
# Sustainable Leather Foundation

## 2-Day Inception Workshop

Malang, Indonesia
8-9th September 2025

**INDUSTRY LED – CONSUMER FOCUSED – TRANSPARENCY YOU CAN SEE**

**WWW.SUSTAINABLELEATHERFOUNDATION.COM**

# Agenda Day 1

| | |
|---|---|
| 10.00 am | Introductions |
| 10.05 am | What is sustainability and unpacking ESG |
| 10.45 am | Why is ESG important:  incoming regulation |
| *11.15 am* | *Break* |
| 11.40 am | Understanding the US Raw Hide export market |
| 12.10 pm | Introduction to the Sustainable Leather Foundation |
| *12.30 pm* | *Lunch* |
| | |
| 14.00 pm | Best use of leather technology and chemistry |
| 14.45 pm | Environmental Module: key requirements and expectations |
| *15.30 pm* | *Break* |
| 15.50 pm | Environmental Module continues |
| *17.30 pm* | *Open discussion and end of day 1* |

# Introduction

- Founder and Managing Director of Sustainable Leather Foundation.
- President of the Society of Leather Technologists and Chemists (SLTC)
- UN/CEFACT Consultant, United Nations European Commission for Europe –
  - Leather Value Chain Expert, working on the project to ''Enhance Transparency & Traceability in the Garment and Footwear Sector''
  - Leather Value Chain Expert, working on the UN/CEFACT Core Component Library
- Practitioner Member of the Chartered Quality Institute (PCQI) and a Qualified SA8000 Social Systems Lead Auditor
- Liveryman of the Worshipful Company of Curriers
- Previously, 5 years managing the Leather Working Group

Deborah Taylor, PQCI
Managing Director,
Sustainable Leather
Foundation

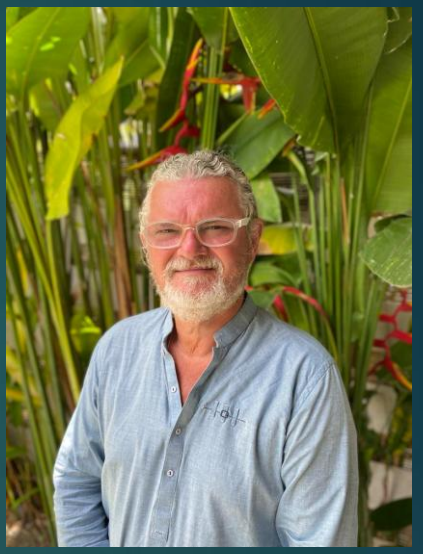
# Introduction

Zain Akber,
Head of Auditing Services,
Sustainable Leather Foundation

- 5th Generation Leather Industry Family
- Early Career as Chemical Quality and Procurement Manager in tanneries, with over a decade of experience working inside tanneries before concentrating on supporting ESG improvement
- IEMA qualified Principal Lead Environmental Auditor, ISO14001, ISO 45001 and an SA8000 Social Leather Auditor.
- Has been successfully consulting tanneries to achieve LWG status for the last 8 years.

# Introduction

- Over 30 years in the leather industry working internationally at senior level.
- Holds an MBA from Bradford University, a Certificate in Leather Technology from Northampton (Nene) University and a BSC (Hons) in Applied Chemistry from Nottingham Trent University.)
- Vast experience working and living as an expatriate in China, Singapore, Thailand, Germany and Indonesia where he now lives
- Currently using his knowledge and experience to support the leather industry in becoming more sustainable. Chris has conducted more than 400 audits of tanneries all over the world.
- CQI & IRCA certified Environmental Lead Auditor for ISO14001:2015 and a Social Systems Lead Auditor for SA8000.



Chris Jacklin
Auditor, Sustainable Leather Foundation

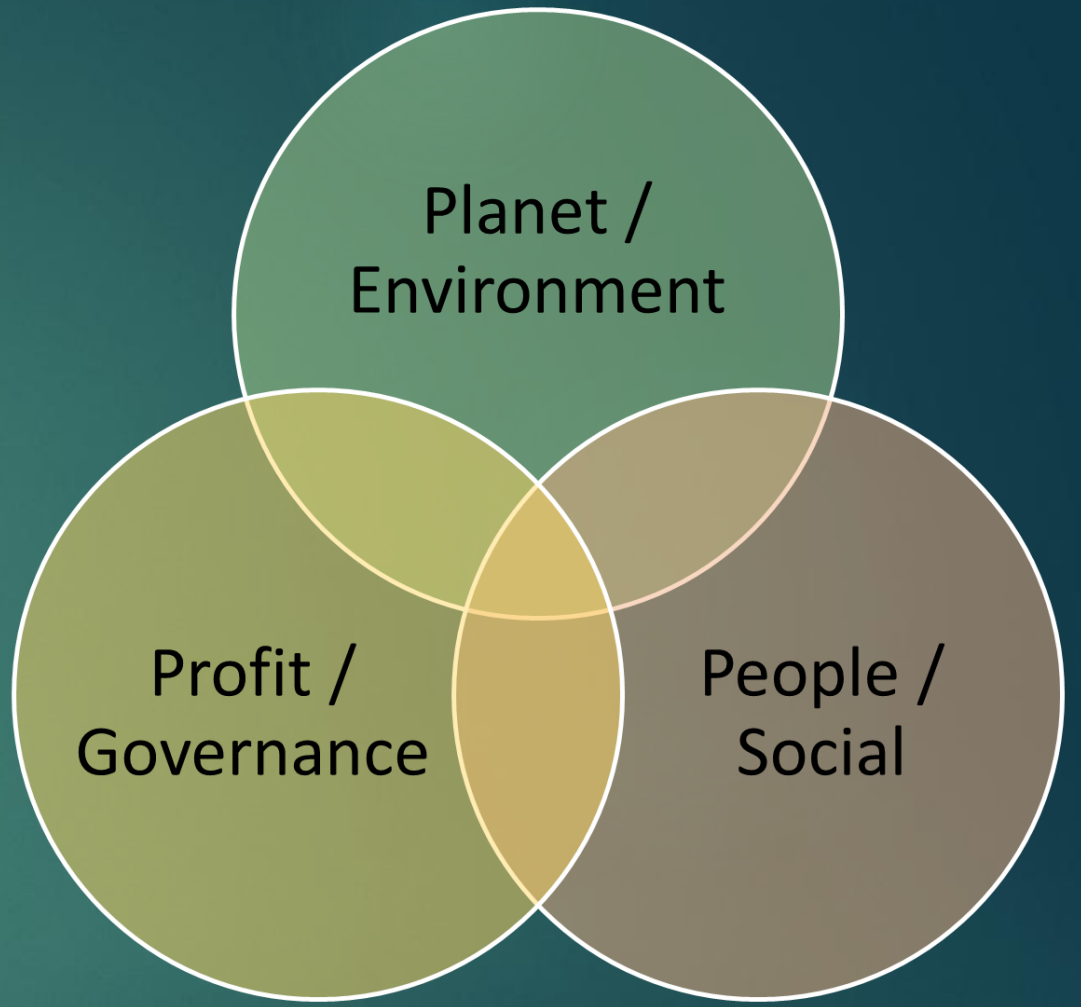
“let’s be the change that secures the future”

# Session 1, Part 1: What is Sustainability? Unpacking ESG Incoming regulation

# What is sustainability?

The first real definition of sustainability, devised within the United Nations Brundtland Commission report “Our Common Future” in 1987 as **“meeting the needs of the present without compromising the ability of future generations to meet their own needs.”**

Sustainability can be broken down into 3 principal pillars, known as “ESG” – Environment, Social and Governance, or put another way, Planet, People and Profit.




SUSTAINABLE LEATHER FOUNDATION

# Let's break down ESG risks

| Environmental / **Planet** | Social / **People** | Governance / **Profit** |
|---|---|---|
| • Deforestation and Biodiversity<br>• Energy Consumption<br>• Water Use<br>• Harmful Chemicals<br>• Air & Noise Emissions<br>• Water Pollution<br>• Land Pollution<br>• Solid Waste<br>• Greenhouse Gas Emissions | • Child labour<br>• Compulsory labour<br>• Discrimination<br>• Unfair wages<br>• Safety & Health<br>• Excessive working hours<br>• Corporate social responsibility | • Ethical Business Practice<br>• Animal Welfare<br>• Housekeeping<br>• Process and Quality Control<br>• Restricted Substance and Chemical control<br>• Occupational Safety and Health |

1. Farming of Livestock

2. Slaughter

3. Hide/Skin Preservation

4-8.Raw to Finished Manufacture of Leather

9. Product Assembly, Dispatch & Warehousing

10. Fulfilment & Retail

11. Post Consumption

4. Raw to Tanned Process

5. Splitting, shaving & Sorting

6. Retanning, Fatliquoring & Crust

7.Dyeing, Setting Out, Samming

8. Drying, Conditioning, Softening & Finishing

Possible Subcontract operations

Colour Key:

Upstream Processes

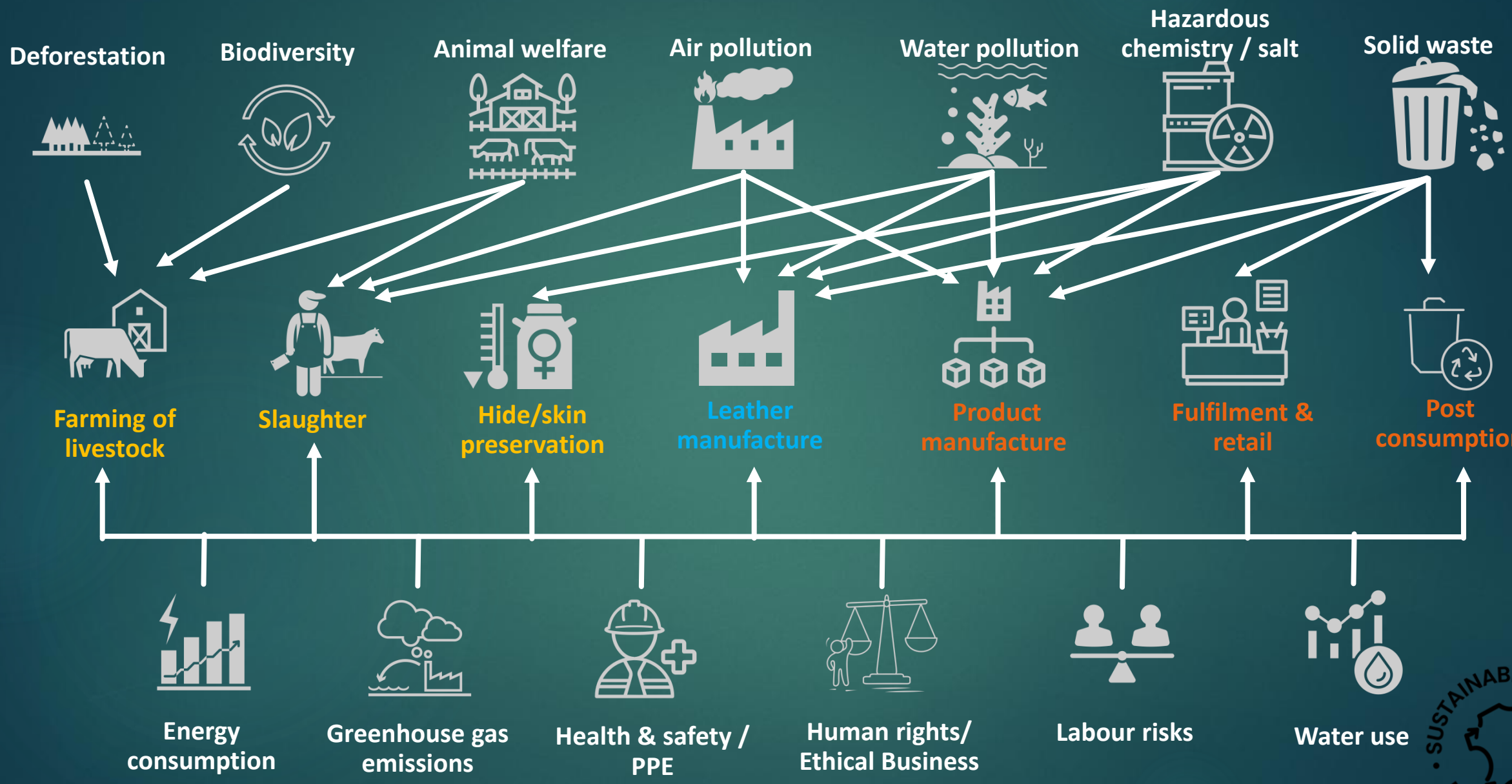
Direct Processes

Downstream Processes

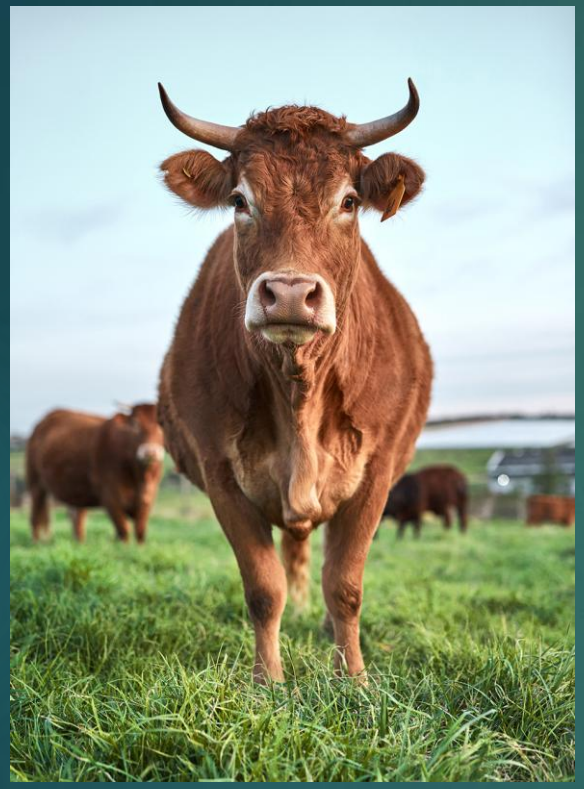
SUSTAINABLE LEATHER FOUNDATION

# Flowchart of Key Processes in Leather Manufacture

# Sustainability Risks in the Leather Value Chain



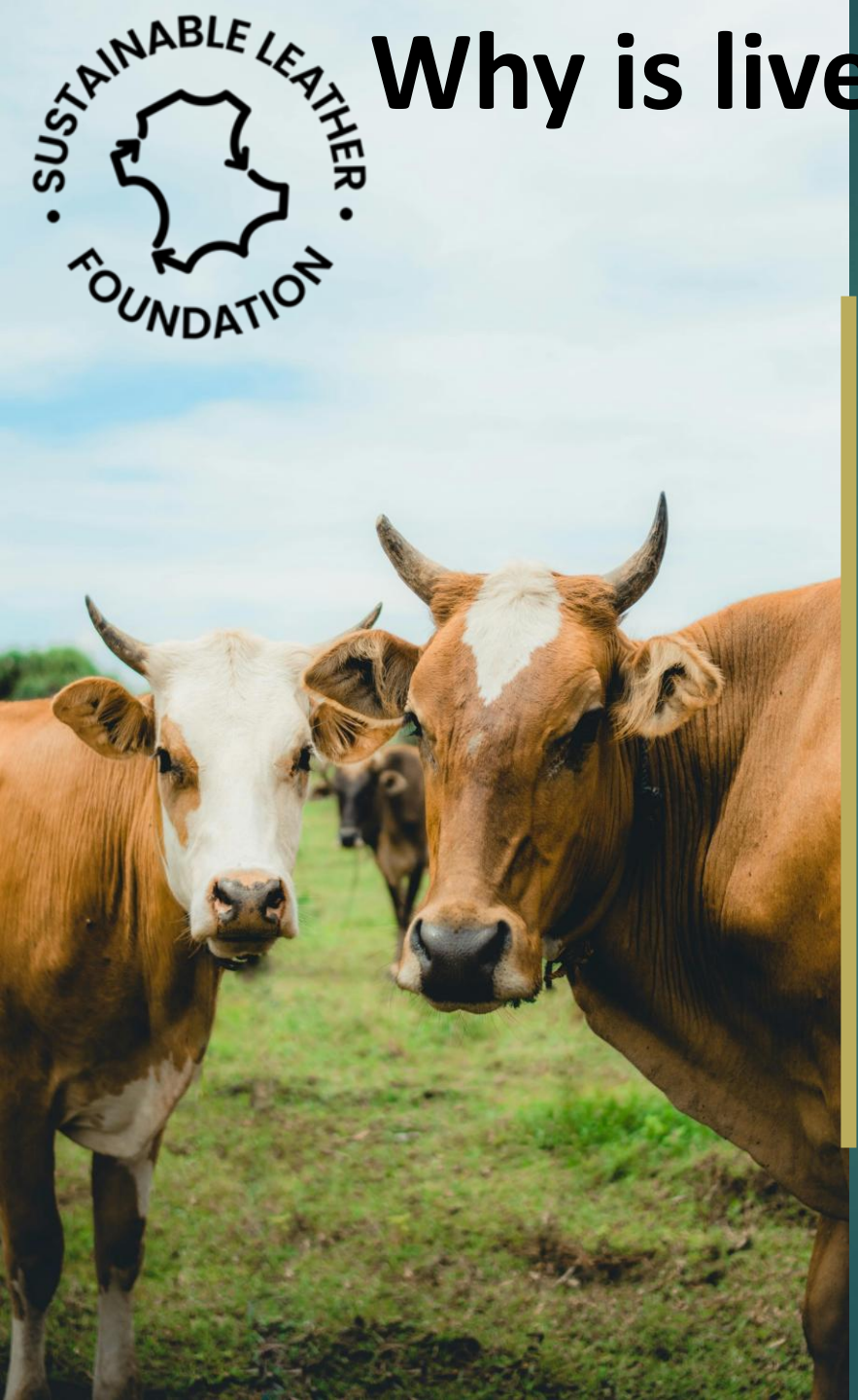
# How does leather meet the definition?



## Raw Input Material:

- Mother Nature provides.  Animals reproduce naturally
  - We care for them in life – They care for us in death
    - Good animal welfare
    - Rotational farming for land and soil health
  - Wider Risks
    - Deforestation
    - Loss of habitats / shifts in biodiversity
    - Methane emissions

# Why is livestock management so important?



Livestock are part of the natural sustainable eco-system.
Without livestock we have:

- **No** meat for the dietary need of a global population
- **No** raw material for the leather industry
- **No** natural fertilization of the land
- **No** natural deterrent to invasive species
- **No** natural encouragement of beneficial species

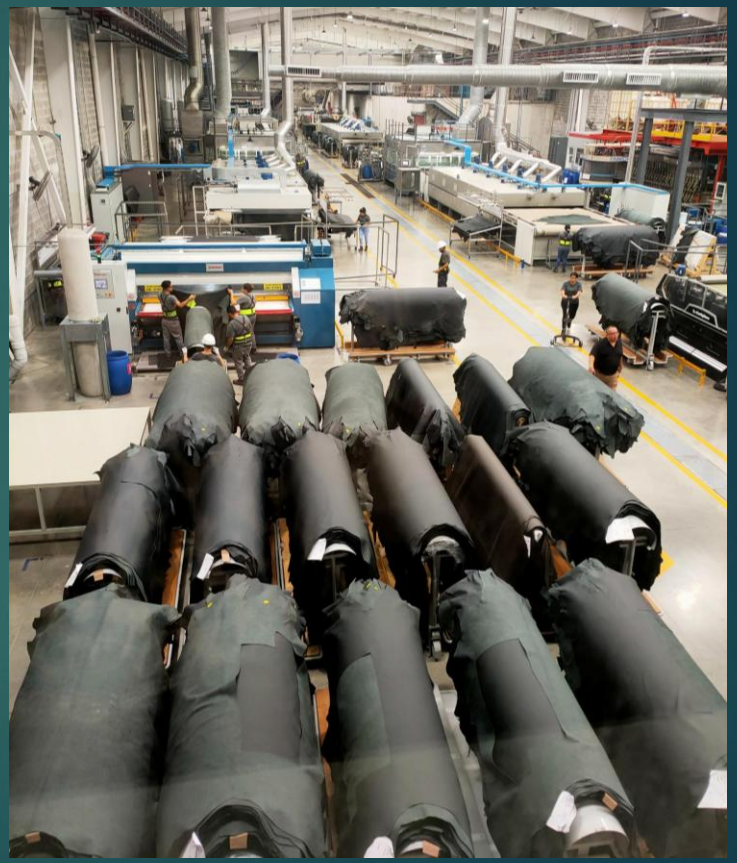
Livestock farming can support carbon reduction by:

- Soil Carbon Sequestration: Well-managed grazing can improve soil health and increase the amount of carbon stored in the soil. Healthy pastures also help pull $CO_2$ from the atmosphere.
- Rotational Grazing: By rotating livestock between pasture areas, vegetation has time to recover, and soil carbon storage can increase, while overgrazing, which leads to land degradation, is minimized.

