



Tti Testing Laboratories

31 YEARS OF EXCELLENCE IN TIC INDUSTRY

ISO/IEC
17025
ACCREDITED

ISO/IEC
17020
ACCREDITED

ZDHC MRSL
V3.1
CERTIFIER



DIVISION 14 · TTI LABS SUSTAINABILITY CENTER

Sustainability services

Your partner in green transformation

Enabling organizations to integrate sustainability into business operations through data-driven insights.

Climate, Carbon & ESG Strategy

Responsible Supply Chain

Scientific & Environmental

111 786 001

www.ttilabs.net



Pakistan's most advanced sustainability solutions

End-to-end sustainability solutions, from emission quantification and circular material testing to ESG reporting and regulatory compliance.

The Tti Labs Sustainability Center exists to make meeting these requirements practical, affordable, and credible, backed by the same scientific rigour as the testing lab.



DIVISION 14 AT A GLANCE

Tti Magazine, chapter 08 · ttilabs.net/sustainability

12

SERVICE AREAS

8

AUDIT TYPES

10

REPORTING FRAMEWORKS

1.2.3

GHG INVENTORY SCOPES

T1-3

SUPPLIER MAPPING TIERS

2025

GHG/ESG FACILITY LAUNCHED

DIVISION 14 · SUSTAINABILITY SERVICES

Climate, carbon & ESG

✓ GHG Inventory Scope 1/2/3

✓ Net Zero (SBTi)

✓ Carbon Credit PDD & MRV

✓ GRI/CSRD Reporting

✓ Strategy Development

✓ LCA

Supply chain & compliance

✓ Supply Chain Mapping

✓ ZDHC Green Chemical Management

✓ Recycling (RCS/GRS)

✓ Waste Categorisation

✓ Baseline Assessments

Scientific & environmental

✓ Water Footprint

✓ Industrial Hygiene

✓ ETP

✓ Scrubbers

✓ Consultation

A PROJECT OF TTI TESTING LABORATORIES

The same scientific rigour as the testing lab



ISO/IEC 17025 accredited laboratory, PNAC LAB 022

✓ ZDHC MRSL V3.1 Certifier (Level 1 & 2)

✓ Punjab EPA-recognized laboratory, largest scope for environmental testing

✓ The Microfibre Consortium 2030 Commitment signatory



ISO/IEC 17020 accredited inspection body, PNAC IB-006

✓ ZDHC Approved Wastewater Lab, all 4 discharge categories incl. ZLD

✓ EPA-approved Emission Monitoring Truck

✓ OCA-recognized GM cotton screening

2023–25

Tti Sustainability Center started as a dedicated division

2025

Dedicated GHG/ESG reporting facility launched

1,500+

Global brands served

Why choose Tti Sustainability Center



Tailored solutions

Customized sustainability strategies aligned with client goals



Independent assurance

Verified, transparent, and globally credible data



Long-term support

Retainer-based partnerships for ongoing ESG requirements



Direct client handling

Seamless coordination across corporate and supply chain levels



Integrated expertise

One-stop partner offering testing with strategic consulting

8-POINT AUDIT PORTFOLIO

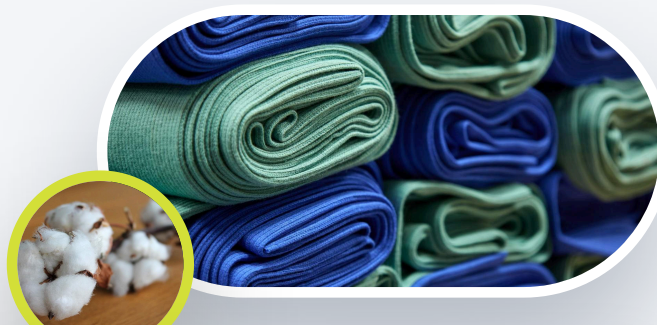
Eight audits, one partner

A garment exporter can have its factory audited for social compliance and receive a carbon footprint assessment, all from a single Tti Labs engagement.



