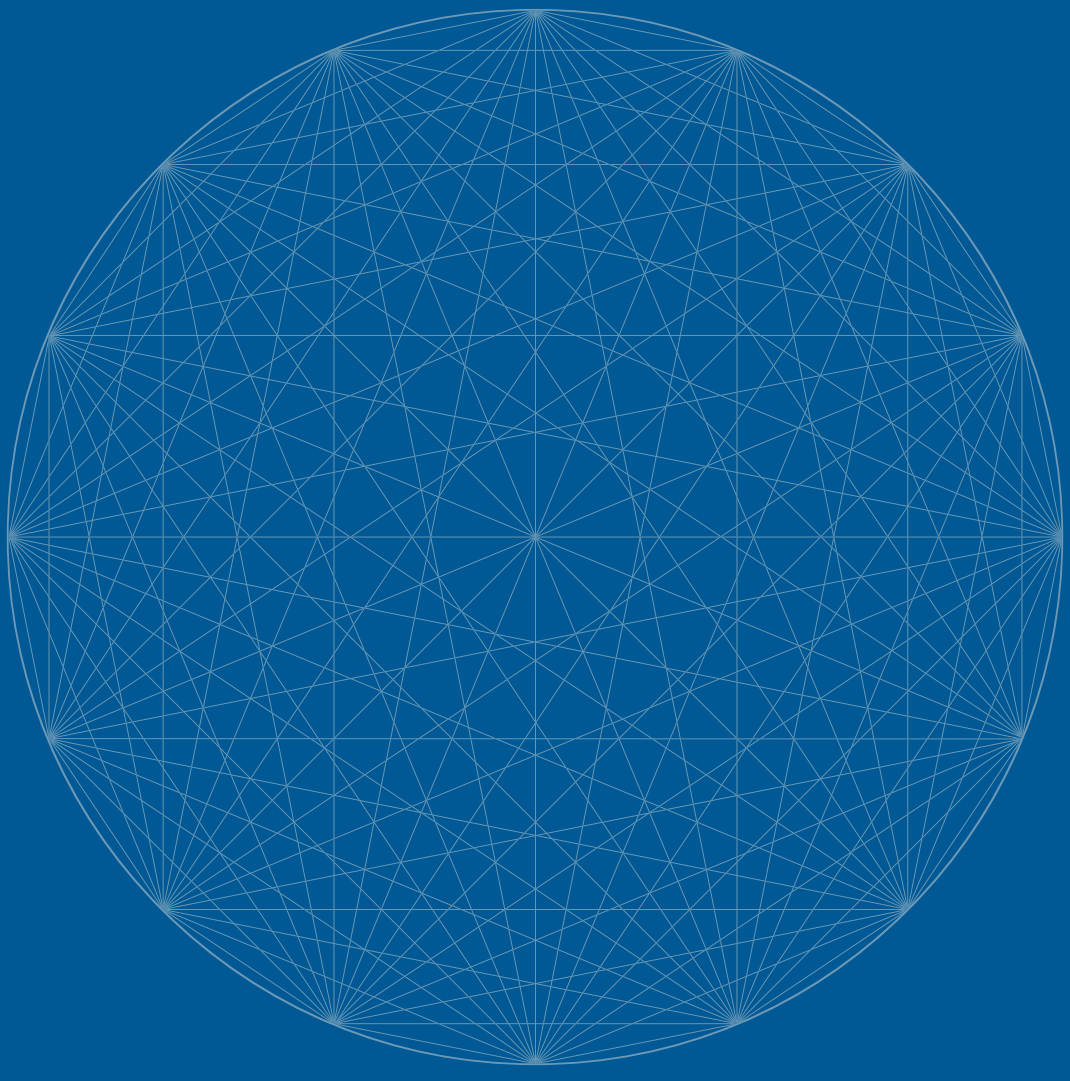
CPRD

Centre for Public Policy Research and Design

PRESENTS

Policy Compendium 2.0



ANANT NATIONAL UNIVERSITY

॥ प्रज्वालितो ज्ञानमयः प्रदीपः ॥

Policy Compendium 2.0

Public policy is the architecture of a nation's progress. It shapes the way our cities grow, our industries innovate, our heritage is preserved, and our citizens thrive. Policy Compendium 2.0, prepared by the Centre for Public Policy Research and Design (CPRD) at Anant National University, is conceived as a definitive resource that brings together some of India's most critical policies across sectors—urban development, heritage management, intellectual property, environment, labour rights, data governance, and technology.

This compendium is not merely a reference document; it is a bridge between design and policy. At CPRD, we believe that every policy is, at its core, a design framework—a set of intentional choices made to solve complex societal challenges. Whether it is the Model Building Bye-Laws shaping safer, sustainable cities, the Digital Personal Data Protection Act securing citizens' privacy, or the Pradhan Mantri Awas Yojana enabling inclusive housing, each policy reflects a design mindset applied to governance.

The second edition of the compendium highlights the evolution of India's policy ecosystem in response to emerging realities of the 21st century—climate change, digital transformation, equitable growth, and the demand for sustainability. It captures not only the legislative frameworks but also the implementation mechanisms, sectoral impacts, and future directions that policymakers, researchers, designers, and students must critically engage with.

By presenting policies in a structured, design-thinking-led format, Policy Compendium 2.0 equips its readers to see beyond the legal texts and into the human, social, and environmental dimensions of governance. It aims to spark deeper inquiry: How can policy be designed more empathetically? How can regulations adapt to local contexts without losing national coherence? How can India's development remain inclusive, sustainable, and future-ready?

As India navigates its path to becoming Viksit Bharat @2047, this compendium serves as a toolkit for learning, reflection, and action. It invites policymakers, academics, practitioners, and students alike to explore how policy design can shape a more just, resilient, and innovative India.

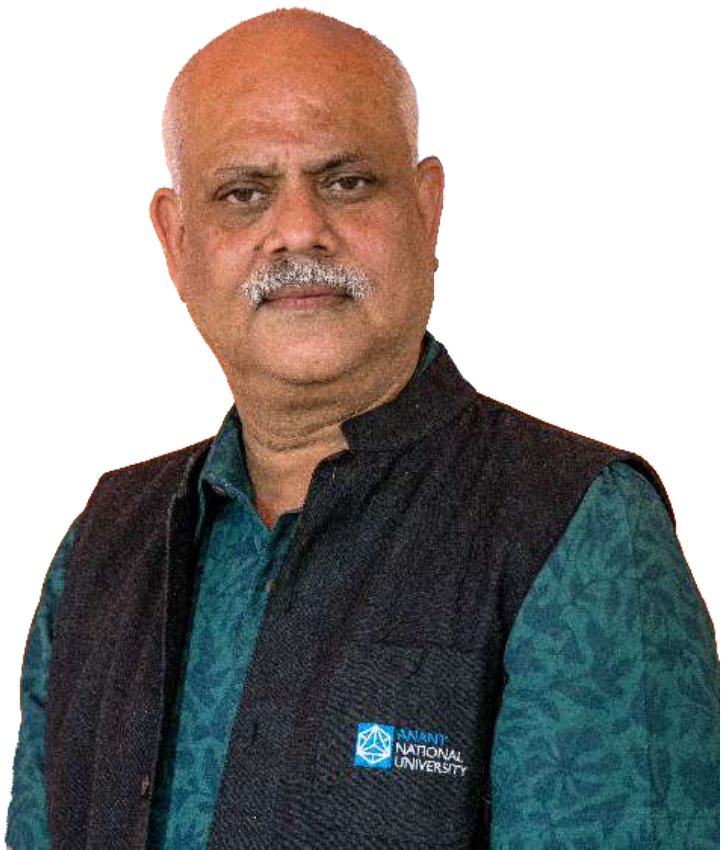
Message from the Provost

In a world marked by complexity and uncertainty, the importance of policy thinking rooted in empathy, evidence, and equity has never been greater. It is within this evolving context that the Centre for Public Policy Research and Design (CPRD) at Anant National University has emerged as a pioneering initiative, exploring the nexus of design and governance while reimagining public policy as a collaborative, creative, and deeply human process.

This report captures not just two years of activities, but also a philosophical approach in action. From promoting policy literacy among disciplinary experts to immersive engagements with communities, CPRD has become a vibrant crucible of thought and practice at Anant.

The diversity of voices heard through Anant savaad, the intellectual stimulation sparked by lively policy debates, and the lived experiences of Anant savaad offer robust testament to CPRD's holistic approach to learning. I commend the CPRD team for cultivating a space where students can become change-makers, not just spectators- where every workshop, debate, and publication contributes to shaping a more inclusive vision for a resilient future.

Let this report serve as an invitation to deepen our collective commitment to promoting public good, and a reminder that when clever design meets purposeful policy, transformation is not only possible - it is inevitable.



Sanjeev Vidyarthi
Provost,
Anant National University

Message from the Centre

The Centre for Public Policy Research and Design is proud to release the Policy Compendium 2.0—a curated volume that brings together contemporary policies, critical insights, and innovative frameworks shaping India's policy landscape today.

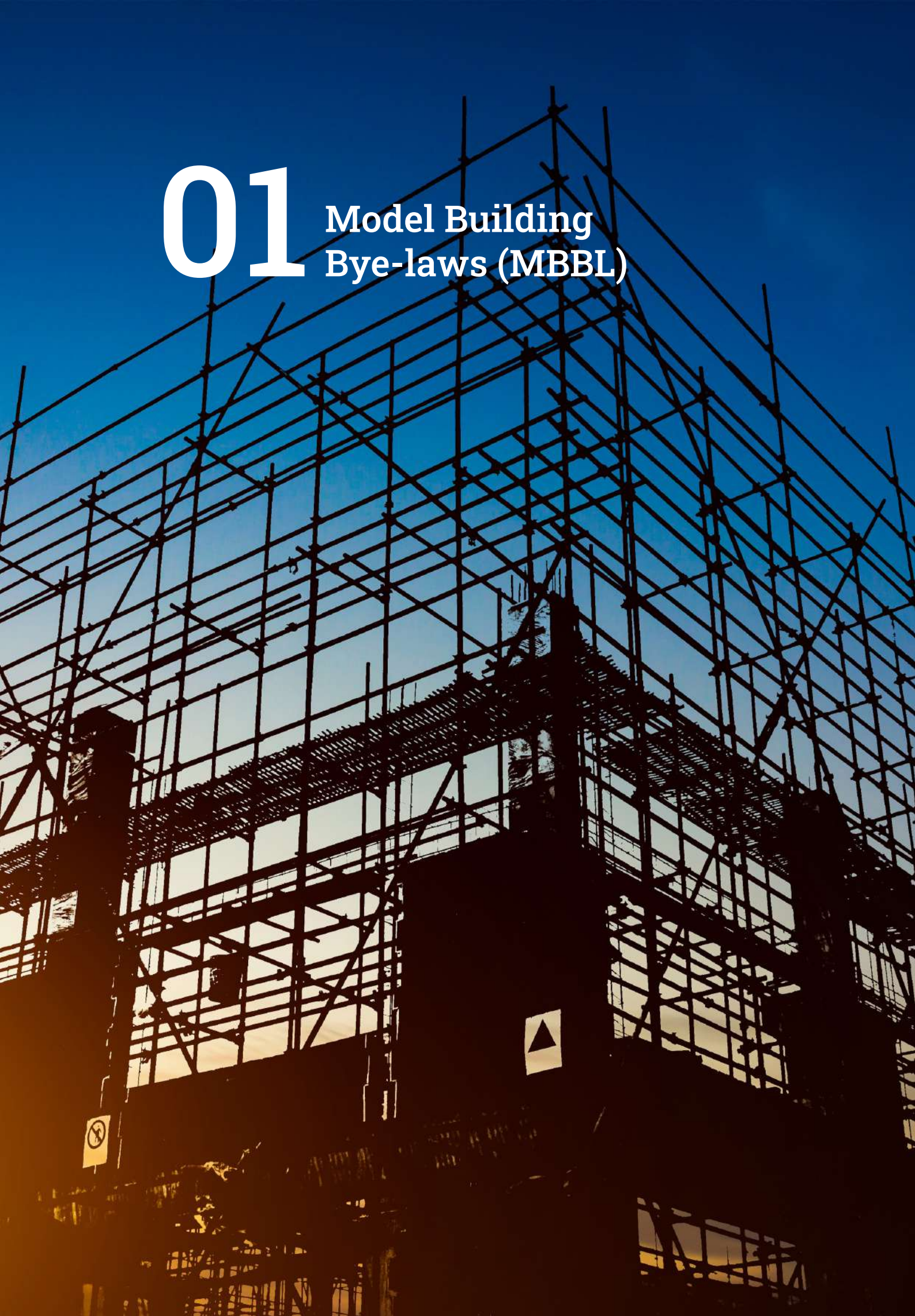
The Compendium reflects our continued commitment to evidence-based research, design-led solutions, and inclusive public policy. Building on the success of the first edition, Policy Compendium 2.0 expands its scope by integrating new thematic areas, case studies, and actionable recommendations that address the evolving needs of governance, society, and the economy.

This publication is not just a repository of policies—it is a platform for dialogue, reflection, and co-creation. It aspires to serve the students of Anant National University, faculty members, scholars and practitioners who believe in shaping a future where policy is rooted in research, informed by design, and driven by impact.

We invite you to engage with the Compendium, contribute your perspectives, and join us in advancing the mission of creating meaningful, people-centric public policy.

Centre for Public Policy Research and Design

Contents



01 Model Building Bye-laws (MBBL)

01 Model Building Bye-laws (MBBL)

1.1 Overview and Significance

The Model Building Bye-laws represent the cornerstone of India's urban built environment regulation. First formulated by the Ministry of Urban Development in 2004 and comprehensively revised in 2016, the MBBL provides a template framework that states and municipalities can adapt to their specific contexts while ensuring adherence to national priorities and standards. These bye-laws establish the fundamental parameters for construction activities across India's diverse urban centers.

The MBBL's significance extends beyond mere technical specifications4it embodies a vision for safer, more accessible, and environmentally sustainable urban infrastructure. By standardizing building parameters while allowing for local adaptation, these bye-laws balance national consistency with regional flexibility, creating a framework that can accommodate India's geographical, climatic, and cultural diversity.

The MBBL addresses four fundamental dimensions of building regulation: structural safety, fire protection, accessibility for persons with disabilities, and environmental sustainability. Each dimension encompasses detailed guidelines and specifications that collectively ensure buildings meet basic standards of safety, inclusivity, and resource efficiency.

As urbanisation accelerates and environmental challenges intensify, the MBBL continues to evolve, incorporating new technologies, construction methodologies, and sustainability approaches. The 2016 revision introduced significant provisions for rainwater harvesting, solar energy utilisation, waste management, and disaster resilience, reflecting a growing emphasis on environmental sustainability and climate adaptation.

1.2 Core Component for the Model Building Bye-Laws

Zoning Regulations
The MBBL establishes a framework for land use zoning that segregates areas based on their primary function: residential, commercial, industrial, institutional, recreational, and mixed-use. Each zone carries specific development parameters including Floor Area Ratio (FAR), ground coverage limitations, and height restrictions. These provisions ensure compatible land uses while maximizing efficient urban space utilization.

Building Controls
Building control regulations specify the dimensional and volumetric parameters for construction, including setbacks (minimum distance from plot boundaries), building height limitations, and floor area ratios. These controls ensure adequate light, ventilation, and privacy while maintaining neighbourhood character and preventing overcrowding.

Structural Safety
The MBBL incorporates comprehensive structural safety provisions, particularly crucial in India's seismically active zones. It mandates compliance with Bureau of Indian Standards (BIS) codes for structural design, foundation systems, and building materials. Additionally, it requires professional certification of structural designs and periodic safety audits for existing structures.