# How does leather meet the definition?

## Leather Manufacture:

- The biggest factors that affect sustainability arise during the manufacturing stages:
  - Use of Chemicals
  - Pollution:
    - Air Emissions
    - Noise Emissions
    - Soil Pollution
    - Water Pollution
  - Natural Resource Depletion:
    - Energy (fossil fuels)
    - Water
  - Human Rights
    - Modern Slavery
    - Health & Safety of Workers
    - Bribery & Corruption



# Agenda Day 1

| | |
|---|---|
| 10.00 am | Introductions |
| 10.05 am | What is sustainability and unpacking ESG |
| 10.45 am | Why is ESG important:  incoming regulation |
| *11.15 am* | *Break* |
| 11.40 am | Understanding the US Raw Hide export market |
| 12.10 pm | Introduction to the Sustainable Leather Foundation |
| *12.30 pm* | *Lunch* |
| | |
| 14.00 pm | Best use of leather technology and chemistry |
| 14.45 pm | Environmental Module: key requirements and expectations |
| *15.30 pm* | *Break* |
| 15.50 pm | Environmental Module continues |
| *17.30 pm* | *Open discussion and end of day 1* |

# Why are we being faced with regulation?

For decades we have:

Over produced

Over consumed

Over polluted

ECONOMIES HAVE BEEN DRIVEN BY PROFIT AT THE EXPENSE OF PLANET AND PEOPLE.

VOLUNTARY STANDARDS HAVE ONLY BEEN SUCCESSFUL TO A SMALL DEGREE

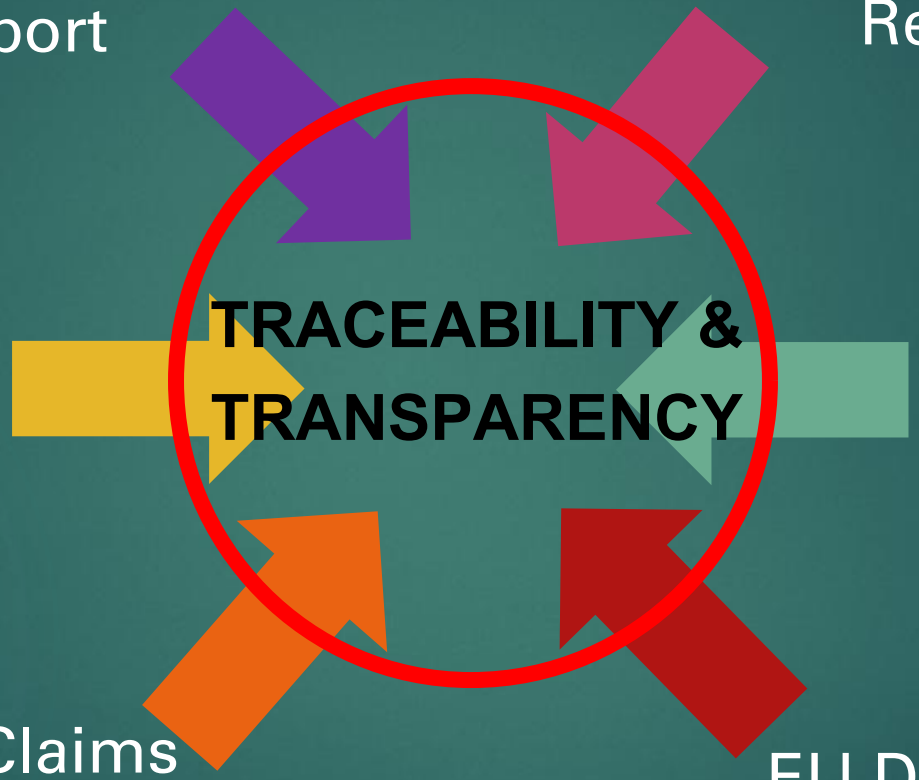
NOW LEGISLATION IS FORCING CHANGE.

SUSTAINABLE LEATHER FOUNDATION

# EU Directives and Regulations

01 EU Corporate Sustainability Reporting Directive
EU CSRD

EU Digital Product Passport
06




EU Waste Framework Directive
05 EU WFD

EU Corporate Sustainable Due Diligence Directive
EU CSDDD 02

EU Green Claims Directive
EU GCD 04

EU Deforestation Regulation
03 EUDR

SUSTAINABLE LEATHER FOUNDATION

# 1. EU Corporate Sustainability Reporting Directive (EU CSRD)

Key Points:

- The Corporate Sustainability Reporting Directive was officially adopted and entered into force by the EU on 5th January 2023.
- This new requirement replaces the existing "Non-Financial Reporting" requirement and is intended to force organisations to actively report on their ESG (Environmental, Social and Governance risks, mitigation, objectives and KPIs.
- The rules will apply for the largest companies who already reported under the NFRD in 2024 for reporting in 2025 and will extend to other large companies with 1000 employees or more with a net turnover threshold of over €450 million euros by 26 July 2028. SMEs have now been removed from scope.
- The new rules will ensure that investors and other stakeholders have access to the information they need to assess the impact of companies on people and the environment and for investors to assess financial risks and opportunities arising from climate change and other sustainability issues.

# 1. EU Corporate Sustainability Reporting Directive (EU CSRD)

Key Points:

- There are 1178 data points in total for CSRD, some mandatory and some voluntary across the following scope:

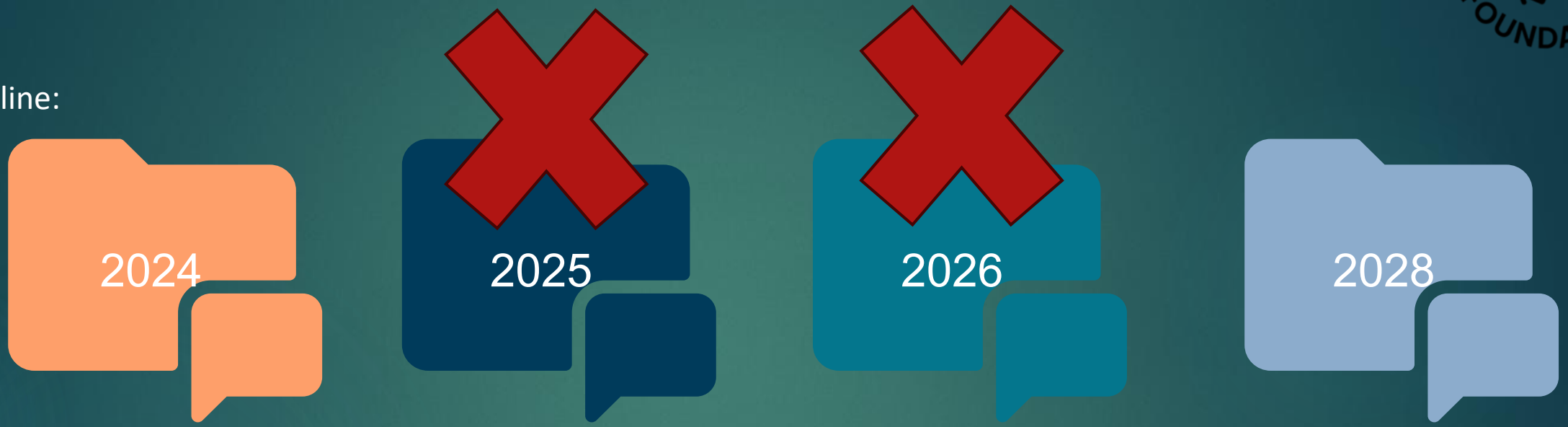
- Climate Change
- Pollution
- Water & Marine Resources
- Biodiversity & Ecosystems
- Resource Use & Circular Economy
- Own Workforce
- Workers in the Value Chain
- Affected Community
- Consumers & End Users
- Business Conduct

| ESRS | DR | Paragraph | Name | Data Type | Appendix C (SFDR + PILLAR 3 + Benchmark + CL) | V [Voluntary] |
|---|---|---|---|---|---|---|
| E2 | E2-1 | 14 | Policies to manage its material impacts, risks and opportunities related to pollution [see ESRS 2 MDR-P] | MDR-P | | |
| E2 | E2-1 | 15 a | Disclosure of whether and how policy addresses mitigating negative impacts related to pollution of air, water and soil | narrative | | |
| E2 | E2-1 | 15 b | Disclosure of whether and how policy addresses substituting and minimising use of substances of concern and phasing out | narrative | | |
| E2 | E2-1 | 15 c | Disclosure of whether and how policy addresses avoiding incidents and emergency situations, and if and when they occur, c | narrative | | |
| E2 | E2-1 | AR 12 | Disclosure of contextual information on relations between policies implemented and how policies contribute to EU Action Plan | narrative | | |
| E2 | E2-2 | 18 | Actions and resources in relation to pollution [see ESRS 2 MDR-A] | MDR-A | | |
| E2 | E2-2 | 19 | Layer in mitigation hierarchy to which action can be allocated to (pollution) | semi-narrative | | |
| E2 | E2-2 | AR 13 | Action related to pollution extends to upstream/downstream value chain engagements | semi-narrative | | |
| E2 | E2-2 | 19 | Layer in mitigation hierarchy to which resources can be allocated to (pollution) | semi-narrative | | |
| E2 | E2-2 | AR 15 | Information about action plans that have been implemented at site-level (pollution) | narrative | | |
| E2 | E2-3 | 22 | Tracking effectiveness of policies and actions through targets [see ESRS 2 MDR-T ] | MDR-T | | |
| E2 | E2-3 | 23 a | Disclosure of whether and how target relates to prevention and control of air pollutants and respective specific loads | narrative | | |
| E2 | E2-3 | 23 b | Disclosure of whether and how target relates to prevention and control of emissions to water and respective specific loads | narrative | | |
| E2 | E2-3 | 23 c | Disclosure of whether and how target relates to prevention and control of pollution to soil and respective specific loads | narrative | | |
| E2 | E2-3 | 23 d | Disclosure of whether and how target relates to prevention and control of substances of concern and substances of very high | narrative | | |
| E2 | E2-3 | 24 | Ecological thresholds and entity-specific allocations were taken into consideration when setting pollution-related target | semi-narrative | | V |
| E2 | E2-3 | 24 a | Disclosure of ecological thresholds identified and methodology used to identify ecological thresholds (pollution) | narrative | | V |
| E2 | E2-3 | 24 b | Disclosure of how ecological entity-specific thresholds were determined (pollution) | narrative | | V |
| E2 | E2-3 | 24 c | Disclosure of how responsibility for respecting identified ecological thresholds is allocated (pollution) | narrative | | V |
| E2 | E2-3 | 25 | Pollution-related target is mandatory (required by legislation)/voluntary | semi-narrative | | |
| E2 | E2-3 | AR 17 | Pollution-related target addresses shortcomings related to Substantial Contribution criteria for Pollution Prevention and Contro | semi-narrative | | |
| E2 | E2-3 | AR 18 | Information about targets that have been implemented at site-level (pollution) | narrative | | |

+ general disclosures are identified, and the minimum disclosure requirements outlined.

# 1. EU Corporate Sustainability Reporting Directive (EU CSRD)

Timeline:




- for large EU "public interest entities" that are already subject to the NFRD
- non-EU companies listed on a regulated market in the EU within the definition of large undertakings with more than 500 employees

- for large EU organisations that are not presently subject to the NFRD
- large non-EU companies listed on a regulated market in the EU

- for listed EU and certain SMEs
- small and non-complex credit institutions and captive insurance undertakings

- for large EU organisations that are not presently subject to the NFRD
- large non-EU companies listed on a regulated market in the EU

# 2. EU Corporate Sustainability Due Diligence Directive (EU CSDDD)

Key Points:

- Adopted by the EU on 23 February 2022, The Corporate Sustainability Due Diligence Directive is concerned with the act of corporate due diligence across the ESG spectrum.
- It is a mandatory set of due diligence steps that companies who are eligible under the CSRD must legally take for:
  - Their own operations and subsidiary companies
  - Tier one, direct suppliers.
- In basic terms, companies will be obliged to investigate and address how their business operations and supply chains affect the wider environmental and human rights on a risk-based approach.
- The two Directives work hand in hand and should considered together.
- It doesn't just affect companies based in the EU – it also applies to non-EU countries, and it effects operations inside and outside of the EU.

# 2. EU Corporate Sustainability Due Diligence Directive (EU CSDDD)

**Large EU Companies:**

Group 1: Companies with 5000+ employees and a net turnover of €1.50 billion

Group 2: Companies in high-impact sectors with 250+ employees and a net turnover of €40 million. (High impact sectors include textiles, agriculture, extraction of minerals)

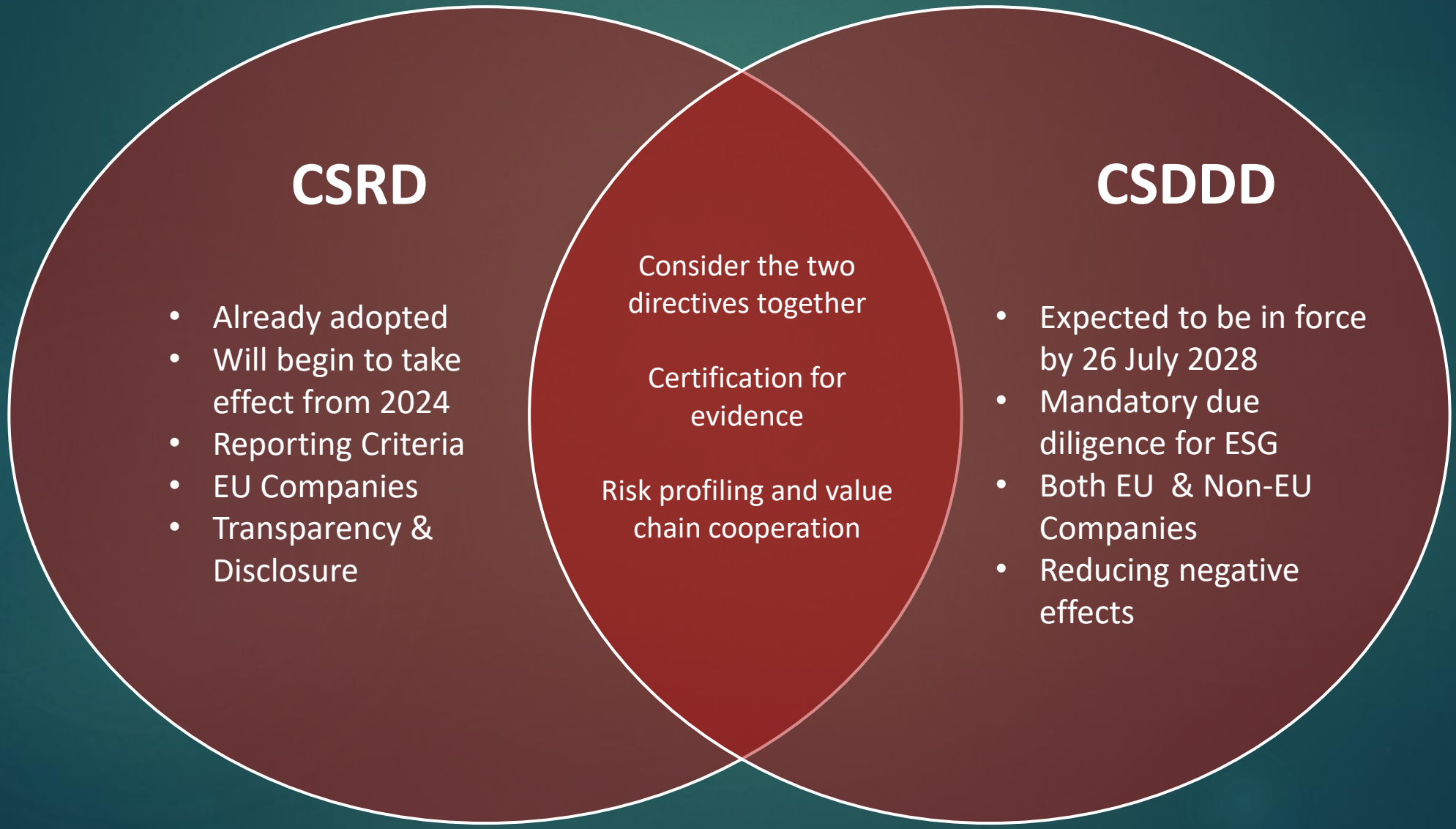
Group 2 obligations start 2 years later than Group 1

**Non-EU Companies:**

Companies who actively operate in the EU with turnover threshold that aligns with Group 1 and 2 within the EU list.

Although micro and SMEs are not directly subject to the rules, there are supporting measures being put in place for those companies that could be indirectly affected.

# 2. EU Corporate Sustainability Due Diligence Directive (EU CSDDD)



# 2. EU Corporate Sustainability Due Diligence Directive (EU CSDDD)

Timeline:


- Draft accepted by the EU on 22 February 2022
- CSDDD accepted as a negotiating text on 1 June 2023
- CSDDD officially adopted
- CSDDD will be mandatory for companies as outlined

# 3. EU Deforestation Regulation (EUDR)

Key Points:

- Entered into force on 29 June 2023, the new regulation on deforestation free products is developed with the aim of reducing greenhouse gases and biodiversity loss.

- It covers key commodities that include soy, **beef**, palm oil, wood, cocoa, coffee and rubber. It also includes the derived by-products such as **leather**, chocolate, tyres and furniture.

- **For the leather value chain all materials are included:**
  - Raw hides and skins (fresh, salted, dried, limed, pickled or otherwise preserved)
  - Tanned or crust hides and skins of cattle, without hair on, whether or not split, but nor prepared.
  - Leather of cattle, further prepared after tanning or crusting, including parchment-dressed leather, without hair on, whether or not split.

- These obligations extend to traders and manufacturers as well as brands to prove due diligence of deforestation-free supply chains

# 3. EU Deforestation Regulation (EUDR)

Obligations as an "Operator":

**STEP 1:**

- Collection of information such as:
  - The type of commodity to be made available to the market or export
  - Quantity
  - Supplier
  - Country of production
  - Evidence of legal farming
  - Geographic coordinates of the plots of land where the commodity was produced / grazed.

**STEP2:**

- Record the information collected into a risk assessment due diligence system

**STEP 3:**

- Take adequate and proportionate mitigation measures in the event of finding under step 2, a more than negligible risk of non-compliance in order to make sure that the risk becomes negligible.

# 3. EU Deforestation Regulation (EUDR)

- To import or export commodities within the scope, operators will require a **Universal Unique Identifier (UUID)** for customs.
- This will be provided once the operator has uploaded a Due Diligence Statement (DDS) and Geolocation of all plots of land where the commodity has been raised/grown/produced into an information system that is currently in final stages of development.
- There are FAQs available, along with User Guide for the IT system, videos and virtual training sessions.
- All geocoordinates will be uploaded using the GeoJSON format

SUSTAINABLE LEATHER FOUNDATION

# 3. EU Deforestation Regulation (EUDR)

Timeline:


- Regulation entered into force on 29 June 2023
- 30 December 2025 effective application for large and medium sized companies
- 30 June 2026 effective application date for micro and small enterprises
- 31st December 2020 is the sunset date for deforested land

THE OPERATOR BEARS THE BURDEN OF PROOF THAT THE MATERIAL, COMMODITY OR PRODUCT WAS PRODUCED BEFORE ENTRY INTO FORCE.

# 4. EU Green Claims Directive (EUGCD)

Key Points:

- Officially known as the Directive on the Verifiability and Communication of Environmental Product Claims.
- In 2020 there were around 230 active "ecolabels" in Europe, but the concern arises over whether consumers or companies can be sure that the claims are based on solid grounds.
- The EU found that 53% of the claims that it examined were vague, misleading or unfounded – and 40% were unsubstantiated.
- The proposed directive sets detailed rules around substantiating and communication explicit environmental claims about products, in business to consumer communications.
- It would apply to voluntary claims and labelling schemes.

# 4. EU Green Claims Directive (EUGCD)

Under the Directive, companies would have to carry out an assessment to substantiate explicit environmental claims and meet certain criteria

Additionally, companies would also have to comply with the following requirements:

- use equivalent information and data for the assessment;
- use data that is generated or sourced in an equivalent manner;
- cover the same stages along the value chain;
- cover the same environmental impacts, aspects or performances;
- use the same assumptions.

