highlights Asia's continued dominance in the global footwear manufacturing industry, driven by factors such as established production infrastructure, cost advantages, and access to raw materials and skilled labour.

Africa ranks a distant second with 17.8% of responses, reflecting its potential as an emerging hub for footwear production, likely due to improving industrial capacities and growing investments in the region. Europe (9.3%), South America (3.7%) and North America (2.8%) lag significantly, signalling that these regions may face challenges in expanding production at a competitive pace.

Interestingly, regional biases are evident in the responses. A majority of respondents in Africa (61%) believe their region will see the fastest growth, reflecting optimism in the continent's industrial development and untapped potential. Similarly, in South America, most responses are evenly split between South America and Asia (40% each), suggesting a more divided perception of the region's future prospects.

These findings indicate that while Asia is broadly recognized as the leader in growth potential, local perspectives may be shaped by regional dynamics, aspirations, and varying levels of confidence in domestic industries.

(worldfootwear.com – 17/03/2025)

PORTUGUESE FOOTWEAR IN THE SPOT-LIGHT AT INTERNATIONAL FASHION WEEKS

In recent weeks, through partnerships with renowned designers, Portuguese shoes have been seen on some of the world's most important fashion catwalks, including Paris and New York.

"Through the Bioshoes4all project, several footwear brands have teamed up with renowned international designers to develop creative partnerships that we hope will be long-lasting", said Paulo Gonçalves. "If the Portuguese footwear industry has the accumulated know-how and installed capacity to respond to the demands of international markets, young designers have a fresh and renewed vision of the market", he pointed out.

This year's campaign kicked off in Paris with the presentation of Bianca Saunders' second collection with Valuni, which explores the concept of parallels - a recurring theme in the designer's work. Entitled 'Dichotomy', Saunders explores the interaction between movement and restriction, two opposing forces that create something entirely new when combined. The collection includes classic high-top boots inspired by equestrian styles, fringed loafers revisited from the first collaboration, and square-toed shoes in pastel colours with laces all the way up.

New York International Fashion Week

After the historic Mariano took to the catwalk in September with Presley Oldham, a third-generation jewellery designer, the brand returned to the city that never sleeps with Mexican designer Patricio Campillo. The 'Fictions of Reality' collection is inspired by magical realism and childhood memories. The collection explores the duality between the real and the surreal, the traditional and the modern, the masculine and the feminine.

Campillo collaborated with Portuguese brand Mariano Shoes to create artisan shoes that complement his garments. Details such as floral buttons pay homage to his roots, while the influence of artist Remedios Varo is evident in the structure, texture and volume of the garments. The collection reflects the fusion between Campillo's contemporary vision and the artisanal heritage of Mariano Shoes.

Calçado da Penha makes its debuts in New York

Calçado da Penha also walked the catwalk at New York International Fashion Week, in partnership with Daniela Kallmeyer. The designer is known for reinventing everyday items and transforming them into a sophisticated wardrobe for modern and empowered women.

In 2019, she opened her first store at 83 Orchard Street. Daniella aims to empower her customers with her creations, offering garments that celebrate strength and femininity in a balanced way. The brand is known for wardrobe essentials made locally in New York, reflecting a commitment to quality and sustainability.

Founded in Guimarães in 1967, Calçado Penha specialises in the manufacture of Goodyear-welted shoes "of the highest quality", according to Armindo Novais. The company stands out for its artisanal production, preference for European raw materials and the use of leather soles insulated with natural cork.

For the company's CEO, "the debut at New York International Fashion Week is another milestone for the company with more than five decades of experience". "We really wanted to seize this opportunity, especially because the North American market is so important". "Calçado da Penha is a historic company that employs more than 100 people and shows that it is possible to produce excellent footwear in Europe at fair prices", Armindo points out.

(worldfootwear.com – 18/03/2025)

INDIA-UK FTA TO BOOST LEATHER, TEXTILE, JEWELLERY EXPORTS

The proposed free trade agreement with the UK is expected to boost India's exports in various sectors, including leather, textile, jewellery, marine and processed Agri products, parliament was informed on Friday. In a written reply to the Rajya Sabha, Minister of State for Commerce and Industry Jitin Prasada said the pact has great potential for increasing exports in service sectors like IT/ITES.

In negotiations with the UK, both sides aim to conclude a fair, equitable, mutually beneficial and commercially meaningful trade deal, which takes into consideration the needs and concerns of all the stakeholders. "The proposed trade deal with the UK is

expected to increase India's exports in various sectors, including Leather, Textile, Jewellery, Marine and processed Agri products," he said. The India-UK Free Trade Agreement negotiations were launched on January 13, 2022. 14 rounds of negotiations have been held so far.

(money.rediff.com/ - 28/03/2025)

UTTAR PRADESH GOVT READIES POLICY TO BOOST LEATHER, FOOTWEAR EXPORTS

The Uttar Pradesh (UP) government is drafting a new leather and footwear policy to boost exports in the state amid changing global trade dynamics.The move aims to provide financial support, technological upgradation, and export subsidies to the state's leather and footwear manufacturers and exporters. "The new policy will aim to double the size of the UP leather industry in five years," said a senior state government official.

The proposed policy will promote the leather and footwear industry in Kanpur, Agra, Unnao, and Noida while aiming to develop integrated leather clusters and parks in the state. For this, the state will target the huge domestic market and the lucrative export destinations in Africa, Latin America, West Asia, the US, and Europe. The policy aligns with the new schemes announced in the Union Budget 2025-26 for UP-based leather manufacturers and exporters to derive the maximum benefit. India is targeting to achieve leather and footwear exports of $50 billion by 2030, up from the current figure of about $5 billion.

The policy to be drafted by the state micro, small and medium enterprises (MSME) department will be modelled on the Tamil Nadu template. According to the Council for Leather Exports (CLE), the central scheme will support design capacity, component manufacturing, and machinery required for non-leather footwear. At present, the state's leather industry is estimated at Rs 20,000 crore, including shipments.

(business-standard.com – 11/02/2025)

"THE ART OF TANNING": THE EXHIBITION SHOWCASING THE CRAFT OF LEATHER TANNING

The work of tanneries in the paintings of **Franklin Boggs**. The Art of Tanning is the title of the exhibition currently on display at the **MOWA – Museum of Wisconsin Art** in **West Bend**, until 8th June. This marks the first time in over 60 years that these nine paintings have been shown to the public.

The Art of Tanning

One of the world's largest tanneries in the mid-20th century, **Albert Trostel & Sons** commissioned Boggs (1914–2009) to "depict and interpret the strength and character of leather tanning" as part of the company's centennial celebrations in 1958. Founded in **Milwaukee** in 1858, Albert Trostel & Sons was one of the leading global suppliers of leather for the automotive industry.

The craft of leather tanning

Boggs' works portray life inside the tannery, also documenting the increasing use of **industrial machinery**, which later helped steer the leather industry towards modern industrialisation. "These nine magnificent canvases by Franklin Boggs vividly illustrate the craft of tanning, bearing witness to the hard work and traditional industrial practices" said **Graeme Reid**, senior curator at the MOWA, as reported by the Washington County Insider.

On display for the first time in 60 years

The artworks were donated to the museum by the **Katherine and Thomas Hauske Jr.** family. "The paintings capture the transition from labour-intensive work to industrial production – a pivotal period in the history of Wisconsin and America" commented **Jane Aspinwall**, deputy director of MOWA.

(laconceria.it/en/news - 31/03/2025)

Valorisation of Invasive Species - For Leather, Fur, Bristle, Meat and By-Products *(Part - 27)*

Subrata Das, M.Tech (Leather Technology)

Freelance Leather Technologist & Consultant, Chennai

Red Fox

Arresting, athletic, adaptable, agile, acrobatic, and adorable in equal measure, the red fox is abundantly distributed across Europe (Albania; Andorra; Armenia; Austria; Belgium; Bosnia and Herzegovina; Bulgaria; Croatia; Cyprus; Czechia; Denmark; Estonia; Finland; France; Georgia; Germany; Gibraltar; Greece; Holy See (Vatican City State); Hungary; Ireland; Italy; Kosovo; Latvia; Liechtenstein; Lithuania; Luxembourg; Moldova; Montenegro; Netherlands; North Macedonia; Norway; Poland; Portugal; Romania; Russian Federation; San Marino; Serbia; Slovakia; Slovenia; Spain; Sweden; Switzerland; Ukraine and the United Kingdom) and North Africa - from western Egypt in the east, along the banks of the Nile to South Sudan, from the Mediterranean coastal regions in the north to Algeria, Morocco, Tunisia and eastern Libya, in the west.

In Asia, populations of the mesopredator are found in Afghanistan; Azerbaijan; Bangladesh; Bhutan; India; Iran; Iraq: Israel; Japan (including Sakhalin, Kurile and some of the surrounding islands of the area) Islands; Jordan; Kazakhstan; DPR Korea; Republic of Korea; Kyrgyzstan; Laos Lebanon; Mongolia; Myanmar; Nepal; Pakistan; Thailand; Saudi Arabia: Syria; Tajikistan; Turkmenistan; Türkiye : Uzbekistan and Vietnam.

In North America the canid inhabits Alaska, extending its dominion across Yukon, Canada, the Ellesmere, Aleutian and Baffin islands and much of eastern and northern US, and northern Canada to the southern United States.

It is conspicuously absent from almost all the countries of South and Central America and the Caribbean, Mexico and large areas of southern and western US. The carnivore is not found in Iceland, Greenland, Faroe Islands, most Arctic islands, bleak and frozen areas of Siberia, as well as from Polynesia, Melanesia and Micronesia.

However, the red fox presents a significant ecological threat in Australia. By 2012, their population had surged to over 7.2 million, with numbers continuing to rise. Introduced by settlers in the 1830s, red foxes have since spread across the mainland, excluding tropical zones like northern Queensland, the Kimberley, and the Top End. Tasmania has also reported confirmed sightings since 2010. Urban areas, including major cities like Melbourne, now host growing fox populations, further complicating control efforts.

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Forty-five sub species of foxes, documented till date, inhabit 83 countries in five continents covering over 14% of the earth's surface thriving at elevations between sea level to 4500m, almost entirely across the northern hemisphere (except Australia).The precise number of red foxes is unknown because of their wide geographical distribution.

The red fox has the widest range of any land mammal besides humans, inhabiting Europe, Asia, Africa, and North America. Despite their name, the ruddy rovers are not always red. As determined by ancestry, interbreeding and genetics, pelage variations include black, grey, shades of brown (collectively called 'cross foxes'), brunet, mahogany, mocha, silver, platinum, anthracite or amber.

Attracted by abundant, regular and dependable food supply in large cities in the interwar years (1919 – 1939), the lithe-bodies, gracile limbed animals were first observed relinquishing their rough country existence in favour of peri-urban and urban areas, to flourish by scavenging on household, restaurant- and abattoir – waste, as well as trashcan dross.

Urban foxes are found in a surprisingly large number of large European cities - London. Paris, Stockholm, Tallinn, Zurich, Stuttgart, Berlin, Rome, Oslo, Aarhus, Copenhagen and Geneva- among others. In other continents, urban foxes are found in Toronto, Hokkaido, Sapporo, Melbourne, Adelaide, Brisbane, Canberra and Sydney, Los Angeles, New York and Washington.

The timeline of the invasive red fox in various continents is as follows

North America

Red foxes imported from England were first introduced to North America, and liberated on Long Island, New York, by early European settlers, both for the fur trade and recreational and target shooting. To recompense for its absence in the areas, later releases were effected in other East Coast states, among them, Virginia, New Jersey and Maryland. Subsequent liberations, with English canids, included New England and Massachusetts. Possessing the adaptability and ability to excel in a wide range of ecosystems, the translocated omnivores, expeditiously diffused westward across greater part of lowland northern US and southern Canada, to the detriment of native avifauna of the region.

The end of WWI saw 46 or more instances of transportation and release of the ruddy quadrupeds, in the Aleutian Islands (USA) and in Ellesmere, Cornwallis and Baffin Islands (Canada). In another quarter of a century, escapees from Vancouver fur farms naturalized north of the Campbell River, in the Sayward forest, an unspecified number of which were caught and released in Sable Islands and Anticosti in Nova Scotia. Exhibiting remarkable vagility, presumably by travelling over the seasonally present sea ice, the unflagging vulpine, took possession of St. Matthew Island, a constituent of the Alaska Maritime National Wildlife Refuge(along with its sister islands , Hall and Pinnacle Islands).

Except Prince William Sound, western Aleutians and some islands of south eastern Alaska, the adaptable canids domiciled throughout "America's Last Frontier" - Alaska. The majority of these fur bearers are thought to have descended from stock, brought for fur farming ventures, in the state, at the turn of the 20th century.

Today, the crafty and canny rovers, are broadly distributed south and moderately north of the of the arctic tundra, invariably outcompeting the smaller, native arctic fox. With its range in the arctic limited only by food availability, with increased climate warming, the "red brigades" have been observed, becoming progressively adaptable to high latitude maritime ecosystems. Due to dissimilarities of anatomical morphology, notably in terms of larger body mass, longer limbs and larger annual litters of 8-12 kits, the species is more dominant, where its territorial range overlaps with that of the arctic fox. Foxes of red pelage, have been observed in Alaska, usurping burrows of arctic foxes, killing kits and nursing vixens, and at times preying on them.