Fire Safety
Fire safety regulations within the MBBL specify requirements for fire-resistant building materials, compartmentalisation, emergency exits, fire detection systems, and firefighting equipment. Buildings are categorised based on occupancy type and height, with progressively stringent requirements for higher-risk structures.

Accessibility Features
In alignment with the Rights of Persons with Disabilities Act, the MBBL mandates accessibility features including ramps, elevators, tactile paths, and specially designed washrooms. These provisions ensure that public buildings and spaces are accessible to all citizens regardless of physical ability.

Green Building Provisions
Environmental sustainability measures include mandatory rainwater harvesting systems, solar energy installations for buildings exceeding certain dimensions, waste segregation facilities, and requirements for permeable surfaces to facilitate groundwater recharge.

1.3 Implementation Mechanism For Model Building Bye-Laws

The effective implementation of Model Building Bye-laws relies on a multi-tiered governance structure that distributes responsibilities across different administrative levels. At the apex, the Ministry of Housing and Urban Affairs (MoHUA) formulates the model framework and provides technical guidance to states. State governments customize these models to address regional priorities and challenges, while Urban Local Bodies (ULBs) serve as the primary enforcement agencies, translating policy into practice at the grassroots level.

The building permission process represents the primary enforcement mechanism for these bye-laws. This process typically involves multiple stages: pre-construction approval, periodic construction inspections, and post-completion certification. The introduction of online building permission systems in many cities has streamlined this process, reducing processing times and minimizing opportunities for discretionary interpretation or corruption.

Compliance monitoring utilizes both technological and administrative approaches. Geo-tagging of approved buildings, drone surveillance of construction activities, and GIS-based monitoring systems enable authorities to identify unauthorized construction or deviations from approved plans. These technological solutions complement traditional inspection regimes conducted by municipal engineers and building inspectors.

The penalty framework for non-compliance includes financial penalties, demolition orders for unauthorized structures, and professional sanctions against architects or engineers who certify non-compliant designs. Some progressive municipalities have adopted a "naming and shaming" approach, publicly identifying developers with consistent violation records.

1.4 Emerging Trends and Future Directions in Building Regulations

The evolution of Model Building Bye-laws reflects broader shifts in urban development priorities and approaches. Recent amendments signal a transition from prescriptive regulations to performance-based standards4a paradigm shift that emphasizes outcomes rather than specific methods. This approach fosters innovation by allowing flexibility in how developers and architects achieve safety, accessibility, and sustainability objectives.

Integration of digital technologies is transforming building regulation enforcement. Building Information Modeling (BIM) facilitates automated compliance checking, where software automatically verifies designs against applicable bye-laws. Smart sensors installed in new buildings enable continuous monitoring of structural integrity and environmental performance, transitioning from periodic inspections to real-time oversight.

Climate resilience has emerged as a critical focus area, with enhanced provisions for flood mitigation, heat island reduction, and disaster-resistant construction. These include mandatory setbacks from water bodies, requirements for permeable surfaces, green roofing standards, and structural reinforcement in vulnerable zones. The National Disaster Management Authority has collaborated with MoHUA to incorporate disaster resilience more comprehensively into building regulations.

Incentive-based compliance represents an innovative approach gaining traction across Indian cities. Municipalities offer expedited approvals, reduced fees, or additional development rights for projects exceeding minimum standards, particularly in sustainability performance. This approach transforms regulation from a minimum standards enforcer to a catalyst for excellence in building design and construction.

1. 2004
   First comprehensive Model Building Bye-laws formulated by the Ministry of Urban Development
2. 2016
   Major revision incorporating sustainability features, accessibility requirements, and streamlined approval processes
3. 2018
   Integration with Online Building Permission Systems and Environmental Clearance Requirements
4. 2021
   Updated to incorporate climate resilience measures and pandemic-responsive design considerations

02 The Ancient Monuments and Archaeological Sites and Remains 2010

02. The Ancient Monuments and Archaeological Sites and Remains 2010

The Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010 represents a significant evolution in India's approach to heritage conservation. This legislation amends the original 1958 Act, strengthening the protection framework for India's rich architectural and archaeological patrimony. Understanding this Act requires contextualizing it within India's broader heritage conservation journey, which spans from colonial-era preservation efforts to contemporary integrated conservation approaches.

The origins of formalized heritage protection in India date to the Bengal Regulation of 1810, followed by the more comprehensive Ancient Monuments Preservation Act of 1904 enacted by the British colonial government. Post-independence, these efforts were consolidated in the Ancient Monuments and Archaeological Sites and Remains Act of 1958, which established the Archaeological Survey of India (ASI) as the primary custodian of nationally significant monuments and sites.

By the early 2000s, rapid urbanization created unprecedented pressures on heritage sites, particularly those located within or adjacent to expanding urban centers. Unregulated development increasingly encroached upon protected monuments, compromising their structural integrity, visual setting, and cultural significance. High-profile cases of development threatening monuments like the Taj Mahal and Delhi's Qutub Minar complex highlighted the inadequacies of the existing regulatory framework.

The 2010 amendment emerged in response to these challenges, introducing more stringent controls on development activities in proximity to protected monuments. It established a two-tiered buffer zone system 4prohibited and regulated areas4and created the National Monuments Authority (NMA) as a specialized oversight body. These provisions significantly expanded the protective umbrella around India's 3,693 nationally protected monuments and sites, reflecting a growing recognition of heritage conservation's importance in sustainable urban development.

2.1 Key Provision of the Ancient Monuments Act 2010

i. Protected Zone Definition
The Act establishes a 300-meter buffer around every protected monument, divided into two zones: a "prohibited area" extending 100 meters from the monument boundary where no construction is permitted, and a "regulated area" extending an additional 200 meters where development is subject to strict review and approval by the National Monuments Authority. This tiered approach creates graduated protection while acknowledging the need for contextual management.

ii. Institutional Framework
The legislation creates the National Monuments Authority (NMA) as a specialized statutory body responsible for grading monuments, formulating site- specific development guidelines, and reviewing construction proposals within regulated areas. The NMA comprises archaeological experts, architects, urban planners, and administrative officers, ensuring multi-disciplinary perspectives in heritage management decisions.

iii. Heritage Bye - Law
The Act mandates the development of site-specific Heritage Bye-laws for each protected monument, addressing unique conservation needs, contextual characteristics, and appropriate development parameters. These bylaws represent a shift from generic restrictions to nuanced, site-responsive regulation that considers the particular significance and setting of each monument.

iv. Enforcement Provisions
The amendment strengthens penalties for violations, increasing fines to up to ¹2 lakh and imprisonment up to two years for unauthorised construction in prohibited areas. It empowers authorities to demolish unauthorised structures and recover costs from violators, significantly enhancing the deterrent effect of heritage protection regulations.

2.2 Implementation Challenges of the Ancient Monuments Act

Despite its robust legal framework, the implementation of the Ancient Monuments and Archaeological Sites and Remains Act faces significant challenges that limit its effectiveness in practice. These challenges stem from institutional capacity constraints, coordination difficulties, and the complex realities of urban development pressures in contemporary India.

Limited institutional capacity represents a fundamental challenge for both the Archaeological Survey of India (ASI) and the National Monuments Authority (NMA). With responsibility for nearly 3,700 protected monuments spread across the country, the ASI's staff of approximately 2,800 technical personnel is severely stretched. Similarly, the NMA operates with a small core team managing a substantial volume of development applications. This capacity shortfall results in delayed responses to encroachment, inconsistent monitoring, and backlogged permission applications.

Multi-agency coordination complexity further complicates implementation. Heritage protection intersects with numerous other administrative domains, including urban planning, infrastructure development, tourism, and environmental protection. The overlapping jurisdictions of agencies like the ASI, Urban Local Bodies, Development Authorities, and state Tourism Departments frequently result in contradictory approaches and priorities. For instance, tourism promotion initiatives may conflict with conservation requirements, while urban redevelopment projects often clash with monument protection provisions.

Pre-existing development in buffer zones presents a particularly thorny challenge. Many protected monuments, especially those in urban centres, were already surrounded by development before the 2010 amendment established the 300-meter buffer zone. This has created complex scenarios for enforcement, particularly in densely populated historic districts where enforcing construction prohibitions would displace established communities. The legislation's retrospective application to pre-existing structures has generated legal disputes and implementation dilemmas.

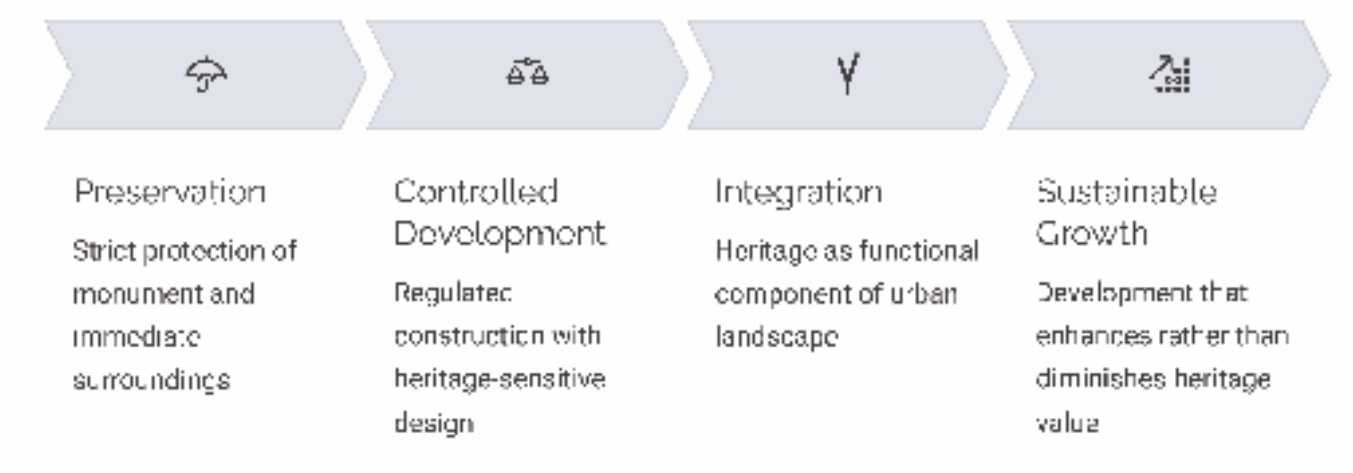
2.3 Balancing Conservation and Development

The tension between heritage conservation and development imperatives represents one of the most significant policy challenges in contemporary urban governance. The 2010 Ancient Monuments Act attempts to navigate this complex terrain through several innovative approaches that seek balance rather than binary choices between preservation and progress.

Site-specific Heritage Bye-laws represent the legislation's most sophisticated balancing mechanism. Rather than applying uniform restrictions across all monuments regardless of context, these bye-laws enable customized approaches that respond to each site's particular significance, setting, and development context. For instance, bye-laws for the Qutub Minar complex in Delhi specify acceptable building heights, materials, and design parameters for its regulated zone, allowing contextually appropriate development while preserving the monument's visual setting and historical significance.

The developmental permissions system within regulated zones (100-300 meters from monuments) embodies a pragmatic compromise between absolute prohibition and unrestricted development. This system evaluates proposals based on multiple criteria including height restrictions, visual impact assessments, archaeological impact potential, and relationship to the monument's historical context. It allows necessary development while ensuring it respects and complements the protected heritage.

Adaptive reuse strategies for historic structures represent another dimension of the conservation-development balance. Though not explicitly detailed in the Act, the policy framework created by the NMA increasingly recognizes the value of repurposing historic buildings for contemporary functions while preserving their architectural integrity. This approach envisions heritage not as a static artifact but as a living element of urban fabric that can accommodate evolving needs while maintaining cultural significance.



2.4 Heritage Management Best Practices And Future Directions

Progressive implementation of the Ancient Monuments Act has generated innovative approaches that extend beyond mere regulatory compliance to embrace comprehensive heritage management principles. These emerging best practices offer valuable models for enhancing the effectiveness of heritage conservation efforts across India.

Integrated management plans represent a holistic approach being adopted for particularly significant monuments and complexes. These plans extend beyond physical protection to address visitor management, interpretation, community engagement, and economic sustainability. The Humayun's Tomb complex in Delhi exemplifies this approach, with a comprehensive plan developed through collaboration between the Aga Khan Trust for Culture, Archaeological Survey of India, and local authorities. This plan integrates conservation, landscape restoration, community development and sustainable tourism in a cohesive framework that enhances both heritage values and community benefits.

Digital documentation technologies are transforming monument monitoring and management. Three- dimensional laser scanning creates precise digital models of monuments, enabling accurate condition assessment and detection of structural changes over time. Geographic Information Systems (GIS) map protected zones and monitor encroachment, while drone surveillance provides regular visual documentation of monument conditions and surrounding development. These technologies enhance monitoring capabilities despite limited personnel resources.

The future of heritage protection under the Act will likely emphasize greater integration with broader urban planning frameworks. Emerging policy discussions highlight the need for heritage considerations to inform master planning processes from their inception rather than appearing as subsequent constraints. This approach envisions archaeological and architectural heritage as generative elements in urban design, shaping development patterns rather than merely restricting them. The draft Heritage-Based Urban Development scheme under the National Urban Policy framework signals this integrated direction, positioning heritage conservation as a catalyst for sustainable urban regeneration rather than an obstacle to development.

03 Minimum Wages Act

03 Minimum Wages Act

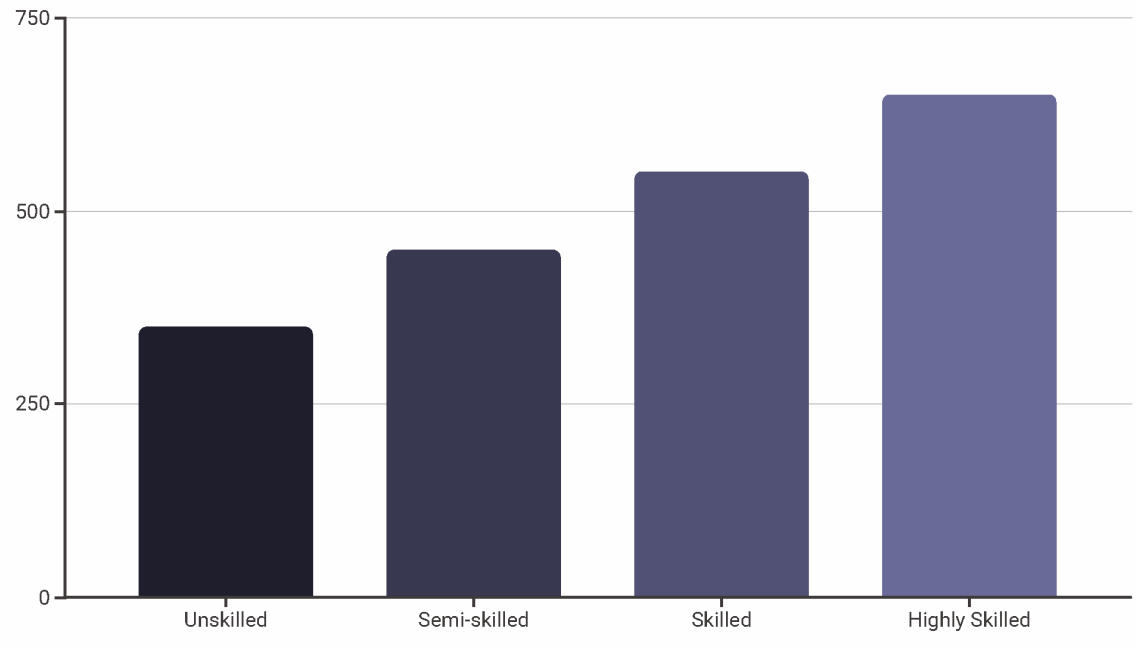
The Minimum Wages Act of 1948 stands as one of India's foundational labor welfare legislations, establishing a floor for worker compensation across various sectors including construction and urban development. While not exclusively focused on urban development, this legislation profoundly shapes the economics, social dimensions, and implementation of construction projects throughout India's rapidly urbanizing landscape.

