



STITCHING INDIA'S APPAREL EXPORT STRATEGY FROM FARM TO FOREIGN



EDITORS

SULAKSHANA RAO | ASHOK GULATI | ROHIT KANSAL

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Stitching India's Apparel Export Strategy:
From Farm to Foreign



Stitching India's Apparel Export Strategy: *From Farm to Foreign*

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Foreword

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The textile and apparel (T&A) sector has historically served as a cornerstone of industrialisation across developing economies. As one of the most labour-intensive manufacturing activities, it has played a pivotal role in enabling structural transformation absorbing surplus labour from agriculture and generating employment, particularly for women. For India, the sector is the second-largest employer after agriculture. And yet, a country with a full fibre to fashion value chain, abundant labour and centuries of craft heritage holds around 3 per cent of global apparel exports, since last two decades. Competitors Bangladesh and Vietnam moved from 2.2 per cent and 1 per cent respectively in 2000, to 9 per cent and 6 per cent by 2024. This book raises a very pertinent question: why has India not been able to fully capture the ‘China+1’ opportunity in global sourcing, even as far narrower economies seized it?

Stitching India’s Apparel Export Strategy: From Farm to Foreign, co-edited by Sulakshana Rao, Ashok Gulati and Rohit Kansal, examines this question across the entire value chain, beginning at the farm, where indecision on next generation cotton technology and under-investment in public research converted India from the world’s leading cotton exporter into a net importer. The book then moves through the fibre to fabric conversion gap, the processing and MMF deficit, the structural fragmentation of garment manufacturing and the capital, skilling and institutional constraints that have collectively affected export competitiveness. The book also draws on India’s own success stories, enterprises and clusters that have built globally competitive

businesses to demonstrate that scale, compliance and innovation are not aspirations but achievable realities, and that the ingredients for global T&A leadership exist within India. India already possesses the essential building blocks for global leadership in T&A; what is needed is a coherent, integrated ecosystem that connects these strengths across the entire value chain and enables them to operate at scale.

The central contribution of the book is its comparative policy analysis of China, Bangladesh and Vietnam, examined through five pillars of competitiveness: scale and ecosystem; capital and financial architecture; labour, technology and skills; cluster governance and institutional mechanisms; and market access and trade facilitation. Lessons from China is one of ecosystem approach: vertically integrated clusters, concessional finance and institutional governance that transformed China as the largest apparel exporter. Bangladesh, had the LDC preference and tariff edge primarily, supported by financial architecture designed around apparel cash flows the back-to-back letter of credit, bonded warehousing and factory-gate regulatory services. Vietnam's rise illustrates the transformative potential of aligning FDI attraction, FTA utilisation and investor-ready industrial infrastructure into a single, demand-responsive system. The book provides a clear short, medium and long-term agenda to reform India's T&A sector.

It is inarguably evident that India is now at an opportune moment. The recently concluded India UK CETA and India EU FTA places Indian exporters on tariff-equivalent terms with competitors, bridging a long standing tariff disadvantage. However, the authors rightly argue that export competitiveness goes well beyond tariff gains. The book provides a comprehensive reform agenda across all five pillars of competitiveness, operationalising PM MITRA parks as genuine fibre to fashion ecosystem, deepening financial access for MSMEs, upgrading skills and technology, streamlining trade facilitation and embedding sustainability in the future.

I hope that the analysis and recommendations in this book will contribute to informed policy dialogue and practical reform efforts, helping reposition India as a scale driven, fibre diverse, digitally enabled and women-inclusive global apparel sourcing hub. The book

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emphasises that business as usual will not work, the real question is whether policy can keep pace with an industry that cannot afford to wait.

Shekhar Aiyar
Director and Chief Executive
ICRIER

Preface

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Textiles are as old as civilisation itself. India's textile story stretches back over four millennia, from the cotton spinners of the Indus valley civilization to the celebrated silks of Murshidabad and the weaving traditions that connected Indian artisans to markets across Asia, Africa and Europe. Long before global value chains became a thing, Indian textiles were among the world's most sought after goods. The industrial revolution powered by Hargreaves 'spinning jenny' and the rise of Lancashire textile mills, transformed textiles from a craft based activity into industrial scale manufacturing, reshaping global trade and competitiveness. In the decades that followed, the T&A sector became the vehicle of industrialisation across Asia, with the 'flying geese' of manufacturing moving from Japan to South Korea and Taiwan, then to China, and more recently to Bangladesh and Vietnam, presenting India with perhaps its greatest opportunity yet to catch.

One must ponder, India has a complete fibre to fashion ecosystem, the rich heritage and craftsmanship and the abundant labour all checks right boxes for apparel manufacturing. And yet, a puzzle remains. The numbers tell a different story. India's share in global apparel exports has remained largely unchanged at around 3 per cent for more than two decades. During the same period, Bangladesh increased its share from 2.2 per cent to 9 per cent, while Vietnam expanded from 1 per cent to 6 per cent. Why has India not been able to fully capture the 'China+1' opportunity in global sourcing, even as economies like Bangladesh and Vietnam seized it? This is the central question that the book asks and gives a roadmap to.

This book *Stitching India's Apparel Export Strategy: From Farm to Foreign* follows the 5F value chain: Farm, Fibre, Fabric, Fashion and Foreign diagnosing where value is lost, where competitiveness is constrained, and where the opportunities for transformation exist. Combining value chain analysis with international benchmarking, the book examines the experiences of China, Bangladesh and Vietnam, draws lessons from India's own success stories, and sets out a practical policy and institutional roadmap for building a globally competitive textile and apparel sector.

Chapter 1 introduces the rationale of the book, establishing the T&A sector's strategic importance and framing the central hypothesis of stagnant export performance despite full value chain endowments. Chapter 2 asks a pointed question: who killed the cotton gene revolution? It traces how India's Bt cotton breakthrough nearly tripled production between 2002 and 2014, only to be undone by policy indecision, IPR suppression and under-investment in public R&D. Chapter 3 examines the fibre to fabric and processing gap, how India's strength in spinning that has not translated into comparable competitiveness in fabrics and value added textiles. Fragmentation, outdated weaving capacity and an underdeveloped processing and finishing ecosystem have limited India's ability to capture the higher value realisations associated with finished fabrics.

Chapters 4 to 7 examine India's apparel export competitiveness in the context of three of its most important competitors: China, Bangladesh and Vietnam. The analysis is across the five pillars of apparel export competitiveness: scale and ecosystem; capital and financial architecture; labour, technology and skills; cluster governance and institutional mechanisms; and market access and trade facilitation.

Chapter 8 draws lessons from India's own success stories, examining firms and clusters that have achieved global competitiveness despite the constraints identified in this book.

Chapter 9 examines India's T&A policy evolution across four decades, from TUFS and post-MFA cluster schemes to the current framework of PLI, PM MITRA, the Export Promotion Mission and the five component Integrated Programme announced in the Union

Budget 2026-27, asking whether India is finally making the shift from fragmented fiscal interventions to a coherent, ecosystem-level industrial policy. Chapter 10 draws on cross-country development finance experience from Bangladesh, Vietnam, Türkiye and China to examine what financing architectures have worked and why, maps India’s own gaps in export credit coverage, MSME capital access and green transition finance, and proposes a multi level financing architecture as the practical pathway to USD 100 billion.

Chapter 11 concludes by setting out an integrated reform roadmap to build a scale-driven, fibre-diverse, digitally enabled and sustainable apparel ecosystem before the window of opportunity narrows.

-Editors

Abbreviations

5F	Farm to Fibre to Factory to Fashion to Foreign
AAGR	Average Annual Growth Rate
ADB	Asian Development Bank
AEO	Authorised Economic Operator
AFTA	ASEAN Free Trade Area
ASEAN	Association of Southeast Asian Nations
ASI	Annual Survey of Industries
ATUFS	Amended Technology Upgradation Fund Scheme
BBLC	Back-to-Back Letter of Credit
BEPZA	Bangladesh Export Processing Zones Authority
BGMEA	Bangladesh Garment Manufacturers and Exporters Association
BIDA	Bangladesh Investment Development Authority
BIS	Bureau of Indian Standards
BKMEA	Bangladesh Knitwear Manufacturers and Exporters Association
BRI	Belt and Road Initiative
BRAC	Bangladesh Rural Advancement Committee
Bt	Bacillus thuringiensis
CAD	Computer-Aided Design

CAM	Computer-Aided Manufacturing
CAGR	Compound Annual Growth Rate
CBZs	Comprehensive Bonded Zones
CEPA	Comprehensive Economic Partnership Agree ment
CEPZ	Chittagong Export Processing Zone
CETA	Comprehensive Economic and Trade Agreement
CETP	Common Effluent Treatment Plant
CCTS	Carbon Credit Trading Scheme
CGTMSE	Credit Guarantee Fund Trust for Micro and Small Enterprises
CIF	Cost, Insurance and Freight
CIDF	Climate Innovation and Development Fund
CITI	Confederation of Indian Textile Industry
CNTAC	China National Textile and Apparel Council
COO	Chief Operating Officer
CPTPP	Comprehensive and Progressive Agreement for Trans- Pacific Partnership
CSR	Corporate Social Responsibility
CSDDD	Corporate Sustainability Due Diligence Direc tive
CEO	Chief Executive Officer
DGFT	Directorate General of Foreign Trade
DLCs	District Level Committees
DPIIT	Department for Promotion of Industry and Internal Trade
DPP	Digital Product Passport
DRDO	Defence Research and Development Organisa tion

DS Group	Deepak Seth Group
ECGC	Export Credit Guarantee Corporation
EDF	Export Development Fund
EBA	Everything But Arms Scheme
EPC	Export Promotion Councils
EPM	Export Promotion Mission
EPF	Employees' Provident Fund
EPZ	Export Processing Zone
ERP	Enterprise Resource Planning
ESG	Environmental, Social and Governance
ESIC	Employees' State Insurance Corporation
ETPs	Effluent Treatment Plants
EU	European Union
EUDR	EU Deforestation Regulation
EVFTA	EU-Vietnam Free Trade Agreement
FAO	Food and Agriculture Organization
FDI	Foreign Direct Investment
FDY	Fully Drawn Yarn
FIEFO	Federation of Indian Export Organisations
FLFPR	Female Labour Force Participation Rate
FLOW	Facilitating Logistics, Overseas Warehousing and Fulfilment
FOB	Free on Board
FSSAI	Food Safety and Standards Authority of India
FTA	Free Trade Agreement
FY	Fiscal Year
GDP	Gross Domestic Product
GEAC	Genetic Engineering Appraisal Committee

GM	Genetically Modified
GOTS	Global Organic Textile Standard
GRS	Global Recycled Standard
GST	Goods and Services Tax
GVA	Gross Value Added
GVC	Global Value Chain
HS Codes	Harmonized System Codes
IBSCs	Institutional Biosafety Committees
ICAC	International Cotton Advisory Committee
IFC	International Finance Corporation
IF-CAP	Innovative Finance Facility for Climate in Asia and the Pacific
IES	Interest Equalisation Scheme
ILO	International Labour Organization
IMF	International Monetary Fund
IPRS	Industrial Park Rating System
IPs	Industrial Parks
ISDS	Integrated Skill Development Scheme
ITC	International Trade Centre
ITIs	Industrial Training Institutes
ITMF	International Textile Manufacturers Federation
IZs	Industrial Zones
L/C	Letter of Credit
LDC	Least Developed Country
LEED	Leadership in Energy and Environmental Design
LIFT	Logistics Interventions for Freight and Transport
MEIS	Merchandise Exports from India Scheme

MFA	Multi-Fibre Arrangement
MCGS	Mutual Credit Guarantee Scheme
Mha	Million Hectares
MiB	Mapped in Bangladesh
MLD	Million Litres per Day
MMF	Man-Made Fibre
MMT	Million Metric Tonnes
MoEFCC	Ministry of Environment, Forest and Climate Change
MOIT	Ministry of Industry and Trade (Vietnam)
MOLISA	Ministry of Labour, Invalids and Social Affairs (Vietnam)
MOOWR	Manufacture and Other Operations in Warehouse Regulations
MPIDC	Madhya Pradesh Industrial Development Corporation
MSME	Micro, Small and Medium Enterprise
MT	Metric Tonne
MW	Megawatt
NCR	National Capital Region
NGO	Non-Governmental Organisation
NIFT	National Institute of Fashion Technology
NFP	National Fibre Policy
NSAI	National Seed Association of India
NSDP	National Skills Development Policy
NSW	National Single Window
NTP	National Textile Policy
NTTM	National Technical Textiles Mission
OBTs	Own-Brand Manufacturers

OEKO-TEX	International Textile Certification Standard
OEMs	Original Equipment Manufacturers
OSS	One-Stop Service
P.A.C.E.	Personal Advancement and Career Enhancement
PBT	Profit Before Tax
PFY	Polyester Filament Yarn
PLI	Production Linked Incentive
PLFS	Periodic Labour Force Survey
PM MITRA	Prime Minister Mega Integrated Textile Region and Apparel
PM SAMARTH	Scheme for Capacity Building in Textile Sector
PMUs	Project Management Units
PSF	Polyester Staple Fibre
VSF	Viscose Staple Fibre
PTA	Preferential Trade Agreement
QCO	Quality Control Order
R&D	Research and Development
RCEP	Regional Comprehensive Economic Partnership
RFID	Radio Frequency Identification
RMG	Ready-Made Garments
RoDTEP	Remission of Duties and Taxes on Exported Products
RoSCTL	Rebate of State and Central Taxes and Levies
RRR	Required Reserve Ratio
SBW	Special Bonded Warehouse
SEIP	Skills for Employment Investment Program
SEZ	Special Economic Zone
SIHMA	South India Hosiery Manufacturers Association

SITP	Scheme for Integrated Textile Parks
SMART	Six-Month Moving Average Rate of Treasury Bill
SME	Small and Medium Enterprise
SOEs	State-Owned Enterprises
SOFR	Secured Overnight Financing Rate
SPCO	Seed Price Control Order
T&A	Textile and Apparel
TE	Triennium Ending
TEA	Tiruppur Exporters Association
TEEM	Textile Expansion and Employment Mission
TRACE	Trade Regulations, Accreditation and Compliance Enablement
TUFS	Technology Upgradation Fund Scheme
UK	United Kingdom
UNFPA	United Nations Population Fund
US/USA	United States of America
USBTA	United States-Vietnam Bilateral Trade Agreement
USD	United States Dollar
VAT	Value Added Tax
VITAS	Vietnam Textile and Apparel Association
VND	Vietnamese Dong
WLL	Welspun Living Limited
WTO	World Trade Organization

About The Editors/Contributors

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Ashok Gulati is currently Distinguished Professor at the Indian Council for Research on International Economic Relations (ICRIER). Prior to this, he was a Chairman of the Commission for Agricultural Costs and Prices (CACP), Government of India (2011-14). He was an Independent Director of the Central Board of Directors of the Reserve Bank of India (RBI), National Bank for Agriculture and Rural Development (NABARD) and Kotak Mahindra Bank Limited (KMBL). He is currently a Member of the Twelfth Audit Advisory Board of the Comptroller and Auditor General of India, Godrej Agrovet Limited and Insurance Regulatory and Development Authority of India (IRDAI). Dr. Gulati has been deeply involved in policy analysis and advice in India. He has 22 books to his credit on Indian and Asian Agriculture, besides numerous research papers in national and international Journals. He has been a prolific writer in leading newspapers in India. He did his M.A. and Ph.D. from Delhi School of Economics.

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1

Introduction

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ASHOK GULATI, SULAKSHANA RAO AND ROHIT KANSAL

1.1. A Civilisation Woven in a Thread

Every nation has industries that contribute to their economy. Few have industries that helped shape their civilisation. For India, textiles is one such industry. Long before modern concepts of manufacturing, trade or industrial policy emerged, textiles were already woven into India's economic, cultural and commercial fabric. Archaeological excavations at *Harappa* and *Mohenjodaro*, cities of the Indus valley civilisation (dating back over 4500 years), have uncovered terracotta spindle whirls, cotton fibres, needles and dyeing related artefacts, providing some of the earliest evidence of cotton cultivation and textile production in the world (Beckert, 2014; Marsh,n.d). These discoveries indicate that textiles are an integral component of one of humanity's earliest civilisational economies.

What began in the Indus Valley was sustained through centuries of trade, innovation and craftsmanship. Indian cottons, silks and dyed fabrics travelled across the Arabian Sea and the Indian Ocean to markets in Egypt, Arabia, East Africa and the Mediterranean. By the first century CE, Roman merchants were regular visitors to India, drawn by the demand for fine cotton fabrics alongside spices and precious stones. Long before the modern global value chains emerged, Indian textiles were already connecting producers and consumers across the Mediterranean and beyond.

Over time, textile production became embedded in India's economic geography. Different regions developed distinct specialisations, linked together through networks of trade and craftsmanship. The

reputation of Indian textiles can be traced back to 4th century BC, with the Greek envoy Megasthenes mentioning in his writing the finesse of Indian fabrics during his visit to the court of Chandragupta Maurya. During the Mughal period, Bengal emerged as the world's premier centre for fine cotton textiles. Roman merchants imported Indian muslins in exchange for gold and silver, reflecting their high value in international trade. Under the Mughal period, Dhaka (then part of the Mughal province of Bengal, India) produced the legendary *Dhaka muslin*, an exceptionally fine, translucent cotton fabric prized by emperors, royalty and aristocrats across Asia and Europe. Bengal became renowned for its fine muslins, Gujarat for printed cottons and maritime commerce and Varanasi for silk brocades woven with gold and silver zari. At the heart of Bengal's textile economy stood Murshidabad, one of the wealthiest commercial centres of the 18th century, whose silk, muslin and trading networks connected South Asia to markets stretching from Istanbul to Amsterdam.

By the beginning of the 18th century, Indian textiles had become among the most traded manufactured products in the world. European trading companies established commercial bases on India's coasts largely to secure access to Indian fabrics, while muslins and silks from India transformed consumer tastes across Europe. The economic significance of all this was immense. India accounted for nearly one fourth (24.4 per cent) of global economic output in 1700, (Maddison, 2007). Cotton grown in one region was spun, woven, dyed and traded in another, creating production networks that connected farmers, artisans, merchants and overseas markets. Long before the world spoke of value chains, India had built one of the world's most integrated textile ecosystems.

For nearly two millennia, India's fabrics clothed consumers across Asia, Middle east and Europe. So what changed? How did the world's leading textile producer lose its dominance? The inventions that powered the Industrial Revolution, most notably James Hargreaves' Spinning Jenny (See Figure 1.1), and other mechanised weaving technologies altered the economics of textile production. These can be called as 'disruptive technologies' that change the rules of the game,

in this case the competitiveness. Competitive advantage was no longer determined by artisanal skill and craftsmanship, but by technology, productivity and scale. Production that had once been dispersed across thousands of artisans could now be concentrated in factories, creating unprecedented economies of scale. As textile mills multiplied across Lancashire and Manchester, British manufacturers were able to produce yarn and cloth at costs that handloom producers around the world struggled to match. The industrial revolution was a textile revolution.

Industrial revolution rested on a global production system. Cotton was sourced from American plantations, where land was available for cultivation. Meeting the growing demand of British mills required a large workforce. This was marked by the slave trade and African labour was transported to work on cotton plantations. Together, American cotton, slave trade, British machinery and global markets marked foundations of a new textile economy that reshaped international trade and manufacturing for centuries to come (Beckert, 2014).

Figure 1.1.
Spinning Jenny by James Hargreaves, 1764



Source: Early Spinning Jenny, Helmshore Mills Textile Museum, Lancashire, England. Photograph from Wikimedia Commons.

For India, the consequences were profound. Mechanised production in Britain, reinforced by colonial trade policies, transformed the structure of the global textile economy. India increasingly became a supplier of raw cotton to Lancashire mills and a market for manufactured textiles. An integrated value chain that had evolved over centuries from cotton cultivation to spinning, weaving, dyeing and export was progressively weakened. The country that had once exported finished textiles to the world found itself exporting raw materials.

Independent India's textile journey has, in many ways, been an effort to reverse this historical dislocation. Significant progress has been made. India today possesses one of the world's few fully integrated textile value chains, spanning cotton cultivation, fibre production, spinning, weaving, processing, garment manufacturing and exports. Yet the central puzzle remains unresolved.

How did the civilisation that pioneered cotton textiles, supplied fabrics to ancient trade routes and once stood at the centre of the global textile economy come to account for only about 3 per cent of global apparel exports today? More importantly, what strategies from Farm to Foreign would help India reclaim a better share in global apparel landscape? Those are the questions that motivate this book.

1.2. India's Textiles and Apparel (T&A) Sector: An Overview

Every fourth manufacturing worker in India makes a thread, a fabric or a garment. Yet the country with a full 5F T&A value chain (Farm to Factory to Fabric to Fashion to Foreign), that employs more people in textiles than most nations accounts for 3 per cent of global apparel exports, a share that has been stagnant for more than past twenty years (UN Comtrade, 2025). It is this gap between what India has and what India can that brought us to write this book.

The sector's domestic scale and strength is unique. The T&A sector contributes 2.3 per cent to India's GDP and 12 per cent to total merchandise exports. It is the second largest source of employment after agriculture, engaging over 45 million workers a significant share of them women and those from rural households (Ministry of Textiles, 2024). India is the world's second largest producer of cotton and has

the second largest spinning base globally with over 60 million spindles. What is equally significant is the employment intensity of the sector: the apparel segment alone generates 153 jobs for every Rs. 1 crore of capital invested, compared to 27 in automobile manufacturing and 14 in steel (ASI, 2023-24). For a country where roughly two thirds of the population is of working age and millions of workers joining the labour force each year, this makes the T&A sector not merely a trade priority but a structural employment imperative.

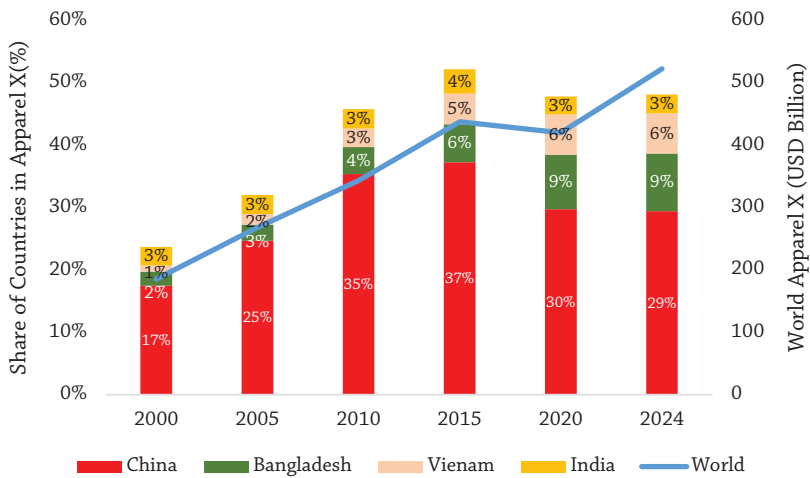
Yet, while this book examines the T&A sector as a whole, its central focus is apparel exports. The rationale is straightforward. Of the global T&A exports at USD 897 billion in 2024, apparel alone accounted for USD 521 billion (ITC Trademap, 2024), making it the largest and most value-added segment of the value chain. Development theory has long recognised labour-intensive manufacturing, particularly apparel, as the first rung of industrialisation, enabling economies to transition from agriculture to manufacturing through large-scale employment creation with relatively low capital requirements and limited training needs. This pathway has been successfully followed by economies such as South Korea, Taiwan, China, Bangladesh and Vietnam. Moreover, a competitive apparel industry creates strong pull effects across the value chain by stimulating demand for fibres, yarns, fabrics, processing, accessories, logistics and other ancillary industries. Apparel is therefore not merely the final stage of production but the engine that drives growth across the broader textile ecosystem. For India, apparel exports is an engine for growth with jobs and export led industrialisation.

What is in question however is, what will translate these strengths into commensurate export performance? The global apparel exports stood at USD 521 billion in 2024; India’s share of it was USD 15.7 billion in FY25. In the same period, Bangladesh’s share of global apparel exports rose from 2.2 per cent in 2000 to 9 per cent in 2024, and Vietnam’s from 1 per cent to 6 per cent (Figure 1.1), both leveraging integrated policy support, export-focused garmenting ecosystems, and preferential market access (UN Comtrade, 2025). So the question that runs through every chapter of this book is: if Bangladesh and Vietnam

could capture a larger and growing share of global apparel markets, why could India not? and what does it need to do differently?

Figure 1.2

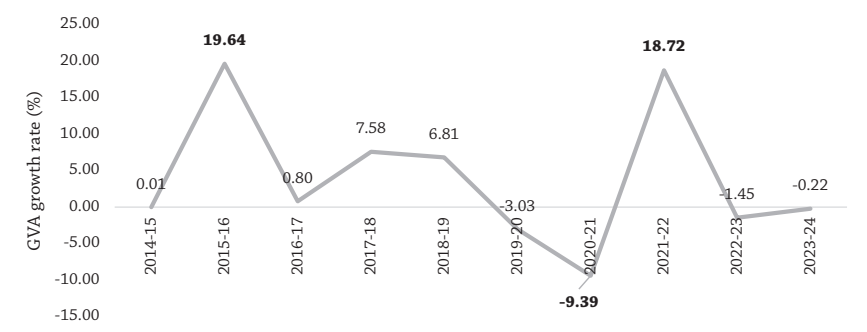
Global Apparel Market Share of Major Exporters (2000-2024)



Source: ITC Trade map, 2024

On the other hand, India's domestic T&A sector has recorded an AAGR of 6 per cent between 2011-12 and 2023-24 (7.3 per cent if the Covid period is excluded). However, the trend has been volatile. GVA growth dipped from 19.64 per cent in 2015-16 to -9.39 per cent in 2020-21, recovered sharply to 18.72 per cent in 2021-22, and then turned marginally negative again in 2023-24. An average of 6 per cent growth with volatility points to a sector that remains reactive to external shocks rather than anchored in a structured and resilient ecosystem. For a sector of this scale and strategic importance, such instability is a signal that the deeper constraints have not been resolved, and that growth remains fragile and uneven.

Figure 1.3
T&A (including leather) GVA growth (AAGR) at constant (2011-12) prices



Source: National Accounts Statistics 2025 | Ministry of Statistics and Program Implementation | Government Of India (data of Textile, apparel and leather products)

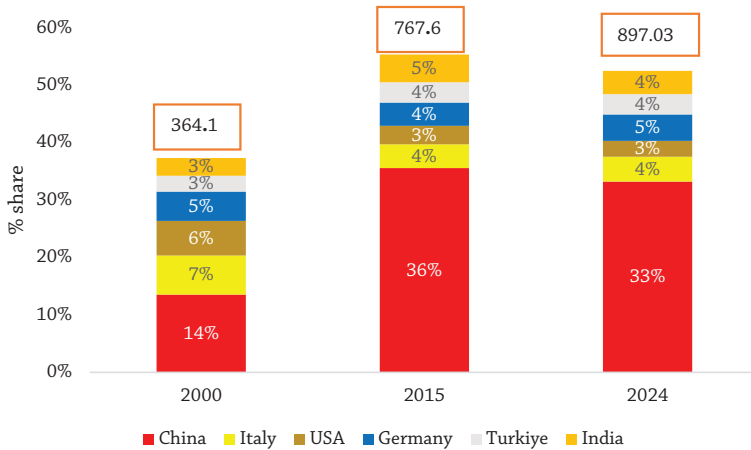
1.3. The Global T&A Landscape Today

The global T&A exports textiles, apparel and home textiles combined was worth USD 897 billion in 2024 (UN Comtrade, 2025). The apparel segment alone, the most employment-intensive and value added part of the chain, stood at USD 521 billion, nearly tripling from USD 185 billion in 2000. Import demand is highly concentrated: the EU accounts for 42 per cent of global apparel imports, the US for 18 per cent, Japan for 5 per cent, the UK for 4 per cent, and Canada for 2 per cent. Together, these five markets constitute over 70 per cent of global demand (ITC Trade Map, 2025).

On the supply side, the market is equally concentrated. China leads with 29 per cent of global apparel trade, though its share has declined from 37 per cent in 2015 as rising wages and deliberate industrial policy have shifted production towards higher-value segments. Bangladesh follows with 9 per cent of global apparel exports, with the EU as its primary destination. Vietnam ranks third at 6 per cent, reflecting its deep integration into diversified global value chains. India, in contrast, contributes only 3 per cent stagnant for two decades. In textiles, India does better, holding nearly 6 per cent of global exports; in home textiles, its share reaches 7.5 per cent. The

Figure 1.4

Global T&A Exports by Major Economies, 2000, 2015 and 2024 (USD Billion)



Source: UN Comtrade, 2025. HSN Chapters 50-63.

Note: Numbers in orange box are T&A export value in USD billion

binding constraint is apparel precisely where employment intensity, value addition and export growth potential are highest.

A structural difference in value chain positioning explains much of this divergence. India is strongest upstream in cotton cultivation, yarn and fabric. Bangladesh and Vietnam have built their export success downstream, in garment manufacturing, which is where the highest employment per unit of output is generated and where global buyer relationships are anchored. India remains strong where the value is lower and weaker where the value and the jobs are maximum.

1.4. The 5F Framework of T&A Value Chain

To diagnose India's T&A competitiveness systematically, this book employs the 5F framework: Farm, Fibre, Fabric, Fashion and Foreign, mapping the full value chain from cotton cultivation to export. A weakness at any node of the 5F chain trickles downstream and compounds export underperformance.

Farm and Fibre: India’s cotton story is one of a revolution that was won upstream and then slowly dipped down. The introduction of Bt cotton in 2002 was a gene revolution: production nearly tripled from 13.6 million bales in 2002-03 to 39.8 million bales by 2013-14. But the revolution plateaued. Production has since been falling. It stood at roughly 29 million bales in 2025-26 . Resistance to existing Bt hybrids has set in, and as a result yield have been falling. This is primarily the result of indecision on next-generation GM technology and a failure to invest in cotton breeding at the pace competitors have (Juneja et al., 2025). India is now a net importer of cotton in the financial year 2025-26 (FY26). The consequences of this upstream stagnation extend well beyond the farm. India’s export basket remains majorly cotton-based, even as nearly 77 per cent of global fibre consumption has shifted to man made fibres (MMF). This fibre mismatch between what India produces and what the world buys is perhaps one of the most consequential structural handicaps in the entire 5F chain. Recently announced National Mission for Cotton Productivity for Self-Sufficiency in Cotton and Competitiveness in Global Textile Markets seeks to address some of these anomalies.

Factory: India is a leading yarn producer and holds nearly 6 per cent of global textile exports. Yet much of its weaving and processing sector continues to lag behind global competitors, and its fibre mix remains heavily tilted towards cotton even as global demand has shifted towards MMF. India holds just 2 per cent of global shuttle-less loom capacity, even though shuttle-less looms are six times more productive (NITI Aayog, 2020); nearly 95 per cent of fabric production originates in small decentralised units unable to meet global buyer requirements for scale and consistency. The fibre mismatch is another aspect the global MMF-to-natural fibre ratio now stands at 75:25, while India’s has historically been the mirror image at 40:60 in favour of cotton (Ministry of Textiles, 2026). For years, an inverted GST structure and Quality Control Orders on polyester and viscose raw materials pushed MMF input prices 15-20 per cent above global levels. The rescission of fourteen QCOs in November 2025 and GST rationalisation in September 2025 have removed these distortions, but the

processing and finishing ecosystem needed to convert this policy correction into export gains remains a work in progress.

Fashion (Apparel Manufacturing): This is where the constraints are most acute and the stakes are high. Only one in ten garment workers in India is employed in a registered factory, with the average unit employing just 131 workers (400-600 in export-oriented) against 1200 in Bangladesh. This is not merely a scale gap; it reflects a broader 'missing middle' in Indian manufacturing where the transition from small informal units to integrated, export-ready factories has stalled. Capital is what translates to scale. In India, real cost of capital (at 6-8 per cent, after accounting for inflation) is higher than competitors like China, Bangladesh or Vietnam. On top of this, the fragmented production structure causes longer lead times, higher transaction costs and limited ability to service the large, fast-turnaround orders that global buyers increasingly demand. India lacks the integrated hubs (ecosystems) that combine fibre, fabric and fashion under one roof, of the kind that Vietnam's FDI-led parks and China's textile towns have built.

Foreign (Market access and Trade Facilitation): Even when firm produces a competitive garment, getting it to the global buyer is costly and slow. As per World Bank Logistic performance indicator (LPI), India ranked 38th out of 139 countries. Although India's logistics performance has improved in recent years, border procedures and customs clearance continue to lag behind leading export competitors, contributing to longer lead times and higher trade costs for exporters. To win the next decade, India's supply chain must move at the speed of the consumer. On the market access front, however, India has made significant strides: over the past six years, it has signed nine free trade agreements (FTAs) including the India-UK Comprehensive economic and trade agreement (CETA) in July 2025 and the India-EU FTA in January 2026 giving Indian apparel exporters tariff parity with Bangladesh in the world's two largest apparel import markets for the first time (Ministry of Commerce, 2026). Yet underlying the competitive landscape is a macroeconomic variable that rarely features in trade facilitation discussions: China's exchange rate undervaluation

as implicit export subsidy. The US Treasury has characterised the renminbi as “substantially undervalued” (US Treasury, 2026), the IMF estimates undervaluation at approximately 16 per cent (IMF, 2026; The Economist, 2026), and Goldman Sachs places it at over 20 per cent on current surplus-adjusted models, with its GSDEER (Goldman Sachs dynamic equilibrium exchange rate) framework implying up to 30 per cent against the US dollar (Goldman Sachs, cited in Bloomberg, 2026; Setser and Sobel, 2025).

Together, the 5F chain highlights the need of an ecosystem approach. What is the integrated institutional, financial and policy architecture that would allow these inputs to combine efficiently and competitively to deliver the export performance that we can, is an issue we examine in this work.

1.5. The Opportunity Window: Why This Moment Matters?

India’s T&A sector stands at a potentially transformative moment as several structural forces converge simultaneously. The ongoing ‘China+1’ realignment driven by rising labour costs in China, geopolitical uncertainties and global brands’ efforts to diversify supply chains has created new opportunities for alternative sourcing destinations. India is at an opportune moment but with a narrowing window.

At the same time, new trade agreements are beginning to alter India’s competitive landscape. The India-UK CETA ensures tariff parity with Bangladesh in the USD 19.6 billion apparel import market of UK, where India currently holds only a 6 per cent share against Bangladesh’s 20 per cent (Rao et al., 2025). India-EU FTA extends equivalent access to the world’s largest apparel market, accounting for 42 per cent of global demand. For the first time, Indian exporters will compete on tariff-equivalent terms with Bangladesh in both key markets simultaneously. Domestically, policy reforms including GST rationalisation in MMF, labour code simplification, the PLI scheme, PM MITRA parks, and the recently announced integrated programme for the T&A sector signal a renewed policy push towards improving competitiveness and scale, with a view to capture larger share of global markets.

India's own history, however depicts a mixed outcome. While exports to the US and EU recorded increases, despite duty-free access under the India-Japan CEPA since 2011, apparel exports to Japan fell from USD 229 million in 2013 to USD 203 million in 2024 (Rao et al., 2025). So, to reach India's ambitious export target of USD 100 billion for T&A sector, a business-as-usual approach will not be sufficient. What is needed is a shift beyond incremental improvements, addressing the structural constraints that limit firms' ability to operate at scale, access competitive finance, integrate efficiently across the value chain and respond to evolving global demand. Converting market access into market share is the task this book undertakes.

1.6. The Employment and Women Empowerment Imperative

The stakes of India's T&A export performance are beyond just trade statistics. For a country where structural transformation from agriculture to industry is both urgent and incomplete, the T&A sector's capacity to absorb semi-skilled workers at scale is an opportunity. Women constitute approximately 47.6 per cent of the apparel workforce, making the sector one of the most significant formal-sector employers of women in India. Female labour force participation, at 32.4 per cent in 2025, remains below potential (ILOStat, 2025). Expanding and modernising the T&A sector, particularly by improving worker welfare infrastructure such as safe housing, creches and transport near industrial clusters, can raise both the quantity and quality of women's formal employment.

India's aspiration to reach USD 100 billion in T&A exports by 2030, more than doubling from the current USD 36 billion, is very ambitious indeed. However, Bangladesh has shown that scale is possible even without having India's raw material depth. Vietnam has shown that institutional coordination and FDI attraction can rapidly transform a country's export standing. The difference is not endowments; it is execution.

1.7. Why This Book, and Why Now

India's T&A sector sits at the intersection of economic transformation, employment generation and export competitiveness. Through

this book, we attempt to move the conversation from analysis to strategy to action, integrating the full 5F chain from farm to foreign, drawing comparative lessons from China, Bangladesh and Vietnam, grounding the argument in firm-level case studies and practitioner experience, and arriving at a time-bound reform roadmap for achieving USD 100 billion in T&A exports by 2030.

This book is written at a moment when the external environment has shifted more decisively in India’s favour than at any point in last two decades. Preferential tariff access in the EU and UK, a global sourcing realignment away from China, an ongoing domestic policy reform agenda and an aggressive support roadmap by the Government, especially the Ministry of Textiles. The risk is the same as it has always been: that the moment passes without the ecosystem-level changes both public and private, needed to capture it. The book’s central argument is this: India’s stagnation in global apparel exports is not a problem of endowments but a problem of ecosystem. Fragmentation, high costs of capital, limited scale and institutional incoherence have collectively constrained the ecosystem. The pathway to a USD 100 billion export ecosystem will involve not just building an integrated institutional, financial and policy architecture to resolve these constraints, but also the capacity of the private ecosystem to seize the moment. Doing so with urgency, is both the analysis and the agenda of the chapters that follow.

1.8. Structure of the Book: A Chapter-by-Chapter Roadmap

This book examines India’s T&A sector through the lens of building competitiveness, tracing the journey from farm to foreign markets and identifying the constraints and opportunities that shape export performance. Ultimately we seek to answer a broader question: What would it take for India to translate its abundant raw materials, labour force and manufacturing capabilities into a globally competitive apparel export ecosystem? The chapters that follow attempt to provide an evidence based and actionable roadmap for stitching India’s apparel export strategy, from farm to foreign.

Following this introductory chapter, Chapter 2 explores the foundations of India's textile economy through the story of cotton. It examines the transformation brought about by the Bt cotton revolution, the productivity gains that followed and the quality, contamination and sustainability challenges that continue to affect the sector. Chapter 3 moves to fibre, yarn, fabric and processing analysing the structural weaknesses that have constrained India's competitiveness, particularly in MMF, and assessing the policy choices that have shaped these outcomes.

Chapter 4 situates India within the global apparel economy and develops a framework for assessing competitiveness through five key pillars: scale and capacity; access to finance; institutional and cluster-based ecosystems; labour, skilling and technology; and market access and trade facilitation. This framework forms the basis for the comparative analysis that follows. Chapters 5, 6 and 7 examine the experiences of China, Bangladesh and Vietnam, respectively. While each country followed a distinct development trajectory, all three successfully expanded their presence in global apparel markets. Together, these chapters identify the policy choices, institutional arrangements and industry structures that enabled their success and draw lessons relevant to India to boost apparel export competitiveness.

Chapter 8 brings the analysis closer to the ground through select case studies of firms and clusters that have demonstrated export competitiveness in practice. These include Shahi Exports, Pearl Global, the Tiruppur cluster and Welspun's home textiles business. Their experiences offer insights into how scale, innovation, market orientation and long-term strategic choices can translate into global success.

Chapter 9 evaluates India's evolving policy architecture for the T&A sector, examining both recent reforms and the gaps that continue to constrain growth. Chapter 10 assesses the role of development finance and institutional support in building competitive textile ecosystems, drawing on lessons from international experience and development programmes.

The book concludes with Chapter 11, which synthesises the evidence and presents a time bound roadmap for strengthening India's

competitiveness in global textile and apparel markets. It also considers how emerging trends including AI, digitalisation, sustainability and changing global sourcing patterns, could reshape the future of the sector and create new opportunities for India to emerge as a scaled up, reliable and competitive node of the global apparel value chain.

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Crisis in the Cotton Fields

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AYUSHI GUPTA, RITIKA JUNEJA AND ASHOK GULATI

2.1 Introduction

Few agricultural technologies have spread as fast, or as far, as genetically modified crops. In 1996, biotech crops occupied just 1.7 million hectares (Mha) globally. By 2023, that number had risen to 206.3 Mha a 120-fold increase in under three decades. No crop technology in modern history has been adopted at this pace (ISAAA, 2024). Since 1996, 73 countries have integrated GM crops into their agricultural systems – 44 through active cultivation and 29 through imports, spanning across Asia, the Americas, Africa, and Europe. These numbers reflect not just enthusiasm for a new technology, but decades of safe use and widespread integration across every major region of the world (ISAAA, 2026). What began with the “big four” - soybean, maize, cotton, and canola, now includes rice, wheat, sugarcane, cowpea, banana, papaya, eggplants, alfalfa, mustard, and potatoes etc. This indicates, adoption is no longer confined to feed crops alone; it extends across food and fibre as well. The technology has moved from laboratories in the developed world into the fields of smallholder farmers across Asia, Latin America, and Africa (ISAAA, 2024).

The top five adopters: the United States (74.4 Mha), Brazil (66.9 Mha), Argentina (23.1 Mha), Canada (11.5 Mha), and India (12.1 Mha), together account for over 91 per cent of the global biotech crop area (AgbioInvestor GM Monitor, 2025). GM crops have delivered real, measurable benefits to smallholder farmers: higher yields, lower pesticide costs, reduced crop losses, and better incomes. The evidence

base is large and largely settled. And yet, despite being one of the top five adopters by area, India has approved only one GM crop Bt cotton first approved in 2002 and its last approval of any trait came in 2006. Nearly two decades have passed without a single new biotech event cleared for cultivation. The contrast with the rest of the world is striking. Countries such as Brazil, Argentina, and the United States have continuously expanded their biotechnology portfolios, approving new crops, traits, and successive generations of genetic technologies. China, once cautious, has steadily moved forward from commercial cultivation of GM cotton and papaya to the recent approval of multiple GM maize and soybean varieties. More telling is the experience of our immediate neighbour, Bangladesh. In 2013, Bangladesh approved Bt brinjal developed by Maharashtra Hybrid Seed Company (MAHYCO), an Indian company. While Indian farmers continue to await a decision on the technology, Bangladeshi farmers have been cultivating Bt brinjal for over a decade, benefiting from lower pesticide use and improved protection. The irony is difficult to miss: a technology developed in India found commercial acceptance across the border before it did at home. This regulatory stagnation is not a technical failure. It is a policy choice, driven by ideological caution and institutional timidity, and Indian farmers are paying a heavy price.

Cotton sits at the heart of this story. It accounts for 11.7 per cent of global biotech crop area the third largest share after soybean and maize (AgbioInvestor GM Monitor, 2025). In the major cotton-producing countries: India, China, the United States, and Pakistan, GM varieties are now dominant. The transformation of global cotton has been, in large part, a story of biotechnology. And the results are remarkable. Global cotton production rose from 14 million metric tonnes (MMT) in TE 1980-81 to 25 MMT in TE 2025-26. Yields nearly doubled from 410 kg per hectare (kg/ha) in TE 1980-81 to a global average of 819 kg/ha in TE 2025-26 (ICAC, 2026). Countries that embraced technology, invested in research, and gave their farmers access to the best available seeds have pulled far ahead. The contrast with India is instructive, and damning.

Look at the yield numbers for TE 2025-26, Australia recorded cotton yields of 2,340 kg/ha, China at 2,311 kg/ha, Brazil at 1,943 kg/ha, the United States at 976 kg/ha, and India at merely 441kg/ha (ICAC, 2026). These are not marginal differences. China's performance is not an accident of geography but an outcome of deliberate policy. China systematically integrated biotechnology into its cotton sector across three distinct agroecological zones: Xinjiang, the Yellow River Basin, and the Yangtze River Basin, while complementing genetic advancement with region-specific farming practices (USDA, 2023). Brazil presents an even more compelling example. It produces almost 16 per cent of the world's cotton, despite 92 per cent of its cotton area under rainfed conditions, no irrigation advantage whatsoever. Technology and seed innovation have done what geography alone could not. Brazilian farms have also, through technology adoption, enabled 60 per cent of cotton-planted area to support a second crop within the same agricultural year (USDA, 2024). That is a productivity revolution built on policy courage and investment in science.

Now consider India. India has the largest cotton-growing area in the world. At over 12 Mha, India accounts for 39 per cent of global cotton acreage and contributes about one-fifth of global cotton production (for TE 2025-26). But its yield is merely 441kg/ha in TE 2025-26 (ICAC, 2026). That is roughly half the global average. It is less than one-fifth of what Australia and China achieve. It is less than one-fourth of what Brazil a rainfed competitor delivers, and less than half of what US achieves¹. India has the most land under cotton in the world and among the lowest productivity of any major producer. This is not a geography problem. It is not a rainfall problem. The gap

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1. While irrigation is frequently cited as the primary determinant of crop productivity, data indicates that water availability is not the decisive factor behind India's low yields. According to the International Cotton Advisory Committee (ICAC) study report *Water Footprint in Cotton 2020-2024: A Global Analysis* (2025), the 5-year average (2020-2024) percentage of cotton area under irrigation stands at: China (87%), Australia (83%), India (35%), USA (30%), and Brazil (9%). The structural disparity demonstrates that India's productivity gap is fundamentally a technology deficit. Both the USA and Brazil maintain significantly lower irrigation footprints than India. Brazil operating as an almost exclusively rainfed producer, yet both achieve vastly superior productivity.

between India and its competitors is a direct reflection of the gap in technology adoption, research investment, and regulatory ambition.

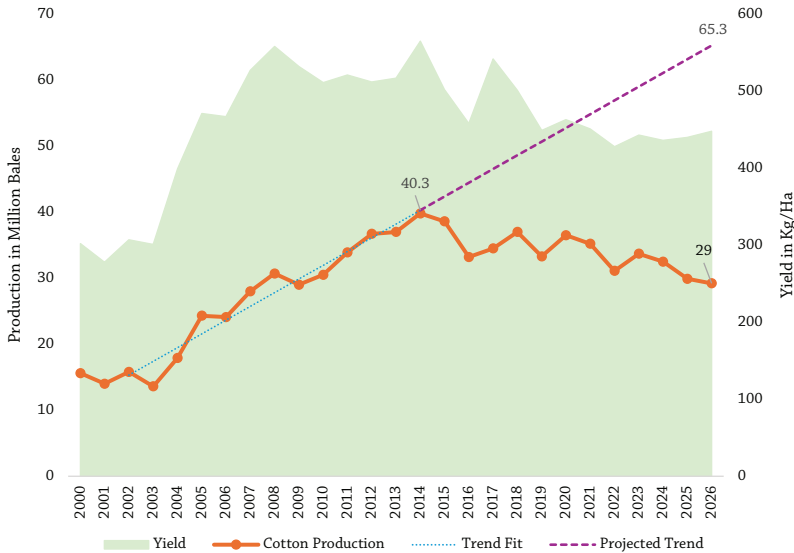
The rest of the world moved. India did not. And the consequences for farmers, for the textile industry, and for the country’s trade position are now becoming impossible to ignore. Understanding how this happened requires going back to 2002, when India did, briefly, get it right.

2.2 India’s GM Cotton Story

On March 26, 2002, Prime Minister Atal Bihari Vajpayee approved the commercial cultivation of Bt cotton through the Genetic Engineering Appraisal Committee (GEAC). The first hybrids developed by Mahyco-Monsanto Biotech (MMB), incorporating the cry1Ac Bt gene were engineered to resist the bollworm complex. India became the 16th country to commercialise transgenic cotton. It was a landmark decision. And for over a decade, it delivered.

Cotton production rose from 13.6 million bales in 2002-03 to 39.8 million bales in 2013-14 a 193 per cent increase. The average annual growth rate (AAGR) during FY 2003 to FY 2014 period was 10 per cent, against just 3.6 per cent in the pre-Bt years (FY 1981 to FY 2002). Area expanded by 56 per cent, from 7.6 Mha in FY 2003 to 11.9 Mha in FY 2014. Yields improved by 88 per cent from 302 kg/ha in FY 2003 to 566 kg/ha in FY 2013 (Juneja, Gupta & Gulati, 2025).

The trade transformation was equally dramatic. India had been a net importer of cotton from 1998-99 to 2004-05. By 2005-06, barely within three years after the commercial introduction of Bt cotton, India transformed into a net exporter wherein exports surged from 0.09 million bales in FY 2000 to 12.9 million bales in FY 2012, a 143-fold increase in twelve years. By 2013-14, India had overtaken China to become the world’s largest cotton producer. In 2006, GEAC approved Bollgard II a second-generation hybrid incorporating two genes, cry1Ac and cry2Ab offering enhanced resistance against *Spo-doptera* and contributing to further yield gains. Bt cotton adoption was near-universal. By the peak years, 90-95 per cent of India’s cotton area was under Bt varieties (Juneja, Gupta & Gulati, 2025).

Figure 2.1*Production and Yield of Cotton in India, 2000-2026*

Source: Authors' calculations using data from Cotton Corporation of India (CCI).

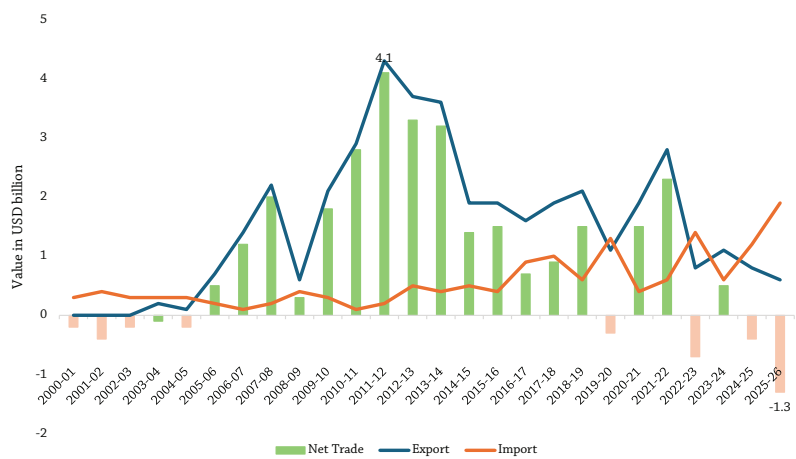
Unfortunately, since 2014-15, cotton production has been declining at an AAGR of 2 per cent (Juneja, Gupta and Gulati, 2025). That single statistic understates the scale of the damage. Consider what a simple projection reveals. If India had merely continued on the production trajectory that it established between 2002 and 2014, cotton output in 2026 would have reached 65.3 million bales. The Ministry of Agriculture's latest estimates for cotton production in FY 2025-26 stands at 29 million bales. The lowest in a decade. The gap of 36.3 million bales is huge and can be viewed as an accumulated cost of a decade long policy failure (Figure 2.1).