# 4. EU Green Claims Directive (EUGCD)

Timeline:


- Proposal for a Directive put forward on 22 March 2023
- Public Consultation ended 21 July 2023
- Draft report submitted on 9 November 2023
- Proposal adopted at the Plenary Session in March 2004 – awaiting implementation date (expected 2026).

If you can’t prove it, don’t say it!

# 5. EU Waste Framework Directive (EUWFD)

Key Points:

- Sets the legal framework for waste management in the EU, designed to protect human health and the environment.
- Applies the principles of the circular economy and resource efficiency.
- Working to the waste hierarchy:
  - Prevention
  - Reuse
  - Recycle
  - Recover
  - Disposal

# 5. EU Waste Framework Directive (EUWFD)

- The Directive adopts the "Polluter-Pays Principle" which is a concept that the original producer of waste is responsible for the costs of its management and disposal
- It also introduces the "Extended Producer Responsibility" which places the responsibility on producers for managing their products and packaging at the end of their life.
- The regulation requires any organisation offering waste management operations to obtain permits and be subjected to periodic inspections and record keeping.
- Member States will be required to ensure adequate networks for disposal and recovery of waste.

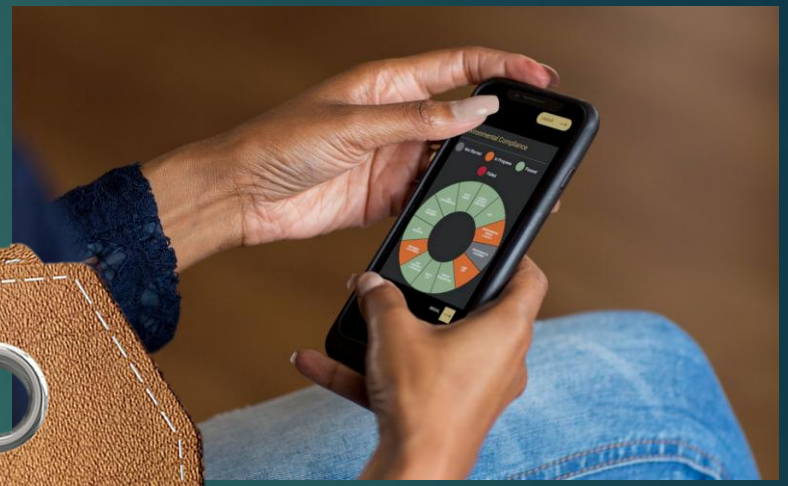
# 5. EU Waste Framework Directive (EUWFD)


- Adoption of a revision to the original adoption in 2008
- Textile Separation Collection is required from 1st January 2025
- Evaluation of Extended Producer Responsibility Schemes
- 65% separate collection for municipal waste is required

# 6. EU Digital Product Passport

Key Points:

- A digital record mandated by the Ecodesign for Sustainable Products Regulation (ESPR) that will provide accessible information about product:
  - Sustainability
  - Durability
  - Safety
  - Origin and Identity
  - Compliance



# 6. EU Digital Product Passport

- Environmental Information:
  - Material Composition
  - Sourcing
  - Environmental Impact
  - Guidance on repair and recycling options.
- Product Information:
  - Manufacturing information
  - Durability and performance metrics
- Compliance and Safety:
  - Declarations of conformity testing
  - Warranty information
  - Safety Instructions

# 6. EU Digital Product Passport


- The Ecodesign for Sustainable Products Regulations (ESPR) was entered into force on 18 July 2024
- Destruction of unsold consumer goods is prohibited from 19 July 2025
- Legal enforcement of DPPs is expected to begin for high-priority sectors (such as batteries)
- DPPs are anticipated to be fully implemented and mandatory for all product categories sold in the EU

# Be Prepared

Other legislation and directives include:

- CBAM – Carbon Border Adjustment Mechanism
- New York State Senate “Fashion Sustainability and Social Accountability Act”
- UK Forest Risk Commodities Act

It is imperative that organisations understand where their risks are and how they can mitigate those risks without creating additional unintended consequences.


# Break

20 minutes

INDUSTRY LED – CONSUMER FOCUSED – TRANSPARENCY YOU CAN SEE

WWW.SUSTAINABLELEATHERFOUNDATION.COM

# Agenda Day 1

| | |
|---|---|
| 10.00 am | Introductions |
| 10.05 am | What is sustainability and unpacking ESG |
| 10.45 am | Why is ESG important:  incoming regulation |
| *11.15 am* | *Break* |
| 11.40 am | Understanding the US Raw Hide export market |
| 12.10 pm | Introduction to the Sustainable Leather Foundation |
| *12.30 pm* | *Lunch* |
| | |
| 14.00 pm | Best use of leather technology and chemistry |
| 14.45 pm | Environmental Module: key requirements and expectations |
| *15.30 pm* | *Break* |
| 15.50 pm | Environmental Module continues |
| *17.30 pm* | *Open discussion and end of day 1* |

"let's be the change that secures the future"

# Session 1, Part 2:

## Understanding the US Raw Hide Quality export market

## Introduction to Sustainable Leather Foundation

LEATHER AND HIDE
COUNCIL OF AMERICA

# Training for U.S. Hide Use

May 23, 2025

Ryan Casey

# Profile

Industry Representative

for

+100 years

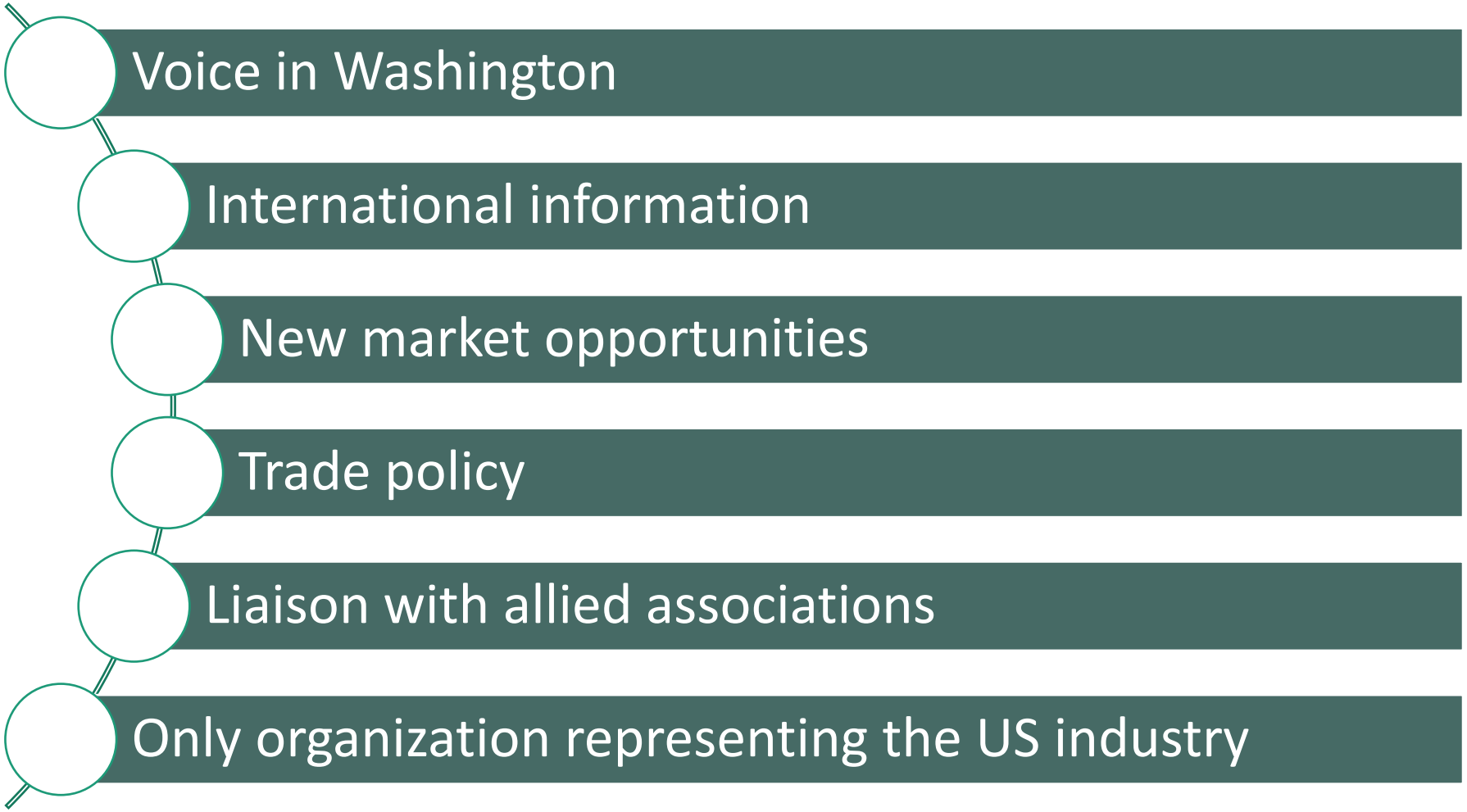
## Membership

- Meat Packers
- Hide Processors
- Brokers
- Dealers
- Tanners
- Brands

## +32 Million hides

- Cattle Hides, Calf & Kip Skins, Pig & Sow skins
- 30% Wet blue
- 95% Export
- +$3 Billion

# What we Do


Voice in Washington
International information
New market opportunities
Trade policy
Liaison with allied associations
Only organization representing the US industry


REAL
LEATHER.
STAY
DIFFERENT.
INTERNATIONAL CAMPAIGN

# CAMPAIGN SUMMARY

- RLSD is a targeted program now in its fourth year - building advocates for leather
- Promotes leather as a sustainable, natural choice in fashion and beyond
- Spans Europe, Africa, Asia and South America.
- Reaching young influencers and future buyers
- Engaging industry brands to secure leather's future
- Challenging, through education, the synthetic industry
- Delivering year-on-year growth in reach and influence
- Supporting sales uplift to international markets

**REAL LEATHER. STAY DIFFERENT.**

**1** GLOBAL CAMPAIGN

**7** STUDENT DESIGN COMPETITIONS

**11** CHANNELS

**40+** NATIONALITIES

**200+** UNIVERSITIES

**6K** STUDENT COMPETITION ENTRIES

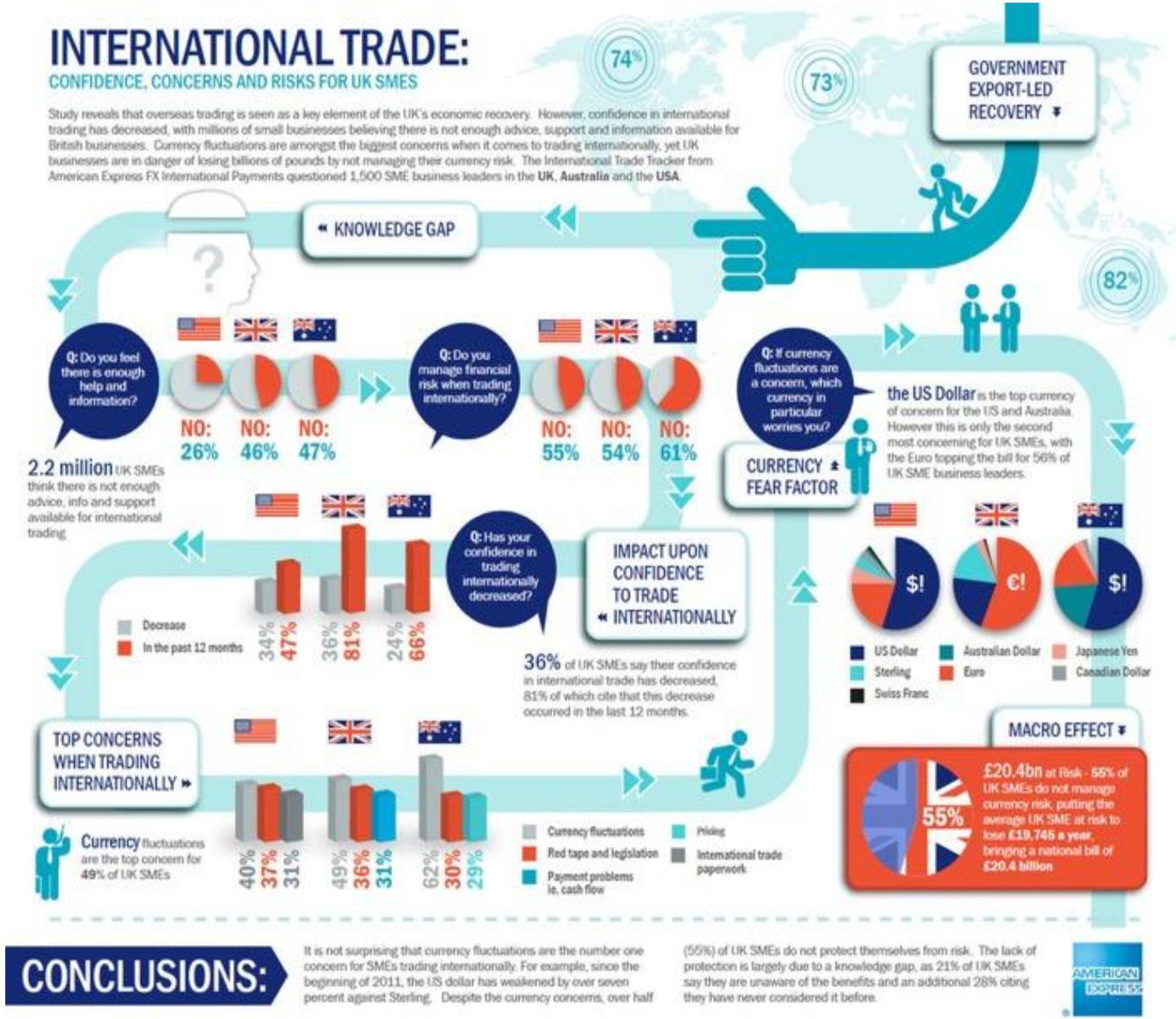
**54.6K** FOLLOWERS

**1.8M** ENGAGEMENTS

**434M** IMPRESSIONS

# International Trade Issues

- Tariffs
- Tariffs
- Tariffs
- Deforestation Regulation
- Chemical Regulation
- Traceability
- Facility Registration



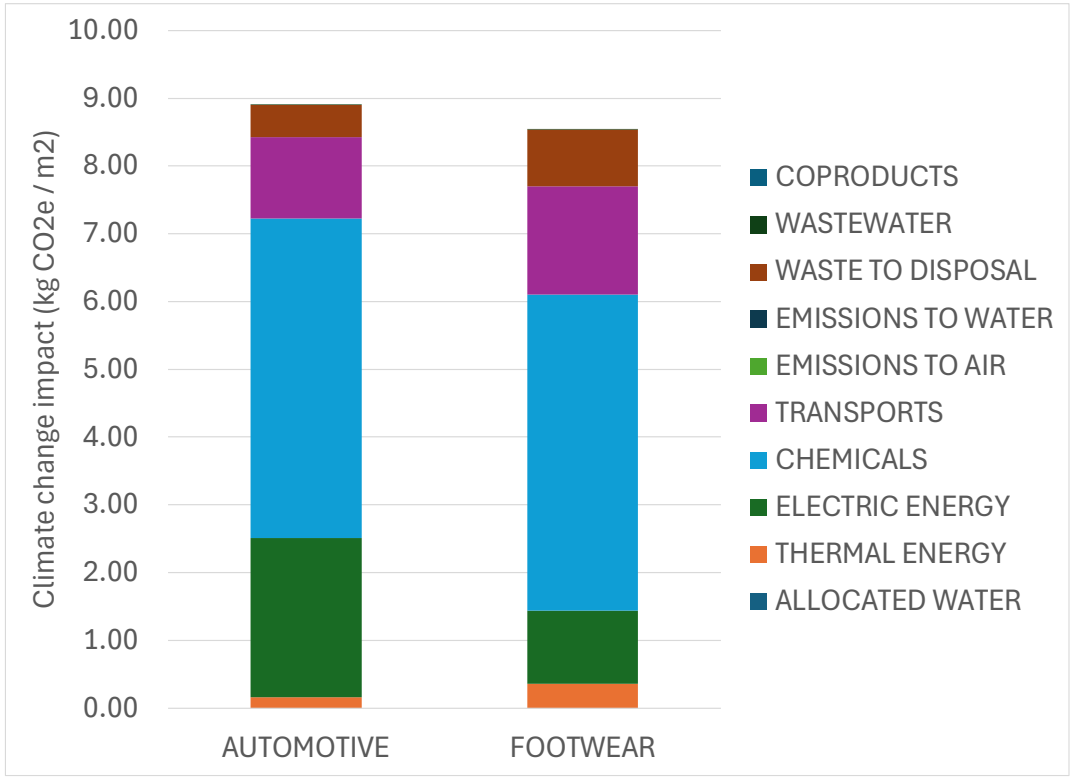
# Lifecycle Assessments: Animal Husbandry & Tanning

## Climate change : brined hides using IPCC AR6 characterization factors

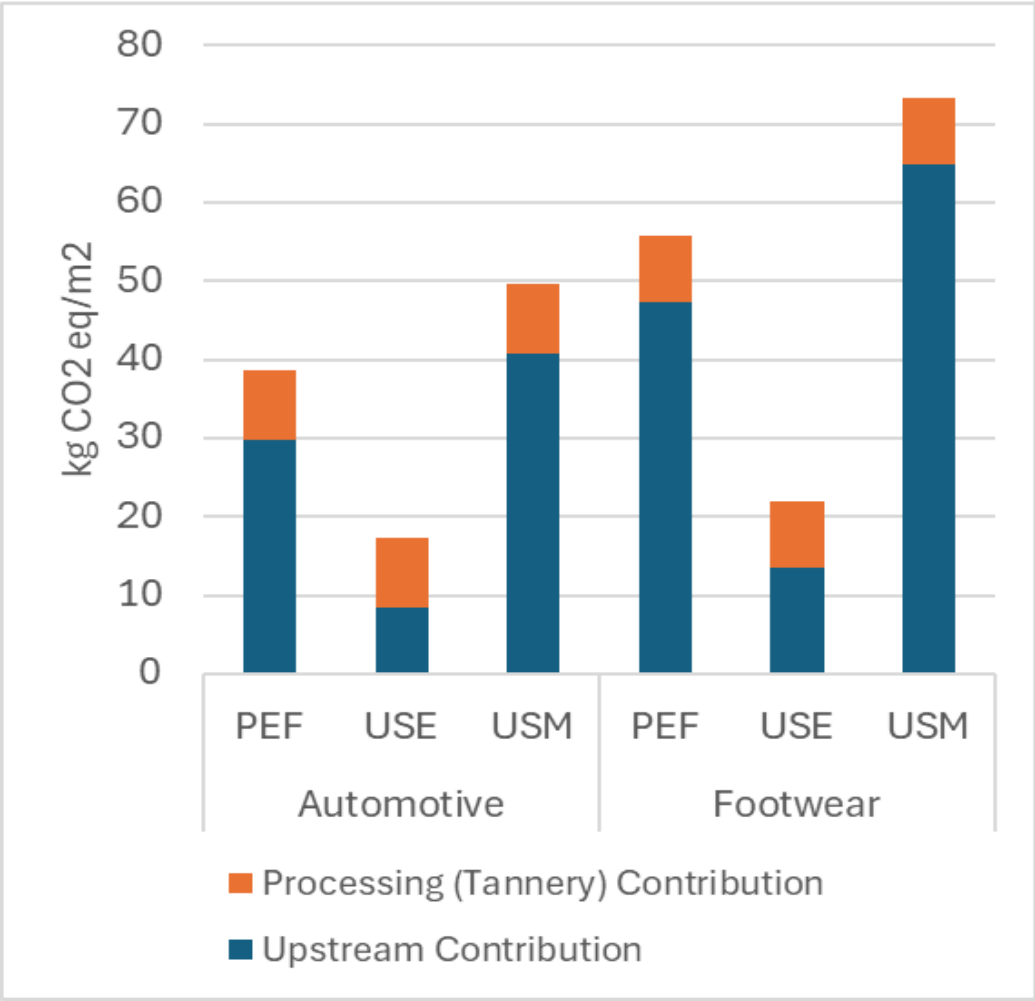
### US Economic Allocation

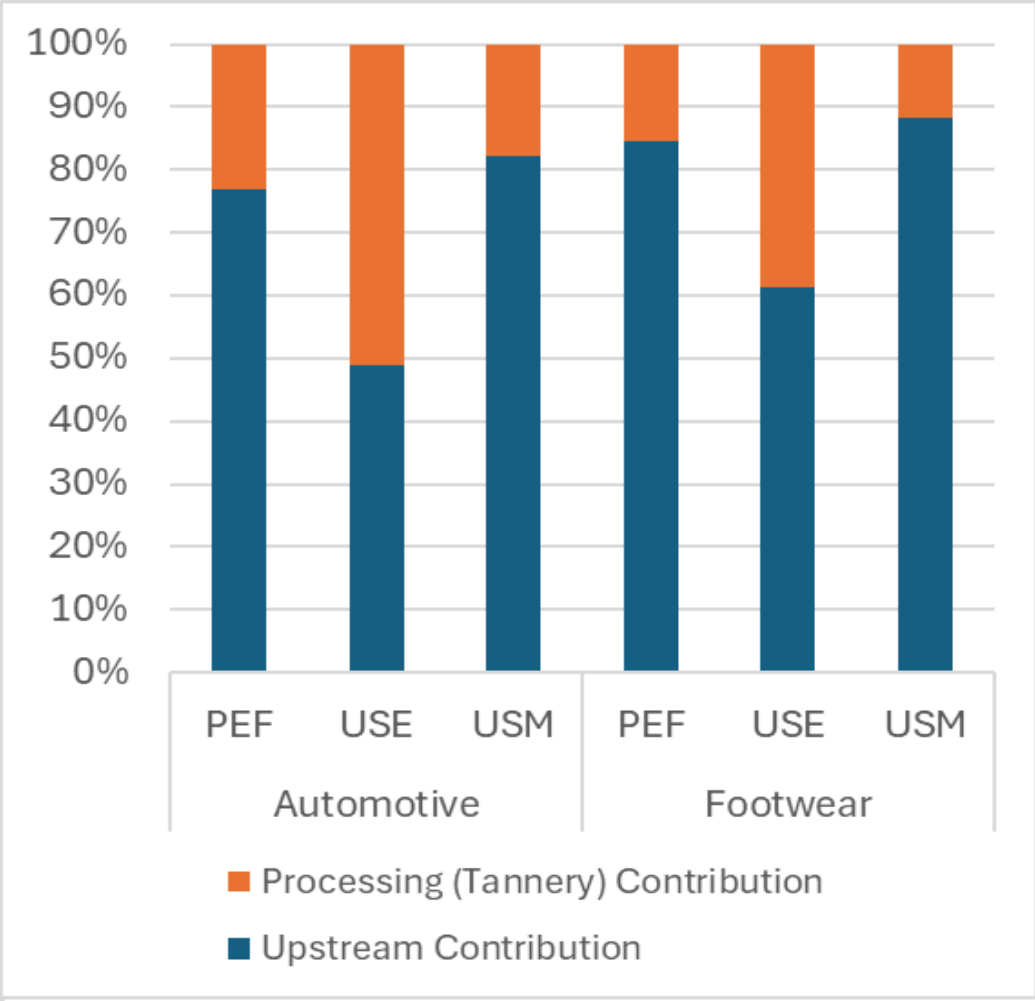
| Hide Source | kg C02er kg brined hide |
|---|---|
| Dairy | 1.56 |
| Beef | 3.42 |
| US Average | 3.04 |
| Grass Finished | 4.47 |