The Act empowers both Central and State governments to set minimum wage rates for scheduled employments under their respective jurisdictions. For the construction sector, which employs approximately 51 million workers and constitutes the second-largest employer after agriculture, these wage determinations establish baseline compensation standards that significantly impact project economics. Minimum wages are established for different categories of construction workers4unskilled, semi-skilled, skilled, and highly skilled4with rates varying across states to reflect regional economic conditions.

The implementation structure operates through a multi-tiered framework. At the central level, the Chief Labour Commissioner's organization oversees enforcement for central sphere establishments, while state labor departments manage enforcement within their jurisdictions. Construction sites falling under central government projects (major infrastructure, railways, etc.) follow centrally determined rates, while private construction and state government projects adhere to state-specific minimum wages.

Recent policy evolution has strengthened the Act's implementation mechanisms. The 2019 Code on Wages consolidates four labor laws including the Minimum Wages Act, introducing universal minimum wage coverage regardless of sector, enhanced penalties for non-compliance, and digitized enforcement systems. For the urban development sector, these changes signal an intensified regulatory environment for labor practices on construction sites across the country.

3.1 Construction Sector Wage Structure and Enforcement



The construction sector wage structure established under the Minimum Wages Act reflects a complex balance between ensuring worker welfare and maintaining the economic feasibility of development projects. Wage rates are determined through a consultative process involving tripartite committees with representation from government, employers, and worker organisations. These determinations consider factors including local cost of living, prevailing market wages, overall economic conditions, and employer capacity to pay.

Enforcement mechanisms include routine inspections by labour enforcement officers, complaint-based investigations, and self-certification schemes for employers. Labour inspectors conduct unannounced site visits to verify compliance with minimum wage provisions, examining wage records, interviewing workers, and assessing working conditions. The introduction of digital enforcement tools, including online complaint registration systems and inspection management platforms, has enhanced transparency and accountability in the enforcement process.

Despite these mechanisms, significant enforcement challenges persist. The informal nature of construction employment, with high worker mobility and limited documentation, complicates verification efforts. Insufficient inspector capacity4with national averages showing one inspector responsible for monitoring hundreds of establishments4limits comprehensive coverage. Complex subcontracting arrangements in construction projects often obscure employment relationships and diffuse responsibility for wage compliance.

Innovative approaches to address these challenges include digital wage payments that create verifiable transaction records, worker identification systems that track employment histories, and third-party monitoring involving civil society organisations. The Central Government's Shram Suvidha Portal exemplifies technology-enabled enforcement, consolidating labour compliance information and enabling risk-based inspection planning.

3.2 Economic And Social Implications of Urban Development

The Minimum Wages Act's provisions generate multifaceted impacts on the urban development landscape, affecting project economics, construction quality, labour market dynamics, and socioeconomic dimensions of urban communities. These impacts extend beyond simple cost considerations to influence fundamental aspects of how cities are built and who benefits from urban development processes.

From a project economics perspective, labour costs typically constitute 25-40% of total construction expenditure in India, making minimum wage compliance a significant factor in development budgeting. Variations in state-determined minimum wages create differential cost structures across regions, potentially influencing investment patterns and development priorities. Public sector projects, which generally demonstrate higher wage compliance, often incorporate these costs into initial budgeting, while private developments may experience cost escalations when enforcement actions require wage adjustments mid-project.

Construction quality bears a complex relationship with wage standards. Higher wages potentially attract and retain skilled workers, improving construction quality and reducing rework requirements. Studies by the National Institute of Construction Management and Research indicate projects with consistent minimum wage compliance experience 15-22% fewer quality defects compared to those with significant wage violations. This quality differential translates to reduced maintenance costs and enhanced building longevity, generating long-term economic benefits that partially offset initial higher labor costs.

Socioeconomic impacts extend to neighbourhood development patterns and urban poverty dynamics. Construction workers often reside in informal settlements near project sites, with their compensation levels directly influencing housing quality, access to services, and potential for economic mobility. Higher and consistently paid wages facilitate worker transitions from temporary to permanent urban residence, contributing to neighbourhood stabilisation and community development in worker-dominated urban areas.

3.3 Compliance Strategies for Development Projects

i. **Direct Employment Models**
Some developers adopt direct employment approaches rather than contractor-mediated hiring, establishing clearer accountability for wage compliance. This model typically includes formal employment documentation, regular payment schedules, and integrated skill development programs. The direct relationship enables more transparent wage determination and reduces compliance risks associated with subcontracting chains.

ii. **Contractor Prequalification**
Development projects increasingly incorporate labour compliance history into contractor selection criteria. Prequalification requirements include verification of past wage compliance, examination of labour dispute records, and assessment of wage management systems. This approach incentivises contractors to maintain consistent compliance as a business development strategy.

iii. **Digital Payment Systems**
Electronic wage payments create verifiable transaction records that demonstrate compliance and protect both employers and workers. Advanced systems incorporate worker identification verification, job classification tracking, and automated compliance reporting. These systems synchronise with regulatory databases to ensure alignment with current applicable minimum wage rates.

iv. **Integrated Compliance Management**
Comprehensive compliance systems address minimum wages alongside related requirements, including working hours, overtime compensation, and leave provisions. These integrated approaches recognise the interconnected nature of labour standards and create administrative efficiencies while ensuring holistic worker protection.

Leading developers have recognised that strategic compliance with minimum wage provisions yields multiple benefits beyond mere legal adherence. Systematic implementation of these compliance strategies reduces legal and reputational risks while potentially enhancing productivity and project outcomes. The construction industry's gradual formalisation, supported by these approaches, contributes to the professionalisation of the sector and improved standards across the urban development landscape.

3.4 Policy Integration and Future Directions in Labour Standards

The evolution of minimum wage regulations within the urban development context reflects broader shifts in how labour standards integrate with development policies and practices. Recent policy developments signal a transition toward more comprehensive, integrated approaches that acknowledge the interconnections between fair compensation, worker welfare, and sustainable urban development outcomes.

The integration of labour compliance with development permissions represents an emerging trend in metropolitan governance. Several Urban Local Bodies, including the Municipal Corporation of Greater Mumbai and the New Delhi Municipal Council, have begun incorporating labour compliance verification into building permit and completion certificate processes. These integrative mechanisms require developers to demonstrate minimum wage compliance for projects exceeding certain thresholds before receiving critical approvals, effectively embedding labour standards enforcement within the core regulatory process for urban development.

Corporate social responsibility linkages with labour practices have gained prominence in the real estate development sector. Major developers increasingly incorporate wage compliance into their sustainability reporting frameworks, recognising fair labour compensation as a fundamental component of responsible development practices. Industry associations, including CREDAI (Confederation of Real Estate Developers' Associations of India), have established ethical guidelines for member organisations that emphasise minimum wage compliance as a baseline requirement for responsible business conduct.

Future policy directions suggest further integration of minimum wage compliance with broader urban development objectives. The draft National Urban Policy Framework identifies equitable labor practices in construction as a component of inclusive city building. Similarly, sustainable building certification systems are expanding their social criteria to include labor standards compliance, with the GRIHA (Green Rating for Integrated Habitat Assessment) system introducing labor practice evaluation in its most recent version. These developments signal a conceptual shift toward understanding fair labor compensation not as a separate regulatory domain but as an integral element of sustainable urban development.

1948

1

Original Minimum Wages Act established, providing first national framework for wage protection

2

1986

Introduction of Central Advisory Board on Minimum Wages to coordinate central and state determinations

2014

3

Launch of Shram Suvidha Portal integrating labor compliance verification systems

4

2019

Code on Wages enacted, consolidating and modernizing minimum wage framework

04 Pradhan Mantri Awas Yojana - Urban 2.0: Policy Evolution and Framework

04 Pradhan Mantri Awas Yojana - Urban 2.0

The Pradhan Mantri Awas Yojana - Urban 2.0 (PMAY-U 2.0) represents the most ambitious urban housing initiative in India's history, evolving from previous housing programs to address the complex challenges of urban housing shortages. This comprehensive policy framework targets the creation of affordable housing for urban low and middle-income populations through multiple intervention strategies and implementation mechanisms.

The evolution of PMAY-U reflects India's shifting approach to urban housing policy. The journey began with the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) in 2005, which included housing components but situated them within broader urban renewal objectives. The initial PMAY-U launched in 2015 represented a milestone shift toward a dedicated, comprehensive housing program with a mission approach. PMAY-U 2.0, approved in 2021 with implementation scheduled through 2024, builds upon lessons from the initial phase while expanding scope and refining implementation mechanisms.

PMAY-U 2.0 operates through four vertically integrated intervention streams designed to address diverse housing needs and leverage different implementation mechanisms. The Credit Linked Subsidy Scheme (CLSS) provides interest subsidies on home loans for Economically Weaker Sections (EWS), Lower Income Groups (LIG), and Middle Income Groups (MIG). Affordable Housing in Partnership (AHP) supports projects where 35% of constructed units are reserved for EWS categories. In-situ Slum Redevelopment (ISSR) facilitates rehabilitation of slum dwellers through private participation and land as a resource. Beneficiary- led Construction (BLC) provides financial assistance for individual house construction or enhancement.

The policy establishes a multi-tiered implementation structure that distributes responsibilities across governance levels. The Ministry of Housing and Urban Affairs provides overarching policy guidance and financial support, while State-level Nodal Agencies coordinate implementation within their jurisdictions. Urban Local Bodies identify beneficiaries, facilitate approvals, and monitor local implementation. This structure balances national standardization with contextual adaptation to local housing conditions and administrative capabilities.

4.1 Implementation Mechanisms and Innovation

The implementation of PMAY-U 2.0 incorporates multiple innovative mechanisms designed to overcome traditional barriers in affordable housing delivery. These approaches reflect a sophisticated understanding of the complex challenges in creating accessible, high-quality housing within India's diverse urban contexts.

Public-Private Partnership models represent a cornerstone implementation approach, particularly within the Affordable Housing in Partnership vertical. These partnerships distribute risks and responsibilities between public authorities and private developers through various arrangements. Land-based models leverage public land as equity contribution while private partners manage construction and partial marketing. Mixed development models allow cross-subsidisation by permitting developers to build premium housing that offsets affordable housing costs. Infrastructure support models provide government-funded services and connectivity while private partners focus on housing construction. These partnership structures have facilitated projects like the Kathputli Colony redevelopment in Delhi, where private developer participation enabled slum rehabilitation while ensuring commercial viability.

Technology adoption has significantly enhanced program implementation efficiency. The PMAY-U 2.0 framework mandates use of the GHTC-India (Global Housing Technology Challenge-India) certified technologies that reduce construction time by 40-60% while improving structural quality and sustainability performance. These technologies include prefabricated sandwich panel systems, monolithic concrete construction, and modular formwork systems. The framework incentivises technology adoption through differential subsidy structures and expedited approval processes for projects utilising approved alternative technologies.

The beneficiary identification and selection process employs technology-enabled approaches to ensure transparency and target accuracy. The framework integrates Aadhaar-based beneficiary identification, geo-tagging of housing units, and direct benefit transfers for subsidy disbursement. This technological integration has reduced leakages, enhanced beneficiary targeting, and facilitated real-time monitoring of implementation progress across the 4,372 urban centres participating in the program.

4.2 Achievements, Challenges, and Urban Impact

The implementation of PMAY-U 2.0 has generated significant quantitative achievements while encountering persistent challenges that reflect the complexity of India's urban housing ecosystem. A balanced assessment of the program's performance reveals both transformative impacts and areas requiring further policy refinement.

Quantitative achievements as of 2023 demonstrate the program's substantial scale. Approximately 11.2 million housing units have been sanctioned across intervention verticals, with 8.3 million units completed or under construction. The Credit Linked Subsidy Scheme has benefited over 1.5 million middle and lower- income households through interest subsidies totaling 35,000 crore. In-situ Slum Redevelopment projects have addressed 1,800 slum settlements affecting approximately 2.2 million residents. These numerical accomplishments represent unprecedented scale in India's affordable housing development.

Implementation challenges persist despite these achievements. Land availability in prime urban locations remains a critical constraint, with high acquisition costs undermining affordability objectives despite subsidy support. Approval processes, though streamlined through single-window systems in many cities, continue to involve multiple agencies with varying efficiency levels. Construction quality monitoring faces capacity limitations in smaller Urban Local Bodies, where technical oversight capabilities are often insufficient for comprehensive quality assurance. Financial viability gaps affect private sector participation, particularly in smaller cities with limited market depth and lower profit potential.

The urban impact extends beyond housing units to broader settlement patterns and urban morphology. PMAY-U projects have influenced peripheral development in many cities, with large-scale projects often located in urban expansion areas due to land availability constraints. This pattern has implications for transportation networks, service provision, and social integration. Progressive projects incorporate transit-oriented development principles, with housing developments planned around transportation corridors to ensure connectivity with employment centres. Evolving design approaches increasingly emphasise mixed-income communities rather than isolated EWS enclaves, promoting social integration while reducing stigmatisation of affordable housing areas.

4.3 Towards Sustainable and Inclusive Urban Housing

The evolution of PMAY-U 2.0 reflects a progressive shift toward more comprehensive approaches to affordable housing that integrate sustainability, inclusivity, and livability considerations. This evolution acknowledges that successful affordable housing requires more than just physical structures-it necessitates holistic environments that support community development and quality of life.

Environmental sustainability integration within the PMAY-U framework has strengthened over time, reflecting growing recognition of ecological imperatives. The policy now incorporates graduated incentives for projects achieving higher sustainability certifications (GRIHA/IGBC), with additional subsidies available for developments incorporating rainwater harvesting, solar energy utilization, and waste management systems. Design guidelines mandate climate-responsive features including proper orientation, natural ventilation, and thermal insulation appropriate to regional climatic conditions. These provisions address both environmental protection objectives and beneficiary economic interests through reduced utility costs over building lifecycles.

Social infrastructure integration represents another dimension of the program's maturation. Recognizing that housing exists within broader community contexts, revised guidelines require projects exceeding 500 units to incorporate educational facilities, healthcare centers, community spaces, and recreational areas. Funding mechanisms now support these social infrastructure elements as essential components of housing projects rather than separate initiatives. This integrated approach acknowledges the relationship between housing adequacy and access to essential services that support resident wellbeing and community development.

Livelihood linkages within housing developments have emerged as a critical focus area, particularly following observations that relocated communities often struggle with employment disruption. Innovative approaches include integrated production centers within larger developments, skills training facilities aligned with local economic opportunities, and commercial spaces allocated for micro-enterprises operated by residents. The Rajkot PMAY-U project exemplifies this approach, incorporating handloom production facilities that provide employment opportunities for women residents while connecting to established textile marketing networks.

100% Accessibility

Housing designs are fully accessible to persons with disabilities

20% Energy Savings

Reduction in energy consumption through efficient design

30% Green Space

Minimum area allocation for parks and community spaces

05 Design Act, India - 2000 - Protecting Architectural Innovation

05 Design Act, India (2000)

The Design Act, 2000 (amended in 2008) established India's modern framework for industrial design protection, including significant provisions relevant to architectural and urban design elements. While typically associated with product design, this legislation plays an increasingly important role in the built environment by providing intellectual property protection for distinctive design elements in buildings, urban infrastructure, and construction components.