India went from 39.8 million bales at its peak in 2013-14 to 29 million bales today, while the trajectory it was on pointed to 65 million. That is not stagnation. That is a reversal.

India was a net exporter of raw cotton, a position it had earned through the productivity gains of the gene revolution. That position is now gone. In 2025-26, India exported 16 lakh bales while importing

40 lakh bales, a net import of 24 lakh bales. In value terms, exports stood at USD 0.6 billion against imports of USD 1.9 billion, leaving a net deficit of USD 1.3 billion (Figure 2.2). The irony is striking - a country that holds 39 per cent of the world’s cotton acreage is now spending foreign exchange to import the raw material required by its own textile industry.

Figure 2.2
Trends in India’s Cotton Trade, 2000-2026



Source: DGFT, various issues

India’s shift from net exporter to net importer of cotton is the direct consequence of two decades of regulatory inaction and innovation suppression.

2.3 Policies that Killed the Gene Revolution

The failure is not one of science or of markets. It is one of governance a sequence of policy decisions that, step by step, dismantled the incentive structure that had made India’s cotton revolution possible.

After Bollgard II in 2006, MMB India developed the next generation: Bollgard II with Roundup Ready Flex (RRF), and Bollgard III incorporating three genes (cry1Ac, cry2Ab, and Vip3A) with herbicide-

tolerant traits designed specifically to address evolving pest resistance and rising weed-management costs. These were not experimental technologies. They were ready for farmers, but never got the approval for commercial cultivation in the country. Amid opposition from activist groups, political concerns, and competing stakeholder interests, the government declined to approve them. As a result, Bollgard II, approved in 2006, remains the last GM technology cleared for commercial cultivation in India.

In the same period, the world moved decisively. The United States, Brazil, Australia, China and several other cotton-producing nations steadily upgraded their technology platforms, moving beyond first-generation Bt traits to stacked-gene varieties offering multiple layers of insect protection, herbicide tolerance, and improved farm management options. The United States now has 96 per cent of its cotton area under GM varieties. In 2000, only 26 per cent of US cotton acres were herbicide tolerant, 15 per cent were Bt, and 20 per cent used stacked seeds. By 2023, stacked gene varieties combining insect resistance with herbicide tolerance and multiple additional traits accounted for 86 per cent of all US cotton planted (Dodson, 2020). Brazil reached 99 per cent GM adoption, with stacked gene varieties significantly boosting production and exports. In 2024, Brazil commercially launched Bollgard 3 XtendFlex providing resistance to multiple insect pests and tolerance to glyphosate, glufosinate, and dicamba simultaneously. Colombia introduced stacked gene varieties in 2007, and they now make up the majority of cotton grown in the country, with Bollgard and Roundup Ready as the dominant approved traits. Australia reached 99.9 per cent GM adoption by 2014, with Bayer's Bollgard 3 XtendFlex now its dominant variety. India is still cultivating a technology approved in 2006. Its competitors are two full generations ahead in adoption of new GM cotton seed varieties.

In the early years around 2005, MMB dominated the market for cotton hybrids, either directly or through sublicensing agreements with private seed companies. Indian firms licensing the Bt trait from MMB paid a one-time licensing fee and ongoing royalties. The National Seed Association of India (NSAI) lobbied the government to

address what it characterised as high seed costs that could limit access for resource-poor farmers (Kesireddy, 2015). In 2006, Andhra Pradesh responded by imposing a price ceiling of Rs. 750 per packet, including the technology fee, on Bt cotton seeds. Other states followed.

Then came the national intervention. In 2015, the Government of India issued the Cotton Seed Price Control Order (SPCO) through a gazette notification under Section III of the Essential Commodities Act, 1995. The order set a maximum sale prices for seeds, fixed licensing guidelines, and regulated trait fees and royalties. A March 2016 gazette notification reduced the price of Bollgard-II seeds from Rs. 905.5 to Rs. 800 per 450 grams cutting the royalty from Rs. 186.95 to just Rs. 49 per packet, lowering prices for farmers by 11.65 per cent but slashing returns for domestic licensees by 74 per cent. In 2018, prices were reduced further to Rs. 740 per packet, with the trait value dropping from Rs. 49 to Rs. 39 (Arora and Malik, 2019).

The government did not stop there. On May 18, 2016, a separate notification mandated GM technology licensing guidelines requiring licensors to grant licenses to any eligible seed company within 30 days, and capping trait fees at 10 per cent of the MSP for five years, with annual 10 per cent reductions thereafter. By 2020, even the 10 per cent annual increase in trait fees was eliminated, removing what little financial headroom remained for innovators.

Developing proprietary Bt genes is expensive and slow, requiring years of research, investment in biosafety regulatory compliance, and sustained financial commitment. Price caps made it financially unviable for seed companies to develop and introduce new traits. Private investment dried up. Companies that had powered India's cotton revolution pulled back. The innovation pipeline closed (Arora and Bansal, 2011).

The market, as it often does, found its own answer. Farmers facing stagnant yields and rising weed-management labour costs began illegally adopting HtBt cotton. By 2017, the Field Inspection and Scientific Evaluation Committee found 15 per cent prevalence of unapproved HT cotton in major states including Andhra Pradesh, Telangana, Maharashtra, and Gujarat. By 2023, HtBt cotton covered

nearly 20 per cent of India's cotton acreage without regulatory sanction (FSII, April 2022).

The government has recognised the crisis. In 2026, the Union Cabinet approved the Mission for Cotton Productivity with an outlay of Rs. 5,659 crore, running from 2026-27 to 2030-31. To address declining productivity, quality concerns, and structural bottlenecks across India's cotton sector. The Mission's focus areas include developing high-yielding, climate-resilient, pest-resistant seed varieties, deploying modern farming technologies such as the high-density planting system and closer spacing, promoting Extra Long Staple cotton, improving quality and traceability, and strengthening infrastructure across the cotton value chain. The headline target is production of 498 lakh bales by 2031, to be achieved by raising lint productivity from 441 kg/ha to 755 kg/ha. The intent is welcome. But intent and public investment, without the right policy environment, will not be enough. The Cotton Mission addresses the symptoms. It does not yet address the cause. Consider the target: 755 kg per hectare by 2031. That would still leave India less than half of what Brazil, China, and Australia achieve today countries whose productivity advantage rests squarely on successive generations of GM technology, stacked traits, and herbicide-tolerant varieties. No amount of extension services, agronomic training, or coordinated research can substitute for access to the best available seed technology. It requires consistently high resources for agri-R&D, where India falls far behind.

2.4 Way Forward

2.4.1 A Call for Coordination and Streamlining

One of the primary causes behind regulatory delays in GM crop approvals is India's fragmented governance structure, which involves too many layers of approval with insufficient coordination. Currently, the GEAC under the Ministry of Environment, Forest and Climate Change handles GM crop approvals, while the Food Safety and Standards Authority of India (FSSAI) oversees GM-derived food products. Bodies such as the Review Committee on Genetic Manipulation (RCGM) and Institutional Biosafety Committees (IBSCs) are respon-

sible for assessing biosafety and efficacy, while State Biotechnology Coordination Committees (SBCCs) and District Level Committees (DLCs) monitor field trials and ensure compliance. While each of these bodies serves an important function, the absence of coordination among them leads to delays and inefficiencies that undermine the credibility of the regulatory process as a whole.

Policymaking must prioritise science-backed decision-making. The government should establish an integrated framework that aligns the functions of central, state, and district-level authorities. A single-window clearance mechanism under the leadership of the GEAC can streamline approvals, with clearly defined roles for SBCCs and DLCs to ensure effective implementation at the local level.

The scale of illegal cultivation further exposes the gaps in the existing regulatory framework. In 2023, HtBt cotton an unapproved GM trait accounted for nearly 20 per cent of India's cotton acreage. This reflects a strong and unmet demand for new technologies among farmers, who have resorted to informal markets in the absence of formal approvals. The proliferation of unauthorised seeds poses significant economic risks, including inflated prices, reduced tax revenues, and the introduction of unregulated traits into the environment. These challenges call for a transparent and efficient policy framework that addresses farmers' genuine needs while safeguarding both economic and environmental interests.

2.4.2 Strengthening IPR Regulations

The transformative success of cotton cultivation in India between 2002 and 2014 was made possible, in large part, by innovations in seed technology brought about by the private sector. High-yielding Bt hybrids revolutionised agricultural practice by improving productivity and reducing pest-related losses. Most Bt cotton hybrids commercially cultivated in India are derived from two Bayer, formerly Monsanto events: Mon 531 and Mon 15985, with licensing rights held by MMB India, which sub-licensed these events to 45 Indian seed companies including Rasi Seeds, Nuziveedu Seeds, Kaveri Seeds, Ajeet Seeds, and JK Agri Genetics, enabling the development of a wide range of hybrids

tailored to regional agro-climatic conditions (USDA, 2023). Seeds, however, are the product of intensive and sustained R&D efforts and are highly susceptible to replication. Strong intellectual property rights (IPR) are therefore critical to sustaining the innovation that makes such an ecosystem possible.

Without robust IP protections, the incentive for private sector investment diminishes significantly, limiting India's capacity to address its pressing agricultural productivity challenges. The Cotton Seed Price Control Order emerged as a significant obstacle to fostering a dynamic and innovative seed industry. By regulating the maximum sale price of cotton seeds including the seed value, licensing fee, and royalties the government progressively restricted the private sector's ability to recover its investments. By 2020, even the trait fee had been abolished, effectively eliminating what remained of the financial incentive for new seed development. That made the innovators turned their back to India. Some of the domestic Indian companies may have felt happy to have a protected market for their seeds, but they are not the innovators and productivity has fallen. The farmers are suffering, and nation has lost its place as the largest producer and second largest exporter, which it had attained in 2013-14. And our policy makers played in the hands of domestic seed companies at the cost of national and farmers' interests.

Developing new seed varieties is not a short-cycle business. It requires years of investment in plant breeding, biotechnology, and trait research, followed by a lengthy and expensive biosafety regulatory process with no guarantee of commercial approval at the end. Without a policy framework that ensures adequate returns on that investment, private companies have no rational basis for undertaking it.

Either the government restores the IPR framework that allows private innovators to recover their costs, or it commits to funding public sector R&D at a scale sufficient to replace what the private sector once provided. If the farmer is not to bear that cost, then the government must. What is not sustainable is the current arrangement, where price controls suppress private innovation, public R&D is underfunded,

and farmers are left with dated technology that was once approved in 2006. The gene revolution of India’s cotton story is now buried under policy paralysis.

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3

Yarn, Fabric and the Value-addition Gap in Factory

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SULAKSHANA RAO, AYUSHI GUPTA AND ASHOK GULATI

3.1 Introduction

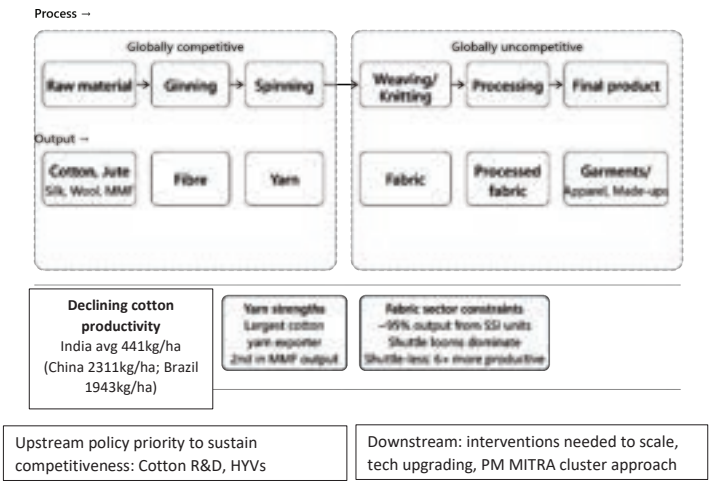
India's T&A sector has long been anchored in its cotton heritage, with the largest area under cotton cultivation, one of the largest cotton production base and a leading position in global cotton yarn exports. Yet this raw material strength, when it comes to fibre-to-fabric conversion in the 5F value chain, is not globally competitive. This chapter examines why India is globally competitive in cotton spinning but has failed to build matching strength in man-made fibre (MMF) yarn, in fabric weaving and knitting and overall in textile processing and finishing.

The answer lies in a series of layered mismatches. India's fibre mix is skewed towards cotton in a world that has shifted decisively towards MMF; weaving infrastructure is large in scale but obsolete in technology; processing and finishing sector is under-invested; and emerging opportunities in recycled, natural fibres and technical textiles calls for focused attention. Identifying these gaps and understanding the policy responses that have begun to address them is the central objective of this chapter.

An assessment of India's T&A value chain (NITI Aayog, 2023) highlights a sharp structural divide in competitiveness (Figure 3.1). While India remains globally competitive in cotton, ginning and spinning, the downstream segments of weaving, knitting, processing and final products continue to face significant inefficiencies. Nearly 95 per cent of fabric production is concentrated in small-scale units, and the

predominance of shuttle looms over shuttle-less looms despite the latter being substantially more productive reflects the technological gaps in the sector. Historically, a tax structure that discouraged MMF production (which now stands corrected) had further compounded these structural disadvantages upstream.

Figure 3.1
India's Competitiveness Across T&A Value Chain



Source: Author's own

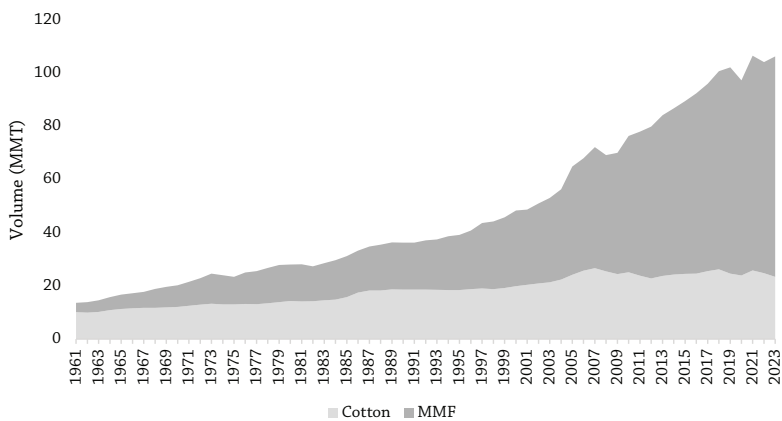
This chapter is organised as follows. Section 3.2 examines the global fibre shift and India's lagging MMF transition. Section 3.3 analyses the yarn sector: cotton's declining export trajectory, the MMF gap, and the policy corrections of 2025-26. Section 3.4 examines the fabric sector's structural fragmentation. Section 3.5 explores future opportunities in recycled fibres, speciality natural fibres, and technical textiles. Section 3.6 maps the policy imperatives beyond input cost corrections. Section 3.7 is the way forward.

3.2 The Global Fibre Shift: Rising MMF Consumption and India's Mismatch

The global fibre landscape has undergone a structural transformation over the past two decades. Total world fibre production reached

124 million metric tonnes (MMT) in 2023 more than double the 58 MMT recorded in 2000 (Textile Exchange, 2024). Within this growth, synthetic fibres accounts for 67 per cent of global fibre production. Polyester alone constitutes a 57 per cent share of global fibre output, with production of around 71 MMT (ICAC, 2024). If we look at global fibre consumption trends, cotton’s share has declined from roughly 40 per cent in the early 2000s to 22 per cent in 2023 (Figure 3.2), while share of MMF is 77 per cent.

Figure 3.2
Global Consumption of Major Textile Fibre



Source: ICAC, World textile demand report, 2024

What were the drivers of this shift in last two decades? MMF yarns, particularly polyester offer significant cost advantages, durability, and versatility across fast fashion, sportswear, athleisure and performance wear. Stable petrochemical feedstock pricing, continuous improvements in fibre technology, and the rise of blended fabrics have further accelerated adoption. Globally, the fibre ratio between MMF and natural fibres now stands at approximately 75:25 (Ministry of Textiles, 2026). India’s ratio, by contrast, remains at roughly 40:60 in favour of cotton. However, more recent domestic demand data shows the transition accelerating: MMF and blended products now account for 52.2 per cent of India’s fibre consumption, with cotton at 41.2 per

cent, silk and wool contributing the remainder (Ministry of Textiles, 2026). The National Fibre Mission 2030-31 (MoT Concept note), targets a 60:40 MMF-to-natural-fibre consumption ratio by 2030-31.

This divergence is not merely a market preference issue. It is a structural competitiveness gap with direct consequences for export performance. Every major apparel buyer sourcing into the fast-growing athleisure, activewear and performance segments is operating in MMF territory. India’s inability to supply competitive MMF-based fabric at scale means it is structurally disadvantaged in the fastest-growing product categories in global apparel trade.

3.3 India’s Yarn Sector: Strengths, Stagnation and the MMF Gap

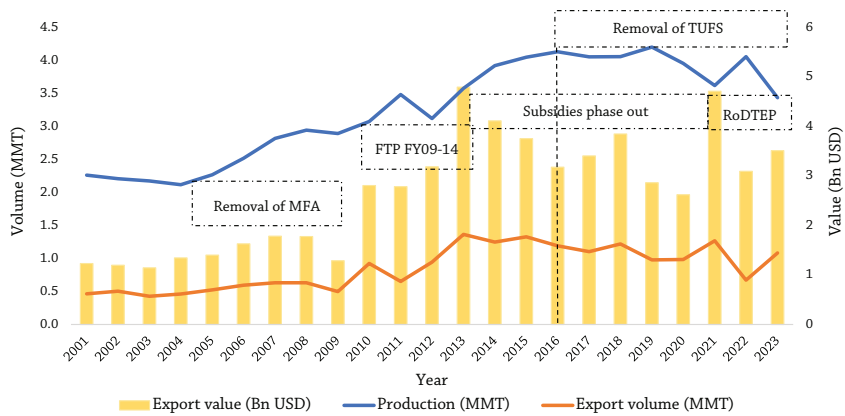
3.3.1 Cotton Yarn

India’s cotton yarn industry is a success case. Total yarn production grew from 3.43 MMT to 6.65 MMT over the past two decades (Rao, Gupta and Gulati, 2025). The adoption of Bt cotton technology, the elimination of the Multi Fibre Agreement in 2005, and a wave of spinning mill modernisation through the Technology Upgradation Fund Scheme (TUFS) collectively drove a surge in production and exports. India became the largest cotton yarn exporter in 2010, with exports peaking in 2013 at 1.37 MMT, valued at USD 4.8 billion (Rao, Gupta and Gulati, 2025).

However, since 2013, cotton yarn exports have followed a declining trend. Major cause for this decline is the shift in trade preferences: China, the world’s largest cotton yarn importer, signed Trade Agreements with Pakistan (the China-Pakistan FTA became operational in 2007) and with Vietnam and other ASEAN nations (the China-ASEAN FTA from 2010). These agreements gave Pakistan and Vietnam duty-free access to the Chinese market while India continued to face tariffs of 3.5-4.5 per cent on most categories. India’s share of China’s cotton yarn imports fell from 42 per cent in 2013 to 22 per cent by 2020 (Figure 3.3 and Figure 3.4). By TE 2022, Vietnam held a 49 per cent share of China’s cotton yarn imports against India’s 13.57 per cent (UNCOMTRADE, 2023).

Figure 3.3

Production and Exports Trends in India's Cotton Yarn

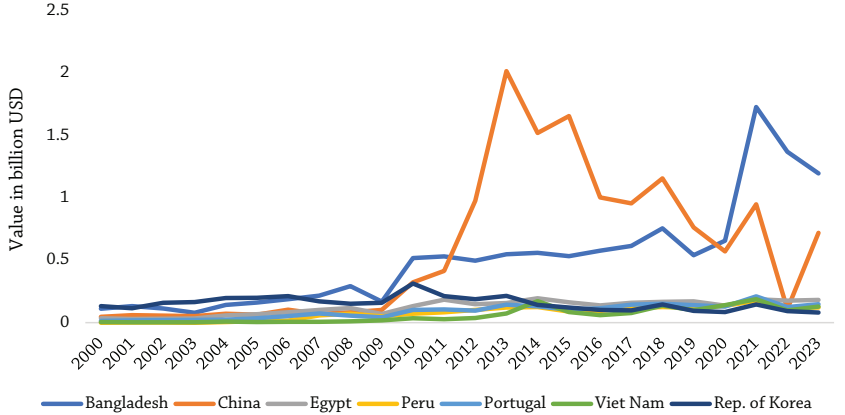


Note: MFA stands for Multi-Fibre Agreement, FTP is Foreign Trade Policy, TUFS is Technology Upgradation Fund Scheme & RoDTEP is Remission of Duties or Taxes on Export Products

Source: Rao, Gupta and Gulati, 2025 and Compendium of Indian Statistics 2016-17; Ministry of Textiles and UNCOMTRADE, 2023

Figure 3.4

India's Major Export Destinations for Cotton Yarn



Source: Rao, Gupta and Gulati, 2025 and UNCOMTRADE; HS codes: 5204, 5205 & 5207

Compounding the tariff disadvantage was the withdrawal of spinning mills from the Amended Technology Upgradation Fund Scheme (ATUFS) launched in 2016. Unlike its predecessor TUFS, the ATUFS explicitly excluded spinning mills from capital investment subsidies removing the key modernisation incentive for a segment where machinery age is a critical competitiveness factor. Tamil Nadu, which accounts for 46 per cent of India’s installed spinning capacity, has approximately 68 per cent of its machinery aged over ten years (Government of Tamil Nadu, 2023). Capacity utilisation in spinning mills has fallen to 70-75 per cent (Rao, Gupta and Gulati, 2025; CITI 2025).

Cotton contamination remains a persistent quality challenge for India’s textile industry. ITMF surveys have consistently identified several Indian cotton varieties contaminated, increasing cleaning costs, yarn breakages and quality losses during processing. Contamination originates in hand-picking practices, the widespread use of polypropylene bags in harvesting and storage and inconsistent ginning quality. These quality challenges increase processing costs and encourage many Indian mills to supplement domestic supplies with imported cotton. Imports are particularly from Australia, US and Brazil (USDA FAS, 2025), which benefit from mechanised harvesting and post harvest handling systems.

The Kasturi Cotton Bharat programme, launched by the Ministry of Textiles with a focus on certification, traceability and branding is a meaningful step towards addressing the contamination and quality perception problem. However, adoption at scale across the fragmented ginning sector remains the key challenge (Ministry of Textiles, 2024). The programme needs to move from a branding initiative to a supply chain integration mandate, with market-linked incentives for mechanised picking and certified gin output.

3.3.2 *The MMF Yarn Gap*

Despite India’s 9.2 per cent share of global MMF production, the upstream production base has not translated into a commensurate downstream export performance in MMF fabrics and apparel (Rao, Gupta and Gulati, 2025). Domestic MMF production grew from 6.25

lakh MT in 2019-20 to 7.50 lakh MT in 2023-24, a CAGR of 4.66 per cent, with further acceleration to 13.0 lakh MT projected by 2030-31 at a CAGR of 8.17 per cent (Ministry of Textiles, 2025a). Non-cellulosic MMF production rose from 56.56 lakh MT in 2019-20 to 66.55 lakh MT in 2023-24. Yet India's share in the MMF apparel export segment is limited.

Table 3.1 maps two vulnerabilities within India's otherwise substantial filament yarn base. Production is dominated by polyester: in TE 2023-24, Polyester Filament Yarn (PFY) averaged 1728 million kg, over 93 per cent of total filament yarn output of 1859 million kg while Viscose Filament Yarn (VFY) and nylon together contributed just seven per cent, averaging 50 million kg and 66 million kg respectively. The scale of the upstream base is not in question. The first vulnerability is in viscose. India's VFY production averaged 49.9 million kg in TE 2023-24 while consumption stood at 94.1 million kg, with imports filling the balance. On a TE basis, the import-to-production ratio exceeded 97 per cent; in 2022-23, VFY imports (52.3 million kg) actually exceeded domestic production (52.2 million kg). This near-total import dependence for cellulosic filament yarn is notable given India's standing as a major VSF producer the upstream raw material exists, but the capacity to convert it into filament has not been built. The National Fibre Mission's cellulosic MMF mandate identifies this as a specific investment priority. The second is in polyester trade. PFY exports declined from 550 million kg in 2021-22 to 350 million kg in 2023-24 (P), while imports more than tripled from 19 million kg to 58 million kg. India retains a net export surplus in PFY, but for total filament yarn the aggregate surplus contracted from 499 million kg in 2021-22 to 249 million kg in 2023-24 (P) a compression of over 50 per cent in two years driven by falling exports and a near-doubling of imports.

Table 3.1

*Production, Trade and Domestic Consumption of Yarn in India,
TE 2023-24 (million Kg.)*

<i>Fibre / Filament</i>	<i>Year</i>	<i>Production, Trade and Consumption (million kg)</i>			
		<i>Production</i>	<i>Imports</i>	<i>Exports</i>	<i>Consumption (Domestic Use)</i>
Viscose Filament Yarn	2021-22	50.04	40.32	4.51	86.99
	2022-23	52.18	52.29	3.98	99.02
	2023-24 (P)	47.61	53.32	4.84	96.29
	TE 2023-24	49.94	48.64	4.44	94.10
Nylon Filament Yarn	2021-22	66.85	2.9	6.62	62.82
	2022-23	67.84	5.29	7.18	66.08
	2023-24 (P)	62.03	4.58	8.22	58.2
	TE 2023-24	65.57	4.26	7.34	62.37
Polyester Filament Yarn	2021-22	1885.18	19.48	550.37	1345.54
	2022-23	1768.96	21.06	363.84	1425.01
	2023-24 (P)	1531.02	58.13	349.78	1238.59
	TE 2023-24	1728.39	32.89	421.33	1336.38
Polypropylene Filament Yarn	2021-22	14.61	0.32	0.8	14.03
	2022-23	14.87	0.16	1.02	13.99
	2023-24 (P)	14.99	0.32	2.51	12.86
	TE 2023-24	14.82	0.27	1.44	13.63
Total Filament Yarn	2021-22	2016.68	63.02	562.3	1509.38
	2022-23	1903.85	78.8	376.02	1604.1
	2023-24 (P)	1655.65	116.35	365.35	1405.94
	TE 2023-24	1858.73	86.06	434.56	1506.47

(P): Provisional. TE 2023-24 = Triennium Ending 2023-24, calculated as the average of 2021-22, 2022-23 and 2023-24 (P).

Source: Office of the Textile Commissioner, DGCIS Kolkata; Ministry of Textiles, Government of India (2025).

In practice, the downstream was held back for nearly a decade by a combination of policy-driven input cost inflation and an inverted duty structure. QCOs that restricted speciality fibre imports and an inverted GST regime where in synthetic fibres faced higher taxes on inputs like fibre (18 per cent) and yarn (12 per cent) compared to lower GST on finished garments (5–12 per cent). QCOs on polyester and viscose raw materials, requiring Bureau of Indian Standards (BIS) certification, created a de facto restriction on the import of speciality fibres and competitively priced raw materials from Taiwan, Korea and other suppliers. Industry estimates indicate that domestic prices of key MMF raw materials remained significantly above international levels as a result. These distortions discouraged product diversification precisely when global demand was shifting towards synthetic and performance textiles.

3.3.3 MMF Policy Support: QCO Removal and GST Rationalisation

Between 2025 and early 2026, a significant series of policy corrections changed the landscape materially. In November 2025, the government rescinded Quality Control Orders across the MMF value chain, covering terephthalic acid (PTA), ethylene glycol (MEG), polyester staple fibre (PSF), polyester spun yarn, industrial yarn, fully drawn yarn, and partially oriented yarn (MOT 2025b). The QCO on viscose staple fibre (VSF) the critical cellulosic input was also rescinded around the same time. Industry associations noted this a structural correction that would stabilise raw material prices, restore supply continuity, and enable Indian MMF manufacturers to source speciality fibres globally for innovation and product development.

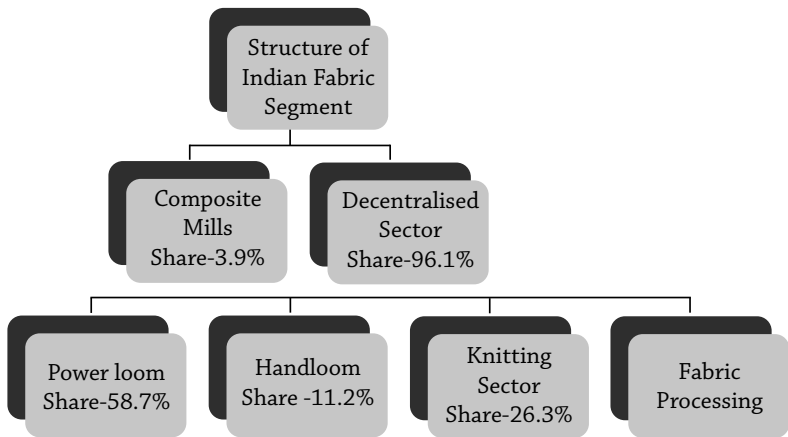
Equally significant was the correction of the inverted duty structure in the GST framework. This meant that inputs were taxed more heavily than finished goods locking working capital, complicating refunds, and effectively penalising downstream manufacturers for using domestic raw materials. The 56th GST Council meeting in September 2025 corrected this long-standing anomaly by reducing GST on man-made fibre and yarn to 5 per cent, creating a consistent rate across the MMF supply chain and eliminating the refund burden that had disproportionately hurt MSMEs.

3.4 The Fabric Sector: Fragmentation, Technology Deficit and the Processing Gap

India has the world’s highest installed loom capacity approximately 3.85 lakh power looms and 28 lakh handlooms as of 2023-24 (Gupta, Juneja & Gulati, 2025) along with a vast knitting sector concentrated in Tiruppur, Ludhiana, and Kolkata. Total fabric production has nearly doubled since the mid-1990s. Yet 97 per cent of output originates in the decentralised sector, with the composite mill sector contributing only 2.7 per cent, a share that has declined continuously since 1995-96, when it stood at 6 per cent (Gupta, Juneja & Gulati, 2025).

The power loom sector accounts for 58.4 per cent of total fabric production and is the primary supplier of fabric for ready-made garments and home textiles (Gupta, Juneja & Gulati, 2025). India holds just 2 per cent of global shuttle-less loom capacity a technology that is six times more productive per machine and produces fabric with significantly superior consistency and defect rates (NITI Aayog, 2020). The contrast with advanced textile nations is stark: in modernised textile hubs elsewhere, shuttle-less looms comprise the overwhelming

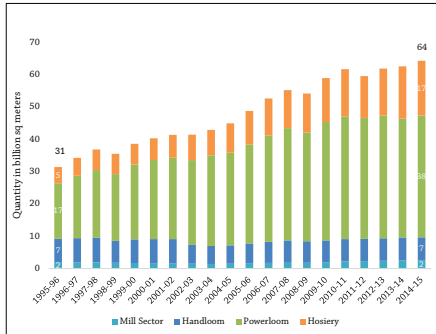
Figure 3.5
Structure of Indian Fabric Manufacturing



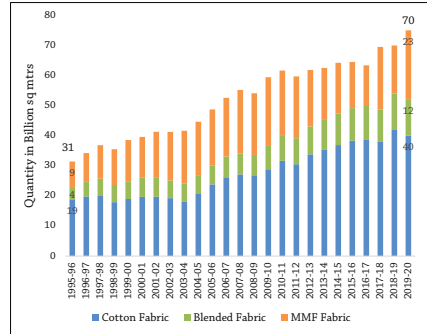
Source: Gupta, Juneja & Gulati, 2025

Figure 3.6

*Sector-wise Indian Fabric Production,
1995 to 2015*

**Figure 3.7**

*Fibre-wise Indian Fabric Production,
1995 to 2020*



Source: Gupta, Juneja & Gulati, 2025

Note: From 2015-16 onwards, the classification of fabric production is made only between the mill sector and decentralised sector. The latest available data is for 2019-20, the mill sector produced 1.7 billion sq meters of fabric whereas the decentralised sector produced 61.6 billion sq meters of fabric.

majority of weaving capacity. India's decentralised sector also operates at chronic under-scale, with most power loom units running as micro-enterprises of five to twenty machines, unable to achieve the production volumes needed for quality certification, consistent buyer relationships, or technology investment.

Within the organised mill sector, some vertically integrated players have demonstrated that scale and technology investment can coexist. Arvind Limited operates across spinning, weaving, knitting, and in-house design with strong positions in denim, technical textiles, and performance fabrics. Raymond integrates spinning, weaving, processing, and garmenting for premium suiting and denim. Grasim Industries (Aditya Birla Group) covers the full chain in viscose and blended textiles. These firms are internationally competitive but they represent a thin layer amidst a base that is predominantly fragmented and undercapitalised.

The fibre composition of India's fabric output mirrors the broader misalignment with global trends. Cotton-based fabrics continue to constitute the largest share of total fabric production approximately

57 per cent as of 2019-20 even as the global market has moved decisively towards MMF (Gupta, Juneja & Gulati, 2025). The revival of cotton’s share from a low of 43 per cent in 2004 to 57 per cent by 2019-20 was itself a consequence of Bt cotton adoption driving domestic raw material availability, but it has effectively reinforced cotton’s structural dominance at precisely the moment when global demand is accelerating away from it.

MMF-based fabric production, concentrated particularly in Surat (Gujarat) which accounts for over 60 per cent of India’s polyester-based fabric output is substantial in volume but limited in value. Surat’s ecosystem of power loom weavers produces enormous quantities of grey synthetic fabric, but the sector is dominated by small units, minimal processing investment, and limited quality certification. MMF fabric exports stood at USD 1.4 billion in TE 2023, a fraction of India’s cotton fabric exports of USD 2.4 billion and a vanishingly small share of the USD 60.6 billion global MMF fabric trade (Gupta, Juneja & Gulati, 2025).

India imports 74 per cent of its MMF fabric from a single source, with China dominating Indian MMF fabric import shares (Figure 3.9). This import dependency is a direct indicator of the domestic fabric sector’s inability to produce competitive MMF fabric in the widths, counts, finishes and delivery parameters that apparel manufacturers require. Bangladesh, India’s largest export market for cotton fabric, imports the bulk of its MMF fabric from the same source. India is effectively supplying the commodity cotton fabric segment of Bangladesh’s garment sector while the higher-value MMF requirements flow to its competitor (Figure 3.8).

Figure 3.8

India's Major Cotton Fabric Export Destinations, TE 2023

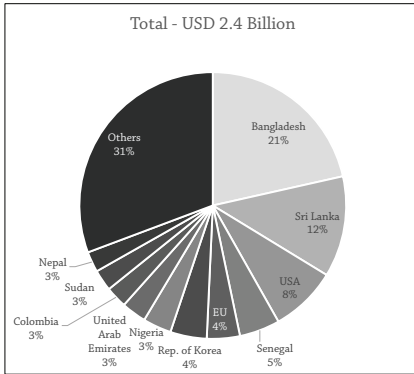
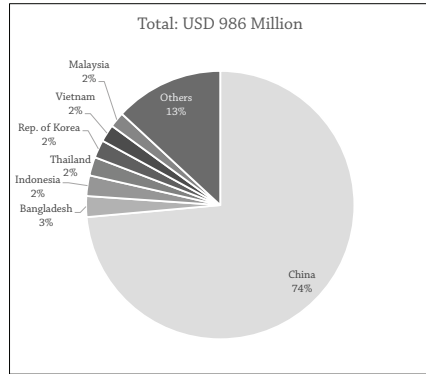


Figure 3.9

India's Major MMF Fabric Import Destinations, TE 2023



Source: UN COMTRADE , 2023

The Processing Gap: Where India Leaves Value on the Table

Of all the structural weaknesses in India's fabric manufacturing sector, the processing and finishing deficit is most consequential and demanding policy focus. Textile processing encompassing pre-treatment, dyeing, printing, and finishing is the stage at which grey, commodity fabric is transformed into finished, value-added textile. Finished, dyed, and coated fabrics command realisation prices 30-50 per cent higher per unit than unprocessed grey fabric (Stark et al., 2022). India exports grey yarn and grey fabric; competitors such as South Korea and Turkey export dyed, finished, and technically functional textiles at far higher price points. The processing deficit is compounded by environmental compliance failures. Textile processing is among the most pollution-intensive industrial segments, consuming large quantities of water, chemicals, and energy while generating hazardous effluents (Madhav et al., 2018). While Tamil Nadu and Maharashtra have enforced Zero Liquid Discharge (ZLD) policies requiring complete water recycling, most other states mandate only basic effluent treatment creating unequal compliance costs and leaving large sections of the sector exposed to ESG risk (Gupta, Juneja & Gulati, 2025).

This ESG risk is increasingly a market access issue. The European Union’s Corporate Sustainability Due Diligence Directive (CSDDD) and extended producer responsibility frameworks create supply chain traceability requirements that will systematically exclude unverified Indian processing units from large-format European buying programmes. Major apparel brands now require global organic textile standard (GOTS), Oeko-Tex, and Bluesign certification from fabric suppliers as pre-conditions for order placement. India’s processing sector is not yet structurally prepared for this transition.

A further structural constraint is India’s continued dependence on imported textile machinery. India imports approximately USD 2.5 billion in textile machinery annually, while the Economic Survey (2025) notes that the sector has attracted limited foreign direct investment, constraining technological advancement and reinforcing reliance on imported machinery. The survey also highlights persistent skill gaps that continue to limit productivity and innovation.

3.5 Future Fibres- Recycled Fibres, Speciality Natural Fibres, and Technical Textiles

India’s frontier fibre opportunities span across recycled fibres, speciality natural fibres and the technical textiles. India has inherent advantages and the way forward is to convert them to competitive positions.

The first is recycled fibres. India possesses one of the world’s largest textile recovery and recycling networks, managing approximately 7.8 million tonnes of textile waste annually across formal and informal systems. As per the ‘Mapping of Textile Waste Value Chain in India’ study, Ministry of Textiles (2026), India generates approximately 7,073 kilo tonnes of textile waste annually, comprising both pre-consumer and post-consumer streams, with nearly 97 per cent of pre-consumer waste already recycled. Panipat has evolved into one of the largest textile recycling hubs globally. The strategic opportunity is significant and time-sensitive: EU Ecodesign regulations and extended producer responsibility frameworks are creating mandatory recycled content requirements; major brands including H&M, Zara, and Nike

have committed to recycled content sourcing targets. The global recycled standard (GRS) and recycled claim standard (RCS) have emerged as the certification infrastructure through which verified recycled content commands a price premium. Panipat's model which is fragmented and largely uncertified is excluded from this premium market. The Atal Centre of Textile Recycling and Sustainability at Panipat, established under the NTTM, demonstrates India's potential in high value fibre to fibre recycling. The Tex-Eco Initiative under the Integrated Programme for Textiles is the right policy vehicle; Panipat should be its anchor pilot demonstration project.

The second category is speciality natural fibres, where India holds comparative advantages that has not fully been leveraged. The sustainability imperative in global T&A is boosting the demand for natural fibres: EU ecodesign regulations, growing consumer preference for biodegradable and traceable materials are collectively expanding the addressable market for premium natural fibres. India is the world's second-largest silk producer, yet remains import-dependent in the grades required for premium apparel. Jute, where India is the leading producer, remains heavily concentrated in traditional packaging applications despite growing opportunities in geotextiles, agro-textiles, sustainable packaging, furnishings and biodegradable composite materials. Wool production has been declining domestically, with the quality profile skewed heavily towards coarse carpet-grade fibre, even as global demand for fine and specialty wool in performance and luxury apparel is growing. In each case, India is on the supply side of a market whose demand is expanding but is positioned at the commodity end rather than the premium end of that market. The National Fibre Mission 2030-31 addresses production, infrastructure and traceability across all three fibres (Ministry of Textiles, 2026a). The strategic opportunity, however, requires as much attention to demand-side positioning certification, branding and buyer development, as to supply-side modernisation.

The third is technical textiles, one of the fastest growth and margin segment of the global textile market, with applications spanning agriculture, medical, construction, defence, automotive, sports

and aerospace. According to IIT Delhi Baseline survey 2020, India’s technical textiles industry was valued at approximately USD 18.89 billion in FY2019-20, representing around 8.7 per cent of the global market valued at USD 217.81 billion (Ministry of Textiles, 2022). The Economic Survey 2024-25 estimates that India’s technical textiles market reached approximately USD 26.8 billion in FY2023-24, making India the world’s fifth largest technical textiles market (Government of India 2025). The National Technical Textiles Mission, launched in 2020 with an allocation of Rs 14.8 billion, has developed the domestic market but the challenge is the translation from domestic supply to export competitiveness. India currently serves primarily lower-value segments: agro-textiles, basic geo-textiles, hygiene products. High-value segments medical textiles, defence composites, filtration fabrics, aerospace-grade reinforcement materials require R&D capabilities, testing infrastructure, regulatory approvals, and quality systems that the sector is still building. The opportunity is large, but it requires a deliberate shift from domestic-market-serving to export-competitive production and the R&D and certification architecture.

3.6 Policy Imperatives beyond input cost corrections

3.6.1 Building MMF Ecosystem

The removal of QCOs and the GST correction have addressed the input cost problem in MMF. But an ecosystem is more than raw material access, and the industry asks have moved accordingly. Beyond tariff correction, building a competitive MMF ecosystem requires action on three dimensions that QCO removal alone cannot provide. First, speciality fibre development: while bulk polyester and viscose are now accessible at competitive prices, the growing market for lyocell, modal, bio-based fibres and recycled content requires a policy framework that enables innovation-driven fibre sourcing, including partnerships with global fibre innovators and domestic R&D investment through the National Fibre Mission. Second, processing and finishing capacity: the MMF raw material advantage is only realised when India can produce finished, dyed, and coated MMF fabric at internationally competitive quality and price. This requires a dedicated technology upgrade stream

for MMF processing in PM MITRA parks and existing clusters. Third, design and product development: the shift from commodity MMF fabric to differentiated performance fabric requires design capability, product testing infrastructure, and buyer development programmes.

Industry has also consistently asked for policy stability especially for investor confidence: a 10-year horizon commitment on input duty structures, QCO and PLI framework continuity. Investor firms in MMF fabric processing need an institutionalised stability through long term policy certainty rather than scheme-by-scheme decisions, a policy ask the industry has consistently raised.

3.6.2 Technology upgrading in Weaving and Processing

The single most impactful near-term investment for India's fabric sector is the large-scale replacement of shuttle looms with shuttle-less looms in the power loom segment. The technology is mature, widely deployed globally, and its productivity advantage six times per-machine output (NITI Aayog, 2024) is not in dispute. The barrier is financial: small power loom operators running units of five to twenty machines cannot individually access the capital required. Collective mechanisms: cluster-level financing pools, shared loom parks within PM MITRA, equipment leasing models can unlock this transition at scale.

The Textile Expansion and Employment Scheme's mandate for capital assistance for machinery modernisation in traditional clusters is the right instrument. Its success will depend entirely on implementation design: whether subsidies are sufficient to cover the technology cost premium, whether they reach last-mile MSMEs and whether processing and finishing equipment is included alongside weaving machines. Technology upgrading should extend beyond machinery acquisition to technology transfer. India should encourage joint ventures, technology licensing and collaborative R&D with leading global textile machinery manufacturers to strengthen domestic capabilities in weaving, dyeing, finishing, automation and digital manufacturing. Over time, such partnerships can support local manufacturing of advanced textile machinery while reducing dependence on imported

capital equipment. On environmental compliance, the Tex-Eco Initiative provides the framework but the infrastructure gap is real. ZLD-compliant CETPs must be extended beyond Tamil Nadu and Maharashtra to all major processing clusters, with concessional financing for MSME access. Digital textile printing, cutting water and chemical consumption significantly cent relative to conventional methods while enabling faster design turnaround deserves dedicated investment incentives for its dual sustainability and quality benefit.

3.6.3 Formalising the Recycled Fibre Economy

The Panipat recycled textile economy is India’s most significant untapped opportunity at the intersection of circular economy policy and export market access. The transition from informal to formalised requires coordinated investment in NIR-based fibre sorting for consistent quality output; cluster-level GRS/RCS certification mechanisms pooling costs across small processors; chemical recycling capability beyond mechanical recycling; and supply chain traceability infrastructure satisfying buyer and regulatory verification requirements. The Tex-Eco Initiative should designate Panipat as a pilot sustainable textile hub for developing a formal, certified and globally competitive recycled fibre ecosystem.

3.6.4 Technical Textiles

The next phase of NTTM should build on the expansion of the domestic market by strengthening the R&D, testing and certification infrastructure needed for export competitiveness in high-value segments: medical textiles requiring clinical validation protocols; ballistic and protective textiles requiring defence procurement alignment; aerospace composites requiring IIT, DRDO and industry partnerships; and agricultural bio-textiles requiring biodegradable geo-textile standards for environmentally regulated export markets. The Budget 2026-27 announcement of Mega Textile Parks in challenge mode with a technical textiles focus is the right directional signal. These parks must emphasise integrated infrastructure, economies of scale and value addition. The parks must also prioritise end to end technical

textile value chains to strengthen India's competitiveness in high-value industrial, medical, defence and infrastructure applications.

3.7 Way Forward

India's fibre-to-fabric story in the 5F value chain is critical and this chapter discusses the structural barriers and their solutions. The QCO rescissions across the MMF value chain, the correction of the inverted GST structure and the announcement of the integrated programme for textiles Integrated Programme for the Textile Sector together address challenges faced by industry. Their combined effect restores the possibility of building an export competitive MMF ecosystem from fibre to apparel.

Need of the hour is building the ecosystem; the processing and finishing capacity, the shuttle-less loom infrastructure, the technology transfer joint ventures and partnerships, the certified recycled fibre economy, and the R&D and testing for technical textiles that would make India competitive not just on input costs but on the full value chain.

Three conclusions from this chapter are worth carrying forward. First, India's competitive advantage in cotton, silk, jute and an expanding MMF production base must be complemented by stronger downstream capabilities, particularly in the conversion of fibre into yarn, finished fabrics and ultimately value added apparel. India remains globally competitive in spinning but globally uncompetitive in weaving, processing, and finishing. Closing that gap is the central task. Second, the fibre transition is underway but incomplete. Cotton remains dominant in India's consumption mix even as MMF now accounts for 77 per cent of global fibre use. The policy direction is right. The National Fibre Mission's target of a 60:40 MMF-to-natural-fibre ratio by 2030-31 is the correct strategic ambition, but the pace needs to accelerate. Third, the sustainability imperative is no longer a future consideration. EU ecodesign regulations, recycled content mandates, and supply chain traceability requirements are shaping global T&A sourcing decisions.

This chapter establishes the need to strengthen downstream competitiveness across the fibre-to-fabric value chain. The next chapter builds on this analysis by examining India’s apparel export competitiveness, focusing on the ‘missing middle’ in manufacturing and the systemic reforms needed to improve India’s position in global apparel value chains.

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India's Apparel Export Competitiveness: The Missing Middle and the Case for Systemic Reform

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SULAKSHANA RAO, RIYA JAIN AND ASHOK GULATI

4.1 Introduction

The textile and apparel (T&A) sector has historically served as a gateway to industrialisation for many developing economies, consistent with the 'flying geese phenomena'¹ of structural transformation (Akamatsu, 1962), where production shifts across countries in response to changing factor costs. This transition is now underway in global apparel markets, and India stands at a critical juncture to capture this opportunity. For a labour-abundant country like India, apparel exports are not merely a trade outcome they are an engine of growth, capable of absorbing large-scale labour, particularly women, and facilitating the movement of workers from low-productivity agriculture to higher-productivity manufacturing.

For India, the T&A sector is especially strategic given its labour-intensive nature, given its demographic profile: roughly two-thirds of the population is of working age (15-64 years) and with 7-8 million persons joining the labour force each year (ILO & IHD, 2024), employment generation is both a challenge and an opportunity. As noted in Chapter 1, the sector's employment intensity, 153 jobs per Rs. 1 crore invested in apparel, against 27 in automobiles and 14 in steel (ASI,

1. Akamatsu's (1962) flying-geese model captures the sequential relocation of labour-intensive industries across countries as factor costs shift. Subsequent elaborations by Cutler et al. (2003) apply the framework explicitly to the apparel sector, tracing successive waves of production from Japan to the East Asian NICs and then to South and Southeast Asia.

2023-24), makes labour absorption central to the sector’s strategic value.

On the other hand, if one looks at the size of the global apparel market, the exports today stand at approximately USD 521 billion, nearly doubling from USD 269 billion in 2005 (ITC Trade map, 2024). As established in Chapter 1, import demand is concentrated in five markets: the EU, US, Japan, UK and Canada which together account for over 70 per cent of global apparel demand (ITC Trade Map, 2024). Global competitor dynamics remain concentrated among four Asian economies: China, Bangladesh, Vietnam and India, which together account for nearly half of world apparel exports (see Chapter 1 for the full breakdown by country). India’s 3 per cent share, unchanged for two decades, sits well below its principal competitors despite a full value chain.

This raises an important question: why has India, despite its full fibre-to-fashion value chain (discussed in Chapter 2-3), abundant labour, and craftsmanship and heritage, not been able to expand its share in global apparel exports? The question becomes even more relevant in the current context, where the global sourcing landscape is undergoing a structural shift. The ‘China+1’ strategy has created a window of opportunity for alternative sourcing destinations, including India. However, this window will not remain open indefinitely.