Elsewhere, the generalist foragers can be found in significant numbers in most of the Lower 48, with sparse presence in the south west of the country - in Utah, Texas, Oklahoma, Nevada, Colorado, California, Arizona and New Mexico.

In 1997, Mississippi nominated the red fox as its State Land Mammal.

Europe

Britain

Foxes from Scandinavia, The Netherlands, Spain and France were imported into the British Isles, and released in coastal plains and lowlands, to replenish dwindling numbers, after a

disproportionately large number of native animals had perished, to recreational shooting pastime of the English gentry.

Widely distributed across the British Isles between 1750 -1850, the following century and thereafter (1950-65) witnessed rapid progression and range expansion of the vulpine

Red foxes are now ubiquitous and considered naturalized, throughout mainland Britain. They are however absent from Isles of Scilly, Channel Islands and all but one Scottish island - Skye. Stable populations abound in the Isle of Anglesey in Wales and in Lindisfarne, off the Northumberland coast, Dorset and Isle of Wight, while few individuals are reported to be present in the Isle of Man.

In the 21st century, urban foxes have become significantly broader in extent, than those in peri-rural and rural areas. More and more cities and towns devoid of canids earlier, now accommodate fox populations, of varying densities. Comparatively less numbers in eastern and northern urban boroughs, contrasted with sizable presence in the south of the country, indicates a strong latitudinal and longitudinal bias by the animal in the choice of its range and habitat.

Urbanization of the red fox, considered a modern peculiarity, commenced in southern England in the 1930s. It was thereafter observed to emerge elsewhere. Red foxes were drawn to peri-urban and urban areas by compromised hygiene levels, anthropogenic food sources and human-dependent fauna associated with landfills, waste yards, trash dumps and urban agriculture, which could be effortlessly preyed on. The opportunistic synanthropes were also observed to be making use of man-made structures, in built-up areas as shelter, and for raising and nurturing offspring.

In 2011, a solitary individual was even found occupying the top of the then-partially completed Shard London Bridge, regularly scaling stairs to reach its living quarters on the 72nd floor, and surviving on food scraps discarded by employees working at the site.

Ireland

Foxes in Ireland are thought to be descended from animals imported from the Netherlands for sport and pastime.

With an estimated annual population of 150,000-200,000, at the commencement of the breeding season, red foxes are the sole canid representatives in Ireland.

Up to five urban vulpine families live per square kilometre in some areas of Dublin, while in the countryside they are found in montane, riparian and littoral areas , as well as on woodlands and farmlands. Since fur farming was never a traditional Irish rural industry, with the limited activity, confined to mink raising, red foxes were never valorized, leading to their burgeoning numbers.

By the end of WWI, the monogamous mammals were found in abundance all over Ireland. A decade later, they assumed pestiferous dimensions

Scandinavia

In 1938, Alaskan silver foxes (a black colour morph of the Red fox) were released in Finland with the objective of enriching the gene pool and producing a cross fox hybrid, thereby enhancing the attractiveness, quality and value of furs.

By the first decade of the present century, the remarkably vagile animals, inhabiting varied ecoregions that include high alpine ecosystems, tundra, taiga, boreal, littoral, riparian and coastal forests had decisively colonized Norway and Sweden , from the northernmost inhospitable wildernesses to the hilly terrain and plains of the peninsula, in the south, as far as Aarhus and Copenhagen in Denmark, and beyond, to lead an urban existence.

Baltic Republics

Estonian authorities have reported invasive vulpine from 33 out of 47 cities and towns. Latvia had 28,000 of the mesopredators in 2019, according to data of its Central Statistical Bureau, while free ranging numbers, were known to have diffused into Lithuania ,both from the east and north. Presently they are predominantly found in eastern and northern Lithuania.

Russia

From 1929-34, with the intention of improving local fur stocks, 251 Canadian silver foxes were liberated in Russia at 6 locations.

The Institute of Cytology and Genetics (ICG) in Novosibirsk, Western Siberia, in a revolutionary programme, launched by geneticist Dr. Dmitri Belyaev, and continued after his death by

Dr. Lyudmila Trut, domesticated silver foxes, by selectively breeding less aggressive feral red foxes for sixty generations, spanning sixty-four years (1959- till date). The scientists adopted behavioural and genetic methodology for inculcating attributes of docility and domestication in the foxes, determined by their submissiveness and sociability towards humans.

Conducted to validate Charles Darwin's path breaking scientific literature, "On the Origin of Species", the experi-ments demonstrated the potential of scientific breeding of ferine canids to instill acquiescence. Consequently, vulpine generations of the fifth and sixth decennium, developed "domestication syndrome" traits - floppy ears, stubby snouts, shorter tails, stouter limbs, paedomorphic craniofacial features, lower stress hormone levels, dappled fur, moderately long reproductive seasonality and prosocial interaction with humans.

Progeny of the sixth (six years for these annually reproducing animals), and successive generations, selectively raised for domestication, were visually perceived tail wagging when happy, expressing affection by licking the hands of their handlers, longing to be lifted, cuddled and petted and registering vocal complaints by barking or whining, when disregarded or left to themselves.

Elsewhere in Europe

The species is present in Portugal and Spain (Iberian Peninsula), France, Italian peninsula and Sardinia, Austria, Hungary, Slovakia, Czechia and Slovenia and other countries of Eastern Europe and the Balkan Peninsula, fully encompassing, a large part of Croatia and Serbia, European Turkey, North Macedonia, Montenegro, Kosovo, Greece, Bulgaria, Bosnia and Herzegovina and all corners of Albania.

Australia

T. H. Pyke, a member of the Acclimatization Society of Victoria, a kindred community, established by wistful and nostalgic settlers from England, desirous of recreating another Britain Down Under, by nurturing and preserving the traditional English sport of fox hunting, is credited with the release of an unspecified number of red foxes, imported in 1985, from the 'mother country', onto his estate in Keilor, a suburb of Melbourne. Contemporaneously, an unstated number of bushy tailed, terrestrial mammal was liberated by the Melbourne Hunt Club.

Forerunner of the rampaging "fox orcs" in Australia were two introductions - the first, a brace near Ballarat in 1871 by Dr King, followed by five mammals, in the early 1870s by Mr T. Chirnside, in the Werribee-Geelong region of southern Victoria. The canid colonization gained both motion and headway, by 1880, when the animals began to be commonly seen in the smallest state in mainland Australia.

In the next "octennial", the "red coats" marched westward across the South Australian frontier. By 1893 the mesopredator wave swept northward to overwhelm New South Wales. In the first decennium of the 20 th Century, the occidental bastion of the world's smallest continent fell to the relentless quadruped colonisers. In 1907, The "red army" sprinted right through the NSW - Queensland border to conquer the Sunshine State. It was only a matter of time before the Northern territory capitulated to the relentless metastasis.

Except for the continent's tropical rainforests, in the far north of Queensland and Tanami and Simpson desert regions of the Northern territory, the interlopers occupy 76 -80% of mainland Australian territory and as many as eighteen offshore islands. In favourable seasonal conditions during the austral autumn and early winter, they have been observed entering the hot deserts of the hinterland.

Tasmania has a long history of vulpine introduction, both legal as well as unlawful ,of more than a century - in 1864, 1882, 1890, 1910, 1911, 1912, 1972 and 1999.

The issue of existence of foxes in Tasmania is contentious and in all likelihood, the animals have failed to establish well established breeding numbers in the Apple Isle, notwithstanding the reported sightings since the early 1990s and occasional discovery of carcasses between 1998-2012.

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In 1998, a fox allegedly fled from a container ship docked in Burnie. Additionally, between 1935 and 1970, unverified accounts suggest that several litters were bred and set loose in the Northern Midlands. However, the ultimate fate of these animals remains unknown.

The issue of existence of foxes in Tasmania is contentious and, in all likelihood, the animals have failed to establish well established breeding numbers in the Apple Isle, notwithstanding the reported sightings since the early 1990s and occasional discovery of carcasses between 1998-2012.

Tasmania's fragile biodiversity and agricultural sector are expected to face precipitous threat, should canid populations become well entrenched on the island, which already lists a dozen threatened species, three dozen holding on tenuously to restricted ranges with imminent risk of competition for survival and predation. Annual costs to the state's exchequer, to safeguard its avifauna and ecosystem, are expected to be in excess of AUD 20 million.

Low fox numbers have been confirmed on South Stradbroke Island and Fraser Island, both off the south eastern coast of Queensland and on Phillip Island, near Melbourne. Down from 7.2 million in 2012, present numbers of the resilient mavens, are estimated to be 1.7 million, according to a study conducted by the Australian National University, Canberra, in 2022 The peripatetic opportunist has secured presence in as many as 50 offshore islands and naturalized in over 80% of the mainland.

New Zealand

Although literature search refers to a breeding 'tod' and 'vixen', being transported to Christchurch in 1964, 'The Land of the Long White Cloud' is surprising free of the invasive vermin.

Asia

Korea

In the Republic of Korea, the mammal is purported to be extinct since 1980, which witnessed a calamitous number of fatalities from secondary poisoning as consequent to the implementation of nation -wide rodenticide measures. Free ranging red foxes had not been seen in Korea, since the discovery of a carcass of an adult male in 2004 in Yanggu, Gangwon Province. Surveys in the DMZ (De -Militarized Zone) between ROK and DPRK, did not show any evidence of red foxes.

A brace, born and raised in Seoul Zoo, was released, on 31 October, 2012, in Sobaeksan National Park, in North Gyeongsang Province, as a part of The Environmental Ministry's intensive restoration programme, to increase the number of the "First Class Endangered Species" to 50 by 2020. In the decennium 2012- 23, a further 118 animals were introduced in the National Park. As on 20 December, 2021, 67 canids, comprising 14 natural births from 53 animals, were reported by the park authorities, thereby achieving the objective of a minimum viable population of 50 animals. On 3, June ,2022, Korean Post released a commemorative stamp, at 430 won, celebrating the returning of the Korean red fox from the brink of extinction.

Japan

Two representatives of the wide-ranging species occur in Japan - the larger built, Ezo Red Fox which ranges from Sakhalin, Russia to Hokkaido in Northern Japan, characterized by its longer, silkier fur to combat frigid and snowy winters, black tipped ears and gracile limbs, and the Japanese red fox, south of Blakiston's Line - the faunal frontier between Hokkaido and Honshu - which inhabits both Honshu and Kyushu. It also has black ears but the paws are usually brown, rather than black.

Both vulpine subspecies in Japan are cathemeral (active throughout the day), and are now considered native to the archipelago.

Vertically elliptical pupils in their eyes, which can perceive the merest of movement in the vicinity, endow the virtuoso

maneuverers with both scotopic (ability to see in the dark or in dim light) and binocular vision. Their erect, triangular, black tipped ears have supreme auditory perception to discern and stalk rodents shuffling or squeaking 330 feet away or terrestrial birds foraging or roosting at six hundred paces. Hunt effectiveness of the mesopredators is further heightened by the dewclaw, located on the forelegs and high up from the ground. When running at terminal speed and energy, of 50 kmph, the penta-tendon dewclaws, attached to muscles of the forelimb, come in contact with and push into the ground, making it easier for the fox to take a zigzag course, make sharp U-turns or abruptly change direction, without twisting its forelegs. The inner toe is of critical importance in the predatory species to gain traction and anchorage, while climbing trees, sometimes as high as 4 metres off the ground to search out Volant marsupials, avifauna and other arboreal prey.

Extending two thirds or more of its lissome physique, the white tipped bushy tail of the canid, covered with dense, opulent fur, serves as a ballast to maintain balance, while tiptoeing, stalking, or sprinting behind prey or away from perceived danger. The caudal appendage is also an asset to ensure insulation in nippy weather, when the animal sleeps in the open or in its den, wrapping the bushy comfort around its nose and paw pads to remain warm. Occasionally the tail is employed for grooming and spreading saliva over the pelage to remain cool in high diurnal temperature and also to brush and dust off detritus from the fur. During the mating season, males are seen to raise their tails high, for extended periods as a visual cue for sexual excitement.

Extraordinary auditory acuity enables the red fox to hear infra, as well as low-frequency sounds very well, picking up subterranean rodent activity to reconnoitre furtively, before launching a violent, surprise offensive into the soil or snow, to pounce on and secure the hapless prey. Whiskers present on the face and limbs function as tactile aids for locomotion, reconnaissance, navigation, social interaction such as nuzzling and courtship. Red foxes are known for vocalizations, which are remarkably similar to those of skirmishing cats.

Taking full advantage of hunting and foraging opportunities that arise, foxes subsist on nourishment from a broad and diverse range of sources displaying varying degrees of omnivory. They prey upon livestock and rodents including mice, hamsters, muskrats, voles, gerbils, squirrels, rats and bandicoots, legomorphs such as hares, pikas and rabbits and appreciable volumes of invertebrates- crickets, caterpillars, grasshoppers, beetles, worms and crayfish.

Apart from these, they also prey upon passerine and ground roosting birds, quails, porcupines, reptiles, amphibians, raccoons and opossum. Difficulty or inconvenience in obtaining prey can urge the canids towards grapes, plums, nuts, acorns, mulberries, cherries, blackberries, raspberries, blueberries, apples, tubers and an assortment of grass.