## Tanning average across multiple tanneries in different regions



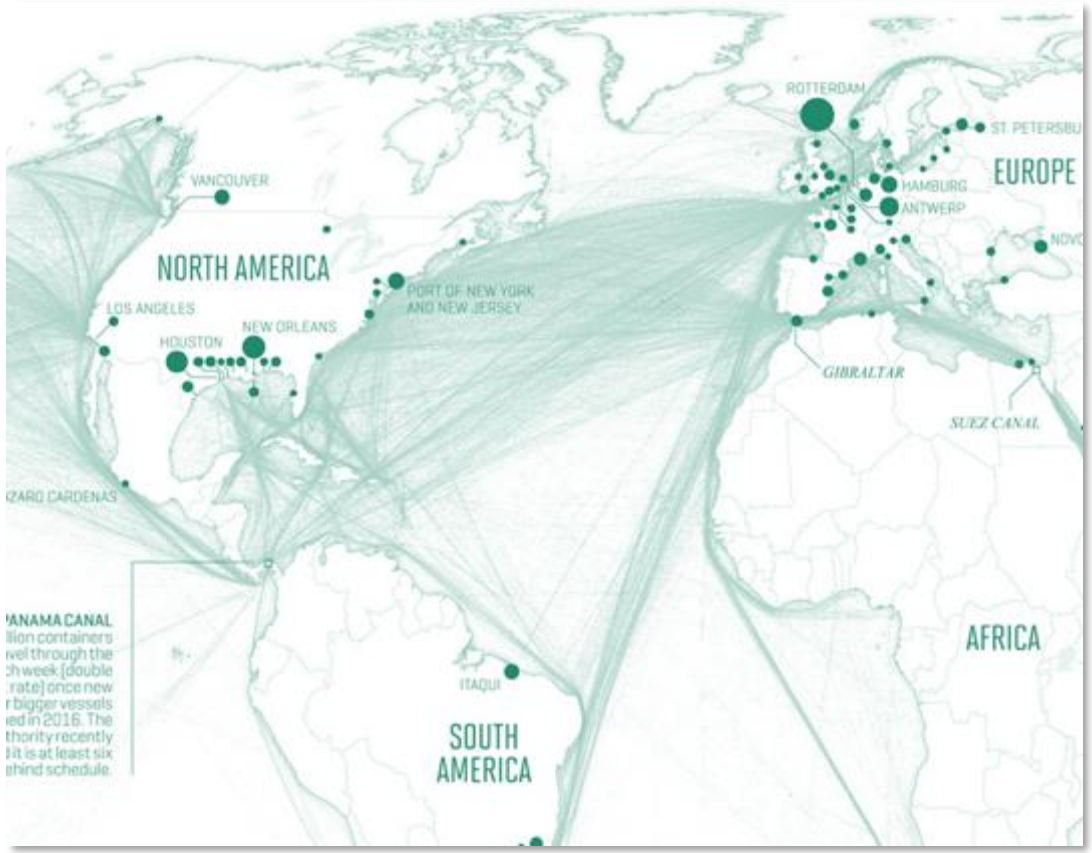
# Results: Overall



# USA - Profile

| | |
|---|---|
| Area | • 9,826,630 sq km |
| Population | • 347 million (May 2025 est.) |
| Economy | • Finance: $5.88 trillion<br>• Manufacturing: $3.08 trillion<br>• Agriculture: $280 billion |
| Cattle Inventory | • 87.2 million head as of January 1, 2025 |
| Hide Production | • 2024 cattle slaughter was 32.6 million head<br>• Production this year is lower YoY 20% |



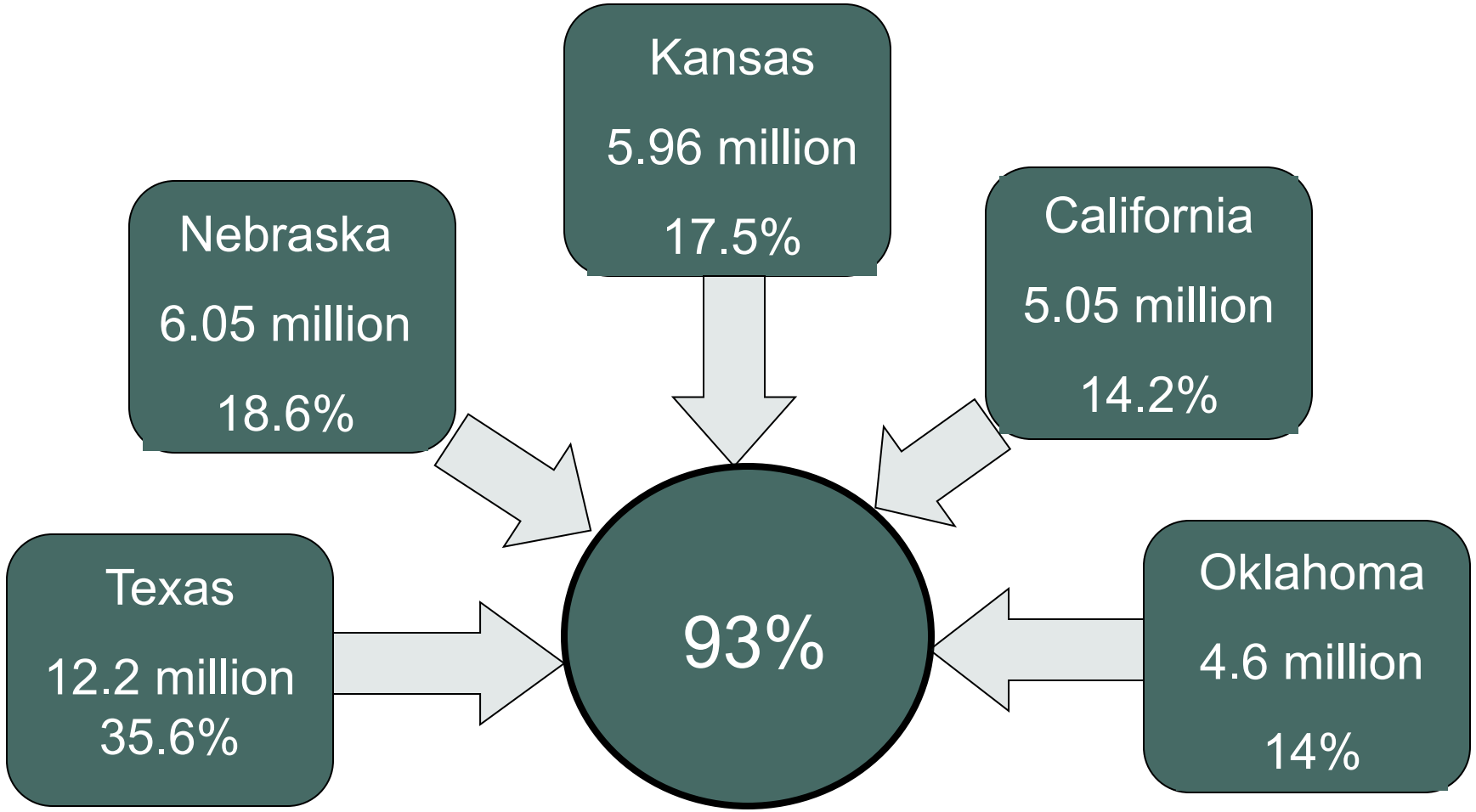
# Global Trade Show Support



# Trust. Built on Reliability, Quality & Science

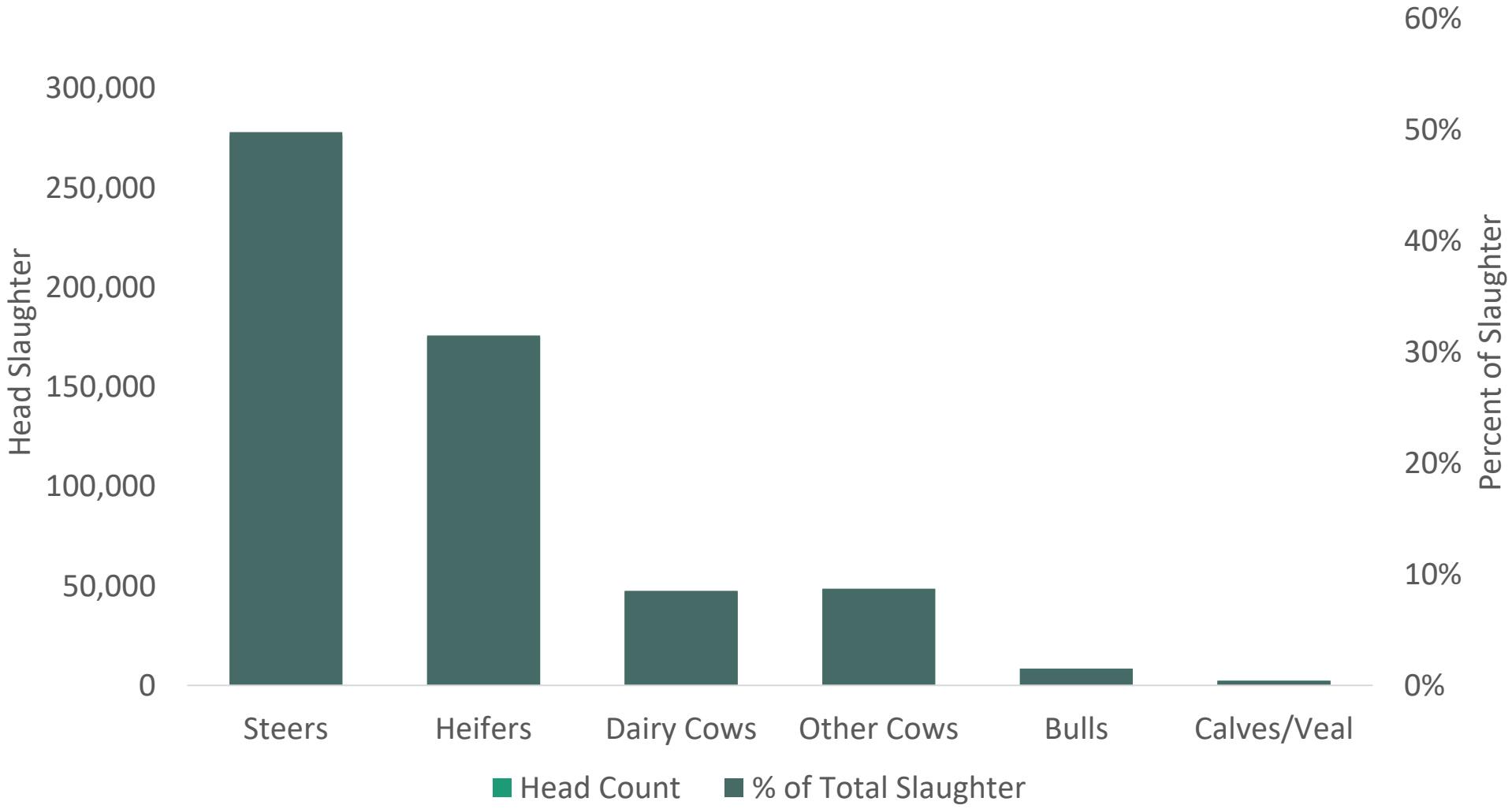
Manufacturing a more sustainable future.
Reducing business risk.

# Cattle Inventory (as of 2024)




Source: USDA

# Slaughter Breakdown 2024




Source: USDA

# US Cattle Breeds

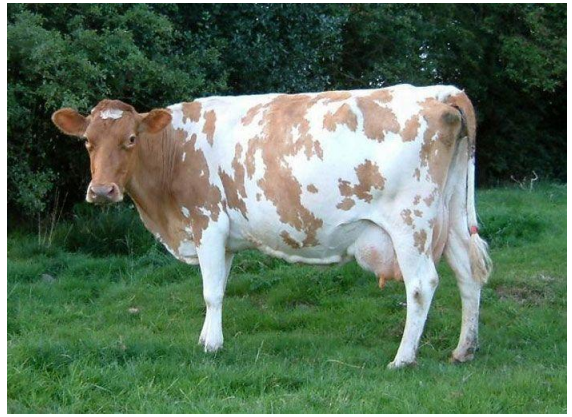
## Meat

Angus

Hereford

Texas Longhorn

## Dairy



Holstein

Guernsey

Jersey

# Post-Harvest Processing

## Hide Removal

- Machine Pulled – reduce time to process & lower temp.
- Hand Flayed
- Machine Pulled w/ Knife Assist

## Salting Method

- Brine Cured – in Raceway or Mixer (18 hours)
- Hand Salted – minimum 14 days

## Fleshing

- Trimmed & Fleshed (T/F) – remove excess fat
- Conventional – hide pulled from animal, trimmed but unfleshed

## Packaging

- Hand Palletized
- Bagged – save time/labor

# US Hide Types

| Supplier/ Geography | Animal Type/Sex | Weight | Brand Content | Processing Methods |
|---|---|---|---|---|
| - Packer<br>- Processor<br>- Trader | Steers | Weight ranges specific to producer | Native | Uniform quantities by producer |
| - Northern<br>- West Coast<br>- Texas<br>- East Coast | Heifer | Light –<br>- Cows & Heifers (btw 36-48 lbs)<br>Seasonal Weight -<br>- Steers (60-66 lbs)<br>- Cows (48-52 lbs)<br>Jumbo / Fed -<br>- Steers (72-80+ lbs)<br>- Cows (60-64 lbs) | Butt Branded | Curing Method |
| | Cows | | Side Branded (Colorado Brand) | Trimmed/Fleshed or Conventional |
| | Bulls | | Mixed or Straight Run | Palletized or Bagged |

All Contracts Governed by Standards Governing Export of NA Hides

# Commercialization of US Hides

- Weekly Offer Lists
  - Monday thru Friday
  - By supplier or processor or trader

- Hide Resources
  - Maxfield Report
  - Jacobsen / Fast Markets
  - Sauer Report

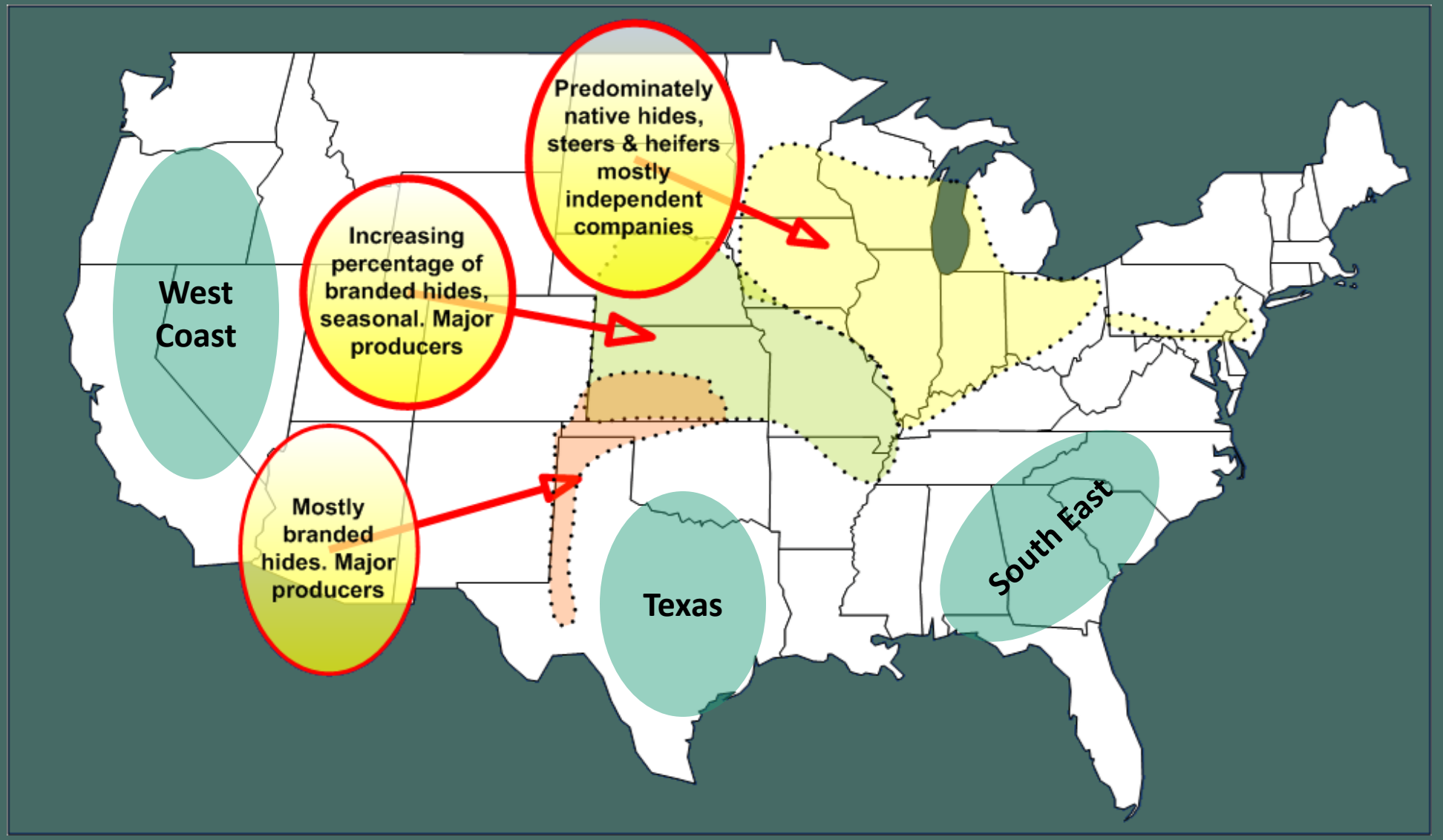
THE MAXFIELD REPORT
ACCURATE · TRUSTED · PROVEN

Fastmarkets

- USDA Export Report
  - Shows breakdown of raw hides, wet blue, splits sold to each country
  - Summary of total sold, shipped, on order
  - https://apps.fas.usda.gov/export-sales/hidesfax.htm