Recent developments have strengthened India’s position on the trade front. The conclusion of major trade agreements (with EU, UK, New Zealand etc) has improved market access conditions, including achieving tariff parity with Bangladesh in the biggest apparel market of the EU. At the same time, it is important to recognise that export competitiveness extends well beyond tariff advantages. On the domestic front, several structural reforms (discussed in detail in Chapter 9) have begun to improve the enabling environment: the correction of inverted GST structures in MME, the revoking of certain QCOs that constrained raw material access, progress towards implementing the new labour codes and renewed policy focus through initiatives such as the Export Promotion Mission and the Integrated Textile Programme. These steps signal clear policy intent.

However, India's ambition to scale apparel exports from the current USD 15.7 billion to USD 40 billion by 2030, and to increase its global market share beyond 3 per cent to say 6-7 per cent, requires a shift beyond incremental improvements. A business-as-usual approach will not be sufficient. Instead, it calls for addressing structural constraints that limit the ability of firms to operate at scale, access competitive finance, integrate efficiently across the value chain, and respond to evolving global demand.

It is against this backdrop that this chapter and the next three, undertake a comparative policy analysis of the apparel ecosystem of India vis-à-vis its principal competitor countries: China, Bangladesh and Vietnam across five key pillars of export competitiveness. The analytical framework basis which the export competitiveness is drawn is summarised in the following section. The chapter is structured as follows. Section 4.2 presents the analytical framework basis which the comparative assessment is done across the five pillars of competitiveness. Section 4.3 analyses India's apparel export trends and key destination markets. Section 4.4 examines the structure of India's apparel ecosystem through the lens of these five pillars. Section 4.5 then positions India within the global context, outlining the rationale for comparative learning.

4.2 Analytical Framework and Theoretical Lens

This book draws its export competitiveness analysis on three complementary theoretical frameworks. The flying geese phenomenon provides the macro-structural context for India's current inflection point; global value chain theory (Gereffi, 1994; Gereffi and Memedovic, 2003)² offers meso-lens focused on the institutional structure that organise production across countries; and the Porter's diamond model (Porter, 1990) that provides industry-level framework to assess the export comparative advantage.

2. Gereffi (1994, 1999) distinguishes producer-driven chains, typical of capital-intensive industries such as automobiles, from buyer-driven chains, characteristic of labour-intensive consumer-goods sectors including apparel.

Flying geese phenomena (Akamatsu, 1962; Kojima, 2000; Cutler et al., 2003) discusses successive waves of industrialisation are triggered by the migration of labour-intensive manufacturing from higher-wage to lower-wage economies. India is at a critical juncture now. However, the process is not automatic, receiving economies must possess the institutional capacity to absorb and organise production at internationally competitive levels of quality, scale and speed.

Global value chain theory (Gereffi, 1994; Gereffi and Memedovic, 2003) reveals that apparel value chains are buyer-driven: lead firms, large international brands and retailers do not typically own production assets but exert significant influence on supplier networks through the specification of price, quality, compliance and delivery standards. The GVC theory emphasises the ways in which suppliers can upgrade: process upgrading (improving the efficiency of transformation processes), product upgrading (moving into higher-value product categories), functional upgrading (value chain function such as design or logistics), and inter-chain upgrading (leveraging competencies across multiple chains). India's export stagnation reflects the need for upgrading across all four dimensions.

Porter's diamond model of competitive advantage identifies four interacting determinants: (i) factor conditions: the quantity, quality and specialisation of production inputs including labour, capital and infrastructure; (ii) demand conditions- scale of domestic demand, which shapes the competitive pressures on domestic producers; (iii) related and supporting industries-supplier and ancillary industries; and (iv) the organisational and competitive dynamics that determine whether firms pursue upgrading or cost-minimisation strategies.

Five Pillars of Export Competitiveness

These three frameworks are complementary. The flying-geese model explains why India is at an opportune moment now; GVC theory explains the governance requirements that must be met to participate effectively in buyer-driven chains; and Porter's Diamond identifies the specific domestic determinants that currently constrain India's competitive position. Together, they motivate the five pillars of

competitiveness around which the empirical analysis is organised: (i) scale and integrated capacity, (ii) access to finance and cost of capital, (iii) institutional and cluster-based ecosystem, (iv) labour, skilling and technology, and (v) market access and trade facilitation.

4.3 India's Apparel Export Trends and Export Destinations

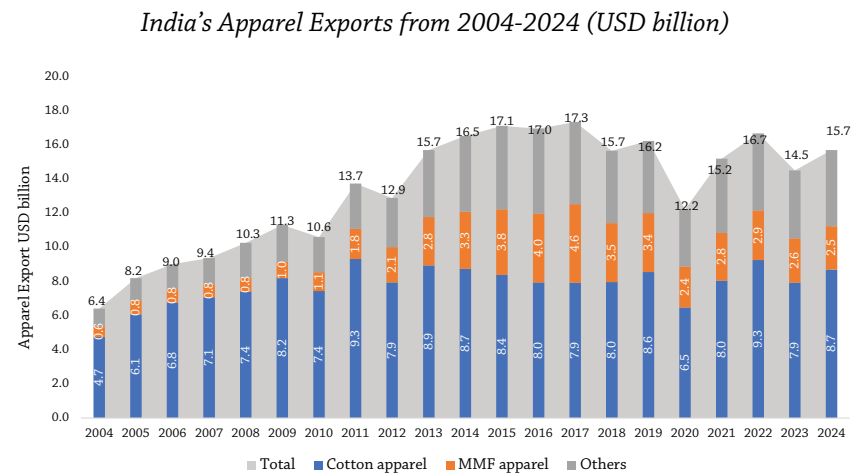
Figure 4.1 reveals two distinct phases in India's apparel export trajectory. Between 2004 and 2017, exports nearly tripled from USD 6.4 billion to USD 17.3 billion, driven by cotton apparel expansion and India's strong raw material base. Since 2017, however, exports have stagnated between USD 14 and 17 billion despite continued growth in global apparel trade and new sourcing opportunities under the China+1 strategy. That India could not capitalise on these opportunities is itself a signal of its challenges.

The composition of exports is to be emphasised here. India's basket remains concentrated in cotton apparel while global demand has tilted towards MMF, which today accounts for 77 per cent of the global fibre consumption. MMF export growth from below USD 1 billion in 2004 to USD 4.6 billion in 2017 has since plateaued, reflecting the accumulated cost of an inverted duty structure and QCOs that long affected MMF manufacturing. Bangladesh and Vietnam, combining preferential market access and large-scale manufacturing, have outpaced India in these segments. India, despite possessing a complete fibre to fashion value chain, has yet to convert upstream strengths into downstream competitiveness. Future growth demands MMF diversification, scaled up manufacturing and deeper global value chain integration.

4.3.1 India's Major Apparel Export Destinations

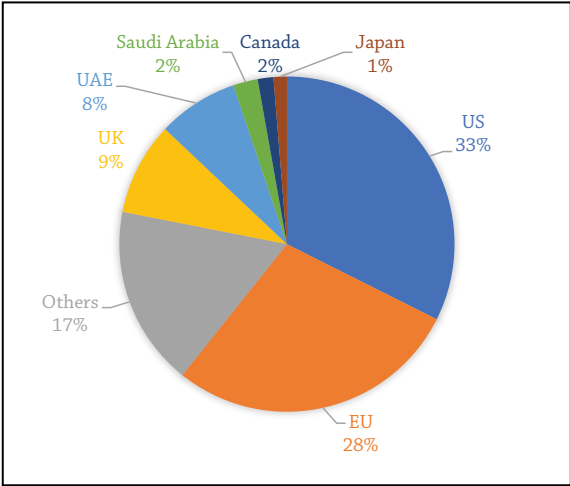
India's apparel exports destinations remain concentrated (Figure 4.2). The US emerged as the largest market, accounting for 33 per cent of exports, followed by the EU with 28 per cent. Together, these two markets absorbed more than 60 per cent of India's apparel exports. Other important destinations included the UK (9 per cent), the UAE (8 per cent), Canada (2 per cent), and Saudi Arabia (2 per cent), while Japan accounted for only 1 per cent.

Figure 4.1
India's Apparel Exports from 2004-2024 (USD billion)



Source: UN Comtrade, 2024.

Figure 4.2
India's Major Apparel Export Destinations 2024 (USD 15.7 Billion)



Source: ITC Trade map, 2024

The US being India's single largest apparel export destination, without a bilateral trade agreement, represents a gap in India's trade policy architecture (See Box 4.1). Vietnam's case needs particular emphasis here. Vietnam has leveraged the preferential market access through an extensive FTA network. With a market share of 21 per cent in 2025 (from 18 per cent in 2024), surpassing China's 15 per cent (22 per cent in 2024), Vietnam emerged as largest supplier to the US market (ITC Trade map, 2025). The EU, at 28 per cent, is an opportunity, yet the future EU regulations focus on value chain transparency. As the bloc extends its sustainability regulatory framework, through the Ecodesign for Sustainable Products Regulation, Digital Product Passport requirements and the Corporate Sustainability Due Diligence Directive to imported apparel, compliance readiness will determine market access.

On the other hand, India has recently moved with unusual speed to address the market access gaps. The India-UK CETA was signed in July, 2025, the India-Oman CEPA in December, 2025 and the India-EU FTA, described as the mother of all deals, was concluded on January 27, 2026. The India-New Zealand FTA was signed in April, 2026, bringing India's total FTA network to nine agreements spanning 38 countries. For apparel specifically, these agreements collectively open the question of how effectively the sector can convert preferential access into export growth.

Analysing the export trends and destinations, first, India has not been able to sustain strong export growth after the mid-2010s. Second, the export basket remains heavily skewed towards cotton apparel, while global demand growth is increasingly concentrated in MMF-based products. Third, the concentration of exports in the US and EU exposes the sector to demand fluctuations, trade policy changes and economic slowdowns in a limited set of markets. Finally, the inability to translate India's abundant raw material base and large domestic industry into sustained export growth points to deeper structural constraints affecting competitiveness.

These trends raise an important question: why has India's apparel export performance plateaued despite favourable factor endowments

Box 4.1.

The India-US Apparel Trade and the Importance of Market Access

The United States is India's single largest apparel export market, absorbing approximately USD 4.8 billion out of India's total apparel exports of USD 15.7 billion in FY2026. Yet the absence of a bilateral trade agreement and the imposition of reciprocal tariffs in 2025 exposed the vulnerability of relying on a major export market without preferential market access, underscoring the growing importance of trade agreements as a pillar of apparel competitiveness. In April 2025, US imposed a 26 per cent additional tariff on Indian goods as part of a broad reciprocal tariff, subsequently paused to 10 per cent for 90 days to allow negotiations to proceed. By August 2025, India's effective tariff burden rose to 50 per cent (an additional 25 per cent levy linked to India's purchase of Russian oil). The sectoral consequence was severe. New orders from US buyers contracted, existing orders were renegotiated at discounts of 15-18 per cent, and exporter margins, particularly among smaller firms in clusters such as Tiruppur came under severe pressure.

In February 2026, the two governments announced a framework for an interim trade agreement. The penalty was withdrawn, bringing tariff to 18 per cent. However, in March 2026, the USTR initiated Section 301 investigations covering 60 economies on concerns related to forced labour and excess industrial capacity. In June 2026, the USTR proposed an additional 12.5 per cent tariff on Indian goods.

The ongoing India-US BTA would be India's first comprehensive trade framework with the US, extending beyond tariffs to address non-tariff barriers, digital trade and supply-chain integration. For the apparel sector, this BTA would transform market access into a more stable and predictable long term arrangement for T&A exports.

Source: Compiled from various sources- DGFT, 2026; Times of India, 2025; Gulati et al.,2025a; Gulati and Wardhan et al., 2025; Gulati et al., 2025b

and a large production base? The answer lies in a set of interconnected competitiveness challenges relating to scale and capacity, access to capital, labour productivity, market access, logistics and institutional coordination. The next section examines these competitiveness pillars in detail to understand the factors constraining India's ability to expand its global market share and compete effectively with leading apparel exporting economies such as China, Bangladesh and Vietnam.

4.4 India's Apparel Export Competitiveness Pillars

4.4.1 Building Scale and Integrated Capacity

There is a critical difference between scale and capacity. Scale refers to quantitative dimensions of production—the number of workers employed, the volume of machinery installed, and aggregate output, whereas capacity encompasses a more qualitative attribute: the ability to efficiently transform raw materials into finished garments across the entire value chain. Global export competitiveness demands not merely the expansion of individual factory sizes, but the development of integrated productive ecosystems in which spinning, weaving, processing and garmenting operations are co-located within shared industrial clusters.

Trade arrangements such as the India-EU FTA, UK CETA offer tariff parity with competitors and preferences, yet translating these advantages into meaningful market share gains will require India to intervene in the raw material composition—most acutely in the MMF segment. MMF is indispensable for penetrating higher-value categories including winterwear, sportswear, and athleisure, yet India's dependence on cotton, compounded by structural policy distortions, has historically constrained its participation in these segments. Recent GST reforms targeting MMF and yarn, alongside a revised QCO regime, are encouraging steps in resolving these upstream bottlenecks.

Even if raw material constraints were fully addressed, the sector would continue to face an equally binding structural issue: insufficient scale and underutilisation of existing productive capacity. Evidence from recent factory-level analyses reveals that fewer than one in ten garment workers in India is employed in a registered manufacturing establishment, and the average registered unit employs only 131 workers (Johny and Thomas, 2024). Export-oriented facilities are somewhat larger, typically employing between 600 and 800 workers (AEPC, 2024). In Tiruppur, India's knitwear hub there have been recent reports of factory floors lying idle amid weakening export orders, mounting input cost pressures, and compressed margins

(Financial Express, 2025). In contrast, Bangladeshi factories with an average of 1200 workers, with many units operating at considerably greater scale (BGMEA, 2024). This structural difference in scale provides Bangladeshi exporters distinct competitive advantages in terms of bulk order capacity, faster turnaround times, and consistent quality assurance-factors that remain decisive for global buyers. As a result, India is frequently characterised by international sourcing companies as a secondary or fallback supplier rather than a primary procurement destination.

Achieving India’s apparel export ambition of USD 40 billion by 2030 requires bridging an incremental gap of approximately USD 24 billion from the current base of USD 15.7 billion. This expansion is not solely based on installing new machineries or new factories. In numerous production clusters, factories already possess dormant or underutilised capacity, machinery capable of supporting additional production shifts if constraints related to order visibility, working capital access, labour availability and input supply were effectively addressed. The central policy challenge, therefore, is creating an enabling ecosystem that incentivises firms to scale up operations, raise machine utilisation rates and align assembly-line capacity with international benchmarks. Government support should accordingly be broadened beyond capital subsidies for new machinery to encompass incentives for within-firm scale expansion, improved access to working capital, reduced compliance friction, facilitation of co-located processing and garmenting facilities and policy certainty of a kind that encourages firms to commit to larger, longer-horizon production investments.

4.4.2 Capital and Cost of Finance

Access to affordable and timely finance represents one of the most binding constraints on the growth of India’s apparel export sector. Rising financing costs and structural mismatches in credit availability limit firms’ capacity to scale operations, invest in technology modernisation and meet the increasingly stringent compliance requirements of global supply chains. Working capital credit for apparel exporters have an interest rate of 9 to 11 percent per annum equivalent to 6.2 to

8.2 percent in real terms substantially above the effective costs available to exporters in Bangladesh (where low cost global financing leads to subsidised credit implies negative real rates) or Vietnam (zero to one per cent). Term loans for machinery modernisation and capacity expansion are costlier still, at an average 12 to 15 percent for small and medium-sized enterprises (FIEO survey data), affecting productivity-enhancing capital investment.

The discontinuation of earlier financial support instruments-notably the Interest Equalisation Scheme (IES) and the Amended Technology Upgradation Fund Scheme (ATUFS) has left a critical lacuna in targeted MSME financing. Exporters also reflect that commercial banks frequently lack a nuanced understanding of the apparel sector's distinctive working capital needs, characterised by heavy upfront expenditure on yarn and fabric, long production cycles, and extended delays before buyer payments are realised. This leads to longer loan processing times and disbursement delays, exacerbating liquidity stress. While credit guarantee fund trust for micro and small enterprises (CGTMSE) has expanded the availability of guaranteed credit, its effectiveness is constrained by documentation requirements, procedural frictions and conservative lending practices that continue to limit access for many micro and small players. These liquidity pressures are further compounded by persistent delays in the disbursement of GST refunds and export rebate claims under RoDTEP and RoSCTL, effectively pushing smaller exporters towards informal credit markets where annual borrowing costs can reach 18 to 24 percent, affecting their export competitiveness.

Several structural deficiencies constrain the reach of India's export credit insurance ecosystem. According to the DGFT study on the domestic trade finance ecosystem (2024), bank mediated export credit supported approximately 28 per cent of India's total exports in 2023, while export credit insurance coverage reached only around 18 per cent of merchandise exports, of which roughly 10 per cent was routed through bank-oriented insurance products and 8 per cent through policies issued directly to exporters (DGFT, 2024). Despite its importance, the accessibility to small exporters has scope of improve-

ment. First, the cost of insurance, documentation requirements and collateral related conditions associated with export finance may be burdensome for MSMEs, which are often perceived as higher risk borrowers. Second, exporters report delays and procedural complexity in claims settlement, reducing the attractiveness of insurance products for smaller firms. Third, standard export credit insurance primarily focuses on payment default and political risks and does not address several commercial risks faced by exporters, including quality disputes and exchange rate volatility (Ojha et al., 2024). Fourth, awareness and accessibility remain limited particularly among MSMEs (DGFT, 2024).

More broadly, there is a pressing need for financial instruments that are structurally aligned with the apparel sector’s cash-flow dynamics. The production cycle involves heavy front-loaded investment in yarn and fabric, followed by weeks of labour-intensive processing before buyer payments eventually materialise. Conventional short-term working capital facilities are not aligned with the T&A needs. India’s challenge is not an absence of financial institutions but rather their limited reach, insufficient product diversity, and weak coordination across intermediaries (DGFT, 2024). What is required is not the creation of new institutions but the mainstreaming of value-chain financing within the existing banking architecture. Instruments such as invoice discounting, factoring, receivables financing, and order-backed credit can bridge liquidity gaps at different stages of production, while machinery leasing models reduce the upfront capital intensity of modernisation and broaden access to technology upgrades.

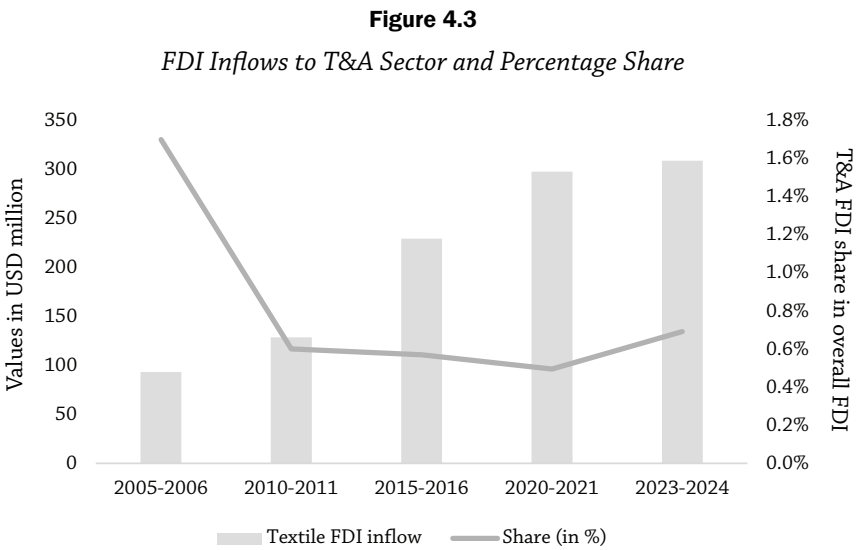
Complementary reforms are equally essential. Streamlining GST rebate disbursements, simplifying documentation requirements for credit guarantee schemes, and promoting fintech-enabled supply-chain finance solutions through platforms such as TReDS and the proposed BharatTradeNet (announced in Union Budget 2026-27) will collectively enhance the availability and affordability of credit across the sector. Linking improved financing access to cluster-level development programmes, particularly the seven PM MITRA parks and the additional mega textile parks announced, holds the potential to reduce

lending risk by bundling physical infrastructure, common service facilities and compliance support, thereby improving the creditworthiness of borrowers and lowering transaction costs for lenders. The integration of financing reform with cluster development thus represents a mutually reinforcing strategy that stronger clusters reduce financial risk, while better finance unlocks productive potential.

4.4.3 FDI and International Capital Flows

Foreign direct investment plays a critical role for augmenting domestic capital formation, introducing frontier technologies, and embedding local industries within global value chains. In the case of India’s T&A sector, however, FDI inflows have remained lower relative to the country’s potential and to the performance of competitor economies such as Vietnam (See Chapter 7)

Available data on FDI trends in India’s textile sector from 2005-06 to 2023-24 reveal that while absolute inflows have registered an increase over the two-decade period—rising from below USD 100 million in the early 2000s to over USD 300 million by 2023-24, the



Source: Ministry of Textiles,2024; DPIIT,2024; CITI,2024

sector’s share in overall FDI inflows has remained below one percent (Ministry of Textiles, 2024; DPIIT, 2024; CITI, 2024).

In contrast, Vietnam’s foreign invested firms contributes about 65 to 70 per cent of total apparel export turnover. (VITAS, 2023). The structural fragmentation of India’s industry-with close to 80 percent of units classified as MSMEs-acts as a deterrent to large foreign investors who generally seek to partner with consolidated, vertically integrated suppliers (Textile Value Chain, 2024). The World Bank’s India Country Economic Memorandum (2025) similarly observes that FDI inflows fall short of what India’s GDP and market size would predict, attributing this gap to the predominance of small firms, elevated trade costs, and regulatory frictions that collectively discourage large investors seeking integrated production ecosystems.

The strategic opportunity nonetheless remains substantial. Global fashion brands are actively diversifying sourcing away from China and Bangladesh, and India is increasingly cited as a compelling alternative (IBEF, 2025). Government incentive programmes-including the PLI scheme and PM MITRA textile parks and recent mega textile parks are designed to attract large-scale investment. However, execution gaps continue to constrain their effectiveness: compliance-heavy application processes, absence of time bound disbursement timelines, and prolonged delays in incentive delivery reduce investor confidence and dampen the schemes’ capacity to catalyse transformative capital inflows.

4.4.4 Labour, Technology and Skilling

Labour has traditionally been identified as a primary source of comparative advantage for India in apparel manufacturing, yet this advantage has been progressively eroded by persistent productivity gaps, rising wage costs and a skill ecosystem that remains poorly aligned with the demands of modern global supply chains³. Factory-level analysis suggests that India’s garment industry continues to

3. The World Bank’s India CEM (2025) cautions that India’s “productivity-adjusted unit labour costs are higher than in Bangladesh or Vietnam. Efficiency and skilling need to be improved significantly.

operate along what might be characterised as a 'low-road' development trajectory, one in which the predominance of small, informal establishments reflects a structural preference for labour flexibility and cost minimisation over investment in technological upgrading (Johny and Thomas, 2024). The study evidence on productivity, based on value added per worker in the garment sector amounts to only 30.8 per cent of the broader factory-sector average, while capital investment per worker stands at a mere 13.5 per cent of the sector mean.

India's workforce challenges extend beyond productivity metrics alone. The sector's heavy reliance on migrant labour creates acute seasonal vulnerabilities: production hubs in Tamil Nadu, Karnataka and Gujarat routinely experience labour shortfalls when workers return to their home states during agricultural seasons or festivals. This cyclical instability, combined with elevated attrition rates, weakens individual firms' capacity to consolidate large orders within single production units. Some exporters have begun relocating operations to labour-surplus states such as Bihar and Odisha, but without coordinated investment in worker housing, welfare infrastructure, and skill development, such geographic shifts are unlikely to deliver sustained competitive gains. The recently announced mega textile parks and the broader PM MITRA programme offer a structural opportunity to accelerate and formalise this reorientation: by establishing mega parks in labour-surplus states and bundling them with worker welfare infrastructure, the policy can bring the factory to the worker. This would reduce seasonal attrition at source, improve firms' ability to sustain large-order production, and deepen the labour pool available to anchor tenants within each park. This will also help embed the workers into a formal social protection systems-including the Employee Provident Fund (EPF) which supports workforce welfare and ensures labour stability. A comprehensive national strategy addressing worker welfare-encompassing housing, healthcare, transport, and social security-would be essential to stabilising the workforce and enabling larger factories to sustain scale operations.

The question of female labour participation needs focused attention. The female labour force participation rate in India rose consider-

ably from 21.6 per cent in 2018-19 to 41.7 per cent in 2023-24 (World Bank, 2025; PIB, 2024), and the expansion of labour-intensive industries such as T&A is critical for augmenting women’s incomes. Women constitute approximately 40 to 65 per cent of the apparel workforce, depending on the estimation approach and sub-segment (ILO, 2023; DataforIndia, 2025), making the sector one of the most significant absorbers of female labour in the formal manufacturing economy. Yet despite their numerical presence, women workers are disproportionately concentrated in low-skill, low-value tasks and face significant barriers to progression into supervisory or managerial roles. Enabling conditions-including safe and affordable hostel accommodation, reliable transport facilities, creche services, and targeted supervisor-track skilling programmes-are essential to improving both the quality and stability of women’s employment in the sector. Clusters that institutionalise such provisions tend to demonstrate lower attrition, higher productivity and stronger compliance with global buyer standards. Embedding these provisions within programmes such as PM SAMARTH and park-level operational norms would simultaneously advance a competitive agenda and a social equity objective.

The skill ecosystem is another area that demands structural reform. Government-supported training programmes-including the Integrated Skill Development Scheme (ISDS) and SAMARTH-have cumulatively trained over 1.1 million workers, approximately 70 per cent of them women. However, instruction remains largely confined to basic stitching and finishing techniques, whereas global buyers increasingly demand product-specific expertise and category specialisation. Competitor countries such as Vietnam prioritises skill training in high quality production, and introduces industry partnership with vocational schools to create a workforce aligned with the evolving needs of T&A export sector.

A critical but often overlooked gap in India’s apparel workforce is mid-level management. Line supervisors and production floor managers occupy a critical intermediary role, translating senior leadership directives and buyer requirements into operational outcomes on the factory floor. Unlike entry-level workers or senior management,

this section typically lacks both technical depth and the soft skills needed to interface effectively with international clients. Bangladesh and Vietnam have addressed this gap through specialised management institutes and structured industry-government partnerships-initiatives that have yielded measurable improvements in production efficiency and buyer confidence.

Addressing these challenges requires a transition from generalised to product- and technology-specific training modalities. Training workers on advanced machines essential for competing in high-demand segments is illustrative of the kind of targeted capability development needed. SAMARTH 2.0 is a positive step towards modernising the skilling ecosystem through deeper collaboration between industry and academic institutions, while enhancing productivity across export-oriented clusters. However, the effectiveness of SAMARTH 2.0 will ultimately depend on whether it moves beyond a target-driven approach focused primarily on the number of workers trained. Unless the programme incorporates product-category-specific curricula, factory-linked apprenticeships, training in advanced manufacturing systems, and dedicated modules for mid-level supervisory and industrial engineering roles, its impact may remain limited. There is also a need for stronger outcome-based monitoring systems that assess productivity improvements, wage gains, placement quality, and export performance rather than simply training completion numbers.

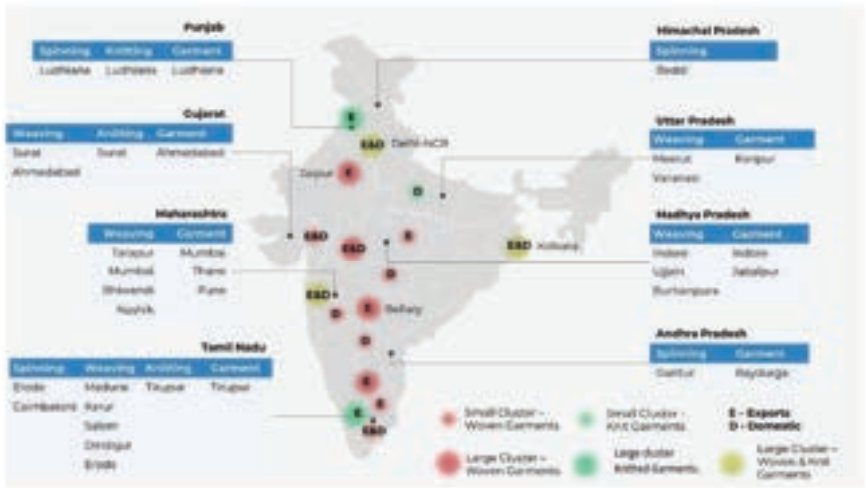
4.4.5 Cluster and Institutional Mechanisms

India's apparel sector is characterised by a dense network of production clusters (Figure 4.4) that have evolved organically over time, often anchored in historical specialisation, availability of skills and proximity to raw materials. Clusters such as Tiruppur, Delhi-NCR, Surat, Ludhiana and Ahmedabad have enabled regional concentration of capabilities and supported the growth of a large number of firms, particularly MSMEs (USITC, 2024). This clustering has been instrumental in building production capacity and sustaining export activity in specific product segments. However, the presence of clusters has not necessarily translated into the emergence of well-functioning industrial ecosystems.

A key limitation lies in the weak institutional architecture underpinning these clusters. Coordination across different stages of the value chain-spinning, processing, garmenting and logistics remains fragmented, often requiring firms to rely on inter-cluster linkages that increase transaction costs and lead times. The absence of shared infrastructure and common service platforms, such as design centres, testing facilities, logistics hubs and compliance support systems, further constrains efficiency, particularly for smaller firms that lack the scale to internalise these functions. While some clusters have developed partial solutions (like Tiruppur and its CETPs) through local networks, these remain uneven and limited in scope.

Institutional mechanisms within clusters also vary significantly in their effectiveness. Industry associations and collective bodies, which could play a central role in facilitating coordination, standard-setting and market linkages, are not uniformly strong across clusters. Tiruppur is often cited as an exception (discussed in Chapter 8), where a relatively cohesive institutional framework and active industry associations have supported export-oriented growth and collective

Figure 4.4
Select T&A Clusters of India



Source: Adapted from United States International Trade Commission; ICRIER, 2025

problem-solving. In contrast, many other clusters still have scope for improvement in terms of collective action and governance, to respond collectively to shifts in global demand or regulatory requirements.

Policy interventions aimed at promoting cluster-based development have sought to address India's fragmented textile production structure, but implementation challenges have limited their effectiveness. The Scheme for Integrated Textile Parks (SITP), launched in 2005 to develop world class common infrastructure and integrated manufacturing clusters, fell significantly short of its intended objectives. A compliance audit by the Comptroller and Auditor General (CAG) found that non-involvement of state governments at the appropriate stage of projects, weak financial strength of SPVs (special purpose vehicles), delays in obtaining statutory clearances and issues related to land allotment were the major reasons for failure. Even after 16 years of implementation, completed and ongoing parks had achieved only 30 per cent of their targeted employment, 50 per cent of projected investment and 37 per cent of planned textile units. Building on these lessons, the PM MITRA initiative seeks to establish large-scale, integrated textile parks with plug and play infrastructure, stronger centre-state coordination, and end to end value chain integration to improve India's global manufacturing competitiveness. While conceptually significant, these initiatives are still in the early stages of development and have yet to demonstrate outcomes at scale.

These factors suggest that while India has a wide network of clusters, the transition from clusters to cohesive industrial ecosystems remains incomplete. The challenge is not merely one of geographic concentration of firms, but of building institutional cohesion coordination mechanisms and shared capabilities that can support scale, efficiency and responsiveness in a globally competitive industry.

4.4.6 Market Access and Trade Facilitation Measures

India's market access in major export markets have increased in the past few years. Building on the market access gains outlined in Chapter 1, the India-UK CETA (implementing on July 15, 2026) delivers immediate tariff elimination on apparel (HS Chapters 61 and

62) in the UK's USD 19.6 billion apparel import market, where India currently holds only a 6 per cent share against Bangladesh's 20 per cent (Rao et al., 2025). Similarly, India-EU FTA extends equivalent preferential access to the world's largest apparel import market, which accounts for approximately 42 per cent of global demand. Once implemented, Indian exporters will compete on tariff-equivalent terms with Bangladesh that removes one of the most persistent competitive disadvantages of the past two decades.

However, India's own experience with earlier trade agreements provides a cautious lesson. As Chapter 1 notes for Japan, preferential access alone has not guaranteed export gains. The pattern repeats with the India-South Korea CEPA, in force since 2010: apparel exports stood at just USD 63 million in 2024, nearly 1 per cent of Korea's total apparel imports (ITC Trade Map, 2024). Converting market access into market share requires that Indian firms can compete on scale, speed, cost and compliance dimensions on which structural gaps remain acute.

Apparel exporters in India must navigate a dense and often opaque regulatory environment before commencing operations. A typical new establishment requires, at minimum, a factory licence from the state labour department, building plan approval from the relevant municipal authority, fire safety certification, pollution control consent, trade licence, utility connections, and mandatory labour welfare registrations under EPFO and ESIC. In principle, many states have sought to consolidate these requirements within single-window clearance systems; in practice, each approval typically involves separate inspections, fees, and procedural timelines. Drawing on discussions with exporters and manufacturers, informal payments to expedite or unblock applications remain a routine feature of the compliance landscape and what practitioners describe as a single window that is, in practice, a facade for multiple departmental doors. India's regulatory architecture imposes over 1,500 separate laws, approximately 69,000 compliance requirements, and more than 26,000 clauses carrying penal provisions, including imprisonment risk a burden that raises the cost of formalisation and structurally discourages enterprises from scaling (Sabharwal, 2025).

The documentation burden does not diminish once operations are underway. Shipping a single export container from India requires between 17 and 18 documents, compared to as few as two in China an invoice and a packing list (Business Today, 2025; Rao et al., 2025). The procedural asymmetry extends to trade facilitation more broadly. India's trade facilitation performance, as measured by the World Bank Logistics Performance Index (LPI)⁴ 2023, reveals persistent gaps relative to key competitors. India ranks 38th among 139 countries, behind China (19th) but ahead of Vietnam (43rd). While India's overall logistics performance has improved in recent years, significant gaps remain in trade and transport infrastructure. India scores 3.2 on the infrastructure dimension, compared with 4.0 for China, and records a timeliness score of 3.6 against China at 3.7. These differences indicate that India's logistics system continues to face constraints that contribute to less efficient and less predictable supply chains, affecting exporters' ability to meet increasingly stringent delivery schedules.

India's apparel export competitiveness is as much about hours as it is about rupees. The World Bank's Country Economic Memorandum (2025) highlights that India's tariff and non tariff barriers continue to raise trade costs and constrain integration into global value chains. Together with logistics and regulatory frictions, these barriers reduce the predictability and competitiveness that global buyers demand. Targeted logistical reforms including expanded risk-based customs inspections, pre-arrival cargo processing, end-to-end port and inland clearance digitisation, and scaled-up bonded warehousing for duty-free input storage within PM MITRA parks-can materially compress order-to-shipment cycles. These measures are complementary to the broader hub and spoke industrial vision and directly reduce the 'time tax' that is currently borne disproportionately by MSME exporters.

4. The Logistics Performance Index (LPI), developed by the World Bank, is a global benchmarking tool that measures countries' trade logistics performance across six dimensions: customs efficiency (speed and predictability of border clearance processes), infrastructure quality (trade and transport-related infrastructure), ease of arranging international shipments, logistics competence (quality of logistics services), tracking and tracing capabilities, and timeliness (frequency with which shipments reach destination within scheduled or expected delivery times). Scores range from 1 to 5, with higher values indicating better logistics performance and trade facilitation efficiency.

According to Aurélien Kruse, the growth of small firms in India continues to be constrained by persistent bottlenecks related to land access, labour regulations, and credit availability, preventing many enterprises from scaling effectively despite the presence of policy incentives. He argues that long-term global competitiveness in sectors such as apparel will depend less on additional subsidies and more on stable policy environments, regulatory predictability, and simplified business processes. The UK CETA and EU FTA have delivered the tariff gains that earlier agreements with Japan and Korea also provided and which those agreements were insufficient to translate into orders. Unless the procedural and regulatory frictions documented above are substantively resolved in parallel, India risks repeating the underperformance of Japan and Korea: preferential access without commensurate export gains, and market opportunity without market share (Rao et al., 2025).

4.5 Positioning India in the Global Context: Why Comparative Learning Matters

The constraints shaping India’s apparel export performance are often discussed as if they are uniquely domestic in nature. In reality, many of these challenges-limited scale, fragmented production structures, gaps in access to capital, skill constraints and coordination failures have been faced, at different points in time, by other apparel-exporting economies. The difference lies less in the nature of the constraints and more in how they have been addressed. Countries that now dominate global apparel trade did not begin with better endowments; rather, they evolved institutional, policy and production systems that allowed them to overcome these constraints in ways that were aligned with global market requirements. India’s experience, therefore, is not exceptional in terms of the challenges it faces, but in the persistence of these constraints over time.

Understanding this requires situating India within the broader structure of global apparel trade, especially with its major competitors- China, Bangladesh and Vietnam. The apparel industry today is deeply embedded in global value chains that are both networked and

buyer-driven. Production is rarely confined to a single geography; instead, it is distributed across multiple locations, with fibres, fabrics and garments moving across borders before reaching final markets. Large international buyers, brands and retailers, play a central role in organising these networks, setting standards for price, quality, compliance and delivery timelines. In such a system, competitiveness is determined not only by cost advantages but also by the ability to meet scale requirements, ensure consistency in supply and respond quickly to changing demand patterns. The industry is, in this sense, highly scale-sensitive and time-sensitive, where even small inefficiencies in coordination or delays in production can lead to loss of orders.

It is within this global context that India's performance needs to be assessed. The issue is not simply that India lacks capabilities, but that these capabilities are not organised in a manner that aligns with the demands of global buyers. This makes comparative analysis particularly important. Examining how other countries have structured their apparel sectors offers a way to understand alternative pathways through which similar constraints have been addressed. Such comparison is not about replication, but about identifying institutional arrangements and policy choices that have enabled firms in these countries to integrate more effectively into global value chains.

Three countries stand out in this regard viz., China, Bangladesh and Vietnam each representing a distinct model of apparel export development. China's dominance in global apparel trade has been built on an ecosystem approach, large scale manufacturing, supported by strong state coordination, infrastructure development and deep integration across the value chain. The ability to operate at scale, combined with investments in technology and logistics, has enabled China to sustain its competitiveness even as costs have risen. Bangladesh, by contrast, has been taking advantage of the preferential market access due to LDC status. Its success has been driven by a relatively simple but highly effective model centred on large-scale garment manufacturing, supported by access to low-cost labour, preferential market access and a financial ecosystem that facilitates export-oriented production. Vietnam represents yet another pathway, where integration

into global trade has been anchored in FDI, trade agreements and the development of industrial parks that bring together production, logistics and export facilitation within a coordinated framework.

For India, the relevance of such comparison lies in identifying the gaps between its current production structure and the evolving demands of global trade. It also provides a basis for understanding how policy, institutions and firm-level capabilities can interact to shape outcomes in the sector. The discussion that follows, therefore, turns to a detailed examination of these three countries, not as benchmarks to be emulated in entirety, but as case studies that offer insights into how apparel export ecosystems can evolve under different conditions. To understand how these constraints can be addressed, the following chapters examine the evolution of apparel export ecosystems in China, Bangladesh and Vietnam.

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China's Globally Integrated Apparel Export Ecosystem Model

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SULAKSHANA RAO AND ASHOK GULATI

5.1 Introduction

China's economy is the world's second largest, recording real GDP growth of 5 per cent in 2025 (IMF, 2026), boosted by manufacturing modernisation, expanding domestic consumption, and deepening trade linkages through the belt and road initiative (BRI) (World Bank, 2025). China's total GDP reached USD 20 trillion in 2026, with the manufacturing sector, which includes T&A, constituting over 25 per cent of that value. Within this expansive economy, the T&A sector continues to function as a structural pillar. Data from the China national textile and apparel council (CNTAC) show that the sector generated close to USD 294 billion in exports in 2023, directly employing around 7.8 million people, of whom around 60 per cent are women (Asia Garment Hub, 2023).

China's sustained leadership in global T&A trade is the product of a coherent, long-term industrial strategy, one that integrates cluster-based industrialisation, export oriented infrastructure, firm-level technological upgrading and institutional coordination. Empirical evidence confirms that geographic agglomeration of T&A firms in coastal provinces such as Jiangsu, Zhejiang and Guangdong generated substantial productivity gains by compressing input and labour transaction costs, facilitating knowledge spillovers and enabling the scaling of integrated supply-chain capacity (Lin et al., 2024). Government policy played a catalytic role throughout: the 11th five year plan and successive textile upgrade guidelines delivered fiscal subsidies, tax incentives

and directed credit to the sector (Stewart and Stewart, 2007; Zeng, 2011). At the local level, provincial and municipal governments in coastal regions implemented ‘one cluster, one product’ strategies that ensured backward and forward linkages along the value chain.

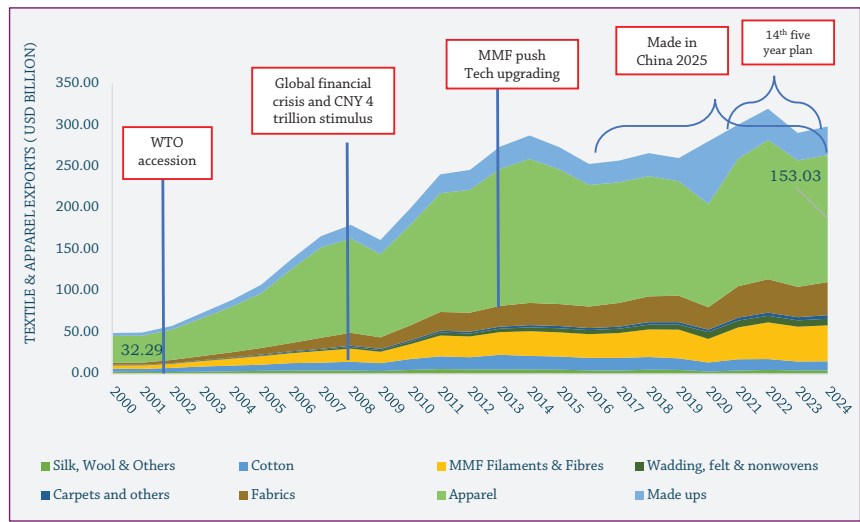
The cumulative effect of these policies was a structural transformation of China’s competitive positioning. Chinese firms evolved from simple original equipment manufacturers (OEMs) assembling garments for foreign brands into own brand manufacturers (OBMs) capturing higher-value segments of global supply chains (Tan et al., 2009). Today, the cutting edge of China’s T&A sector is defined by computer-aided design (CAD), AI-driven quality inspection, and 5G-enabled factory automation (CNTAC, 2022; The Fashion Chronicle, 2024). What distinguishes China from other large-scale industrial policy practitioners is the success of their execution: the alignment of national objectives with provincial implementation, finance delivery and cluster governance that converted policy into high-performance industrial ecosystems.

This chapter examines China not merely as the world’s largest apparel exporter, but as the most instructive case of industrial system-building. The chapter is structured as follows: Section 5.2 traces China’s export trajectory alongside the structural and policy shifts that produced it. Section 5.3 analyses the five pillars of competitiveness that underpin China’s global position. Section 5.4 draws together targeted lessons for India.

5.2 Export Trends, Global Alignment and Structural Transformation of China’s T&A

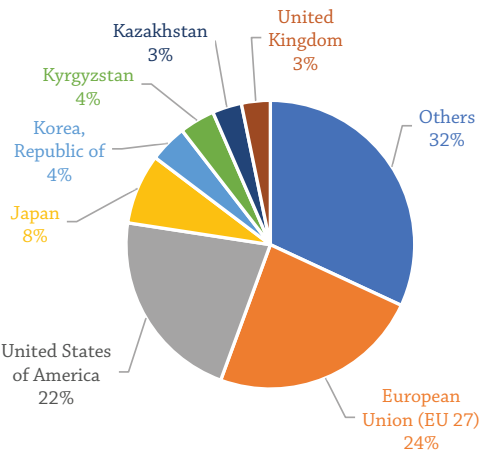
China’s apparel exports values rose from USD 32.3 billion in 2000 to a peak of USD 173.4 billion in 2014 (Figure 5.1) stabilising in the range of USD 150-170 billion in subsequent years, and reaching approximately USD 153 billion in 2024 (UN COMTRADE, 2024). Apparel has consistently been the dominant contributor, accounting for over 52 per cent of total T&A exports in 2024, reflecting China’s deep-rooted position as the default large-volume sourcing hub for global fashion brands. To place the scale in context: India’s entire T&A

Figure 5.1
China's T&A Exports Trend from 2000-2024



Source: Rao and Gulati, 2026 and UN COMTRADE, 2024

Figure 5.2
China's Major Apparel Export Destinations (TE 2024)
USD 158.3 billion Apparel Exports TE24



Source: Rao and Gulati, 2026 and UN COMTRADE, 2024

exports of around USD 36.9 billion in FY24-25 amounted to just 12 per cent of China's apparel exports alone (UN COMTRADE, 2024). As of 2024, China accounted for 33 per cent of global textile exports and 29 per cent of global apparel exports, a combined dominance that remains unmatched by any single country.

China's export dominance is further reflected in the breadth of its market presence. As shown in Figure 5.2, EU (24 per cent) and the US (22 per cent) together accounted for nearly half of China's apparel exports in 2024, while significant shares were also directed to Japan, Korea, UK and emerging markets. More importantly, China has achieved this scale despite lacking comprehensive preferential trade agreements with several of its largest apparel markets. Unlike competitors such as Bangladesh, Vietnam or Cambodia, which derive part of their export competitiveness from preferential market access, China's apparel industry continues to command around 29 per cent of global apparel exports primarily through scale, integrated supply chains, productivity, logistics efficiency and product diversification. This demonstrates that competitiveness in global apparel trade is ultimately sustained not by tariff preferences alone, but by the ability to deliver volume, speed, reliability and product variety at scale.

This trajectory did not unfold in a straight line. It was shaped by a sequence of deliberate policy inflection points, each responding to a distinct phase of global and domestic change. China's WTO accession in 2001 was the decisive early turning point. The elimination of MFA quotas, combined with VAT export rebates for T&A raised exports from USD 32 billion in 2000 to over USD 113 billion by 2008. When the global financial crisis of 2008 delivered a sharp export shock, the government responded with a CNY 4 trillion (USD 586 billion in 2008 terms) economy-wide stimulus (NDRC, 2009), raised export VAT rebates to up to 16 per cent for textile products and expanded credit support to exporters and small and medium enterprises through banking system, enabled the sector to rebound to USD 121 billion by 2010.

The post-crisis decade marked a strategic pivot. The 12th five year prioritised industrial upgrading, technological innovation, energy

efficiency and environmental compliance, encouraging firms to modernise production and move towards higher value-added manufacturing. Support was provided through a combination of fiscal incentives, preferential financing, tax policies and local government programmes aimed at upgrading production capacity, particularly in MMF. Simultaneously, the 2014 cotton policy reform replaced the temporary cotton reserve programme with a target-price subsidy scheme in Xinjiang, under which producers received direct payments when market prices fell below a government-determined target. The reform reduced reliance on market intervention, aligned domestic cotton prices more closely with international prices, and encouraged a gradual shift towards greater use of man-made fibres in China's textile industry (USDA, 2023).

Global fashion demand had begun tilting decisively toward MMF-based products (activewear, athleisure, performance wear, and fast fashion) and China adapted with unusual speed. By 2023, MMF garments accounted for nearly 46 per cent of China's total apparel exports compared to under 30 per cent a decade earlier. The contrast with India is stark: India's export basket remains approximately 70 per cent cotton-based even as nearly 77 per cent of global fibre consumption is MMF-based. This fibre-mix misalignment is among the most consequential structural disadvantages India faces in global apparel competition.

Rising labour costs from approximately USD 220 per month in 2010 to USD 550 by 2018 and intensifying competition from Vietnam and Bangladesh pressed China to accelerate industrial transformation in the mid 2010s. The Made in China 2025 strategy, launched in 2015, promoted automation, digital manufacturing and smart factories through a combination of fiscal incentives, concessional finance and provincial support programmes. At the same time, stricter environmental regulations encouraged the consolidation and upgrading of polluting textile processing facilities, particularly in dyeing and finishing, improving compliance and production quality. Although apparel exports contracted sharply during the pandemic to about USD 124 billion in 2020, they rebounded rapidly, reaching nearly USD 167 billion in 2022 before moderating to around USD 159 billion in 2024.

The 14th five year plan (2021-2025) has reinforced this trajectory by prioritising green manufacturing (including DPP pilots), technological upgrading and digital transformation across the T&A sector.

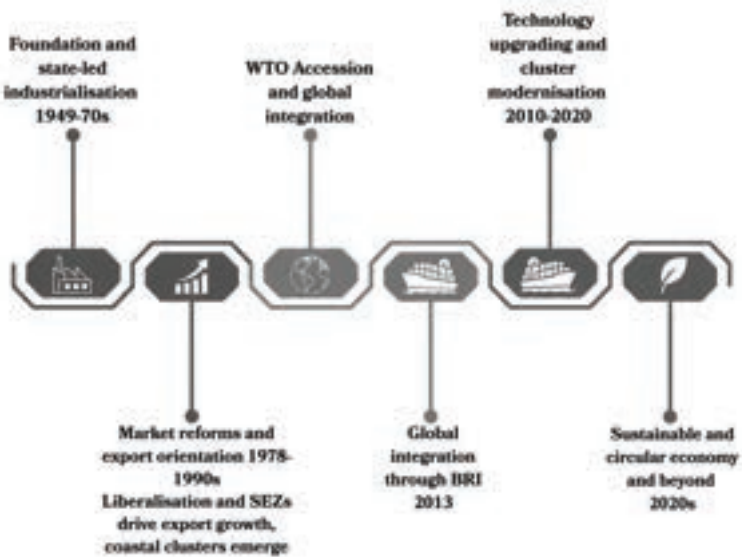
Underpinning all of these policy cycles is a spatial and organisational transformation that is equally fundamental. China's T&A competitiveness rests not on individual firm scale alone but on cluster-based industrialisation in which spinning, weaving, knitting, dyeing, finishing, garmenting, wholesale markets, finance and logistics are co-located within compact geographic zones. Examples include Keqiao in Zhejiang, (the world's largest fabric trading hub), Shengze in Jiangsu, Nantong for home textiles, and Humen in Guangdong for fast-fashion apparel. This spatial concentration compresses lead times, reduces transaction costs, enables just-in-time replenishment and delivers the scale and flexibility that global buyers treat as minimum requirements. The BRI, launched in 2013, reinforced this transformation by integrating inland producers into global markets via the China-Europe Railway Express, which now completes over 17,000 trips annually and cuts shipping time to Europe from 45 days by sea to 18 days by rail (Liu, 2025). Beyond coastal hubs, clusters are expanding inland-to Anhui, Henan and Sichuan-where land and wage costs are lower, while new hubs like Shantou and Huzhou are positioning themselves as digital manufacturing centres with digitalisation and smart equipment adoption.