The interlopers have been seen attacking incubating females and devouring eggs and fledglings of endangered Mallee fowls, In the Mallee, north west of Victoria, Australia, thereby frustrating programs to release birds raised in captivity , into the wild.

Forest reserves, preserves, rabbit and poultry farms, penned game bird enclosures and goat and sheep husbandry establishments, are resource - rich establishments which attract foxes.

The skilled and artful terrestrial hunters are significantly compromised when looking for prey in water, because their natural prowess does not extend to swamps, mires and marshes. Although moderately good swimmers, water bodies bigger than brooks, small streams and ponds are usually too challenging for a reynard to navigate. For the most part, foxes prefer to stick to shallow bodies of water in search of crabs, fish, shrimps, prawns and other crustaceans, and are known to raid pisciculture farms and backyard ornamental ponds, periodically.

Although fundamentally cathemeral, foxes prefer to hunt in early dawn and at dusk – typically foraging solo. In environments where they are native, red foxes can integrate well as natural predators, in overlapping territorial regions, without over-predating native prey animals, though they can be a nuisance by eating livestock by migrating beyond normal expected levels of predation.

Dentition format of the animal, consists of sharp pointed teeth, which are used to both puncture and grip prey. As in other carnivores, they have modified molars, called sectorial or carnassial teeth, which function as shearing blades rather than for ripping and pulling to pieces, thereby facilitating efficient and effective consumption of flesh.

Unconsumed food, for a later snack, is generally concealed beneath dirt, snow, grass, or leaves, at a location, marked with odoriferous urine for easy identification.

Foxes make loyal partners and display “pair–bonding” or lifelong monogamy, mating once annually, between late winters to early spring (January to March). Seven to eight weeks later, the vixen

gives birth to litters, varying from 1-12 kits in secure burrows, which she digs during pregnancy. Provisions for reserve dens, such as abandoned marmot or rabbit warrens, are made for exigencies. The dyad display exceptional measure of parental investment during the twelve weeks of neonatal dependency, with both partners unreservedly involved in caring for their offspring. Around twelve weeks after birth, the weaned young venture out under parental supervision, to be fed regurgitated food. Juveniles set off on their own at seven months of age, to lead independent lives.

Among the most destructive introduced predators in Australia, bulling indigenous avifauna to the brink of extinction, colonizing approximately 80% of the nation's territory, adversely livestock husbandry, and imposing an estimated $227.5 million annual burden on the economy, red foxes, consume up to 500 grams of food per day, inflicting devastating damage to Australia. Their deepening adjacence, to human habitation, in large cities and well as in rural and peri-rural areas, is a major cause for concern. Although their small physical stature restrains them from physically attacking humans, their deleterious effect on societies, economies, native avifauna and livestock, as well the bioregion and ecosystem they settle in, is immense.

In Europe, predation of outdoor livestock and poultry, such as piglets, newborn calves, kids, lambs, chicks, ducklings, bunnies and nongame birds, such as quails, swans and pheasants, by red foxes constitute significant losses to the farming community. The mesopredators are also known vectors for zoonoses, such as, canine distemper, rabies, sarcoptic mange, tularemia, parvovirus, toxocariasis and various helminth infestations.

In North America, the world's most widely dispersed terrestrial carnivore, reported to swim considerable distances in search of new territory and food, have not only outcompeted the smaller arctic and grey foxes but also devastative native rodents, amphibians and birdlife. The losses to North American farmers, as in the case of their European counterparts, have been significant.

Valorization

Fur and Hair

Fox skins measure 60-95 cm with a thick, bushy tail. Coats vary in red and grey shades, with a grey undercoat and yellow-grey shaft tips. Guard hairs are grey at the base and red-grey above; tail tips are dark or black. The skin has wide furrows and follicles that hold 6-12 hairs.

Fine fur fibers are circular, 12-19 µm in diameter, with comb-like cuticular scales, and a central, unbroken medulla in a uniserial ladder pattern. Intermediate fibers, 20-40 µm wide, are similar in structure but may vary in cross-section.

Guard hairs, 40-85 µm thick, are round or ellipsoidal, with even or crenated scales, and have a spongy-lattice medulla filled with foam-like material.

Due to burgeoning demand and its popularity in the fur trade, in the late 1970s, red fox pelts sold at a peak price of $80, and silver fox pelage, upwards of $500 each. Prices dropped to $8 in the early 1990s, for the former, due to excessively abundant supplies and non-moving inventory. The offer doubled, by 2015, to $16. However, in 2022 -23, there were absolutely no takers with only prime pelts fetching approximately $10 each.

Among the most important furbearing mammals harvested by the fur trade, because of their profusion, are red foxes. Their pelts are used for trimmings for both cloth coats and fur garments, scarves, craft Bows and Fox Hats, fur trinkets, headbands, cardigans and vests, fur rings, fur hoodies, stoles and boas, in a range of colors, from vibrant hues to natural earthy tones, muffs and evening wraps. Fur skins from 8 foxes are required for a short coat, while, 14 -16 animals contribute a full-length fur coat, which is lustrous, lightweight and luxuriant. Collar, hood, cuff, lapel, belt and pocket trims are ideally fabricated from pelts with long guard hairs.

Animal furs including fox pelts have been used for various purposes throughout history. In some cultures, fox pelts are employed for making ceremonial dress or prominently displayed, in an attire, as a status symbol. Ceremonial caps, known as busbies fur for the British Royal Horse Artillery, Kings Troop Officers, are made of red fox fur. When well-maintained fox fur busbies have been found to enjoy indefinitely long lifespan.

Other uses of fox fur include, furry pom-pom bobble hats, handbag charms, gilets, fur trim lace boots, fur felt fedoras and bucket hats, fox fur backpacks by Prada, fox fur purses, fur blankets, zonkers and fishing flies, shawls, bags, cuffs, fur throws, floor rugs, runners, home decor such as wall hangers and tapestries.

While cross foxes are mostly used for pelerines, mufflers and scarves but rarely trimming, pelts of silver-morph foxes are popular as capes, pelisses and mozettas. Animals of North

American origin, particularly those of northern Alaska, are the most valued for their fur, as they have guard hairs of a very silky texture that, after dressing, provide unhindered mobility to the wearer. However, pelts from Aleutian Islands and southern coastal southern Alaska possess rough, indelicate fur, which commands 60% lower price than the north Alaskan variety – which are also superior to European selections in optical, textural and tactile attributes. The demand for albino, melanistic and partially melanistc peltries vary according to market conditions.

There is immense potential for fur clothing and accessories from the pelage of invasive red foxes. New, experimental and modern styling, could bring new dimension to the sector to engage a younger market, comprising of millennial clients. While mature, senior and elderly clients, mindful of anti-fur protests of the first two decades of the present century, may prefer classical styles , simultaneously seeking to alleviate their anxieties and concerns before making a purchase, younger buyers, may not be cognizant or give this aspect a second thought – but feel favourably disposed towards avant-garde, hip outwear such as hoodies and bomber jackets with fur.

The onus would square lie with the manufactures to re-calibrate fur garments into -contemporary, cutting–edge, "rebellious" or "anti-establishment" styles and designs to introduce greater amplitude to what they had been selling all along.

The global fur trade, worth more than $US22 billion, in 2020, could be substantially augmented, if this market potential is adequately harnessed.

Meat

Fox meat, which contains, 20% protein, 3% carbohydrates, and 6% fat., as well as significant quantities of vitamins and minerals, is an uncommon, obscure but edible choice of meat. The fox, which is a mesopredator, derives much of its energy, from carnivorous fare, consisting predominantly of fat and protein. The high lipid diet imparts greasiness to fox flesh. Protein metabolism results in ammonia and urea build up in the muscles, giving the animal's flesh a pungent aroma, toughness and gristliness.

Throughout human civilization, fox meat has been consumed by humans, mostly out not of urge, but urgency. Mongolian and Kazakh herders periodically shoot predatory foxes and consume the flesh.

From 2011, butchers J.M. Danslow from Gravesend, commenced selling fox rump meat, sourced from farms in Sweden and Denmark, to experimental eaters and "flexitarians" as "a low-calorie, lean alternative to common meat" – a pair of fox rumps selling for GBP 6.99. There have been reports of flayed fox carcasses being supplied to restaurants in China, and in 2014, Wal-Mart recalled stocks of "five spice donkey meat "from its 359 China outlets, when DNA testing revealed the presence of fox flesh in the product.

There have been records of hunters and trappers in Asia, Europe and North America occasionally consuming the meat of feral foxes.

The tough and chewy meat, with a sharp and pungent odour, requires extended brining, deep marinating and slow and extended cooking over low flame, as a part of a casserole to be adequately tenderized for consumption. To circumvent health issues due to parasites and bacteria, eating uncooked or undercooked fox meat is strongly discouraged.

Late English celebrity chef and television personality Clarissa Dickson Wright, who was a keen advocate of hunting, showcased a fox recipe on TV, in which the flayed and gutted animal, suspended in a cool dry place, was stewed and enjoyed with chestnut pasta.

Although a periodic source of sustenance or partaken exclusively during feasts, for the indigenous peoples of the Americas, foxes were hunted more for their pelts rather than nutritional value, Smoked fox flesh was used in soups and stews. Foxtails were used to absorb blood of slaughtered animals and consumed as soup. Fat from the carnivore was used as balms and ointment and bones of the forelegs, made into awls

Oil

Curative and palliative treatment of a range of conditions including aches, pains, arthritis and gout with "Olio Volpino" or "Oglio de Volpine (fox oil) finds prominent mention in pharmacopoeia of the 18th century.

Tail

In the 1930s, hanging fox tails from automobile radiator caps, rear view mirrors or radio aerials became a youth culture fad. The craze peaked in 1936-37 and continued for another before blowing over. At the end of the 70s, it became fashionable to tie fox tails to the then usual long telescopic antennas of

Chevrolets, Opels, VWs Kadetts and Buicks. Although of no practical use, they are occasionally offered by dealers for car ornamentation, in the US.

Fish tackle stores across USA and Canada, store fox tails for use as Zonker flies and, hand tied dressed hooks for fishing lures.

Zootherapy and Traditional Medicine

Red fox pelts and fur have been used in traditional medicine bags, symbolizing healing, adaptability, and spiritual insight. In various cultures, fox fur is seen as protective, often worn or used to ward off negativity. Teeth and claws are valued as charms for courage, while the brain is believed to enhance clarity. The tail represents luck, and in Taoism, the fox embodies transformation, with its underbelly fur prized for healing. These uses lack scientific validation and aren't a substitute for modern medical treatment.

Fox Hunting

The red fox is a well-known game animal in British sport, categorized as a Beast of Chase, unlike the higher-ranking Beasts of Venery - Red deer or Wild boar. The Masters of Foxhounds Association (MFHA), founded in 1907, oversees 170 registered packs in England and Wales and 8 in Scotland. In North America, MFHA governs 135 mounted hunts in the U.S. and Canada, aiming to preserve and promote foxhunting with hounds while fostering community connections.

Sporrans

The sporran, meaning 'purse' in Scottish, is a key element of Highland attire, serving as a pocket for the kilt. Crafted from leather or fur, its design matches the outfit's formality. Worn on a strap or chain over the groin, it is often made from fox pelts with the head purposed as the front flap of the pouch.

Bag Charms

Fendi's fox fur buggies, which playful furry bag charms, have designs like Strangee, with multicolored fur and Swarovski eyes, and Lucy Junior, a fox fur charm with a leather face, stand out. Simple fox fur charms with leather cords are also available. With characters like Funny, Snob, Angry, Savage, Crazy, and Playful, these pom-pom faces add charm to bags, phones, wallets, or necklaces.

War Propaganda

During World War II, the U.S. plotted Project Fantasia, aiming to spook superstitious Japanese citizens by releasing radium-painted, glow-in-the-dark foxes, inspired by the Shinto kitsune myth. A test in Washington, D.C., startled locals, but the paint washed off when the foxes swam ashore in Chesapeake Bay. A taxidermy fox with a glowing skull and movable jaw was also considered. The plan was scrapped after Japan's surrender.

With "invasivorism", "alternative diet and life styles", "traceability", "sustainability" and "responsible living" becoming clarion calls for our society, in view of the multifarious uses, as food, feed, fashion, pet protein and emollient, there exists vast potential to valorise interloping red foxes optimally, nose to tail, instead of consigning them to landfills after culling.

Taxidermy

Life size taxidermy red-fox forms are available in a wide range of positions and mounts, in a variety of characteristic positions and sizes.

Dioramas

Red fox dioramas appear in several museums worldwide. The American Museum of Natural History in New York highlights their shifting range in the "Moving North" section of its Climate Change exhibit. The Science Museum in Springfield, Massachusetts, and the Hastings Museum in Nebraska also feature red fox displays. The Natural History Museum of Crete presents habitat images, while the Natural History Museum of Bern in Germany showcases Swiss wildlife, including red foxes.