USDA Foreign Agricultural Service

# Major Hide Producing Regions



# World Markets

## Cattle Inventory

- 2 Billion head
- Multiple breeds
- 27 major regions

## Hide Supply

- 335 Million annual production
- Diverse qualities
- Cost opportunities
- Optimize leather applications

# Global Hide Production

**Total Slaughter: 335 million**

| Country | Slaughter | % Use |
|---|---|---|
| China | 51 mill | 60 |
| Brazil | 48 mill | 70 |
| India | 41 mill | 70 |
| US | 32 mill | 85 |
| EU | 22 mill | 85 |

**Representing about 60% of slaughter and 80% of use**

Source: IndexMundi and USDA

# Major Hide Producing Areas

| | |
|---|---|
| China | • Large domestic market<br>• Fragmented supply |
| Brazil | • Quality constraints<br>• Export limited to web blue |
| USA | • Large supply - stable<br>• Raw or processed options |
| Europe | • Splintered market<br>• Inconsistent quality |
| Argentina | • Production declining<br>• Crust |
| Australia | • Quality constraints<br>• Raw or processed options |

# Transactional Transparency

| | |
|---|---|
| Daily Price Discovery | • Independent Reporting<br>• No other origin |
| Government Reporting | • Weekly export sales<br>• Daily production levels |
| Dollar Based | • Price uniformity<br>• Consistent with leather sales |

# Value Proposition

| | |
|---|---|
| Features | • Majority feed-lot cattle<br>• Consistent quality breeds<br>• Brine cured and Fleshed & Trimmed |
| Advantages | • Consistent expectations<br>• Availability and Coverage<br>• Suitability for all leather constructions |
| Benefits | • Volume Purchasing and Programmable Buying<br>• Price Transparency and Cost Effective<br>• Repeatable Standards |

# US Hide Exports 4101/4104

**(1000 pc)**

| | 2023 | 2024 |
|---|---|---|
| China | 16,674,881 | 18,402,528 |
| Mexico | 3,732,662 | 3,927,353 |
| Vietnam | 1,887,609 | 2,791,140 |
| EU 27 | 2,149,682 | 2,456,060 |
| South Korea | 2,010,851 | 1,988,933 |
| Thailand | 1,684,376 | 1,431,847 |
| Brazil | 1,447,296 | 1,118,044 |
| Taiwan | 371,439 | 353,662 |
| Japan | 137,588 | 159,543 |

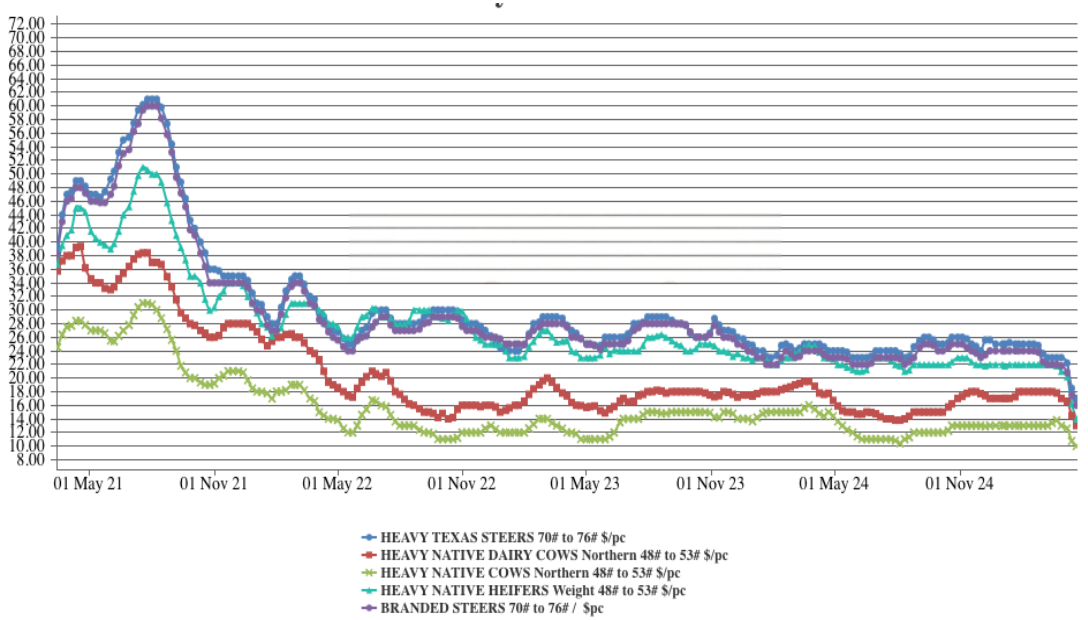
**($ Mill)**

| | 2023 | 2024 |
|---|---|---|
| China | $533,162,484 | $614,436,319 |
| Mexico | $108,571,065 | $141,912,728 |
| Vietnam | $182,515,736 | $293,488,960 |
| EU 27 External Trade (Brexit) | $99,667,723 | $123,149,863 |
| South Korea | $69,483,371 | $75,215,421 |
| Thailand | $67,256,562 | $58,118,400 |
| Brazil | $46,618,992 | $37,933,588 |
| Taiwan | $11,932,453 | $12,495,229 |
| Japan | $6,372,900 | $7,868,465 |

# US Hide Price Opportunity

## Global Hide Prices Over 10 Years


## Recent US Hide Prices (Maxfield Report)




www.themaxfieldreport.com

LEATHER AND HIDE
COUNCIL OF AMERICA

Questions?

Thank You

# Agenda Day 1

| | |
|---|---|
| 10.00 am | Introductions |
| 10.05 am | What is sustainability and unpacking ESG |
| 10.45 am | Why is ESG important:  incoming regulation |
| *11.15 am* | *Break* |
| 11.40 am | Understanding the US Raw Hide export market |
| 12.10 pm | Introduction to the Sustainable Leather Foundation |
| *12.30 pm* | *Lunch* |
| | |
| 14.00 pm | Best use of leather technology and chemistry |
| 14.45 pm | Environmental Module: key requirements and expectations |
| *15.30 pm* | *Break* |
| 15.50 pm | Environmental Module continues |
| *17.30 pm* | *Open discussion and end of day 1* |

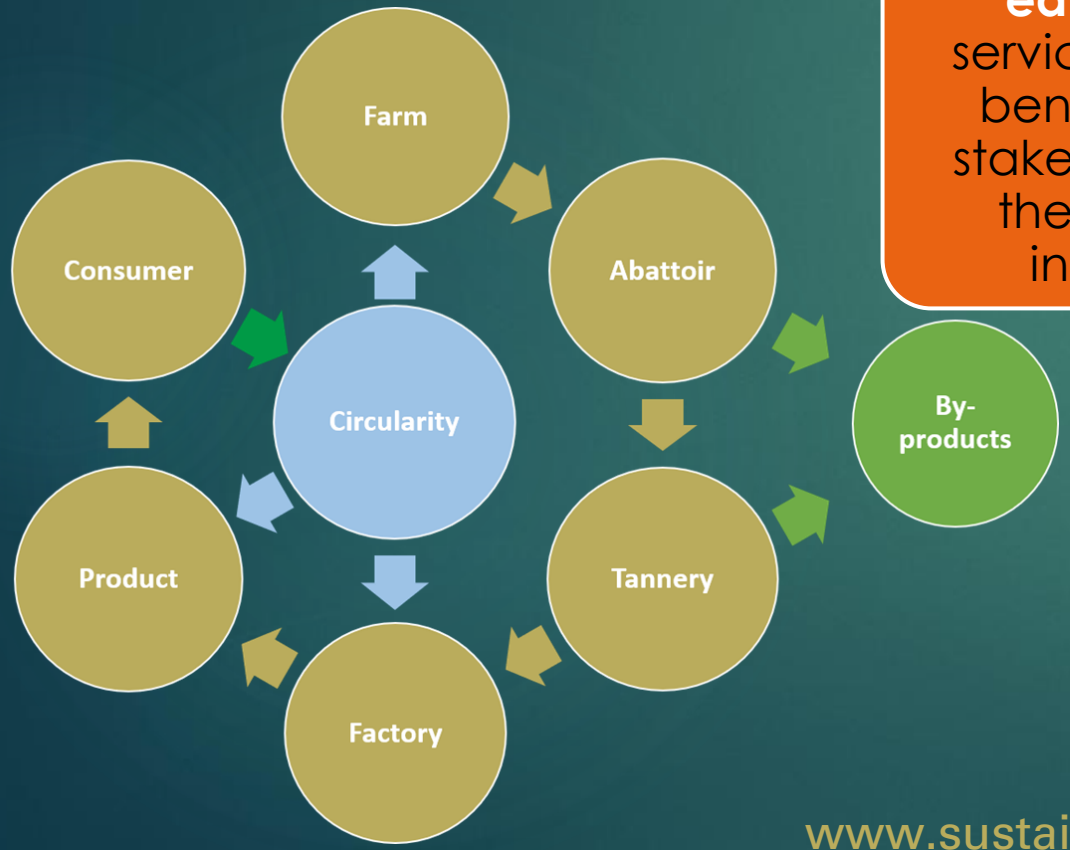
# SLF's Core Vision

## Transparency you can

Established in 2020 a global foundation providing **certification**, **equivalency** and **education** services for the benefit of all stakeholders in the leather industry.

At the heart of the foundation is the **SLF Transparency Dashboard™** that displays a holistic ESG profile for the leather value chain.

A **consumer accessible window** to sustainability linking the value chain to industry experts and innovative tools.

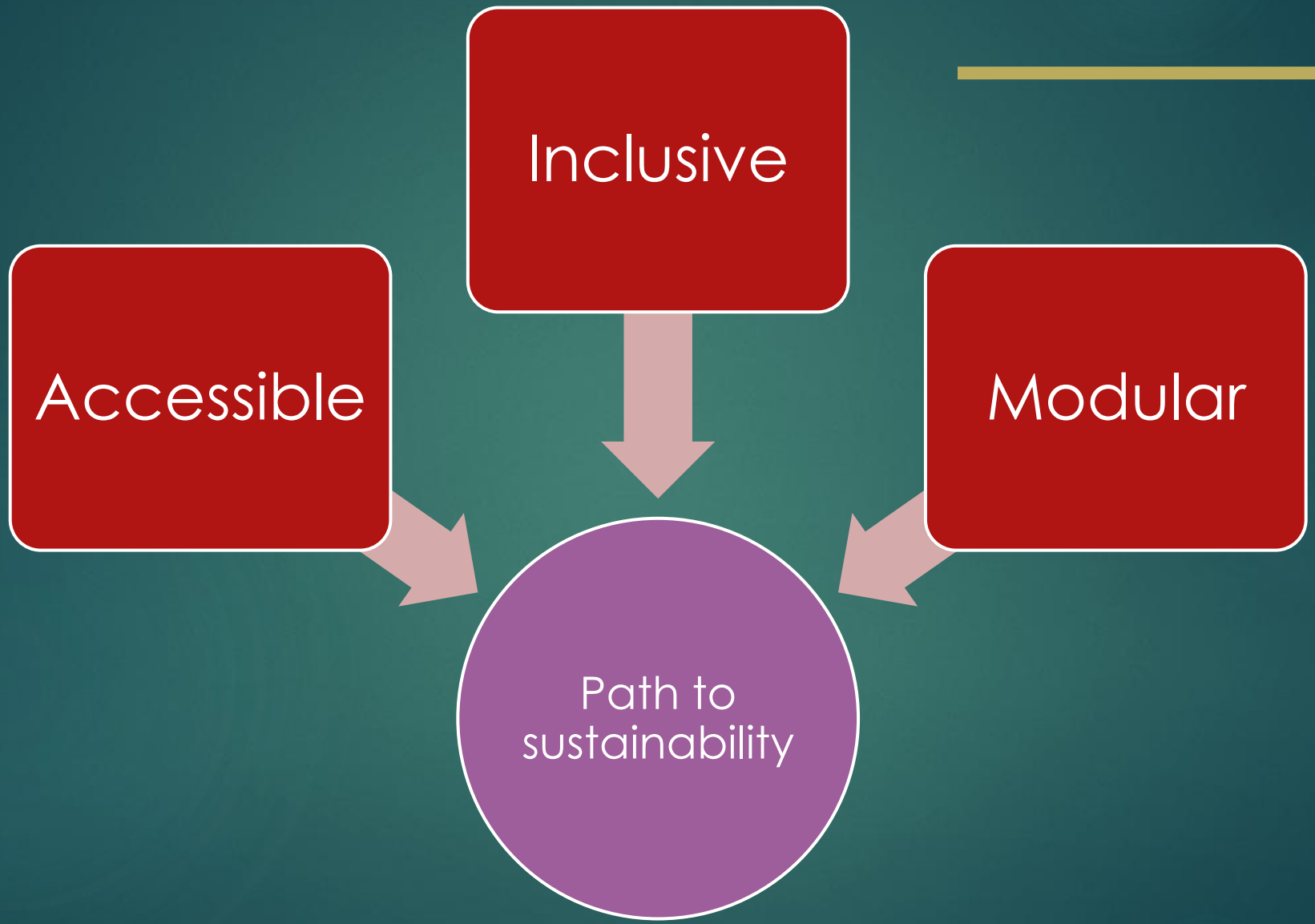



***We provide tangible solutions for the whole leather value chain to communicate & build upon all your ESG requirements***

SUSTAINABLE LEATHER FOUNDATION

www.sustainableleatherfoundation.com

# SLF's A.I.M. Approach



# SLF Transparency Dashboard ™

## Modular in Approach


Each organisation has their own Transparency Dashboard.

Key Information about who they are, where they are, what they product and for what end application.

3 Wheels for ESG

Simple traffic light system

www.sustainableleatherfoundation.com

# SLF Transparency Dashboard ™

## Modular in Approach


This view is open source – anyone who visits the desktop website or mobile app can view the top-line information.

However, they are not be able to access the detail behind the headline.

www.sustainableleatherfoundation.com

# SLF Transparency Dashboard ™

## Visibly Transparent

This view is only accessible for paid up partners of SLF

LOGOUT

### EMS

**Status: Passed**

BASIS OF ASSESSMENT: Successful completion of an LWG audit dated 6-7th November 2019, with certification awarded.

Evidence provided.

NEXT STEPS: To maintain this status, Crest Leather will require a re-audit on or before 7th November 2021, with LWG or an alternative certification company of equivalent standard.

BACK

LOGOUT

### Environmental Health & Safety

**Status: In Progress**

BASIS OF ASSESSMENT: Partial criteria reached through successful completion of an LWG audit dated 6-7th November 2019, with certification awarded.

Evidence provided.

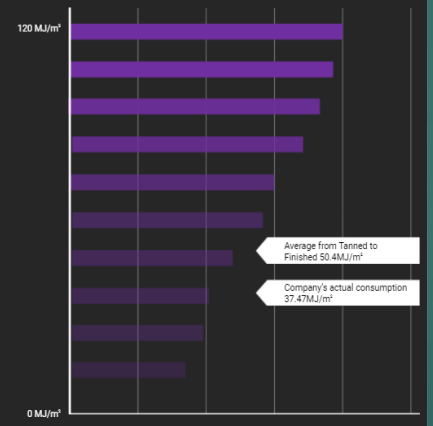
NEXT STEPS: Outstanding criteria to be audited by SLF during June/July 2021.

BACK

LOGOUT

### Energy Consumption

**Energy Consumption MJs/m² of leather**



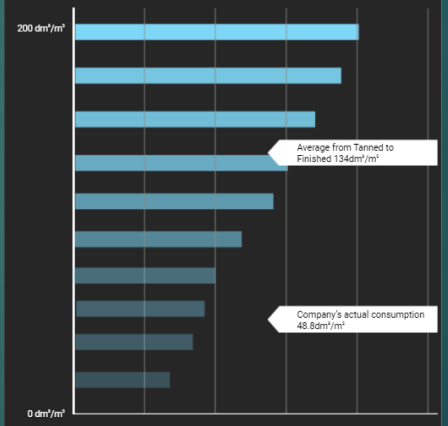

Crest Leather Italia Srl Annual Energy Consumption: 115MJ

BACK

LOGOUT

### Water Use

**Total Annual Water Use dm³/m² of leather**




Crest Leather Italia Srl Annual Water Use: 115dm³

BACK

LOGOUT

### Traceability

**Status: Passed**

Audit Certification Method: LWG Certification. All raw hides are physically marked and marking is entered on job cards and an ERP system. All hides have traceability back to the slaughterhouse.

Level 1:

Level 2:

Level 3: 100% material traceable

Level 4:

Level 5:

Comment: Successful completion of Supply Chain Risk Management PAS7000

BACK

www.sustainableleatherfoundation.com

# SLF Transparency Dashboard ™

## Visibly Transparent

Summary Conformance

Kings International Limited

| Compliance & Performance Programme | Award | Expiry Date |
|---|---|---|
| Sustainable Leather Foundation | Environmental Module | - |
| Sustainable Leather Foundation | Social Module | - |
| Sustainable Leather Foundation | Governance Module | - |

| Other | Award | Expiry Date |
|---|---|---|
| | Audited Award | 9th July 2021 |
| | Self-Assessment Facility Social and Labor Module | 29th April 2022 |
| | Self-Assessment Facility Environmental Module | 2021 |
| | Environmental Management System ISO14001:2015 | 18th January 2024 |
| | Quality Management System ISO 9001:2015 | 18th January 2024 |
| BSI | Occupational Health & Safety Management System ISO 45001:2018 | 18th January 2024 |
| BSI | Supply Chain Risk Management PAS 7000:2014 | 28th September 2021 |
| BSI | SA 8000 Social Accountability System | 18th January 2024 |
| CII-ITC Centre of Excellence | Energy Management Systems ISO 5001:2018 Internal Auditor Training | 16th September 2025 |

| Additional Recognition | Award | Date Awarded |
|---|---|---|
| CII-ITC Centre of Excellence for Sustainable Development | Winner Excellence in Environmental Management | 2020 |
| World Leather Tannery of the Year Award | Tannery of the Year Award | 2016 |
| World Leather Tannery Innovation Award | Tannery Innovation Award | 2016 |
| UNIDO Innovation Award | Innovation Award | 2017 |

LWG
SAC Higg
BSI

Summary Conformance

Conceria Montebello

| Compliance & Performance Programme | Award | Expiry Date |
|---|---|---|
| Sustainable Leather Foundation | Environmental Module | - |
| Sustainable Leather Foundation | Social Module | - |
| Sustainable Leather Foundation | Governance Module | - |

| Other Equivalent Programmes | Award | Expiry Date |
|---|---|---|
| Leather Working Group | Gold Rated | 29th June 2022 |
| ICEC | Environmental Management Systems ISO 14001:2015 | 16th July 2021 |
| ICEC | Quality Systems ISO 9001:2015 | 21st January 2022 |
| ICEC | Lab Certifications TS 406 | 5th December 2023 |
| | Company Sustainability Certification | To be advised |
| | Code of Conduct and Social Accountability | 30th December 2023 |
| | Product Environmental Footprint | No expiry |

| | Award | Date Awarded |
|---|---|---|

ICEC
Oeko-Tex
ECO2L

www.sustainableleatherfoundation.com

**Equivalency built in**

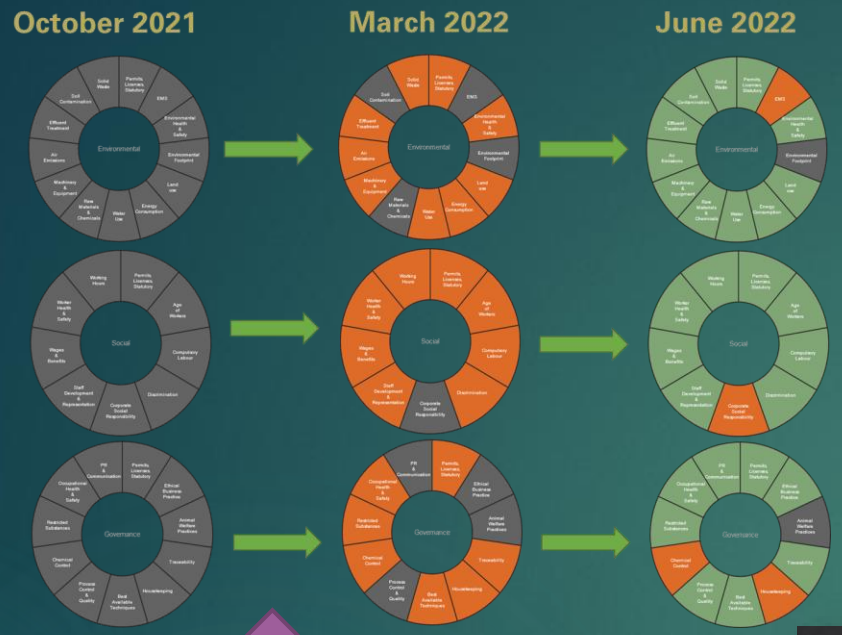
# The A.I.M Approach – Accessible, Inclusive, Modular