5.3 Pillars of Competitiveness

5.3.1 Scale and Integrated Capacity

China's apparel industry operates at a scale that has no parallel in global manufacturing. According to the China Garment Association (2025), there were 13820 apparel enterprises above the designated revenue threshold of RMB 20 million in 2024, collectively generating RMB 1.27 trillion (approximately USD 175 billion) in operating income and producing over 20.46 billion garments-a year-on-year increase of 4.2 per cent. By 2022, China was processing more than 60 million tonnes of fibre annually, representing close to half of the world's total fibre-processing capacity (Global Times, 2024).

Figure 5.3
Structural Transformation of China's T&A Industry (1949-2025)



Source: Rao and Gulati, 2026

At the apex of this ecosystem are China’s mega factories-vertically integrated production complexes that embody the country’s scale advantage in its most concentrated form. Shenzhou International employs over 1 lakh workers and produces more than 550 million garments annually, supplying Nike and Uniqlo. Esquel Group, with 35000 workers in China, achieves an annual output exceeding 80 million shirts. These firms manage end-to-end operations from fibre to branded finished garments, offering buyers unmatched cost control, quality assurance, and capacity reliability (Shenzhou International, 2024).

The architecture of this scale is as important as its magnitude. Nearly half of China’s T&A industry revenue and profits are generated from among 216 specialised clusters, concentrated across the Yangtze River Delta, Pearl River Delta and Fujian. (CNTAC and CICC, 2020). Within these integrated clusters, fibre production, spinning, weaving, knitting, dyeing, finishing, garment manufacturing and logistics are

closely co-located, allowing intermediate inputs to move rapidly across the value chain. This spatial integration compresses lead times, lowers logistics and transaction costs and enables the in time production and rapid replenishment demanded by global buyers. Investment has continued to strengthen this ecosystem: in 2024, fixed asset investment in China's garment industry increased by 18 per cent over the previous year, driven by investments in smart manufacturing, green production and e-commerce logistics (NBS, 2025).

Scale was not achieved spontaneously. Three mutually reinforcing drivers produced it. First, industrial clustering created scale economies at both firm and ecosystem levels, with the internal demand base of a USD 328 billion, 2024 in apparel retail market (Statista, 2024). Second, dual orientation-simultaneously serving global brands and China's growing middle class-allowed producers to achieve economies of scale unavailable to purely export-oriented competitors. Third, successive five year plan incentives provided fiscal subsidies, tax rebates, export-credit facilities, and preferential land allocation to large enterprises, supporting consolidation and vertical integration (Lin et al., 2024).

5.3.2 Cluster and Institutional Mechanisms

China's T&A clusters are not simply geographic agglomerations of firms. They are policy-driven ecosystems, shaped by deliberate institutional design, local entrepreneurship, targeted infrastructure investment and layered governance structures (Zhang and Cao, 2004). Understanding them requires examining the institutional architecture that converted spatial proximity into sustained competitive advantage.

The coastal provinces Guangdong, Jiangsu, Zhejiang, and Shandong historically anchored the industry. Guangdong, Pearl River Delta was specialised in fast-fashion finishing; Jiangsu combining fabric production, machinery innovation, and synthetic fibre capability; and Shandong leading in cotton spinning. From the early 2000s, inland provinces such as Henan, Anhui, and Jiangxi absorbed labour-intensive garment assembly as coastal costs rose, while high-value upstream processes remained anchored in established coastal hubs.

Drawing on Wang, 2014, China’s cluster institutional framework can be understood multi-layered: combining local government spatial governance, specialised commodity and wholesale markets, shared infrastructure and service platforms, financial and fiscal instruments, and embedded informal norms and networks. Local governments designated specialised development zones for T&A production, providing plug-and-play industrial plots, utilities, and rapid administrative clearance. These were not passive land allocations but institutional instruments designed to internalise scale economies, create dense supplier networks, enable labour mobility, and generate specialised business service providers-from dyeing workshops to export promotion agencies-that reduced per-unit coordination costs across the cluster.

Figure 5.4
Geographical Distribution of China’s T&A Industry



Source: Authors’ own.
Note: This map is for representational purpose only and is not drawn to scale.

The creation of specialised commodity markets was equally transformative. China Textile City in Shaoxing, the world’s largest textile trading market and the Yiwu International Trade Market served simultaneously as trading platforms, information exchanges, credit intermediaries and logistics nodes. By concentrating thousands of

SMEs in a single trading complex, they drastically lowered search and marketing costs, formalised buyer-seller transactions, and enabled even small workshops to access both domestic and international demand (Wang, 2014).

Perhaps the most distinctive institutional feature is the role of informal networks and ‘institutional entrepreneurship’: local entrepreneurs leveraged *guanxi*-trust-based relational networks-to build subcontracting chains and trading partnerships that formal policy subsequently legitimised. The coexistence of flexible informal norms and adaptive local governance produced an environment of rapid learning, dense knowledge diffusion, and continuous industrial renewal (Wang, 2014).

5.3.3 Capital and Cost of Finance

Capital availability is a central pillar of China’s T&A competitiveness. China has systematically built an ecosystem that delivers low-cost finance, liquidity certainty, and risk mitigation-particularly for capital-intensive midstream operations such as spinning, weaving, dyeing and finishing, which require substantial upfront investment in machinery, automation, and pollution control. Firm-level cost data from integrated producers such as Luthai Textile shows that depreciation, energy, and manufacturing overheads together represent over 30 per cent of total costs, while raw materials account for roughly half (CICC, 2021). Access to affordable and stable financing is therefore decisive for competitiveness.

China’s monetary framework maintains structurally low borrowing costs for productive sectors. In 2024, the nominal lending rate averaged approximately 3.34 per cent, while consumer price inflation stood at 0.22 per cent with a real cost of capital of around 3.1 per cent (CEIC, 2024; People’s Bank of China, 2024). The People’s Bank of China uses frequent adjustments of the required reserve ratio (RRR) and relending and rediscount facilities to direct concessional finance to priority sectors, including manufacturing, MSMEs, and rural enterprises that anchor the textile value chain. State-owned commercial banks-including the Industrial and Commercial Bank of China and the

Bank of China-function as policy conduits, extending targeted credit to firms in strategic textile hubs.

This is complemented by the China Export and Credit Insurance Corporation (Sinasure), which provides political and commercial risk coverage at insurance cost, 0.3-0.5 per cent of invoice value for 90 days payment term covering up to 90-95 per cent of export value. This coverage functions as quasi-collateral, enabling firms-especially MSMEs to access working capital at lower spreads from commercial banks. During periods of global uncertainty, US-China trade tensions and the COVID pandemic, these mechanisms played a decisive counter-cyclical role, sustaining liquidity flows to exporters under severe external stress (Sinasure, 2024; Berne Union, 2023). Box 5.1 examines the architecture of Sinasure in detail and draws out the implications for India.

Box 5.1

Sinasure - Architecture and Implications for India

The China Export and Credit Insurance Corporation (Sinasure) was established in 2001 as a state backed export credit agency mandated to support Chinese exporters against political and commercial payment risks. It offers short, medium and long term export credit insurance, overseas investment insurance, and financial guarantees. Insurance cost for short term trade credit are <1 per cent of invoice value, in the range of 0.3- 0.5 per cent for 90 days repayment with coverage extending to up to 90 per cent of export value against both commercial and political risks.

Sinasure's structural advantages derive from: (i) strong sovereign backing that enables underwriting of higher-risk transactions; (ii) extensive risk diversification across hundreds of thousands of exporters, numerous countries, and multiple sectors; (iii) advanced credit risk assessment infrastructure, including dedicated country-risk research centres and a database of over 400 million enterprises; and (iv) efficient claims management systems that maintain financial stability at high volume. Sinasure insurance enables banks to finance export receivables through assignment and refinancing structures, effectively transforming export receivables into bank collaterals, for Chinese MSMEs (Sinasure, 2024; Berne Union, 2023).

India has recently announced Export Promotion Mission (Rs. 25,060 crore) which is an important step towards strengthening the country's export credit support ecosystem. The next phase of reform should be to develop a Sinasure equivalent export credit architecture by expanding coverage beyond conventional export

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insurance to include buyer and supplier credit insurance, incentivising premiums for MSME exporters, enabling export credit-backed receivables to be treated as bankable collateral and deploying digital platforms for rapid onboarding, underwriting and claims settlement. Such an institutional framework would reduce payment risks, improve access to trade finance and enable Indian apparel exporters to expand into new markets, thereby strengthening their global competitiveness.

Source: Sinosure, 2024; Trade Finance Global, 2025; Berne Union, 2023.

5.3.4 Labour

China’s apparel sector was historically built on an abundant, low-cost rural labour supply that has now become structurally constrained. Average annual manufacturing wages reached approximately USD 14,500 in 2023, continuing a trajectory that has outpaced the productivity gains achievable through traditional labour-intensive assembly (NBS, 2025). Entry-level apparel workers earn between USD 500 and USD 600 per month on average, a level that renders China non-competitive with Bangladesh where the minimum wage stands at approximately USD 113 per month for purely cost-based sourcing decisions.

Demographic pressures compound this cost challenge. China’s working-age population is shrinking, and younger cohorts are increasingly reluctant to enter factory work. The average age of garment workers in coastal provinces now exceeds 38 years, creating chronic shortages on sewing lines and pushing firms to automate or relocate production inland (CNTAC, 2024; China Briefing, 2025).

Firms have responded through accelerated automation. Several large factories have adopted ‘dark factory’ models-facilities with minimal human intervention-improving speed and quality while displacing low-skilled migrant workers (TexSpace Today, 2024; Financial Times, 2025). By 2024, China led the world in manufacturing automation intensity, with robot density reaching 470 units per 10000 workers (IFR, 2023). Labour-intensive sewing operations are being redistributed inland, while upstream high-value activities remain anchored in established coastal zones-a spatial division of labour that preserves China’s role as a core node in global apparel value chains (SCCEI, 2024).

5.3.5 Market Access, Trade Facilitation, and Fiscal Instruments

China's export dominance in T&A cannot be understood without examining the depth of its trade facilitation infrastructure, fiscal support architecture, and the macroeconomic environment in which these operate. Together, these mechanisms compress lead times, reduce compliance costs, improve liquidity cycles, and-through exchange rate management-maintain price competitiveness at the structural level. In a sector defined by thin margins, fast turnaround requirements, and price-sensitive sourcing decisions, each of these dimensions carries significant competitive weight.

China's National Single Window (NSW) is the institutional centre of its trade facilitation ecosystem. It integrates customs, inspection and quarantine, ports, taxation and all relevant trade agencies on a single digital platform, with core system availability exceeding 99.9 per cent (World Customs Organisation, 2019). All export documentation-declarations, certificates, licences, and compliance records-is submitted once to a single portal, with automated routing to the relevant agencies. The practical outcome is an average export customs clearance time of just over three days (World Bank Enterprise Surveys, 2022). For the T&A sector, where lead time is a primary sourcing criterion, this procedural efficiency is a decisive competitive input.

Comprehensive Bonded Zones (CBZs) extend these advantages to export-oriented manufacturers. Within CBZs, raw materials and intermediates are imported and held duty-free, with customs duty payable only on goods entering the domestic market. Manufacturers can import yarn, fabric, and trims without upfront duty payment, hold inventory without customs declaration, and ship finished garments rapidly on confirmed orders. In 2024, China's CBZs collectively generated RMB 6.7 trillion (approximately USD 920 billion) in annual import and export trade, a 4.7 per cent increase on the previous year (SCIO, 2025). PM MITRA parks in India could adopt a comparable bonded warehousing framework-though expanding their reach and simplifying operating procedures would be essential to match the functional utility of CBZs.

Authorised Economic Operator (AEO) certification is a further accelerator. As of April 2024, China had 5882 AEO certified enterprises, whose combined foreign trade volume accounted for 36.3 per cent of the national total (People’s Daily, 2024). AEO-certified companies benefit from the lowest customs inspection rates, priority clearance lanes, and international mutual recognition agreements with 28 countries and customs unions. Critically, under the AEO Joint Incentive Programme, export tax rebate processing times for certified firms have been reduced from 15 days to just five days sharply improving cash conversion cycles and enabling higher capacity utilisation (World Customs Organisation, 2019). Firms report overall export time compressed from close to a month to around three days following AEO certification (People’s Daily, 2024).

VAT export rebates have functioned as one of China’s most consequential fiscal instruments for export competitiveness. China applies a standard VAT rate of 13 per cent (revised from 17 per cent in 2019) on domestic goods and the export rebate system allows manufacturers to reclaim the full or partial VAT paid on inputs and production. For T&A, rebate rates have historically been among the highest in the system, with full rebates frequently applied to incentivise export-oriented production (Open Economies Review, 2024). Beyond direct rebates, qualified enterprises in the T&A sector benefit from a preferential corporate income tax rate of 15 per cent (HNTEs) against the standard 25 per cent, and environmental, energy, and digital transformation investments may qualify for a 10 per cent investment tax credit carried forward for up to five years (PwC, 2025; China Briefing, 2025).

5.3.6 *Exchange Rate Policy as an Implicit Export Subsidy*

Underlying all fiscal and facilitation instruments is a macroeconomic variable that receives insufficient attention in most comparative analyses of T&A competitiveness: China’s exchange rate management. Over two decades, China has combined large-scale manufacturing expansion, high domestic savings, controlled capital flows, and active foreign exchange reserve management to sustain a persistently competitive export price environment.

Multiple institutional and market-based assessments now converge on the view that the renminbi is substantially undervalued relative to medium-term economic fundamentals. The IMF's February 2026 assessment places undervaluation at approximately 16 per cent, (IMF, 2026; The Economist, 2026). The US Treasury has characterised the yuan as significantly undervalued given persistent trade surpluses and limited transparency in exchange rate management (Treasury, 2026). Market-based models imply considerably wider gaps: Goldman Sachs estimates undervaluation at approximately 25 per cent on a weighted average of valuation frameworks, with its (Goldman Sachs Dynamic Equilibrium Exchange Rate) model signalling discounts of up to 30 per cent against the dollar, driven by productivity and inflation differentials between China and advanced economies (Goldman Sachs, 2025). Fund-consistent external balance methodologies under higher surplus assumptions point to undervaluation in a similar range (Setser and Sobel, 2025).

For the T&A sector, characterised by razor thin margins, high price sensitivity, and buyer-driven sourcing decisions, the competitive implications are material. A currency advantage of 10-20 per cent can offset rising wage costs and environmental compliance expenditures, determine sourcing allocations, and preserve global market share across cycles. By maintaining a stable and periodically undervalued renminbi, China effectively lowers the dollar-denominated price of its garment and textile exports, functioning as an implicit and sustained export subsidy. Chinese exporters are approximately 29 per cent of global apparel market share even in the face of tariffs or rising domestic input costs. It also strengthens debt servicing capacity in foreign currency terms, improves reinvestment capacity, and stabilises profitability across business cycles.

5.4 Conclusion and Lessons for India

China's T&A sector offers India not a blueprint to replicate but a structural demonstration of what coherent, sustained industrial policy can achieve. From its origins as a low-cost assembler in the 1980s to its current position of 29 per cent of global apparel exports,

China evolved through the mutually reinforcing application of cluster industrialisation, institutional governance, a deep export-finance architecture, and an integrated trade facilitation and fiscal support system. The lessons for India lie in the coherence of this system-not in any single instrument.

1. Build Value-Chain Ecosystems, Not Just Factories

China's most fundamental lesson for India is that the cluster, not the individual factory, is the unit of competitive strategy. China has 216 specialised textile industry clusters, concentrated across the Yangtze River Delta, Pearl River Delta and Fujian, ecosystems where spinning, weaving, dyeing, garmenting, and logistics are co-located. This spatial concentration is what delivers the scale, speed, and reliability that global buyers treat as minimum requirements. Single firms like Shenzhou International employing over 1 lakh workers and producing more than 550 million garments annually, are themselves products of this ecosystem logic, not exceptions to it. India's registered apparel factories average just 131 workers; even export-oriented units average 600-800. China's scale ecosystem is an output of continued planning and implementation across cluster governance, shared infrastructure investment, and institutional design that India has yet to replicate at scale.

Lessons for India

- **Delegate Governance Authority:** Each PM MITRA park requires a cluster governance authority with delegated powers spanning customs, pollution control, labour inspections, DGFT clearances, banking and export credit facilitation. The jurisdictional fragmentation that currently forces exporters to navigate multiple agencies at state and central level is itself a competitiveness cost.
- **Build Infrastructure Before Factories:** Common effluent treatment plants, accredited testing laboratories, bonded warehousing, and logistics parks must be operational before the first factory opens, not treated as future additions. In China's clusters,

shared infrastructure is what converts physical proximity into supply-chain advantage.

- **Prioritise Deepening Existing Clusters:** Incentivising existing firms to expand production lines and raise machine utilisation within established clusters is more productive in the near term than building entirely new greenfield parks. A national baseline mapping of T&A clusters documenting governance structures, integration depth, compliance readiness would enable the systematic replication of cluster models like Tiruppur across other regions.

2. Build a Coherent Export-Finance Architecture

China's export-finance system is distinguished by its systemic coherence: low-cost working capital linked to confirmed orders, comprehensive credit insurance covering commercial and political risk at affordable premiums, rapid VAT rebate processing that functions as a real-time liquidity tool, and a monetary environment that structurally supports export price competitiveness. These elements do not operate independently; they function as a mutually reinforcing system in which finance, facilitation, and macroeconomic management align to reduce the cost and uncertainty of exporting.

Lessons for India

- **Transform Export Credit Architecture into a Sinasure-Equivalent:** Broaden coverage to include buyer and supplier credit insurance, incentivise premiums for MSMEs and treat export credit-backed receivables as bankable collateral. This single reform would materially reduce the risk burden on Indian apparel exporters and expand their effective market reach.
- **Mainstream Value Chain Financing and Operationalise Cluster-Linked Concessional Refinance:** Enable banks to lend at globally competitive rates aligned with apparel's cash-flow cycle. Instruments such as factoring, invoice discounting, and order-backed credit must move from niche to standard practice across the banking system serving apparel exporters. Banks need to be

enabled through regulatory guidance, partial credit guarantees, or expanded institutional backing to treat confirmed export orders as primary security for working capital loans.

- **Digitise and Time Bound Rebate Processing:** GST and RoD-TEP/RoSCTL rebate disbursement must be automated and time-bound, targeting timelines comparable to five day AEO benchmark as seen in China. Delayed GST disbursals and the withdrawal of IES and ATUFS for MSMEs have compounded the liquidity stress on smaller exporters. Months of delay in rebate disbursement makes it a deferred cost rather than a liquidity instrument.

3. *Eliminate the Time Tax on Export Manufacturing*

Every day spent on documentation, customs clearance or rebate processing is a day lost in an industry where buyers increasingly compete on speed, flexibility and reliability rather than price alone. Trade facilitation is therefore no longer merely a customs reform, it is industrial policy. India's competitiveness will increasingly depend not only on production costs but also on its ability to move goods, information and approvals quickly across the export value chain.

- **Integrate India's Trade Facilitation Architecture into a Single Operational System:** India already has the core digital infrastructure like ICEGATE and SWIFT for customs, DGFT for trade authorisations, GSTN for taxation and Port Community Systems for logistics. The challenge is end to end integration (De, 2024). Exporters should file information once, with customs, licensing, taxation, ports and regulatory agencies processing approvals through a fully integrated digital operating system.
- **Develop Bonded Manufacturing Ecosystems within PM MITRA Parks:** PM MITRA parks should incorporate simplified bonded warehousing and manufacturing facilities that allow duty-free import and storage of raw materials, with customs duties payable only when goods enter the domestic market. Such a framework would improve liquidity, reduce inventory costs and enable exporters to respond rapidly to buyer orders, par-

ticularly in MMF and technical textiles where imported inputs remain important.

- **Transform AEO into a Competitiveness Instrument for Apparel MSMEs:** India's AEO programme should evolve into a competitiveness instrument. A simplified onboarding pathway for apparel MSMEs, combined with priority customs clearance, risk based inspections and time bound processing of export incentive claims, would shorten order to shipping cycles and strengthen India's reputation as a reliable sourcing destination.

4. Closing the MMF Structural Gap and Emerging Opportunities like Technical Textiles

Nearly 77 per cent of global fibre consumption is MMF-based; India's apparel export basket remains approximately 70 per cent cotton-based. China's early, policy-driven pivot to MMF production was enabled by cotton price reform, R&D subsidies and investment in synthetic fibre capability. India's recent GST correction on MMF and the QCO removal are encouraging steps, but they address the upstream price distortion rather than the full set of constraints which include technology gaps in synthetic fabric production, limited MMF weaving capacity, and design capability, and insufficient integration into emerging segments like performance wear, industrial textiles, and other technical textile applications. The issue is therefore systemic, spanning the entire value chain from fibre production to finished goods. Closing the fibre-mix gap is not a single-policy problem; it requires sustained investment across the MMF value chain from fibre to finished garment.

Lessons for India

- **Invest Across the Entire MMF Value Chain and Promote demand led Diversification:** Technology gaps in synthetic fabric production, limited MMF weaving capacity, and weak design capability for performance and technical textile segments must be addressed together. Strengthening capabilities across the

value chain will enable India to produce the synthetic fabrics and garments increasingly demanded by global buyers.

- **Technical Textiles as a Strategic Priority Segment:** Industrial textiles, medical textiles, geotextiles, and performance wear are high-growth, high-margin segments. Dedicated R&D support, buyer linkage programmes, and testing infrastructure for these segments would allow India to enter markets where competition is lower and margins are higher.

China is the largest player in global apparel exports. It was about USD 32 billion in apparel exports in 2000 and today it is USD 153 billion, accounting for 29 per cent of global exports. This chapter shows that China's T&A dominance was built through decades of coordinated investments in industrial clusters, logistics, export infrastructure, skills, technology and trade facilitation. This chapter also points to the role of exchange rate management in sustaining China's export competitiveness. Recent international and market-based assessments suggest that the renminbi remains undervalued by roughly 16-30 per cent relative to economic fundamentals. Such undervaluation allows a persistent competitive advantage, helping Chinese firms maintain market share even in the face of rising wages, geopolitical concerns or growing competition from other apparel exporting countries. Key lesson for India is to integrate the 'ecosystem approach', where raw materials, processing units, service providers, finance and exporters operate within a close radius, reducing costs and improving responsiveness to global buyers. We also emphasise that continued export competitiveness requires policies that work together linking infrastructure, finance, skills, technology and trade facilitation within integrated production ecosystems. Adapting this approach to India's MSME dominated apparel sector is crucial for India to become a scale ready and reliable global apparel sourcing hub by 2030.

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6

Bangladesh's Ready-Made Garment Export Strategy

AYUSHI GUPTA AND ASHOK GULATI

6.1 Introduction

The apparel industry is considered to be the ‘starter industry’ of export-led industrialisation for developing countries as it provides employment opportunities for unskilled or semi-skilled workers and brings thousands of families out of poverty (Jones, 2006). In Bangladesh, the apparel industry has gradually consolidated its position as the largest export earner and employment generator. The ready-made garment (RMG) industry contributed 10.35 per cent of the country’s GDP in fiscal year (FY) 2023, accounting for 81.3 per cent of the total export revenue in the FY 2023-24 (Jahan and Akter, 2024). With USD 51.7 billion worth of clothing exports during this period, Bangladesh has solidified its role as the second-largest exporter of RMG globally, just behind China (Bangladesh Garment Manufacturers and Exporters Association (BGMEA), n.d.).

Table 6.1

Bangladesh's Key Economic Indicators

<i>Indicators</i>	<i>Value for 2024</i>
Area	148,460 km2
GDP per capita, Current Prices	USD 2,622
Population	173.7 million
Inflation Rate	10.47%
Labour Force Participation Rate	61.89%

Sources: IMF, World Population Review, World Bank, 2025

The roots of Bangladesh's textile legacy stretch back centuries, when fine muslin from pre-independence Bengal was prized across the world for its quality and craftsmanship. Post-independence, jute was the country's industrial mainstay, until its gradual decline in the 1970s created space for a new industrial champion to emerge (Haider, 2005; Rahman, 2014). That champion was the RMG sector. Taking off in the late 1970s and early 1980s, it leveraged Bangladesh's competitive advantage in low-cost, abundant labour, especially women and attracted the attention of foreign buyers seeking affordable production alternatives. By the 1990s, the country had carved out a niche in global supply chains.

Today, the industry directly employs close to 4 million workers, though estimates vary across sources and are discussed in greater detail later in the chapter. Historically, the sector's growth has been driven by women's participation. A decade ago, women made up around 80 per cent of garment workers in Bangladesh, but this figure reportedly declined to about 60 per cent by 2022 (Ethical Trading Initiative, 2022). Some scholars, such as Dina Mahnaz Siddiqi, argue that women's share may never have been as high as these early estimates suggested. The International Labour Organization (ILO), in its 2023 analysis, places the female share at 44 per cent, while more recent Mapped in Bangladesh (MiB) data (2025) estimates women at 57 per cent of the total RMG workforce¹. These figures, though divergent, collectively indicate a gradual shift in the industry's gender composition influenced by automation, occupational restructuring, and social mobility dynamics (Mirdha, 2020).

Bangladesh today stands as the world's second-largest exporter of ready-made garments, home to over 230 Leadership in Energy and Environmental Design (LEED) - certified green factories, underscoring its leadership in sustainable manufacturing. The country also enjoys access to 52 duty-free export markets and offers a 10 per cent green

1. ILO estimates, based on 2023 data, draw upon national labour-force. In contrast, the MiB (2025) estimates are derived from field surveys of export-oriented factories. Differences in coverage, reference year, and methodology are likely to account for part of the variation between the ILO's figure of 44 per cent and the MiB's estimate of 57 per cent female participation in Bangladesh's garment workforce.

tax incentive to promote environmentally responsible production (Bangladesh Investment Development Authority, n.d.).

This chapter traces the evolution of Bangladesh’s garment industry, unpacks the dynamics of its input ecosystem, including labour, capital, scale and institutional frameworks and highlights the policy innovations and production strategies that have underpinned its success. It examines the sector’s product mix and its positioning in global trade. The chapter also reflects on how Bangladesh’s experience offers valuable lessons for India, especially in designing supportive institutions, facilitating easier access to working capital and enabling scalable, labour-intensive manufacturing. By drawing on Bangladesh’s model, this chapter identifies strategic pathways for India to enhance its export performance and strengthen its integration into global value chains.

6.2 Evolution and Export Dynamics of the RMG Sector

The modern RMG industry formally began in 1977 with the establishment of Desh Garments, under the leadership of Nurool Quader Khan, who is recognised as the industry’s pioneer. What set Desh apart was its technical and marketing collaboration with South Korea’s Daewoo Corporation. Under this joint venture, 130 Bangladeshi workers and managers were trained in South Korea, gaining exposure to production techniques, international quality standards and business practices. This model built the nation’s first skilled cadre and facilitated essential access to global buyers (BGMEA, n.d.), encouraging other early actors like Reaz Garments and Sunman Group to scale from domestic tailoring toward export-oriented manufacturing.

The MFA Boom and Structural Growth (1984 – 2004)

The sector's exponential expansion was heavily facilitated by the Multi-Fibre Arrangement (MFA)². As traditional Asian producers reached their quota limits, Bangladesh's status as a Least Developed Country (LDC) provided quota-free access to Western markets (Siddiqi, 2025). This external advantage aligned with internal trade liberalisation and state-led support, including bonded warehouses and back-to-back letters of credit, which lowered entry barriers for small entrepreneurs.

Bangladesh's RMG exports in 1983-84 were valued at just USD 31.57 million, accounting for only 3.89 per cent of the total exports (BGMEA, 2024). By 2000, RMG exports stood at USD 4.86 billion, making up over 75 per cent of the country's total exports. The early growth phase (1983–2004) was marked by volatile but exponential expansion. The sector's share in total exports jumped from under 4 per cent to over 75 per cent during this period. Exports increased from USD 31.6 million in FY 1984 to USD 5.7 billion in FY 2004. Exports tripled between 1995 to 2005, aided by quota benefits under the MFA and stronger institutional support, at an average annual growth rate of 12.7 per cent.

Eminent scholars like Prof. Naila Kabeer at the London School of Economics have emphasised how the RMG sector created new forms of economic agency for women, despite the informal, precarious nature of their employment. Political economist Rehman Sobhan notes that it also shifted the nation's standing from 'aid dependence to trade dependence' (Siddiqi, 2025).

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2. The MFA was a global textile and clothing trade regime managed under GATT from 1974 to 1994 that imposed bilateral import quotas by developed nations (including the US, European Community, and Canada) on major exporting countries to protect their domestic textile industries. Quotas set absolute limits on the volume of cotton, wool, and manmade fibre textiles and apparel measured in square yards equivalent (SYE). For example, the bilateral agreement with Hong Kong (effective January 1, 1978, through December 31, 1982) applied an aggregate limit of 1.1 billion SYE for 1980. Similarly, the Republic of Korea faced an aggregate limitation of 660.3 million SYE for 1980 on all textile categories. These restrictions significantly constrained export growth of leading suppliers such as Hong Kong, South Korea, Taiwan, India, and Pakistan.

Global Integration and Post-MFA Resilience (2005 – 2015)

An inflection point came in 2005 when the MFA was phased out. Many feared that Bangladesh would lose market share to more efficient, vertically integrated producers like China or Vietnam. However, the opposite happened: the country expanded its footprint. International brands and retailers, entrenched in Bangladesh’s supply chain, deepened their relationships instead of leaving. According to Gereffi and Frederick (2010), Bangladesh benefited from being part of a buyer-driven global value chain that produces standardised, large-volume, low-margin items such as trousers and T-shirts at scale.

During this time (2006-2015) exports defied skepticism by doubling from USD 9.2 billion to USD 25.5 billion, sustained by low costs and deepening global brand engagement.

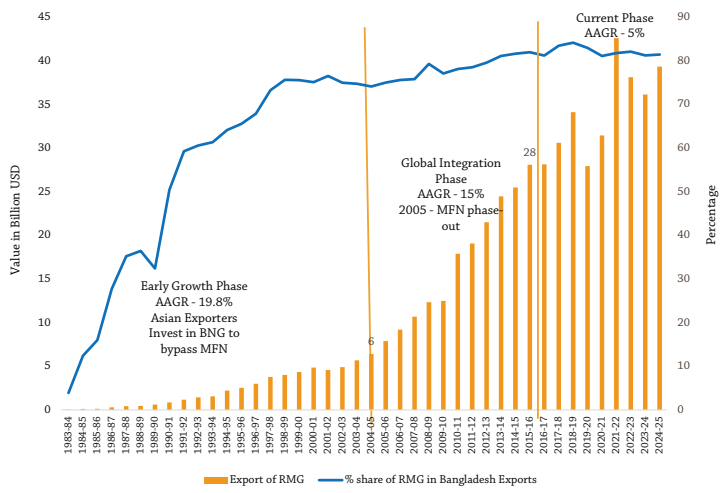
Maturity and Current Market Alignment (2016 – Present)

The sector has now entered a phase of maturity and resilience. Although the annual growth rate has stabilised to approximately 5 per cent between 2016 and 2025, the industry’s dominance remains absolute. From a peak of USD 42.6 billion in 2021-22 to a robust USD 39.3 billion in 2024-25 achieved despite a global trade downturn the RMG sector contributes over 81 per cent of Bangladesh’s total export earnings (BGMEA, 2025).

However, this success is characterised by a high degree of product concentration. The export basket is dominated by five core categories: trousers, T-shirts, sweaters, shirts & blouses, and underwear. This concentration on core basic items like trousers and T-shirts allows Bangladesh to serve as a dependable supplier for global fast-fashion brands with large-volume, low-margin production (Fakhruzzaman, 2025).

Geographically, the European Union (EU) remains the dominant destination, benefiting from Bangladesh’s duty-free access under the Everything but Arms (EBA) scheme for LDCs. Bangladesh exported USD 18.4 billion worth of garments to the EU in the triennium ending (TE) 2024-25. The USA absorbs nearly a fifth of the exports (USD 7 billion in TE 2024-25). The share of non-traditional markets (e.g.,

Figure 6.1
Bangladesh's RMG Exports and Share in Total Exports, 1983-2024
Value in USD Billion



Source: BGMEA, 2024

Note: This data reflects a more conservative and specialised subset of the nation's total textile and apparel trade, as it focuses specifically on the exports reported by BGMEA-registered garment manufacturing members and is limited to core RMG products falling primarily under HS Codes 61 and 62. It may therefore differ from broader national or international trade statistics (e.g., ITC Trade Map, which often includes CIF valuation and a wider scope of textile/apparel items).

Figure 6.2
Share of Top Exported RMG Items, 2023-24

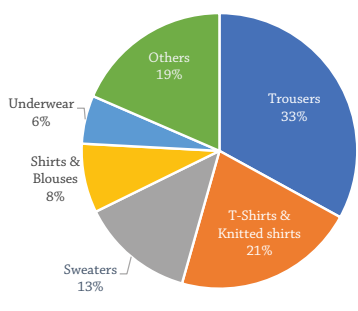
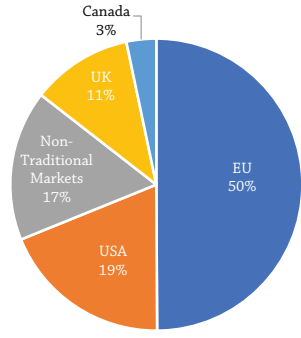


Figure 6.3
Bangladesh's Major Export Destinations Share – TE 2024-25



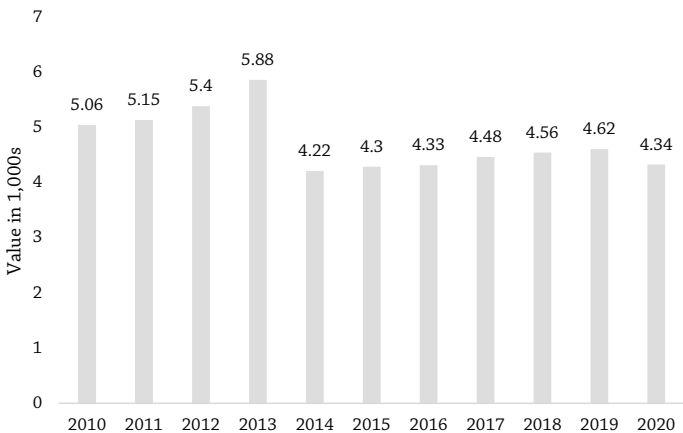
Source: Gupta and Gulati, 2026 using data from BGMEA

Japan, Australia, Russia, South Korea) is rising gradually, accounting for USD 6.2 billion worth of goods.

6.3 Scale of Bangladesh’s Garment Industry

Bangladesh’s RMG sector operates on a vast scale, with thousands of factories distributed across the country. According to the MiB census (a Brac University mapping of the industry), there were 3,556 export-oriented garment factories active as of June 2025. MiB, the supply chain disclosure effort of the first-ever digital map of Bangladesh’s RMG industry – has determined this number through physical visits and two years of verification and validation of these units. Aside from these primarily export-facing factories, Bangladesh has numerous facilities and workshops catering to the domestic market. MiB identified 581 factories that export only part of their production. Exact figures for purely domestic-oriented garment producers are more difficult to obtain (as they often fall outside formal databases). These semi-export and local-market units, though smaller in scale, number in the hundreds and employ tens of thousands of workers (Financial Express, 2025).

Figure 6.4
Number of Garment Factories in Bangladesh (2010 to 2020)



Source: Gupta and Gulati, 2026 using data from BGMEA

Box 6.1

Bangladesh's Key Garment Manufacturing Hubs

Garment manufacturing in Bangladesh is highly clustered in a few key regions rather than being evenly spread across the country.



The lion's share of RMG factories is concentrated in four districts: Dhaka, Gazipur, Narayanganj, and Chittagong (Dhaka Tribune, 2022). Dhaka, the capital, and its surrounding areas (Gazipur to the north, Narayanganj to the southeast, plus Savar/Ashulia on the outskirts) form the heart of Bangladesh's garment belt. As per recent BGMEA data, Dhaka district and its periphery account for around 1,750 factories, compared to about 350–400 active factories in Chittagong district. Chittagong, the country's main port city, is the second key cluster. It houses several major factories, including those in the Chittagong EPZ where pioneers like Pacific Jeans and Young-one operate.

Ashulia and Savar have developed as hubs for large, purpose-built factories attracted by lower land costs and proximity to the capital. Gazipur has grown into a vast industrial zone combining garment assembly units with spinning and weaving mills. Narayanganj is a historic textile hub specializing in knitwear, sweaters, and dyeing, and supplies to mid-tier garment exporters, maintaining its role as one of Bangladesh's oldest centres of textile craftsmanship. Meanwhile, in the southwest, Khulna is emerging as a promising industrial city for garments, benefiting from its strategic location and improved access through Mongla Port, which positions it as a valuable link for future export-oriented production (Ahmed, 2025).

Mega-factories and groups illustrate the upper limits of scale. The Ha-Meem Group, one of Bangladesh’s largest apparel manufacturers, operates 26 garment factories with around 300 production lines and 50,000 employees, producing 7 million woven garments per month (Ha-Meem Group, n.a.). Similarly, DBL Group, a leading knitwear producer, has grown to over 50,000 employees and can manufacture 9-13 million pieces monthly across its units. Pacific Jeans, a major denim exporter based in Chattogram, employs 35,000+ people across 13 factories, producing about 40 million pairs of jeans annually (over 3 million per month) (Pacific Jeans, n.a.).

Beneath the surface of Bangladesh’s giant factories lies an expansive subcontracting network. When orders exceed capacity or require specialised processes, it is common for export manufacturers to out-source work to smaller and informal units. This has created a multi-tier supply chain: compliant, frontline factories at the top and a web of secondary producers feeding into them.

These subcontracting units range from medium-sized factories that lack direct export licences to tiny workshops (sometimes home-based operations). In 2023, about 23 per cent of the RMG factories (at least 856 units) were not under any safety inspection mechanism; many of these are likely subcontracting units. They tend to have lower wages, higher production pressure and no union presence, as noted by labour advocates (Daily Star, 2023).

6.4 Policy Framework for Supporting the Industry

Bangladesh’s transition from a heavily protected, import substitution-driven economy to an outward-oriented, export-led industrial hub began in the mid-1980s. The government-initiated reforms to reduce import restrictions and encourage domestic and foreign private investment in labour-intensive and export-oriented sectors (WTO, 2000).

This policy shift included the creation of the Chittagong Export Processing Zone (CEPZ), established in 1983 under the Bangladesh Export Processing Zones Authority (BEPZA) (Fakhruzzaman, 2025). This marked an early effort to cluster export-focused industries within

a regulated, investment-friendly enclave. The government introduced targeted policy tools designed to overcome the high upfront costs of garment production; the back to back letter of credit (BBLC) and the special bonded warehouse (SBW) systems, both launched in 1984, were among the most significant. These instruments fundamentally reduced the capital burden on exporters, allowing manufacturers to source imported inputs duty-free and on credit against future export proceeds.

Against this backdrop, this section will examine two of the most critical cost elements in garment manufacturing, capital and labour, and the range of support measures introduced by the Bangladesh government to ease the burden on exporters and attract domestic and international manufacturers.

6.4.1 Bangladesh's Capital Support for Garment Manufacturers and Exporters

Bangladesh's export success in readymade garments rests not only on low labour costs but on a layered financial architecture that ensures manufacturers have affordable, timely access to credit at every stage of the production cycle from raw material procurement to shipment. Four key mechanisms underpin this system: the back-to-back letter of credit (BBLC), the export development fund (EDF), the pre-shipment credit refinance scheme, and the packing credit (PC) facility. Together, they address the full working capital cycle, ensuring that neither import financing, domestic production costs, nor export risks become binding constraints on growth.

The most consequential of these instruments is the BBLC system, introduced in 1984. Under this arrangement, an export letter of credit (L/C) issued by a foreign buyer serves as collateral for the exporter to open import L/Cs allowing manufacturers to procure fabrics, trims, and accessories without cash collateral or fixed assets. This marked a fundamental shift from asset-based lending to cash-flow-based financing, where guaranteed export proceeds serve as primary security. The result is a self-liquidating financing loop: once finished goods are shipped and the foreign buyer pays, the bank recovers its advance automatically. For small and medium firms that lack mortgageable

assets, this mechanism has been transformative removing the capital barrier that would otherwise exclude them from global supply chains (Lopez-Acevedo and Robertson, 2016; Rahman, 2014). India currently lacks an equivalent facility, representing a significant structural gap that constrains the competitiveness of its garment exporters.

The remaining instruments complement the BBLC by addressing financing gaps that it does not cover.

The export development fund, managed by Bangladesh Bank since 1989, provides short-term foreign currency loans for the import of raw materials under back-to-back L/Cs. Interest rates are pegged to secured overnight financing rate (SORF) plus a maximum margin of 4 per cent and given that average inflation for past 5 years ran at 7.86 per cent in 2024, real interest rates remain negative, making these effectively subsidised loans (Dhaka Tribune, 2024; The Financial Express, 2024).

The pre-shipment credit refinance scheme offers subsidised Taka liquidity to banks at a maximum borrower rate of 5 per cent, with exporters eligible to borrow up to 10 per cent of their export consignment value (Bangladesh Bank, 2023).

The packing credit facility addresses the domestic working capital gap not covered by the BBLC or EDF specifically non-import costs such as wages, domestic procurement, and operational overheads. Capped at 10 per cent of the free-on-board (FOB) value, it is priced at SMART (six-month moving average rate of treasury bill) plus a maximum margin of 2 per cent, or a concessional 5 per cent if refinanced through a dedicated Bangladesh Bank scheme. Like the BBLC, it is self-liquidating: repaid automatically from export proceeds within 180 days (Dhaka Tribune, 2023).

Finally, the export credit guarantee scheme, administered by Sadharan Bima Corporation since 1978, provides insurance against commercial and political risks of non-payment including buyer insolvency, foreign exchange restrictions, and political instability in the importing country. It covers up to 80 per cent of commercial losses and 95 per cent of political risk losses, offering both pre- and post-shipment guarantees (Gereffi and Frederick, 2010).

Table 6.2*Export Financing Schemes for RMG Manufacturers in Bangladesh*

<i>Schemes</i>	<i>Core Function</i>
Back-to-Back L/C	Converts a foreign buyer's export order into working capital, no cash collateral or fixed assets required. Removes the capital barrier for SMEs without fixed assets or cash reserves.
Export Development Fund	Provides short-term USD loans to manufacturers for importing raw materials and intermediary goods via back-to-back L/Cs.
Pre Shipment Refinance	BB-managed fund providing subsidised Taka refinancing to banks for onward lending to exporters.
Packing credit	Short-term Taka loan covering non-import production costs wages, domestic procurement and overheads not financed by EDF or back-to-back L/C. Plugs the domestic working capital gap within the production cycle
Export Credit Guarantee Scheme	Insurance against non-payment risk covering buyer insolvency, payment default, foreign exchange restrictions and political instability in the importing country.

Source: Author's own compilation from various sources.

Fiscal Incentives and Tax Preferences

Beyond credit, Bangladesh deploys a range of fiscal instruments to reduce the cost of exporting. A duty drawback system reimburses customs duty, excise duty, and VAT on imported inputs used in export production, with refunds typically ranging from 0.9 to 4 per cent of FOB value depending on product category (Apparel Resources, 2020). Duty exemptions and concessional tariffs (1–5 per cent) on imported machinery and spare parts reduce the upfront cost of factory modernisation a policy that originated in Export Processing Zones in the 1980s and has since been extended to all export-oriented units, most recently reaffirmed in the Export Policy 2024–2027.

Export-oriented RMG manufacturers benefit from a preferential corporate income tax rate of 12 per cent, against a national rate of 22.5–27.5 per cent; green-certified factories pay an even lower rate of 10 per cent. These rates are guaranteed through FY2028, providing investment predictability. Historically, new factories also received tax holidays of up to 10 years depending on location and investment size (Deloitte, 2024).

Direct cash incentives calculated as a percentage of FOB value and credited post-shipment have historically supported export diversification and the use of local fabrics. However, these are being phased out ahead of Bangladesh’s graduation from Least Developed Country status. The base incentive rate has already fallen from 4 per cent in FY2018 to 1.5 per cent in 2024, with partial compensation offered through electricity tariff waivers of up to 10 per cent and further reductions in machinery import duties (Sumi, 2024; The Business Standard, 2024).

6.4.2 Bangladesh’s RMG Labour Market

The success of the sector on the world stage has depended on offering the lowest possible labour costs, with Bangladesh’s “competitive price level” widely regarded as its defining advantage (McKinsey, 2011), yet the precise scale of its workforce remains contested.

While earlier reports indicated a workforce of 4 and 4.2 million workers, before the Rana Plaza disaster in 2013, factory closures and large-scale layoffs during the COVID-19 pandemic have complicated these estimates. In 2024, the state minister for Labour and Employment stated that the industry employs over 5 million workers, a figure that has been contested by the BGMEA and Bangladesh Knitwear Manufacturers and Exporters Association (BKMEA), who argue that automation has decoupled factory expansion from employment growth (Islam, 2024). Most recent MiB data (June 2025) suggests a leaner workforce of 3.01 million across 3,556 factories with women comprising the majority at 57 per cent. This shift in the workforce composition, coupled with factors like wage hikes, automation and Bangladesh’s shift towards more complex garment production, has contributed to a decline in female workers, historically the backbone of the country’s garment industry (Mirdha, 2020).

Wage policy remains a central point of contention within the sector’s competitive framework. In December 2023, the minimum wage was raised for the first time in five years to Taka 12,500 (USD 113), a 56 per cent nominal increase from the previous rate of Taka 8,000. Despite this hike, the current wage remains approximately one-

quarter of the USD 460 living wage estimated for Dhaka, leaving many households below the poverty line (Fair Labor Association, 2024). This maintains Bangladesh's position as one of the lowest-wage garment exporters globally; by comparison, Vietnam and Cambodia offer minimum wages near USD 200, while India and Pakistan range between USD 170 and USD 180. The challenge is further compounded by an implementation gap, with research indicating that over 30 per cent of workers are still paid below the statutory minimum, highlighting a disconnect between legal mandates and factory-floor reality (GoodWeave, 2025).

The delivery of statutory worker benefits ranging from health-care to childcare is equally uneven. Although Bangladeshi labour law mandates facilities such as on-site childcare for factories with more than 40 women, these services are frequently non-functional or exist only on paper (Syed and Karim, 2024; GoodWeave, 2025). Similarly, although transportation and mid-day meal services are provided in a majority of EPZ factories, workers in non-zoned factories often lack these protections. This disparity underscores the need for more uniform enforcement of compliance guidelines across the broader manufacturing landscape.

A comparative look at the World Bank Enterprise Surveys (2022) highlights a distinct regulatory advantage. According to the surveys, only 1.3 per cent of firms in Bangladesh identified labour regulations as a major or very severe constraint. In stark contrast, 11.9 per cent of firms in India reported similar challenges. This flexible framework facilitates rapid market responsiveness and large-scale production, though it necessitates careful balancing to ensure flexibility does not come at the cost of worker safety and retention.

To sustain growth post-LDC graduation, the sector is transitioning from 'cut-make-trim' operations to high-value design and branding. However, a 60 per cent skill gap persists as per a Bangladesh Institute of Development Studies (The business Post, 2023). To address this, the National Skills Development Policy and the Productivity Master Plan 2021–2030, the government and international partners have launched targeted initiatives such as the Skills for Employment

Investment Program (SEIP). These programmes aim to transition the workforce from basic ‘cut-make-trim’ operations toward higher-value design and branding. Central to this strategy is the empowerment of female workers through institutes like the Centre of Excellence for Bangladesh Apparel Industries (CEBAI), which provides the vocational training necessary for operators to move into supervisory roles. By prioritising reskilling for high-technology tasks, this framework aims to ensure that increasing automation serves as a catalyst for productivity rather than a driver of mass labour displacement (Asian Productivity Organisation, 2019).

6.4.3 *Institutions Supporting Bangladesh’s RMG Industry*

One of the critical policy supports for Bangladesh’s apparel exporters is the special bonded warehouse facility. By allowing export-oriented firms to import raw materials and accessories duty-free, the SBW system effectively removes the liquidity burden of upfront customs duties and VAT. Given that Bangladesh remains heavily dependent on imported textiles, this exemption is critical; it not only reduces direct production costs but also significantly improves lead times by bypassing the cumbersome process of paying duties and later claiming drawbacks (Haider, 2007).

To further bolster export manufacturing, Bangladesh has utilised Export Processing Zones (EPZs), established in 1983. Managed by the Bangladesh Export Processing Zones Authority (BEPZA), EPZs function as industrial enclaves that offer a concentrated bundle of incentives. Historically, these included a 10-year full corporate tax holiday, though rules were adjusted after 2012 to a tapered five-to-seven-year holiday depending on the zone’s location. In major hubs like Dhaka and Chattogram, firms receive a 100 per cent tax exemption for two years, 50 per cent for the next two, and 25 per cent in the fifth year. EPZs are geared to attract foreign and domestic investment, boost exports and foreign exchange earnings. Beyond tax holidays, EPZ firms enjoy duty-free privileges on all production inputs including machinery and spare parts and benefit from simplified procedures. BEPZA acts as a central coordinator for permits, utilities, and labour

permissions, ensuring rapid customs clearance and the guaranteed repatriation of profits (BEPZA, 2024).