Reference :

1) https://pressbooks.pub/extinctionstories/chapter/redfox/
2) https://www.smh.com.au/national/nsw/fearless-foxes-breeding-in-sydneys-eastern-suburbs-20170223-gujf25.html
3) https://www.abc.net.au/news/2015-02-15/increasing-fox-population-causing-massive-damage-in-canberra/6076788
4) https://www.britannica.com/animal/red-fox-mammal
5) https://www.canids.org/species/view/PREKLP237241
6) https://www.koreaherald.com/view.php?ud=20121101000970

7) http://koreabizwire.com/korea-national-park-service-to-protect-sobaeksan-foxes-from-illegal-traps/204629
8) https://www.grit.com/animals/wildlife/red-foxes-from-farmland-zm0z13ndzgou/
9) https://www.semanticscholar.org/paper/Foxes-in-Tasmania%3A-A-report-on-an-incursion-by-an-Saunders-Lane/75bf80fa24f0f3cc383315c2ac46b57b58216a2d
10) https://www.wildlifeonline.me.uk/animals/article/red-fox-distribution
11) https://www.nwf.org/educational-resources/wildlife-guide/mammals/red-fox#:~:text=Red%20foxes%20can%20be%20found,%2C%20wetlands%2C%20and%20brushy%20fields.
12) https://www.mammalwatching.com/2019/05/23/red-fox-vulpes-vulpes-schrencki/
13) Ezo Red Fox
14) https://www.jstor.org/stable/3784493
15) https://www.cbc.ca/news/canada/north/fox-eradication-effort-nears-completion-on-alaska-islands-1.3242866
16) https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0115124
17) https://www.discoverwildlife.com/animal-facts/mammals/understand-fox-behaviour/
18) https://www.theage.com.au/national/victoria/who-let-the-fox-in-penguin-fears-as-phillip-island-defences-breached-20220531-p5apu5.html
19) https://phys.org/news/2014-10-world-years-journey-red-fox.html
20) https://www.pbs.org/newshour/science/domesticated-foxes-genetically-fascinating-terrible-pets
21) https://en.wikipedia.org/wiki/Domesticated_silver_fox
22) https://www.nhptv.org/natureworks/redfox.htm/
23) https://www.nps.gov/articles/aps-v14-i1-c5.htm
24) https://bmcecolevol.biomedcentral.com/articles/10.1186/1471-2148-11-214
25) https://www.conserveireland.com/mammals/red_fox.php
26) https://www.irishtimes.com/life-and-style/travel/ireland/why-are-there-so-many-young-foxes-roaming-around-our-cities-1.3899593
27) https://academic.oup.com/beheco/article/18/4/716/204080
28) https://www.iucnredlist.org/species/23062/193903628#habitat-ecology
29) https://www.sciencedirect.com/science/article/abs/pii/S0169204613002338#:~:text=Red%20foxes%20have%20probably%20been,cities%20since%20the%20Middle%20Ages.&text=Urban%20visits%20by%20red%20foxes,since%20the%20late%2019th%20century.&text=Anthropogenic%20food%20sources%20probably%20attracted%20red%20foxes%20to20towns%20and%20cities.&text=Some%20urban%20fox%20observations%20concerned%20escaped%20pets.
30) https://bmcecolevol.biomedcentral.com/articles/10.1186/1471-2148-13-114
31) Fox | Traditional Animal Foods of Indigenous Peoples of Northern North America - Animals - Mammals - Furbearers
32) https://www.shootinguk.co.uk/features/all-about-the-fox-109808#:~:text=The%20short%20answer%20is%20yes,eaten%20with%20a%20chestnut%20pasta.
33) https://metro.co.uk/2011/04/15/fox-meat-now-on-gravesend-butcher-shop-menu-651576/#ixzz3wseZD25o
34) https://www.thefedoralounge.com/threads/raccoon-fox-tails-on-radio-aerial-why.42108/
35) https://www.abc.net.au/news/2018-03-07/fox-numbers-take-bite-out-of-australian-agriculture-economy/ 9485428
36) https://www.ligatnesdabastakas.lv/our-animals/red-fox/
37) https://nre.tas.gov.au/invasive-species/invasive-animals/invasive-mammals/european-red-foxes
38) https://www.treehugger.com/surprising-facts-about-the-red-fox-4864544
39) https://www.washingtonpost.com/archive/local/1995/01/05/harvesting-fox-pelts-and-hard-feelings/558d1e13-a858-470e-8f74-4e499f283e7d/
40) https://www.efurs.co/blog/what-is-fox-fur



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Problems of Transition : Finished Leather To Leatherware

By J M DEY, Honorary Editor of Journal of Indian Leather Technologists Association

This article is the text of the keynote address at the seminar on Finished Leather and Leatherwares, on August 14 at the Great Eastern Hotel in Calcutta. The seminar was part of the ILTA's 30th Foundation Day function. The keynote address was presented by **Mr J Sinha Roy**.

The continuing crisis in the world economic situation during 1980 keeps on creating an atmosphere of gloom in the Indian leather industry. With the world market still critical, Indian leather and leatherware manufacturers faced another year of slump in exports during 1980-81. The export of leather and leather products suffered a 29 per cent shortfall during 1980-81 and totalled Rs. 303.73 crore against 1979-80 exports which were Rs. 424.98 crore, the shortfall thereby being about Rs. 120 crore. Industry Ministry sources estimated that the production of finished leather goods during 1980 was about 26 million pieces against 28 million pieces produced in 1979. The production of leather footwear was 133 million pairs against 134.6 million pairs produced in 1979. Even finished leather exports were 30 per cent lower and leather goods were down by 36 per cent.

Comparative statement of finished leather and leather products in 1978-79, 1979-80 and 1980-81

(Figures in million rupees)

	1978-79	1979-80	1980-81	Variation % (over last year)
Finished leather	1812.59	2660 08	1860.47	— 30
Leather goods	146.17	182.35	115.78	— 36
Leather footwear	149.99	180.51	205.98	+ 14
Footwear componants	83.65	295.84	169.45	— 43
Industrial leather manufactures	32.51	36.15	112.47	+ 211

(Source : *Lexport Bulletin*)

Export Target

In spite of the decline in leather exports in the past Financial year, the export target for 1981-82 has been fixed at Rs. 425 crore by the Export Promotion Council for Finished Leather and Leather Manufactures : Semi-finished leathers : Rs. 80 crore ; finished leather : Rs. 250 crore ; leather goods and industrial leather : Rs. 35 crore ; footwear and components : Rs. 60 crore.

The export target by the Export Promotion Council for 1979-80 was Rs. 460 crore, which was scaled down to Rs. 400 crore for 1980-81, and was lower than even the actual exports of Rs. 425 crore effected in 1979-80. This was due to the demand recession prevailing in the international markets. But even this target could not be achieved and the value totalled Rs. 303 crore resulting in a shortfall of about Rs. 97 crore below the fixed target. It is necessary to analyse pragmatically our capacity and ability to achieve the export target of Rs. 425 crore fixed for the year 1981-82.

Under the present demand recession, it is impossible to escape the prolonged depressions and crisis in the international market. This should prompt us to formulate a long-term perspective plan for ensuring the growth and viability of the leather industry.

At present, South Korea, Taiwan, Hong Kong, Brazil, Argentina, Italy and Spain have emerged as the leaders in the world trade. There are indications to show that China is preparing on a massive scale to import American hides and export leather products in the near future. Hence the Indian leather industry will have to face, on the one hand, stiff tariff barriers abroad and, on the other hand, stiff competition from the above newly emerged countries in the world leather trade. How far India will succeed depends on the correct strategies being evolved and adopted.

Added Value Concept

If one is to take a long-term view of the development of the industry, it is the export of high-value-added products that should receive our attention.

Till 1971-72, value-added items such as finished leather and leather products constituted only an insignificant portion. Based on the Sectharamiah Committee recommendations, the Government of India introduced various incentives such as cash compensatory support on exports, duty drawbacks, air freight subsidy, import replenishment licences, quota restrictions etc., but all these incentives have failed to achieve the desired results.

According to an UNCTAD report in 1974, the value which could be added for the conversion of raw hides and skins into finished leather and leather products is mentioned below :

	Hides (Per cent)	Skins (Per cent)
Raw	100	100
Wet-blue	122	153
Finished leather	236	296
Footwear/leather goods	600	600

How far the above added-value figures were applicable to India was checked by some exercises made by

CLRI and their findings in the case of raw to finished leathers are :

	Hides (Per cent)	Skins (Per cent)
Raw	100	100
Wet-blue	159	150
Finished leather	252	237

According to UNCTAD estimates, chemicals represent 15 to 17 per cent and labour content 12-13 per cent in the total cost of production. But in the CLRI study, chemicals represent about 35 per cent and labour content 12%. In certain cases it was reported that Indian chemicals were costlier than imported ones. Unless we reduce the cost of chemicals, it is impossible to bring down the cost of finished leather.

How far we have been able to attain the added value according to the above established formula and why we failed remains to be examined carefully and remedial measures for this gap should be found.

Causes of Debacle

Various factors are responsible for the inability of the Indian leather industry to stand up to the present international situation. One of the main factors is the tense trading climate characterized by protectionistic measures in many developed countries which are facing serious problems in their leather and leather products industries. European buyers have built substantial inventories and, therefore, they are not willing to effect any further purchases from India. The resistance of the importing countries' official policy not to allow Indian finished products to get a foothold in their countries was responsible for the fall in Indian leather products exports. Some arguo that we are unable to compete because our quality of leather and leather products is below the international standard.

Some are of the view that the gloomy condition of our Indian leather industry is due to our complete dependence on foreign markets, ignoring the home market. While the importance of increasing exports cannot be overemphasized it must be supported by a sound home market.

World Market Has Not Improved

The world leather market is still in the doldrums. Though the price trends in the world market are steady, there is an undertone of weakness. In the West, there are no orders for winter production. Expectations of a revival of the world market have proved illusory.

At a Press conference on July 20, Mr Sanjoy Sen, who visited the European and American markets in June, said : 'Recession in Europe continued unabated and the international leather and leather goods market did not show any immediate signs of improvement. There is no motivation to buy Indian semi-tanned or finished leather as the rulidg prices in India do not offer a sufficient differential to motivate European buyers to buy and a process of de-stocking continues on large stocks of earlier supplies at distressed prices. To sell Indian leather in America is difficult as American prices for finished leather are not more than

those of ours. However, where products are concerned the situation is similar to Europe and Indian exports have a great potential provided infrastructural facilities can be created. The difficulty of servicing the American market lies in its largeness of orders'.

Export Potential for Leather and Leatherware

According to a UNIDO report, the total world requirement of manufactured leather by the year 2000 will be around 159 billion sq. ft.

A recent assessment of the US market for leather goods by the Tanners Councial of America has revealed that it holds a vast potential for leather goods export.

In 1978, the world market for leather footwear was worth US $ 5,726 million and the USA, West Germany, France, the U.K., Canada, Belgium—Luxembourg imported more then 70% of total imports. India has only a negligible share of 0.76% in the world maaket.

India's Share in World Exports

In million US dollars

	World Exports	India's Exports	India's Share %
Leather	1530.5	188.0	12.3
Footwear (all types)	3936.4	23.9	0.61
Travel goods, handbags etc.	798.5	7.3	0 92
Leather garment & accessories	871.7	1.3	0.15
Total —	7137.1	221.3	3.10

Diversificatlon Recommended

Based on study conducted by the Inuian Institute of Foreign Trade under the Swedish International Development Agency and International Trade Centres Integrated assistance programme for India, IIFT recommended diversification of exports of medium-priced chrome-tanned leather goods made from cow calf and sheep skins to Hong Kong. Malaysia and Singapore as these countries are heavily dependent on imports for meeting their mounting domestic demand for leather goods.

Recently, the State Trading Corporation signed an agreement with Holland for 200,000 pairs of leather shoes and also succeeded in securing a big order for shoe uppers from Bulgaria. Exports of shoe uppers to the German Democratic Republic are likely to be 1.5 million pairs compared with nearly a million pairs in 1980-81. Besides a long-term agreement for 1981-84 with GDR for shoe uppers is expected to be signed at the end of the year. More shoe uppers and leather goods will be exported to Romania. STC is launching joint-venture projects exclusively for export production, such as manufacture of shoe uppers, shoes, gloves (with Bulgarian collaboration), leather board and leather products (with West German participation), leather shoes and uppers (with US collaboration).

The Ministry of commerce wants to promote joint ventures with foreign firms with buy-back arrangements to provide assured outlets for leather goods on a long-term basis.

It is a great relief that the US authorities have decided to withdraw the countervailing duties on India's leather sandals, slippers and chappals imported by them in October 1979. The countervailing duties on unlasted leather footwear uppers were withdrawn in March 1980. However, no such relaxation has been made for relatively important items of exports from India—leather shoes and leather uppers other than the unlasted variety.

Judging from the projections of world demand for leather goods, the scope for increasing India's exports is vast. A major thrust is needed in the area of product diversification and exploring new markets. Over-dependence on a few markets has been a severely limiting factor. Expansion of exports will greatly depend on the industry's initiative and dynamism in making new products for existing markets as well as for new markets.

Government's Present Policy Help or Hindrance ?

There appears to be some confusion over the relative importance being assigned to the different sections of leather exporters. The export duty cut on semi-finished leather from 25 to 10 p.c. *ad valorem* has been welcomed by the exporters of semi-finished leather, while the manufacturers of leather products are dissatisfied as this would affect their availability of finished leathers and retard the growth of the much advocated value-added leather products. The Government has not yet been able to identify priorities in the matter of fixing targets and export policy formulations.