## October 2021


## March 2022


## June 2022


SUSTAINABLE LEATHER FOUNDATION




**Guided support Leads to audit**

(or equivalency mapping)


**Audit leads to certification**

**Certification leads to customer information**



**Customer information accessed by QR technology**

**Continued progress maintained**


# Real time tools to support improvement

## Dashboard Infographics

- Infographics with partners personalised summaries
- Enable partners to share their dashboard information easily and in an accessible format


## Dynamic Branded QR Code

One click tap to send partners and consumers to real-time relevant information

Real-time progress

www.sustainableleatherfoundation.com

# Audit Standard Report

## Audit Standard Review

- No complicated scoring. Evidence recorded to validate answer.
- Pre-audit questionnaire to include all basic company information.
- Pink indicates critical questions required for a “Pass” within each section. Green indicates an added value question.
- Dynamic environmental metrics tables so data can be demonstrated in the Dashboard.
- Equivalency with LWG for Social Audit to meet LWG requirements

# Benchmarking – real data, real measurement

## Water Consumption

| WATER CONSUMPTION BENCHMARKING | | | | | | |
|---|---|---|---|---|---|---|
| Operational Scope | Raw to Tanned | Raw to Crust | Raw to Finished | Tanned to Crust | Tanned to Finished | Crust to Finished |
| Unit of Measure | $L/m^2$ | $L/m^2$ | $L/m^2$ | $L/m^2$ | $L/m^2$ | $L/m^2$ |
| Average Benchmark | 146 | 270 | 297 | 63 | 134 | 11 |
| **Average Actuals** | **No Data Yet** | **109** | **127** | **29** | **55** | **9** |
| | **Average actuals to be used as directional reference only. Limited data set availabe; not statistically significant* | | | | | |

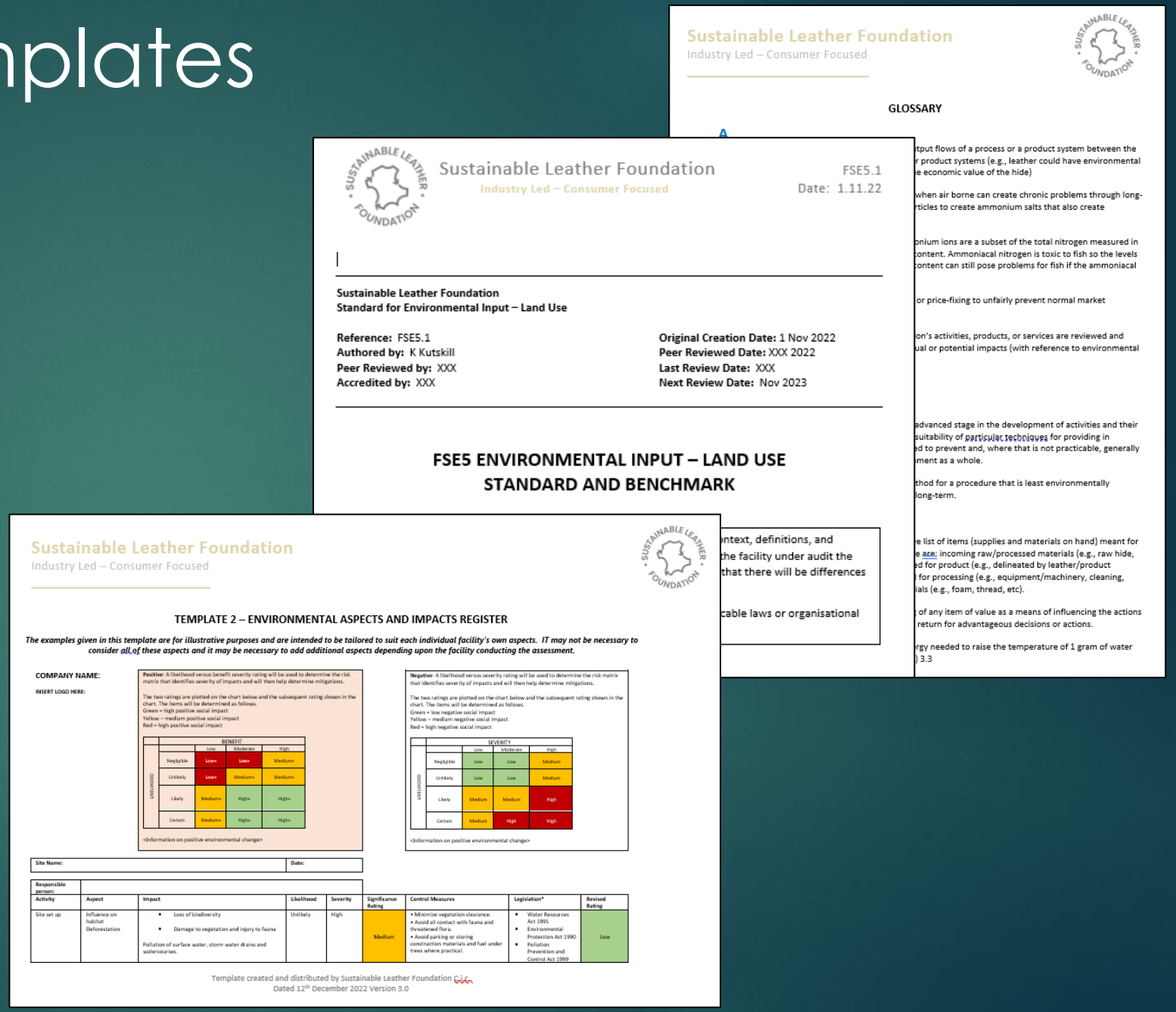
## Energy Consumption

| ENERGY CONSUMPTION BENCHMARKING | | | | | | |
|---|---|---|---|---|---|---|
| Tannery Name | Raw to Tanned | Raw to Crust | Raw to Finished | Tanned to Crust | Tanned to Finished | Crust to Finished |
| Unit of Measure | $kWh/m^2$ | $kWh/m^2$ | $kWh/m^2$ | $kWh/m^2$ | $kWh/m^2$ | $kWh/m^2$ |
| Average Benchmark | 4 | 13 | 21 | 7 | 14 | 8 |
| **Actuals Average** | **1** | **2** | **11** | **5** | **15** | **8** |
| | **Average actuals to be used as directional reference only. Limited data set availabe; not statistically significant* | | | | | |

# Guidance & Templates

## Technical Library

- Published Glossary of 120 Terms
- Comprehensive library of Standards & Benchmarks
- Downloadable Word and Excel Templates + Guidance Notes




www.sustainableleatherfoundation.com

# Mapping Spreadsheet

**EM6. Energy Consumption Table**

**Facility Name:** 0

| Month / Year | Electricity Consumption | Natural Gas Consumption | Diesel Consumption | Total Production Output |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |

**EM6. Energy Consumption Table**

**Facility Name:** 0

**EM11: Effluent Outputs Table**

| Production Effluent Emissions Source* | Particulates (ppm) Reference FSE11.1 for Benchmarks; Pg. 5 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Acidity (pH) | Temp (C°) | COD | TKN | $NH_3$-N | Total Cr | Total Cr VI | $S^{2-}$ | Oil and Grease | Susp. Solids | Total Diss. Solids | Colour (ADMI) |
| Regulatory Limit | | | | | | | | | | | | |
| Effluent Source 1 | | | | | | | | | | | | |
| Effluent Source 2 | | | | | | | | | | | | |
| Effluent Source 3 | | | | | | | | | | | | |
| Effluent Source 4 | | | | | | | | | | | | |
| Effluent Source 5 | | | | | | | | | | | | |
| Name of Regulation Referenced | | | | | | | | | | | | |

*Please define if CETP, METP, or own ETP. If greater than 5 effluent sources, please add rows or reference the SLF environmental metrics calc-conv excel for expanded charts.*

*COD = Chemical Oxygen Demand; TKN = Total Nitrogen; $NH_3$-N = Ammoniacal Nitrogen; Cr = Chromium; Cr VI = Chromium VI; $S^{2-}$ = Sulfide; Susp. = Suspended; Diss. = Dissolved*

**Environmental Module**

**Facility Name:** 0

| | ASR Environmental V2.3 Audit Question | Company Comments / Questions | SLF Comments |
|---|---|---|---|
| | responsible for updating the legal/compliance register for environmental permissions / compliance / legal / statutory obligations?<br>If yes or WIP, please provide evidence (which must include frequency of updates) | | |
| EM1.5 | Is there a register of environmental complaints or legal notices (enforcement or other)? | | |
| EM1.6 | Is the site operating within the scope of its environmental permissions?<br>If yes or WIP, please provide evidence from accredited test laboratories<br>(Special attention is placed on effluent, hazardous waste and air quality reports) | | |
| EM1.7 | Is the company required to register with an online licensing portal for licenses / enforcement notices / complaints?<br>If yes or WIP, please include a screenshot of the registration. | | |
| **EM2. Environmental Management System** | | | |
| **General Comments** | | | |
| EM2.1 | In the environmental aspects and impacts register (risk assessment), is there evidence that a detailed aspect screening has been performed? (can refer to company LCIA)?<br>If yes or WIP, please provide evidence of inclusion<br><br>See Template 2 in the accompanying Explanatory Notes & Templates | | |
| EM2.2 | Is there a Master Environmental Programme (MEP)document or similar manual? This should include the following:<br>If yes or WIP, please provide evidence of implementation<br>Please see SLF Standard FSE2 in the accompanying Standards & Benchmarks document<br>See Explanatory Note 2 in the accompanying Explanatory Notes & Templates<br><br>Policy/Plan<br>Objectives<br>Procedures<br>Roles and Responsibilities<br>Training Plan<br>Emergency Plan<br>Monitoring and control measures<br>Internal Audits<br>Management Review | | |
| EM2.3 | Has the environmental scope, policy, plan for the company been communicated to all employees, e.g., displayed on employee boards or included in training material?<br>If yes or WIP, please provide evidence | | |
| EM2.4 + | Have the environmental goals of the company been communicated externally as part of ESG reporting or on website?<br>If yes or WIP, please provide evidence | | |

www.sustainableleatherfoundation.com

# Comparison

## SLF Comparison Matrix with other certification standard owners

| | |
|---|---|
| | Yes |
| | WIP - Some elements missing |
| | Not included |
| | Unknown |
| | Not a standard - benchmarking tool |

| | SLF | LWG | CSCB | Oeko-Tex STeP for leather | Oeko-Tex Made in Green | Oeko-Tex Detox to zero | ZDHC | ISO 9001 | ISO 14001 | ISO14040 | ISO 45001 | ISO 50001 | SA 8000 | Sedex SMETA 4 Pillar | Sedex SMETA 2 Pillar | LIA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Environmental Module** | | | | | | | | | | | | | | | | |
| Permits, licences, statutory - env | | | | | | | | | | | | | | | | |
| Environmental Management Systems | | | | | | | | | | | | | | | | |
| Environmental Health & Safety | | | | | | | | | | | | | | | | |
| Environmental Footprint | | | | | | | | | | | | | | | | |
| Land use | | | | | | | | | | | | | | | | |
| Energy consumption | | | | | | | | | | | | | | | | |
| Water use | | | | | | | | | | | | | | | | |
| Raw materials and chemicals | | | | | | | | | | | | | | | | |
| Equipment and machinery | | | | | | | | | | | | | | | | |
| Air pollution | | | | | | | | | | | | | | | | |
| Effluent | | | | | | | | | | | | | | | | |
| Soil Contamination | | | | | | | | | | | | | | | | |
| Solid waste | | | | | | | | | | | | | | | | |
| **Social Module** | | | | | | | | | | | | | | | | |
| Permits, licences, statutory - social | | | | | | | | | | | | | | | | |
| Age of workers | | | | | | | | | | | | | | | | |
| Compulsory labour | | | | | | | | | | | | | | | | |
| Discrimination | | | | | | | | | | | | | | | | |
| Corporate social responsibility | | | | | | | | | | | | | | | | |
| Staff development and representation | | | | | | | | | | | | | | | | |
| Wages & Benefits | | | | | | | | | | | | | | | | |
| Worker Health & Safety | | | | | | | | | | | | | | | | |
| Working hours | | | | | | | | | | | | | | | | |
| **Governance module** | | | | | | | | | | | | | | | | |
| Permits, licences, statutory - gov | | | | | | | | | | | | | | | | |
| Ethical business practice | | | | | | | | | | | | | | | | |
| Animal Welfare | | | | | | | | | | | | | | | | |
| Traceability, procurement, and sales | | | | | | | | | | | | | | | | |
| Housekeeeping | | | | | | | | | | | | | | | | |
| BATNEEC/BPEO | | | | | | | | | | | | | | | | |
| Process control, QMS,efficiency and productivity | | | | | | | | | | | | | | | | |
| Chemical control | | | | | | | | | | | | | | | | |
| Restricted substances | | | | | | | | | | | | | | | | |
| Occupational Health & Safety | | | | | | | | | | | | | | | | |
| Public relation and communications | | | | | | | | | | | | | | | | |

# Value to you

Partnership for Sustainability

Low cost through guided support and more profit through efficiency and opportunity

Access to a triple pillar platform that opens visibility to international markets

Value-Added cross product/discipline interconnections within facility and within industry

# LHCA Training Project Partner

Step 1:  Workshops

Step 2: Preparatory Audits

Step 3: Development and Improvement

Step 4: Formal Audit and Certification

Step 5: Action Plan for Continued Development


# Lunch

## 90 minutes

**INDUSTRY LED – CONSUMER FOCUSED –**
**TRANSPARENCY YOU CAN SEE**

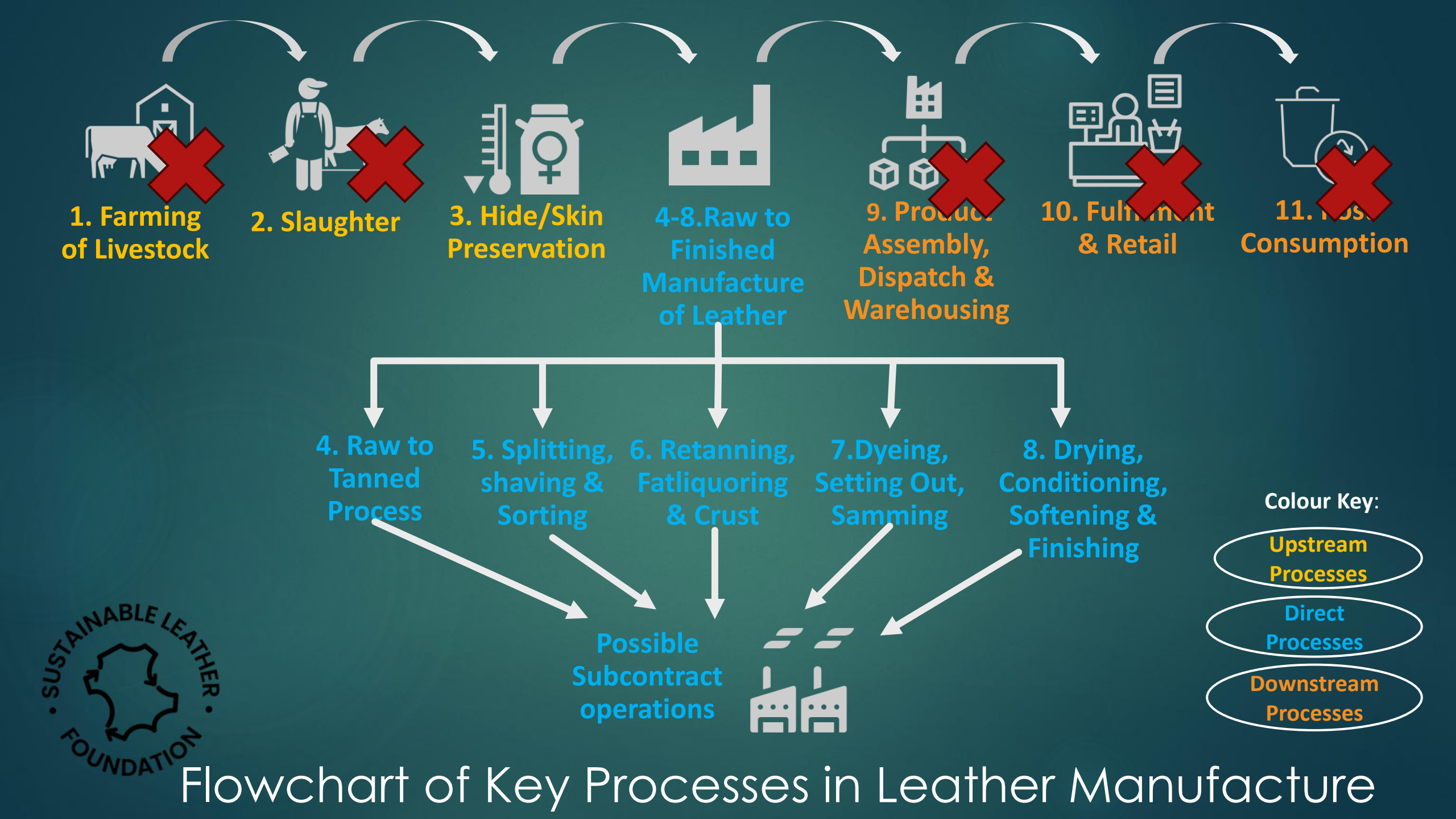
**WWW.SUSTAINABLELEATHERFOUNDATION.COM**

# Agenda Day 1

| | |
|---|---|
| 10.00 am | Introductions |
| 10.05 am | What is sustainability and unpacking ESG |
| 10.45 am | Why is ESG important:  incoming regulation |
| *11.15 am* | *Break* |
| 11.40 am | Understanding the US Raw Hide export market |
| 12.10 pm | Introduction to the Sustainable Leather Foundation |
| *12.30 pm* | *Lunch* |
| | |
| 14.00 pm | Best use of leather technology and chemistry |
| 14.45 pm | Environmental Module: key requirements and expectations |
| *15.30 pm* | *Break* |
| 15.50 pm | Environmental Module continues |
| *17.30 pm* | *Open discussion and end of day 1* |

"let's be the change that secures the future"

# Session 2, Part 1: Best use of leather technology and chemistry from raw material to finished leather




# Flowchart of Key Processes in Leather Manufacture

# Preservation

Considerations:

Green hides have the least impact, but fresh hide processing is not generally possible unless an integrated system.

Salted hides are most common and this is a reliable way to preserve hides that travel distances.

- Use salting enclosures, if possible, to prevent too much excess salt being lost
- Use salt removal machines to shake as much salt from the hides before processing begins, Desalting examples.
- Look at ways to recover and reuse the salt for future preservation.

# Soaking/De-hairing / Liming

- Some debate over whether to split hides in the liming stage to save on production energy and chemicals.  On one hand this is sensible, but it can damage the integrity of the hide structure which is beneficial to maintain in the first tanning stage. For better more robust structure in wet blue, it may be preferable to split in the blue i.e. for shoe upper leathers.

- Soaking is a very important process and should not be rushed, soaking brings back the hide to the same condition as it was before salting. It is very important to ensure correct presoak and soaking during processing. Incorporation of bactericide and soaking agents can help especially if there is some drying out of hides. Soaking agents can combine wetting agent and enzymes.

- Unhairing is critical to remove excess flesh and develop a softer leather, i.e. for upholstery/ garment leather normally done with lime splitting. A flatter cleaner liming can be achieved using liming auxiliaries and enzymes.

# Soaking/De-hairing / Liming

- It is recommended to do a first trim of material to reduce tanning of what will ultimately become waste later in the process.
- Follow traditional methods and pay attention to details such as best practise to check pH float lengths etc.
- Consider innovative or new technology such as improved processing, improved machinery and new technologies, for example, chrome recovery, waterless tanning, Chrome free metal free tanning etc.
- Proprietary chemicals can be used to aid in unhairing and reduce the amount of Na2 S used. The process should be balanced to achieve clean and flat limed pelts

**Leather is made in the beam house. Priority should be given to this area as it is more difficult and expensive to rectify any mistakes in later processing i.e. retannage or finishing.**

# Soaking/De-hairing / Liming / Deliming

- Deliming is the process of reducing pH in order to prepare for pickle/ tannage. Control of float length and checking cut to phenol phthalein are important controls here.