The legal framework defines "design" as features of shape, configuration, pattern, ornament, or composition of lines or colours applied to articles through industrial processes. In the context of urban development, protectable designs include distinctive building facades, innovative structural elements, unique fixtures, specialised construction components, and characteristic streetscape features. The protection extends to the aesthetic aspects of these elements rather than their purely functional dimensions, recognizing the creative expression embedded in visual and experiential aspects of the built environment.

Registration procedures under the Act involve application to the Controller General of Patents, Designs and Trademarks, with submissions including representations of the design and specification of its application. For architectural and urban design elements, this typically requires detailed drawings, renderings, or models that clearly depict the distinctive features seeking protection. The examination process evaluates both originality (not previously published) and novelty (significantly differentiated from existing designs) before granting registration for an initial period of ten years, renewable for an additional five years.

The scope of protection prohibits unauthorised application of registered designs or obvious imitations to the same category of articles. For urban development professionals, this means that distinctive design elements cannot be legally copied in other projects without permission from the design rights holder. This protection enables designers to differentiate their work in the marketplace while recovering the investment made in creating innovative design solutions.

5.1 Applications in Urban Development Practice

The Design Act has found diverse applications across the urban development landscape, protecting innovation in multiple domains while shaping how design professionals approach their work. These applications demonstrate the Act's practical relevance to architectural practice, construction technology, and urban design.

In architectural practice, the Act enables protection for signature design elements that distinguish a firm's work. Notable examples include distinctive façade treatments, characteristic spatial arrangements, and innovative interior design systems. The protection allows architects to develop recognizable styles that enhance their market position while preventing unauthorized appropriation of their creative expressions.

Leading firms increasingly include design registration as a standard component of their project development process, particularly for high-profile projects where distinctive design represents a significant value proposition.

For construction component manufacturers, the Act provides essential protection for innovative building elements including specialized cladding systems, modular construction components, advanced fenestration designs, and distinctive hardware. This protection supports investment in research and development by ensuring that novel design solutions cannot be immediately copied by competitors without compensation to the original innovator. The construction material industry has become one of the most active sectors for design registrations, with over 850 applications filed annually for construction-related components.

Urban design applications include protection for distinctive street furniture, specialized paving patterns, characteristic lighting fixtures, and unique wayfinding systems. These protections are particularly valuable for place-making initiatives where consistent, recognizable design elements contribute to neighborhood identity and branding. Municipal authorities and development agencies increasingly register designs for public realm elements that form part of area revitalization or district identification strategies.

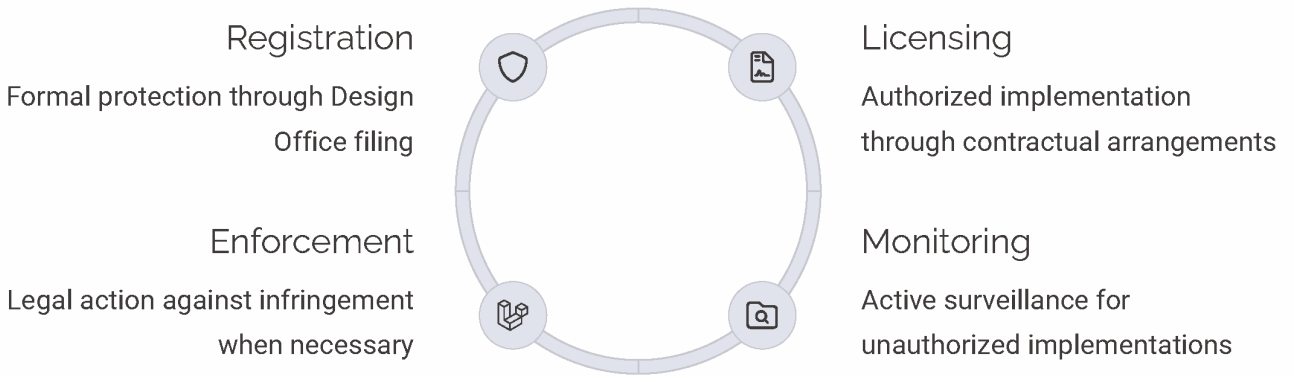
5.2 Enforcement Mechanisms and Design Licensing

The practical value of design protection depends significantly on effective enforcement mechanisms and strategic licensing approaches. The Design Act establishes both judicial and administrative pathways for enforcing registered design rights, while evolving business practices have created sophisticated licensing frameworks that facilitate appropriate commercialization of protected designs.

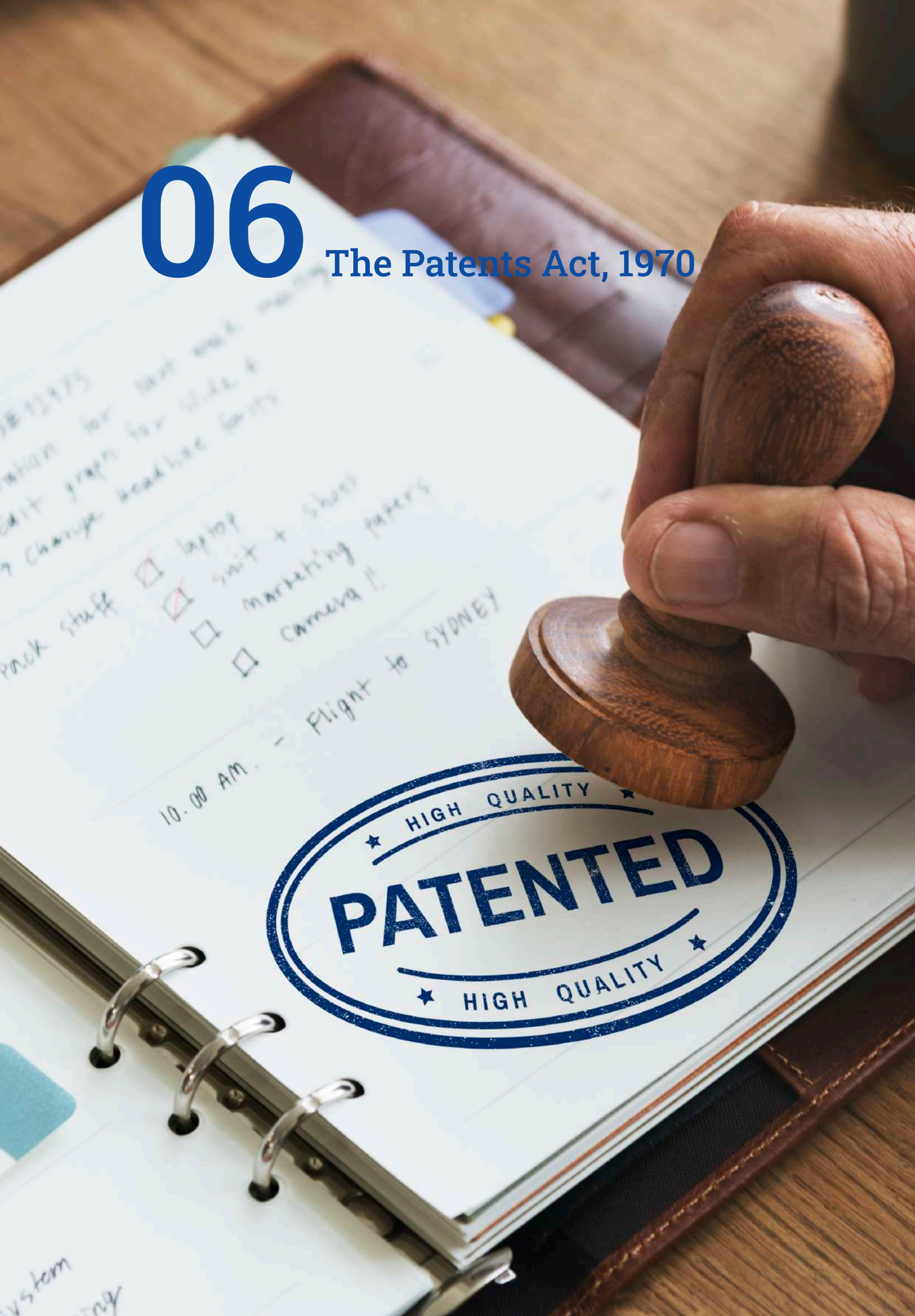
Enforcement procedures for design infringement involve both civil and criminal remedies. Civil proceedings typically begin with cease and desist notices to alleged infringers, followed by litigation in District Courts or the High Court where injunctions, damages, and accounts of profits may be sought. Criminal penalties for willful infringement include fines up to ¹50,000 and imprisonment up to one year. For architectural and urban design elements, enforcement more commonly involves civil remedies, with litigants seeking injunctions to prevent continued use of infringing designs and damages to compensate for unauthorized use.

Burden of proof considerations significantly shape enforcement dynamics. The plaintiff must demonstrate both valid registration and substantial similarity between the registered design and the allegedly infringing implementation. In architectural contexts, this often involves detailed comparative analysis of design elements to distinguish between general design concepts (unprotectable) and specific expressions of those concepts (protectable). Expert testimony frequently plays a central role in these determinations, with architectural authorities providing opinion evidence on the distinctiveness of design elements and the substantiality of similarities.

Licensing strategies enable productive commercialization of protected designs while maintaining intellectual property control. Exclusive licensing arrangements grant a single entity rights to implement a design within specified parameters, typically with geographic or sectoral limitations. Non-exclusive licensing allows multiple implementers to utilise the design, often appropriate for construction components with broad application potential. Cross-licensing arrangements, where designers exchange rights to different protected elements, facilitate collaborative development while respecting individual contributions. These licensing approaches enable design innovation to propagate through the built environment while ensuring appropriate compensation for originators.



06 The Patents Act, 1970



06 The Patents Act, 1970

The Patents Act, 1970, serves as the cornerstone of India's patent regulation system, establishing the legal framework for the protection of inventions. This legislation has undergone significant amendments, particularly in 1999, 2002, and 2005, to align with the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) following India's accession to the World Trade Organization in 1995.

The Act defines a patent as an exclusive right granted to a person who has invented a new and useful article, an improvement of existing article, or a new process of making an article. It excludes mere discoveries, scientific theories, mathematical methods, business methods, computer programs per se, and traditional knowledge from patentability. Notably, Section 3(d) prevents the patenting of new forms of known substances unless they demonstrate enhanced efficacy 3 a provision that has been particularly relevant in pharmaceutical patent cases.

Patents in India are granted for a period of 20 years from the date of filing the application, during which the patentee has the exclusive right to make, use, sell, import, and distribute the patented invention. The Act establishes a robust examination system administered by the Indian Patent Office, which scrutinizes applications for novelty, inventive step, and industrial applicability.

The legislation also incorporates provisions for compulsory licensing under specific circumstances, such as non-working of patents, public health emergencies, or anti-competitive practices.
This balanced approach aims to protect inventors' rights while ensuring public access to vital technologies, particularly in healthcare. The Controller General of Patents, Designs and Trademarks serves as the primary administrative authority overseeing the implementation of the Act, supported by four Patent Offices located in Chennai, Delhi, Kolkata, and Mumbai.

Patent Filing and Examination Procedures in India

The patent filing and examination process in India follows a systematic procedure governed by the Patents Act, 1970, and the Patents Rules, 2003 (as amended). The journey begins with the filing of a patent application at one of the four Patent Offices located in Chennai, Delhi, Kolkata, or Mumbai. Applications can be filed by the inventor, assignee, or authorised patent agent and must be accompanied by a complete specification detailing the invention, claims, abstract, and drawings (if applicable).

The application undergoes preliminary scrutiny for formal requirements before publication in the Official Journal, typically after 18 months from the priority date. Following publication, a request for examination must be filed within 48 months from the priority date. The application then enters the substantive examination queue, where a patent examiner evaluates it for patentability criteria including novelty, inventive step, and industrial applicability.

1 Initial Filing

Submission of application with provisional or complete specification, accompanied by prescribed fees and forms

2 Publication

Application published in Official Journal after 18 months from priority date, enabling public scrutiny

3 Examination Request

Formal request required within 48 months of priority date, accompanied by examination fees

4 Substantive Examination

Comprehensive review for formal requirements, patentability criteria, and potential objections

The examiner issues a First Examination Report (FER) outlining any objections or requirements. The applicant has six months (extendable by three months) to respond and overcome these objections. This may involve amending claims, providing arguments, or submitting additional evidence. If objections are satisfactorily addressed, the patent is granted and published in the Official Journal. If objections persist after the applicant's response, the Controller may refuse the application, subject to the applicant's right to request a hearing.

India also provides for expedited examination under specific circumstances, including when the applicant has selected India as an International Searching Authority in a PCT application or for startups and small entities. The entire process from filing to grant typically takes 3-5 years, though this timeline can vary based on the technical field and complexity of the application.


COPYRIGHT

07 Digital Personal Data Protection Act, 2023

07 Digital Personal Data Protection Act, 2023

7.1 Intorduction and Scope

The Digital Personal Data Protection Act (DPDPA) of 2023 marks a significant milestone in India's data governance framework, establishing comprehensive regulations for the processing of personal digital data. Enacted after years of deliberation and multiple draft iterations, the DPDPA introduces a robust legal framework that seeks to balance individual privacy rights with the need for data utilization in the digital economy.

The Act applies to the processing of digital personal data within the territory of India, whether collected from individuals (data principals) residing in India or outside. Its jurisdiction extends to personal data processed outside India if it relates to offering goods or services to individuals in India. The legislation defines "personal data" as any information that can directly or indirectly identify a natural person, while "digital personal data" specifically refers to personal data in digital form.

The scope of the DPDPA encompasses both automated and non-automated processing of digital personal data, covering virtually all sectors of the economy. However, it provides important exemptions for personal data processing in specific contexts, including non-automated processing by individuals for personal or domestic purposes, data included in records that have existed for at least 100 years, and data processing necessary for the prevention, detection, investigation, or prosecution of offences.

The Act assigns key roles to different entities in the data ecosystem. The "data principal" is the individual to whom the personal data relates, the "data fiduciary" is the entity that determines the purpose and means of processing personal data, and the "data processor" processes personal data on behalf of the data fiduciary. A significant institutional development is the establishment of the Data Protection Board of India as the primary regulatory authority responsible for enforcement and adjudication. This ambitious legislation represents India's response to the challenges of data protection in the digital age, aiming to create a trustworthy digital ecosystem while promoting innovation and economic growth.

7.2 Introduction and Scope Key Provisions and Obligations Under the DPDPA

The Digital Personal Data Protection Act introduces a comprehensive framework of obligations for data fiduciaries and rights for data principals, establishing new standards for personal data handling in India. At its foundation, the Act mandates that personal data can only be processed for lawful purposes after obtaining valid consent from data principals, with limited exceptions such as compliance with legal obligations or responding to medical emergencies.

Data fiduciaries are bound by several fundamental obligations. They must implement reasonable security safeguards to prevent data breaches and must notify both the Data Protection Board and affected data principals in case of significant personal data breaches. The legislation introduces strict purpose limitation principles, requiring that data collection be limited to what is necessary for specified purposes and retained only as long as required. Data fiduciaries must also ensure the accuracy and completeness of personal data and provide a clear notice about their data processing activities in simple, accessible language.