The Govenment's present policy in reserving the leather industry in the small-scale sector and of not allowing export-oriented units to enter the different fields of leather, leather products production without a very high export obligation has failed to motivate the infrastructural growth. At the same time, the Government has declared the policy of encouraging joint ventures with overseas buyers with a buy-back arrangement for expediting growth of export.

The policy of export incentives introduced by the Government has encouraged the export of semi-finished and finished leather to such an extent that manufacturers of footwear and leather products have cried out in vain for raw materials that were not available. Further the 10.5 per cent excise on footwear production has served as a disincentive to mechanization.

Deficiencies in Basic Approach

The latest report of the Committee on Public Undertakings on the export of leather and leather goods by the STC brings into sharp focus the deficiencies in India's basic approach to the development of the export-oriented industries. The Committee expressed the hope that the leather and leatherware industry should receive the attention it

deserved and the Government should adopt a massive programme for this labour-intensive industry by diverting to it a large volume of plan funds for development, research and export promotion. The Committee said further that the system of export controls and export subsidies that was evolved was not effectively enforced and the subsidies went largely to benefit rich middlemen in the country and affluent consumers abroad. What is needed is 'an imaginative sales promotion effort, not to mention development of skills or infrastructural facilities in the country for the value-added finished leather goods export'.

The Committee pointed out that no specific study of the impact of the incentive scheme had been undertaken by the Government and it was important to review the export strategy critically in the context of incentives and subsidies. The Committee suggested that the Government should set up a Leather Board on the lines of the Coffee and Tea Boards to exploit the export potential. This Board should be under the Ministry of Commerce. They have also recommended the introduction of a quota on finished leather exports to boost the export of leather products. But the Ministry rejected the suggestion on the ground that the Bharat Leather Corporation has been set up as an apex body under the administrative control of the Ministry of Industrial Development for the overall growth of the leather industry and various States have also established Leather Development Corporations. But Bharat Leather Corporation has not yet been able to create any impact on the growth of the industry in different regions of the country, nor has it developed close co-ordination with State-level Leather Development Corporations and also with other agencies. This is also true in the case of the different State Leather Development Corporations.

There is need for re-structuring the present export and import policies to encourage the export of high-value-added products and to accelerate a balanced growth of the leather and leatherware industry within the country. It is felt that alternative measures should be evolved to strengthen its infrastructure and its bargaining power. Frequent changes in the export, import and licensing policies discourage the orderly growth of the industry and the export trade. In the import of essential leather auxiliaries and sophisticated machinery, a flexible import policy should be followed. The existing duties of importing these items need re-consideration to reduce the import burden. The 40 per cent preferential duty lists need addition as suggested by a Sub-committee of the Leather Development Council.

Vital Issued Not Resolved

There are other vital issues that have not been resolved by the Government—for example, how to bring harmony between the decentralized and organized sectors of the industry, or between units engaged in production for domestic markets and those for export. Allocation of product lines between the

decentralized small-scale sector and the organized sector needs careful consideration in view of their implications on the general growth of the industry.

Will the Government's reported move to sanction ad hoc quotas for export of wet-blue chrome harm the interests of finished leather exporters ? At a time when imports of wet-blue leathers are permitted without licence and the Government wants to increase exports of finished leathers, footwear and leather products, is this move a contradictory one and will it hinder the pace of growth of added value exports ?

Recently, the Government of India decided to liberalize the licensing policy for leather footwear and leather goods to promote decentralized development of the industry, and provide an assured market to the small-scale and cottage sectors. In terms of new policy, applications for the organized sector for the manufacture of leather footwear (closed shoes) and leather goods will be considered favourably. But the Government had laid down certain conditions that the units will have to set up in notified backward areas, they will have to export not less than 70% of their production, and the remainder can be sold in the domestic market at a minimum ex-factory price of Rs. 150 per pair of gents shoes, Rs. 110 per pair of ladies shoes and Rs. 70 per pair of children's shoes. Large houses will have to procure at least 50% (by value) of their requirements of components like shoe uppers from the small-scale and cottage sectors. Other companies will have to procure at least 35% (by value) of their requirements from these sectors. Foreign collaboration, both technical and financial will be permitted. How far the present liberalization will help the small-scale and cottage sectors is a matter of doubt since the small-scale and cottage units are unorganized, the product base is poor and limited and their outlook extremely traditional. A major portion of their production is low-value chappals and sandals and the average price realization for their items is very low.

Present Constraints

The main reason for the slow growth of finished leather and leather products is lack of the necessary infrastructure. The infrastructure has not yet been built as the manufacturers and exporters in the majority are interested in getting quick returns by exporting semi-finished and the so-called finished leathers, and are afraid of investing capital required for building the infrastructure. Many of the exhibitors in the last leather fairs frankly admitted that they would not be in a position to execute bulk orders for all the items they were displaying had there been such orders. This is an indication of the extremely unsatisfactory state of affairs in the Indian leather and leather products industry.

For several reasons, the transition to leatherware is likely to be more difficult than the transition which has so far been made from semi-finished to finished leather. Finished goods involve far more specialized manufacturing and marketing capabilities, which are lacking today. It is for this reason that footwear and leather goods still constitute only 5% of

total leather exports. The constraints faced by the manufacturers of leather products and footwear are :

Scarcity of Raw Materials

For the manufacture of leather footwear, leather goods, garments etc. the main raw material—finished leathers of superior grade—is not available as need ed. This is a great handicap. The availability of additional finished leather by 1982-83 would be approximately 153 million sq. ft from hide and 29.6 million sq. ft from skins. It is likely that about 80% of the additional available finished leather by 1982-83 would be consumed in the footwear industry for both domestic and exportable shoes and the rest 20% would be available to the leather goods and garment manufacturers.

Items	Quantity	Consumption of finished leathers In million sq. ft
Shoes and Sandals	25 million pairs	69
Shoe uppers	15 „ „	60
Chappals	75 „ „	56
Garments	1.5 „ pieces	30
Other leather goods		21
		236 million sq. ft.

According to the report of the Task Force Committee, India will require by 1987-88 the following quantum of finished leathers :

Hide shortage to the tune of 6.5 million pieces is expected by 1987-88, whereas skins show a comfortable surplus to meet the growing needs for leatherware production and exports in the form of finished leathers.

The specific additional requirements of finished leathers for 1987-88 are estimated at 236 million sq. ft :

While projecting these export figures, a growth rate of about 20 per cent per annum has been taken into account.

It is therefore necessary to produce high quality finished leathers to feed to the leatherware industries for the manufacture of high-value quality products.

Accessories, Fittings, Tools, Shoe Lasts etc.

Good quality accessories such as zips, locks, rivets, frames, buckles, buttons, corners etc. are not available and those available are not accepted by foreign buyers.

(million pieces)

	Hides			Skins		
	1977-78	1982-83	1987-88	1977-78	1982-83	1987-88
Availability	32.3	33.2	34.0	67.4	69.87	72.42
Consumption of leatherware production (footwear, garments and leather goods)	22.5	31.0	40.5	13.2	20.6	37.1

Imported accessories should be used to improve the overall finish and get-up and improve the image of leather goods. For this purpose, it is necessary to allow duty-free imports of fittings, accessories etc.

There is a general complaint that the stitching of leather goods lacks uniformity, which affects the get-up and saleability of these products and therefore it should be avoided by using precision machines and good workmanship.

For the manufacture of closed shoes, shoe lasts form the foundation. One of the main difficulties faced by shoe manufacturers is shortage of standard-size shoe lasts. The estimated demand for shoe lasts by 1982-83 is about 382,000 pairs per annum. Thus there is a vast gap of 332,000 pairs of shoe lasts per annum and sufficient capacity to meet the gap is very essential. There is also a need to take up production of plastic shoe lasts, which can withstand the stress and strain of weather conditions.

Product Development

Product development is one of the most important marketing activities and the range of leather products developed must be based on material availability and the production capability of the plant. India has shown no initiative in creative product designs or product ideas. There is need to give closer attention to planning and development strategy, product ranges tailored to market needs and aimed at pre-researched market areas. Sophisticated ranges should be made on a pilot scale production volume in readiness for future demands or market area changes. Leather goods exporters should keep pace with fashion changes and effect necessary product development to suit foreign markets,

Quality Control and Standardization

On the ground of bad quality some of the major foreign buyers slashed or cancelled their orders for leather goods drastically. Buyers complained about the indifferent quality and poor finish of leather products. This is due to lack of proper and effective control and supervision over bulk of the export production which is mostly organized by the export house on job work basis. Hence quality control should be introduced at all stages, production supervision and final inspection unremittingly applied. Product quality must be kept to the highest possible standard through careful quality control.

Technical Manpower

Indian artisans possess a degree of skill that is fast becoming extinct and it is therefore necessary to harness this skill. The training facilities presently available are too inadequate to meet the needs of the industry. Existing training facilities should be assessed and training programmes formulated for building technical manpower. Training institutions in the field of footwear, leather goods and garments should be set up on a regional basis.

Marketing

The main problems of marketing may be described as inadequacy of statistical

data, absence of means for collection, evaluation and dissemination of marketing information and insufficient feedback from markets.

Lack of knowledge of the nature and structure of export markets and their methods of doing business and lack of know-how and experience as regards sales strategies, products, selling methods and sales servicing are the most pressing problems of the individual exporters. Market intelligence and marketing advisory services are essential for facilitating prospecting and development of new markets. These could be provided by trade associations to be set up and supported by the industries concerned. The functions of such trade associations could include, in addition to providing market information, training, observation of design and fashion trends and changes, liaison with service industries and end-products in industrial organizations and participation in trade promotional fairs etc.

Expansion of exports will greatly depend upon marketing new products in existing markets as well as for new markets.

Specific Suggestions

In the context of the aforesaid observations, the foremost requirements for the development, expansion and protection of the leather and leather-based industries is for planning pragmatically on a long-term perspective and effective execution. If the present stagnant state of affairs is allowed to continue without a planned change for the better, than we can only blame ourselves for the resultant debacle. With this view in mind, some specific measures are suggested for careful consideration.

If we can succeed in implementing the following planned programme and achieve an annual growth of 10 per cent exports, taking 1979-80 as the base year, then we can claim pride for placing India honourably on the world leather map : (a) Survey of the manufacturing potential, infrastructural development in leather footwear, leather goods, garments and industrial products industry in different States. (b) Study the employment potential, upgradation of the technical training, managerial and organization skill necessary: (c) Study of product diversification and diversified markets. (d) Viable size of units and investments for export production for leather footwear and other leather products. (e) Technical collaboration and tie-ups to make available technology, design and market, enabling interaction between buyer and seller. (f) Integrated marketing approach embodying all basic elements e.g., production development, distribution, sales promotion and styling. (g) Requirement of institutional support for the integrated measures for infrastructural development, productivity improvements, marketing practice and commer- policies. (h) Setting up leather complexes for technocrats. (i) Setting up common facility centres for footwear and leather goods with financial aid from the STC Leather Development Fund, which has been accumulated and remains unutilized.

(Continued on page 26)

PROBLEMS OF TRANSITION : FINISHED LEATHER TO LEATHERWARE

(Continued from page 18)

(j) Steps to ensure steady and easy supply of : (i) cow, buff, sheep skins, softy and nappa plain, aniline, semi-aniline and printed leathers of thickness 0.5 mm to 0.8 mm for leather bags. (ii) Chrome- tanned cow and buff hide and sheep skins of economic quality for work gloves. (k) Design development—Indian style—ethnic. (l) Pattern-cutting central cell for cut components. (m) Training of workers—unskilled to semi-skilled and skilled. (n) Setting right all reconditioned sewing machines and import of multi-purpose latest sewing machines. (o) Central clicking unit near concentration of leather goods units or export units. (p) Buyers' contact, development on the basis of buyers seasonal requirements. (q) Buyers—sellers meets. (r) Packaging improvement. (e) Checking all exporters' executing orders for production or procurement planning to adhere to delivery dates.

Hands on Leather Finishing : Developing School kid Leather Challenges, limitation and other aspect to meet consistent result

Pulok Mazumder

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School Kid leather refers to a type of leather made from hides of young goat, known as "kids". This leather is typically soft, supple, and has a fine grain. It is often used for making high-quality footwear, and other accessories due to light weight, durability, and smooth texture.

Although "school kid leather" is traditionally made from young goats, using cow hides for a similar purpose involves using a type of leather processed to mimic the fine, smooth, and supple qualities of a kid leather.

Performance characteristics of School kid Leather for shoe upper:

1. **Abrasion Resistance:** The cow hide should have a high Martindale rating, typically exceeding 4 different type of method/norms to ensure it can endure the daily wear and tear expected for school shoes.

2. **Durability**: It should be robust and tough, able to withstand impacts and stress while protecting the foot.

3. **Flexibility:** Like traditionally school kid leather, process cow hide should maintain flexibility, allowing for comfortable movement without cracking or stiffness

4. **Breathability:** The leather should allow air to pass through to maintain comfort, especially for children 's shoe that worn all day.

   Meeting Water vapour permeability and Water vapour co-efficient test too.

5. **Smooth finish**: The finish must be mimic the fine grain of kid leather. allowing for a polished, smooth appearance that takes well to dyes and finishes for an attractive look.

6. **Colour Fastness:** The leather should maintain colour without fading, even after exposure to sunlight or wear, important for maintaining a consistent appearance over time.