- Traditional deliming methods use Ammonium salts , sulphate or chloride which at the prevailing pH liberates ammonia. This of course can be dangerous. It is best practice to delime using salts of non swelling acids and this also gives greater control of pH for the introduction of pancreatic bating agents which help to clear scud and hair roots, and give a cleaner pelt. More control and buffering of the pH in this process will provide more consistent results.

- Washing throughout these processes is very important and there needs to be good control over water use, i.e. batch wash and water meters.

# Soaking/De-hairing / Liming / Deliming

- Next is the pickle stage preparation for tannage. If using Chrome tannage which is still used for the majority of leather production, then a well buffered system is recommended to control the pH.
- The swelling of the pelt is controlled by the use of salt, plus sodium formate, then the pelt is acidified with a combination of sulphuric and formic acid.
- It is good practice to check the baume here again control of any change in pH is vital for quality leather.
- A well masked tannage using dicarboxyilic acids will lead to more efficient and more consistent uptake of Chrome, a flatter and brighter tannage. Look at optimising the Chromium added by using a basifying technique with slow gradual increase in pH from 2.8 to 3.8-4 over several hours. Proprietary products based on MgO are beneficial here.

# Soaking/De-hairing / Liming / Deliming

- Much work has been undertaken in recent years to develop wet white Chrome free tannage. However, these are more effective on ovine skins. For bovine it is very hard to get the correct penetration on full substance lime splits. An efficient low Chrome tannage still offers the best results

- Piling after Chrome tannage is very important for the completion of the complex Chrome fixation process.

# Soaking/De-hairing / Liming / Deliming

**Best practice during all beam house operations is to control water and the use of water meters for processing vessels is valuable.**

**Remember almost 60-70% of water use in leather manufacturer is used in the beam house/ tanning area.**

# Tanning

- Minimise the water and chemical use through thorough weighing and dosing.
  - If possible, use an automatic dosing system.

- Look at alternative tannage techniques to evaluate whether there is a more efficient / environmentally friendly option that works for the facility.

# Retanning

- Control of humidity in the leather is very important from the wet blue stage. Sammying, splitting and shaving are important mechanical operations to ensure consistent substance. Good machines and skilled workers are very important here

- It is best practice to use a combination of retannage incorporating resins, acrylic and dicyano, and replacement syntans to get the desired levels of flatness, tightness and to impart level dyeing.

- The correct technique is needed to effect level/ penetrative dyeing. Fatliquoring is very important for lubrication of the fibers, especially through the subsequent drying process. Different oils need to be balanced to maintain tightness while imparting softness and deep lubrication. Recent advances in polymer technology help in this regard and again, control of the float and PH is important.

# Retanning

- When thinking of capital investment, consider introducing water and chemical saving technology such as Qualus Sferes.
- It is important after neutralising to give the material a thorough washing to mitigate against possible salt spew occurring subsequently.
- Retanning, Dyeing and Fatliquoring require initial control through a neutralisation process and it is very important to have buffered systems and non-violent changes in PH.
- In the cross section of leather, especially in thicker wet blue, it is  important here to maintain tightness and a good break.

# Drying and Storage

- Within your geography what is the most efficient and reliable way of drying material?
  - Vacuum drying is consistent but uses energy
  - Is there space for drying racks overhead?

- If you store material in crust, has the facility been optimised for movement.
  - Is there an inventory system so material is used on a first in, first out basis?
  - Drying / crusting and preparation for finishing is also a crucial area in obtaining a consistent high-quality leather. Dependent on ambient temperatures and leather type a correct combination of vacuum, hang and toggle drying can be employed. But the humidity of the leather is vitally important throughout this process.

# Splitting / Shaving

- Ensure machinery is keep well maintained with adequate ventilation and dust extraction systems.

# Finishing

- This is the science of leather making - the magic in the processing comes in the black arts of finishing techniques.
- The correct use of finishing coat applications either through padding, spraying or roller coating is vital
- Combinations of base intermediate and colour coats to the final topcoat are very dependent on the final leather requirements.
- Mechanical operations are important to impart the desired aesthetic finish in combination with the chemical formulation.

# Finishing

- Optimise batches for dyeing to reduce the changeover costs between runs.
- Train workforce to reduce the amount of reworking necessary.
- Provision of adequate lighting is essential to ensure that quality control checks are efficient and reliable.
- Look at process flow for efficient flow of material through the facility.
- There is a recent technical advancement in reverse roller coating to perform a precoat to upgrade the crust.
- Newer forms of finishing techniques include the mixing of different typical finishing chemicals into so called compact finishes, and the use of a cationic precoat for example.

# Agenda Day 1

| | |
|---|---|
| 10.00 am | Introductions |
| 10.05 am | What is sustainability and unpacking ESG |
| 10.45 am | Why is ESG important:  incoming regulation |
| *11.15 am* | *Break* |
| 11.40 am | Understanding the US Raw Hide export market |
| 12.10 pm | Introduction to the Sustainable Leather Foundation |
| *12.30 pm* | *Lunch* |
| | |
| 14.00 pm | Best use of leather technology and chemistry |
| 14.45 pm | Environmental Module: key requirements and expectations |
| *15.30 pm* | *Break* |
| 15.50 pm | Environmental Module continues |
| *17.30 pm* | *Open discussion and end of day 1* |

"let's be the change that secures the future"

# Session 2, Part 2: Environmental Module

# Why have a Standard?

A complete non-commercial three pillar sustainability system did not exist for the leather industry
Environmental
Social
Governance

No umbrella dashboard that shows the end user of leather all the sustainability sensitivities in the value chain

Leather sustainability standards have not been agreed (by consultation)

# Environmental Module

1. Permits & Licenses
2. Environmental Management System
3. Environmental Health & Safety
4. Environmental Footprint
5. Land Use
6. Energy Use
7. Water Use
8. Raw Materials & Chemicals
9. Machinery & Equipment
10. Air Emissions
11. Effluent Treatment
12. Soil Contamination
13. Solid Waste

13 sections covering:

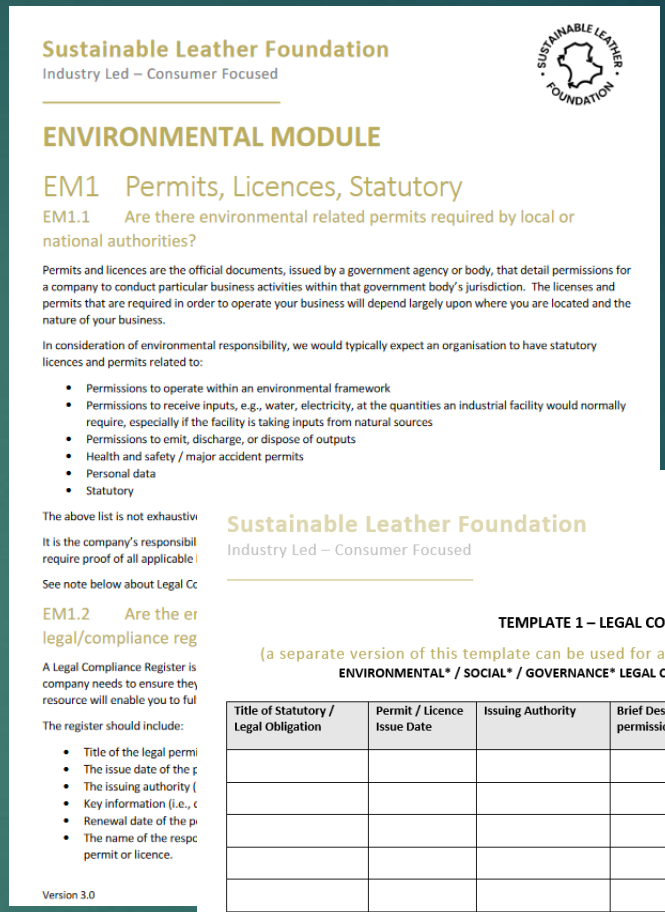
Permits, policies and systems

Environmental Inputs

Environmental Outputs

# EM1. Permits and Licenses

- **The SLF Audit Standard examines the operating permits of all three ESG pillars**
- **The environmental inputs/outputs must show compliance with statutory requirements**



Sustainable Leather Foundation
Industry Led – Consumer Focused

ENVIRONMENTAL MODULE

EM1 Permits, Licences, Statutory

EM1.1 Are there environmental related permits required by local or national authorities?

Permits and licences are the official documents, issued by a government agency or body, that detail permissions for a company to conduct particular business activities within that government body's jurisdiction. The licenses and permits that are required in order to operate your business will depend largely upon where you are located and the nature of your business.

In consideration of environmental responsibility, we would typically expect an organisation to have statutory licences and permits related to:

- Permissions to operate within an environmental framework
- Permissions to receive inputs, e.g., water, electricity, at the quantities an industrial facility would normally require, especially if the facility is taking inputs from natural sources
- Permissions to emit, discharge, or dispose of outputs
- Health and safety / major accident permits
- Personal data
- Statutory

The above list is not exhaustiv

It is the company's responsibil
require proof of all applicable

See note below about Legal Cc

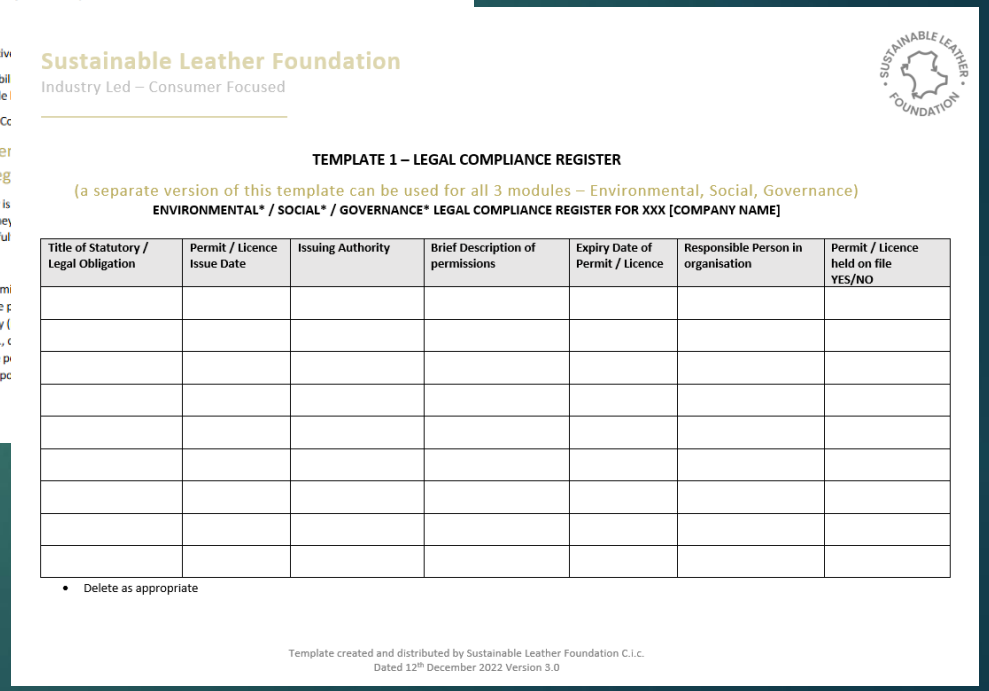
EM1.2 Are the er
legal/compliance reg

A Legal Compliance Register is
company needs to ensure they
resource will enable you to ful

The register should include:

- Title of the legal permi
- The issue date of the p
- The issuing authority (
- Key information (i.e., c
- Renewal date of the pe
- The name of the respc
permit or licence.

Version 3.0



Sustainable Leather Foundation
Industry Led – Consumer Focused

TEMPLATE 1 – LEGAL COMPLIANCE REGISTER

(a separate version of this template can be used for all 3 modules – Environmental, Social, Governance)

ENVIRONMENTAL* / SOCIAL* / GOVERNANCE* LEGAL COMPLIANCE REGISTER FOR XXX [COMPANY NAME]

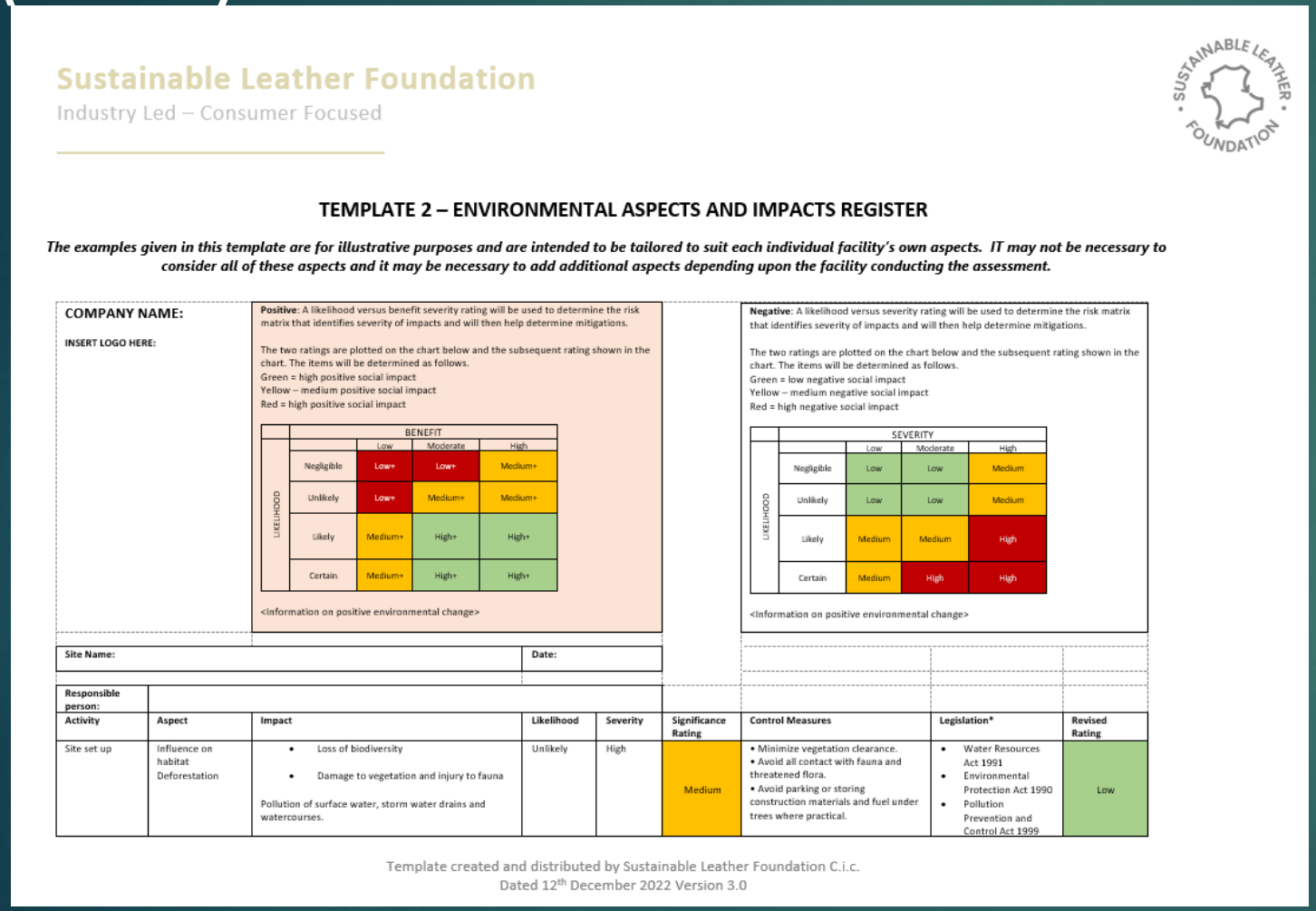
| Title of Statutory / Legal Obligation | Permit / Licence Issue Date | Issuing Authority | Brief Description of permissions | Expiry Date of Permit / Licence | Responsible Person in organisation | Permit / Licence held on file YES/NO |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

- Delete as appropriate

Template created and distributed by Sustainable Leather Foundation C.i.c.
Dated 12th December 2022 Version 3.0

www.sustainableleatherfoundation.com

# EM2. Environmental Management System (EMS)



Sustainable Leather Foundation
Industry Led – Consumer Focused

**TEMPLATE 2 – ENVIRONMENTAL ASPECTS AND IMPACTS REGISTER**

***The examples given in this template are for illustrative purposes and are intended to be tailored to suit each individual facility's own aspects. IT may not be necessary to consider all of these aspects and it may be necessary to add additional aspects depending upon the facility conducting the assessment.***

**COMPANY NAME:**

**INSERT LOGO HERE:**

**Positive**: A likelihood versus benefit severity rating will be used to determine the risk matrix that identifies severity of impacts and will then help determine mitigations.

The two ratings are plotted on the chart below and the subsequent rating shown in the chart. The items will be determined as follows.
Green = high positive social impact
Yellow – medium positive social impact
Red = high positive social impact

| LIKELIHOOD | BENEFIT: Low | Moderate | High |
|---|---|---|---|
| Negligible | Low+ | Low+ | Medium+ |
| Unlikely | Low+ | Medium+ | Medium+ |
| Likely | Medium+ | High+ | High+ |
| Certain | Medium+ | High+ | High+ |

<Information on positive environmental change>

**Negative**: A likelihood versus severity rating will be used to determine the risk matrix that identifies severity of impacts and will then help determine mitigations.

The two ratings are plotted on the chart below and the subsequent rating shown in the chart. The items will be determined as follows.
Green = low negative social impact
Yellow – medium negative social impact
Red = high negative social impact

| LIKELIHOOD | SEVERITY: Low | Moderate | High |
|---|---|---|---|
| Negligible | Low | Low | Medium |
| Unlikely | Low | Low | Medium |
| Likely | Medium | Medium | High |
| Certain | Medium | High | High |

<Information on positive environmental change>

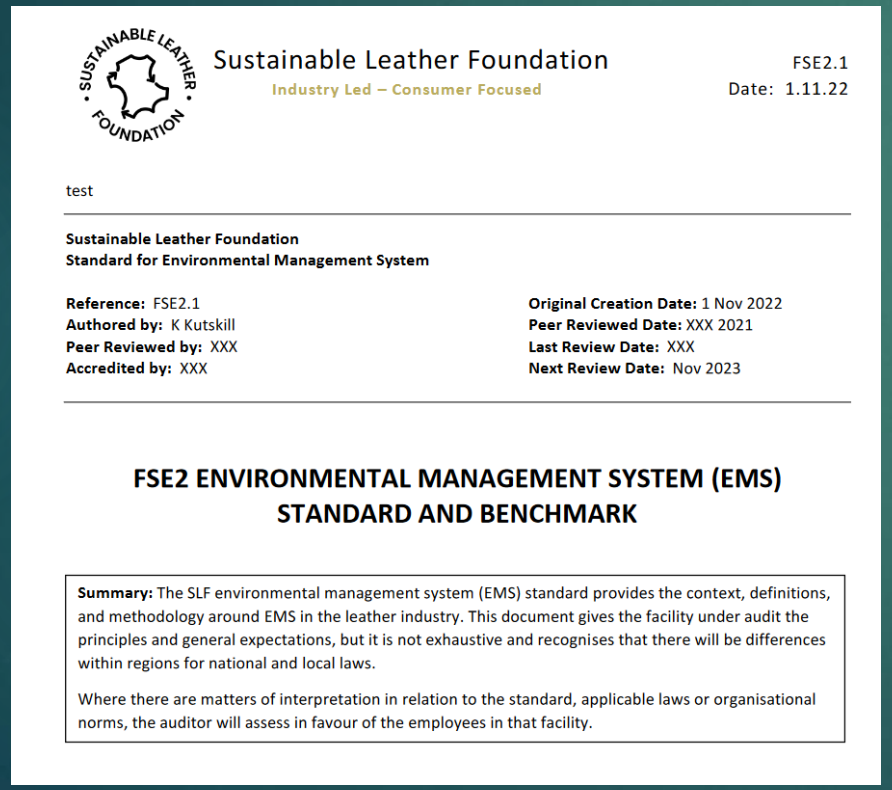
| Site Name: | | Date: | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Responsible person:** | | | | | | | | |
| **Activity** | **Aspect** | **Impact** | **Likelihood** | **Severity** | **Significance Rating** | **Control Measures** | **Legislation*** | **Revised Rating** |
| Site set up | Influence on habitat<br>Deforestation | • Loss of biodiversity<br>• Damage to vegetation and injury to fauna<br>Pollution of surface water, storm water drains and watercourses. | Unlikely | High | Medium | • Minimize vegetation clearance.<br>• Avoid all contact with fauna and threatened flora.<br>• Avoid parking or storing construction materials and fuel under trees where practical. | • Water Resources Act 1991<br>• Environmental Protection Act 1990<br>• Pollution Prevention and Control Act 1999 | Low |

Template created and distributed by Sustainable Leather Foundation C.i.c.
Dated 12th December 2022 Version 3.0

- **A register of how a facility interacts with the environmental, social, business communities is analysed – aspects**
- **The aspects are then evaluated to see if they positively or negatively impact those communities**
- **Also known as a risk assessment**

# EM2. Systems and Analysis

**The information obtained from an environmental impacts and aspects register is translated into a environmental management system:**



Sustainable Leather Foundation
Industry Led – Consumer Focused

FSE2.1
Date: 1.11.22

test

**Sustainable Leather Foundation**
**Standard for Environmental Management System**

**Reference:** FSE2.1
**Authored by:** K Kutskill
**Peer Reviewed by:** XXX
**Accredited by:** XXX

**Original Creation Date:** 1 Nov 2022
**Peer Reviewed Date:** XXX 2021
**Last Review Date:** XXX
**Next Review Date:** Nov 2023

**FSE2 ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) STANDARD AND BENCHMARK**

**Summary:** The SLF environmental management system (EMS) standard provides the context, definitions, and methodology around EMS in the leather industry. This document gives the facility under audit the principles and general expectations, but it is not exhaustive and recognises that there will be differences within regions for national and local laws.