Building on the EPZ, Bangladesh in 2010 launched a broader Special Economic Zones (SEZ) programme in 2010, aiming for at least 100 zones nationwide. SEZs provide similar incentives to EPZs. Unlike EPZs, which were focused purely on exports, many SEZs allow production for the domestic market.

Simplified procedures and one-stop services support investors. BEPZA co-ordinates permits, utilities, customs and labour permissions within the zones, creating a seamless experience. EPZ companies are free from repeated licensing requirements and enjoy on-site customs offices for rapid clearance and guaranteed repatriation of profits and capital. Foreign staff can obtain work permits efficiently and off-shore bank accounts are permitted. These streamlined administrative processes save critical time and costs that are highly valuable in the fast-moving garment sector (BEPZA, 2024).

The One Stop Service Act, 2018, empowered the Bangladesh Investment Development Authority (BIDA) to coordinate approvals through a single online portal, allowing manufacturers to apply for licenses, tax registrations, and utility connections in a streamlined manner. Complementing this domestic simplification is a major overhaul of trade logistics: the rollout of the national single window (NSW). Supported by the World Bank, the NSW integrates all key government agencies including customs, ports, the central bank, and zone authorities into a single digital interface (Industry Insider, 2025). This platform is designed to expedite export-import processes and enhance transparency across the supply chain. An investor looking to set up a garment factory (inside or outside a zone) can use BIDA's online one stop service portal to apply for needed licences, tax registration and utility connections in a streamlined way.

The efficiency of these integrated trade and customs procedures is reflected in Bangladesh's performance metrics compared to regional competitors. According to the World Bank Enterprise Surveys (2022), Bangladesh averages 11 days to clear imports and 7 days for direct exports, a stark contrast to India's 31.5 and 17 days, respectively. Fur-

thermore, only 2 per cent of firms in Bangladesh identify customs and trade regulations as a major or severe obstacle, whereas 15.5 per cent of firms in India report similar challenges. These metrics underscore how Bangladesh’s institutional frameworks have successfully minimized lead times and regulatory friction, allowing the RMG sector to meet global demand with high efficiency.

6.5 Conclusion and Lessons for India

Bangladesh’s ready-made garment sector serves as a striking example of how a low-income, post-conflict economy can evolve into a global manufacturing leader through targeted, export-led industrial strategies. From its early emergence in the 1980s, driven by joint ventures and quota opportunities under the MFA, to its current status as the world’s second-largest garment exporter, is the result of a supportive institutional ecosystem designed to eliminate the specific bottlenecks that stifle manufacturing in developing nations.

1. Ease Capital Constraints

One of the key aspects of Bangladesh’s approach is its intentional reduction of capital and working capital restrictions for manufacturers. Tools such as the back-to-back letter of credit system and the special bonded warehouse scheme have been transformative, allowing exporters to acquire raw materials without tying up internal funds. In an industry defined by narrow margins and high volumes, these tools provide a decisive liquidity advantage. Alongside donor-backed credit lines, concessional finance from Bangladesh Bank and targeted cash incentives, these measures fostered an environment that encouraged entrepreneurs to expand, reinvest and stay competitive globally.

Lessons for India: India’s exporters currently face fragmented, compliance-heavy schemes like Advance Authorisation, while refund-based mechanisms (RoDTEP/RoSCTL) are often marred by delays that erode liquidity. To bridge this gap, India should:

- **Transition to Cash-Flow-Based Lending:** Shift from collateral-based to cash-flow-based financing. Regulators should encourage banks to treat confirmed export orders and receivables as

primary security. An order-backed credit product, modeled on the back-to-back L/C system, would lower entry barriers for MSMEs lacking immovable assets. Banks should be encouraged through regulatory guidance, partial credit guarantees, or an expanded ECGC-backed facility to treat confirmed export orders and receivables as primary security for working capital loans.

- **Digitise Remissions:** Ensure time-bound, IT-driven processing of RoDTEP and RoSCTL credits so they function as predictable liquidity instruments rather than uncertain windfalls.
- **Scale Bonded Warehousing:** Simplify regimes like Manufacture and Other Operations in Warehouse Regulations (MOOWR) for apparel clusters. By allowing duty-free import of inputs against export intent, with real-time electronic inventory control and risk-based audits instead of burdensome pre-approval procedures. Although the MOOWR scheme is legally available for textile and apparel units in India, it has seen little uptake among T&A exporters because they typically prefer the more tailored Advance Authorisation route, given its better alignment with short lead-time production cycles and export-only input import.

Ultimately, easing capital constraints in apparel requires more than incremental scheme reform; it requires a banking architecture that understands the sector's thin margins, high turnover, and export-driven cash cycles. Aligning financial instruments with industrial realities would not only support competitiveness but also advance the objectives of Make in India and Ease of Doing Business.

2. One-Stop Governance and Long-Term Policy Commitment

Bangladesh's EPZs demonstrate the power of cluster-driven scale. By combining infrastructure with single-agency oversight (BEPZA), these zones provide one-stop customs clearance and licensing at the factory gate. While India has introduced initiatives such as PM MITRA parks, it must ensure these go beyond land allocation to create genuinely integrated ecosystems.

Lessons for India: While India has introduced initiatives such as PM MITRA parks, it must ensure these go beyond land allocation to create genuinely integrated ecosystems. Policy stability is crucial to secure large, multi-year foreign direct investment (FDI) commitments that require predictable returns.

- **Fully Integrated Ecosystems:** New initiatives like PM MITRA Parks must move beyond land allocation to become genuinely integrated ecosystems. Firms should benefit from a single digital window covering environmental, utility, and labour clearances across state and central departments to eliminate redundant documentation.
- **Policy Continuity Guarantees:** India must establish multi-year stability for export incentives. The Ministry of Commerce and Ministry of Finance should commit to a policy continuity guarantee, fixing RoDTEP/RoSCTL rates for a five-year tenure. This certainty is essential for securing large-scale, multi-year FDIs.
- **Strategic Pilots:** Launch a phased pilot in two PM MITRA Parks (e.g., in Madhya Pradesh and Tamil Nadu). These pilots would feature a unified digital portal for all clearances and a five-year lock-in period for incentives to provide exporters with baseline financial predictability

However, there is a cautionary side to Bangladesh’s experience. Its strategy has heavily relied on a cheap labour force, often at the cost of dignified working conditions and fair compensation. Repeated weakening of labour laws under industry pressure, including the relaxation of overtime protection, demonstrates the social risks of over-prioritising competitiveness. India cannot and must not replicate this. While adopting capital facilitation tools, it must institute robust labour safeguards to ensure the sector grows without sacrificing worker dignity and rights.

Crucially, this responsibility extends beyond national borders. A parallel call for action must be directed toward global buyers, whose purchasing practices profoundly shape labour standards in supplier countries. As highlighted in ILO policy brief (Vaughan-Whitehead &

Caro, 2017), unfair buying terms such as compressed lead times, unilateral price cuts, and unpredictable order volumes directly erode suppliers' capacity to maintain decent working conditions and fair wages. The forthcoming EU Corporate Sustainability Due Diligence Directive (CSDDD) directly mandates buyers to identify, prevent, mitigate, and account for adverse human rights and environmental impacts in their supply chains. To foster a genuinely fair working environment, buyers must ensure fair purchasing practices (including timely payment, stable pricing, and reasonable lead times). The CSDDD provides the regulatory leverage for India to demand that buyers' actions align with their legal due diligence obligations.

In summary, Bangladesh demonstrates to India that apparel manufacturing can flourish when the state actively lowers capital barriers, simplifies trade logistics, and creates an enabling environment for exporters. Yet its trajectory also reveals the structural limits of a global value chain driven by relentless price competition and buyer dominance. In such a system, social and environmental costs are routinely externalised to the producing countries, eroding both equity and resilience.

True competitiveness, however, now rests not merely on cost advantages but on the credibility of governance, fair labour practices, and responsible production. In such a system, social and environmental costs are routinely externalised to the producing countries. India's challenge and opportunity is to develop a world-class apparel ecosystem that combines capital efficiency with protections for its workers, leveraging collective producer strength to negotiate fairer value within global supply chains. If it can align fiscal prudence, trade facilitation, and ethical production within a predictable policy framework, India will not only compete globally but also redefine what inclusive and sustainable industrialisation can look like in the Global South.

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Vietnam's Apparel Export Strategy and Global Competitiveness

RIYA JAIN AND ASHOK GULATI

7.1 Introduction

Once a war-scarred agrarian economy, Vietnam has engineered an industrial transformation that has reshuffled the global apparel export order, elevating itself to the world's third-largest apparel exporter through strategic reforms. In just two and a half decades, its apparel sector has surged from a mere one per cent share of global apparel exports in 2000 to a commanding 6.3 per cent in 2024 (TradeMap, 2024), securing its position as the largest apparel exporter after China and Bangladesh. The scale of this shift is staggering; total exports of goods and services now account for approximately 90 per cent of Vietnam's GDP in 2024, a dramatic leap from just 6.6 per cent in 1986 (World Bank, 2025), highlighting the role of trade in their economic transformation. This trade-led expansion has been a central driver of the rapid macroeconomic scaling, with GDP at current prices reaching USD 459.4 billion (IMF, 2025) alongside a population of 101.6 million (Table 7.1).

There are a couple of reasons that make Vietnam's apparel sector an interesting and inspirational case to study. First, Vietnam's share in the global apparel market has expanded sharply over the past two and a half decades, making it one of the world's leading choices for man-made fibre (MMF) apparel exports after China. Second, this growth has occurred in the absence of a fully integrated textile value chain, with heavy reliance on imported raw materials, mainly from China and South Korea. Making it more interesting, about 90 per cent

Table 7.1
Key Statistics: Snapshot for Vietnam

S. No	Key Statistic	Vietnam	Year, Source
1.	Geographical Area (mha)	33.13	2023, FAO
2.	Population (Million)	101.6	2025, UNFPA
3.	Labour force participation rate (Male, Female)	67.6 % (73.3%, 62.1 %)	2023, ILO
4.	GDP, current prices (USD billion) (GDP, PPP)	459.4 (1,654.7)	2024, IMF
5.	GDP per capita, current prices (GDP per capita, PPP) (USD)	4,316 (15,040)	2024, IMF
6.	Inflation Rate (%)	3.6%	2024, World Bank
7.	Total Exports (T&A exports as % of total exports)	USD 403.2 Billion T&A exports USD 44.4 billion (11% of total exports)	2024, ITC trademap

of enterprises in Vietnam’s T&A sector are small and medium sized enterprises (SMEs), a structural similarity shared with India. Yet, while India possesses a complete domestic value chain and a similar SME-dominated industry base, its apparel export share has remained largely stagnant.

Starting from basic garment assembly, Vietnam’s T&A sector evolved steadily through policy reforms, foreign direct investment (FDI), and deepening ties with international buyers. By 2024, the United States (US) absorbed approximately 49 per cent of Vietnam’s apparel exports, followed by the European Union (EU) at 13 per cent and Japan at 12 per cent (TradeMap, 2024), a concentration that reflects a deliberate and disciplined alignment with the world’s largest demand markets.

This market reach did not emerge by accident. Over the past 25 years, Vietnam has systematically deepened its global trade integration through a network of free trade agreements (FTAs), underpinned by coordinated institutional action across the Ministry of Industry and Trade (MOIT) and the Ministry of Labour (MOLISA). Strategic invest-

ments in industrial zones (IZs), investment facilitation, and workforce development have collectively built a productive ecosystem for export manufacturing. With over 3.5 million workers concentrated in key industrial clusters, labour remains the sector’s competitive backbone, further strengthened by formalisation, well-managed industrial parks, and business-friendly governance that together boost productivity and sustain buyer confidence.

Overall, Vietnam’s experience highlights how trade integration, institutional coordination, and workforce development can together drive sustained export competitiveness in the apparel sector. The chapter first discusses the historical evolution of Vietnam’s T&A sector, followed by an analysis of its apparel exports and textile import patterns. It then examines the key factors behind Vietnam’s success before concluding with lessons relevant for India.

7.2 Evolution of the Apparel Sector

Few industries capture Vietnam’s economic transformation as vividly as its T&A sector, a journey from wartime subsistence production to globally competitive export manufacturing, compressed into barely four decades of deliberate reform and strategic opening.

Phase 1: From Wartime Industrialisation to Centralised Economic Control (1954–1985)

Vietnam’s early T&A sector was shaped entirely by conflict and ideology rather than market forces. In the North, state-owned mills in *Nam Dinh* and *Hanoi* produced basic spinning, weaving, and garments, largely for military and state use, sustained by Soviet support rather than domestic capability. In the South, small private tailors and garment enterprises served urban consumers and foreign military demand using imported fabrics from Japan, Taiwan, and Hong Kong. Reunification in 1975 did little to resolve these structural weaknesses, domestic fibre production remained negligible, output was confined to low-quality standardised goods distributed through rationing, and trade was limited to barter arrangements within the socialist bloc. By the mid-1980s, chronic shortages, fragmented production, and

negligible export competitiveness had exposed the fundamental limitations of central planning, making reform not merely desirable but unavoidable (Goto, 2023).

Phase 2: Doi Moi Reforms and Export Take-off (1986-2005)

The *Doi Moi* reforms of 1986 marked the decisive turning point, shifting Vietnam toward a market-oriented economy and opening the T&A sector to private enterprise and foreign investment. EPZs and industrial parks (IPs) developed in the late 1990s provided the infrastructure backbone for both domestic and foreign investors, while the 1987 Foreign Investment Law enabled joint ventures and technology transfer. Vietnam's reintegration into the global economy, through Association of Southeast Asian Nations (ASEAN) membership, normalisation of US relations, and the 2001 bilateral trade agreement with the US, significantly expanded market access. By the early 2000s, the sector had emerged as a major contributor to employment and export earnings, with private and foreign-owned firms gradually displacing state enterprises as the primary drivers of industrial growth (Nguyen Thi Tue Anh, 2016).

Phase 3: WTO Accession and Industrial Scaling (2007-2015)

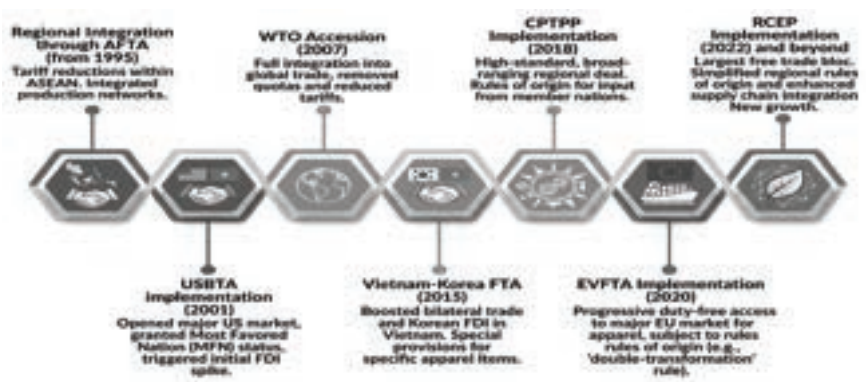
WTO accession in January 2007 was a watershed moment, removing export quotas following the expiry of the Multi-Fibre Arrangement (MFA) in 2005 and creating a more level playing field in key markets such as the US and EU. A series of FTAs deepened market access further (Figure 7.1), attracting significant FDI from South Korea, Taiwan, China and Hong Kong, investors who introduced more vertically integrated production systems spanning yarn, fabric, and garment manufacturing. Specialised textile and industrial parks in *Binh Duong*, *Dong Nai*, and *Hai Phong* enabled large-scale production and deeper global value chain (GVC) integration. Government policy simultaneously pushed for quality upgrading, design capability, and compliance with international labour and environmental standards. By 2015, Vietnam had firmly established itself as a major global garment manufacturing hub, transitioning from volume-driven production toward quality,

branding, and sustainability (Nguyen Thi Tue Anh, 2016) (Tran Thi Mai Thanh, 2024).

Phase 4: Deep Trade Integration and Sustainable Transformation (2016–Present)

Since 2016, Vietnam’s T&A sector has shifted decisively from export volume toward value addition, sustainability, and digital transformation. The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) (2018) expanded preferential access to Japan, Canada, and Australia, while its yarn-forward provisions incentivised upstream investments from South Korea, Taiwan, and China (Style, 2019). Regional Comprehensive Economic Partnership (RCEP) (implemented 2022) further strengthened Vietnam’s position within Asian supply chains by improving access to cost-effective inputs (News, 2022). The Vietnam Sustainable Textile Strategy (2021–2030) accelerated the adoption of eco-friendly technologies, wastewater management, and energy conservation, with green industrial parks and international certifications, OEKO-TEX, Bluesign, and LEED, becoming increasingly central to buyer compliance. Concurrently, firms adopted CAD/CAM systems, 3D sampling, and data-driven fore-

Figure 7.1
Key Trade Agreements Signed by Vietnam



Source: Author's Own

casting, while rising labour costs prompted deeper industry-institution collaboration on workforce upgrading (Net, 2025).

This phase reflects the maturation of Vietnam's T&A sector, no longer defined by cost and volume alone, but by sustainability, technological capability, and human capital depth.

Across four decades and four distinct phases, Vietnam's T&A sector has traversed a remarkable arc, from centralised subsistence to globally integrated export powerhouse. What makes this trajectory instructive is not merely its speed, but its strategic intentionality: each phase built deliberately on the last, converting policy reform into industrial capacity, market access into export dominance, and foreign investment into deepening value chain integration. It is this accumulated strategic coherence, rather than any single intervention, that the following sections examine in detail.

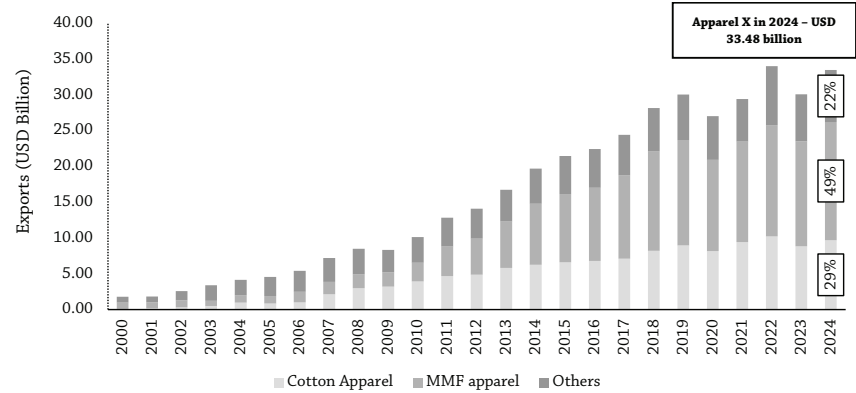
7.3 Apparel Export Analysis and Global Import Alignment

Vietnam's apparel export sector tells a story not just of volume, but of composition, direction, and strategic intent. T&A exports accounted for around 11 per cent of Vietnam's total export turnover in 2024, underscoring the sector's central role in the country's export economy. In the same year, Vietnam exported approximately USD 44.4 billion worth of T&A products, of which apparel alone contributed USD 33.48 billion, representing nearly 75 per cent of the sector's total exports (TradeMap, 2024). A closer look at the composition of Vietnam's apparel exports reflects a deliberate alignment with global demand. MMF-based products lead at 49 per cent, followed by cotton (29 per cent) and other fibres (22 per cent), tracking precisely the segments where international consumption is expanding fastest (Figure 7.2).

This product mix highlights Vietnam's ability to adapt its export basket to international consumption trends, particularly in major markets such as the US and the EU, where demand for MMF apparel has been rising.

Vietnam's apparel exports are highly concentrated in the US, the EU (27), and Japan, markets that collectively represent 65 per cent of

Figure 7.2
Vietnam Apparel Exports 2000-2024 (USD Billion)



Source: ITC Trade Map, 2024

the global apparel import (TradeMap, 2024). Vietnam has also secured trade agreements with most of its major export destinations, many of which also represent the largest global apparel import markets. This reflects a deliberate strategy of aligning export orientation with global demand centres while simultaneously negotiating preferential market access. As a result, Vietnamese apparel enjoys reduced or zero-duty access in several key markets under agreements such as the EU-Vietnam FTA (EVFTA) and CPTPP, significantly enhancing its price competitiveness.

In 2024, Vietnam exported USD 33.5 billion worth of apparel. The US remained the dominant destination, absorbing nearly 49 per cent of Vietnam's apparel exports (USD 15.7 billion), followed by the EU-27 at 13 per cent (USD 4.1 billion) and Japan at 12 per cent (USD 3.8 billion). Other notable destinations are Canada (4 per cent), China (3 per cent), and the United Kingdom (2 per cent) (TradeMap, 2024) (Figure 7.3a).

The Vietnam-US relationship commands particular attention. Not only does the US capture almost half of what Vietnam's apparel exports are, but Vietnam also commands nearly 20 per cent of total US apparel imports, ahead of China (14.6 per cent), Bangladesh (10

per cent), and India (6.2 per cent) in 2025 (TradeMap, 2025). This dominance is striking in context: In the early 2000s, Vietnam held a mere 4 per cent share of the US apparel market, while China commanded over 25 per cent. By 2025, Vietnam had surpassed China to become the single largest apparel exporter to the US, a shift decisively accelerated by the 2018 US-China trade war, which imposed punitive

Figure 7.3a
Vietnam’s Major Apparel Export Destinations and Share
(TE2024) (USD 33.48 billion)

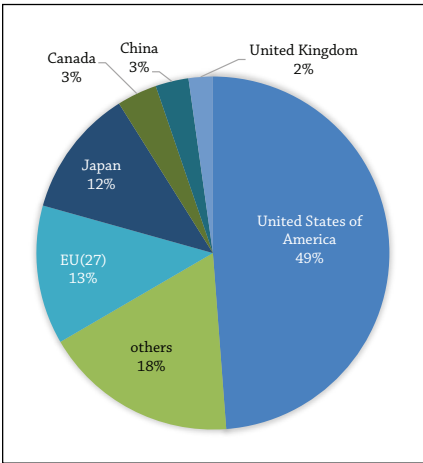
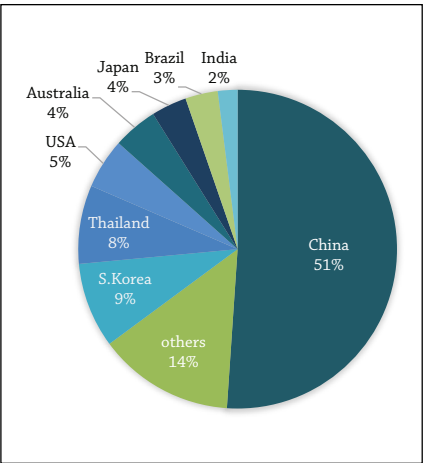


Figure 7.3b
Textile Import Destinations and Share
(TE2024)(USD 21.8 billion)



Source: ITC Trade Map, 2024

tariffs on Chinese goods and prompted American buyers to diversify their sourcing base (Fibre2Fashion, 2026). China’s share has since contracted to approximately 15 per cent in 2025, a reversal driven as much by geopolitical disruption as by Vietnam’s own readiness to scale. This positioning in one of the world’s largest apparel import market stands as perhaps the most telling measure of Vietnam’s export competitiveness.

Vietnam’s apparel export strength also rests on a significant foundation of imported textile inputs. In TE2024, Vietnam imported approximately USD 21.8 billion worth of textiles, spanning cotton,

MMF yarns and fibres, and knitted fabrics. China dominates this import base, supplying around 51 per cent of Vietnam’s textile inputs, followed by South Korea, Taiwan, Thailand, and the United States (TradeMap, 2024) (Figure 7.3b).

This dependence, however, is a double-edged sword. While access to established regional supply networks has enabled Vietnam to scale exports rapidly, but it exposes the industry to supply disruptions, price volatility, and geopolitical risk, particularly given the heavy concentration in China. It also constrains Vietnam’s ability to fully leverage preferential trade agreements, where rules of origin requirements, such as the yarn-forward provisions under CPTPP and EVFTA, mandate substantial local or regional value addition (Le, 2026).

Beyond import reliance, a key driver of Vietnam’s export success has been its disciplined pursuit of a ‘right market, right product’ strategy. Its export basket is closely calibrated to global demand, with leading products, T-shirts, jerseys, trousers, overcoats, and brassieres, consistently ranking among the most traded apparel categories worldwide. This product-level alignment reflects not merely market targeting, but a deeper responsiveness to shifting international consumption patterns (Jain and Gulati, 2026).

What has sustained this outward orientation domestically forms the focus of the next section, which examines the key pillars of Vietnam’s apparel export competitiveness in detail.

7.4 Vietnam’s Apparel sector: Pillars of competitiveness

Vietnam’s apparel sector has built its global competitiveness on a combination of structural policy and firm-level advantages. These strengths have enabled the industry to scale rapidly, integrate into GVCs, and consistently expand its export footprint. The following pillars highlight the key factors underpinning Vietnam’s success in the global apparel market.

7.4.1 Scale and Capacity

Vietnam’s apparel industry has scaled remarkably over the past two decades, cementing its position among the global top three

Figure 7.4
Spatial Concentration of T&A Clusters in Vietnam



Source: Jain and Gulati, 2026

apparel exporters. In terms of geographic distribution, nearly two-thirds of manufacturing units are concentrated in southern Vietnam, drawn by proximity to critical logistics infrastructure, major airports such as *Noi Bai* and *Tan Son Nhat*, and seaports including *Hai Phong* and *Sai Gon* (APEC, 2016) (VITAS, 2025; VALO, 2025).

Vietnam's T&A sector hosts 14,313 enterprises, accounting for 12.4 per cent of all manufacturing firms, reflecting the industry's considerable productive capacity (GSO, 2023). By ownership structure, the industry consists of private enterprises, FDI enterprises, and State-Owned Enterprises (SOEs), which account for approximately 86.4 per cent, 13.4 per cent, and 0.2 per cent, respectively, in 2021 (ILO, 2025). Also, between 2009 and 2022, the number of apparel manufacturing enterprises grew by 165 per cent¹, as compared to the total manufacturing sector, at 160 per cent. Low entry barriers and limited product differentiation in the sector largely drive this. Thus, the resulting competitive intensity has kept margins thin, with profit

1. The growth of T&A enterprises between the same period has been 162 per cent, and only Textiles has been 157 per cent.

before tax (PBT) around 3 per cent over the past five years (GSO,2023) (Jain and Gulati, 2026).

FDI enterprises, though smaller in share, drive 60–65 per cent of total T&A exports and anchor Vietnam’s GVC integration (Tuc, 2026). The domestic base tells a contrasting story: around 90 per cent of T&A enterprises are SMEs employing up to 200 workers, with over 80 per cent operating on capital below VND 50 billion (approx. USD 2 million) (ILO, 2025). Financially constrained and largely confined to Cut Make Trim (CMT) operations, these firms function primarily as subcontractors; only 21 per cent participate in GVCs and nearly 85 per cent capture minimal value beyond assembly (APEC, 2016). FDI enterprises, by contrast, bring capital, technology, buyer relationships, and compliance capabilities that domestic SMEs structurally lack, making them the primary channel to higher-value supply chain segments. This dual structure, a vast but shallow SME base alongside a lean but export-dominant foreign tier, defines both Vietnam’s industrial strength and its most pressing upgrade challenge.

This structural duality is not merely organizational; it is fundamentally a capital story. The constraints facing domestic SMEs and the dominance of foreign-invested firms are both rooted in Vietnam’s financing landscape for export-oriented manufacturing.

7.4.2 Capital and Investment

Capital and investment form the structural backbone of Vietnam’s T&A competitiveness, enabling the sector to scale from USD 1.8 billion in apparel exports in 2000 to over USD 33.48 billion by 2024. Vietnam’s combination of domestic financing and an open FDI regime has expanded capacity, driven technological upgrading, and deepened GVC integration, transforming the country from a low-cost assembly base into one of the world’s most competitive apparel export platforms.

Domestic Financing Ecosystem

Vietnam’s domestic financing ecosystem for export-oriented T&A manufacturing combines fiscal incentives, preferential credit, and

institutional support mechanisms. Rather than relying on a single instrument, the sector benefits from a layered policy architecture, spanning tax relief, subsidised credit, and administrative facilitation, designed to reduce operational costs and enhance the competitiveness of manufacturers at every scale.

The Vietnam Development Bank (VDB)² reinforces this through export credit and guarantee programmes at preferential rates, targeting SMEs under the National Financial Inclusion Strategy (2020–2025)³. On the fiscal side, the Investment Law (2020) and Decree 218/2013/ND-CP together extend Corporate Income Tax (CIT) reductions of 10–20 per cent, land-rent exemptions for up to 15 years, and import-duty waivers, collectively lowering the cost of production, encouraging reinvestment, and sustaining export momentum across the T&A sector. Table 7.2 shows a list of policies and strategies related to capital and investment in the T&A sector.

Foreign Direct Investment (FDI) and Global Integration through Trade Agreements

Few indicators capture Vietnam's global economic integration as starkly as its FDI trajectory. Between 1988 and 2024, Vietnam attracted cumulative FDI inflows of USD 502.8 billion across approximately 42,000 projects, a scale that reflects not just investor confidence, but Vietnam's deliberate positioning as a manufacturing hub of global significance (VnEconomy, 2025). The origin of these investments reveals a distinctly intra-Asian character. South Korea leads at 18 per cent, followed by Singapore (17 per cent) and Japan (15 per cent), with Taiwan and Hong Kong each contributing around 8 per cent and China at 6 per cent (National Statistics Office, 2024) (Figure

2. VDB is a state-owned financial institution established to implement national development policies.
3. Under this, Vietnam completed all 62 assigned tasks by the end of 2025. Notably, approximately 290,000 SMEs had outstanding loans with credit institutions, exceeding the target of 250,000, while 71% of adults held formal credit histories, improving access to structured lending. Non-cash payment infrastructure improved, reducing transaction costs for small manufacturers. Together, these outcomes reflect the state's commitment to expanding formal, affordable credit access for SMEs, directly addressing the financing constraints that limit domestic firms' capacity to upgrade and integrate into higher-value supply chain segments.

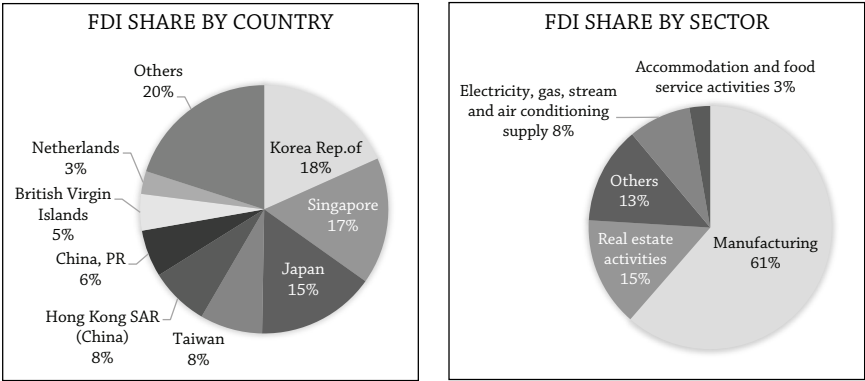
Table 7.2

*List of Policies and Strategies Related to Capital and Investment
in the T&A Sector*

<i>Field</i>	<i>Documents</i>	<i>Objectives</i>	<i>Main policy content</i>
1. Attracting investment, including foreign investment	· Law on Investment, 2020. · Decree on the government guiding the implementation of the Investment Law, 2021.	· Development of supporting industries. · Large investment projects of exceeding VND 6,000 billion, and 3,000 employees. · Investment in supporting the development of SMEs · Investment in rural areas.	· Corporate Income Tax (reductions of 10-20%) · Import duties on raw materials for export purposes are deferred for up to 275 days. · Exemption or reduction of land use levy, land rent, and land use tax. · E-clearance, National Single Window (NSW).
2. Finance, credit	· Resolution of tasks and solutions to remove difficulties for production and business, 2023. · Decree on Vietnam's preferential export tariffs and special preferential import duties to implement the CPTPP Agreement for 2022–27.	· Ensuring access of small and medium enterprises through the Small and Medium Enterprises Development Fund. · Redemption of import and export duties on textiles and garments.	· Preferential lending interest rate: short-term loan interest rate is 1.2 per cent/year, medium- and long-term loan interest rates are 4.4 per cent/ year. · Preferential export and import tax rates.
3. Development of domestic value chains	· Law on support for small and medium enterprises, 2017. · Decree on supporting industry development, 2015.	· Support small and medium-sized enterprises to develop domestic value chains and increase localization.	· Establishes provincial SME Credit Guarantee Funds that provide loan guarantees to SMEs to improve their access to bank credit. · The Ministry of Science and Technology supports SMEs through training, technical guidance on standards, and product development. · SMEs can obtain loans of up to 70% of project investment with credit guarantees, provided they meet collateral (≥15%), equity (≥20%), and financial compliance requirements. · Exempted or reduced land/water space rent for SMEs.

Source: Jain and Gulati, 2026.

Figure 7.5
FDI Share in Vietnam by Country and Sector



Source: National Statistics Office, 2024

7.5). This intra-Asian capital concentration underscores Vietnam’s adept use of regional trade agreements, transforming preferential market access into a tangible investment magnet that has drawn neighbouring economies to anchor their production networks within its borders.

Sectorally, FDI is heavily concentrated in manufacturing, accounting for around 61 per cent⁴ of total inflows (National Statistics Office, 2024). This reinforces Vietnam’s role as a global manufacturing hub, particularly in electronics, textiles & apparel, and machinery. The dominance of manufacturing highlights Vietnam’s reliance on export-led industrialisation and its deep integration into global production networks. In 2024 alone, Vietnam’s manufacturing sector attracted approximately USD 25.5 billion in FDI (National Statistics Office, 2024).

Within Vietnam’s broader FDI landscape, the T&A sector has emerged as a particularly productive channel, attracting 3,261 licensed

4. Followed by real estate (15%) and utilities (8%), including electricity, gas, steam, and air conditioning, while the remaining share is distributed across services such as accommodation and food (3%), wholesale and retail trade (2%), construction (2%), and transportation and storage (1%) (National Statistics Office, 2024)

projects and USD 37 billion in cumulative registered capital between 1988 and 2024 (National Statistics Office, 2024). South Korea, Taiwan, Hong Kong, and China are the dominant FDI sources. This is exemplified by *Hyosung* TNC, the world's largest spandex producer, which entered *Dong Nai* province (Southern Vietnam) in 2007 and has since expanded across multiple industrial zones, becoming one of the most deeply embedded foreign investors in Vietnam's textile upstream segment (Textile World, 2024). This upstream FDI concentration is directly shaped by Vietnam's FTA architecture: yarn-forward rules of origin under CPTPP and EVFTA compel foreign investors to localise fibre and fabric production within Vietnam to qualify for preferential tariff access. The effect is also visible in Japanese investment patterns. Firms have established upstream facilities in Vietnam to meet these disciplines, while comparable investments remain limited in India despite the India-Japan Comprehensive Economic Partnership Agreement (CEPA) in 2011. Vietnam's FTAs have thus functioned not merely as market-access instruments, but as catalysts for integrated upstream industrial development (HCC, WTO, 2025).

Another major driver of Vietnam's GVC integration has been the China+1 diversification strategy, as multinationals seek alternative manufacturing bases amid rising Chinese labour costs and geopolitical risk. Its geographical proximity to China, manufacturing ecosystem readiness, and FTA network have made it the the primary beneficiary of this shift. The scale of reorientation is measurable: China's share of the US apparel market declined sharply from 33 per cent in 2018 to 15 per cent by 2025, while Vietnam's share rose correspondingly from 15 per cent to 20 per cent over the same period, a trajectory that had begun gradually through the 2010s but accelerated decisively after the onset of US-China trade tensions in 2018 (TradeMap, 2025).

This market share transition is also mirrored at the brand level. Nike, the world's largest sportswear company, has steadily relocated apparel sourcing from China to Vietnam, with the latter now accounting for 31 per cent of its global apparel production by 2025. Similar sourcing shifts by H&M, Zara, and Uniqlo further reflect Vietnam's consolidation as a preferred node in buyer-driven value chains, under-

pinned by supplier compliance, cost competitiveness, and a stable investment environment (VN Investor, 2025) (Jain and Gulati, 2026).

Driving these outcomes is Vietnam's open investment regime, which permits 100 per cent foreign ownership across most manufacturing activities, supported by streamlined approval processes and sustained improvements in regulatory predictability, collectively cementing Vietnam's position as one of Southeast Asia's most internationally integrated and investment-ready manufacturing hubs (World Bank, 2020). Yet behind every investment-ready hub is a local workforce that makes production viable and gives them livelihood, and Vietnam has engineered its labour force with the same strategic deliberateness that defines its investment climate.

7.4.3 Labour and Productivity

The apparel manufacturing is, by nature, labour-intensive, making the depth, scale, and composition of Vietnam's workforce a critical determinant of its export competitiveness. In 2023, Vietnam's apparel sector employed nearly 3 million workers. Whereas, the whole T&A sector employed nearly 3.4 million workers. A defining feature of this workforce is its gender composition: women constitute nearly 75 per cent of total T&A employment, amounting to approximately 2.5 million workers. On remuneration, average monthly wages in 2023 stood at approximately VND 7.1 million (USD 270) in apparel and VND 7.6 million (USD 290) in textiles, the modest differential reflecting the higher skill and capital intensity of upstream textile activities (National Statistics Office, 2024). The Labour Code 2019 governs working conditions, prescribing a standard 48-hour working week, with overtime capped at 200 hours annually, extendable to 300 hours for labour-intensive sectors such as T&A, providing manufacturers the flexibility to scale output during peak demand cycles.

Labour productivity has emerged as a critical determinant of export competitiveness in Vietnam's T&A sector, shaped by workforce skills, technological adoption, capital intensity, and industrial organisation. According to the ILO, labour productivity in Vietnam's garment sector stands at USD 4,717 (gross value added per worker),

ahead of India's USD 3,504, though still below regional peers such as Thailand and Sri Lanka. Notably, real wages in the sector have risen at an average annual rate of 7.2 per cent between 2013 and 2023, reflecting sustained improvements in worker incomes alongside productivity gains (ILO, 2025). Despite the gap with higher-income competitors, Vietnam has achieved steady productivity improvements through skill development programmes, cluster-based industrialisation, and the modernising influence of foreign-invested enterprises.

A measurable illustration of this comes from the ILO's Better Work programme: production lines overseen by Better Work-trained female supervisors met production targets faster than untrained counterparts, yielding a 22 per cent increase in productivity, demonstrating that investment in human capital directly translates into export-relevant efficiency gains (ILO, 2024). This is institutionally reinforced by training ecosystems such as the *Ho Chi Minh City College of Technology* (HCT), which follows a dual-training model combining classroom instruction with hands-on industry exposure across fibre technology, garment manufacturing, and fashion design (Vietnam Pictorial, 2014).

However, a structural skills gap persists: more than 80 per cent of T&A workers in 2022 lacked any formal technical or professional qualification, and the share of young workers (aged 15–24) in the sector declined from 26 per cent in 2012 to 14 per cent in 2023, signalling an ageing workforce and growing recruitment challenges (ILO, 2025). Addressing this, the ILO and VITAS jointly developed a sectoral skills strategy in 2024–25, focused on reskilling, upskilling, and green manufacturing competencies aligned with evolving global buyer standards (ABC Group, 2026).

At the sectoral level, workers are trained not only in machine operation and quality control but increasingly in compliance and sustainable manufacturing, reflecting the shift from CMT to full-package production models that demand higher technical competence. Industrial clustering further also has the potential to amplify these gains through knowledge spillovers, lean manufacturing adoption, and the diffusion of best practices introduced by foreign-invested enterprises.

Vietnam's approach, rather than relying on standalone training initiatives, integrates skill development with industrial organisation and GVC participation, enabling continuous, compounding improvements in efficiency, quality, and competitiveness (Korwatanasakul 2022).

Overall, Vietnam's approach to labour productivity is characterised by the integration of skill development with industrial organisation and GVC participation. Rather than treating skill development as an isolated policy intervention, the sector has developed a system where education, enterprise needs, and export-oriented production are closely aligned, enabling continuous improvements in efficiency, quality, and competitiveness.

7.4.4 Institutional Mechanism and Trade Facilitation

Over three decades, Vietnam's industrial zoning strategy, anchored by EPZs, IPs, and an expansive network of FTAs, has attracted over USD 100 billion in cumulative investment, generated more than 4 million jobs, and today accounts for over 50 per cent of national export value (Vietnam Plus, 2022). It is precisely this combination of world-class production infrastructure and preferential market access that has enabled Vietnam to penetrate and sustain its position in the world's most lucrative apparel markets, from the US and the EU to Japan and Canada.

Vietnam's four EPZs, anchored by *Tan Thuan*, established in 1991 with Taiwanese investment, and the *Linh Trung* zones, are concentrated in the south where investor advantages extend well beyond zone boundaries. For investors, HCMC's demographic profile is as compelling as its infrastructure, a city of approximately 10 million people where 65 per cent of residents are under 35, supported by over 80 universities generating approximately 300,000 graduates annually, ensuring a steady supply of both shop-floor labour and educated managerial talent. These zones offer a fully self-contained operational environment, from hard infrastructure covering electricity, water, telecommunications, wastewater treatment, flood prevention, warehousing, transportation centres, bonded warehouses, and industrial waste collection, complemented by soft infrastructure spanning dormitories,

employee recreation and training centres, incubation facilities, and on-site banking, eliminating the need for investors to source any operational or workforce support externally. A one-stop service management model eliminates the need for enterprises to navigate multiple departments for licenses and certificates, while zone-specific financial incentives, zero per cent VAT, duty-free import of machinery, equipment and raw materials, and full duty exemption on exported products, directly enhance cost competitiveness (TTTFIC, 2026) (TTC, 2026). These are further reinforced by nationwide fiscal benefits available to all export-oriented manufacturers, including corporate income tax reductions of 10–20 per cent and deferred import duties on raw materials for up to 275 days, providing critical cash flow relief particularly for SMEs dependent on imported inputs (Investment Law, 2020; Law on Tax Administration, 2025). Both standard and high-rise factory formats accommodate manufacturers of varying scales.

Beyond EPZs, specialised industrial parks demonstrate Vietnam’s institutional capacity to resolve deeper structural bottlenecks. *Rang Dong* Textile Industrial Park (Aurora IP) in *Nam Dinh* Province, spread over 519.6 hectares within the *Ninh Co* Economic Zone, exemplifies how pre-approved environmental infrastructure, centralised utilities, and single-window governance can compress investment timelines and eliminate regulatory uncertainty, particularly for capital-intensive dyeing and processing operations. By integrating land allocation, utilities, logistics, and compliance infrastructure within a single administrative framework, the park has attracted investments such as TOP Textile JSC’s USD 203 million facility supplying global brands Puma and New Balance, confirming that institutional convergence, not merely physical infrastructure, is what draws serious upstream investment (VOV, 2024).

Layered atop this production infrastructure is Vietnam’s FTA network, its most powerful instrument for converting industrial capacity into sustained export competitiveness. With 17 FTAs concluded, Vietnamese apparel enjoys preferential or zero-duty access across its most critical demand markets. Under the EVFTA, effective August 2020, granting Vietnamese exporters a structural edge over their com-

petitors (Wellfabric, 2025). Under the CPTPP, effective January 2019, tariffs on 43 per cent of Vietnam's garment exports to Canada were eliminated immediately, rising to full elimination by 2023, with comparable preferential access secured in Japan, Australia, and Mexico (Vietnam Incorp, 2024). Research comparing both agreements finds that CPTPP has exerted the more substantial impact on Vietnam's textile exports, driven by broader market reach and more advantageous tariff schedules (VNU Journal of Economics and Business, 2024).

Together, these elements form a mutually reinforcing ecosystem, where ready-built infrastructure lowers the cost and complexity of production, single-window facilitation reduces regulatory friction, and preferential market access converts that production capacity into export opportunity. Ministries such as MOIT and MOLISA provide the institutional continuity that binds these elements together, mediating investor relations, enforcing labour standards, and ensuring regulatory consistency across regions. Vietnam didn't just build factories; it built an entire ecosystem where investors could produce efficiently and export profitably. That combination is precisely what India needs to study.

7.5 Conclusion and Lessons for India

Vietnam's apparel export sector is a striking demonstration of how a post-war economy can convert deliberate openness into manufacturing dominance. From the *Doi Moi* reforms of 1986 through successive waves of FTA-driven integration and FDI attraction, to its current standing as the world's third-largest apparel exporter, Vietnam's ascent is neither accidental nor unreplicable. It is the result of three decades of strategic alignment between trade policy, investment facilitation, industrial infrastructure, and workforce development, each reinforcing the other within a governance model explicitly designed to drive value chain upgrading.

1. FTA-Driven Global Integration and FDI Attraction

Vietnam's experience demonstrates that trade integration and FDI attraction are not parallel strategies; they are mutually reinforcing.

By combining 17 concluded FTAs with a deliberately investor-ready production ecosystem, Vietnam successfully attracted major investments and manufacturers from Korea, China, Taiwan, and Japan, who contributed not only capital but technology, managerial expertise, and direct GVC linkages. This positioned Vietnam as the primary beneficiary of the China+1 diversification strategy, underpinned by port-linked industrial clusters, tax incentives, simplified customs procedures, and predictable regulatory frameworks that collectively sustained investor confidence.

Lessons for India: India's T&A sector possesses the scale, workforce, and domestic value chain depth to compete, yet continues to underperform in FTA utilisation and FDI attraction, despite adequate labour availability. Vietnam's lesson is not merely about signing agreements or constructing parks in isolation, but about the coherence between the two. India should:

- **Establish Investor-friendly FDI Facilitation Desks:** Dedicated T&A investment facilitation desks must be embedded within PM MITRA parks, guiding investors through land acquisition, clearances, incentive access, legal advisory, dispute resolution, and business setup, in both local and international languages, within defined timelines. Vietnam's EPZs succeeded partly because investors encountered a seamlessly supportive institutional environment from entry to operation; India must replicate this by treating investor services as infrastructure, not an afterthought.

- **Align Trade Negotiations with Production Capacity:** FTA negotiations must be explicitly coordinated with investment promotion and global buyer requirements, ensuring market access and production capacity are built simultaneously according to the market needs, rather than sequentially. Rules of origin provisions, particularly yarn-forward and fabric-forward requirements, should be deployed as strategic tools to incentivise upstream investment, not treated as compliance burdens.

- **Institutionalise Regulatory Predictability:** Legally guaranteed incentive frameworks, stable taxation, and digital trade facilitation must be fixed for defined multi-year periods. India's current envi-

ronment is marked by frequent scheme modifications and incentive uncertainty, which directly undermines the long-cycle investment decisions that large-scale apparel FDI demands.

2. Systems Coherence as the Foundation of Export Competitiveness

Vietnam's export competitiveness is not the product of any single policy intervention; it is the outcome of a demand-responsive governance model where industrial policy, workforce development, and trade facilitation operate as an integrated ecosystem. Port-linked clusters demonstrate how institutionally coherent zones, combining manufacturing, logistics, environmental infrastructure, and port connectivity within a single administrative framework, resolve bottlenecks, compress investment timelines. This is matched by Vietnam's workforce architecture: three-way partnerships between enterprises, vocational institutions, and industry bodies such as VITAS, targeting compliance, quality control, and OEM-level standards rather than basic machine operation, together forming a system explicitly designed to drive value chain upgrading rather than entrench low-value assembly.

Lessons for India: Vietnam's most transferable lesson is not a single policy; it is a systems approach. India's apparel sector remains constrained by fragmented interventions where industrial parks, skilling, and trade policy operate in silos rather than as a coordinated whole. India should:

- **Develop PM MITRA Parks as Port-Linked, Labour-Proximate Integrated Clusters:** Drawing from Vietnam's EPZ and IP model, PM MITRA parks must be strategically located near labour-surplus states such as Bihar and Odisha, with pre-built logistics connectivity, environmental infrastructure, and single-window governance delivered as a single integrated package from inception, not negotiated firm by firm after investment arrives. Location, infrastructure, and governance must be designed together, ensuring parks function as frictionless, port connected ecosystems rather than isolated land parcels awaiting infrastructure that arrives years after investors commit.

- **Institutionalise Three-Way Skilling Partnerships for Value Chain Upgrading:** India should institutionalise three-way skilling

partnerships between exporters, educational institutes, and industry bodies, shifting training from basic machine operation to compliance, quality control, and OEM-level standards. This requires co-designing curricula with industry and continuously updating them against buyer requirements, so workers are upgrade-ready rather than confined to low-value assembly. Tying these partnerships to PM MITRA park conditionality would give the model real accountability, rather than leaving it as a voluntary, fragmented effort.

Vietnam's ascent demonstrates that sustained apparel sector competitiveness is not built on cost alone; it is built on the credibility of governance, the coherence of industrial strategy, and the deliberate conversion of preferential market access into production capability. For India, which shares Vietnam's SME-dominated structure but holds the additional advantage of a near-complete domestic value chain from fibre to finished product, the imperative is unambiguous: move beyond fragmented interventions toward a unified, demand-driven framework in which trade policy, investment promotion, workforce development, and industrial planning operate not as parallel tracks but as a single, coordinated strategy oriented around one objective, competing and winning in global apparel export markets. If India can achieve this alignment, it will not merely replicate Vietnam's model. It will surpass it.

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8

Indian Textile & Apparel Success Stories: Evidence from the Field

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8.1 Introduction

The preceding chapters have examined why India's T&A sector has not scaled in global markets the way its raw material base, workforce abundance and fibre-to-fashion ecosystem would suggest it should. The discussion so far has diagnosed the 5F value chain and the challenges woven into it. Then turned outward to China, Bangladesh and Vietnam, to understand how coherent T&A ecosystems, export credit architecture and institutional coordination gave them a scale, speed and global integration. This chapter turns to few select success stories from India. Have Indian firms, operating within precisely these constraints of fragmentation, capital costs etc managed to build globally competitive, scaled and sustainable T&A businesses? The answer lies across four very different cases documented in next sections.