Basically, corrected grain leather, often referred to a **"Martindale fast school kid leather"** is type of leather that has been sanded, buffed, or otherwise treated to remove imperfections from the surface. The process results in a more uniform appearance with a smooth and glossy finish. The term "Corrected grain" indicates that the natural grain of the leather has been altered or enhanced, usually by embossing a consistent grain pattern ot the surface after correction process.

The term **"Martindale"** refer **Martindale Abrasion Test,** which is a method used to measure the abrasion resistance of leather, particularly in upholstery and footwear. For a leather, it indicates how well the material can withstand wear and rubbing. The result is given in the number of cycles (revolutions or rubs) the material can endure before showing visible wear. High Martindale cycles suggests that the material is durable and suitable for high-use applications.

Requirement of the crust:

The production of School kid leather involves specific requirements for the **"Crust"** stage, which refers to the intermediate stage of leather processing where the hide has been tanned and dried but not yet finished. Here are the key requirements for crust leather intended for corrected grain school kid leather:

1. **High Quality Hides:** The Crust Leather should be made from high quality calf hides, as school kid leather is typically valued for its fine, smooth texture. The hide should be free from any blemishes or significant defects that cannot be corrected much during the finishing processes.

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2. **Uniform Thickness:** The crust should have consistent thickness, which is important for ensuring an even finish during the correction process. This uniformity contributes to the final products performances, smoothness, and durability.

3. **Proper Tanning:** The tanning process should be carefully controlled to ensure the leather has the right balance and flexibility and firmness. This types of shoe upper requires a firm but supple feel, which is achieved through combination of vegetable or chrome tanning methods. Easy buffing and absorbency but non stretchy tight grain.

4. **Clean Surface***:* Since it is corrected grain leather undergoes sanding and, buffing to remove imperfections, the crust should have minimal surface flaws to reduce the extent of correction needed. A clean surface ensures a higher-quality final product.

   Grade three and four, **cured scars, cured tick-marks, preferably non open scars, no shrunken grain''.**

5. **Moisture Content**: The moisture content of crust leather must be carefully managed to facilitate correction in finishing process. It can affect quality of of the sanding and buffing.

6. **Absorption Properties**: The crust must have suitable absorption properties to ensure that dyes and finishes adhere properly during the final stages of leather production. This ensure colour and gloss are evenly distributed.

The challenges: The finished leather must fulfil following criteria:

- Tight Grain
- Scuff Resistance
- Other Specification - Bally Flex, Adhesion -Peel Off test etc.

Since the finish of corrected grain leather used for School kid Shoes, has to fulfil highest criteria, the finish must be specially designed by Leather Engineer. Here is Martindale Abrasion Specification demanded by Brands –

SL.	TEST	CONDITIONS		REQUIREMENT
		DRY	WET	
1.	Martindale Abrasion (TM131)	51200	25600	Good
		51200	51200	Excellent
		51200	12800	Moderate
2.	Drum Abrasion (TM95)	Damage Scale Rating 2 & Finish Appearance B		Good
		Damage Scale Rating 1 & Finish Appearance A		Excellent
		Damage Scale Rating 3 & Finish Appearance B		Moderate
Damage scale (0-5) -No damage to severe damage;Finish Appearance Range A TO d (Little or No damage)				
3.	Chisel Scuff (TM140)	50 Rev		Moderate
		200 Rev		Good
		400 Rev		Excellent
4.	Abrasion (TM163)	1000 Cycle		Moderate
		2000 Cycle		Good
		3000 Cycle		Excellent

Testing of Scuff Resistance:

Significant improvement in scuff resistance can be obtained using impregnating resins while making of corrected grain leather.

Scuff resistances are widely tested in corrected grain shoe upper where impregnation operation is part of leather making especially school kid leather where durability is key property include sports footwear

There are no single test to predict but the performance of these leather, and so a combination of three test is normally used:

- **Martindale TM131:2003(2014) Method A,**
- **Martindale TM95:2020-ABRASION and SNAGGING resistance - DRUM method"**
- **Martindale TM140:1996-Scuff Resistance - CHIESEL Method**

SATRA TM131 carried out in both dry and wet conditions; it is mild but continuous rubbing abrasion which may occur during prolonged wear. The test is particularly useful where any finish used and the underlying layer have marked **contrast in colour, which likely to lead rejection or failure in test.**

SATRA TM 95 TEST is more severe test and corresponds to prolonged Abrasion and Snagging that can occur against various hard or sharp objects encountered in wear.

The **SATRA TM 140** test represents severe **accidental scuffing and snagging**, a disc of leather, finish side up ,is rotated against chisel of defined dimension under a contact force. The test normally stopped once chisels has worn through the finish to expose the leather substrate, although other end points can be used-such **as colour contrast shows**.

Author recently experiences with one of biggest shoemaker of North India doing well and performing set process of box Corrected grain School Kid Leather above three test **set by author and his team** reported not passing the test -on checking it was found crust colour i.e., **dyeing process changes lot to lot has resulted contrast colour** in both **TM131 and TM 140** resulting failure. this should be avoided.

Preliminary Step to make School kid Leather:

- **Requirement of Crust** already we discussed. Through dyeing of crust is must with tone in tone throughout the flesh to grain and inside the cut.

- **Grain buffing**: Should be done carefully, the same apply to rebuffing or snuffing time after impregnation. First buffing preferably with 240 Emery Paper twice. The buffing operation greatly influenced '**Orange Peel**,' The grain should not be completely removed with weakening the structure of to an extent where more **"Stretch"** will be possible, resulting **"Orange Peel".**

- **Dusting:** Carefully and thoroughly After buffing and snuffing operation through de-dusting machine.

- **Fixing:** Flesh side fixing with solvent resistance binder solution, to avoid dust reaching to smooth surface from leather.

- **Impregnation: First Step-** Apply 35 g/sq. ft. approx., if possible 40 g/sq. Ft. Impregnating mix should contain 10% of high solid acrylic or co-polymer of high solid approx. (36-40%) for tightening and smoothening and 2% of highly penetrating lower molecular size low solid (approx. 20%) for improving penetration and filling.

  Now a days Impregnating resin based on co-polymer with 40% producing tight grain with softer mellow handle required by tanners is very successfully gaining popularity.

- **Post Impregnation Procedure:** Impregnated leather piling "grains to flesh" for approx. 6 hrs (In tannery condition overnight) to facilitate uniform deposition by way of **osmosis**. It is helping Impregnating solution administered uniformly distributed to entire leather.

- **Vacuum Dry**: Best is vacuum dry at 50-65*C and 2min time then airing of is must to regulate moisture before snuffing.

- **Re Impregnation:** Its normally avoided by tanners but when big lot are in production pre assortment made by selector; there need some percentage of leather may require re-impregnation. where general rule is to use 7% High Solid acrylic and 2% low sold low molecular size acrylic to use. Here as well we need to do re-snuffing.

- **Through Dyeing's and Correction if any in these stages:** Normally school kid leather tested by Abrasion SNG test TM 95 and Chisel Scuff TM140 is severe in nature causing crust colour reappear making test fail. Hence if crust colour is not black additional spray of dye solution and highly transparent pigment advisable.

- **Adhesion Coat**: It is must to have better Martindale fastness, normally aromatic PU with water advisable, in any case IPA or penetrator is avoided in any coat. Any type of Penetrators disturbs Martindale Test in ageing

- **Base Coat:** This type of leather can be finish by Hands spray, Auto spray, if large production auto spray or Roller coater can be followed.

- **Repetition of one recipe: Author** has experienced working with large tannery in North India once set formulation with Hands Spray, applied in next production in Auto or Roller, **it will not give consistent result**. In each cases Machine and application system to be tried and set before taking lot.

- **In every case once set formulation or recipe with Hands Spray finish, must be set in Auto Spray or Roller Coaster, otherwise result will vary.**

- A chronological study and provided here how Author and his team must work to a set process, to standardised as per application process to be applied.

- **Normally season made with formulated recipe applied at viscosity of 18-20 sec F' Cup 4** by 30A rollers one coat 5-6 gm, dried properly given sand blast at Embossing press or Roto then another 2 Coat by 30^{0}C @ 3gm sq. ft. applied for better smoother coverage and retaining grain smooth look.

- Once covered it is ready for topcoat, points to be noted to regulate viscosity here tanners or leather engineer uses **Thickener** available in the market.

- In base Coat formulation –

Pigment : Binder :: 100 : 300 should be minimum.

Out of 300 Binder

120-parts Resin having universal nature with crosslink able and better flex behaviour.

200-part Polyurethane tough, non-tacky to have better spec with covering power.

30/40 parts Hard Acrylic

Polyurea Crosslinker for **better adhesion and Martindale fastness advised in base coat.**

Auxiliaries:

Hard **Casein** and Very Good quality **Filler or Wax will** be in the formulation,

Author preferred **30-40 parts of hard Casein** and same part hard resin for better **abrasion resistance by chisel and snag test.**

And **30 parts Filler/Hard bleaching wax** for **covering and Taber abrasion and piling**.

Other auxiliaries in base coat formulation are **defoamer, leveller and thickener**, above all **crosslinker for highest specification requirement Leather Engineer adopting.**

Intermediate Embossing of Fine Grain - To get smooth fine grain super fine hair cell given in between spray. In any case if it is made on roller 1 RC @ 30A roller 5-6 gm and 2 RC @30C 3 gm each roller to be applied with intermediate FHC

If it is Auto spray/hand spray similar consumption to be administered in coat with intermediate FHC twice.

Topcoat:

For Semi-Gloss, a medium-hard transparent film with gloss, high covering polyurethane is used. Now a days polyurethane tops developed by supplier in the industry which provides high flex, abrasion, and wet **fastness.**

Combination of dull and gloss along with tough water patent polyurethane along with performing handle modifier advised to add for better Taber values and Chisel Scuff Resistance.

When customer demand faster production change of finishing method from hand to auto or auto to roller the result obtained is totally different .

We can produce martindale fast school kid leather by below three machine operation either of

- Hands Spray finishing
  or
- Auto Spray Finishing
  or
- Roller finishing

Author and his team had to do repeat trial in ever cases adopting hand to auto and roll coater machine.

Author also find during the process once set , customer frequently changing –

- Dye (and not caring for dyed thru)
- Not maintain tone and tone dyeing (flesh to grain.)

All these **imperfections resulted poor fastness**. Tanners must correct same in finish.

The project of making Martindale Fast School Kid leather from 2022 developing from salesman sample (by Hands Spray) to produce by Auto Spray and then Roller several trials done,

replicated after test report and evaluation to take ,on lot production for his buyer / exporter to end buyer successfully. The customer needs three option which we successfully replicated in production lot after lot.

TEST	CONDITIONS		REQUIREMENT	RESULT OBTAIN
	DRY	WET		
Martindale Abrasion (TM131)	51200	25600	Good	Good
	51200	51200	Excellent	
	51200	12800	Moderate	
Drum Abrasion (TM95)	Damage Scale Rating 2 & Finish Appearance B		Good	Good
	Damage Scale Rating 1 & Finish Appearance A		Excellent	
	Damage Scale Rating 3 & Finish Appearance B		Moderate	
Damage scale (0-5) - No damage to severe damage; Finish Appearance Range A TO d (Little or No damage)				
Chisel Scuff (TM140)	50 Rev		Moderate	Good
	200 Rev		Good	
	400 Rev		Excellent	
Abrasion (TM163)	1000 Cycle		Moderate	Excellent
	2000 Cycle		Good	
	3000 Cycle		Excellent	

A chronological study and provided here how we standardized recipe as per application process applied, we adopted changes according to demand of faster production by auto and Roller -

Chronological Trials in Hands Spray to Auto and roller coater of School Kid leather

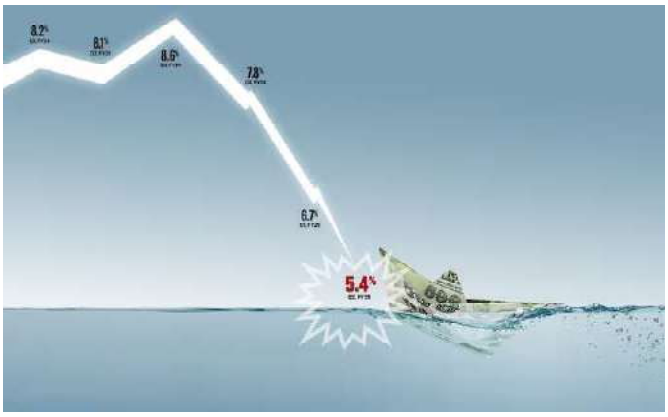
Sl. No.	Date	By Hands Spray (HS) / Auto Spray (AS) / Roll Coater (RC)	Other relevant Info on Crust and Finishing	Test Specification	Pass	Fail
1	Nov'22	HS	In 2022 all trails made on Full grain Crust for approval last samples made on CG crust.	Taber Abrasion (TM163)	Pass	
2	Feb'23	AS	IN 2023 bulk lot taken in Auto Spray on Nov'22 trials of HS	Taber Abrasion (TM163)		Fail
3	Mar'23	AS / RC	CG crust with impregnation Feb'23 recipes followed	Taber Abrasion (TM163)	Pass	
4	Aug'23	RC	DO	DO		Fail
5	Aug'23	RC	CG crust - change process - add of performance modifier, add of cross linkable resin	TM131, TM163, TM95, TM140	Pass	

Note: Several trials and test made prior to standardise recipe opted for faster production in auto and roller during February 23 to August 23 end to set in Auto/ROLLER and THEN only by ROLLER.