Audit names and schemes: Tti Magazine, chapter 08. Colour families are a reading aid.

What each scheme covers



01

Environmental audit

ISO 14001:2026 · ISO.ORG

The internationally recognized standard for environmental management systems: a framework to design, implement and continually improve an EMS.

Tti

Environmental management system assessment

02

Higg FEM verification

HIGG FEM · CASCALE

Assesses the environmental impact of manufacturing at a facility, from energy and GHG to water, wastewater, air, waste and chemicals. A Cascale-approved verifier verifies the self-assessment.

Tti

Facility Environmental Module, 3rd-party verification

03

Circular economy audit

RCS & GRS · TEXTILE EXCHANGE

Criteria for third-party certification of recycled materials and chain of custody; the GRS adds a 50% minimum recycled content and social, environmental and chemical requirements.

Tti

Recycling, waste management, circular model

04

GHG inventory audit

ISO 14064-1:2018 · 14064-3:2019

Part 1: quantifying and reporting an organization's greenhouse gas emissions and removals. Part 3: verifying and validating GHG statements.

Tti

Greenhouse gas inventory verification

05

Carbon footprint assessment

GHG PROTOCOL · SCOPES

Scope 1: direct emissions from owned or controlled sources. Scope 2: purchased electricity consumed. Scope 3: emissions from sources the company does not own or control.

Tti

Full lifecycle carbon footprint calculation

06

Chemical management audit

ZDHC MRSL · ROADMAPTOZERO.COM

A chemical conforms to the ZDHC MRSL when it does not contain listed substances above the set limits. Using only conforming formulations reduces environmental impact.

Tti

Chemical inventories, MRSL adherence

07

Organic audit

GOTS · OEKO-TEX ORGANIC COTTON

GOTS covers every step from fibre processing to trading; its "organic" grade needs at least 95% certified organic fibres. OEKO-TEX ORGANIC COTTON verifies from farm to product.

Tti

Organic integrity verification for textiles

08

Social compliance audit

SA8000:2026 · SAI

A social certification standard with a management-systems approach: children and young workers, freedom of association, hours and wages, discrimination, health and safety.

Tti

Labour standards, health & safety, business ethics



Tti audits, assesses and reports what it finds. It is not the certification body for SA8000, GOTS, OEKO-TEX, GRS or ISO certificates: certificates sit with each scheme's owner and its accredited certification bodies.

GHG Scope 1, 2 & 3

SBTi FLAG & non-FLAG

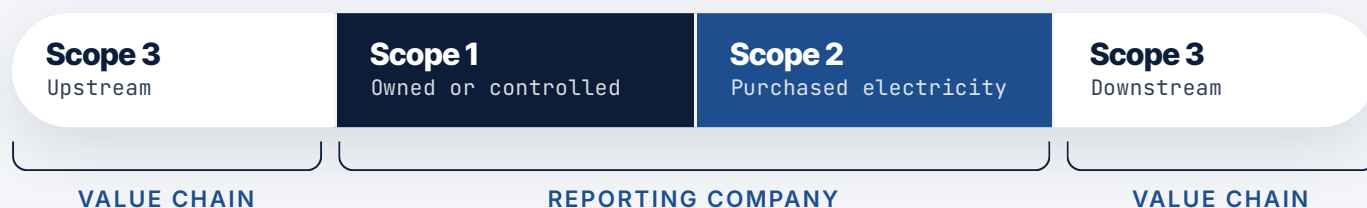
Paris Agreement Article 6

Climate & carbon accounting

Establish measurable baselines and pathways to Net Zero, a critical step toward climate leadership and compliance readiness.

Where emissions sit

GHG PROTOCOL CORPORATE STANDARD



Scope 3 emissions occur from sources not owned or controlled by the company, in its upstream and downstream activities. Illustration, not to scale.