Notice and Consent Requirements

- Clear, accessible notice in multiple languages
- Explicit consent for data processing
- Right to withdraw consent at any time
- Special protections for children's data

Data Principal Rights

- Right to access information about processing
- Right to correction and erasure of personal data
- Right to nominate another person in case of death or incapacity
- Right to grievance redressal

Cross-Border Data Transfer Provisions

- Data transfer to notified countries permitted
- Based on adequacy assessment or reciprocity
- Government may restrict certain sensitive data
- Compliance with additional safeguards may be required

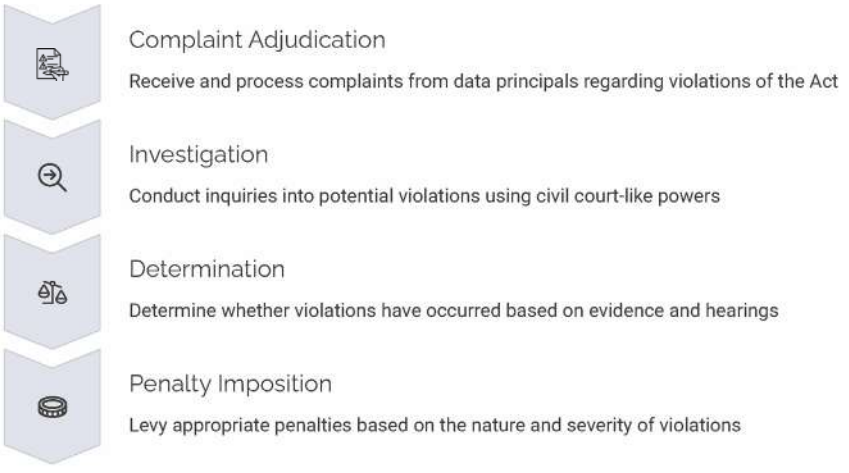
The DPDPA establishes enhanced protection for children's personal data, requiring parental consent for processing and prohibiting tracking or behavioural monitoring of children. Significant data fiduciaries, designated based on factors such as volume of data processed or risk to data principals, face additional compliance requirements, including periodic data audits and appointment of a Data Protection Officer.

For cross-border data transfers, the Act introduces a notification-based regime where the government may allow transfers to specific countries based on adequacy assessments. Non-compliance with DPDPA provisions can result in substantial penalties, up to ₹250 crore for certain violations, making this one of India's most consequential data governance legislations to date.

7.3 Data Protection Board: Structure, Power and Functions

The Data Protection Board of India represents the central regulatory authority established under the Digital Personal Data Protection Act, 2023. The Board is designed as an independent body tasked with enforcing compliance, adjudicating on matters related to personal data protection, and imposing penalties for violations. The Union Government appoints the Chairperson and Members of the Board, who are selected based on their expertise in law, technology, data science, cybersecurity, and related domains.

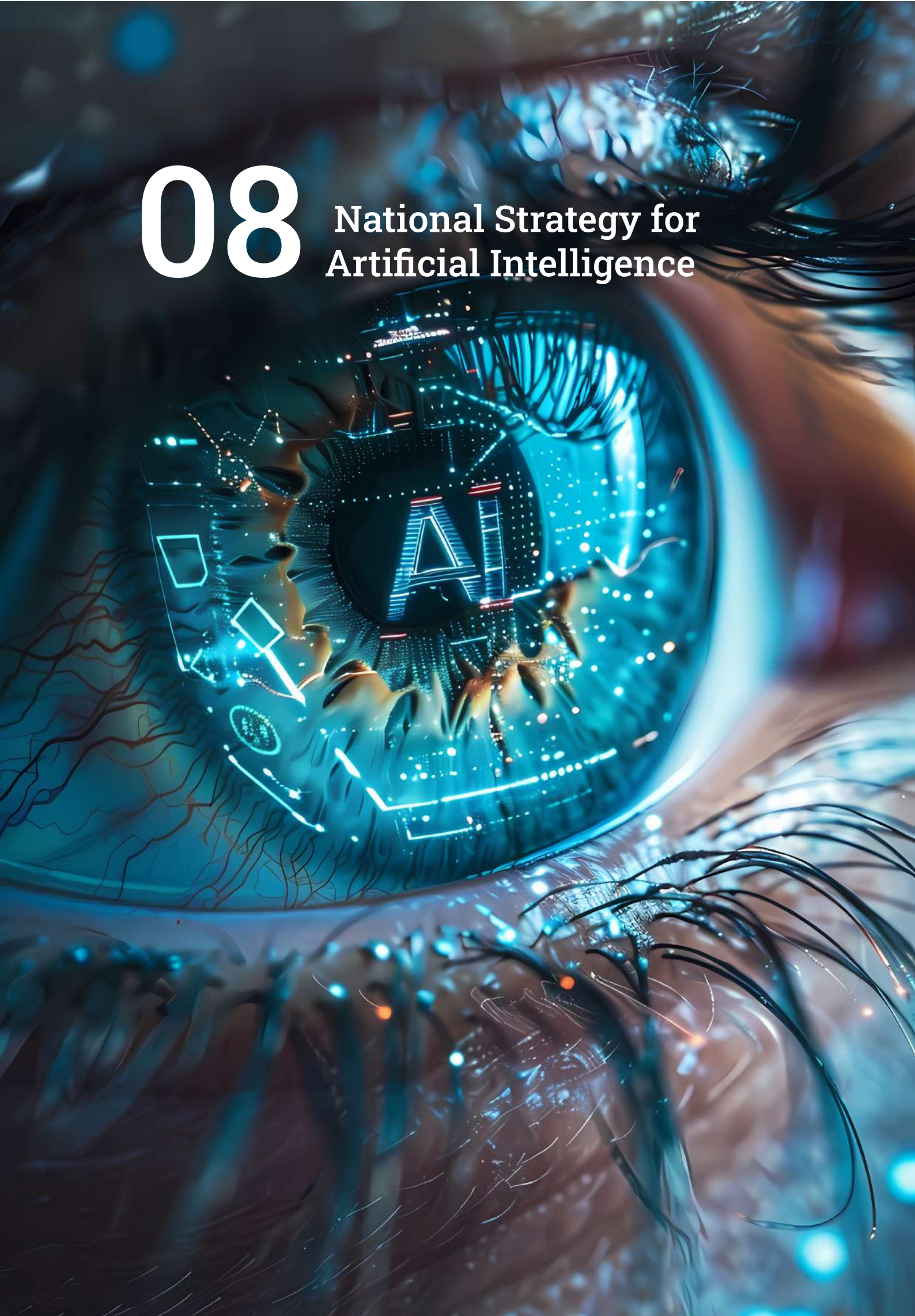
The Board is vested with significant investigative and enforcement powers to fulfill its mandate. It can conduct inquiries based on complaints from data principals or on its own initiative if it has reason to believe that a data fiduciary has violated provisions of the Act. During investigations, the Board has powers comparable to a civil court, including summoning witnesses, requesting documents, receiving evidence on affidavits, and issuing commissions for the examination of witnesses or documents.



The Board functions as a digital office with jurisdiction throughout India, leveraging technology to streamline processes and ensure accessibility. It follows a quasi-judicial procedure that balances efficiency with due process. Proceedings begin with a preliminary assessment of complaints, followed by notices to concerned parties, hearings where parties can present their case, and finally, determinations that may include directions to remedy violations and/or financial penalties.

In determining penalties, the Board considers various factors, including the nature, gravity, and duration of the violation; the type of personal data affected; whether the violation was intentional or negligent; actions taken to mitigate harm; and any previous violations. Appeals against the Board's decisions can be made to the Telecom Disputes Settlement and Appellate Tribunal. This comprehensive regulatory structure aims to create a robust enforcement mechanism that protects data principals' rights while providing clear guidance to data fiduciaries on compliance requirements.

08 National Strategy for Artificial Intelligence



08 National Strategy for Artificial Intelligence

8.1 Vision and Objectives

India's National Strategy for Artificial Intelligence, developed by NITI Aayog in 2018, represents a visionary approach to positioning India as a global AI leader while addressing unique domestic challenges. The strategy articulates a comprehensive framework branded as "#AIForAll" that seeks to leverage AI for inclusive growth, social development, and technological leadership. This dual emphasis on economic advancement and social inclusion distinguishes India's approach from purely commercially driven AI strategies adopted by some other nations.

The strategy identifies five key focus sectors where AI interventions can generate transformative impact: Healthcare (increasing access and affordability), Agriculture (enhancing farmer income, reducing wastage), Education (improving access and quality), Smart Cities and Infrastructure (enhancing efficiency), and Smart Mobility and Transportation (reducing congestion and enhancing safety). These sectors were selected based on their potential for both social impact and commercial viability, representing areas where India faces significant challenges that AI solutions could address.

The document outlines four essential objectives to realise its vision. First, it aims to enhance and empower Indians with the skills necessary to operate in an AI-driven economy, proposing workforce retraining programs and educational curriculum updates. Second, it seeks to accelerate AI research by establishing Centres of Research Excellence (CORES) and International Centres of Transformational AI (ICTAIs). Third, it promotes the development of scalable AI solutions addressing societal needs, with particular attention to creating application-based research. Fourth, it proposes responsible AI development through ethical guidelines, privacy frameworks, and secure digital infrastructure.

Rather than viewing AI merely as a technological tool, the strategy conceptualises it as a socio-technical system with far-reaching implications for economic growth, social development, and India's position in the global innovation landscape. It acknowledges the importance of addressing challenges like data privacy, security, and skilling while fostering an innovation ecosystem that can utilise India's strengths in IT services, large youth population, and growing startup environment. The strategy sets the foundation for subsequent policies and initiatives in the AI domain, representing India's structured approach to harnessing this transformative technology.

8.2 Implementation Framework of India's AI Strategy

The implementation framework for India's National AI Strategy encompasses a multi-faceted approach to address various challenges in the AI ecosystem. At its core, the framework recognises the need for institutional mechanisms, research promotion, talent development, and market applications to create a sustainable AI environment in India. This implementation architecture is designed to be adaptive, evolving with technological advancements and changing societal needs.

On the institutional front, the strategy proposes a two-tiered research structure. Centres of Research Excellence (COREs) would focus on fundamental research to advance core AI technologies, while International Centres of Transformational AI (ICTAIs) would concentrate on application-based research with industry collaboration. This dual approach aims to balance pure research with practical applications. The strategy envisions these centres operating through a public-private partnership model, with the government providing initial funding and the private sector contributing through research grants and endowments.

Research & Development Focus Areas

- Natural Language Processing for Indian languages
- Computer vision and image processing
- Machine learning algorithms for social good
- Explainable AI systems
- Edge computing for resource-constrained environments

Data Infrastructure Development

- National AI Marketplace platform
- Annotated datasets in priority sectors
- Data trusts for responsible data sharing
- Standardized data formats and APIs
- Federated learning frameworks

Skills & Talent Development

- Multi-tiered AI education programs
- Faculty development initiatives
- Industry-academia fellowships
- Reskilling programs for professionals
- International collaborations for knowledge transfer

To address the data challenges critical for AI development, the strategy proposes creating a National AI Marketplace (NAIM) that would serve as a one-stop platform for data collection, preprocessing, and sharing. This would be supplemented by initiatives to create data trusts, develop standardized annotation practices, and establish data marketplaces specific to key sectors. The implementation framework emphasizes creating high-quality, representative datasets that are accessible to researchers and innovators while respecting privacy and security concerns.

The strategy outlines specific initiatives to develop AI talent, including curriculum reforms at different educational levels, faculty development programs, and certification courses. It proposes establishing a National AI Fellowship Programme to retain talent and creating specialized AI tracks in technical education. For broader ecosystem development, the framework includes provisions for innovation funding through venture capital, acceleration programs for AI startups, and special economic zones focused on AI development. This comprehensive approach aims to create a self-sustaining AI ecosystem while addressing India's unique challenges and leveraging its inherent strengths.

8.3 Ethical and Regulatory Considerations in India's AI Policy

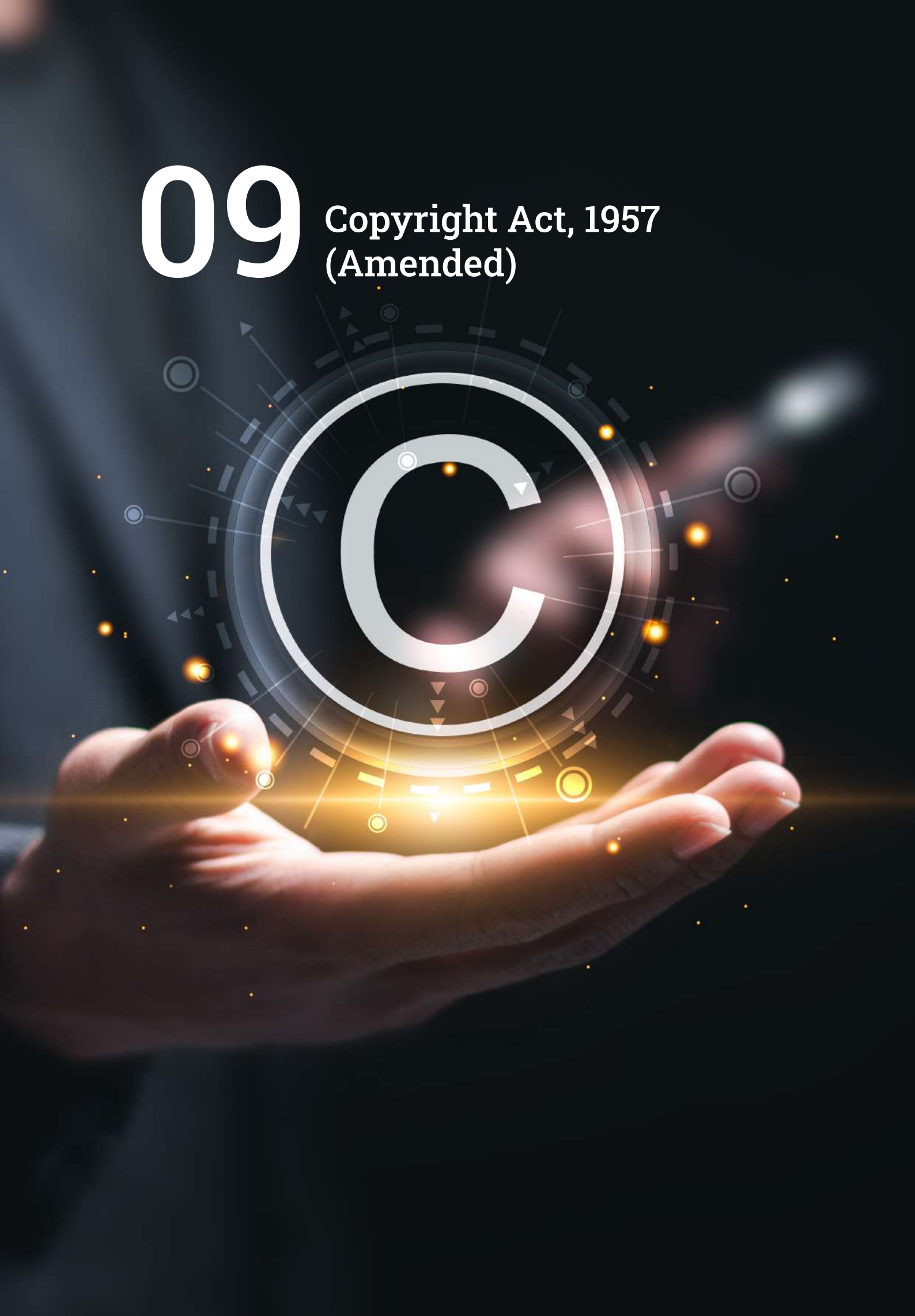
The National Strategy for Artificial Intelligence acknowledges that ethical considerations must be central, not peripheral, to AI development in India. The strategy emphasizes that as AI systems become increasingly autonomous and operate with minimal human oversight, ensuring their alignment with human values, fairness, and transparency becomes paramount. This perspective is shaped by India's cultural and constitutional ethos, which values diversity, inclusion, and social justice.