Shahi Exports, Pearl Global Industries, the Tiruppur knitwear cluster, and Welspun Living were chosen not to represent the sector statistically but to document the range of strategic pathways through which Indian T&A enterprises have achieved global competitiveness. Vertical integration and worker welfare (Shahi); geographic diversification and supply chain resilience (Pearl Global); collective action and institutional design (Tiruppur); and innovation-led scale with traceability (Welspun Living). Each represents a distinct model.

These cases were developed through a combination of primary and secondary research. Primary research included field visits and

structured interactions with senior management, factory floor staff and industry association representatives at each of the firms and the Tiruppur cluster. Secondary sources company annual reports, industry data, academic literature, and policy documents were used to corroborate and contextualise primary findings throughout.

The chapter conclusion draws together the cross-cutting themes in a structured, comparative format, with direct implications for the reform agenda developed in the chapters that follow.

8.2 Case Study 1: Shahi Exports, Building India’s Largest Apparel Empire

8.2.1 The Woman Who Stitched an Empire

She was married at sixteen. In the India of the late 1950s, that was not unusual. What was unusual was what came next.

At twenty-two, with children to raise and a household to run, she made a decision; she went to work. As a sewing machine operator in a garment factory, she joined a labour force that India’s textile sector had long depended upon, women’s hands, women’s precision, women’s patience. The work was honest. The hours were long. And then, as it does for millions of women across India’s manufacturing belt even today, the arithmetic of care broke down. The factory’s rhythms would not bend to the reality of motherhood. Something had to give.

Most women, confronted with this choice, disappear from the workforce. India’s female labour force participation rate (FLFPR) in 2025 stood at just 40 per cent, as per Periodic Labour Force Survey (PLFS) data, although ILO (2025) puts this figure at only 32.4 per cent, against 68.6 percent in Vietnam, 59.1 percent in China, and 80.7 percent in Nigeria. At the state level, Bihar records an FLFPR of just 30.5 percent, the lowest among all states, while Uttar Pradesh stands at 34.5 percent in 2023-24 (PLFS, 2023-24) (Gulati et al., 2026). Sarla Ahuja did not exit. She rerouted.

When her factory head offered to let her work on orders from home, she took it. The seed had been planted earlier by her mother, who had taught her to sew, and by a woman in her neighbourhood she had watched run a small export business with a quiet, unassuming confidence. If she could do it, the logic went, so could I. In 1974, with a capital of Rs. 5,000, 15 women, and a production capacity of roughly 200 pieces a day, Sarla established Shahi’s first production unit in Ranjit Nagar, Delhi. The orders went directly to America and Europe.

What followed was not smooth. Neighbours complained constantly about the women coming and going, about the noise, about the disruption to the quiet order of a residential lane. The families of the women she employed were not always supportive some were

actively hostile. She received threats. She kept going. “I single-handedly managed things, blind in work,” she said. “I think only God knew what the plan was at that time” (Balakrishnan, 2023).

She went around her neighborhood and knocked on doors. She found women living without stable shelter and told them to come work with her so that they could secure a better life for their children. This was not charity. It was employment, on terms that recognised who these women were and what their lives looked like. She worked sometimes until midnight to complete urgent orders. She drew no line between her ambition for the business and her belief in the women who made it run.

The social dimension of what she was building was, from the beginning, inseparable from the commercial one. Decades later, when Shahi established one of the first ATMs on a factory premises in Bengaluru, it was a direct expression of this same instinct: women needed not just wages, but control over those wages.

This philosophy hardened into institutional commitment over time. Shahi became the first company in India to pilot Gap Inc.’s Personal Advancement and Career Enhancement program (P.A.C.E.), (now RISE) running it across its factories for sixteen years, training women in soft skills such as financial literacy, communication, and stress management. By FY 2024-25, 75,280 women had been trained through Shahi’s free skilling centres. The company also incubated Good Business Lab, a nonprofit dedicated to improving workers’ well-being across areas of female labour, skill gaps, and holistic health. These are not peripheral CSR gestures.

Sarla’s two sons, Harish and Sunil, grew up in the business helping after school and college, eventually taking over. Harish expanded operations in India through the 1990s. Sunil managed the American import side. When India’s garment export quotas were lifted, the business scaled rapidly. The small home unit in Ranjit Nagar became a network of factories across eight states. Today, Shahi Exports operates 48 manufacturing facilities and 5 processing mills, produces over 150 million garments a year, and employs over 100,000 people. 73 per cent of that workforce is women. Revenue stands at approximately

one billion USD for FY 2023-24. Its buyers include Walmart, H&M, Gap, Nike, Uniqlo, and PVH.

Sarla Ahuja is 87. She built India’s largest apparel export business from Rs. 5,000, a sewing machine, and an unshakeable conviction that women who are given the opportunity to work will take it and do something meaningful with it. She was right.

8.2.2 Building at Scale

An inflection point came with the abolition of the Multi-Fibre Arrangement (MFA) in 2005. Until then, global garment trade operated under a quota system that artificially distributed export volumes across countries. When those quotas were lifted, the most efficient and best-organised manufacturers stood to gain disproportionately. Shahi was ready. Combined with India’s first National Textile Policy in 2000, which began to shift the sector’s orientation from an import-driven model toward building direct customer relationships, the early 2000s marked Shahi’s transition from a well-run mid-sized exporter into a business operating at genuine industrial scale.

What enabled that transition was a strategic commitment to vertical integration. Today, a majority of Shahi’s fabric requirements are fulfilled in-house through its own textile mills. Fabric accounts for roughly 50 per cent of a garment’s total cost. A manufacturer

Figure 8.1

Shahi exports factory in Faridabad, Haryana



Figure 8.2

Shahi exports factory in Bengaluru, Karnataka



that controls its own fabric supply controls its margins, its timelines, and its quality. It also controls something less tangible but equally valuable: traceability. Global buyers, particularly in Europe and North America, increasingly demand full visibility into their supply chains, down to the fibre level. Vertical integration is no longer just a cost strategy. It is a compliance strategy, and a competitive one.

Geographic expansion has followed a similarly considered logic. When Shahi expanded into Andhra Pradesh, it encountered a minimum wage structure that was 45 per cent lower than in Karnataka. Rather than absorbing that differential as a margin gain which most manufacturers would have done without a second thought, the company chose to match Karnataka wages in its Andhra Pradesh operations. This decision cost money in the short term. Over time, it built workforce stability and loyalty, managing chronic labour turnover one of the sector's most persistent problems.

The management architecture that underpins this scale is equally deliberate. Shahi is promoter-led, but it has consistently placed the most technically qualified person in each decision-making role, regardless of family affiliation. Professionals with deep expertise in apparel manufacturing and textile engineering were brought in, retained for years, and given genuine autonomy. Different divisions are run by independent CEOs and COOs who operate with full decision-making authority within their domain. Almost every member of senior management has spent two decades or more with the company and often longer in the sector. In an industry notorious for high attrition at every level, this kind of institutional continuity is a competitive asset.

And threading through all of it is the cultural inheritance of Sarla Ahuja's founding vision. Ruchi Asija, Shahi's Executive Vice President of Marketing, captures it plainly: *"Our industry is predominantly female-led, and this isn't by design, but it's simply organic. At Shahi, we've normalised gender equity, creating a culture where women are empowered and respected. It's not about highlighting women's achievements as exceptions, but recognising them as the norm."* That framing matters. Gender equity at Shahi is not a programme or a policy; it is a baseline condition, one that was baked into the company's DNA before the language of diversity and inclusion existed in the corporate lexicon.

The result is a business that has consistently outgrown its sector. But perhaps more importantly, it is a business that has done so without discarding the principles it was founded on. And yet, Shahi remains, curiously, a company that most Indians have never heard of. Its garments travel to Walmart shelves in Arkansas and H&M stores in Stockholm, yet it barely registers a flicker of recognition in the country that made them.

8.2.3 *Vision and the Road Ahead*

Fifty years is a long time to hold a steady vision. Harish Ahuja, Managing Director and Chairperson, has articulated the company’s ambition clearly: to become the best manufacturing company in the world. Not the largest. Not the most profitable. The best. “This is not a pursuit of mere size or scale,” he has written. “It’s about a relentless commitment to excellence, a dedication to innovation, and a deep-seated belief in the power of sustainability.”

The operational roadmap reflects this. Over the past two years, Shahi has made substantial investments across the full length of its production chain spinning, knitting, processing, and garmenting, deepening its vertical integration at a moment when global buyers are demanding greater traceability, faster responsiveness, and tighter quality control. A new garmenting unit is being established in Odisha, aligned with the company’s focus on regional diversification and workforce availability. On the market side, Shahi is strengthening its presence across the UK, EU, and EFTA countries, building a more balanced geographic mix that supports a greater global presence.

Anant Ahuja, Director of ESG and Sustainability, frames the underlying orientation plainly: Shahi “exists with a higher purpose to create a positive impact on the lives of our employees, customers, and the communities we serve.” That higher purpose is being formalised into institutional commitment. The company is in the process of setting its 2030 sustainability targets, which will anchor its environmental and social roadmap through the end of the decade. Worker wellbeing across dimensions of holistic health, skilling, workplace quality, and livelihoods remains a named priority. So does the social mission

that has defined the company from its founding: generating quality employment for women in rural India.

The next phase of growth, in the company's own framing, is centred on measured expansion, deeper integration, and execution excellence building a resilient, future-ready manufacturing platform.

8.2.4 Conclusion

Shahi's story is not simply one of entrepreneurial success. It is a demonstration of what employment-intensive manufacturing can achieve when professional management, vertical integration, and worker welfare are treated as strategic priorities rather than operational afterthoughts. The company did not succeed because of a favourable policy environment it succeeded despite its absence. Firm-level excellence, as Shahi shows, is replicable. But replication requires an ecosystem that rewards scale, supports women's formal employment as a core industrial objective, and removes the regulatory and trade frictions that keep capable firms small. India has the workforce. It has capability. What it has lacked is the policy architecture to match.

The lessons are not complicated, but they demand policy honesty.

Vertical integration is a long-term strategic necessity, not a short-term efficiency play. Controlling fabric requirements in-house took Shahi decades to build. It now delivers control over cost, quality, and traceability precisely what global buyers increasingly demand. Yet most Indian apparel firms cannot make this journey alone. Capital is expensive and credit is shallow.

Women's employment must be treated as a core industrial strategy, not a peripheral inclusion agenda. Childcare infrastructure near factory clusters, transport subsidies for women workers, and gender-disaggregated targets within production-linked incentive schemes would signal that women's workforce participation is an economic priority, not a rhetorical one.

At the ecosystem level, India has taken steps, new labour codes have been introduced, and several free trade agreements have been signed. But intent and impact are not the same thing. The labour codes are yet to be uniformly implemented across states. The FTAs are

yet to come into force. And even where agreements exist, utilisation by exporters has historically been poor. Preparing firms to actually use these agreements through awareness, documentation support, and rules-of-origin compliance is where the real work lies.

8.3 Case Study 2: Pearl Global Industries Ltd. :Building a Global Apparel Manufacturer from India

8.3.1 A Founder's Vision

In 1976, a young entrepreneur named Deepak Seth received an order that would reshape his life and, eventually, clothe millions. The request was simple: six thousand checkered shirts, destined for New York, with a six-week deadline. Seth, a first-generation entrepreneur raised in Delhi with an MBA from the late nineteen sixties, had walked away from the security of a corporate job to chase something larger. This order was his moment.

Every evening, he drove his car through Delhi's streets, distributing two to three hundred shirts to approximately one hundred and fifty women working from their homes. Each morning, he collected the garments and brought them back to his modest facility for finishing; buttonholes cut, buttons sewn, rigorous inspection, washing, pressing. On the final days, he mobilised every available hand to meet the deadline. The cartons reached New York on time. The order succeeded not because Seth improvised around his limitations, but because his ambition was always larger than his circumstances and he simply refused to let the two remain misaligned (Aneja, 2022).

That ambition would define everything that followed. In the 1970s, when exports were a priority for India (as it needed foreign exchange), Seth recognised the moment with the clarity of someone who had always been thinking at a global scale. He understood the brutal realities of the export business eight-to-twelve-week timelines, relentless quality inspections, payment delays, cancellations, penalties, all borne by the vendor, never the buyer. Where most Indian manufacturers accepted thin margins and played the volume game, Seth played a different game entirely. He and his brothers built an unshakeable reputation for quality and on-time delivery, establishing offices in Germany and the USA, and launching their own brand, Sorrell, in America. They were no longer vendors executing orders; they were partners shaping them (Aneja, 2022).

Between 1976 and 2000, Seth executed a quiet revolution. Pearl Global Industries limited commenced its commercial operations in 1987. He established sourcing offices in Bangladesh (1999) and Indonesia (2000), and built production bases across Vietnam and Sri Lanka. Each location was chosen not randomly, but strategically because each offered distinct competitive advantages in raw materials, labour specialisation, and processes. A buyer needing jeans could source from Bangladesh; blouses from India; synthetic dresses from Indonesia. The group was no longer confined to Indian geography; it had become a business without national boundaries, able to offer any product from any location at competitive cost and quality.

This diversification was not mere expansion. It was the realisation of a deeper principle: that vision without boundaries means seeing the world’s resources its labour, its materials, its expertise as a single interconnected system to be orchestrated, not a set of separate markets to be conquered.

The transformation was visible in the numbers. From 200 machines in 1976 to 25 factories in 2026, producing one million garments daily. Over the years, the DS Group produced an estimated fifteen billion garments roughly two pieces of clothing for every person on the planet. Deepak Seth’s ambition to “clothe the world” had ceased to be vision and become reality. This vision is being taken forward by his son Pulkit Seth (Vice-Chairman & Non-Executive Director). More importantly, Deepak Seth had demonstrated something vital: that an Indian company, built from constraints and clarity about global systems, could become genuinely global not by abandoning India, but by understanding that India was always just one node in a much larger network.

8.3.2 *Beyond Borders – A Global Enterprise*

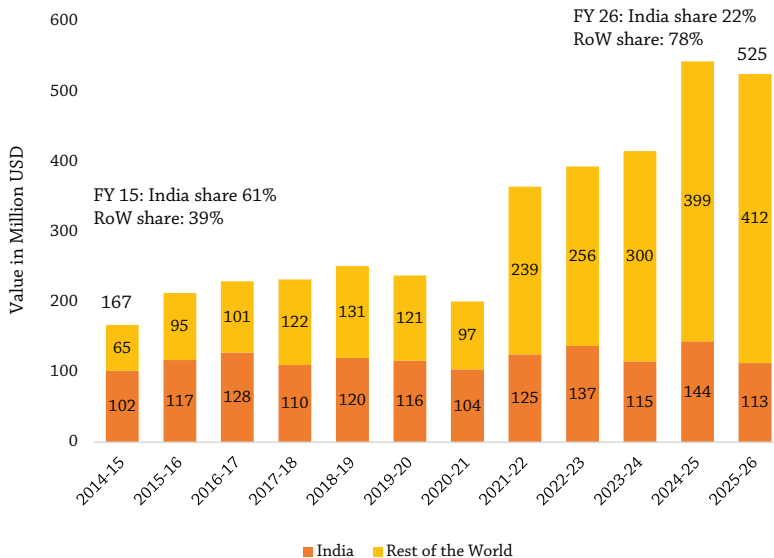
What does it mean for an Indian company to truly go global? Not merely to export from Indian shores, but to manufacture across continents, serve the world’s largest retail brands, and earn the majority of its revenues from its operations outside its home country? Pearl Global Industries Limited offers a compelling answer.

By financial year 2025-26, Pearl Global reported annual revenues of USD 525 million, with 25 manufacturing sites spread across five countries – India, Bangladesh, Vietnam, Indonesia, and Guatemala and design and marketing offices in Spain, the United States, the United Kingdom, and Hong Kong. The company supplies some of the world's most recognisable retail names: Ralph Lauren, Target, Old Navy, Primark, Kohl's, and PVH, among others. Its key markets span Europe, the United Kingdom, the United States, and Japan. Also, a directly employed workforce of over 25,700 people (Pearl Global Industries Limited, 2025).

As illustrated in Figure 8.3 the company's revenue trend from FY2015 to FY2026, a fundamental rebalancing has taken place. In FY2015, India accounted for 61 per cent of total revenues of USD 167 million, while the rest of the world contributed 39 per cent. By FY2025, that ratio had dramatically inverted: India's share had fallen

Figure 8.3

Pearl Global Industries Ltd Revenue Share, FY 2015 – FY 2026



Source: Company Annual Report

Note: Value converted to USD using RBI annual average exchange rates.

to 22 per cent, while the rest of the world now contributes 78 per cent of the revenue base. This is not a marginal shift it is a structural transformation. The company’s center of gravity has moved decisively beyond Indian borders (Pearl Global Industries Limited, 2026).

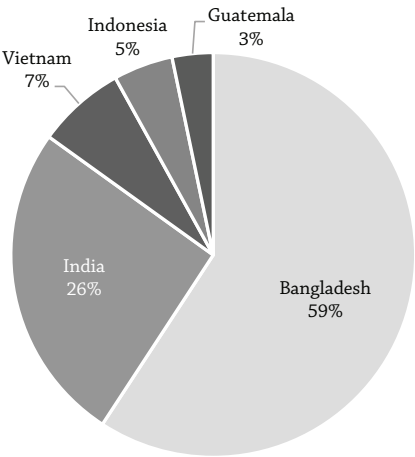
The average annual growth rates (AAGR) reinforce this analysis. Between FY2015 and FY2026, Pearl Global’s overall revenues grew at an AAGR of 13 per cent. But disaggregated, the numbers are even more telling: India-based revenues grew at just 2 per cent annually, while rest-of-world revenues expanded at 24 per cent, more than six times the domestic rate.

In response to questions about the benefits of its diversified manufacturing strategy, Pearl Global noted that as countries were forced into staggered shutdowns during the pandemic, its multi-country production base allowed it to maintain continuity where single-location competitors could not. Subsequent geopolitical disruptions, the closure of the Red Sea and Suez Canal, which significantly extended shipping timelines for South Asian exporters further demonstrated the resilience built into a geographically distributed model. Most recently, US tariff challenges in 2025 underscored this advantage again: Pearl Global’s ability to shift production across geographies meaningfully reduced its exposure to tariffs applied specifically to Indian-origin goods.

This global production footprint is not accidental. It is the deliberate operationalisation of Deepak Seth’s foundational insight: that competitive advantage in garment manufacturing is geographically distributed, and must be strategically assembled. Bangladesh, the group’s single largest production hub, accounts for 59 per cent of total installed annual capacity of 100.8 million pieces (Figure 8.4), operating at a capacity utilisation of 85 per cent, the highest across all locations. India contributes 26 per cent of capacity across eight in-house units, operating at 62 per cent utilisation (Pearl Global Industries Limited, 2025).

Critically, each geography is not a replica of another. Each has been assigned specialisation aligned to its natural competitive advantage. India produces woven and knit tops, women’s fashion wear, and

Figure 8.4
Production Capacity Pearl Global Industries Ltd., FY 2026
Total: 100.8 million pieces



Source: Company Annual Presentation, 2026

kids’ wear. Bangladesh focuses on denim, activewear, athleisure, and sleepwear capitalising on its deep ecosystem of fabric suppliers and skilled labour. Vietnam handles the group’s most technically demanding products: seam-sealed outerwear, down jackets, and specialised waterproofed garments. Indonesia concentrates on women’s professional and performance wear, while Guatemala serves the Western Hemisphere with polos, knits, and denim. The result is a manufacturing network that can respond to any buyer’s need, from any geography, with precision. This network was built methodically over decades from commercial operations commencing in 1987, through Hong Kong in 1998, Indonesia in 2002, Bangladesh in 2004, Vietnam in 2017, Guatemala in 2023, and continuing expansion through 2025 (Pearl Global Industries Limited, 2025).

8.3.3 Taking the Factory to the Worker

Bihar has been defined in India’s industrial imagination not by what it produces, but by whom it sends away. According to Census

2011, Bihar ranked second only to Uttar Pradesh in inter-state migration, with 7.45 million workers residing outside the state. More recent estimates suggest the phenomenon has only deepened nearly two in three Bihari households now report at least one migrant worker (Times of India, 2025). These are overwhelmingly young men, travelling to Delhi, Bengaluru, Surat, and Chennai in search of factory work uprooted from families and communities, absorbed into India’s urban manufacturing clusters. Bihar, meanwhile, remained on the periphery of India’s manufacturing map.

Pearl Global’s decision to establish a manufacturing unit in Muzaffarpur was, at its core, a calculated business decision. The company identified a clear competitive advantage: a large, underutilised labour pool in a state where wage costs remain significantly lower than in established garment clusters. As wages continue to rise in Chennai, Bengaluru, and Delhi driven by years of industrial growth and increasing labour market tightening, the economics of manufacturing in Bihar become increasingly compelling.

Pearl Global’s GoGreen garment factory is a fully integrated, export-oriented garment unit built from the ground up around a first-generation female workforce. Spread across approximately 169,000 square feet in three sheds, the facility houses a centralised fabric store, cutting section, embroidery unit, laundry, and modern production lines manufacturing shirts for both domestic and international buyers. As of February 2026, the factory operates 500 machines each supporting approximately 1.7 to 1.9 workers corresponding to a workforce capacity of 900 to 950 workers per shift. At the time of the visit, 650 women had been trained and deployed on the shop floor, with a target to scale to 3,000 by March-April 2027.

The socio-economic significance of this model is underscored by evidence from comparable contexts. Research from Vietnam where the transition of women from informal agriculture to formal garment manufacturing has fundamentally reshaped gender dynamics illustrates the transformative potential of this kind of employment. Vietnam’s garment sector narrowed the gender wage gap from 17.2 per cent in 2013 to 9.3 per cent in 2023, while enhancing women’s

agency in household decision-making and elevating their social standing within rural communities (ILO, 2025; Duong et al., 2024). The shift from subsistence work to structured factory employment acted as a catalyst for broader social transformation improving female labour force participation and generating better long-term health and education outcomes for families. Bihar stands at precisely this inflection point.

Recognising that integrating first-generation women into formal employment requires more than opening a factory gate, Pearl Global invested in building the conditions for that transition. Under the Bihar Skill Development Mission's Recruit-Train-Deploy scheme, the company designed its own training curriculum. The programme combines 36 days of classroom instruction covering soft skills, workplace discipline, nutrition, and hygiene alongside machine familiarisation with 24 days of hands-on machine training. Mobilisation relies on village-level outreach, partnerships with local panchayats, and the government's Jeevika programme. Families are actively invited to visit the factory a deliberate trust-building measure in a context where a daughter entering formal industrial employment remains a significant social transition.

The Muzaffarpur experience, however, also surfaces ecosystem-level challenges with direct policy implications. Despite being positioned as a plug-and-play industrial facility, critical infrastructure washing, boilers, and effluent treatment plants remains incomplete or pending certification. Delays in certifying effluent treatment plants create bottlenecks in meeting international buyer compliance requirements, slowing export onboarding. Large firms like Pearl Global can absorb these costs temporarily; smaller exporters cannot. Additionally, uncertainty in global export markets particularly the United States has forced a temporary reorientation toward domestic buyers, underscoring that nascent manufacturing ecosystems require sustained policy support during their most vulnerable years.

8.3.4 Vision and the Road Ahead

Pearl Global's targets for the near term are unambiguous. The company aims to cross Rs. 6,000 crore approximately USD 722 million

in revenue by 2027-28, targeting early double-digit profitability. To support this, it had committed Rs. 250 crore (USD 30 million) in capital expenditure for 2025-26: Rs. 130 crore (USD 15.6 million) toward expanding manufacturing capacity, Rs. 110 crore in Bangladesh (USD 13.25 million) and Rs. 20 crore (USD 2.4 million) in India adding approximately 8 million pieces of annual production.

Equally significant is the direction of domestic expansion. Pearl Global is actively building presence in Tier 2 cities across India lower-cost ecosystems with untapped labour pools. This is the same logic that brought the company to Muzaffarpur. The aim, as stated in the company’s annual report, is to build “a more inclusive, decentralised, and resilient production network” one in which industrial growth and geographic equity reinforce each other rather than compete.

Pulkit Seth, Vice Chairman and son of founder Deepak Seth, frames the company’s direction plainly: “Our future is built on resilience, innovation, and purposeful growth.” Managing Director Pallab Banerjee reinforces this with a commitment to ESG as a core operating metric not peripheral disclosure, but a genuine measure of business performance. The company is also positioned to capitalise on the UK Free Trade Agreement while actively managing tariff-related challenges through diversified sourcing reflecting the same adaptive, globally oriented thinking that has characterised the group since its founding.

For other manufacturers particularly those in India’s garment and apparel sector, the Pearl Global story carries concrete lessons. First, that geographic diversification of production is not a luxury but a strategic necessity in volatile global markets; concentration in a single location is a structural vulnerability. Second, moving up the value chain through in-house design, compliance capabilities, and strategic partnerships transforms a vendor into an indispensable partner, commanding better relationships and more resilient order books. Third, that untapped labour markets, particularly those with large female workforces in lower-cost regions, represent genuine competitive opportunity provided firms invest seriously in training and workforce development rather than simply extracting cheap labour.

Pearl Global began with six thousand shirts and a six-week deadline. What it has built since is a masterclass in thinking beyond the immediate beyond the order, beyond the cluster, beyond the country. That, ultimately, is the lesson the company offers: that scale without boundaries is achievable, but only for those willing to invest in the infrastructure, the people, and the vision to sustain it.

8.4 Case Study 3: Tiruppur, The Testament of Collective Action and Bargaining Power

8.4.1 Introduction

From an export turnover of Rs. 15 crore (USD 12 million) in 1985 to Rs. 45000 crore (~USD 5.3 billion) worth exports in 2024-25, that is the distance Tiruppur has travelled in four decades. Not the distance between two balance sheets, but the distance between a small hosiery town in western Tamil Nadu and India’s knitwear capital. Tiruppur accounts for 68 per cent of India’s cotton knitwear exports. The cluster provides livelihoods to over a million workers from various Indian States (like Bihar, Odisha, Jharkhand etc), 70 per cent of them are women (TEA, 2026, The Print, 2026). Tiruppur became a self-made benchmark cluster of India, by building itself through collective enterprise, community capital and institutional trust.

Every other case study in this chapter examines a firm. Tiruppur stands out. Over 4000 factories located within a 20km radius, garment exports of Rs. 45000 crores a year, domestic business of Rs. 30000 crore, acting together through well-designed institutions, can outperform most individual firms (TEA, 2026¹). Collective action is their competitive strategy. And the architecture of that collective action and bargaining power, the associations, the shared infrastructure, the industry-wide norms is precisely what this case study offers as a lesson to the India’s apparel sector.

8.4.2 From Agrarian Village to Knitwear Cluster

Tiruppur emerged as an organic T&A cluster. Located in one of India’s finest cotton-growing belts, the district benefited from the Karunganni long-staple cotton variety cultivated in the Avinashi and Palladam regions, ideal for hosiery production. Yet Tiruppur’s rise was not driven by state-led industrialisation. It emerged through com-

1. This case study draws primarily on *Made in Tiruppur*, The coffee table book published by the Tiruppur City Municipal Corporation, Tiruppur Exporters Association and The Hindu Group (2026 edition). All quantitative data, historical facts and direct quotations are sourced from and attributed to this publication. The analytical framework, lessons and policy arguments are the authors’ own.

munity capital, entrepreneurial networks and the collective action of thousands of small producers. The first banian units appeared in the 1920s, and by the 1940s Tiruppur already had 34 hosiery companies. Institutional support followed with the formation of the South India Hosiery Manufacturers Association (SIHMA) in 1956, which helped secure credit, modernise factories, and strengthen collective industry capabilities. Tiruppur's reputation for high-quality white cotton banians, aided by favourable water quality, helped it dominate domestic hosiery markets through much of the twentieth century.

8.4.3 Antonio Verona and the First T-Shirt of Tiruppur: The Export Chapter begins (1979)

The decisive moment arrived in 1979 when Antonio Verona from Milan, Italy, came to Tiruppur. Word of Tiruppur's knitwear capacity had reached Italian buyers through trade networks in Kolkata, and Verona began placing sourcing orders with 'City Knitting' the first direct export consignment of t-shirts exported to Europe. That single transaction placed Tiruppur on the international sourcing map for the first time. In the mid-1970s, a small group of Tiruppur manufacturers started supplying t-shirts stitched with interlock knitted fabric to European brands through buying agents in the north.

The Knitwear Exporters Association was formed in the same period to address labour and export-related issues collectively, which then transformed to the Tiruppur Exporters Association (TEA) in 1990, under the visionary leadership of Padmashri A. Sakthivel, the founder and first TEA president. From Rs. 15 crore in 1985 to Rs 1000 crore by 1993 to Rs. 45000 crore in 2024-25: that growth is the story of what a focused, well-institutionalised cluster achieves when its associations work.

To understand how Tiruppur actually works, one must first understand the Tiruppur cluster ecosystem.

8.4.4 Tiruppur Cluster Ecosystem: Scale, Capacity and Structure

Export oriented manufacturing as engine of growth

Within the garment industry specifically, approximately 2500 export-oriented factories operate in and around Tiruppur, of which 700 are direct exporters² . The remaining units operate as job work or indirect suppliers feeding into the direct exporters’ order pipelines. There are 10 to 15 fully integrated companies have the in-house capability to handle the entire value chain, from yarn to packed finished garment, and each records annual export revenues of Rs. 500 crore or more. Approximately 60 per cent of Tiruppur’s total export turnover is concentrated in 100 companies, while the remaining 40 per cent is distributed across the wider base of MSME exporters. The cluster’s scale flexibility is a key buyer advantage. Individual factories can handle orders ranging from pilot runs of a thousand pieces to full-season programmes of one lakh pieces or more.

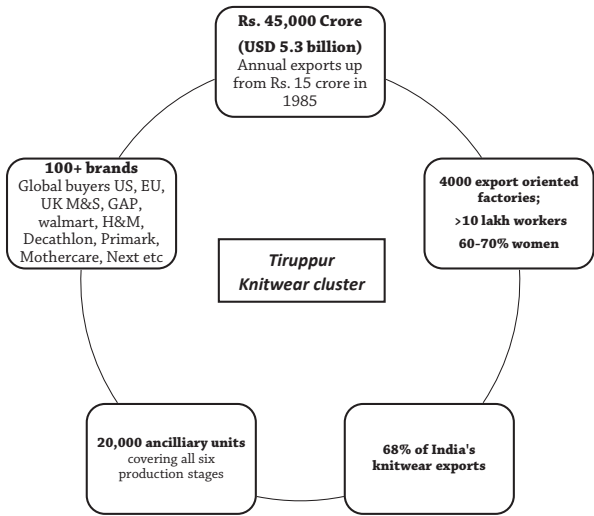
Annual exports from Tiruppur stand at approximately Rs 45,000 crore or USD 5.3 billion (2024-25), representing 68 per cent of India’s total cotton knitwear exports. The destinations are given in Figure 8.6. The buyer base spans over 100 international brands across the US, EU and UK from mass-market retailers such as Walmart, Lidl and Primark to mid-market names including M&S, GAP, H&M, Decathlon and C&A. Product mix for export is wide and growing infant and kids’ wear, sportswear, medical textiles, and fashion garments. Alongside exports, close to 2000 factories in Tiruppur produce produce exclusively for the Indian market innerwear, women’s wear, infant wear, and allied garment categories generating annual domestic sales of approximately Rs 30,000 crore (TEA, 2026).

The integrated T&A value chain and supporting ancilliary units

Producing a finished garment in Tiruppur involves distinct production stages: cotton cleaning and yarn spinning, fabric knitting, printing, sewing, trimming, pressing, packaging and final despatch. What makes Tiruppur unique is this ecosystem, all the processes are

2. Firms that hold their own export registration and transact directly with overseas buyers.

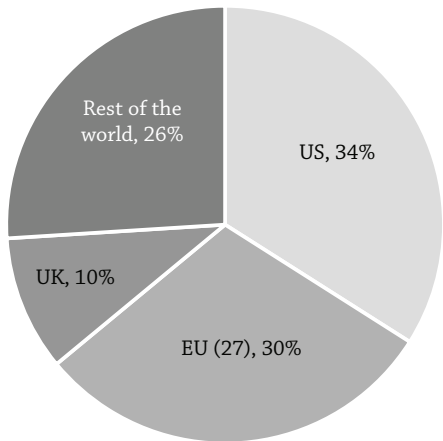
Figure 8.5
Tiruppur Cluster: An Overview



Source: Author’s own

Figure 8.6
Tiruppur’s Major Export Destinations, 2024

Total exports Rs. 45000 crores (USD 5.3 billion)



Source: Tiruppur Exporter Association, 2024

within a radius of approximately 20 kilometres. Woven around these production stages are approximately 20000 job-work units, each specialising in one or more steps of the manufacturing cycle, making the cluster self-sufficient across the entire garment value chain. A third tier of input suppliers, providing trims, packaging materials, logistics and finishing accessories from buttons and zippers to polybags and shipping labels, completes the ecosystem. Together, this layered value chain within a compact geography is the cluster's single most important supply chain advantage. A global buyer can source a fully finished, tested and packed T-shirt from Tiruppur without leaving the district.

Environmental Infrastructure: CETPs, ZLD and Renewable Energy

The cluster's environmental infrastructure today comprises 300 wet processing and dyeing units, served by a network of 18 Common Effluent Treatment Plants (CETPs) and a further 60 factory-level individual treatment facilities. Together, these have the combined capacity to treat approximately 13 crore litres of effluent per day and recover close to 10 crore litres of water per day for reuse within the production cycle. On energy, Tiruppur's industries have collectively invested in 2100 MW of wind and solar energy systems.

The Netaji Apparel Park: India's First Industry-Built Apparel Park

TEA established the Netaji Apparel Park spread across 166 acres, it is India's first and largest industry-promoted apparel park. Developed from 1999 onward on 100 acres at a collective investment of approximately Rs 300 crore, it houses 189 work sheds and the Netaji Export Knitwear Industrial Complex, which contains 52 knitwear factories manufacturing exclusively for export markets. The park was inaugurated in 2003 through a public-private partnership involving TEA, the Central Government, and the Tamil Nadu state government, and provides employment to approximately 15000 people.

Tiruppur stands tall in giving back to society. The entrepreneurs and business community of Tiruppur actively contribute to social development through various platforms such as TEA Trust, NGOs, Lions Clubs, Rotary Clubs and organizations like Vetry. These institu-

Figure 8.7*Netaji Apparel Park of Tiruppur*

Source: Tiruppur Exporter Association, 2026

tions undertake numerous initiatives, including tree plantation drives, provision of clean drinking water, waste management programs, healthcare awareness campaigns, educational support and welfare activities for the underprivileged. Their collective efforts not only improve the quality of life of the local community but also promote sustainable development and ensure the inclusive growth of Tiruppur.

Skilling and Education Infrastructure

The cluster's institutional investment in talent is anchored by the NIFT-TEA College of Knitwear Fashion, established in 1997 through a collaboration between the National Institute of Fashion Technology and TEA the only institution of its kind co-created by an industry cluster in India. The district hosts four Industrial Training Institutes (ITIs) catering to trades aligned with manufacturing requirements, alongside other colleges. It reflects the cluster's long-held view that building human capital as an industry responsibility.

The 2011 Crisis and polluter pay principle

No account of Tiruppur's institutional architecture is complete without the environmental crisis that tested the cluster's collective action most severely. The Noyyal River had been receiving effluent from Tiruppur's dyeing and bleaching units. Invoking the 'polluter

pays principle’ and the precautionary principle, the courts held that industries responsible for environmental damage must bear the cost of treatment and restoration. The Madras High Court³ ordered the closure of 752 dyeing units that did not comply with ZLD norms (Downtoearth, 2011). In July 2012, the ZLD standard was first implemented at Arulpuram CETP. Today, Tiruppur has invested over Rs. 850 crores in ZLD infrastructure, with 18 CETPs that serve 310 textile units, alongside 60 individual ETPs. These plants collectively treat 14 crore litres of effluent daily (95 per cent recovery rate) (TEA, 2025).

8.4.5 Lessons for India’s Apparel Sector and the Vision for Tiruppur 2030

Tiruppur’s competitive advantage lies not in any single factory but in the completeness of its ecosystem. Within a 20 km radius, a buyer can access every stage of production from cotton cleaning to freight forwarding without leaving the cluster. India’s PM MITRA parks are the closest policy instrument to replicating this, but physical infrastructure alone is insufficient. The ecosystem is built on shared testing labs, NABL-accredited quality centres, cluster-level traceability systems and compliance secretariats that make every unit globally competitive regardless of size. Equally critical is the institutional architecture TEA, SIHMA, TEAMA through voluntary cooperation among competing manufacturers who recognised that beyond the factory gate, their interests converged. This social capital transforms a geography of factories into a functioning industrial cluster. For new PM MITRA sites, the institutional governance has to be designed, not after factories are built, cultivated through incentives for collective action and governance frameworks that reward participation over time.

The Tiruppur Vision: Rs. 1 Lakh Crore by 2030

Tiruppur’s growth agenda rests on three pillars. The first is diversification from cotton basics into man-made fibres, technical textiles

3. Tirupur dyeing units told to close; <https://www.casemine.com/commentary/in/tirupur-dyeing-factory-owners-association-v.-noyyal-river-ayacutdars-protection-association%3A-establishing-zero-liquid-discharge-and-polluter-pays-principle/view>

and circular fashion with a target of 20 per cent MMF in its export mix by 2030. The second is proactive sustainability leadership: moving beyond its existing ZLD and renewable energy infrastructure toward Scope 3 carbon accounting, offering farm-to-garment emissions data as EU supply chain disclosure requirements tighten. The third is digital transformation building a buyer-facing sourcing interface that aggregates Tiruppur's 2500 factories into a single verified, ESG-documented marketplace with real-time visibility into production and compliance.

The prerequisites for reaching the Rs. 1 lakh crore (USD 12 billion) target are largely within policy reach: implementation of the EU FTA and UK CETA to close the tariff gap with Bangladesh and Vietnam, providing affordable worker housing to reduce attrition, and sustaining state and central investment in shared cluster infrastructure. Tiruppur's deeper ambition, however, is not merely scale, it is to compete on quality, sustainability and design rather than cost alone, accessing a premium market for verified, ethically produced knitwear that is growing faster than the commodity segment.

The lesson Tiruppur cluster offers is that of collective action built above the individual firm: associations that negotiate, invest, comply and bargain together; shared infrastructure that makes quality and compliance affordable for small units; and a culture of common purpose that prevents the tragedy of the commons from undermining what competition alone would destroy. India has one Tiruppur. The current framework of policies should facilitate the country with the tools to build several more.

8.5 Case Study 4: A Sister Sector’s Blueprint: Innovation, Scale and Traceability Lessons from Welspun Living

“The future belongs to companies that combine scale with sustainability, innovation with quality, and manufacturing with purpose. At Welspun, we did not just build a textile company; we built a globally trusted Indian brand.”

- Balkrishan Goenka, Chairman, Welspun World

In a global textile industry where quality is the entry ticket, compliance is the minimum standard, and trust is the only currency that compounds, the story of Welspun stands apart. Founded in 1985 by Mr B.K. Goenka, Welspun has grown from a small textile unit in Palghar, Maharashtra, to one of the world’s largest home textile manufacturers. Its brand ecosystem spans over 60 countries through partnerships with leading international retailers, generating revenues exceeding USD 1.2 billion⁴ by more than 24,000 people (Living, 2024-25).

Among the many stories the Indian textile industry has to tell, Welspun earns its place in this book for three reasons. First, the company has built enduring brand trust with global buyers through consistent quality, compliance, and delivery, a trust that often takes decades and cannot be replicated overnight. Second, they have turned product innovation into a competitive weapon, turning R&D into a price-setting tool rather than a cost. Third, they have achieved unparalleled vertical integration at scale, complemented by a pioneering traceability infrastructure that gives them a decisive first-mover advantage in a world where provenance is becoming non-negotiable.

For India’s T&A export sector, Welspun is proof that innovation, scale, vertical integration, and an unrelenting commitment to vision can together rewrite what an industry believes is possible for itself. The case study unfolds by understanding the scale of Welspun Living and decoding the innovation leadership that created a sustainable competitive advantage, reflecting the challenges faced during the process and the key learning for India’s apparel sector.

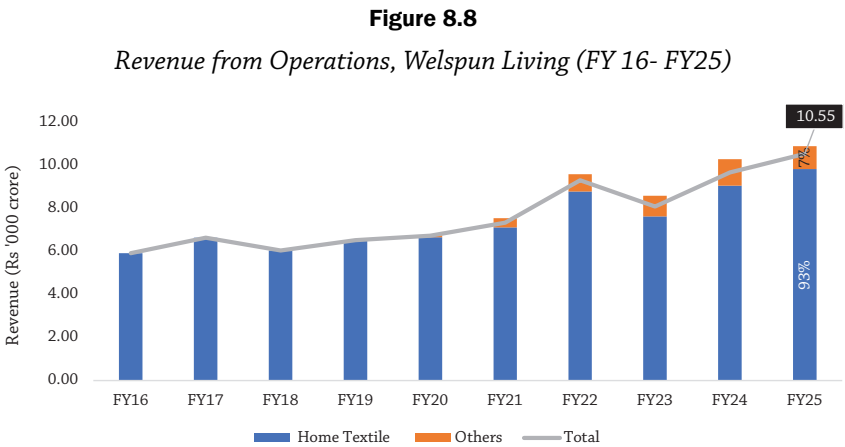
4. Welspun Group revenue stands at USD 3.6 billion and group workforce is more than 32,000 in FY 2024-25.

8.5.1 *The Making of Welspun*

The story of Welspun's scale begins not in a boardroom, but in the restless mind of a young entrepreneur. Before laying the first brick, Chairman B.K. Goenka visited 25 to 30 towel manufacturing plants worldwide, studying processes, benchmarking quality, and absorbing the architecture of global excellence. And this conviction was seeded with Rs 20 lakh from his father, Shri Gopiram Goenka, popularly known as *Babuji* among the Welspun family, and a non-fund-based payment guarantee of Rs 80 lakh from Canara Bank. From this modest yet purposeful beginning, Welspun Winilon Silk Mills Pvt. Ltd., a synthetic yarn business, was established in 1985. By 1991, the company had gone public, and by 1993 set up its Terry Towels plant in Vapi (Gujarat), India. What followed was four decades of relentless compounding in scale, capability, and ambition until Welspun owned every step of the journey, from farm to shelf (Minds, 2025).

8.5.2 *Welspun Living Today*

Today, Welspun Living Limited (WLL), led by Ms. Dipali Goenka (MD & CEO), stands among the world's top integrated home textile manufacturers, with revenues of USD 1.07 billion in FY26 (Living, 2024-25) from a product portfolio spanning bed, bath, flooring, and advanced textiles. This revenue is generated across four strategically located facilities, two in Gujarat at Anjar and Vapi, a flooring facility in Telangana, two in USA, collectively forming a globally integrated, multi-continental supply chain. Together, these facilities produce 96,400 MT of bath linen and 108 million metres of bed linen every year (Welspun Group, 2026). Behind this output stands a workforce of more than 24,000 people, 28 per cent of whom are women. It is this workforce, operating across these facilities, that drives a business reaching customers across the globe. The United States contributes 61 per cent of WLL's revenue, Europe and UK at 18 per cent, and India, the domestic market, 13 per cent. And the clearest measure of what this workforce, these facilities, and these relationships have built together is a single number: Welspun holds the number one position in Towels and Bath Rugs in the US, a fact that renders every conversation about scale redundant (Living, 2024-25).



Source: Welspun Group, 2026

*Others include revenue from flooring and Unallocated segments

Figure 8.8 traces the revenue trajectory of Welspun Living Limited over the last ten years, revenues that have almost doubled, from Rs 5924 crore in FY16 to Rs 10,545 crore in FY26, with home textiles contributing 93 per cent of revenues and flooring and other segments accounting for the remaining 7 per cent. But numbers, however impressive, do not tell the story of ‘how?’ Welspun did not scale first and then innovate. It innovated its way to scale, and that distinction is the single most important lesson this case study carries for the T&A sector. In 1994, during a trade visit to Manchester, a buyer said to Mr. B.K. Goenka: “You Indians show something and deliver something else.” (Minds, 2025). These words reflected a perception holding Indian home textiles back. After that, he built a company that made that statement impossible to repeat. When Welspun secured its first Walmart order for terry towels in 1998, it was not competing on price; it was competing on commitment and quality.

When Welspun decided to expand beyond Vapi, the instinct was to scale what already existed. But, Anjar was chosen. It was an unlikely destination, far from established textile corridors. In 2004, with an initial investment of Rs. 1,350 crore, Welspun City was inaugurated at Anjar, a 2,500-acre fully integrated township that today stands as the physical and strategic backbone of the entire enterprise.

Figure 8.9*Aerial View of Welspun's Anjar, Kutch Facility*

Source: Welspun Group , 2026

What Welspun built at Anjar is not just a factory. It is a self-sustaining industrial ecosystem (Figure 8.9). As of 2024-25, the facility has achieved Zero Waste to Landfill status. A 30 MW captive solar plant supplies 15 per cent of its total energy needs. A 30 MLD sewage treatment plant treats, recycles, and reuses wastewater on-site, advancing Welspun's goal of freshwater-positive operations, supported further by advanced recycling systems and rainwater harvesting (Living, 2024-25).

Today, WLL holds 50 patented technologies, each one representing a choice to own what they created rather than simply execute what buyers asked for. The commercial proof is equally striking: 22 per cent of revenues flow directly from innovative products, meaning nearly one in every five rupees Welspun earns comes from something no competitor can walk into a factory and replicate. There are two Welspun innovations that stand out, they are Wel-Trak, a supply chain technology which redefined what a manufacturer could prove to exporters, and a product technology that redefined what a towel could feel like (Living, 2024-25).

8.5.3 *The Edge of Innovation*

This innovative product technology, which was launched in 2005, was built on a simple yet overhauling insight: What if a towel got better every time one washes it? Using a patented spinning process that produces yarn with a revolutionary hollow core, towels bloom after each wash, growing softer, loftier, and more absorbent over time. The bedding range takes the same hollow-core architecture further, incorporating hydrophilic properties that keeps cooler in summer and warmer in winter. Commercially, by 2020, this product technology had crossed USD 1 billion cumulatively in global sales. One innovation made Welspun’s products impossible to replicate. The next made their supply chain impossible to question (Welspun Living, 2020).

If this innovative product technology redefined what a textile could feel like, Wel-Trak redefined what a manufacturer could prove. When faced with one of the most challenging episodes in its history in August 2016, Welspun did not merely respond. It reinvented. Using a combination of Radio Frequency Identification (RFID) barcodes, QR code scanners, and Enterprise Resource Planning (ERP) integration, Wel-Trak follows cotton from the gin to the spinning mill, from the weaving stage to the retail shelf, end to end, without ambiguity, without a break in the chain of custody and assures independent third-party testing. Deployed in a record four months, it raised the bar not just for Welspun but for the entire global home textile industry (Welspun Living, 2017-18) (Figure 8.10).

The evolution did not stop there. In October 2021, Wel-Trak 2.0 was launched, upgraded with blockchain technology and further strengthened with scientific traceability through chemical fingerprinting from Oritain. Where Wel-Trak 1.0 focused on specialty fibres, Wel-Trak 2.0 captures all product lines and layers in ESG data, water usage, fair pay, power consumption, and gender equality. In an era where global regulations such as EU Deforestation Regulation (EUDR) and the Corporate Sustainability Due Diligence Directive (CSDDD) increasingly require verifiable proof of origin, and where buyers are making traceability an obligation. Welspun stands competitive to respond to the global supply chain needs (‘Made in India to Trusted from India’).

Figure 8.10
Wel-Trak Block Chain



Source: Annual Report, WLL 2017-18

Box 8.1

SPUN: A Sustainable brand that champions Women Empowerment

In the heart of Kutch, SPUN was born in 2014 with one clear purpose: to empower rural women to earn on their own terms, with dignity, in a space their communities trust. The SPUN range, handcrafted quilts, decorative pillows, cushion covers, and bedding accessories, is not mass-produced. Each piece is made by hand, carrying the identity of the artisan woman who created it. What makes SPUN remarkable is where its raw material comes from: the waste and discarded fabric generated within Welspun's own production facilities. Through structured waste segregation and upcycling, materials that would otherwise be discarded are transformed into finished, market-ready products. Waste, in the SPUN philosophy, is not a problem to be managed, it is a resource waiting to be reimaged.



The numbers tell the story clearly. SPUN has established 8 production centres and 6 embroidery centres across the region, trained over 2,500 women. Depending on the time they devote, SPUN artisans earn between Rs 10,000 and Rs 40,000 a month, by learning a skill. Collectively, they have earned over Rs 2.7 crore, with the impact reaching nearly 10,000 lives across the region (WelspunLiving, 2026). SPUN is not a CSR programme appended to a balance sheet. It is proof that a manufacturing enterprise, at sufficient scale and with sufficient intent, can turn its own waste into another community's livelihood, and in doing so, redefine what it means to be a responsible industrial anchor.

Source: WLL, 2026

Together, these two innovations tell the complete Welspun innovation story. One built trust in the product. The other built trust in the process. What the market will demand tomorrow, Welspun built yesterday. That is the rhythm that has defined this company across four decades, and it is the rhythm that the Welspun 2.0 vision is designed to carry forward. Built on three growth engines- emerging businesses, brand portfolio expansion, and e-commerce and three value enablers, innovation, digitalisation, and ESG Welspun 2.0 is not a reinvention. It is the next compounding layer of a strategy that has never changed at its core: commit to a vision before the world can validate it, build the capability before the market demands it, and let the numbers tell the story of the decisions made years before.