GHG inventory management

ISO 14064

Scope 1, 2 & 3 inventory and audit

Net Zero strategy

SBTi

FLAG & non-FLAG target pathways

Carbon credits

UNFCCC Art. 6

Assessment, PDD & MRV, roadmaps

Carbon footprint

Scope 1/2/3

Hotspots & reduction guidance

Customized dashboards

Real-time data

Custom Scope 3 & GHG tools

MULTI-TIER SUPPLIER MAPPING & TRACEABILITY

From farm to finished product



01

Farm

Sustainable agriculture, aligned with EU and other organic regulations

GMO testing

Soil carbon check

Pesticide residues

OCA-recognized GM cotton screening



02

Fibre & materials

Organic and recycled claims, and the trail behind them

Organic audit · GOTS & OEKO-TEX

Recycling · RCS/GRS

Material & process traceability



03

Chemical inputs

What goes into the dye house

ZDHC MRSL V3.1 certification · L1 & 2

RSL/MRSL screening

Chemical management audits



04

Wet processing & effluent

What comes out of it

ZDHC Wastewater V2.2

Effluent & sludge analysis

ETP/CETP performance

ZLD verification



05

Factory & workforce

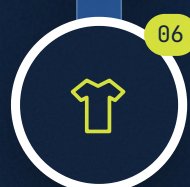
Systems, people and the workplace

Social compliance · SA8000

Environmental · ISO 14001

Higg FEM verification

Industrial hygiene



06

Finished product & market

Claims a buyer can rely on

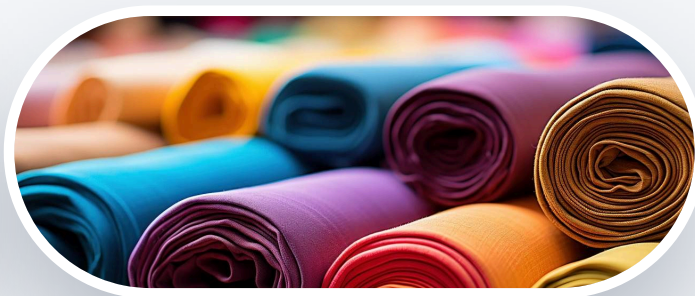
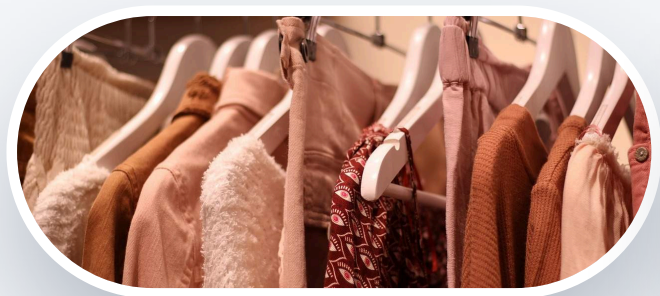
Life Cycle Assessment

Carbon footprint

EU DPP readiness

ESG reporting

SUPPLIER NETWORK MAPPING · TIER 1 TO TIER 3



RESPONSIBLE SUPPLY CHAIN & COMPLIANCE

Reduce non-compliance risk, promote sustainable material usage, and achieve readiness for EU Digital Product Passport (DPP) requirements.

01 Sustainable supply chains

- Multi-tier supplier mapping & traceability
- Supply chain due diligence & risk assessment
- Material compliance & RSL/MRSL screening
- Supplier ESG audits & corrective action plans
- Responsible sourcing & procurement controls
- Supplier capacity building & performance monitoring
- Sustainable manufacturing training programs

02 Supplier mapping

- Supplier network mapping (Tier 1–Tier 3)
- Country & sector-based risk assessments
- Material & process traceability evaluations
- Chemical management audits
- Sustainability training

03 Sustainable chemistry

Comprehensive chemical testing of dyes, coatings, plastics and textiles for restricted substances, including heavy metals, APEOs, PFAS, phthalates and VOCs, aligned with:

REACH

AFIRM

OEKO-TEX

GOTS

ZDHC

CPSC

Prop 65

Advanced PFAS and Total Organic Fluorine (TOF) testing using LC–MS/MS and CIC, for targeted and hidden fluorinated compounds.