Reference:

- Author's hands on trial to meet the Specification of Martindale Fast leather.
- Trail record and feedback -test result by BVCPs and inhouse test at tannery

GDP GROWTH DISAPPOINTS: IS THERE HOPE?



Real gross domestic product (GDP) growth is estimated to have slowed sharply to 6.4 per cent in the current financial year (FY25) from 8.2 per cent expansion in FY24, according to the first advance estimates released by the National Statistics Office (NSO). Nominal GDP growth was more stable, at 9.7 per cent in FY25 versus 9.6 per cent growth in the last. That growth compares unfavourably with the 10.5 per cent growth assumed by the central government in making the estimates for the Budget in July.

However, the government is not going to be too perturbed about achieving the modest additional fiscal consolidation required to hit the fiscal deficit target of 4.9 per cent of GDP. Buoyant revenue collections and weaker capex spending so far indicate scope for bigger savings.

The slowdown in real growth in FY25 looks sharp but may be exaggerated. The supply-side estimate for value addition, captured in the gross value added (GVA) metric, is more reliable compared to the demand-side measurement of output captured in GDP, in the case of India. Typically, the gap between the two metrics is modest, and both have grown 6.4 per cent in FY25. But that was not true in FY24 when GDP growth was a full percentage point higher compared to GVA, with the latter pegged at 7.2 per cent.

Nevertheless, the 6.4 per cent growth estimated for GVA and GDP is still below the trend growth or potential growth of the economy. Headline growth was quite weak heading into the Covid period but averaged 6.4 per cent and 6.7 per cent in the five years between FY16 and FY20 for GVA and GDP, respectively.

Compared to that period, India has nurtured a new growth driver in the form of services exports.The health of the banking sector and corporate balance sheets also looks better, while the economy has adjusted to key reforms initiated in that period (such as the transition to the GST regime). On the flip side, government debt levels have gone up, and household leverage has also increased.

While household debt levels still look comfortable, the buildup was likely too quick, and debt servicing could be impinging on urban demand in the backdrop of sluggish real wage growth. Pinning down potential growth is difficult, but these drivers together suggest a suitable range of 6.5 to 7 per cent (i.e., at least in the same ballpark as the pre-Covid period) and likely closer to 7 per cent.

One silver lining is that headline growth still implies stronger performance in the second half of this financial year (H2 FY25), and more so when comparing it with the shockingly weak GVA/ GDP growth of 5.6 per cent/5.4 per cent in the July-Sep period. GVA and GDP growth averaged 6.2 per cent and 6 per cent, respectively, in H1, but are penciled to expand 6.6 per cent and 6.7 per cent, respectively, in H2. That growth is more in sync with trend growth.The caveat is that these estimates by NSO are based on data available for the first eight months of FY25 only and require heavy extrapolations for making the full-year estimate.

In the past, growth in the First Advance Estimates has been upgraded as well as downgraded, albeit growth in the previous two financial years was revised higher. But the latest estimate looks realistic. The NSO estimates imply stronger growth in the agriculture sector and government spending as key drivers of better growth in H2.

Agriculture GVA growth is seen accelerating to 4.5 per cent in H2, from 2.7 per cent in H1. The growth in private final consumption expenditure (PFCE) on the demand side is accordingly higher, and that is the biggest part of GDP.

Note, PFCE growth in FY25 (7.3 per cent) is estimated to grow at a much faster clip compared to FY24 (only 4 per cent) when headline GDP growth was far stronger, and that is another silver lining. Strong growth in the labor-intensive construction sector (8.6 per cent), which continues to grow at a much faster clip compared to the pre-Covid period, is encouraging as well.

Overall, the NSO estimate confirms growth in H1 FY25 was dragged lower excessively on account of one-off factors, even as the economy is still performing below potential.

(rediff.com/business - 08/01/2025)

INDIA NEEDS 7.8 MN NON-FARM JOBS YEARLY TO SUSTAIN GROWTH: ECONOMIC SURVEY

The Economic Survey 2024-25, tabled in Parliament on Friday, mentioned that India needs to create an average of 7.85 million non-farm jobs annually until 2030 to accommodate its expanding workforce. Generating quality jobs remains a critical and well-prioritised national objective, key to ensuring inclusive and sustainable economic growth.

Post-pandemic recovery in employment trends

India has seen notable employment growth in recent years, largely driven by sustained economic recovery. The 2023-24 Periodic Labour Force Survey (PLFS) by the National Statistical Organisation (NSO) reveals a robust post-pandemic rebound. The country's overall unemployment rate for individuals aged 15 years and above has decreased from 6 per cent in 2017-18 to 3.2 per cent in 2023-24.

In urban areas, the quarterly unemployment rate for individuals aged 15 and above also showed progress, dropping from 6.6 per cent in Q2FY24 to 6.4 per cent in Q2FY25. Additionally, the labour force participation rate (LFPR) in urban areas increased from 49.3 per cent to 50.4 per cent, and the worker-to-population ratio (WPR) rose from 46 per cent to 47.2 per cent during the same period.

Eco Survey 2025: Regional labour market dynamics

The 2023-24 Periodic Labour Force Survey (PLFS) report highlights positive labour market trends across India. Of the 36 states and Union Territories, only 12 have a WPR lower than the national average of 43.7 per cent, and 12 fall below the national LFPR average of 45.1 per cent. On a positive note, 14 states have seen a significant increase of over 10 percentage points in their WPR, and 11 states have achieved a similar rise in their LFPR compared to 2017-18.

Economic Survey 2025: Shifts in employment types

The workforce has shown a notable shift towards self-employment. The proportion of self-employed individuals increased from 52.2 per cent in 2017-18 to 58.4 per cent in 2023-24, indicating a rise in entrepreneurial activities and flexible work arrangements. While regular salaried employment declined slightly from 22.8 per cent to 21.7 per cent, the trend has stabilised, with employment levels remaining steady or gradually improving since 2020-21. Casual workers also saw a decrease from 24.9 per cent to 19.8 per cent, suggesting a movement toward more structured self-employment models.

Impact on women's employment trends

The shift in employment patterns has had a significant impact on women, particularly in rural areas. Although the proportion of women in salaried employment decreased, more women engaged in self-employment or contributed to household enterprises. In rural India, the share of women in regular wage jobs dropped from 10.5 per cent in 2017-18 to 7.8 per cent in 2023-24. In contrast, the share of women working as "own account workers/employers" or "helpers in household enterprises" has risen significantly. In urban areas, salaried employment for women decreased from 52.1 per cent to 49.4 per cent, with a notable dip in 2020-21 when it fell from 54.2 per cent to 50.1 per cent.

Growth in rural women's entrepreneurial roles

Among rural women, the proportion working as "own account workers/employers" surged from 19 per cent in 2017-18 to 31.2 per cent in 2023-24, reflecting a strong trend towards independent work and entrepreneurship. Similarly, the share of women acting as "helpers in household enterprises" increased from 38.7 per cent to 42.3 per cent, pointing to a rise in family-oriented economic activities. In urban areas, "own account workers/employers" grew from 23.7 per cent to 28.5 per cent, and "helpers in household enterprises" rose from 11 per cent to 13.8 per cent over the same period.

Pandemic's lasting impact on employment

The PLFS data, covering the period from July to June, reflects the Covid-19 pandemic's deep impact, particularly in 2019-20. The lockdowns, coupled with challenges like school closures and health concerns, led many women to leave regular wage work in favour of flexible jobs, allowing them to care for children and elderly family members. The flexibility offered by "own

account work" has provided opportunities for women, leading to a substantial increase in this employment category post-pandemic, the Economic Survey mentioned.

Initiatives to support entrepreneurship

Government schemes like Mudra Yojana, Skill India, Start-Up India, and Stand-Up India have significantly contributed to fostering entrepreneurship, providing skill training, and promoting self-reliance. "This ecosystem of support reflects the growing emphasis on empowering individuals to chart their own professional paths," the survey document reads.

(business-standard.com – 31/01/2025)

WHY IS INDIA NOT IN THE INNOVATION RACE?

Flip through any academic journal, wade through an opinion piece on an online news site or its print cousin, or glance at a news headline and you see businesses claiming their innovative new product/service launch or governments proclaiming innovation-related investment or legislation.

And you start wondering what all this frenzy about innovation is about. When I query my business friends, they promptly reply that innovation is essential to help them differentiate their products or services from those of their competitors. When I query my friends involved in state or national-level policy making, their prompt reply is that innovation is central to creating industries that drive economic growth and thus create jobs and grow gross domestic product (GDP). And come to think of it, the term 'GDP', which in my college days was perceived by all of us as something that only academics chant about, in today's world appears to be as important even to the non-professional as India winning the world one-day cricket championship, or having an Indian girl being crowned as Miss World.

Then we read about United States-based companies like Google and Microsoft dominating the current hot topic of innovation, artificial intelligence (AI), and then you hear that these great innovator tech giants are led by Indians: Google by Sundar Pichai, Microsoft by Satya Nadella, IBM by Arvind Krishna, and, hold your breath, the White House Science and Technology Policy Committee by Arati Prabhakar ... the list goes on and on.

India also has its share of both large tech companies and large national laboratories, but why is it that these don't seem to be at the forefront of any innovation news headlines?Even more bewildering is that all these Indian tech leaders in the United States and leaders heading Indian tech companies and labs, are all part of something we are all proud of: India's merit-based education system, which ensures that in all fields, be it science, engineering, management or social sciences (to name a few fields), entry to the best colleges and institutes is based on an entrance exam system and is not based on family contacts and inheritance and paying hefty amounts.

Co-existing with all of the above is the oft-reported news that we, because of this extreme merit-based system, seem to be creating a generation of students/entrants who have mastered a system of besting entrance tests using rote learning (through training schools such as those in Kota) and thus are not good at the kind of original thinking that innovation requires?

Maybe we can learn from other countries, particularly ones that overwhelmingly lead in innovation, and for this there is no better place to start than the United States of America. As we all know, in our times, outfits from this country dominate the innovators of the business world (Google, Microsoft, etc) as well as the innovators of the educational world (Stanford University, Massachusetts Institute of Technology, etc). What makes the US such a dominant player in the innovations of our time?

The answer to this is (hold your breath) a public institution called DARPA, the full form of which is Defense Advanced Research Projects Administration. DARPA is the institution that defined the technical challenge and funded, for example, the innovation behind Google's original search algorithm. DARPA's funding also laid the foundation for the creation and dominance of Intel, Nvidia, Qualcomm, Cisco as well as Raytheon, Boeing, and more. A recent eye-catching one was the $600 million funding by DARPA of Amazon's cloud-computing project.

Incidentally, there are several of my left-leaning American friends who recount all this and say that this is why America needs to be at war all the time so that such funding will continue. But that is another story. What makes me worry and perhaps you too, dear reader, is this: India also has its share of such large institutions like the Defence Research and Development

Organisation (DRDO), which alone had an annual Budget allocation last year of $2.8 billion (Rs 23,000 crore/Rs 230 billion) and a network of 52-plus laboratories spread all over India and employs more than 7,000 scientists.

Why, then, does India not have world-leading technology companies like Google, Microsoft, and Amazon? When I wandered through my friends and acquaintances with this same question, why is India not in the forefront of innovation, the wisest reply that I got, and unsurprisingly, from a friend who is a member one of India's "business communities" was this: "It does not pay to innovate in India." I immediately jumped on him: "Why is that so?" His answer: Indian companies, private or government-owned, think it is too risky to adopt a new innovative product or service.

In India, another friend says, a significant portion of research funding is government-led, particularly in sectors like defence, space, and energy. This can lead to bureaucratic inefficiencies and a slower adoption of cutting-edge technologies in the private sector. And, crucially, large Indian companies often prefer low-risk, service-oriented models over high-risk, high-reward innovation. And, finally, India produces many highly skilled engineers and technical graduates, but many of them migrate to countries like the United States, where opportunities for tech innovation are greater, or they end up in the services sector domestically.

The education system in India also tends to emphasise rote learning over creative problem-solving. Clearly, we have a lot on our hands if we set out to make India a more technologically innovative country!

(rediff.com/business - 16/01/2025)

INDIA'S GDP GROWTH SEEN AT 6.5% IN FY25, FY26: EY REPORT

India's economy is likely to grow by 6.5 per cent in the current and the next financial year, an EY report said, attributing lower than anticipated expansion in the September quarter to fall in private consumption expenditure and gross fixed capital formation. Real GDP growth eased to a seven-quarter low of 5.4 per cent in July-September — the second quarter of the current 2024-25 fiscal year. This was compared to 6.7 per cent in the preceding quarter.

This was primarily because two domestic demand components — private final consumption expenditure and gross fixed capital formation — together accounted for a fall of 1.5 percentage points."One outstanding feature of demand is the slowdown in investment, as reflected in the growth of gross fixed capital formation. This growth is estimated at 5.4 per cent in 2QFY25, which is a six-quarter low. Apart from the fact that private investment demand has not picked up, there was a contraction in government of India's investment expenditure growth, which has remained negative at (-)15.4 per cent in first half of FY25," the report said.