The strategy identifies several critical ethical challenges that require policy intervention. The issue of algorithmic bias features prominently, with concerns that AI systems may perpetuate or amplify existing social biases related to gender, caste, religion, or economic status. To address this, the strategy proposes developing technical standards for bias detection and mitigation, promoting diverse development teams, and creating representative training datasets that reflect India's social diversity. It also emphasises the need for explainable AI, enabling individuals to understand how algorithmic decisions affecting them are made.

On the regulatory front, the strategy advocates for a balanced approach that protects citizens while fostering innovation. Rather than creating entirely new regulatory frameworks, it suggests adapting existing sectoral regulations to address AI-specific challenges. The strategy recommends a risk-based regulatory approach, with greater oversight for AI applications in high-risk domains like healthcare and transportation. For implementation, it proposes establishing a multi-stakeholder body for AI ethics, developing sectoral guidelines, and creating regulatory sandboxes to test AI applications in controlled environments.

The strategy also acknowledges the interconnection between AI policy and data protection legislation, recognising that effective AI governance requires robust data governance frameworks. It anticipates alignment with the Digital Personal Data Protection Act and recommends mechanisms for consent, anonymisation, and purpose limitation in AI contexts. Furthermore, the strategy addresses workforce disruption concerns by proposing transition support for affected workers, including reskilling programs and social safety nets. This comprehensive ethical and regulatory framework aims to create a responsible AI ecosystem that balances innovation with societal well-being.

09 Copyright Act, 1957 (Amended)



09 Copyright Act, 1957 (Amended)

The Copyright Act, 1957, as amended multiple times with significant revisions in 1994, 2012, and 2021, serves as the primary legislation governing copyright protection in India. The Act aligns with international copyright conventions, including the Berne Convention, the Universal Copyright Convention, and the TRIPS Agreement, while incorporating provisions that address India's specific socio-economic context.

The legislation protects original literary, dramatic, musical, and artistic works, cinematograph films, and sound recordings. Protection is granted automatically upon creation without any formal registration requirements, though registration provides evidentiary advantages in infringement proceedings. The Act defines "copyright" as an exclusive right to reproduce, publish, perform, communicate, translate, adapt, and commercially rent the protected work. The term of protection varies by category: for literary, dramatic, musical, and artistic works, copyright subsists for the lifetime of the author plus 60 years; for photographs, cinematograph films, sound recordings, and works of government and public undertakings, the term is 60 years from the year of publication.

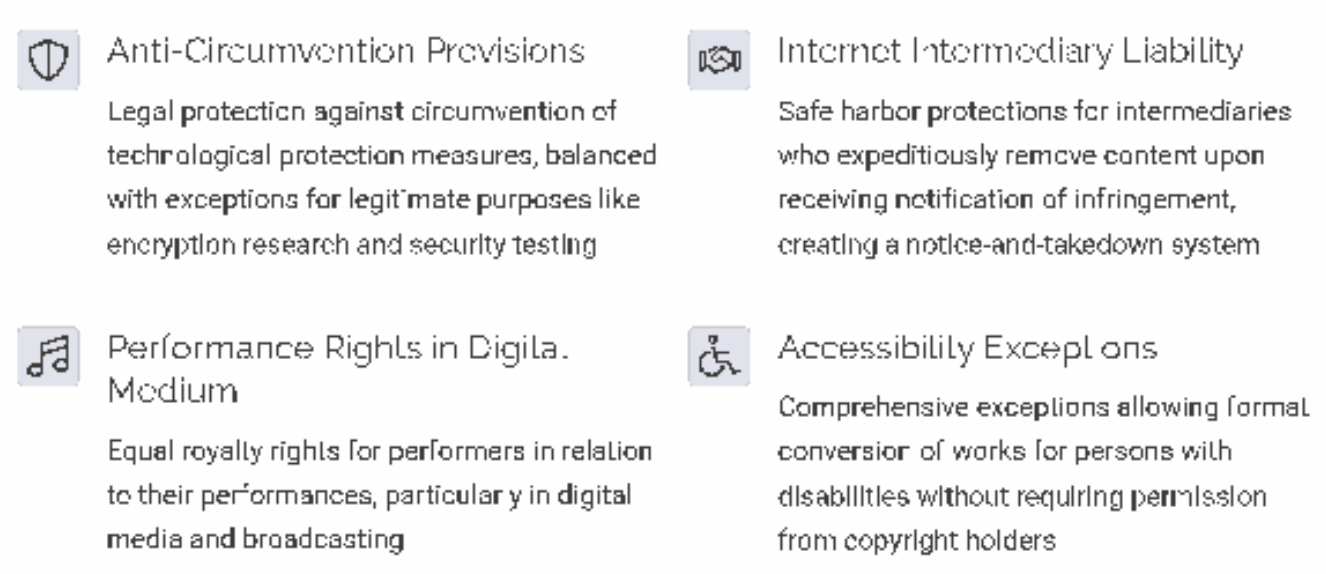
The Act establishes a dual system of ownership and authorship. Generally, the author of a work is the first owner of copyright, but exceptions exist for works created in the course of employment (where the employer becomes the owner) and commissioned works (where ownership may belong to the commissioner). The legislation provides for the assignment and licensing of copyright, enabling economic exploitation of protected works while safeguarding authors' interests through provisions like the requirement of written assignments and the limitation on assignment duration.

A distinctive feature of India's copyright regime is its robust framework of exceptions and limitations under the doctrine of "fair dealing." Section 52 provides an extensive list of acts that do not constitute infringement, including use for research, criticism, review, news reporting, and educational purposes. The 2012 amendment expanded these exceptions to accommodate digital technologies and address the needs of persons with disabilities. The Copyright Board, reconstituted as the Intellectual Property Appellate Board (IPAB) and subsequently transferred to High Courts, adjudicates disputes related to copyright licensing and assignments, setting appropriate royalties and resolving conflicts between stakeholders.

9.1 Digital Copyright Challenges and 2012 Amendments

The digital revolution presented unprecedented challenges to India's copyright framework, necessitating comprehensive legislative responses. The proliferation of digital technologies fundamentally altered the dynamics of creation, distribution, and consumption of copyrighted works, challenging traditional copyright notions of reproduction and control. Digital works could be perfectly copied, instantaneously transmitted across borders, and easily modified, raising concerns about unauthorised exploitation and enforcement difficulties.

The Copyright (Amendment) Act of 2012 represents India's most significant legislative response to these digital challenges. The amendments introduced technology-neutral definitions for key concepts, ensuring that copyright protection extends to digital environments regardless of technological evolution. The amendments explicitly recognised digital reproduction rights, addressing concerns about server-side and client-side copying in networked environments. They introduced explicit provisions for temporary copies made during technological processes, ensuring that transient reproductions necessary for digital transmission don't constitute infringement.



The amendments introduced India's version of anti-circumvention provisions, prohibiting the circumvention of technological protection measures (TPMs) used to protect copyrighted works. However, unlike the more stringent approach in some jurisdictions, India's provisions apply only when circumvention is done with the intention of infringing copyright, creating a more balanced regulatory framework. The amendments also addressed digital licensing challenges by providing for statutory licenses for broadcasting organizations and creating a mechanism for addressing orphan works.

Significantly, the 2012 amendments strengthened authors' rights in the digital environment by introducing provisions for inalienable rights to royalties for certain works, particularly benefiting musicians and lyricists whose works are used in films and sound recordings. This ensures equitable remuneration in the digital ecosystem where traditional revenue models have been disrupted. The amendments also expanded fair-dealing exceptions to accommodate educational and research uses in digital contexts, including provisions for intermediate copies for computational analysis. These comprehensive changes positioned India's copyright law to better address the challenges and opportunities of the digital age while maintaining a balance between creator rights and public access.

9.2 Copyright Enforcement and Remedies in India

The Copyright Act of India establishes a robust enforcement framework that provides copyright owners with both civil and criminal remedies against infringement. Civil remedies include injunctions, damages, rendition of accounts of profits, and delivery of infringing copies. The legislation empowers courts to grant both temporary and permanent injunctions to prevent ongoing or anticipated infringement. In assessing damages, courts may consider actual economic loss, unfair profits gained by the infringer, and, in cases of flagrant infringement, additional punitive damages. The Anton Piller order, which allows surprise inspections of premises suspected of housing infringing materials, represents a powerful procedural tool available to copyright owners.

Criminal enforcement provides a parallel track for addressing copyright violations. Section 63 of the Act stipulates that knowing infringement or abetment of infringement is punishable with imprisonment ranging from six months to three years and fines between ₹50,000 and ₹2 lakhs. Enhanced penalties apply for second and subsequent convictions. Criminal provisions also target activities that facilitate infringement, such as making or possessing plates for producing infringing copies and importing infringing copies into India.

Remedy Type	Available Actions	Key Requirements	Time Limitations
Civil Remedies	Injunctions, damages, accounts of profit, and delivery up of infringing copies	Proof of ownership and infringement	Three years from date of infringement
Criminal Remedies	Imprisonment (6 months to 3 years), fines (50,000 to 2 lakhs)	Knowledge or intention to infringe	Three years from date of offence
Administrative Remedies	Border enforcement measures, customs seizure	Registration with customs authorities	Based on registration validity
Alternative Dispute Resolution	Mediation, arbitration through commercial courts	Mutual consent of the parties	Variable based on specific ADR mechanism

Administrative enforcement mechanisms complement judicial remedies. Under the Intellectual Property Rights (Imported Goods) Enforcement Rules, 2007, copyright owners can register their works with customs authorities, who are empowered to seize suspected infringing imports. The specialised Commercial Courts established under the Commercial Courts Act, 2015, have jurisdiction over copyright disputes with significant commercial implications, providing specialised and expedited adjudication.

Despite this comprehensive framework, copyright enforcement in India faces practical challenges. These include delays in court proceedings, difficulties in quantifying damages, jurisdictional issues in online infringement cases, and limitations in enforcement agency capacity. To address these challenges, India has established specialised Intellectual Property cells in police departments in major cities and implemented training programs for law enforcement officials. Alternative dispute resolution mechanisms, including mediation and arbitration, are increasingly utilised to resolve copyright disputes more efficiently. The Copyright Office maintains a searchable online register of copyrighted works, facilitating verification of ownership claims during enforcement proceedings.

10 India's National Intellectual Property Rights (IPR) Policy, 2016

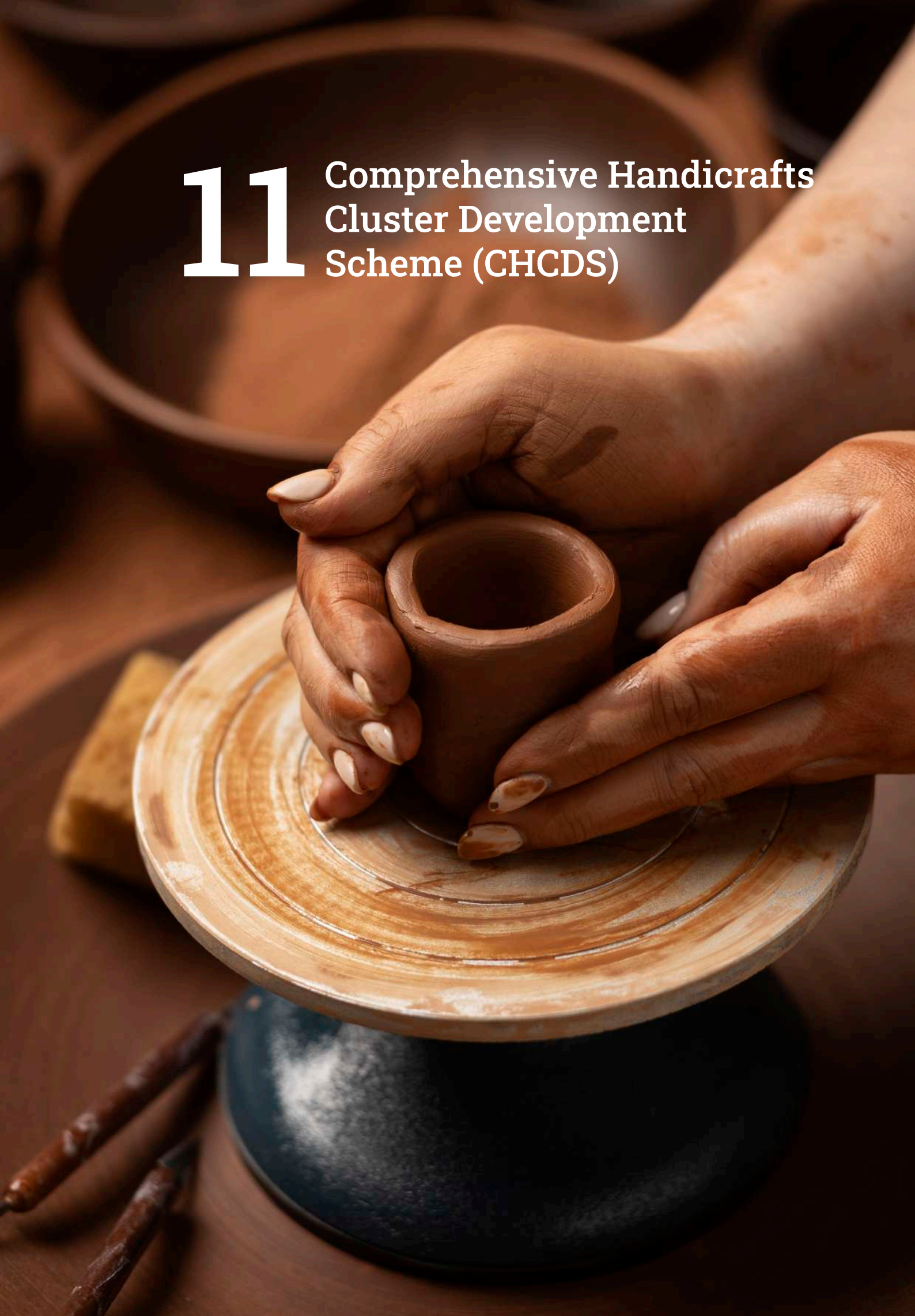
10 Intellectual Property Rights (IPR) Policy

The National Intellectual Property Rights (IPR) Policy of 2016 represents India's strategic vision to stimulate innovation and creativity across sectors while balancing economic growth with social and developmental priorities. The policy was formulated by the Department for Promotion of Industry and Internal Trade (DPIIT) to establish a holistic approach to intellectual property protection and promotion.

The policy is structured around seven key objectives: IPR Awareness (outreach and promotion), Generation of IPRs (stimulation of IP creation), Legal and Legislative Framework (robust, effective laws), Administration and Management (modernized IP offices), Commercialization of IPRs (value generation), Enforcement and Adjudication (strengthened mechanisms), and Human Capital Development (IP education and research). These objectives are designed to function synergistically to create an ecosystem that values and protects intellectual property.

A significant institutional development under this policy was the transfer of responsibility for copyright and semiconductor layout design to the Department for Promotion of Industry and Internal Trade (DPIIT), creating a unified administrative structure for most forms of intellectual property. The policy also emphasizes the importance of Traditional Knowledge Digital Library (TKDL) to protect India's vast traditional knowledge from misappropriation through improper patenting.