04 ZDHC wastewater

- Wastewater testing
- Effluent & sludge analysis
- Microplastic & PFAS detection
- Zero Liquid Discharge verification
- ETP/CETP performance testing

GRI · CSRD · CSDDD · IFRS S1 & S2 · ESRS

ESG reporting & disclosure

Build transparency, meet disclosure mandates, and strengthen investor confidence through standardized ESG communication.

01

Materiality assessments

02

Double materiality analysis

03

Stakeholder mapping

04

Risk assessment

05

Disclosure & compliance

06

Real-time dashboards

The frameworks, in their own words

OWNERS' SITES · EUR-LEX · READ OCT 2026

Global Reporting Initiative

GRI

Standards that let any organization understand and report on its impacts on the economy, environment and people.

ISSB · issued June 2023

IFRS S1

Disclosure of sustainability-related risks and opportunities that could reasonably be expected to affect an entity's prospects.

ISSB · issued June 2023

IFRS S2

The same for climate-related risks and opportunities: governance, strategy, risk management, and metrics and targets.

Directive (EU) 2022/2464

CSRD

Sustainability information in the management report. Directive (EU) 2026/470 limits it to undertakings above EUR 450m turnover and 1,000 employees.

Reg. (EU) 2023/2772

ESRS

The standards undertakings use for their CSRD sustainability reporting; simplified by Delegated Regulation (EU) 2026/1563.

Directive (EU) 2024/1760

CSDDD

Due diligence on human rights and environmental adverse impacts. Directive (EU) 2026/470 raises its scope to 5,000 employees and EUR 1.5bn turnover.

REPORTING FRAMEWORKS SUPPORTED

GRI

CSRD

CSDDD

IFRS S1

IFRS S2

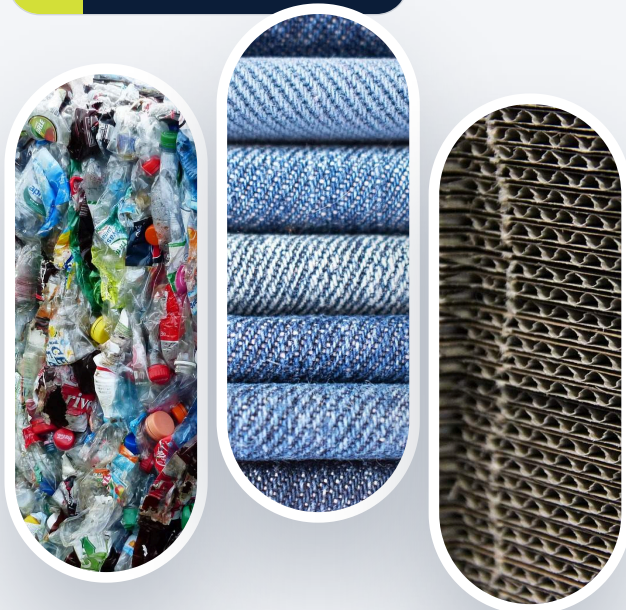
SBTi

UNFCCC Art. 6

ZDHC MRSL

HIGG FEM

LCA



Circular economy

Demonstrate recyclability and product circularity, a key requirement for global exports and environmental labeling.

We help organizations shift from a take-make-waste approach to a regenerative model, where materials are reused, recovered, and given new life.

Life Cycle Assessment, boundary by boundary

GHG PROTOCOL PRODUCT STANDARD



The five life-cycle stages of GHG Protocol Product Standard figure 7.1; cradle-to-gate and cradle-to-grave as defined in its glossary. Tti also runs comparative LCA. Illustration, not to scale.