It continued to be negative even in October 2024 at (-)8.4 per cent, implying that in the first seven months government's investment expenditure growth has remained negative at (-)14.7 per cent. "In fact, to meet the budgeted target of Government of India's capital expenditure growth of 17.1 per cent over CGA actuals for FY24, we now require a growth of 60.5 per cent in the remaining five months of the fiscal year FY25."

The EY Economy Watch December 2024 forecasts India's real GDP growth at 6.5 per cent for FY25 (April 2024 to March 2024 fiscal year) and FY26.It also highlights the importance of reforming India's fiscal responsibility framework to achieve the Viksit Bharat vision by 2047-48. A recalibrated approach is vital for sustainable debt management, eliminating government dissaving's, and driving investment-led growth, paving the way for India's transformation into a developed economy, it said.

"With global conditions remaining uncertain and global trade likely to be fragmented, India may have to continue to rely largely on domestic demand and services exports. In the medium-term, India's real GDP growth prospects can be kept at 6.5 per cent per year provided the Government of India (GoI) accelerates its capital expenditure growth in the remaining part of the current fiscal year and comes up with a medium-term investment pipeline with participation from the GoI and state governments and both their respective public sector entities, and the private corporate sector," it said.

It would be appropriate to recast the earlier 2019 National Infrastructure Pipeline (NIP) for a period extending up to 2030 with revised targets for the priority sectors including roads, smart cities, railways, power, and renewable energy. "Investment targets for all the three major investors namely GoI and state governments and their respective public sector undertakings, and private corporate sector should be recast after evaluating their performance in financing the earlier NIP," it said, adding, together, the GoI and the state governments should ensure a minimum capital expenditure allocated towards infrastructure growth of 6 per ent of GDP each year over five years. This implies driving their revenue deficits to near zero.

The latest edition of EY Economy Watch suggests that the total debt of the central and state governments combined should not exceed 60 per cent of the country's nominal GDP, with each taking an equal share of 30 per cent. It also emphasizes the need for both levels of government to balance their current/ operating income and spending, which would boost national savings. This would lead to a savings rate of about 36.5 per cent of GDP in real terms. Adding another 2 per cent of GDP from foreign investments would bring the total real investment level to 38.5 per cent, helping India achieve steady economic growth of 7 per cent per year.

D K Srivastava, Chief Policy Advisor, EY India, said, "The proposed revisions to the Fiscal Responsibility and Budget Management (FRBM) Act are essential for enabling India to pursue sustainable growth while maintaining fiscal prudence. The updated framework would help eliminate government dissaving, increase investment, and create a more resilient economy that is well-equipped to meet the challenges of the future. The changes will not only address current challenges but also pave the way for India's transition to a developed economy, achieving its Viksit Bharat aspirations."

Economy Watch suggests that a major reform is required in the FRBM Act to ensure fiscal responsibility while supporting India's ambitious growth goals. One of the recommendations is to reinstate the revenue account balance as a key target for both the central and state governments.This would eliminate government dissaving's, which are currently a drain on resources, and create space for productive investments that are vital for economic growth.

The report also suggests that both the central and state governments should aim for a fiscal deficit target of 3 per cent of GDP each. However, to handle unexpected challenges like economic slowdowns, the central government should have some flexibility, allowing the deficit to range between 1 per cent and 5 per cent of GDP. In case the crisis is much bigger, such as the Covid crisis, suitable variation in GoI's and states' fiscal deficit beyond the above range may be considered by an appropriate body such as a fiscal council. This approach balances fiscal discipline with the ability to address extraordinary situations.

Another key recommendation is to eliminate revenue deficits. This would free up funds for productive investments, with combined government investments expected to reach 6 per cent of GDP by FY2048. "Overall, investments in the economy, including contributions from households, businesses, and the public sector, are expected to grow to 38.5 per cent of GDP in real terms, driving sustained growth and development," the report added.

(english.jagran.com/ - 25/12/2024)

MICRO UNIT FOCUS TO CREATE JOBS; MSME MINISTER DETAILS FUNDING IN FIVE NORTH BENGAL DISTRICTS

The state MSME (micro, small and medium enterprises) and textiles department has taken a slew of initiatives to encourage setting up different micro-level units in north Bengal to create employment in the region, Chandranath Sinha, the state MSME and textiles minister, said here on Monday. Sinha was here to inaugurate the regional khadi fair that was hosted by the West Bengal Khadi and Village Industries Board.

"The government is providing financial assistance and subsidies to people and self-help groups who run micro units. In north Bengal, our department will spend around Rs.15 crore to help such units and develop the infrastructure of the MSME and textile sectors," Sinha told newspersons on the sidelines of the event.

The fund, he said, would be spent on Darjeeling, Jalpaiguri, Alipurdur, Kalimpong and Cooch Behar districts. According to him, the department has decided to open multiplex centres in every district. "These multiplex centres will be in the public-private-partnership (PPP) model and provide spaces for self-help groups and others to sell their products," said Sinha.

The minister also elaborated on some of the initiatives they have taken so far in the region. The initiatives include providing vermicompost pits (vermicompost is used in agriculture) to 130 youths in Mainaguri of Jalpaiguri at a cost of Rs.1.3 crore, assistance of Rs.1.5 crore to 1,000 farmers in Matiali block of the district to encourage millet cultivation and an allocation of Rs.1 crore to set up a khadi marketing centre in Falakata, Alipurduar.

"In Cooch Behar, we have given Rs. 1.2 crore to around 2,000 artisans associated with *shitalpati* (traditional, natural fibre mats) making. Another 26 artisans who make *mekhla* (a traditional garment) have been given Rs. 8 crore," he said. In the hills, around 250 beneficiaries who are into bee-keeping have been assisted with Rs. 2.5 crore.

Sinha also announced a plan to promote Bengal handlooms. "According to chief minister Mamata Banerjee's instructions, we will soon introduce a franchise model named 'Banglar Sari' to market saris made by handloom weavers. Private companies will be involved in managing the franchise to ensure a wider market reach for traditional Bengali saris," Sinha said.

(telegraphindia.com – 02/04/2025)

WEST BENGAL'S GROWTH DRIVEN BY FISCAL DISCIPLINE, SAYS ECONOMIC REVIEW

The Economic Review for 2024-25 presented by the West Bengal government in the assembly on Wednesday said that the state had achieved growth over the years through fiscal discipline. The review said that in the last 13 years, the West Bengal economy has witnessed tremendous growth. The size of the economy, measured in terms of nominal gross state domestic product (GSDP) has reached a level of Rs 18,15,010 crore in 2024-25. In the same fiscal, the state economy is estimated to grow by 6.80 per cent in real terms.

According to the review, fiscal health of the state has improved impressively in the last 13 years. The state's own tax revenue collection has risen by more than four times between 2010-11 to 2023-24. On the other hand, capital expenditure has been consistently increasing since 2011-12. Also, government spending on agriculture and allied sector, rural development and social welfare schemes has increased enormously, the review said. On account of effective fiscal consolidation measures, the total debt of the state as a percentage of GSDP has shown a consistent decreasing trend.

Revenue deficit as a percentage of total revenue receipt has reduced from 36.55 per cent in 2010-11 to 12.83 per cent in 2023-24, it said. The fiscal deficit of the state has also shown a steady decrease over the last few years. The review also said that the aim of the state government is to ensure a decent standard of living for all people across different sections of the society.

Empowering women has always been a priority for the state government in the last 13 years. '*Lakshmir Bhandar*', a financial assistance scheme for women, is the pioneering project of the state government to provide a basic monthly income to 2.21 crore women in the state.

Over the last 13 years, there has been significant growth in industrial output in West Bengal. The state has become a favourite destination for investors, both foreign and domestic, the review said.

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-: JILTA : -

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History and Activities Indian Leather Technologists' Association

The Indian Leather Technologists' Association (ILTA) was founded by Late Prof. B. M. Das, the originator of Das-Stiasnay theory and father of Indian Leather Science on 14 th August' 1950. ILTA is the Member Society of IULTCS (International Union of Leather Technologists & Chemists Societies) representing India.

The primary objectives of the oldest Leather Technologists' Association which celebrated its Diamond Jubilee year in the 2010, are:

- To bring all concerned with the broad spectrum of the leather industry under one umbrella.
- To organize seminar, symposium, workshop in order to create information, knowledge and latest development for the benefit of all concerned. To offer a common platform for all to interact with each other in order to understand each other's problems and prospects.
- To publish monthly journal as a supplement to those above objectives. The monthly journal of ILTA is known as journal of Indian Leather Technologists' Association and is the most widely circulated technical journal concerning leather technology.
- To publish text books for the benefit of students at various levels of study, for the researchers and industry.
- To have interface between urban and rural sector.
- To assist Planning Commission, various Government Institutions, Ministry and autonomous bodies to formulate appropriate policies acceptable and adoptable to the industry.
- To organize practical training and to provide skilled manpower and to motivate good students for study.
- To conduct activities related to the growth of the export of leather and leather goods from India.

ILTA also organizes Prof. B. M. Das Memorial Lecture every year during the Foundation Day Celebrations on 14 th August and Sanjoy Sen Memorial Lecture on 14 th January, the birthday of our late President for several decades. Many reputed scientists, industrialists and educationists have delivered these prestigious lectures. Foreign dignitaries during their visits to India have addressed the members of ILTA at various times.

ILTA have published the following books:

1. An Introduction to the Principles of Physical Testing of Leather by Prof. S.S. Dutta
2. Practical Aspects of Manufacture of Upper Leathers by J. M. Dey
3. An Introduction to the Principles of Leather Manufacture by Prof. S. S. Dutta
4. Analytical Chemistry of Leather Manufacture by P. K. Sarkar
5. Comprehensive Footwear Technology by Mr. Shomenath Ganguly
6. Treatise on Fatliquors and Fatliquoring of Leather by Dr. Samir Dasgupta
7. Synthetic Tanning Agents by Dr. Samir Dasgupta
8. Hand Book of Tanning by Prof. B. M. Das

ILTA presents awards in the name of Prof. B. M. Das Memorial, Sanjoy Sen Memorial and J. M. Dey Memorial Medals to the top rankers at the University graduate and post graduate levels. J. Sinha Roy Memorial Award for the author of the best contribution for the entire year published in the monthly journal of the Indian Leather Technologists' Association (JILTA). From the year 2023 ILTA has started to present a Scholarship namely Prof. Moni Banerjee Memorial Scholarship to a Student of B.Tech / M.Tech Leather Technology who is meritorious but financially crippled.

contd.

ILTA
Since 1950

Indian Leather Technologists' Association
[A Member Society of International Union of Leather Technologists' and Chemists

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History and Activities Indian Leather Technologists' Association

The International Congress of IULTCSused to held in different locations of the world once in two years. In its 125 years history, for the first time the Congress was held in January 1999 outside the developed countries and that too in India at CLRI, Chennai. Indian Leather Technologists' Association organized the Congress under the able leadership and guidance of Late Sanjoy Sen, the then President of ILTA and IULTCS and Dr. T. Ramasami, the then Vice-President of ILTA and Director, CLRI, Chennai. In 2017 IULTCS Congress was successfully held again at Chennai, India for the second time.

In order to promote and provide marketing facilities, to keep pace with the latest design and technology, to have better interaction with the domestic buyers, ILTA has been organizing LEXPO fairs at Kolkata from 1977, Siliguri from 1992 and Durgapur from 2010. To help the tiny, cottage and small-scale sectors industries in marketing, LEXPO fairs give the exposure for their products. Apart from Kolkata, Siliguri and Durgapur, ILTA have held LEXPO at Bhubaneswar, Gangtok, Guwahati, Jamshedpur and Ranchi. In commensurate with the time, demand and new perspective of the modern leather users, ILTA has started to organize LEXPO in Kolkata from 2022 in a new shape with the Manufacturers and Exporters of Leather Goods from all over India.

- ILTA has celebrated its Golden Jubilee with a year long programme from 14 th August' 2000 to 13 th August' 2001 along with the first conference of South East Asian Countries at Netaji Indoor Stadium, Kolkata.
- ILTA has also celebrated its Diamond Jubilee with a year long programme from 14 th August' 2010 to 13 th August' 2011 along with the 8th Asia International Conference on Leather Science and Technology (AICLST) at Hotel 'The Stadle', Kolkata.
- ILTA is going to celebrate its Platinum Jubilee with a year long programme from 14th August, 2025 to 13th August, 2026 along with the 14th Asia International Conference on Leather Science & Technology (AICLST) in Kolkata.

The Association's present (as on 31.03.2024) strength of members is around 550 from all over India and abroad. Primarily the members are leather technologists passed out from Govt. College of Engineering and Leather Technology – Kolkata, Anna University – Chennai, Harcourt Butler Technological Institute – Kanpur, B. R. Ambedkar National Institute of Technology – Jalandhar and Scientists and Research Scholars from Central Leather Research Institute (CLRI).

In order to strengthen its activities, ILTA have constructed its own six storied building at 44, Shanti Pally, Kasba, Kolkata – 700107, West Bengal, India and have named it as "Sanjoy Bhavan".

This Association is managed by an Executive Committee duly elected by the members of the Association. It is absolutely a non-profit making voluntary organization working for the betterment of the Leather Industry. None of the Executive Committee members draws any remuneration for their services rendered but they get the satisfaction of being a part of this esteemed organization.

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