8.5.4 Future Path and Key Learnings

Welspun’s rise from a modest textile operation to a globally recognised home solutions brand is not merely a business story; it is a blueprint for what Indian manufacturing can become when ambition is matched with discipline, and scale is built on purpose rather than price. The road ahead is clear. Welspun will continue to expand its footprint, deepen its engagement, and explore adjacent home-lifestyle categories, and leading the industry through whatever market shifts lie ahead. For Welspun, sustainability is not a standalone initiative; it is embedded into the very fabric of how it thinks, operates, and grows. As it continues to expand the company remains equally committed to purpose, inclusivity, and creating meaningful impact at every touch-point. (Living, 2024-25). Sustainability anchors this forward march. In FY26, Welspun sourced 95 per cent of its cotton from sustainable origins, recycled 953 million litres of water, and touched over one million lives through community initiatives. Its Net Zero target by 2040 signals that sustainability is not compliance; it is a competitive strategy.

For India’s T&A sector, lessons are as follows. Welspun proves that vertical integration builds resilience that price competition never can; that compliance is not a cost but a market-access credential; and that product innovation, protected by patents and proven by revenue,

fundamentally changes the terms on which a manufacturer competes. Policy makers should facilitate MSME integration to compete on quality, traceability, innovation and trust.

Welspun did not wait for the market to demand these capabilities. That gap between what the market had not yet asked for and what Welspun had already delivered is where lasting competitive advantage is created and enduring global relevance is built.

8.6. Conclusion and Way Forward for India’s T&A Sector

The four cases in this chapter: Shahi Exports, Pearl Global, Tiruppur cluster and Welspun Living were built under the same constraints that India’s T&A sector faces. Expensive capital, fragmented supply chains, inadequate cluster infrastructure etc. Yet how they achieved this global scale, is the central lesson. Global competitiveness is built on long term investments in people, technology, compliance and buyer trust. These firms and clusters succeeded because they looked beyond short term costs and invested in capabilities that created enduring competitive advantage. Tiruppur built through collective action and institutional design; Pearl through geographic diversification that converts supply chain vulnerability into resilience, Shahi treated worker welfare and gender inclusion as commercial strategy and Welspun followed the path of innovation-led traceability that converts sustainability from a cost into a price-setting tool. Across all four, it was the ecosystem that allowed that capability to replicate.

At the same time, their success highlights the constraints faced by the vast majority of India’s garment firms, most of which are small, fragmented and undercapitalised MSMEs. The policy must facilitate the T&A sector through better cluster infrastructure, affordable finance, workforce development, trade facilitation and compliance support. India does not need a new model; it needs to scale the models that have already worked. That is the pathway to a globally competitive apparel sector and the ambition of becoming a USD 100 billion T&A exporter.

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9

The T&A Policy Ecosystem: Incentives, Integration and Export Competitiveness

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9.1. Introduction

India's textile and apparel (T&A) sector is, by virtue of every structural measure, an industrial giant. The sector employs over 45 million workers directly, accounts for 12 per cent of merchandise exports (Ministry of Textiles, 2024), and spans a full fibre to fashion value chain. The T&A sector, of the size USD 179 billion and projected to rise to USD 350 billion by 2030 (at a CAGR of 9-11 per cent), contributes to 2.3 per cent to the country's GDP.

India's export performance, at approximately USD 37 billion in FY2025, reflects a strong and resilient foundation. While its share of global apparel exports has remained at around 3 per cent since the early 2000s, peer economies such as Bangladesh (9.5 per cent; USD 51 billion) and Vietnam (7.3 per cent; USD 39.4 billion) have scaled rapidly, demonstrating the dynamism of the sector globally (ITC TradeMap, 2025; Ministry of Textiles, 2025).

Importantly, India's position is underpinned by inherent strengths in raw material availability, labour and a large and growing domestic market. The evolving landscape therefore presents a significant opportunity. With a clear recognition of the need to strengthen downstream manufacturing scale, deepen value-chain integration, expand access to finance and enhance market linkages, India's policy framework has been steadily aligning to unlock this potential. The trajectory ahead is

thus one of expansion and consolidation, building on strong fundamentals to capture a larger share of global trade.

India’s T&A policy landscape has evolved significantly since the mid-1990s, progressing through four broad phases that reflect a deepening understanding of the sector’s competitive requirements and the need for increasingly targeted policy responses. The current framework, anchored in the five component integrated programme for T&A announced in the Union Budget 2026-27, a comprehensive and cohesive industrial policy commitments to the sector. As discussed in Chapter 4, it addresses critical enablers including access to finance, machinery modernisation, cluster-based infrastructure, sustainability compliance, export incentives and employment generation.

It is within this context that this chapter examines India’s T&A policy architecture. The sector has had continued policy support frameworks, spanning technology subsidies, credit guarantees, export rebates, mega-park investments and production-linked incentives. Yet the sector still has significant untapped potential, to be translated to export competitiveness and industrial scale that comparable economies (as discussed in Chapters 5-7 of this book) have achieved. And how can India’s current policy push that aims to transform the policy architecture from fragmented schemes to a stable, integrated ecosystem that help achieve growth in long-term private investment, manufacturing scale and global market integration?

Answering these questions requires tracing the evolutionary arc of India’s textile industrial policy. The chapter is organised as follows. Section 9.2 traces the evolution of India’s textile industrial policy across four phases from the 1990s to the present. Section 9.3 examines the export competitiveness landscape and the three dimensions of scale, finance and operational competitiveness that define the transformation agenda. Section 9.4 analyses the integrated policy ecosystem of the current decade: the PLI scheme, the PM MITRA parks, the Export Promotion Mission and the Integrated Programme for T&A announced in the Union Budget 2026-27, including the WTO compliant export incentives and the sustainability imperative. Section 9.5 sets out the three priorities for translating this policy architecture

into competitive outcomes of policy stability, institutional coordination and MSME inclusivity. Section 9.6 is the conclusion section.

9.2. India's T&A Policy Evolution

Markets alone do not build textile giants. Behind every country that has scaled the T&A sector into a global export market be it China or Bangladesh or Vietnam, there has been a policy support. One that lowered the cost of capital, channelled infrastructure to clusters, aligned incentives with export performance and incentivised MSMEs to scale up. For India's apparel sector to be globally competitive, policy has a large part to play. In this section, we trace India's T&A policy evolution from mid 1990s for understanding how the policy architecture has evolved with the emerging global and domestic scenario.

Phase 1: The Quota Transition and the Foundations of Global Competitiveness (1990s-2000s)

India's post-independence textile policy was organised around the twin objectives of protecting small scale producers and generating rural employment. Garments were reserved for the small scale industries sector, handlooms and small powerlooms were exempted from excise duties, and the Multi-Fibre Arrangement (MFA), which governed global textile trade through country specific quotas, provided a degree of market protection that reduced the urgency of large scale modernisation. As a result, Indian mills, particularly in the composite segment, continued to operate on decades old technology.

The National Textile Policy 2000 (NTP 2000) and its emphasis on technology modernisation is best understood against the backdrop of the Great Bombay Textile Strike of 1982, led by trade union leader Datta Samant and involving over 2.5 lakh mill workers. The strike accelerated structural shifts within the industry and initiated a gradual process of de-reservation, enabling the entry of larger factories and foreign investment.

At the same time, the global trading regime for textiles was undergoing a fundamental transition. The MFA was terminated on 1 January 1995 and replaced by the WTO's Agreement on Textiles and

Clothing (ATC), which provided a phased framework for integrating textile trade into general GATT rules. The ATC was fully phased out on 1 January 2005, marking the end of quota-based trade and India’s transition to a fully competitive global market. This impending shift necessitated rapid technological upgradation and greater competitiveness across the textile value chain.

This imperative was operationalised through the Technology Upgradation Fund Scheme (TUFS), launched in April 1999, which provided an interest subvention of 5 per cent on loans for machinery acquisition. TUFS marked an important recognition that market forces alone would be insufficient to drive investment in a sector characterised by high capital costs, thin margins and a significant technology gap relative to global competitors.

Phase 2: Infrastructure, Scale and the post MFA phase (2005-2014)

The expiry of ATC in 2005 marked a decisive shift in the global competitive landscape. Indian exporters, previously operating within country-specific quota allocations in key markets such as the United States and the European Union, were now required to compete directly with China and other Asian manufacturing economies.

The policy response accordingly shifted from a primary focus on technology financing to the development of infrastructure and scale, with an emphasis on cluster based approaches and shared physical infrastructure to support integrated production systems. The Scheme for Integrated Textile Parks (SITP), launched in 2005, was central to this strategy. It provided grants of up to Rs. 40 crore, covering approximately 40 per cent of project costs, to facilitate the development of textile clusters with common infrastructure such as effluent treatment plants, power supply, testing laboratories, and processing facilities. In total, over 59 parks were sanctioned across major textile-producing states (Ministry of Textiles, 2019). However, the CAG compliance audit of SITP, 2023 identified two major concerns: parks covered only one or two segments of the value chain rather than constituting genuinely integrated operations and the complete non involvement of state

governments left projects exposed to land, power and statutory clearance failures, together accounting for the cancellation of 43 per cent of all sanctioned parks and a shortfall of 70 per cent against employment targets even after sixteen years (CAG India, 2023).

In parallel, the National Fibre Policy, 2010 sought to promote a 'fibre-neutral' approach, aimed at enhancing the availability and balanced use of different fibres to support sustained growth across the textile value chain. The recommendations of the policy subgroups focused on correcting fiscal distortions and addressing structural limitations within the existing ecosystem, with a view to enabling more balanced and competitive sectoral growth (Ministry of Textiles, 2010).

Phase 3: Formalisation, Fiscal Reforms and Strategic Investment (2015-2020)

This phase was defined by two major policy shifts that reconfigured the structural and institutional landscape of the sector: the transition from the interest-subvention-based TUFs to the capital subsidy led Amended TUFs (ATUFs) in January 2016, followed by the implementation of the Goods and Services Tax (GST) on 1 July 2017.

ATUFs addressed structural weaknesses in the earlier TUFs framework by shifting from interest subvention to a capital investment subsidy model (CAG performance audit 2014-15). The scheme provided support of 15 per cent for garmenting and technical textiles and 10 per cent for other segments, while introducing tighter design features, including mandatory 100 per cent physical verification, the exclusion of second-hand machinery and a more robust claims processing mechanism. These changes enhanced the efficiency, credibility and targeting of capital support.

GST, in turn, marked a consequential reform of India's indirect tax architecture in over three decades. By linking Input Tax Credit (ITC) to supplier tax compliance, it created systemic incentives for formalisation, particularly within the fragmented powerloom and processing segments. This reform improved value chain transparency, strengthened compliance and facilitated the gradual integration of informal enterprises into the formal economy.

This phase also witnessed a fundamental restructuring of India’s export incentive architecture, with a transition away from the Merchandise Exports from India Scheme (MEIS) towards instruments such as the Rebate of State and Central Taxes and Levies (RoSCTL) and the Remission of Duties and Taxes on Exported Products (RoD-TEP), aligning export promotion with evolving global trade rules.

Phase 4: The Integrated Framework with Scale, Integration and Sustainability Focus

The Union Budget 2026-27 sets out the contours of what is arguably an ambitious and holistic policy framework. The framework signals a deliberate shift from firm-level incentives towards ecosystem-level investments, recognising the need to address systemic constraints across the value chain. It places a clear emphasis on downstream segments such as weaving, processing and garmenting where India’s structural gaps remain most pronounced. At the same time, it seeks to integrate sustainability as a core industrial policy objective, moving beyond its earlier treatment as a compliance requirement.

Central to this phase is the PM Mega Integrated Textile Region and Apparel (PM MITRA) scheme, launched in 2021. Designed as a direct institutional response to the SITP gaps identified in the CAG audit viz fragmented value chains and absent state government accountability, PM MITRA mandates minimum 1000 acre parks housing the full textile value chain from spinning through garmenting, while embedding state governments as 51 per cent equity co owners of each park’s Special Purpose Vehicle (SPV), making accountability for land, utilities and statutory clearances a structural design feature rather than a nominal expectation. Seven parks have been sanctioned across Tamil Nadu, Telangana, Gujarat, Karnataka, Madhya Pradesh, Uttar Pradesh and Maharashtra, with the first park inaugurated and operationalized at Warangal, Telangana in May 2026. A key feature of this phase is the proposed creation of an institutional delivery architecture at the cluster level, through mechanisms such as Textile Suvidha Kendras, intended to strengthen coordination, implementation and last-mile delivery.

Across these four phases, India's textile industrial policy reflects a clear trajectory from firm level interventions towards increasingly systemic and spatially anchored approaches to competitiveness. While the early phases focused on technology upgradation and adjustment to global trade regimes, subsequent policy responses progressively recognised the importance of scale, infrastructure and value chain integration. Within this evolution, the cluster-based approach has emerged as a central organising principle. What began as a supporting instrument for infrastructure provisioning in the post-MFA phase has, over time, evolved into a core policy strategy for addressing fragmentation, enabling shared efficiencies and strengthening coordination across the value chain. In its current form, the cluster approach underpins not only infrastructure development, but also institutional delivery, sustainability integration and ecosystem level competitiveness.

9.3. The Export Competitiveness Landscape: Strengths, Gaps and Policy Opportunity

India's T&A has been cotton focused. India is world's second largest producer of cotton and the second largest spinning base with over 55 million spindles; it produces approximately 5 MMT of cotton annually, second only to China (MoT, 2025). It holds competitive cost advantages in yarn, with manufacturing costs among the lowest globally (ITMF, 2021). Its domestic market, of USD 154 billion size and growing at 7 percent (last decade, excluding the covid period) provides a scale of demand that generates production diversity and resilience unlike export focused economies.

The export opportunity is equally substantial. The China Plus One Strategy (C+1), accelerated by geopolitical shifts and sustainability-driven sourcing transitions, has created favourable conditions for India to expand its share within global value chains. In parallel, India's recently concluded trade agreements with key markets, including the European Union and the United Kingdom, position it more competitively by narrowing tariff differentials vis-à-vis countries such as Bangladesh and Vietnam.

In a global apparel market valued at approximately USD 525 billion (ITC Trade Map, 2025), even incremental gains in India’s share would have a substantial impact. Expanding India’s global share from around 3 per cent to 6-7 per cent has the potential to generate an additional 3-4 million formal manufacturing jobs. The USD 40 billion apparel export target for 2030, therefore, reflects both ambition and a clear opportunity for scale.

Against this backdrop of strong structural fundamentals and expanding global opportunity, three key dimensions of export competitiveness require focused policy attention. It is around these dimensions that the current policy framework has been calibrated.

The first dimension is scale, cluster integration and product diversification. Global buyers are increasingly seeking large, integrated sourcing destinations where fibre production, processing, garmenting, logistics and compliance systems operate in proximity and countries that are able to offer such ecosystems consistently capture larger and more stable shares of global sourcing. India’s apparel sector, by contrast, remains fragmented and sub-scale. Processing continues to be the weakest link in the value chain, and the average Indian garment factory generates revenues in the range of Rs. 140-200 crore, compared to Rs. 850-900 crore for leading Chinese manufacturers (company websites). This fragmentation is further accentuated by geographic dispersion across the value chain, with cotton ginned in Maharashtra, spun in Tamil Nadu, woven in Gujarat, processed in Tiruppur, and assembled in the NCR. The result is fabric to garment lead times of 60-90 days, which are increasingly misaligned with the requirements of fast fashion and rapid replenishment cycles. Alongside this integration challenge, India’s export basket remains concentrated in cotton basics even as global demand has shifted decisively towards MMF, performance textiles, which together account for approximately 77 per cent of global fibre consumption (Textile Exchange, 2024). As buyers increasingly prioritise traceability and sustainability, building capabilities in these segments is no longer a matter of compliance, but a core competitive requirement. In response, policy interventions have increasingly sought to address these interlinked challenges in a

coordinated manner. Initiatives such as the PLI scheme, with its focus on MMF and technical textiles, PM MITRA parks with their emphasis on spatial integration, National Fibre Scheme and the Tex-Eco Initiative together reflect a calibrated approach towards enhancing scale, integration, sustainability and product diversification.

The second critical dimension is the cost of capital and the structure of the financial architecture. The textile industry is inherently capital intensive, requiring sustained investment in machinery modernisation, automation, sustainability compliance and capacity expansion. Yet, access to finance remains uneven, particularly for MSMEs, which continue to face stricter lending assessments, elevated risk perceptions and limited access to long-term credit. India's working capital loans, at 6-8 per cent in real terms, remain substantially higher than those in competing economies such as Bangladesh, where real rates are negative, Vietnam at 1-2 per cent, and China at around 3.1 per cent (Rao et al., 2026). This differential has direct implications for cost competitiveness. These challenges are compounded by the structural characteristics of the T&A sector, which differ from general manufacturing. Seasonality is pronounced, order cycles are short and working capital requirements are driven by buyer payment cycles rather than fixed asset lifecycles. Financial products, however, have not consistently been tailored to these dynamics, resulting in collateral requirements and appraisal norms that are misaligned with the sector's cash flow realities. The discontinuation of the Interest Equalisation Scheme after December 2024 has further intensified financing pressures, particularly for MSME garment exporters relied on export credit. Policy responses are increasingly being calibrated to address these gaps. Instruments such as the Export Promotion Mission's factoring facility and interest subvention mechanisms, along with the Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) and the Micro and Small Enterprises Credit Guarantee Scheme (MCGS), are designed to better align the financial architecture with sectoral requirements, particularly for SMEs.

The third dimension relates to operational competitiveness, encompassing workforce capability, technology adoption and logis-

tics efficiency. These factors collectively determine whether India can manufacture at the pace, quality and responsiveness demanded by global buyers. In the current sourcing environment, competitiveness is shaped not only by labour costs, but increasingly by productivity, reliability and lead-time efficiency. India adds millions of workers to manufacturing each year, many of them first-generation industrial employees. Investments in skilling, supervisory capacity, worker welfare, and safe working conditions are therefore not merely social interventions, but industrial imperatives. Global experience demonstrates that successful textile clusters, particularly in China and Vietnam, combine workforce training with worker housing, healthcare and integrated industrial ecosystems to improve productivity, retention and operational stability. At the same time, India’s downstream textile ecosystem continues to face structural challenges of fragmentation, limited automation and technological gaps, particularly in weaving, processing and garmenting. Indian apparel firms remain smaller and less productive than benchmark global players operating within integrated cluster ecosystems. For instance, the Guangdong T&A ecosystem in China integrates manufacturing hubs such as Guangzhou, Dongguan, Foshan and Shenzhen into a highly coordinated production network spanning more than ten cities. Hosting over 20,000 enterprises and employing more than one million workers, the cluster derives its strength from scale and deep integration, enabling seamless production across the value chain from fabric manufacturing to final garment finishing.

By contrast, Indian exporters continue to face logistics inefficiencies and delays arising from fragmented infrastructure and procedural bottlenecks. Policy responses are increasingly aligned to address these operational constraints. Initiatives such as SAMARTH 2.0 and the employment incentives under TEEM seek to strengthen workforce capabilities, while cluster-level infrastructure investments, including worker housing, aim to improve retention and productivity. On the logistics front, the EPM’s FLOW and LIFT components, along with reforms to the Advance Authorisation scheme, are directed towards improving speed, reliability and cost efficiency across the supply

chain. To remain competitive in the coming decade, India's textile supply chains will need to operate at the pace demanded by increasingly dynamic consumer markets.

Taken together, these three dimensions, scale and cluster integration, access to affordable and sector-aligned finance and operational competitiveness through skilled labour, technology and logistics efficiency, define the core transformation agenda for India's T&A sector. The current policy framework, through initiatives such as PM MITRA, PLI, Integrated Programme for Textiles including TEEM and SAMARTH Schemes, and the EPM, seeks to address these interlinked constraints and reposition India as a globally competitive, large-scale, and responsive sourcing destination. The following section examines these policy responses in detail.

9.4. India's T&A Policy Ecosystem: The Current Landscape

India's textile policy in the current phase is framed with the objective of building a coherent and mutually reinforcing policy ecosystem. Four major instruments underpin this integrated approach: the Production Linked Incentive (PLI) scheme, the PM MITRA Scheme, the Export Promotion Mission (EPM), and the Integrated Programme for Textiles with its five sub-components. Each of these is designed to address distinct constraints, while collectively contributing to a more coordinated and systemic policy framework.

9.4.1. Production Linked Incentive Scheme

The PLI scheme for textiles, launched in September 2021 with an outlay of Rs. 10,683 crore and operational until 31 March 2030, is the government's flagship initiative to attract large-scale investment, particularly in MMF apparel, MMF fabrics and technical textiles (Ministry of Textiles, 2025). Incentives ranging from 3 to 11 per cent are linked to incremental production over a defined base year, thereby rewarding scale, competitiveness and market expansion rather than merely capital investment. As of mid-2025, the scheme had catalysed investments of Rs. 7,343 crore, generated turnover of Rs. 4,648 crore, and exports of Rs. 538 crore (Economic Times, 2025). Complementing

this, the National Technical Textiles Mission (NTTM), with an outlay of Rs. 1,480 crore and over 168 approved research and development projects as of 2026, seeks to strengthen the innovation ecosystem for high-value technical textiles.

9.4.2. PM MITRA: Spatial Integration at Scale

The PM Mega Integrated Textile Region and Apparel (PM MITRA) scheme, envisaging seven parks with Development Capital Expenditure support of up to Rs. 500 crore per park and Competitive Incentive Support of up to Rs. 300 crore, is a landmark and much needed spatial industrial policy intervention in India’s textile policy landscape.

The rationale is grounded in operational realities. India’s geographic fragmentation imposes lead times of 60 to 90 days for a complete fabric to garment cycle. PM MITRA seeks to address these constraints by providing plug-and-play infrastructure that enables the co-location of spinning, weaving, processing, and garmenting alongside shared facilities such as effluent treatment plants, testing laboratories, logistics hubs and worker housing. Seven locations have been identified to both leverage existing industrial strengths and develop new textile manufacturing geographies (Table 9.1).

Progress across parks reflects underlying industrial readiness. Locations anchored in established ecosystems, such as Virudhunagar in Tamil Nadu’s knitwear belt and Navsari in Gujarat’s MMF cluster, are advancing more rapidly, with special purpose vehicles operational and anchor investors engaged. In contrast, parks in emerging regions will require sustained state-level investment in core infrastructure and proactive investor mobilisation to catalyse the private investment needed for scale.

Among the parks demonstrating strong early momentum, Dhar in Madhya Pradesh stands out as a notable case of accelerated progress. Dhar’s strategic advantages include its central geographic location, proximity to major cotton-growing regions, and connectivity to industrial corridors and logistics networks. The park also holds potential for integration with emerging apparel and MMF manufacturing ecosystems. It is envisaged as a major employment generator,

Table 9.1
PM MITRA parks: An Overview

<i>PM MITRA Location</i>	<i>State</i>	<i>Sectoral Focus</i>	<i>Progress Status (2026)</i>	<i>Strategic Rationale</i>
Virudhunagar	Tamil Nadu	Cotton knitwear; sustainable processing	Anchor investors engaged, infrastructure and investment progressing. 1052 acres, Investments worth Rs. 2192 crores grounded	Tiruppur ecosystem proximity; ZLD infrastructure
Warangal	Telangana	Integrated textiles: cotton and MMF, Handloom integration	Functional, commercial production started. Investments worth Rs. 3862 crores grounded; 540 acres allocated	Brownfield park, access to FDI and global value chains
Navsari	Gujarat	MMF textiles; synthetic fabrics; technical textiles	Land and infrastructure development ongoing; being built in PPP mode	Surat MMF cluster extension; petrochemical linkage
Kalaburagi	Karnataka	Garmenting	Initiated and early developments	Labour access; state industrial policy support; garmenting hubs
Hardoi, Lucknow	Uttar Pradesh	Handloom; apparel; integrated textile manufacturing, technical textiles	Land finalisation stage; being built in PPP mode	Access to India's largest apparel market and workforce, strategic location in North India, existing T&A base
Dhar	Madhya Pradesh	Integrated textile and apparel manufacturing, MMF, garmenting	1130 acres land allotted and proposed investments of 24175 crores	Central location, cotton belt access, industrial corridor, logistics connectivity
Amravati	Maharashtra	Cotton; textiles, spinning, MMF blends	Brownfield park, Infrastructure development in progress	Cotton belt raw material access, existing textile ecosystem of Maharashtra

Source: Author's compilation from Ministry of Textiles and other websites; PIB 2026a

with projections of nearly three lakh jobs, while contributing to the broader 5F vision of linking farm, fibre, factory, fashion, and foreign markets. The Park has attracted land allotments of over 1130 acres out of a total planned area of 2150 acres, with proposed investments exceeding Rs. 24,175 crore. This level of industry response is comparable to that seen in more established textile regions, indicating strong investor confidence. The experience of Dhar illustrates how targeted policy design, combined with proactive state-level engagement, can compress the timeline from initial designation to tangible investor commitment, even in regions without an established industrial base.

More broadly, PM MITRA represents a shift in the unit of policy focus, from the individual firm to the cluster. It reflects the recognition that textile competitiveness is increasingly determined at the ecosystem level, and that public investment in shared infrastructure is both a legitimate and necessary instrument of industrial strategy.

9.4.3. The Integrated programme for Textile and Apparel

The Union Budget 2026-27 announced a comprehensive Integrated Programme for the T&A sector, reflecting a strategic shift towards strengthening the entire value chain from fibre production to global markets. The framework recognises textiles as a core driver of employment, exports, rural livelihoods and sustainable industrial growth (PIB, 2026). The programme is structured around five major sub-components:

- **National Fibre Scheme:** This component aims to build self-reliance across the full fibre spectrum, covering both natural fibres such as silk, wool and jute, and man-made and new-age fibres. By strengthening domestic fibre availability and promoting innovation in advanced materials, including carbon fibre and aramid, the scheme seeks to reduce import dependence and diversify the raw material base for downstream manufacturing, supporting India’s ambition to emerge as a hub for technical textiles (PIB, 2026).
- **Textile Expansion and Employment (TEEM) Scheme:** TEEM serves as the central pillar of the framework’s manufacturing

modernisation agenda. It brings together a range of interventions aimed at addressing structural constraints across the textile value chain, including access to finance, technology upgradation, domestic machinery development, employment generation and cluster-level infrastructure. The scheme integrates instruments such as credit guarantee mechanisms, concessional financing, capital support for modernisation, incentives for employment in labour-intensive segments, and the development of shared infrastructure and institutional support at the cluster level. Designed as a catalytic policy instrument, TEEM seeks to leverage public investment to mobilise private capital, enhance productivity, and enable scale across textile clusters, while strengthening the sector's competitiveness in both domestic and global markets.

- **National Handloom and Handicraft Programme:** This unified programme consolidates existing schemes to deliver targeted support to weavers and artisans. By enhancing incomes, strengthening market linkages, and integrating traditional production systems with global e-commerce platforms, it seeks to preserve cultural heritage while enabling commercially viable livelihoods. The Mahatma Gandhi Gram Swaraj Initiative, announced alongside the Integrated Programme, specifically targets khadi, handloom and rural artisans for global branding and market linkage (PIB, 2026).
- **Tex-Eco Initiative:** This component is designed to promote environmentally sustainable and globally competitive textile manufacturing. It emphasises capacity and capability development, demand generation and awareness creation to enable sector-wide adoption of sustainable practices. It also supports clean energy transitions, promotes textile waste management, and seeks to augment recycling capacities across the value chain. These efforts are complemented by alignment with international sustainability standards through instruments such as support for Zero Liquid Discharge requirements, and integration with the Carbon Credit Trading Scheme (CCTS). The initiative aims

to position sustainability as a source of competitive advantage rather than a compliance burden.

- **SAMARTH 2.0:** An upgraded workforce development programme, SAMARTH2.0 aims to modernise the sector’s skilling architecture by strengthening industry-academia linkages and delivering technology and product-specific training. Building on the first phase, which trained over 1.1 million workers, the programme shifts towards competency-based modules covering MMF handling, digital manufacturing, CAD/CAM operations, and sustainability compliance, aligning workforce capabilities with evolving global buyer requirements (PIB, 2026).

Alongside these components, the Budget also proposed the development of Mega Textile Parks in challenge mode to complement PM MITRA, and introduced export facilitation measures, including extended export timelines to ease working capital pressures. Taken together, the Integrated Programme reflects a comprehensive policy intent, spanning investment support, financial access, logistics efficiency, skilling, sustainability alignment and market access across the full value chain from fibre to fashion.

9.4.4. Export Promotion Mission

In February 2026, the Government of India launched the Export Promotion Mission (EPM), a flagship Rs. 25,060 crore initiative aimed at accelerating India’s transition from a predominantly domestic producer to a globally competitive exporter, with a particular focus on MSMEs and emerging trade segments. Announced by the Minister of Commerce and Industry, the mission reflects a strategic shift towards an integrated export ecosystem approach, bringing together financial, regulatory, logistical, and market access support under a unified framework (The Economic Times, 2026).

EPM is structured around a seven point strategy addressing both financing and ecosystem constraints. These include improving access to credit for digital exporters, enabling affordable working capital through export factoring, expanding access to high-risk and untapped markets, supporting compliance and certification requirements,

strengthening overseas logistics and warehousing, incentivising exporters in remote and hilly regions and enhancing trade intelligence and facilitation services (DGFT, 2026).

Under its financial enablers pillar (*Niryat Protsahan*), the mission introduces instruments such as interest subvention of 2.75 per cent on export factoring costs, capped at Rs. 50 lakh per MSME annually, and structured credit facilities for e-commerce exporters with partial guarantee coverage. These include a Direct e-Commerce Credit Facility of up to Rs. 50 lakh with 90 per cent guarantee coverage, and an Overseas Inventory Credit Facility of up to Rs. 5 crore with 75 per cent guarantee coverage, with interest subvention benefits capped at Rs. 15 lakh per applicant per year (DGFT, 2026).

The ecosystem support pillar (*Niryat Disha*) focuses on reducing non-financial barriers. Key interventions include TRACE (Trade Regulations, Accreditation and Compliance Enablement), which provides reimbursement of 60 per cent for eligible costs under the Positive List and 75 per cent under the Priority Positive List¹, up to Rs. 25 lakh per Importer Exporter Code. FLOW (Facilitating Logistics, Overseas Warehousing and Fulfilment) offers support of up to 30 per cent of approved project costs for overseas warehousing and fulfilment infrastructure, while LIFT (Logistics Interventions for Freight and Transport) provides partial reimbursement of up to 30 per cent of freight expenditure, with an annual ceiling of Rs. 20 lakh per Importer Exporter Code (DGFT, 2026).

The mission also builds on India's recent trade engagements, including preferential access covering nearly 70 per cent of global GDP and two-thirds of global trade across 38 economies through nine concluded free trade agreements. By integrating export financing, compliance support, logistics facilitation and market access initiatives, EPM represents a structural evolution in India's export policy architecture.

1. Under the Export Promotion Mission (EPM), the Positive List refers to a notified list of eligible international certifications, testing requirements and regulatory compliances for which exporters can receive partial reimbursement support (60 per cent). The Priority Positive List is a subset of the Positive List comprising strategically important certifications such as those linked to high-value markets, sustainability standards or critical trade requirements that qualify for a higher reimbursement rate (75 per cent).

For the T&A sector, particularly MSME exporters, these interventions have the potential to reduce working capital costs, support entry into new markets, and mitigate compliance-related constraints that have historically limited competitiveness in global value chains.

9.4.5. The Export Incentive Architecture: RoSCTL, RoDTEP and Duty Inversion

India’s export incentive framework is anchored in two key instruments, RoSCTL and RoDTEP, which reflect a deliberate policy effort to ensure tax neutrality and enhance the competitiveness of Indian exporters. RoSCTL covers garments (HS Chapters 61 and 62) and made-ups (Chapter 63), while RoDTEP applies to yarn, fabric and other upstream products. Together, these schemes represent a calibrated transition towards a rules-based framework that seeks to fully neutralise embedded domestic taxes and levies, aligning India’s export strategy with global trade norms.

RoSCTL rates, differentiated across product categories, are designed to reimburse exporters for state and central taxes and levies not otherwise refunded through existing mechanisms, including electricity duties, fuel levies, mandi taxes, stamp duties, and residual taxes outside the GST input credit framework. The scheme continues to play a critical role in sustaining export competitiveness for apparel and made-ups, particularly for MSME exporters operating on thin margins. The extension of the scheme in April 2026 up to 30 September 2026 provides important policy continuity for exporters and global buyers engaged in long lead-time sourcing arrangements.

In parallel, recent policy actions have addressed structural tax distortions affecting the man-made fibre segment. The earlier inverted GST structure across the synthetic textile value chain, where upstream inputs attracted higher tax rates than downstream products, had led to the accumulation of unutilised input tax credit and working capital pressures, particularly for MSMEs. Recognising these challenges, the government initiated GST rationalisation measures following the 45th GST Council meeting, moving towards greater tax alignment across the MMF value chain from January 2022 onwards.

These reforms mark a significant step towards reducing tax-induced inefficiencies, promoting fibre neutrality, and strengthening India's competitiveness in MMF and technical textiles. Taken together, the evolving export incentive architecture reflects a maturing policy approach that seeks to balance compliance with global trade rules while actively enhancing the cost competitiveness and resilience of India's textile exports.

9.4.6. The Sustainability Imperative

Sustainability has moved from the periphery of India's textile industrial policy to its core, driven by a convergence of increasingly stringent global regulatory frameworks, shifting capital allocation patterns, and India's own commitments under the Paris Agreement. Export markets are progressively adopting graded regulatory regimes, where compliance requirements are expected to deepen over time, making sustainability an evolving and continuous condition for market access.

The European Union, one of India's most important export destinations, accounting for approximately 17 per cent of our garment exports, has emerged as a key driver of this transition. With the recently concluded FTA identifying textiles as a priority sector, forthcoming regulatory measures on product standards, traceability, and due diligence are set to play a defining role in shaping export competitiveness. These include requirements related to durability, recyclability, supply chain transparency, and environmental performance under the Ecodesign for Sustainable Products Regulation (ESPR) and its Digital Product Passport (DPP) framework, the Corporate Sustainability Due Diligence Directive (CS3D), and the EU Strategy for Sustainable and Circular Textiles (EU Green deal), signalling a shift towards more stringent and data-driven compliance systems.

India's policy response to this evolving landscape is advancing across three interlinked dimensions: water, energy and circularity. On water and effluents, the widespread adoption of Zero Liquid Discharge systems and Common Effluent Treatment Plants, particularly in clusters such as Tiruppur, is being reinforced by national targets

to improve water-use efficiency. On energy and emissions, the Perform, Achieve and Trade (PAT) scheme laid the foundation for sectoral energy efficiency improvements, and has now been succeeded by the Carbon Credit Trading Scheme (CCTS). Under CCTS, 173 textile units have been designated as obligated entities required to meet legally binding Greenhouse Gas Emission Intensity targets, marking a transition towards a more comprehensive, market-based carbon regulation framework.

On circularity, India generates over 7000 KTPA of textile waste annually, of which roughly 70 per cent is recovered and processed through a vast informal collection and sorting network. Complementing this, India hosts one of the world’s largest mechanical textile recycling ecosystems, concentrated in clusters such as Panipat and emerging in Tiruppur and Karur, providing a strong foundation for scaling circular solutions. Building on this base, pilots for collection, sorting, aggregation, and channelisation of textile waste for reuse, recycling, and upcycling are being operationalised across geographies. These efforts aim to develop regional recycling hubs, strengthen linkages between waste generators and recyclers, and divert textile waste from landfill and incineration towards higher-value applications, thereby unlocking value through waste valorisation and advancing a more circular textile economy. Together, these developments are contributing to the emergence of an ecosystem-level approach to circularity, moving beyond isolated interventions towards integrated, scalable solutions across the textile value chain.

At the institutional level, the Ministry of Textiles constituted an ESG Task Force to guide and coordinate the sector’s transition towards sustainable and resource-efficient production. This led to the launch of complementary initiatives, including pilot programmes aimed at accelerating the transition towards circular production systems, cleaner technologies, and sustainable textile value chains. These also serve as templates for scaling through policy instruments such as the Tex-Eco initiative, focused on embedding sustainability into manufacturing ecosystems through wastewater recycling, resource-efficient technologies, clean energy adoption and alignment with emerging carbon and circularity standards.

9.5. Towards a Fully Integrated Policy Ecosystem

The effectiveness of a policy framework is ultimately determined not by its design, but by its implementation. While the preceding sections outline a comprehensive and well-calibrated policy architecture, translating this into tangible competitive outcomes depends on how coherently and consistently these instruments are delivered on the ground. Three priorities define this transition from policy intent to industrial transformation.

First, policy stability as a competitive signal. Durable industrial transformation requires investor confidence that the policy environment will remain stable over the horizon of investment decisions. With equipment lifetimes of 10-15 years and payback periods of 5-7 years, even moderate uncertainty regarding policy continuity can materially raise effective hurdle rates. Bangladesh's back-to-back letter of credit system has operated with minimal structural modification since 1982, providing manufacturers with the confidence to invest in scale and long-term buyer relationships. Similarly, Vietnam's industrial park framework, established in the 1990s and sustained over time, has attracted 3261 licensed FDI projects worth nearly USD 37 billion into its textile and apparel sector between 1988 and 2024, led by investors from South Korea, Taiwan, Hong Kong and China (ILO, 2025). India's five-year TEEM mission structure is a meaningful step; extending this into a ten-year Textile Policy Framework for 2027-2037, with clearly defined conditions for mid-term review, would provide the long-horizon credibility required to translate well-designed instruments into sustained investment.

Second, institutional coordination as the backbone of the ecosystem. India's textile policy spans multiple ministries and state departments, often with limited formal coordination. For the Integrated Programme to function as a cohesive programme rather than a set of parallel schemes, alignment across design, eligibility, and disbursement is essential. International experience highlights the importance of institutional simplicity: Bangladesh's investment facilitation model coordinated clearances across functions, while Vietnam's industrial park authorities provide integrated on-site services (Rao et al., 2026).

In India, Textile Seva Kendras have the potential to serve as effective coordination nodes, provided they are empowered not only to disseminate information but also to initiate, track, and facilitate applications across schemes. Strengthening these institutions with domain expertise and equipping implementing agencies with real-time monitoring systems will be critical to improving delivery outcomes.

Third, an inclusive architecture that ensures last-mile access for MSMEs. India’s textile sector continues to exhibit a ‘missing middle’, with a concentration of micro enterprises and relatively few globally competitive medium-sized firms. Addressing this gap is central to scaling exports and industrial capability. Recent policy measures, including the PLI amendments of October 2025, expanded credit guarantee mechanisms, workforce development programmes such as SAMARTH 2.0, and dedicated SME financing initiatives, are directed at easing access barriers. The critical complement, however, is outcome accountability, ensuring that benefits reach the intended segments. This requires systematic tracking of disbursements across firm sizes and adaptive implementation through institutional mechanisms such as the Textile Seva Kendra network.

9.6. Conclusion

Industrial transformation in textiles is not driven by individual schemes, but by the coherence and credibility of the policy ecosystem within which firms operate. The experience of China, Bangladesh and Vietnam illustrates how stable, predictable, and mutually reinforcing policy frameworks can enable investment, scale and sustained integration with global T&A markets. India, with its exceptional raw material base, its 45 millionstrong workforce, and its USD 154 billion domestic market, has long possessed the underlying endowments for such a transformation. What has evolved, through three decades of progressive policy learning, is the ecosystem architecture required to unlock them.

The current policy framework is holistic by design. It addresses scale and cluster integration through PM MITRA and PLI, access to affordable finance through TEEM’s credit guarantee and global financ-

ing components alongside the Export Promotion Mission, operational competitiveness through PMM, SAMARTH 2.0, and the Textile Suvidha Kendra network, and sustainability through the Tex-Eco initiative. Taken together, these instruments represent the most coordinated and comprehensive policy commitment the sector has received.

The opportunity this framework seeks to capture is real, time-sensitive and structurally aligned with India's strengths. Global buyers are actively diversifying supply chains, and India's recent trade agreements with nine nations, including the achievement of tariff parity with Bangladesh and Vietnam in the EU market, remove a long-standing structural constraint. In a global apparel market of USD 525 billion, even a modest increase in India's share from 3 per cent towards 6-7 per cent could generate 3-4 million formal manufacturing jobs and move the sector closer to its USD 40 billion export target by 2030.

What this chapter intends to establish is that transformation is not only about policy instruments, but also about the conditions under which they operate. Scale and cluster integration must advance in line with the spatial logic of PM MITRA, supported by proactive state-level facilitation. Financial architecture must evolve to reflect the sector's seasonality and working capital realities, ensuring that EPM and TEEM financing mechanisms reach MSMEs at scale. At the same time, the green transition, accelerated by regulatory developments such as the Digital Product Passport and the Corporate Sustainability Due Diligence Directive, will require sustained support through cluster-level infrastructure, including ZLD systems and participation in market-based mechanisms such as the CCTS.

India's textile sector has navigated multiple structural transitions over time, from the composite mill era to decentralised production, from quota-based trade to open global competition, and from fragmented MSMEs to the beginnings of an integrated ecosystem. Each transition required a policy response aligned with the scale of the challenge. The current policy framework reflects an effort to address these structural challenges through a more integrated and coordinated approach.

The architecture is in place. The instruments are defined and better resourced than at any previous point. The task ahead, as it has always been, is delivery.

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Financing Competitiveness in India's Textile & Apparel Sector

Lessons from Global Practice

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10.1. The Strategic Case for Financing Competitiveness

For India, textiles and apparel are not merely another manufacturing segment; they are a cornerstone of employment, exports, and industrial transformation. The sector contributes close to 2 per cent of GDP, about 10 per cent of industrial production, and directly supports more than 45 million people with women constituting more than 50 per cent of the workforce (PIB, 2026). In 2024-25, textile and apparel exports rose to about USD 37.8 billion from USD 35.87 billion in 2023-24, and the sector remained a major net foreign exchange earner (PIB, 2025a). At the same time, the government's stated ambition is much bigger, a pathway toward USD 100 billion in textile and apparel exports by 2030. This implies nearly tripling exports within a relatively short time horizon (PIB, 2025b).

The export structure also shows why the challenge is urgent. India's traditional export markets remain concentrated in the United States and the European Union, while India's global textile and clothing export share remains modest compared to leading Asian competitors (Rao et al., 2025). India is the sixth-largest exporter of textiles and apparel globally, with a share of about 4.1 per cent of world trade

(PIB, 2025c). Recent policy assessments indicate that export growth has been positive but remains modest relative to the scale of the target, and that further progress will depend on improvements in logistics, infrastructure, policy support, and stronger state-level implementation.

The sector would require a sustained growth trajectory of around 15-20 per cent per annum to realise the export target. The issue is not whether India has scale, but whether this can translate into export leadership with the required speed. This will require coordinated and targeted attention to finance and capital deployment across the value chain. Recent trade agreements, including the Comprehensive Economic and Trade Agreement with the United Kingdom, which provides duty-free access to 99 per cent of Indian exports to that market, and the Free Trade Agreement with the European Union, under which textiles, apparel, and allied products will attract zero duty from the date of entry into force, are expected to improve market access. However, market access alone will not deliver competitiveness.

The core argument of this chapter is straightforward. India has a wide range of schemes, but these remain fragmented across institutions, instruments, and implementation channels. Textiles parks, incentives, export rebates, technology programs, and skilling initiatives exist, but they do not yet function as a unified competitiveness system. Global experience suggests that successful exporting countries scale faster when they simultaneously finance factories and working capital, finance common infrastructure and logistics, and build institutions that reduce delay, uncertainty, and coordination failures. India needs a similar integrated approach, adapted to its federal structure and industrial landscape. India is often positioned as a fallback sourcing option in the global apparel value chain rather than a primary, scaled node of production. Development finance can help transform this position by strengthening the infrastructure, compliance systems, and institutional coordination that global buyers require of reliable supply chain partners (Rao et al., 2025).

10.2. Why Development Finance Matters

The textiles and apparel business is cash-intensive at every stage. Raw materials must be procured early, while processing, testing, logistics, and shipment occur before export revenues are realized. More importantly, the sector is dominated by firms with weak collateral, especially smaller exporters and processing units, which strengthens the case for development finance. An assessment indicates that only 19 per cent of MSME credit demand was met through formal channels as of FY21, leaving an addressable credit demand of approximately Rs 80 lakh crore which is an important statistic for a sector that is constituted by 95 per cent MSMEs (NITI Aayog and Institute for Competitiveness, 2024). Development finance is not only about subsidized loans. It is about converting export orders, receivables, and shared infrastructure into bankable assets. Evidence across developing economies shows that export growth depends on access to trade finance, particularly for smaller and indirect exporters, because without it, firms cannot respond effectively to external demand (World Bank, 1990).

This point becomes clearer in real sector examples, such as in Bangladesh, where two mechanisms were especially important in the rise of garments. First, bonded warehouses which allowed duty-free import of inputs used for export production and second, back-to-back letters of credit, which allowed firms to obtain imported inputs against confirmed buyer orders without locking up large amounts of working capital (World Bank, n.d.). Together, these instruments reduced financing constraints and supported rapid export expansion.

The broader lesson is that development finance in this sector operates across four levels. First, there is ecosystem finance which includes industrial/textile parks, roads, substations, water, effluent treatment, worker housing, dormitories, labs, and testing infrastructure. Second, there is firm finance which includes machinery, quality control, energy efficiency, digital systems, and scale-up of integrated units. Third, there is trade finance which includes packing credit, bill discounting, receivables finance, insurance, and guarantees. Fourth, there is transition finance which includes everything required for green compliance,

water recycling, renewable energy, traceability, and chemical management. Weakness in any of these areas raises costs and constrains competitiveness (WTO, 2021).

India’s present financing ecosystem reflects this gap. The DGFT Trade Finance Study 2025 notes that approximately 28 per cent of India’s merchandise exports in 2023 were supported through formal export credit, with 75 per cent of that credit denominated in rupees and only 25 per cent in foreign currency (DGFT, 2025). ECGC, which holds a 70 per cent market share in trade credit insurance, provides critical protection against payment defaults, but private insurers remain underutilised due to the absence of capital relief on their policies, which discourages banks and exporters from leveraging them. The study also found that over 70 per cent of exporters and 60 per cent of financial institutions identified the inability to fulfil documentation requirements, limited knowledge of trade finance instruments, and insufficient capacity to perform trade finance operations as the primary reasons for rejection of trade finance applications. Smaller exporters are often pushed toward informal finance with high borrowing costs. When that happens, it does not simply make firms less profitable but also changes their behaviour, causing delays in modernisation, avoiding larger orders, staying out of export markets, and underinvesting in compliance. Hence, financing competitiveness is not a narrow banking issue but the core of export growth.

10.3. Global Lessons from Successful Exporting Countries

The first global lesson is that finance works best when it is embedded in an export ecosystem. Bangladesh did not become a leading garment exporter because one bank alone lent more money. It became competitive because finance, customs treatment, imported-input access, and export orientation moved together. Evidence from global value-chain and development finance studies shows that bonded warehouses and back-to-back letters of credit helped firms import inputs without locking up large working capital, while favorable market access accelerated early (World Bank, n.d., World Bank, 2018; Hos-sain et al., 2022). Bangladesh’s garment sector also hosts 270 LEED-

certified garment factories, including 114 Platinum-rated facilities, the largest concentration of top-tier green-certified apparel manufacturing in the world (Cascale, 2025). At the same time, studies also highlight the limits of that model. Bangladesh remained heavily concentrated in basic garment segments, and moving to faster delivery or higher-value segments required better infrastructure, shorter lead times, and stronger capacity than the ecosystem could easily provide. Finance solved the entry problem. It did not automatically solve the upgrading problem.

The second lesson comes from Viet Nam, where industrial policy and investment facilitation were tied much more closely to export strategy. Trade policy reviews show that foreign direct investment played a central role in Viet Nam's economy, contributing around 20 per cent of GDP, 30 per cent of state budget revenues, and millions of jobs. (Nguyen Tien Long et al., 2023; UNCTAD, 2008; Tran Viet Tuan et al., 2026). Manufacturing absorbed a large share of cumulative FDI, and textiles and garments emerged as a major export sector, with foreign-invested firms predominantly from South Korea (the largest textile-sector investor), Taiwan, the People's Republic of China and Japan, accounting for 65 per cent of the industry's export turnover (Investment and Trade Promotion Centre, 2024). Viet Nam's industrial zones and export processing zones attracted several projects and became key drivers of industrial production (Investment, 2025). Just as important, zone management boards operated a "one-stop-shop" mechanism to simplify investment procedures, and new zones were approved only when existing ones reached sufficient occupancy levels (UNCTAD, 2008). ADB has supported clean energy deployment through ADB's support of over USD 100 million for rooftop solar installations across Viet Nam's industrial facilities illustrating how targeted energy financing can reduce operating costs while improving the sustainability credentials (Viet Nam, ADB, 2026a). Viet Nam's model has another important feature for India. Trade and development analysis shows that outcomes were shaped by rules of origin embedded in trade agreements, notably the EU-Viet Nam FTA, that guarantee market access for zone-based producers, which encouraged

investment in upstream processing to meet origin requirements. This helped build a stronger value chain, even though Viet Nam continues to depend on imported raw materials and many SMEs remain in low-value segments. The lesson here is not that Viet Nam solved everything but that its institutions helped move capital quickly into exportable production linked to market access, and that the state treated industrial zones as implementation platforms, not just land banks (World Bank, 2016).

A third lesson comes from Türkiye. Its key strength lies less in low wages and more in exporting with institutional depth through a strong export-credit architecture. In 2025, Türk Eximbank provided USD 54.3 billion in combined credit and insurance support to exporters, an 11 per cent year-on-year increase, (Türk Eximbank, 2025) In January 2026, the agency expanded its buyer credit program to include letter-of-credit discounting and investment goods financing under overseas contracting projects ensuring that Turkish exporters can offer internationally competitive financing terms to foreign buyers. Development finance assessments further indicate that the institution has historically financed a significant share of exports and has expanded medium- and long-term financing over time. More recent disclosures show continued scaling of support, including the introduction of green export finance. Therefore, a competitive textile and apparel exporter needs an official export-credit institution that is large, responsive, and well-integrated with the wider banking system (World Bank, 2020). For instance, ADB, in May 2026, launched a USD 20 billion Asia-Pacific Digital Highway financing fiber networks, satellite links, and regional data centres. Its broader portfolio has long funded digital infrastructure alongside digital start-ups and digital public services spanning education, finance, governance, and health in countries such as Uzbekistan, India, Indonesia, Viet Nam, and Malaysia (ADB, 2026b, 2026c).