Where there are matters of interpretation in relation to the standard, applicable laws or organisational norms, the auditor will assess in favour of the employees in that facility.

- Scope
- Policy
- Objectives
- Procedures to meet those Objectives
- Footprint (Life Cycle Analysis and Mass Balance)
- Monitoring
- Review
- Continuous Improvement

# EM2. PDCA Model

| Plan | Do | Check | Act |
| --- | --- | --- | --- |
| • Establish environmental objectives and processes necessary to deliver results in line with the Aspects and Impacts (risk assessment) | • Implement the processes outlined in the plan<br>• Allocate adequate resources and manpower | • Monitor and measure the results of the processes against the plan<br>• Include commitments, objectives, operating criteria<br>• Report the results | • Take action according to the results in order to continually improve<br>• Re-evaluate the plan and continue the cycle |

# EM3. Environmental - Health & Safety

- **All three pillars must be concerned about H&S**
  - **Environmental (external) protection**
  - **Worker (personal) protection**
  - **Governance system and infrastructure**
- **Management system**
- **ISO 45001 or OSHA 18001**

- Noise Levels
- Odour Controls
- Pollution to waterways
- Air Pollution
- Hydrogen Sulphide Gas

# Exercise

*What do you consider to be the priority environmental risks in your facility?*

*What do you consider to be:*

1. *the easy to implement changes that could have immediate benefits?*
2. *the medium term changes that require a little time to implement?*
3. *the long term changes that require strategic planning?*

# EM4 Environmental Footprint

## What is an LCA and a Carbon Footprint

LCA is defined by the ISO 14040 as:
**the compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle.**

A carbon footprint is **the total amount of greenhouse gases (including carbon dioxide and methane) that are generated by our actions.**

It is important to note that carbon footprint is only one of many aspects to consider in a lifecycle analysis

# EM4 Environmental Footprint

## 3 Scopes of Carbon Emissions

# What do the different emissions scopes mean?

Scope 1 emissions – direct emissions from sources owned or controlled by a company.

Scope 2 emissions – indirect emissions from purchased electricity, steam, heat, and cooling.

Scope 3 emissions – all other emissions associated with a company's activities.

# EM4 Environmental Footprint

## Key Components of a Lifecycle Analysis

There are six major components to understand prior to initiating an LCA:

- 1. Scope of Environmental Footprint / LCA
- 2. Functional Unit
- 3. System Boundary
- 4. Allocation
- 5. Life Cycle Inventory
- 6. Life Cycle Impact Assessment

Each of these components are critical to researching, prior to collection of data or hiring of a third party. While there are many more variables to consider when evaluating an LCA, understanding these six will provide a solid baseline for beginners.

# EM4 Environmental Footprint

## Where to start?

Before committing to a significant financial investment – LCAs can run to tens of thousands of pounds – start with basic knowledge and understanding.

1. Allocate internal resource – someone to take responsibility for researching the subject inhouse.
2. Study the existing ISO standards for Life Cycle Analysis (ISO14040 and 14044)
3. Consider one principal product line to focus on to start more in-depth analysis
4. Start collecting all the facility data associated with that product. Even if the scope, system boundaries, etc, are not finalised, all the data collected and organised for energy use, water use, chemical use, waste management and air emissions will be an excellent place to startCollect your data

# EM5. Environmental Input:  Land Use

- Do you record and can you verify your land and its boundaries?
  - Deforestation
  - Displacement of indigenous people
  - Green v developed areas
  - Drainage, soil contamination

# EM6. Environmental Input: Energy Consumption

| EM6. Energy Consumption Table | | | | |
|---|---|---|---|---|
| Month | Electricity Consumption | Natural Gas Consumption | Diesel Consumption | Total Production Output |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| Annual Total | | | | |
| Unit | | | | $m^2$ leather |

*Please reference the SLF environmental metrics calc-conv excel for tables with calculations and conversions available.*

- Do you measure and record energy input and consumption?
- Do you utilise renewal energy sources?
- Do you look for efficiencies in consumption?

# EM6. Environmental Input: Energy Consumption

**Annex A**

| | kWh/kg | MJ/kg |
|---|---|---|
| Buffing dust (chrome) | 4.69 | 16.9 |
| Butane | 12.58 | 45.3 |
| Charcoal | 8.22 | 29.6 |
| Coke | 7.22 | 26 |
| Crude oil | 11.67 | 42 |
| Diesel | 11.67 | 42 |
| Ethane | 13.28 | 47.8 |
| Fleshings (dried) | 2.47 | 8.9 |
| Hard black coal (Australia and Canada) | 6.64 | 23.9 |
| Hard black coal (IEA) | 6.94 | 25 |
| Hydrogen ($H_2$) | 33.30 | 120 |
| Kerosene | 11.94 | 43 |
| Landfill gas (biogas) | 17.70 | 63.72 |
| Leather trimmings | 5.47 | 19.7 |
| Lignite/brown coal (Australia) | 4.83 | 17.4 |
| Lignite/brown coal (IEA) | 2.78 | 10 |
| Liquefied petroleum gas (LPG) | 12.78 | 46 |
| Methane ($CH_4$) | 13.90 | 50 |
| Methanol ($CH_3OH$) | 6.31 | 22.7 |
| Natural gas (methane and higher alkanes) | 11.67 | 42 |
| Pentane | 12.60 | 45.36 |
| Peat | 4.72 | 17 |
| Petroleum coke | 8.69 | 31.3 |
| Propane | 12.88 | 46.4 |
| Petrol/Gasoline | 12.22 | 44 |
| Rendered oil (methyl ester) | 10.50 | 37.8 |
| Shaving dust (chrome) | 1.83 | 6.6 |
| Soft bituminous coal (Australia and Canada) | 4.83 | 17.4 |
| Soft bituminous coal (IEA) | 5.00 | 18 |
| Steam | 0.63 | 2.3 |
| Sub-bituminous coal | 6.78 | 24.4 |
| Tannery mixed waste | 3.33 | 12.0 |
| Wood (dry) | 4.44 | 16 |

Engineering ToolBox, (2003). *Fuels - Higher and Lower Calorific Values*. [online] Available at: https://www.engineeringtoolbox.com/fuels-higher-calorific-values-d_169.html [Accessed 12/11/2020].

## 3. Terms and definitions

3.1 **Btu – British Thermal Unit**

3.2 **Calorie (Cal)** - the energy needed to raise the temperature of 1 gram of water through 1 °C (now usually defined as 4.1868 joules)

3.3 **Joule** – the SI unit of work or energy, equal to the work done by a force of one newton when its point of application moves one metre in the direction of action of the force, equivalent to one 3600th of a watt-hour.

3.4 **Tce** – tonne of coal equivalent

3.5 **Toe** – tonne of oil equivalent

3.6 **Watt hour (Wh) -** the SLF will use the Wh hours unit of measurement as the standard unit of measurement (as is also used by the International Energy Agency, IEA), with the kilowatt hour, with the megawatt hour and gigawatt hour when necessary.

3.7 **Renewable energy** - sources of energy (wind power, solar power, hydroelectric power, ocean energy, geothermal energy, biomass, and biofuels) are alternatives to fossil fuels that contribute to reducing greenhouse gas emissions, diversifying energy supply, and reducing dependence on unreliable and volatile fossil fuel markets, in particular oil and gas.

[1] https://www.iso.org/standard/51297.html

[2] https://www.legislation.gov.uk/eudr/2009/28/contents#





Standard and Benchmark for guidance

# EM7. Environmental Input: Water Use

| EM7. Water Consumption Table | | |
|---|---|---|
| Month | Water Consumption | Total Production Output |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| Annual Total | | |
| Unit | | $m^2$ leather |

*Please reference the SLF environmental metrics calc-conv excel for tables with calculations and conversions available.*

- Do you measure and record water input and use?
- Do you recycle or use minimisation techniques?
- Do you perform a mass balance?

# EM7. Environmental Input: Water Use

Sustainable Leather Foundation
Industry Led – Consumer Focused

FSE7.1
Date: 1.11.21

**Annex A**

| Unit | Conversion |
|---|---|
| 1 Gigalitre (GL) | $1.0 \times 10^9$ L |
| 1 Megalitre (ML) | $1.0 \times 10^6$ L |
| 1 Kilolitre (kL) | $1.0 \times 10^3$ L |
| 1 L | 1 $dm^3$ |
| 1000 L | 1 $m^3$ |

## Standard and Benchmark for guidance

**6. Calculation of water use**

| Parameter | Use (ML) |
|---|---|
| Supplied and metered water (municipal or other provider) | |
| Metered blue water (river, lake, reservoir, desalination) | |
| Metered ground extraction | |
| Tankered water (transported water) | |
| **SUBTOTAL** | |
| Less renewable green water (precipitation, recovery) | |
| **SUBTOTAL** | |
| Total annual amount of leather produced | |
| **Facility energy consumption per square meter of leather produced ($L/m^2$):** | |

- 3 -


www.sustainableleatherfoundation.com

# EM8. Environmental Input: Raw Materials and Chemicals

Control the flow, quantity, and turnover of incoming materials to the facility, reducing waste and ensuring safe and proper use

Monitor the designation and movement of incoming materials to ensure appropriate stock and on-time-delivery is maintained

Track usage over-time to identify critical products (and associated characteristics) requiring surrogate or back-up materials

Allow for trend analyses to be completed for evaluation of annual budget, waste minimisation and product development strategy

- Do you monitor and record input material?
  - Inventory
  - System control
  - Minimisation

# EM9. Environmental Input: Equipment & Machinery

- Level of thermal insulation
- Condition of electrical wiring
- Energy use – energy saving lighting, auto switches
- Boiler efficiency
- Energy recovery / co-generation

- Do you implement energy efficiency audits on equipment and machinery?
- Is there a plan for maintenance and renewal?


# Break

20 minutes

**INDUSTRY LED – CONSUMER FOCUSED –
TRANSPARENCY YOU CAN SEE**

**WWW.SUSTAINABLELEATHERFOUNDATION.COM**

# Agenda Day 1

| | |
|---|---|
| 10.00 am | Introductions |
| 10.05 am | What is sustainability and unpacking ESG |
| 10.45 am | Why is ESG important:  incoming regulation |
| *11.15 am* | *Break* |
| 11.40 am | Understanding the US Raw Hide export market |
| 12.10 pm | Introduction to the Sustainable Leather Foundation |
| *12.30 pm* | *Lunch* |
| | |
| 14.00 pm | Best use of leather technology and chemistry |
| 14.45 pm | Environmental Module: key requirements and expectations |
| *15.30 pm* | *Break* |
| 15.50 pm | Environmental Module continues |
| *17.30 pm* | *Open discussion and end of day 1* |

“let’s be the change that secures the future”

# Session 2, Part 2: Environmental Module

# EM10. Environmental Output: Air Pollution

- Do you monitor and record air outputs (with emissions) as an inventory?
- Do you practice any minimisation or reclamation?

| EM10: Air Emissions Table | | | | | | |
|---|---|---|---|---|---|---|
| **Air Emission Source*** | **Particulates** (ppm, ppb, or mg/Nm$^3$ where appropriate) Reference FSE10.1 for Benchmarks | | | | | |
| | **Oxides of Sulfur ($SO_x$)** | **Carbon Dioxide ($CO_2$)** | **Carbon Monoxide (CO)** | **Nitric Oxide (NO)** | **Oxides of Nitrogen ($NO_x$)** | **Oxygen ($O_2$)** |
| Regulatory Limit | | | | | | |
| Air Emission Source 1 | | | | | | |
| Air Emission Source 2 | | | | | | |
| Air Emission Source 3 | | | | | | |
| Air Emission Source 4 | | | | | | |
| Air Emission Source 5 | | | | | | |
| Name of Regulation Referenced | | | | | | |

**Please define the air emissions source* (Generator, Boiler, Stack, etc). *If greater than 5 air emission sources, please add rows or reference the SLF environmental metrics calc-conv excel for expanded charts.*

# EM10. Environmental Output: Air Pollution

- Baseline – meeting and legislative requirements
- Banding for additional good practice

*Table 1. Air emission benchmarks for facilities.*

| CAS # | Substance | Limit | | | |
|---|---|---|---|---|---|
| | | A | B | C | D |
| Low short term exposure limit (STEL) gases | | | | | |
| 7783-06-4 | Hydrogen sulfide | 10 ppm | 20 ppm | 90 ppm* 2 ppm/hr by badge | NM = Failure |
| 7664-41-7 | Ammonia | 10 ppm | 25 ppm | 300 ppm* | NM = failure |
| 10049-04-4 | Chlorine dioxide | 0.1 ppm | 0.3 ppm | 5 ppm* | NM = failure |
| 75-09-2 | Dichloromethane | 25 ppm | 125 ppm | 2300 ppm* | NM = failure |
| Higher short term exposure limit (STEL) gases/particles | | | | | |
| - | $PM_{10}$ | 20 mg/Nm³ | 50 mg/Nm³ | 500 mg/Nm³ | NM |
| - | $PM_{2.5}$ | 10 mg/Nm³ | 25 mg/Nm³ | 250 mg/Nm³ | NM |
| - | NOx | 40 mg/Nm³ | 150 mg/Nm³ | 450 mg/Nm³ | NM |
| - | SOx | 100 mg/Nm³ | 300 mg/Nm³ | 400 mg/Nm³ | NM |
| - | Total Volatile Organic Compounds (by meter) | 0.3 mg/Nm³ | 0.5 mg/Nm³ | 10 mg/Nm³ | NM |
| 71-42-2 | Benzene | 100 ppb | 0.5 ppm | 2 ppm | NM |
| 111-96-6 | Bis(2-methoxyethylether) | 1 ppm | 5 ppm | 10 ppm | NM |
| 108-39-4 | m-cresol | 10 mg/Nm³ | 20 mg/Nm³ | 50 mg/Nm³ | NM |
| 95-48-7 | o-cresol | 10 mg/Nm³ | 20 mg/Nm³ | 50 mg/Nm³ | NM |
| 106-44-5 | p-cresol | 10 mg/Nm³ | 20 mg/Nm³ | 50 mg/Nm³ | NM |
| 95-50-1 | 1,2-dichlorobenzene (1,2-DCB) | 10 ppm | 20 ppm | 50 ppm | NM |
| 107-06-2 | 1,2-dichloroethane | 2 ppm | 10 ppm | 30 ppm | NM |
| 110-80-5 | 2-ethoxyethanol | 0.5 ppm | 2 ppm | 5 ppm | NM |
| 111-80-5 | 2-ethoxyethyl acetate | 0.5 ppm | 2 ppm | 5 ppm | NM |
| 110-71-4 | Ethylene glycol dimethyl ether | 1 ppm | 5 ppm | 10 ppm | NM |
| 109-86-4 | 2-methoxyethanol | 10 ppb | 0.1 ppm | 2 ppm | NM |
| 110-49-6 | 2-methoxyethylacetate | 10 ppb | 0.1 ppm | 2 ppm | NM |
| 75-09-2 | Methylene chloride | 20 ppm | 50 ppm | 100 ppm | NM |
| - | Polychlorinated dibenzodioxins (PCDD) | 0.05 pg/m³ | 0.1 pg/m³ | 0.4 pg/m³ | NM |
| - | Polychlorinated dibenzofurans (PCDF) | 0.05 pg/m³ | 0.1 pg/m³ | 0.4 pg/m³ | NM |
| 79-01-6 | Trichloroethylene | 1 ppm | 10 ppm | 30 ppm | NM |
| 112-49-2 | Triethylene glycol dimethyl ether | 1 ppm | 5 ppm | 10 ppm | NM |
| 127-18-4 | Tetrachloroethylene | 10 ppm | 20 ppm | 50 ppm | NM |
| 1330-20-7 | Xylene | 20 ppm | 50 ppm | 100 ppm | NM |

* Levels equal to or higher; NM = not measured yet

# EM11. Environmental Output: Effluent

| EM11: Effluent Outputs Table | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Production Effluent Emissions Source* | Particulates (ppm) Reference FSE11.1 for Benchmarks; Pg. 5 | | | | | | | | | | | |
| | Acidity (pH) | Temp (C°) | COD | TKN | $NH_3$-N | Total Cr | Total Cr VI | $S^{2-}$ | Oil and Grease | Susp. Solids | Total Diss. Solids | Colour (ADMI) |
| Regulatory Limit | | | | | | | | | | | | |
| Effluent Source 1 | | | | | | | | | | | | |
| Effluent Source 2 | | | | | | | | | | | | |
| Effluent Source 3 | | | | | | | | | | | | |
| Effluent Source 4 | | | | | | | | | | | | |
| Effluent Source 5 | | | | | | | | | | | | |
| Name of Regulation Referenced | | | | | | | | | | | | |

**Please define if CETP, METP, or own ETP. If greater than 5 effluent sources, please add rows or reference the SLF environmental metrics calc-conv excel for expanded charts.*

*COD = Chemical Oxygen Demand; TKN = Total Nitrogen; $NH_3$-N = Ammoniacal Nitrogen; Cr = Chromium; Cr VI = Chromium VI; $S^{2-}$ = Sulfide; Susp. = Suspended; Diss. = Dissolved*

- Do you monitor and record your production related output water?
- Do you test your output parameters?

# EM11. Environmental Output: Effluent

*Table 1. Water emission benchmarks for facilities (adapted from Buljan and Král, 2019).*

| Substance | Limit | | | |
|---|---|---|---|---|
| pH | 5-9 | | | |
| Temperature | No more than 15°C above the receiving water temperature | | | |
| | A | B | C | D |
| Chemical Oxygen Demand, COD (ppm) | 40 | 300 | 500 | NM |
| Total Nitrogen, TKN (ppm) | 5 | 50 | 100 | NM |
| Ammoniacal Nitrogen, $NH_3$-N (ppm) | 0.5 | 30 | 50 | NM |
| Total Chromium (ppm) | 0.05 | 1.2 | 2 | NM |
| - Chromium VI (ppm) | 0.001 | 0.01 | 0.02 | NM |
| Sulfide, $S^{2-}$ (ppm) | 0.1 | 3 | 5 | NM |
| Oil and Grease (ppm) | 0.5 | 50 | 100 | NM |
| Suspended Solids (ppm) | 5 | 50 | 100 | NM |
| Total Dissolved Solids (ppm) | 500 | 1000 | 2000 | NM |
| Colour (ADMI) | 50 | 175 | 300 | NM |

NM = not measured yet

- Baseline – meeting and legislative requirements
- Banding for additional good practice

# EM12. Environmental Output: Soil Contamination

- Do you monitor and record outputs to the soil?
  - Chemical and other pollutant spills
  - Chrome shavings
  - Contaminated waste

- Do you have storage with bunded flooring and run off drainage channels?

# EM13. Environmental Output: Solid Waste

- Do you monitor and record solid waste outputs?
  - Safe storage
  - External collectors that are regulated / verified

- Do you have tests / checks for sludge content?

- Do you a reduce / re-use / recycling policy?

# Open discussion

# Agenda Day 1

| | |
|---|---|
| 10.00 am | Introductions |
| 10.05 am | What is sustainability and unpacking ESG |
| 10.45 am | Why is ESG important:  incoming regulation |
| *11.15 am* | *Break* |
| 11.40 am | Understanding the US Raw Hide export market |
| 12.10 pm | Introduction to the Sustainable Leather Foundation |
| *12.30 pm* | *Lunch* |
| | |
| 14.00 pm | Best use of leather technology and chemistry |
| 14.45 pm | Environmental Module: key requirements and expectations |
| *15.30 pm* | *Break* |
| 15.50 pm | Environmental Module continues |
| *17.30 pm* | *Open discussion and end of day 1* |