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A GAP ANALYSIS of Existing Environmental Policies and Regulations Pertaining to the Leather Sector

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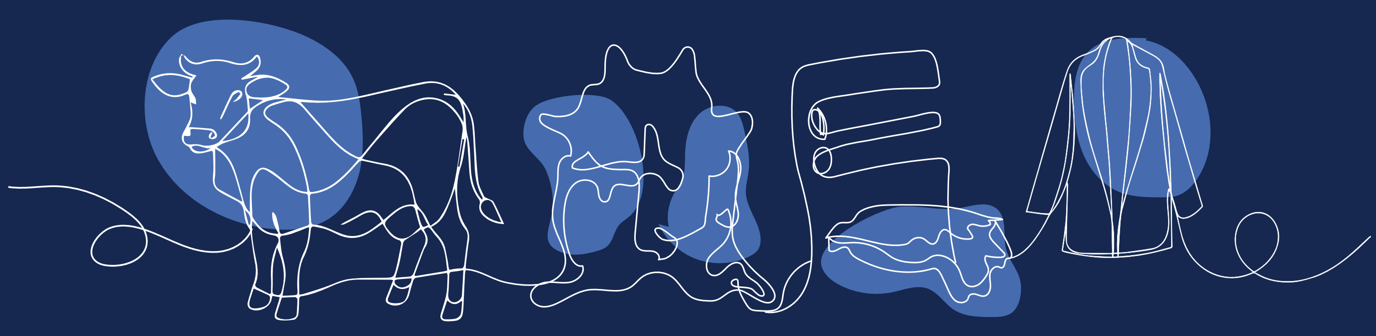

Executive Summary

Leather is one of the major pillars of Pakistan's economy, standing as the third-largest export sector and contributing approximately four per cent to the national GDP. While leather production utilizes hides and skins (a byproduct of the meat industry), it is not immune to environmental and social risks including water pollution, chemical use, solid waste generation, and occupational health risks. Moreover, increasing consumer awareness and demand for sustainable products along with global requirements and emerging regulatory pressures highlight the need for a robust environmental compliance and governance framework within the leather industry.

This document presents a brief review of Pakistan's industrial environmental policy landscape, focusing on the leather sector. The analysis examines the extent to which current regulatory frameworks directly or indirectly address environmental risks associated with leather manufacturing and identifies gaps that may hinder effective environmental governance.

The review finds that while Pakistan has a range of environmental and industrial policies, most frameworks address industrial pollution broadly without sector-specific provisions for the leather industry. The report identifies fragmentation across regulatory instruments, limited institutional coordination, and implementation challenges as key barriers to effective environmental governance of the leather sector. These findings highlight the need for improved regulatory alignment and sector-specific policy integration to support sustainable industrial development.

This gap analysis aims to support policymakers, regulators, and stakeholders in understanding the current regulatory landscape and identifying opportunities for strengthening environmental governance of Pakistan's leather sector.

Introduction

The industrial sector in Pakistan plays a vital role in economic growth, employment generation, and export earnings. Among sub-sectors, the leather industry holds strategic importance due to its significant contribution to exports, value addition, and linkages with global markets. Pakistan is among the leading producers of leather and leather goods, including garments, footwear, gloves, and accessories. In 2024, Pakistan exported $689M of Leather Apparel, making it the 4th largest exporter of Leather Apparel (out of 208) in the world. During the same year, Leather Apparel were the 10th most exported product (out of 1,124) in Pakistan. The main destinations of Pakistan's Leather Apparel exports were United States ($157M), Germany ($92.9M), Poland ($44.6M), Canada ($36.9M), and the United Kingdom ($29.3M)[1].

Despite capitalizing on the meat industry for raw material in Pakistan, leather processing is resource-intensive and environmentally sensitive. Tanning and finishing processes require significant water use and involve chemicals such as salts, dyes, and solvents. These processes generate wastewater, sludge, and solid waste, which can pose environmental and health risks if not properly managed. Major leather clusters exist in cities such as Karachi, Lahore, Sialkot, and Kasur. Despite its economic importance, the sector faces environmental compliance challenges due to outdated technologies, limited regulatory enforcement, and lack of sector-specific policy guidance.