The IPR Policy acknowledges the need to balance inventors' rights with the larger public interest, particularly in critical areas such as healthcare, food security, and environmental protection. It promotes the use of TRIPS flexibilities, including compulsory licensing provisions, to ensure access to essential commodities. The policy has fostered greater coordination among various ministries and departments and has established India's approach to international IP negotiations, advocating for a development-oriented perspective in global forums.



11 Comprehensive Handicrafts Cluster Development Scheme (CHCDS)

11 Comprehensive Handicrafts Cluster Development Scheme (CHCDS)

The Comprehensive Handicrafts Cluster Development Scheme (CHCDS) is a flagship initiative of the Ministry of Textiles, Government of India, designed to address the multifaceted challenges faced by the handicrafts sector. Launched as part of the broader National Handicrafts Development Programme, this scheme aims to enhance the productivity, competitiveness, and market access of artisans through a cluster-based approach to development.

The cornerstone of CHCDS is its recognition of the geographical concentration of artisans working on similar crafts as 'clusters'. These natural formations of craft communities serve as the foundation for targeted interventions. The scheme identifies clusters with a minimum of 100 artisans, though mega clusters with over 500 artisans receive special attention and funding allocations.

The primary objectives of the CHCDS include improving the infrastructure support systems for artisans, enhancing product quality and design innovation, facilitating access to technology and market intelligence, strengthening institutional frameworks, and creating sustainable livelihood opportunities. The scheme places particular emphasis on preserving traditional crafts while simultaneously adapting them to contemporary market demands.

A distinctive feature of the CHCDS is its integrated approach, which addresses multiple dimensions of cluster development simultaneously. Unlike previous piecemeal interventions, this scheme encompasses hard interventions (physical infrastructure), soft interventions (skill development, design inputs), and thematic interventions (marketing support, brand building) within a unified framework. This holistic approach recognises the interdependent nature of various factors affecting handicraft production and marketing.

11.1 Implementation Mechanism of the Handicrafts Cluster Development Scheme

The Comprehensive Handicrafts Cluster Development Scheme employs a multi-tiered implementation structure to ensure effective delivery of interventions across India's diverse handicraft clusters. At the national level, the Office of the Development Commissioner (Handicrafts) serves as the nodal agency, providing overall policy direction and monitoring the scheme's implementation. A Central Project Approval Committee (CPAC), comprising senior officials from relevant ministries and subject matter experts, evaluates and approves project proposals.

At the cluster level, the scheme operates through Implementing Agencies (IAs), which include State Handicrafts Development Corporations, Export Promotion Councils, NGOs with proven track records, and registered Producer Companies of artisans. These IAs are responsible for mobilising artisans, conducting diagnostic studies, preparing Detailed Project Reports (DPRs), and implementing the approved interventions. To ensure local ownership and participation, each cluster establishes a Cluster Development Executive (CDE) and forms an artisan-led Cluster Management and Technical Agency (CMTA).

1 **Diagnostic Study**

Comprehensive assessment of the cluster's strengths, weaknesses, opportunities, and threats, identifying specific interventions required

2 **Trust Building and Baseline Survey**

Mobilisation of artisans, formation of self-help groups, and collection of baseline data on socio-economic conditions

3 **Detailed Project Report Preparation**

Development of a comprehensive plan outlining specific interventions, timelines, budgets, and expected outcomes

4 **Implementation and Monitoring**

Execution of approved interventions with regular progress tracking against defined milestones and indicators

The scheme follows a phased implementation approach, typically spanning 3-5 years for each cluster. Funding is released in instalments based on the achievement of predetermined milestones, ensuring accountability and results-oriented implementation. Special provisions exist for expedited implementation in aspirational districts, North-Eastern states, and regions with significant tribal artisan populations, reflecting the scheme's commitment to inclusive development.

11.2 Funding Structure and Financial Component of CHCDS

The Comprehensive Handicrafts Cluster Development Scheme operates on a differentiated funding model, with allocations varying based on cluster size, geographical location, and the nature of interventions proposed. The scheme utilises a combination of Central Government grants, State Government contributions, and beneficiary participation to ensure sustainable development and stakeholder commitment.

For regular clusters (100-500 artisans), the scheme provides financial assistance of up to Rs. 2 crore per cluster, while mega clusters (over 500 artisans) can receive up to Rs. 5 crore. Special Category clusters in North-Eastern states, Jammu & Kashmir, and aspirational districts receive enhanced financial support with a modified funding pattern to address regional disparities and special needs. The Government of India's contribution ranges from 80% to 100% of the project cost, depending on the location and category of the cluster.

Intervention Type	Percentage of Total	Allocation Maximum Ceiling (Regular Cluster)
Soft Interventions	15-20%	Rs. 40 lakhs
Hard Interventions	50-60%	Rs. 1.2 crore
Thematic Interventions	15-20%	Rs. 40 lakhs
Administrative & Management Costs	5-10%	Rs. 20 lakhs

Soft interventions include skill development programmes, design workshops, exposure visits, and market awareness activities. Hard interventions encompass the establishment of Common Facility Centres (CFCs), Raw Material Banks, Technology Centres, and Testing Laboratories. Thematic interventions focus on market linkages, brand building, geographical indication registration, and e-commerce integration.

The financial management system includes rigorous monitoring mechanisms, with implementing agencies required to maintain separate bank accounts for scheme funds and submit quarterly utilisation certificates. Third-party evaluations are mandated at the midterm and completion stages to assess impact and ensure financial probity. This structured financial framework aims to maximise the developmental impact while maintaining fiscal discipline and accountability.

Impact Assessment Of the Handicraft Cluster Development Scheme

Economic Impact

- Generated sustainable livelihood opportunities for over 150,000 artisans across 75 clusters nationwide
- Increased artisan incomes by 25-40% through improved market linkages and value addition
- Reduced production costs by 15-20% through the establishment of Common Facility Centres
- Facilitated exports worth Rs. 1,500 crore annually from supported clusters

Social Impact

- Enhanced social capital through the formation of 3,200+ Self-Help Groups and artisan collectives
- Improved working conditions and reduced occupational health hazards through technological interventions
- Increased participation of women artisans (currently at 62% of total beneficiaries)
- Reduced migration from rural areas through creation of local employment opportunities

Cultural Impact

- Documented and preserved 120+ traditional craft techniques at risk of extinction
- Registered 35 crafts under Geographical Indication (GI) protection
- Created digital repositories of traditional designs and motifs for 45 craft forms
- Facilitated intergenerational transfer of craft knowledge through master-craftsperson programmes

12 Silk Samagra

12. Silk Samagra - 2.0

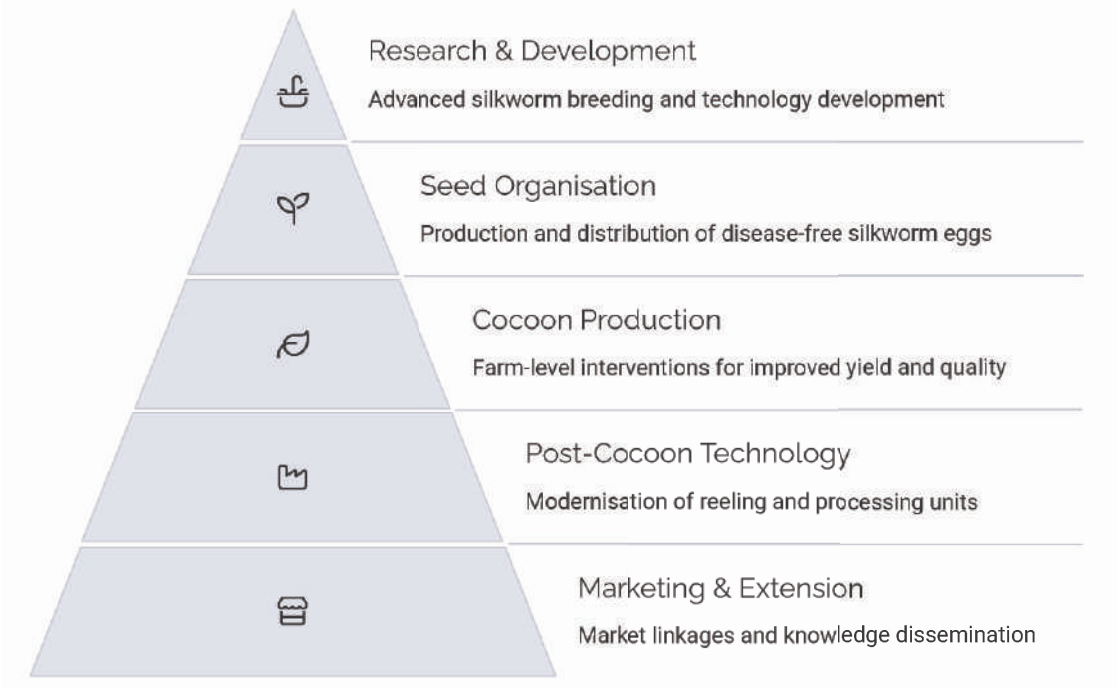
Silk Samagra - 2.0 represents the second phase of India's Integrated Silk Industry Development Programme, launched by the Ministry of Textiles for the period 2021-2026 with an outlay of Rs. 4,645 crore. This comprehensive scheme builds upon the achievements and lessons of the previous phase while introducing new components to address emerging challenges in the silk sector. As a centrally sponsored initiative, it aims to strengthen all segments of the silk value chain, from sericulture development to marketing, with a particular focus on enhancing productivity, quality, and farmer incomes.

The programme's strategic objectives encompass multiple dimensions of silk sector development. It aims to increase raw silk production from 35,820 MT (2020-21) to 38,500 MT by 2025-26, with special emphasis on enhancing production of indigenous varieties like Vanya silk (Tasar, Eri, and Muga) from 9,000 MT to 11,000 MT during the same period. A significant focus lies on improving the quality parameters of domestic silk to reduce import dependency, particularly for mulberry silk which accounts for over 70% of India's silk production.

Silk Samagra - 2.0 adopts a cluster-based approach, identifying 59 existing silk clusters for intensive development while establishing 19 new clusters to expand the geographical footprint of sericulture. The programme emphasises technological modernisation, supporting research and development for improved silkworm breeds, host plant varieties, and reeling techniques. It incorporates capacity building measures for approximately 8 lakh stakeholders across the value chain, from farmers and reelers to weavers and entrepreneurs.

A distinctive aspect of Silk Samagra - 2.0 is its focus on sustainability and climate resilience. The programme promotes eco-friendly rearing practices, water conservation techniques, and waste management systems within the sericulture sector. It also emphasises brand building and market development for Indian silk, particularly promoting the "Indian Silk Mark" as a quality assurance mechanism for domestic and international markets. Through these multifaceted interventions, Silk Samagra - 2.0 aims to position India as a self-reliant producer of quality silk while ensuring equitable benefits for all stakeholders in the value chain.

12.1 Key Components and Implementation Framework of Silk Samagra 2.0



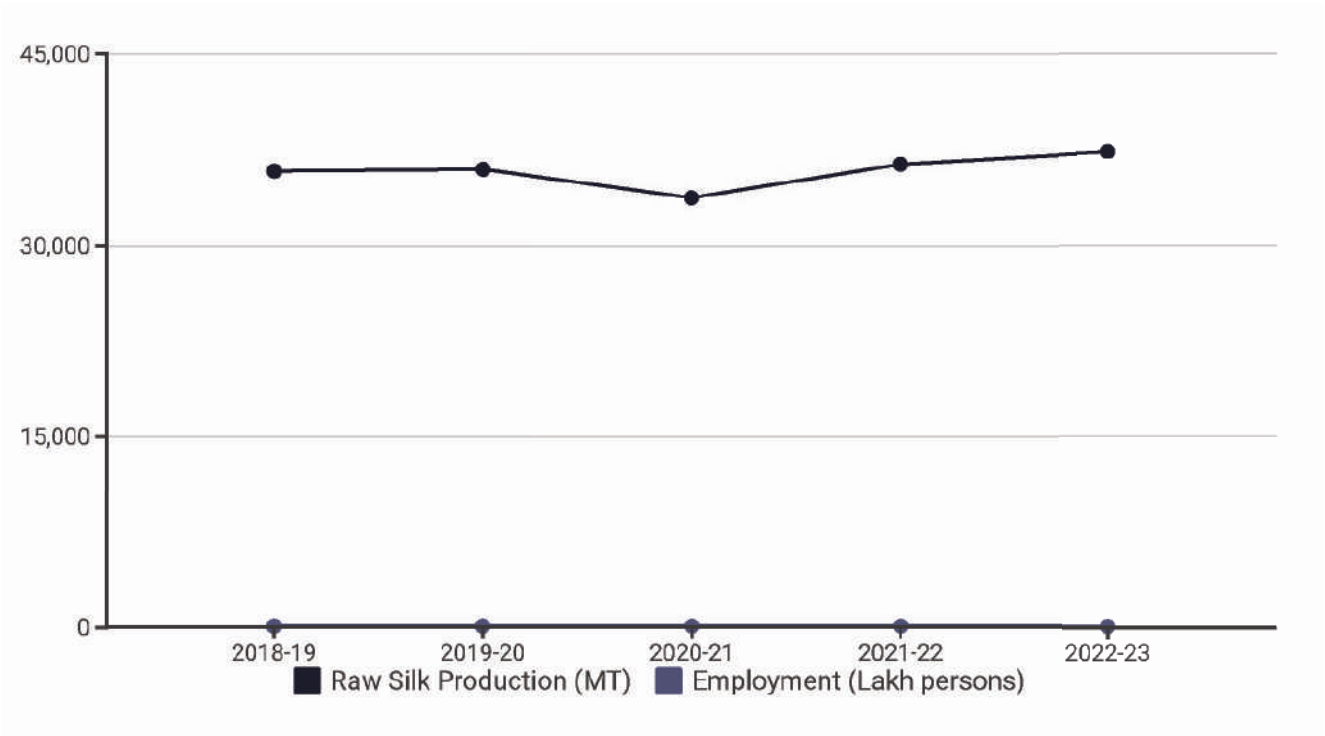
Silk Samagra - 2.0 is implemented through a three-tier institutional framework. At the national level, the Central Silk Board (CSB) functions as the nodal agency, providing technical guidance, coordination, and monitoring. The State Sericulture Departments serve as the primary implementing agencies at the state level, adapting the scheme components to local conditions and requirements. At the grassroots level, the programme operates through Cluster Development Teams, comprising technical experts, extension workers, and farmer representatives.

The Research & Development component focuses on developing improved silkworm breeds with higher productivity, disease resistance, and quality traits. It supports the establishment of silkworm seed production centres and biotechnology laboratories for genetic improvement. The Seed Organisation component ensures the production and distribution of disease-free layings (DFLs) to farmers, maintaining the critical quality control at the initial stage of the value chain.

Under Cocoon Production, the programme supports the establishment of new sericulture farms, mechanisation of rearing processes, and irrigation facilities for mulberry cultivation. It provides subsidies for constructing rearing houses, procuring equipment, and adopting improved rearing practices. The Post- Cocoon Technology component focuses on modernising reeling units, establishing common facility centres, and introducing energy-efficient technologies for silk processing.

The Marketing & Extension component facilitates market linkages through cocoon banks, silk exchanges, and direct marketing platforms. It supports product diversification, design development, and promotion of silk products in domestic and international markets. Cross-cutting elements include capacity building programmes, information technology interventions, and convergence with other government schemes like MGNREGA and RKVY to maximise resource utilisation and impact. This comprehensive implementation framework ensures that all segments of the silk value chain receive targeted support, leading to balanced and sustainable development of the sector.