Waste recovery & recycling assessments

Waste categorisation and management, recycling, and circular business models.



Product durability & material testing

Durability, accelerated ageing and UV resistance, and advanced polymer and textile testing in ISO/IEC 17025 accredited labs.



Recycling: RCS / GRS

Textile Exchange: GRS applies to products with 20% or more recycled content; only products with at least 50% qualify for product-specific GRS labelling.



Life Cycle Assessment

Cradle-to-grave, cradle-to-gate, cradle-to-cradle and comparative LCA: four boundaries, one method.

SCIENTIFIC & ENVIRONMENTAL

Science behind every claim

Our ISO/IEC 17025 accredited, state-of-the-art labs support innovation, circular product design, and eco-material verification.



Sustainable agriculture

Verified organic supply chains and soil health transparency, aligned with EU and other global organic regulations.

- ✓ GMO testing
- ✓ Soil carbon check
- ✓ Pesticide residue testing
- ✓ Microbial soil quality audits

Environmental compliance

Industrial compliance under Pakistan EPA regulations.

- ✓ Air quality monitoring: ambient, stack, indoor
- ✓ Waste & sludge testing
- ✓ ETP & scrubbers (pollution control)
- ✓ EIA support; EPA NOCs, construction & operational phases

Advanced analytical testing

Innovation, circular product design and eco-material verification.

- ✓ Product & material durability
- ✓ Advanced polymer & textile testing
- ✓ Microbiological & chemical R&D
- ✓ Accelerated ageing & UV resistance studies

Industrial hygiene

The workplace itself, measured.

- ✓ Workplace air quality
- ✓ Chemical exposure assessment
- ✓ OSHA/IHC aligned
- ✓ Occupational health & safety audits

Milestones of the Sustainability Center

2023-25	2023-25	2025	Jul 2025	Dec 2025	Dec 2025
Dedicated division	TMC 2030	GHG/ESG facility	CO₂ Talks 2025	Inspiring Change	OCA stakeholders
Tti Sustainability Center started	Signatory to The Microfibre Consortium commitment	Dedicated reporting facility launched	CEO keynote on climate, traceability and carbon strategies	Gold sponsor; Sustainability Center showcased	Platinum sponsor, organic cotton event

Photography. Unsplash: Wendy Shervington (cover), Geranimo, Richard Heinen, Trisha Downing, Made From The Sky, Victor Volkov, Miha Rekar (back). Pixabay: Schwaoze, Digital_Expert, M_wie_Moehre, Erbs55, Hans, damodarmenon, FredKlein, inmorino, OrnaW, u_nnjglrk13q, Pexels, jarmoluk. Object photographs only; they do not show Tti, its clients or their sites.



Tti Testing Laboratories

TTI SUSTAINABILITY CENTER

**Targeted lab analysis or
complete assurance
solution. We promise clarity,
control & confidence.**

ISO/IEC 17025 · PNAC LAB 022

ISO/IEC 17020 · PNAC IB-006

ZDHC MRSL V3.1 Certifier

ZDHC Wastewater Lab

111786 001

www.ttilabs.net · quotations@ttilabs.net



Lahore Office

(Headquarters & Laboratories)

347-S Quaid-e-Azam Industrial Estate, Kot
Lakhat, Lahore-54770.

(92-42) 111 786 001.

Faisalabad Office

Office # 145, 1st Floor Centre Point Plaza,
Jaranwala Road, Faisalabad-38000.

(041) 8733001.

Karachi Office

3rd Floor, Plot No. 7C, Sunset Commercial St.
No. 1, Phase 4, DHA, Karachi-75500.

(92-21) 111 786 001.

Sialkot Office

Opposite Mag Town Masjid, Kashmir Road,
Sialkot-51310.

(052) 3573367.