[1] *Observatory of Economic Complexity. (n.d.). Leather apparel exports from Pakistan. OEC. https://oec.world/en/profile/bilateral-product/leather-apparel/reporter/pak*

In recent times, international market requirements and sustainability standards have increased pressure on leather manufacturers to improve environmental compliance. Buyers and regulatory frameworks in export markets increasingly require traceability and improved compliance to environmental standards. This evolving context highlights the importance of strengthening environmental governance in Pakistan's leather sector.

Objectives

The objectives of this report are to:

1. Review existing policies and regulations relevant to the leather sector
2. Assess the extent of policy coverage for environmental issues in leather manufacturing
3. Identify gaps in regulatory frameworks
4. Highlight cross-cutting challenges in environmental governance

Analytical Framework for Gap Assessment

This gap analysis applies a five-dimensional framework to systematically assess policy adequacy:

Legal Gaps:
Absence of sector-specific laws/regulations

Regulatory Gaps:
Weak/insufficient standards and provisions

Institutional Gaps:
Fragmentation and coordination failures

Implementation Gaps:
Weak enforcement, monitoring, compliance

Market Alignment Gaps:
Misalignment with global ESG and trade requirements

Each policy instrument is assessed across these dimensions.

Review of Policy and Regulatory Instruments Relevant to the Leather Sector

This section reviews key national policies, legal frameworks, and regulatory instruments relevant to Pakistan's industrial sector and assesses their relevance to the leather industry. The review focuses on identifying sector-specific integration, gaps, and regulatory limitations. See table 1 for summary table on existing policies and table 2 for gap matrix with severity and impact.

- **Pakistan Environmental Protection Act, 1997**

  The Pakistan Environmental Protection Act (PEPA), 1997 provides the overarching legal framework for environmental governance in Pakistan. It regulates industrial pollution, hazardous substances, and environmental quality standards applicable to industrial operations including leather manufacturing.

  While the Act provides a strong legal basis for regulating pollution, it remains sector neutral. The Act primarily focuses on end-of-pipe pollution control rather than preventive approaches such as cleaner production, traceability, or circularity.

- **Provincial Environmental Quality Standards (PEQS)**

  The PEQS provide measurable pollutant limits including chromium, sulphides, biological oxygen demand (BOD), and chemical oxygen demand (COD), which are directly relevant to tannery effluent.

  The standards regulate final effluent quality but do not address process-level improvements, cleaner production, or sector-specific waste streams. The PEQS therefore provide direct but limited sector integration.

- **Hazardous Substances Rules, 2003**

  These rules regulate hazardous chemical handling, storage, and disposal. They are relevant to leather processing due to use of chromium salts, acids, solvents, dyes, and finishing chemicals. However, the rules are sector-neutral and do not provide leather-specific guidance for chemical management in tanning operations.

- **Punjab Water Act, 2019**

  The Punjab Water Act establishes a legal framework for water resource management including groundwater regulation and water quality protection. The leather sector is indirectly relevant due to high water consumption and wastewater generation. The Act does not specifically address the leather or tannery sector, nor does it acknowledge industries with high water consumption and pollution loads. It focuses primarily on water supply services and regulation of water utilities, rather than industrial wastewater generation or treatment. As a result, it does not provide sector-specific provisions for managing tannery effluents, hazardous tanning chemicals, water recycling, or pollution reduction technologies, and offers limited guidance on integrating industrial water users into water governance mechanisms.

- **National Water Policy, 2018**

  The National Water Policy promotes integrated water resource management and sustainable water allocation. While relevant to leather due to water-intensive operations, the policy does not provide sector-specific guidance for industrial wastewater management.

- **National Policy on Solid Waste Management, 2020**

  The policy highlights Pakistan's solid waste management challenges and promotes improved disposal systems. However, it primarily focuses on municipal waste and does not adequately address industrial waste streams such as tannery sludge and chrome-containing waste. This represents a significant gap for leather sector waste management.

- **National Climate Change Policy, 2021**

  The policy promotes climate resilience and sustainable industrial development. The policy remains strategic and sector neutral.

- **Pakistan Climate Change Act, 2017**

  The Act establishes climate governance institutions and strategic direction. However, sector-specific compliance pathways remain absent. Circularity is implied through sustainability language but not structured.

- **National Biodiversity Strategy and Action Plan (2017-2030)**

  The strategy focuses on ecosystem conservation and biodiversity protection. Industrial sectors such as leather are not explicitly addressed, despite pollution risks affecting ecosystems.