The fourth lesson comes from the People’s Republic of China which shows the power of low-cost capital and risk insurance when combined with scale. Comparative analysis of export systems highlights that relatively low lending rates, combined with active liquidity

support from the central bank, have helped maintain a low cost of capital for productive sectors. These systems are complemented by export incentives and strong trade insurance mechanisms, including support from the People's Republic of China Export & Credit Insurance Corporation, (Sinasure) which provides high levels of coverage and effectively allows firms to borrow against export flows. This creates a very different financing environment compared with one in which smaller exporters rely on high-cost informal borrowing.

Taken together, these cases show a clear pattern. The most successful exporters did not rely on a single instrument. They combined low-cost working capital, strong export-credit support, industrial zones with reliable infrastructure and fast approvals, and a predictable trade policy. Public institutions played a central role in reducing risks that private finance alone would not address. India can learn from all four examples, but it should also recognize the limits. Bangladesh shows the risk of remaining in low-value segments. Viet Nam shows that scale can coexist with upstream dependence. Türkiye shows that export finance institutions must be large enough to matter. The People's Republic of China shows how sustained cost-of-capital advantages can reshape global competitiveness over time (ADB, 2023a).

10.4. Lessons from Development Finance Institutions

Development finance institutions offer a useful practical lesson; finance works best when it is directed at a specific missing function. ADB's operations in textiles and apparel show that the most effective interventions are not broad credit lines, but targeted financing that addresses a clearly defined constraint in the production system.

One strong example is the 2015 ADB-supported loan to BRAC Bank in Bangladesh wherein support was given to finance the construction and upgrading of garment factories to meet post-Rana Plaza structural, fire, and electrical safety standards. A parallel loan to Eastern Bank Limited followed a similar model, financing socially and environmentally sustainable projects in the textile and garment sector with an explicit gender action plan. Project assessment further explains that the financing supported sustainable investments, includ-

ing the construction and expansion of factories meeting improved labor, safety, and environmental standards. What worked here was not just the financing itself, but the delivery mechanism, wherein, through a domestic financial intermediary with knowledge of local firms and compliance gaps, finance was directed toward a concrete bottleneck that commercial banks were reluctant to fund on their own (ADB, 2015).

A second set of ADB-supported operations shows the same logic in green manufacturing. In 2022, ADB supported financing for Envoy Textiles to invest in energy-efficient spinning machinery and related modernization. In 2024, ADB provided financing to Ananta Knitwear to develop a new knit fabric facility with a green building and modern production systems. In both cases, the project scope was narrow, measurable, and clearly tied to improvements in productivity and sustainability. These examples show that development finance has the highest value where it provides patient capital for equipment, energy efficiency, and green buildings that improve competitiveness but have long payback periods or uncertain commercial appetite from local lenders. This logic is reinforced by policy instruments such as Bangladesh’s Green Transformation Fund, which addresses the mismatch between long-term sustainability investments and short-term commercial finance (ADB, 2025a).

A third lesson comes from skills. ADB’s Skills for Employment Investment Program was designed to scale up skilling for new entrants and upskilling for existing workers in priority sectors. In 2023, ADB also approved a large program on Skills for Industry Competitiveness and Innovation, including support for advanced skills such as smart textile technologies and green production systems. The positive lesson is that development finance has recognized that apparel competitiveness depends on labor capability, not just capital investment. Evidence from Bangladesh’s garment sector shows that many factories prefer their own trainers or highly tailored in-firm programs, because generic provider-led training can interrupt production and does not always match shop-floor needs. This is an important lesson for India that skilling is most effective when it is tied directly to industrial organization, supervisors, line balancing, and factory systems (ADB, 2023b).

A fourth lesson is less visible but equally important, trade facilitation can be a high-return form of development finance. Evidence from cross-border paperless trade studies shows that exporting a garment product can involve dozens of documents, including multiple originals and copies across agencies. These frictions matter because even efficient factories lose competitiveness if documentation, border processing, and customs coordination are slow. The implication is that export competitiveness is often constrained by “soft” frictions that do not appear in factory balance sheets but strongly affect delivery time and working capital. Development finance that reduces paperwork, digitizes certificates, and improves coordination across border agencies can therefore be just as critical to competitiveness as investments in physical capital (ADB, 2021).

Evidence from other countries reinforces these patterns. In the People’s Republic of China ADB’s Promoting Industrial Park Green and Low-Carbon Development Project supports the transition of existing industrial parks toward resource efficiency, renewable energy integration, and digital environmental monitoring, treating sustainability as a park-level systems investment rather than a firm-level retrofit (ADB, 2026d). A complementary operation, the Eco-Industrial Park Waste-to-Energy Project demonstrates how circular economy principles can be embedded within industrial zone infrastructure (ADB, 2023c). ADB’s knowledge work on industrial park quality, including the India Industrial Park Rating System (IPRS 2.0), provides a diagnostic framework for assessing park-level competitiveness across infrastructure, connectivity, environmental management, and business facilitation, directly relevant to India’s PM MITRA parks scheme (ADB, 2023d).

In Viet Nam, development finance and policy support have been closely aligned with industrial zones and export-oriented investment, with the ADB-supported Rooftop Solar Project illustrating this at the enterprise level (ADB, 2026a). On the other hand, the Solar Rooftop supported by ADB in India demonstrated a blended finance model where ADB and a domestic partner bank achieved significant leverage of concessional capital into commercial-scale deployment (ADB, 2025b). The Monsoon Wind Power Project in the Lao People’s Demo-

cratic Republic extends this logic to utility-scale renewable energy that can serve industrial zones and export processing areas. These approaches reduce transaction costs and credit risk by treating infrastructure and finance as part of a single system rather than separate interventions (ADB, 2025c).

Sri Lanka offers a different but equally relevant lesson. Flexible financing instruments, such as the Small Expenditure Financing Facility, designed for smaller, dispersed investments including support for energy efficiency, feasibility studies, and incremental upgrades have been effective in addressing the fragmented nature of industrial upgrading (ADB, 2024). These instruments recognize that many competitiveness improvements occur through small, continuous investments rather than large capital projects, particularly for smaller firms. ADB’s broader climate finance architecture, including the Innovative Finance Facility for Climate in Asia and the Pacific (IF-CAP) and the Climate Innovation and Development Fund (CIDF), provides additional platforms for channeling concessional capital toward industrial sustainability transitions at scale (ADB 2026c, ADB 2026e).

Across these experiences, a consistent pattern emerges. Development finance works best when it is targeted, embedded in existing production systems, and aligned with policy and institutional frameworks. It is most effective when it supports compliance, green capex, trade facilitation, and industry-linked skills rather than when it operates in isolation through generic training programs, standalone credit lines without ecosystem support, or isolated interventions that do not address complementary constraints. The underlying reason is straightforward, as textile and apparel competitiveness is an ecosystem outcome. Finance can address individual bottlenecks, but it cannot substitute for coordination across infrastructure, policy, institutions, and markets. Development finance is positioned to deliver substantial results when it operates within that system rather than outside it.

10.5. Key Gaps and Opportunities in India’s Textile Sector

The first area for strengthening is the fragmentation of production ecosystems. Major clusters such as Tiruppur, Surat, Ludhiana,

and Delhi National Capital Region (NCR) have grown organically and remain dispersed, with over 95 per cent of textile enterprises classified as micro, small, or medium (NITI Aayog, 2025). This has allowed flexibility and entrepreneurial growth, but it also limits economies of scale, coordination, and production efficiency. By contrast, many competitor economies operate through more integrated ecosystems in which processing, utilities, logistics, supplier networks, and approvals are more closely linked. Addressing this fragmentation presents a clear opportunity to not only improve production efficiency, but also to strengthen access to finance, as banks are more willing to lend into visible, serviced, and integrated ecosystems (Wazir advisors, 2016; SIDBI, 2025; ADB, 2020).

The second area is the strengthening of export-credit architecture. Available evidence suggests that only a limited share of exports is supported by formal export credit, while risk coverage mechanisms remain concentrated among larger firms. Smaller exporters continue to face documentation burdens, delays in claims, and limited risk protection, and in many cases rely on higher-cost informal finance. This presents a significant opportunity. Strengthening export finance systems can directly lower the effective cost of production and enable firms to compete more effectively in markets where margins and delivery timelines are critical (CLE 2025; RBI 2023).

Another area relates to policy design for the missing middle. The Production Linked Incentive (PLI) scheme for textiles marked an important shift by targeting MMF apparel, MMF fabrics, and technical textiles segments where scale and value addition are essential (PIB, 2025d). However, initial design features such as entry thresholds and compliance requirements limited participation by mid-sized firms. Subsequent adjustments and increased participation indicate that the scheme is gaining traction and highlight the importance of adaptive policy design. The opportunity lies in ensuring that such schemes can more effectively support firms across the full size spectrum, particularly those positioned to scale (MoT, 2021).

The fourth area is the pace of industrial infrastructure development. India's PM MITRA parks scheme is conceptually strong, with

its focus on large integrated parks, shared infrastructure, and end-to-end value chain integration. Government communications indicate significant investment interest and employment potential across the proposed sites. As implementation progresses, accelerating execution timelines will be critical. Faster delivery of these parks can unlock early investment, improve ecosystem efficiency, and strengthen India’s positioning in global value chains (MoT, 2025).

The fifth area is implementation coordination across the Union and the states. The NITI Aayog Export Preparedness Index, which ranks states on export infrastructure, trade facilitation, and institutional coordination, reveals substantial variation across states in the quality of the institutional environment within which firms access financing and trade facilitation instruments (IFC, 2023). Trade policy reviews indicate that export growth remains affected by gaps in logistics, infrastructure, and regulatory processes, and that stronger center–state coordination is required (WTO, 2021). This reflects a growing recognition that competitiveness is a system outcome rather than a set of isolated policy measures. Strengthening institutional coordination, therefore, presents a major opportunity to align policy intent at the national and sub-national level (WTO, 2021).

A final and very practical area is the financing of green compliance in legacy clusters. The experience of Tiruppur illustrates both India’s strengths and its future opportunities. The cluster successfully transitioned toward zero liquid discharge and large-scale water recycling, representing a significant environmental and industrial achievement. However, the ongoing cost of maintaining common effluent treatment systems continues to affect competitiveness. This highlights the need for more sustainable financing solutions for shared environmental infrastructure. With the right financing frameworks, such compliance systems can become a source of long-term competitiveness rather than a cost burden.

10.6. A Financing Architecture for the Hundred-Billion-Dollar Path

Building on the gaps and global lessons discussed above and drawing on the four categories of competitiveness finance discussed in

Section 10.2, India's financing strategy can focus on a set of clear principles that can translate ambition into scale.

10.6.1 a. Ecosystem finance

The first principle for India is that public finance should not attempt to fund the entire export push. Its primary role is to attract private capital by reducing risk at the right points. Experience already shows that credible public platforms can attract significant private interest. PM MITRA parks have been designed with this objective, and the combination of earlier PLI approvals and the recent expansion signals that firms respond when there is some predictability in incentives and demand. The financing strategy should therefore focus on catalytic public support, including viability gap funding for common infrastructure, first-loss or guarantee support for exporters, and long-tenor debt for utilities and transition investments that commercial lenders underprovide.

The second principle is to treat common infrastructure as productivity infrastructure. In textiles and apparel, shared facilities such as worker housing, transport, water recycling, effluent treatment, testing laboratories, design centres, plug-and-play units, and logistics connectivity are not supplementary. They directly affect lead times, compliance costs, labour retention, and the ability of financial institutions to assess project viability. While large industrial mega hubs provide a strong greenfield model, existing clusters such as Tiruppur, Surat, Ludhiana, and NCR will continue to drive a large share of export growth in the near term. They require a dedicated legacy-cluster modernization window, combining long-tenor financing with targeted support for common facilities. PM MITRA is built on the principle that ready infrastructure attracts investment. Each park delivers developed industrial space with core infrastructure, support infrastructure and external connectivity to ports and freight corridors. Viet Nam's experience points the same way, where infrastructure readiness within industrial zones has driven foreign direct investment, supported by zone management boards operating one-stop-shop mechanisms (Organisation for Economic Co-operation and Development, 2025).

The public private partnership through a master developer model allows public capital support to be combined with private investment.

The third principle is to use state-level policy competition more effectively. States already offer a range of incentives, including capital subsidies, payroll support, power subsidies, and infrastructure assistance. While this has encouraged investment, it has also created unevenness and complexity for firms. A more coordinated approach would involve a co-funded performance framework in which central support is linked to measurable state-level outcomes such as timelines for land allocation, infrastructure provision, environmental clearances, worker housing delivery, and park occupancy. Such an approach would strengthen predictability for investors while improving accountability in implementation.

10.6.2 b. Firm-level finance

The fourth principle is to direct firm-level finance toward machinery that is modern and energy efficient. Weaving and processing equipment sets the unit economics across much of the value chain, and the composition of the installed loom base shapes the quality, consistency, and throughput with which exporters serve premium markets. India operates one of the largest decentralised weaving bases in the world, and the powerloom sector alone accounts for more than half of national cloth production (Office of the Textile Commissioner, Ministry of Textiles). That scale positions the move to shuttleless, automated, and energy-efficient looms as a direct route to higher output per worker and to lower energy and water use per unit of cloth. Development finance can support this in a practical way. In Bangladesh, the IFC-led Partnership for Cleaner Textile worked with local banks such as BRAC Bank to design energy-efficiency loan products for textile factories (IFC, 2025). India can draw on similar models as it modernises its weaving and processing base.

The Fifth principle is to finance capabilities, not only assets. In many exporting countries, productivity gains in apparel are driven by improvements in industrial engineering, line supervision, quality systems, factory digitization, compliance management, and middle-

management capability. Skills initiatives in India have already created a foundation, with large numbers of workers trained under schemes such as SAMARTH. The next step is to connect this skilling architecture more directly with financing. Financial institutions and development finance windows can incentivize firms that combine capital investment with structured in-factory productivity and supervisory training.

10.6.3 c. Trade and Liquidity finance

The Sixth principle is to place working capital at the center of policy rather than at the margin. India cannot reach USD 100 billion in exports if formal export credit continues to support only a minority of export flows. The objective should be to move well beyond current coverage and build a system in which confirmed orders, receivables, and insured export flows become lendable for MSMEs. This requires mainstreaming invoice discounting, factoring, receivables finance, order-backed credit, equipment leasing, and digital bill discounting platforms. Recent reforms such as the expansion of the Trade Receivables e-Discounting System and the use of credit guarantees to support invoice financing provide an important foundation for this shift.

The Seventh principle is to treat document reduction and logistics as part of financing reform. Exporters continue to face a relatively high documentation burden compared to leading competitors, which increases transaction costs and lengthens cash cycles. Investments in digital customs systems, pre-certification processes, testing infrastructure near clusters, and faster refund mechanisms should be treated as part of the financing architecture. Faster processing of documentation directly reduces working capital requirements and improves liquidity for firms.

10.6.4 d. Transition finance

The Eighth principle is to build a dedicated transition-finance window for green competitiveness. This is no longer optional. Buyers increasingly demand low-water, low-carbon, traceable, and chemically compliant supply chains. Recent development finance operations

demonstrate that investments in energy-efficient machinery, green buildings, and resource-efficient production systems can be financed when the use of funds is clearly defined. India should therefore establish a textile transition-finance platform that supports rooftop solar, wastewater recycling, energy-efficient machinery, digital traceability, chemical management, recycling capacity, and certification. Financing instruments can be linked to verified resource savings, while common infrastructure should be prioritized where compliance costs are too large for individual firms.

With a suite of such well-coordinated interventions, the pathway to USD 100 billion in exports becomes more achievable. The objective is not to expand subsidies or rely solely on increased bank lending under existing conditions. It is to use development finance strategically to reduce risk, improve the bankability of infrastructure and firms, shorten approval and payment cycles, and expand access to formal trade credit for MSMEs. In practical terms, this means making the sector easier to finance, easier to invest in, easier to comply with, and easier to export from. That is the core of financing competitiveness.

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11

India's T&A Vision and Strategy for USD 100 Billion Exports

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11.1. Introduction and Key Findings

This book began with a simple question: why does a country with a complete fibre to fashion value chain account for only about 3 per cent of global apparel exports? India's share of global apparel exports has hovered around 3 per cent since 2000, the same year Bangladesh was at 2.2 per cent and Vietnam at barely 1 per cent. Today, Bangladesh is at around 9 per cent and Vietnam 6 per cent. India, despite its large workforce, abundant cotton, and rich craftsmanship, has missed much of the 'China+1' diversification opportunity that global buyers created. India's challenge is not a shortage of cotton, labour, entrepreneurs or markets. It is that these strengths have not come together to build a globally competitive apparel manufacturing ecosystem. While India relied on individual strengths across the value chain, competitors built integrated ecosystems that combined scale, finance, infrastructure, skills and trade facilitation around the needs of export manufacturing. This chapter synthesises the key findings from the book and presents a reform agenda for building a globally competitive T&A sector capable of achieving India's USD 100 billion export vision by 2030.

Based on the analysis across Chapters 1-10, the key findings across the 5F value chain and the five pillars of competitiveness are as follows.

11.1.1. Key Findings

- The Farm Story: How Was the Cotton Gene Revolution Killed?**
 India's Bt cotton revolution between 2002 and 2014 nearly tripled production from 13.6 million bales in 2002-03 to 39.8 million bales in 2013-14, among the fastest agricultural productivity transformations globally. Since then, production has declined to 29 million bales in 2025-26 against a trajectory that pointed to 65.3 million for the same period. Regulatory inaction on next-generation GM technology, IPR suppression through the Cotton Seed Price Control Order, and under-investment in public sector R&D converted India from one of the leading cotton exporter to a net importer.
- Fibre to fabric and processing gap:** India is one of the leading cotton yarn exporter and cotton yarn exports peaked at USD 4.8 billion in 2013. Since then, FTA-driven preference (Pakistan and ASEAN) erosion has reduced India's share of China's cotton yarn imports from 42 per cent in 2013 to 13.57 per cent by 2022, and capacity utilisation in spinning mills has fallen to 70-75 per cent. In weaving and processing, India holds just 2 per cent of global shuttle-less loom capacity, and 97 per cent of fabric production originates in the decentralised sector. The processing and finishing deficit is the most consequential gap where finished and dyed fabrics yield 30-50 per cent higher unit realisations than grey fabric, yet India predominantly exports grey. MMF fabric exports stand at USD 1.4 billion against a global trade of USD 60.6 billion. The QCO rescissions and GST rationalisation of 2025 have removed the policy distortions that suppressed MMF competitiveness for a decade. Closing the conversion gap now requires cluster level investment in shuttle-less loom replacement, ZLD-compliant processing infrastructure and digital textile printing, which cuts water and chemical consumption by 60-70 per cent relative to conventional methods alongside global organic textile standards (GOTS) and Oeko-tex certification.

- **Scale, Clusters and Infrastructure Gaps:** India's average registered garment factory employs 131 workers, and only 1 in 10 garment workers is employed in a registered establishment. The 'missing middle', mid-sized, export-ready manufacturing units capable of handling large fast-turnaround orders, is India's defining apparel constraint, leaving it characterised by global buyers as a fallback supplier rather than a primary sourcing destination. In contrast, China has 216 specialised textile clusters, where the co-location of spinning, weaving, processing, garment manufacturing and logistics creates integrated manufacturing ecosystems. Vietnam's investor-ready parks, and Bangladesh's EPZs provide plug-and-play production environments that minimise transaction costs. India's PM MITRA parks have been approved but are not yet fully operational. Weak cluster infrastructure the absence of testing centres, processing houses, yarn banks, bonded warehouses, CETPs, and worker housing at the cluster level has raised compliance costs, lengthened lead times, and weakened buyer confidence.
- **Capital and Cost Constraints:** Real interest rates (after accounting for inflation) of 6.2-8.2 per cent are far higher than Bangladesh (negative real rates), Vietnam (0-1 per cent) and China (3.1 per cent). Liquidity pressures are aggravated by delays in GST refunds and RoDTEP/RoSCTL disbursals along with the withdrawal of the Interest Equalisation Scheme. India's export support architecture also needs to evolve towards a more comprehensive risk sharing model drawing lessons from China's Sinosure (90-95 per cent quasi-collateral coverage for MSMEs). Bangladesh's back-to-back letter of credit converts a confirmed buyer order into collateral, removing the capital barrier for MSMEs. What is required is not new institutions but the mainstreaming of value-chain financing invoice discounting, factoring, receivables financing, and order-backed credit within the existing banking architecture. FDI has been equally constrained, as cumulative T&A FDI between 2000 and 2024 totalled only USD 4.56 billion, less than 1 per cent of India's total FDI

receipts, against Vietnam where foreign-invested firms account for 65-70 per cent of apparel exports (VITAS, 2024). Going forward, India's financing system should focus on seven priorities: catalytic financing for industrial ecosystems, investment in common infrastructure, firm level capability development, easier access to working capital, simplified documentation, wider adoption of value chain financing and dedicated support for the green transition. Together, these reforms would make the sector easier to finance, invest in, comply with and export from.

- **Labour, Skilling and Tech-upgrading:** India's apparel sector employs 45 million workers, with female labour force participation at 47.6 per cent, one of the strongest engines of women's formal employment in the economy. Yet the training architecture has not kept pace with what global buyers require. SAMARTH has trained over 6.07 lakh workers, but the programme remains volume-driven rather than product-line and technology-specific. Mid-level supervisor training, the most acute skill gap on the factory floor is largely absent. Vietnam's more effective model rests on direct industry-academia partnerships where vocational schools co-design curricula with apparel firms, aligned to specific product categories and buyer requirements; this is what converts training to productivity gains. On machinery, India imports approximately USD 2.5 billion in textile machinery annually, with 66 per cent sourced from China. India should pursue technology transfer through joint ventures with Chinese and Korean machinery manufacturers particularly in MMF processing, shuttle-less weaving and CAD, CAM enabled cutting so that machinery capability is built domestically over time, reducing costs and creating a domestic capital goods base that supports MSME modernisation at scale.
- **Institutions and Trade Facilitation:** India's customs efficiency score was 3.0 in the World Bank's Logistics Performance Index (2023), reflecting persistent bottlenecks in customs clearance and border procedures. De (2024) proposes end to end integration of stakeholder systems to strengthen India's trade

facilitation architecture. In the apparel industry, where buyers increasingly compete on speed, flexibility and reliability, delays in customs clearance, regulatory approvals and export incentive disbursements raise transaction costs, lengthen lead times and weaken export competitiveness. Despite 20 trade agreements, utilisation remains low. For example, apparel exports to Japan have declined since the India-Japan CEPA came into force in 2011, illustrating that tariff preferences alone do not guarantee export growth. China's National Single Window integrates customs, licensing and regulatory approvals into a unified digital platform, enabling faster and more predictable export processing. Bangladesh BEPZA provides one stop regulatory services that reduce compliance costs and approval timelines for exporters. India has to integrate existing digital platforms and simplify trade procedures so that exporters can move goods, documents and approvals through a seamless end to end system with minimal compliance costs and delays.

Based on our comparative analysis across Chapters 4-10, Table 11.1 summarises the policy parameters across major apparel exporters and the integrated reform roadmap is presented in Table 11.2.

Table 11.1
Policy Comparison Matrix Across Key Apparel Exporters

Pillars	China	Bangladesh	Vietnam	India
Scale & Capacity	• T&A: USD 298.3 billion. • Apparel: USD 153 billion (29% share). • Apparel X are 51% of T&A X. • 14600 apparel firms; 7-8 million workers. • Mega-factories: Shenzhen (>1 lakh), Esquel (35000) 216 specialised clusters; 30-50 km integrated ecosystems.	• T&A: USD 52.1 billion. • Apparel: USD 50 billion (9% share). • Apparel X are 96% of T&A X. • 3556 export-oriented factories; average 1200 workers/factory • Vast subcontracting network.	• T&A: USD 44.4 billion. • Apparel: USD 33.48 billion (6% share) • Apparel X are 75% of T&A X. • 14313 T&A firms. • Exports led by FDI firms (>5000 workers) 90% SMEs. • FDI fills the scale gap.	• T&A: USD 36.1 billion. • Apparel: USD 15.7 billion FY25 (3% share). • Apparel X are 43% of T&A X. • 9000-10000 firms (ASI 2022-23). • Average: 131 workers (registered); 600-800 (export-oriented). • Missing middle; under-utilised capacity.
Capital	• Nominal: 3.3%; Real: 3.1%. • Sinosure: 90-95% export coverage; quasi-collateral for MSMEs. • VAT rebates 13-16%; investment tax credits 10%.	• Nominal: max 9%; Real: negative (inflation 10%). • Back-to-Back L/C: cash-flow-based. • Pre-shipment refinance, Packing Credit, Export Credit Guarantee Scheme (80-95% risk cover).	• Nominal: 3-5%; Real: 0-1% • Cumulative T&A FDI: USD 37 bn (1988-2024). • CIT reductions 10-20%. • VDB export credit and guarantee programmes.	• Nominal: 9-11%; Real: 6.2-8.2%. • IES and ATUFS withdrawn. • Delayed GST/RoDTEP disbursements. • Export credit coverage needs expansion, MSMEs rely on informal credit at 18-24%.

Labour	• 20 million workers. • 60% women. • USD 270-300/month; 40 hrs/week. • High automation; shifting to dark factories.	• Approximately 3 million workers. • 57% women. • USD 113/month. • EPZ dormitories reduce attrition.	• 3.4 million workers. • 75% women. • USD 270-290/month. • Productivity: USD 4717/worker.	• 45 million workers • 47.6% women. • USD 180/month; 48 hrs/week. • Skilling gap and attrition 20-25%; mid-management training absent.
	Institutional Mechanisms & Trade Facilitation • NSW: 99.9% coverage. • 3-4 day clearance; two documents. • AEO: 5882 firms; CBZs 23 FTAs. • Yuan undervaluation as implicit subsidy, 16-30% estimates (IMF 2026, US Treasury, Goldman Sachs, 2025).	• Bonded warehouse. • BEPZA: one-stop at factory gate 7 day export; 11 day import clearance. • LDC duty-free access: 52 countries.	• 17 FTAs (EVFTA, CPTPP, RCEP); 433 industrial parks, 4 EPZs. • Import duty deferred 275 days. • VINATEX, MOIT, MOLISA co-ordination.	• RoSCTL, RoDTEP, PLI, SAMARTH (scheme-heavy, fragmented). • PM MITRA: 7 parks approved, none fully operational. • 17-18 documents per shipment; time tax; 20 trade agreements; tariff parity in EU post-FTA.

Source: Authors' own compilation from ITC TradeMap (2024); DGFT (2023-24); IMF (2025); ILO (2025); BGMEA (2025); CNTAC (2024); VITAS (2024); World Bank Logistic Performance Index (2023); Rao et al. (2025). Note: India's apparel export figure reflects FY2025-26 (DGFT). Other country data from ITC TradeMap, 2023.

11.2. Global Lessons from China, Bangladesh and Vietnam

The comparative analysis of China, Bangladesh and Vietnam in this book indicates that they did not build globally dominant T&A sectors through individual incentives. They built coherent, stable, mutually reinforcing policy architectures that gave investors the confidence to commit, firms the infrastructure to compete and workers the skills to produce at global standards. The lessons for India from each of the three models are as follows.

11.2.1 *China: Build the Ecosystem, Not the Factory*

China's dominance in global apparel trade, 29 per cent of global apparel exports from USD 32 billion in 2000 to USD 153 billion today, has been built on vertically integrated mega-clusters and fibre-to-fashion textile towns, reinforced by a concessional finance architecture and highly predictable five-year industrial planning. China's 216 specialised clusters are built on the co-location of firms across the textile value chain. From spinning and weaving to processing, garment manufacturing, logistics and specialised services creating integrated ecosystems that deliver the scale, speed and reliability global buyers demand. Mega-factories like Shenzhou International (1 lakh workers, 550 million garments annually) and Esquel (35000 workers, 80 million shirts) are example anchor firms of cluster-level systems that make operating at that scale rational for every unit within the ecosystem, not just the largest.

China's financial architecture is equally important. Sinasure, established in 2001, provides political and commercial risk coverage at premium rates of 1-3 per cent, covering 90-95 per cent of export value, functioning as quasi-collateral that enables MSMEs without fixed assets to access working capital from commercial banks. This is complemented by VAT export rebates of 13-16 per cent and a monetary framework that maintains a real cost of capital of approximately 3.1 per cent.

The central lesson from China is that the appropriate unit of competitive strategy is the cluster, not the individual factory. PM MITRA parks are the right institutional vehicle for this vision, but implement-

ing them requires a shift from land-allocation models to governance-embedded, fibre-to-fashion ecosystems with delegated authority, mandatory shared infrastructure (CETPs, testing labs, bonded zones, worker housing) and cluster-level digital compliance platforms. Equally, evolving ECGC into a Sinasure-equivalent, broader coverage, MSME-subsidised premiums, receivables as bankable collateral, is a learning from the China model. Last lesson is eliminating time tax on export manufacturing and India's supply chain must move at the speed of the consumer.

Besides all these aspects, one very important but much less talked about is the issue of undervalued Chinese currency. Various agencies (IMF, 2026; US Treasury, 2026 and Goldman Sachs, 2025 etc) have given estimates that range from 16 per cent to 30 per cent undervaluation of Chinese yuan vis-à-vis US dollar (see Chapter 1 and 5 for details). This acts as a big export subsidy to T&A exporters. No wonder, it becomes extremely difficult for countries that follow market principles to find their currency's true exchange rate to compete with Chinese exports as its exchange rate is heavily manipulated (undervalued). Lesson for India is not to prop up Indian Rupee's value vis-à-vis US dollar or Euro artificially. Let it find its market value as per market's demand and supply principles.

11.2.2 Bangladesh: LDC Status and Financial Architecture

Bangladesh built the world's second largest apparel export sector despite a limited domestic textile base and dependency on imported yarn and woven fabrics. Two structural advantages powered this ascent. The first was its LDC status, which gave it duty-free access to 52 markets and most consequentially, a 12 per cent tariff advantage in the EU the world's largest apparel import market against which India competed at a structural disadvantage. The India-EU FTA (concluded in January, 2026, to be implemented post ratification) places India on tariff-equivalent terms with Bangladesh in the EU for the first time. The second, deeper advantage is a financial architecture deliberately designed around apparel cash flow needs. The back-to-back letter of credit (BBLC), introduced in 1984, converts a confirmed foreign

buyer’s order into collateral, enabling manufacturers without fixed assets to procure imported inputs without tying up working capital. The BBLC operates alongside the Export Development Fund, Pre-shipment Credit Refinance at a maximum borrower rate of 5 per cent, and Packing Credit covering domestic production costs outside the BBLC. BEPZA provides one-stop regulatory services at the factory gate, with average export clearance of seven days against India’s seventeen.

The lessons for India from Bangladesh are on three aspects. On capital facilitation, the core ask is to adopt cash-flow-based instruments modelled on the back-to-back letter of credit system, and to build the banking sector’s capacity to understand and serve the apparel industry’s specific working capital dynamics. On policy stability, the lesson is to ensure that schemes carry guaranteed fixed terms of at least five years without annual changes subject to periodic review, and to draw from Bangladesh’s EPZ experience in delivering fully serviced industrial infrastructure with low-cost utilities and streamlined approvals conditions that gave investors the planning horizon to commit capital and scale. On trade logistics efficiency, the priority is to streamline claims, reduce refund delays and simplify compliance hurdles by learning from Bangladesh’s bonded warehouse model and to build a true one-stop integrated clearance model, with PM MITRA parks as the pilot for this institutional redesign.

11.2.3 *Vietnam: Align FDI, FTAs, and Industrial Infrastructure as One System*

Vietnam’s rise from 1 per cent to 6.3 per cent of global apparel exports in 25 years is the most instructive case for India because Vietnam shares India’s SME dominated industrial structure, 90 per cent of T&A enterprises are SMEs, and yet has outperformed India decisively despite importing 51 per cent of its textile inputs from China. Two interconnected lessons define Vietnam’s success: first, the deliberate coherence between FTA utilisation, FDI attraction, and investor facilitation; and second, the integration of spatial planning, industrial clustering, and workforce development into a single, demand-responsive ecosystem.

Doi Moi reforms of 1986 opened the sector to private enterprise and foreign investment. WTO accession in 2007, followed by a network of 17 concluded FTAs including CPTPP and EVFTA, deepened market access. It is important to emphasise that beyond tariff gains, yarn-forward rules of origin (ROO) under CPTPP and EVFTA compelled foreign investors to localise upstream textile production within Vietnam to qualify for preferential access. This mechanism converted market access agreements into catalysts for integrated industrial development. FDI worth USD 35-37 billion in cumulative T&A from South Korea, Taiwan, Japan and China followed, bringing capital, technology, buyer relationships and GVC integration. The result is visible in worker productivity (USD 4717 per worker) driven by investment in skills training through industry-academia partnerships.

The lessons Vietnam offers India are specific and actionable across four dimensions. First, on trade and market access the lesson goes beyond securing tariff preferences to ensuring that FTA utilisation is actively supported through investor-facing infrastructure rules-of-origin advisory services, compliance support facilities and FDI facilitation desks that help firms actually capture the preferences negotiated. Second, on global sourcing integration through deep integration into global sourcing networks, with major international brands investing directly in production processes. India must create the conditions for this buyer-led investment by demonstrating reliability, scale and compliance consistency across its park ecosystem. Third, on investment environment, Vietnam's model rests on clear, rule-based investment frameworks that provide long-term certainty, with legally guaranteed incentives and simplified administrative procedures for export-oriented firms. Fourth, on infrastructure, Vietnam's port-linked industrial clusters, example, the Rang Dong Industrial Urban Seaport Complex spanning 520 ha combines manufacturing, logistics, environmental infrastructure and port connectivity in a single zone, attracting upstream investors who require the full ecosystem, not just land. PM MITRA parks are the right vehicle for India, but they must be designed to this standard port-linked, fully serviced, and governed by guaranteed long-term incentive frameworks. Finally, on labour,

skilling through structured partnerships between enterprises, vocational schools and industry associations is what delivers the productivity gains.

India’s EU FTA and UK CETA represent a comparable opportunity to Vietnam’s EVFTA and CPTPP. The question is whether India will design the complementary FDI facilitation infrastructure , sector-specific FDI desks within PM MITRA parks, ROO advisory services, park-level compliance infrastructure , that converts preferential market access into upstream investment attraction. Vietnam’s export success is disproportionately driven by foreign-invested firms rather than domestic SMEs. India must attract FDI while simultaneously building the domestic MSME upgrading infrastructure that the Vietnam model has not prioritised.

11.3. Lessons from Within India: What Our Own Champions Show

Across four very different organisations, a family-founded garment exporter, a globally diversified manufacturer, a century-old knitwear cluster and a home textile innovator, Chapter 8 documents Indian T&A success built at scale, without the policy architecture this book argues, India needs.

Shahi Exports built a USD 1 billion, 1 lakh worker enterprise from Rs. 5000 and 15 women in 1974 through two choices that most Indian garment firms have not made- vertical integration, controlling 85 per cent of fabric in house, which gives authority over cost, quality, lead time, and traceability and a deliberately female workforce of 73 per cent, built on the operating principle that worker welfare and commercial performance reinforce rather than compete with each other. Low attrition, high stability and buyer confidence that cannot be easily replicated are the commercial returns on that principle.

Pearl Global Industries, USD 543 million in revenues across five countries, demonstrates that geographic diversification of production is a strength. Its multi-country network absorbed COVID-19 shutdowns, Red Sea disruptions and the recent US tariff escalations where single-location competitors could not. To be emphasised as a catalyst of change is their Muzaffarpur factory in Bihar, built around

a first generation female workforce recruited through village-level outreach and panchayat partnerships, trained through a 60 days curriculum, and integrated into global supply chains from one of India's most labour surplus districts. This is the factory moving to the worker rather than the worker migrating to the factory. Can Bihar be the next Bangladesh? Pearl Global has already answered the first question: production can move, labour is available and the business model is viable. The next challenge is whether policy can keep pace. What is needed is an enabling ecosystem- cluster level compliance and testing infrastructure, efficient logistics and worker housing that allows scale. If these enabling conditions are created, India could build its own apparel manufacturing belt rooted in creating jobs where workers already live.

Tiruppur's journey from Rs 15 crore in 1985 to Rs 45000 crore (USD 5.3 billion) in 2024-25 is proof of what collective action can build over time. It is not the story of any single factory, but of 4000 competing manufacturers who learned to bargain together with global buyers on price, lead times, and compliance standards; with government on infrastructure and policy; and with regulators on the terms of environmental transition. That collective bargaining power was made possible by institutions: TEA negotiating on behalf of the cluster, NIFT-TEA training its workforce, the Netaji Apparel Park providing shared production infrastructure and 18 CETPs representing Rs 850 crore of voluntary ZLD investment. Together, these transformed a geography of small competing factories into a single organic cluster capable of meeting global demands. India's cluster approach must embed this governance architecture that enables collective bargaining at inception, before the factories are built.

Welspun Living demonstrates that compliance and innovation are revenue strategies, not cost burdens. ZLD investment cut water costs. Renewable energy improved margins. Wel-Trak 2.0, blockchain-enabled traceability from farm to shelf, unlocked buyer relationships that non-compliant competitors cannot access. Their product innovation crossed USD 1 billion cumulatively in global sales and made Welspun a price-setter in a segment global competitors treat as a commodity.

Twenty-two per cent of Welspun’s revenues flow from products no competitor can replicate. This is the competitive trajectory India’s apparel sector must collectively pursue, from executing buyer specifications to owning product identity, pricing power and the trust that compounds both.

The four cases offer a direction. Towards scale through vertical integration, towards competitive advantage through compliance and innovation, towards employment generation through the deliberate inclusion of women workers, towards cluster competitiveness through collective bargaining and institutional design and towards supply chain resilience through geographic diversification.

11.4. India’s Vision for a USD 100 billion T&A Exports

The Government of India has set a clear target: USD 100 billion in T&A exports by 2030, as part of a broader USD 350 billion T&A ecosystem. Apparel must be the primary engine, growing from USD 15.7 billion today to USD 40 billion, while yarn, fabric, home textiles, and technical textiles drive the remainder USD 60 billion.

So, what does a globally competitive Indian T&A export sector should look like by 2030? Five defining attributes describe the vision. First, scale-readiness and ecosystem. PM MITRA parks must function as farm to foreign ecosystems, moving India’s export factory average from 600-800 workers to the global benchmark, with logistics reforms ensuring India’s supply chain moves at the speed of the consumer. Second is fibre diversity, MMF and technical textiles must have a major share of apparel exports, while India’s natural fibre heritage has to positioned as a niche category. Third, sustainability competitive rather than sustainability compliant. Next generation of EU regulations shifts the focus from factory level compliance to value chain transparency, carbon accountability and circularity. EU ESPR Digital Product Passport requirements must be met across every major processing cluster, with ZLD infrastructure, renewable energy and blockchain traceability for competitiveness. Fourth, digital capability, end-to-end export digitisation and AI powered tools to ensure supply chain readiness. Lastly, factories moving closer to the labour. With

apparel generating 153 formal jobs per Rs. 1 crore of capital, 47.6 per cent held by women, the vision is to take manufacturing to labour surplus states such as Bihar, Uttar Pradesh, Odisha, Jharkhand.

Achieving this vision requires operationalising the reform agenda set out in the next section across five pillars-scale and ecosystem; capital and finance; labour skilling and technology; market access and trade facilitation; sustainability and compliance (Table 11.2).

Table 11.2
Integrated Reform Agenda for India's T&A Sector

<i>Pillar</i>	<i>Rationale</i>	<i>Short-Term (< 1 year)</i>	<i>Medium-Term (2-3 years)</i>	<i>Long-Term (2030)</i>
Scale and Ecosystem	India's apparel sector is fragmented and sub-scale. Most units are micro or small. PM MITRA parks approved but not operational. Missing middle persists.	- Fast-track PM MITRA with 6-month milestones. - Financial incentives for firms scaling to >1000 machines. - Machinery subsidy for garmenting. - National baseline study of T&A clusters; operationalise Cluster Exchange Mechanism for cross-learning across clusters.	- Operationalise PM MITRA as fibre-to-fashion hubs with differentiated regulations, fiscal incentives and plug-and-play units. - Promote co-location of spinning, processing, garmenting. - Capital incentive to attract global textile machinery manufacturers to produce in India, reducing import dependence in high-end equipment.	Develop PM MITRA into governance-rich global hubs with bonded warehouses, design/R&D centres, digital compliance and park-level governance, comparable to China's textile towns.
Capital and Finance	Real lending rates 6.2-8.2% versus negative (Bangladesh) and 3.1% (China). IES and ATUFS withdrawn. Delayed GST/RoDTEP disbursements squeeze MSME liquidity.	- Guaranteed GST and RoDTEP/RoSCTL disbursements within 15 days. - Expand export credit coverage for MSMEs; simplify claims settlement. - Scale MSME uptake of EPM factoring and invoice discounting instruments; mandate cluster-level awareness through AEPC and CITI.	- Mainstream value-chain financing: invoice discounting, factoring, receivables, order-backed credit, equipment leasing. - Evolve export credit and insurance into a Sinosure-equivalent: enhanced coverage ratios, MSME differentiated premium structures and receivables recognised as bankable collateral. - Explore concessional global financing (ADB/JICA model).	Value-chain finance as mainstream banking product in T&A clusters.

Labour, Skilling and Technology	• Worker productivity low. Attrition 20-25%. SAMARTH skill-mix misaligned. Mid-management training absent. Worker welfare inadequate.	• Upgrade SAMARTH 2.0 with product-specific modules: MMF handling, CAD/CAM, supervisory skills, digital compliance. • Introduce mid level management and supervisor-training institutes. • Scale worker housing and crèches.	• Dual-training partnerships between enterprises, vocational schools and industry associations. • Incentivising technology transfer partnerships (JVs) between global equipment and process leaders and Indian firms..	• Institutionalise continuous skilling in R&D, automation, digital manufacturing, ESG compliance. • Fully digitise compliance through cluster-level traceability platforms.
Market Access and Trade Facilitation	• India ranked 38th on World Bank LPI 2023. Despite significant progress in digitalisation, end-to-end integration across trade facilitation systems is needed, while FTA utilisation remains low, particularly with Japan and Korea.	• Complete end-to-end integration of the NSW across all regulatory agencies. • Operationalise BharatTradeNet as the common digital integration. • Introduce Digital Advance Authorisation, replacing rigid input-output norms. • Fast-track AEO accreditation for MSME apparel exporters. • Cluster-wise product mapping for UK, EU.	• Customs clearance under 5 days as benchmark (risk based inspection) • Bonded warehousing in PM MITRA parks. • Leverage underutilised FTAs via targeted product strategies. • Negotiate flexible de-minimis rules. • Create FTA facilitation cells for cluster-specific market intelligence, buyer matching and utilisation support.	• Port-linked logistics corridors from PM MITRA to major ports. • Digital sampling and virtual design embedded in clusters.
Sustainability and Compliance	• EU Digital Product Passport (2027-28), CSDDD (2028) convert sustainability into market access condition for 42% of global apparel demand.	• Incentivise GOTS/Oeko-Tex/GRS certification through cluster-level certification pools, particularly MSMEs • Scale global adoption of Kasturi Cotton Bharat while extending India's digital fibre traceability ecosystem beyond cotton to MMF. • Incentivise ZLD and water saving infrastructure in major processing clusters.	• National textile traceability platform interoperable with EU DPP. • Build institutional capacity for sustainability accreditation bodies, testing labs. • Scale innovation and start up support for green textile technologies; Panipat as formalised anchor circular textile hub. • 'Made in India' sustainability brand.	• India's sustainability standards goes global, India benchmarks in sustainability and circularity developed. India recognised as a global hub for sustainable and circular textiles.

Source: Rao et al., 2025; ICRIER, 2026

11.5. Reform Agenda and Way Forward

Recent initiatives, PM MITRA parks, PLI revisions, the Export Promotion Mission, and the Integrated Programme for the Textile Sector announced in the Union Budget 2026-27, indicate a movement toward more integrated industrial planning. The EPM’s unified export-finance and compliance framework and the Integrated Programme’s value-chain orientation signal recognition of the structural gaps in capital access, cluster development, fibre diversification and skilling. Yet the path to competitiveness is long. PM MITRA parks are not yet operational and need the forward-looking governance architecture that global manufacturing hubs demonstrate, on-site empowered authorities, integrated customs desks, bonded logistics, CETPs, accredited labs, real-time digital compliance, worker housing and unified labour services. Movement on these lines has been slow. It needs urgent speeding up if India is to capture the EU and UK markets now within reach.

Table 11.2 sets out an integrated, sequenced policy roadmap structured around the five pillars of competitiveness, mapping short, medium and long-term priorities for repositioning India from a fall-back supplier to a competitive and reliable node in global apparel value chains.

Three principles must bind this reform agenda into a coherent system rather than another set of schemes- policy stability for boosting investor confidence, institutional co-ordination and pace of implementation and last mile MSME inclusivity.

First, policy stability is an investment signal. Bangladesh’s BBLC has operated with minimal structural modification since 1984; Vietnam’s industrial park framework has never been disrupted. India needs at least a ten year policy clarity, with notified disbursement schedules and defined conditions for mid-term revision. Second, institutional coordination and pace of implementation are where policy intent translate into tangible outcomes. India’s T&A policy spans several central ministries and state departments. For the Integrated Programme to function as a programme rather than five parallel schemes, operational convergence is must. What matters the most is

the speed of implementation as India's window of opportunity is narrow and rapidly closing. Equally important is adaptive governance. As global regulations, technologies, market expectations and consumer preferences continue to evolve, policy frameworks must be capable of responding in a timely, coordinated and evidence-based manner. Such an approach will ensure that policy remains responsive to emerging challenges while providing the long-term certainty needed to sustain competitiveness. Third, with more than 80 per cent of T&A being MSMEs, last mile MSME inclusivity is critical for competitiveness. The real test lies in monitoring whether smaller firms gain access to finance, technology, market linkages, skilled labour and modern infrastructure that enable them to scale. Only then can India ensure that its T&A sector is inclusive, resilient and sustainable.

The Integrated Programme for Textiles represents an important step towards addressing these three priorities through a holistic, value chain-based policy framework. By integrating flagship interventions such as the Textile Expansion and Employment (TEEM) Scheme, focused on enhancing scale, productivity and employment, and the Tex Eco Initiative, aimed at accelerating sustainability, circularity and global compliance, the programme seeks to move beyond fragmented schemes towards a coordinated approach to sectoral transformation. Together, these initiatives have the potential to strengthen competitiveness by aligning industrial development, sustainability and export growth under a common strategic vision. However, the success of this integrated approach will ultimately depend on a long-term, fast-acting implementation strategy. As the experience of China, Bangladesh and Vietnam demonstrates, globally competitive textile industries are built through stable policy frameworks sustained over a decade or more, providing the certainty required for businesses to invest, innovate and scale with confidence.

The Ministry of Textiles' ESG Task Force complements this integrated approach by providing a permanent multi-stakeholder platform for government, industry, academia, financial institutions and development partners to collectively identify emerging challenges, build policy consensus and support implementation. As a mechanism

for adaptive governance, it will help ensure that India’s textile policy remains responsive to evolving global sustainability and competitiveness requirements.

11.6. Conclusion

India’s apparel sector today stands at a critical inflection point. The global sourcing window created by shifting geopolitics and the ‘China+1’ strategy is open, but it will not remain open indefinitely. On the domestic front, several structural reforms have already begun to improve the enabling environment: the correction of inverted GST structures in MMF, the rescission of Quality Control Orders that constrained raw material access, progress towards implementing the four labour codes, and renewed policy focus through the Export Promotion Mission and the Integrated Textile Programme. These steps signal clear intent. However, if India is to expand apparel exports from USD 15.7 billion today to USD 40 billion by 2030 and raise its global market share beyond the current 3 per cent, business-as-usual will not suffice.

What is required is a decisive overhaul of the apparel ecosystem , across scale, finance, skills, institutions and trade facilitation , implemented with speed and co-ordination. The real litmus test is not in policy announcements but in the pace at which they are implemented. The evidence assembled in this book, from the cotton fields of Maharashtra to the knitwear factories of Tiruppur, from the bonded warehouses of Chittagong to the industrial parks of Vietnam, from Shahi’s lakhs of workers to Tiruppur’s collective Rs 850 crore ZLD investment to Welspun’s blockchain traceability from farm to retail shelf , consistently points to one conclusion: India does not lack the ingredients for global T&A leadership. What it has lacked is the institutional coherence to organise them and deliver quality product at scale, in time.

The good news is that coherence is now being built. The Integrated Programme for T&A, the Export Promotion Mission, PM MITRA, PLI 2.0 network together demonstrate policy intent. The EU-FTA and UK-CETA have placed Indian exporters on tariff-equivalent terms with Bangladesh in the world’s two largest apparel markets for the first

time. And the three structural forces that will define the next decade: AI and digitisation, sustainability as competitive advantage and apparel exports as the anchor of inclusive industrial growth are to be leveraged by India.

India's window of opportunity is open, but it is time bound. The real test is in the pace and coherence of implementation. By synthesising international experience with India's structural realities, this book outlines a practical pathway for accelerating these reforms and repositioning India as a scale-driven, fibre-diverse, digitally enabled and women-inclusive global apparel sourcing hub. We hope that the Government will pay heed to these suggestions and implement them with a view to realise the ambitious target of USD 100 billion exports by 2030.

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"India's T&A sector is not merely an industry. It is a civilisational inheritance that we are giving new purpose under PM Modi's 5F vision. 'Stitching India's Apparel Export Strategy: From Farm to Foreign' is a timely and insightful contribution that presents a clear reform agenda for strengthening India's apparel export competitiveness. It will be a valuable guide for policymakers, industry and academia alike."

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*Hon'ble Union Minister of Textiles
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