- **Punjab Protected Areas Act, 2020**

  The Act provides legal protection for wetlands and ecosystems. Industrial pollution including tannery effluent may indirectly fall within regulatory scope.

- **National Industrial Policy (Draft), 2021**

  The draft policy promotes industrial growth and manufacturing competitiveness. However, leather-specific environmental challenges are not addressed.

- **Trade-Related Investment Policy Framework (2015-2023)**

  This framework promotes export-oriented manufacturing including leather. However, environmental compliance requirements are not integrated.

- **Factories Act, 1934; Punjab Occupational Safety and Health Act, 2019; Sindh Occupational Safety and Health Act, 2017; Pakistan Labour Policy, 2010; Employment of Children Act, 1991**

  This framework promotes export-oriented manufacturing including leather. However, environmental compliance requirements are not integrated.

- **Pakistan SDGs National Framework 2018**

  These frameworks promote sustainable industrialisation and responsible production. However, they remain broad and sector neutral.

- **Pakistan's Leather and Leather Goods Export Strategy (2023–2027)**

  This strategy, developed under the Strategic Trade Policy Framework and supported by TDAP, reflects a growing recognition of sustainability and ESG considerations within the leather sector. The strategy explicitly highlights the need to transition towards environmentally sustainable production practices, improved resource efficiency, enhanced traceability, and compliance with international environmental and social standards. It acknowledges that global markets, particularly in developed economies, are increasingly demanding environmentally responsible production, transparency across supply chains, and adherence to sustainability standards.

The strategy acknowledges the environmental challenges within Pakistan's leather sector, including wastewater discharge, solid waste management, air emissions, and chemical use in tanning processes. It also highlights the need for improved effluent treatment infrastructure, adoption of cleaner production technologies, and enhanced certification and compliance with international sustainability frameworks.

While these elements demonstrate a strong ESG orientation within export promotion planning, the strategy primarily functions as a trade and competitiveness roadmap rather than a regulatory instrument. As a result, many of the proposed sustainability improvements rely on voluntary adoption, donor-supported initiatives, or industry-driven changes rather than enforceable regulatory mechanisms. Furthermore, there is limited formal integration between export promotion strategies and environmental regulatory frameworks administered by federal and provincial environmental protection agencies.

This disconnect highlights a broader policy gap. While export-oriented strategies are increasingly emphasizing sustainability and ESG compliance, regulatory frameworks governing the leather sector have not evolved at the same pace to support or enforce these transitions. The absence of regulatory incentives, compliance-linked mechanisms, and coordinated institutional frameworks limits the ability of the leather sector to systematically transition toward environmentally sustainable production.

Therefore, there is a growing need for stronger alignment between trade promotion strategies and environmental regulatory frameworks. Enhanced regulatory support through updated environmental standards, enforcement mechanisms, and compliance incentives would help translate ESG ambitions into sector-wide transformation. Such alignment would not only strengthen environmental performance but also support long-term competitiveness and resilience of Pakistan's leather sector in increasingly sustainability-driven global markets.

Table 1: Existing Environmental Policies and Regulations in Pakistan and their Relevance to the Leather Sector

Policy / Regulation	Year	Relevance to Leather Sector	Type of Coverage
Factories Act	1934	Industrial safety	Indirect
Employment of Children Act	1991	Labour compliance	Indirect
Pakistan Environmental Protection Act	1997	Industrial pollution control	Direct
National Environmental Quality Standards (NEQS)	2000	Effluent and emissions control	Direct
Hazardous Substances Rules	2003	Chemical handling	Partial
Pakistan Labour Policy	2010	Labour protection	Indirect
National Climate Change Policy	2012	Industrial sustainability	Indirect
Pakistan Climate Change Act	2017	Climate governance	Indirect
Sindh Occupational Safety and Health Act	2017	Worker safety	Indirect
National Biodiversity Strategy and Action Plan	2017	Ecosystem protection	Indirect
National Water Policy	2018	Water use and wastewater	Indirect
Pakistan SDGs National Framework	2018	Sustainable production	Indirect
Punjab Water Act	2019	Water regulation	Indirect
Punjab Occupational Safety and Health Act	2019	Worker safety	Indirect
National Policy on Solid Waste Management	2020	Waste management	Partial
Punjab Protected Areas Act	2020	Environmental protection	Indirect
National Industrial Policy (Draft)	2021	Industrial development	Partial

Table 2 Gap Matrix with Severity & Impact[2]

Policy Area	Gap Description	Severity Score	Severity Level	Impact Score	Impact Level	Key Justification
Environmental regulation (PEPA, NEQS)	No leather-specific regulatory framework	4.3	High	4.5	High	Entire sector governed by generic laws
Environmental regulation	End-of-pipe focus, no cleaner production	3.8	High	4.5	High	Pollution not addressed at source
Environmental regulation	Weak enforcement by EPAs	3.5	High	4.8	High	Compliance gaps lead to major environmental damage
Water governance	No industrial water reuse/recycling mandates	4.3	High	4.8	High	High water use and groundwater stress
Water governance	No integration of industrial users in water policy	3.3	High	3.8	High	Industrial demand not managed
Chemical management	No leather-specific chemical restrictions	4.8	High	5.0	High	Hazardous chemicals (e.g., chromium) unmanaged
Waste management	No regulation for tannery sludge & hazardous waste	4.5	High	5.0	High	High contamination risks
Air emissions	Weak monitoring of VOCs and emissions	3.0	Medium	3.5	High	Health risks are present but less regulated
Industrial policy	No environmental compliance conditions	4.0	High	4.5	High	Growth prioritized over sustainability
Trade policy	No mandatory ESG or traceability requirements	5.0	High	5.0	High	Export market risks (EU compliance)
Institutional framework	Fragmented governance across agencies	4.0	High	4.3	High	Weak coordination

[2] *The gap assessment applies a structured multi-criteria framework to evaluate each issue across two dimensions: severity (adequacy of the policy/regulatory framework) and impact (the consequence of the gap on environmental performance and sector competitiveness). Each dimension was assessed using four criteria (for severity: existence, specificity, coverage, and global alignment; for impact: environmental risk, economic risk, scale and reversibility), scored on a scale of 1 to 5. Composite scores were calculated as averages and then categorized into Low, Medium, and High levels for clarity and policy relevance.*

Key Observations from Policy Mapping

- **Absence of sector-specific policy**
  None of the reviewed policies are specifically designed for the leather sector. Regulatory coverage is largely generic.

- **Overreliance on end-of-pipe regulation**
  Most policies emphasise pollution limits rather than preventive approaches such as cleaner production and circularity.

- **Fragmented governance**
  Multiple institutions regulate different aspects of leather manufacturing without coordinated oversight.

- **Weak integration of environmental compliance in industrial policies**
  Industrial development policies promote growth but do not embed environmental compliance requirements

- **Emerging international compliance pressure**
  Global market requirements such as traceability and sustainable sourcing are not reflected in current regulatory frameworks.

- **Gender equality and social inclusion**
  No policy is addressing gender equality and social inclusion within the sector. Women are largely excluded from formal leather workforce, informal workers exposed to hazardous chemicals, and no gender-responsive labour or environmental safeguards are in place.

Root Cause Analysis

Institutional Fragmentation
- Federal vs provincial disconnect
- No lead authority for leather sector governance

Capacity Constraints
- Under-resourced EPAs
- Limited technical expertise in cleaner production

Policy Silos
- Trade, environment, and industry operate independently

Economic Disincentives
- Compliance increases cost without market reward (locally)
- SMEs lack access to finance for upgrades cleaner production

Emerging Policy Priorities: Cleaner Production, Circularity and Traceability in the Leather Sector

The policy review highlights that existing environmental frameworks governing Pakistan's leather sector largely rely on end-of-pipe pollution control mechanisms and lack emphasis on preventive environmental approaches. However, emerging global market trends and export competitiveness requirements increasingly prioritise cleaner production, circular economy approaches, and supply chain traceability.

These emerging priorities are particularly relevant to Pakistan's leather sector, which is highly export-oriented and therefore sensitive to international environmental compliance requirements.

- **Growing Importance of Traceability in the Leather Value Chain**

  Global leather markets are increasingly demanding transparency and traceability across the value chain. According to the Pakistan Leather and Leather Goods Export Strategy, consumers and international buyers increasingly demand information regarding product origin, environmental compliance, and supply chain transparency. This growing emphasis on traceability is driven by environmental, social, and animal welfare concerns across the global leather industry . The strategy further highlights that certification and traceability across the value chain are essential for improving competitiveness and strengthening compliance with environmental and social standards. Despite this growing importance, current policy frameworks in Pakistan do not include regulatory provisions promoting traceability in leather supply chains. This creates a significant gap between global market requirements and national regulatory frameworks.

- **Cleaner Production and Sustainable Manufacturing**

  Cleaner production approaches are increasingly recognised as essential for improving environmental performance in leather manufacturing. The Export Strategy emphasises the need for sustainable tanning methods, improved effluent treatment, and waste reduction to reduce environmental impact and enhance competitiveness. Similarly, the strategy identifies investment in advanced technologies that reduce water, energy, and chemical consumption as a key priority for the sector's sustainable development. However, existing environmental policies in Pakistan do not sufficiently promote cleaner production approaches for the leather sector. Regulatory frameworks remain focused on pollution limits rather than process-level improvements.

- **Circular Economy Opportunities in the Leather Sector**

  Leather processing generates significant by-products and waste streams. Circular economy approaches can convert these waste streams into value-added products, reducing environmental impact and improving resource efficiency. Global trends indicate increasing emphasis on energy efficiency, material efficiency, and reduction of hazardous substances in leather production processes. However, policy frameworks in Pakistan do not explicitly support circular economy approaches within the leather sector. There is limited regulatory encouragement for waste valorisation, resource recovery, and industrial symbiosis.

[3] *Trade Development Authority of Pakistan. (2022). Leather and leather goods export strategy. https://tdap.gov.pk/wp-content/uploads/2022/08/Leather-and-Leather-Goods-Export-Strategy-4_web.pdf*

- **Value Chain Integration and Competitiveness**
  The value chain analysis of Pakistan's leather sector[4] highlights the importance of strengthening competitiveness through technological upgrading, value addition, and improved environmental compliance. Global competitors such as China have strengthened their leather industries through technological innovation, environmental compliance, and integrated value chain development. This highlights the need for Pakistan to transition from reactive environmental compliance to proactive sustainable production models.

Implications for Policy Development

The analysis highlights three emerging policy priorities:

- **Cleaner production integration**
  Policies should promote preventive environmental approaches rather than end-of-pipe regulation.

- **Circular economy promotion**
  Regulatory frameworks should encourage waste valorisation and resource efficiency.

- **Traceability and supply chain transparency**
  Policy frameworks should integrate traceability mechanisms aligned with global market requirements.

  These emerging priorities provide a strong foundation for linking regulatory gap analysis with practical interventions.

Institutional Mapping

Actor	Role	Gap
EPAs	Regulation	Weak enforcement capacity
TDAP	Trade promotion	No environmental linkage
Industry Associations	Representation	Limited sustainability push
Local Governments	Infrastructure	Weak waste management systems

[4] *Trade Development Authority of Pakistan. (2021). Leather sector profile. https://tdap.gov.pk/wp-content/uploads/2022/01/2.4-Leather-Final.pdf*

Conclusion

This gap analysis highlights that while Pakistan has a broad range of environmental and industrial policy instruments, the regulatory framework governing the sector at large and the leather sub-sector remains fragmented, sector neutral, and largely focused on end-of-pipe pollution control. Existing policies provide partial coverage of environmental risks associated with leather manufacturing but lack sector-specific guidance for addressing wastewater management, chemical use, solid waste handling, and resource efficiency.

The review also demonstrates that emerging priorities such as cleaner production, circular economy approaches, and supply chain traceability are increasingly shaping global leather markets. Although these priorities are reflected in export promotion strategies, including the Pakistan Leather and Leather Goods Export Strategy (2023–2027), they are not yet embedded within Pakistan's environmental regulatory frameworks.

This disconnects between export competitiveness strategies and environmental regulation creates a critical policy gap. As international buyers and regulatory regimes increasingly require sustainable and traceable supply chains, the absence of coordinated regulatory support may limit the ability of Pakistan's leather sector to remain competitive in global markets.

Strengthening alignment between environmental regulations, industrial development policies, and export promotion strategies will be essential to support sustainable growth of Pakistan's leather sector. A more integrated regulatory approach would enable the transition from reactive compliance toward proactive environmental management, supporting both environmental sustainability and long-term sector competitiveness.

DISCLAIMER

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