12.2 Evaluation of Silk Samagra's Performance and Future Directions



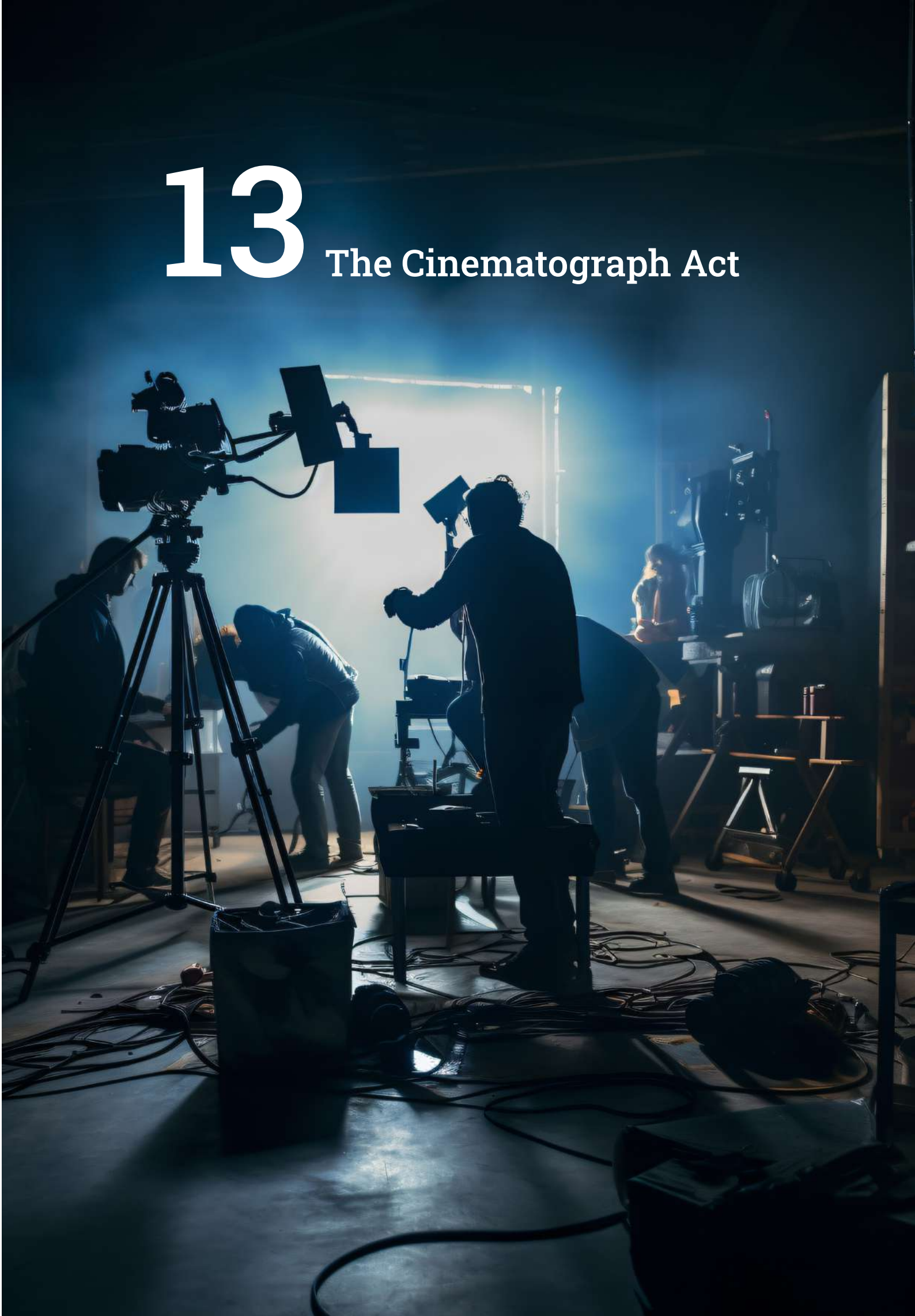
The first phase of Silk Samagra (2017-2020) demonstrated significant achievements in enhancing India's silk production capabilities and supporting livelihoods. Raw silk production increased from 30,348 MT in 2016-17 to 35,820 MT in 2020-21, marking a growth of 18%. The scheme benefited approximately 8.7 lakh stakeholders, particularly in rural and tribal areas, generating sustainable employment opportunities with 60% women participation. The quality parameters of Indian silk improved substantially, with the proportion of Bivoltine silk (superior quality) increasing from 15% to 38% of total mulberry silk production.

Despite these achievements, the first phase faced implementation challenges that have informed refinements in Silk Samagra - 2.0. Uneven geographical distribution of benefits, with southern states capturing a disproportionate share of allocations, limited the scheme's impact in non-traditional sericulture areas. Market linkage mechanisms remained inadequate, with many farmers still dependent on intermediaries and vulnerable to price fluctuations. The technology adoption rate varied significantly across regions, with resource-poor farmers struggling to implement recommended practices without adequate support.

The COVID-19 pandemic exposed vulnerabilities in the silk value chain, with disruptions in input supply, production activities, and market access severely affecting stakeholders. The sector demonstrated remarkable resilience, however, recovering to pre-pandemic production levels by 2021-22, partly due to the support mechanisms established under Silk Samagra.

Silk Samagra - 2.0 addresses these challenges through several strategic shifts. It allocates 25% of its resources to North-Eastern states and other non-traditional areas to ensure more balanced regional development. The enhanced focus on digital platforms for knowledge dissemination, market intelligence, and traceability aims to reduce information asymmetries and improve market efficiency. The programme's increased emphasis on climate-resilient sericulture practices acknowledges the growing vulnerability of the sector to environmental fluctuations. By incorporating these lessons and adaptations, Silk Samagra - 2.0 aims to build a more resilient, inclusive, and globally competitive silk industry in India, preserving this cultural heritage while enhancing its economic contribution.

13 The Cinematograph Act



13 The Cinematograph Act

13.1 Historical Evolution and Key Provisions

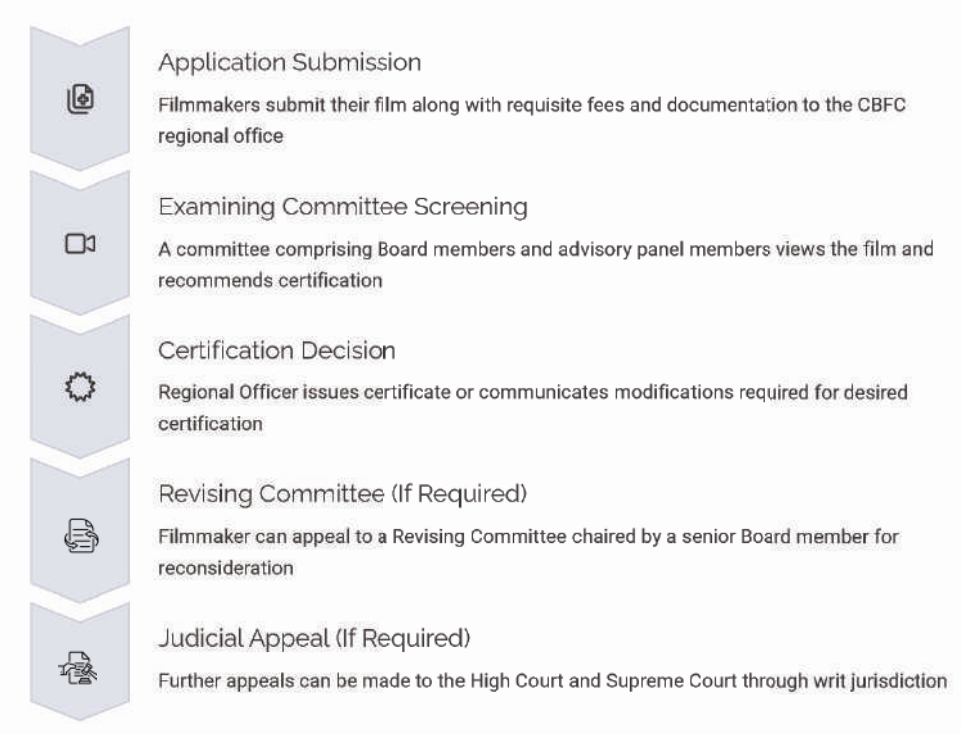
The Cinematograph Act, established in 1952, serves as the cornerstone of India's film regulatory framework, providing statutory authority for the certification and exhibition of films. This legislation emerged from the colonial-era Cinematograph Act of 1918, but was significantly reformulated to align with the constitutional values and cultural ethos of independent India. The Act has undergone several amendments over the decades, notably in 1981, 1984, and 2021, reflecting evolving societal norms and technological advancements in filmmaking and exhibition.

At its core, the Act establishes a centralised film certification system through the Central Board of Film Certification (CBFC), commonly known as the Censor Board. The CBFC is empowered to examine films and certify them for public exhibition based on specified guidelines. The certification categories have evolved over time, with the current system classifying films as U (Unrestricted), U/A (Parental Guidance for children below 12 years), A (Adults Only), and S (Restricted to Special Classes of Persons). This graduated certification system aims to balance creative expression with the protection of vulnerable audiences, particularly minors.

Beyond certification, the Act governs the structural and operational aspects of film exhibition. It mandates the licensing of cinema houses, prescribes safety standards for projection equipment, and regulates ticket pricing in certain contexts. The legislation also establishes a multi-tiered appellate mechanism, allowing filmmakers to challenge certification decisions through the Revising Committee, Film Certification Appellate Tribunal (until its abolition in 2021), and ultimately, judicial review by the High Courts and Supreme Court.

The Act empowers the Central Government to issue binding directives to the CBFC regarding certification principles, and in exceptional circumstances, to reverse certification decisions. This provision has occasionally generated controversy regarding political interference in artistic expression. Section 6 of the Act authorises the Central Government to declare any film as uncertified if it contravenes the interests of the sovereignty and integrity of India, security of the State, friendly relations with foreign States, public order, or decency. The Cinematograph Act thus navigates the delicate balance between creative freedom, cultural sensitivities, and national interests, serving as both an enabler and regulator of India's vibrant film industry.

13.2 Certification Process and Guidlines Under The Cinematography Act



The certification process is guided by a comprehensive set of guidelines issued under Section 5B of the Act. These guidelines require the CBFC to ensure that films do not depict elements that undermine the sovereignty and integrity of India, threaten security of the State, jeopardise friendly relations with foreign States, disturb public order, or offend decency and morality. Specific provisions prohibit the glorification of violence, obscenity, drug misuse, and disparagement of racial, religious, or cultural groups.

The CBFC employs a contextual approach to certification, considering factors such as the theme, treatment, target audience, and contemporary standards of tolerance. Films intended for unrestricted viewing (U certificate) face more stringent scrutiny regarding potentially sensitive content compared to those aimed at adult audiences (A certificate). The U/A category allows potentially challenging content with the expectation of parental guidance, recognising the varying maturity levels among younger viewers.

Recent amendments to the certification guidelines have introduced more nuanced provisions regarding the depiction of smoking and tobacco use, requiring statutory warnings during such scenes. The guidelines also address emerging concerns such as digital manipulation of images, hate speech, and gender sensitivity. The certification process has gradually evolved from primarily censorial functions to a more classification-oriented approach, reflecting growing recognition of audience agency and filmmaker rights.

14 The National Mission on Cultural Mapping And Roadmap (NMCMR)

14 The National Mission on Cultural Mapping And Roadmap (NMCMR)

14.1 Vision and Structure

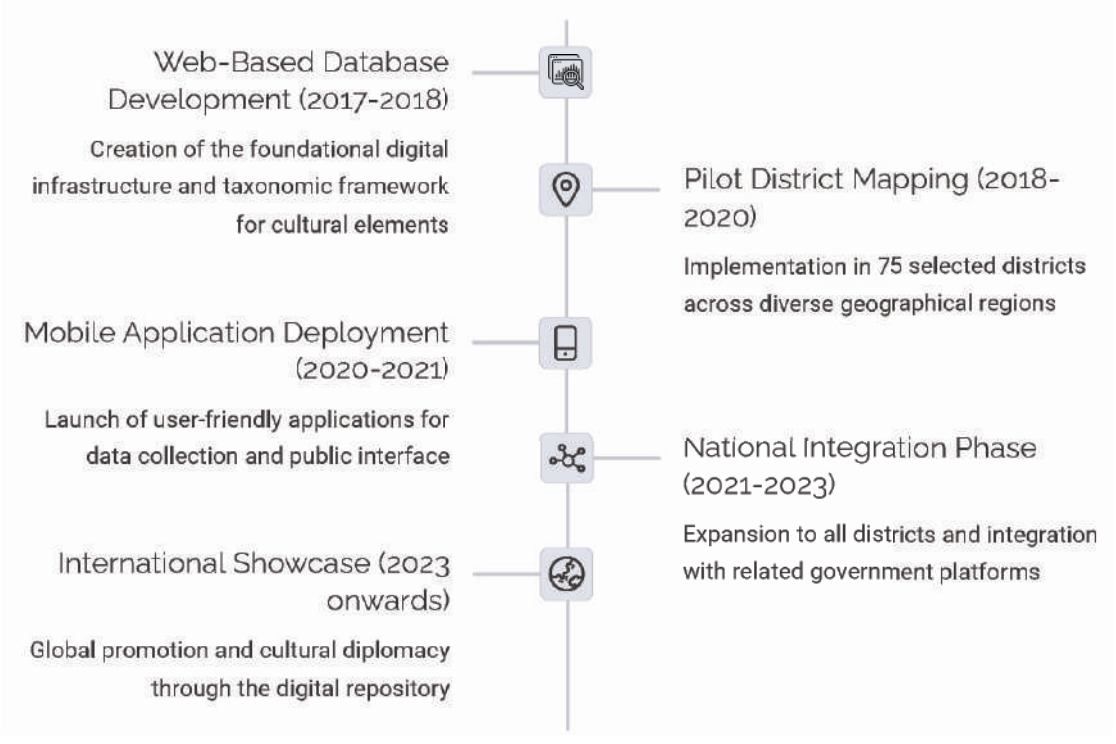
The National Mission on Cultural Mapping And Roadmap (NMCMR) represents a pioneering initiative launched by the Ministry of Culture, Government of India, to create a comprehensive digital repository of India's diverse cultural assets and practitioners. Conceptualised in 2017 with an initial outlay of Rs. 469 crore, the mission envisions the development of a unified database that documents, preserves, and promotes the country's rich cultural heritage across various domains, including performing arts, visual arts, handicrafts, literature, and festivals.

At its core, the NMCMR aims to address the fragmented and often undocumented nature of India's cultural landscape by establishing standardised frameworks for identification, classification, and preservation of cultural elements. The mission is structured around three fundamental pillars: mapping, documentation, and promotion. The mapping component focuses on geo-tagging cultural assets and identifying practitioners across India's 6.4 lakh villages and urban centres. The documentation pillar involves creating detailed digital profiles of artists, art forms, and cultural resources using multimedia formats. The promotion aspect aims to leverage this data for cultural tourism, educational initiatives, and livelihood opportunities for traditional artists.

The institutional architecture of NMCMR operates through a three-tier structure. At the apex level, a National Steering Committee, chaired by the Minister of Culture and comprising experts from various cultural domains, provides strategic direction and policy oversight. A Mission Directorate, established within the Ministry of Culture, serves as the central implementing agency, coordinating with various stakeholders and monitoring progress. At the operational level, State Culture Directorates function as nodal agencies for implementation within their respective territories, working in collaboration with district administration, cultural institutions, and academic bodies.

The mission adopts a phased implementation approach, beginning with a pilot phase covering 75 districts, followed by a scaling phase encompassing all districts nationwide. It utilises a convergence model, integrating existing cultural databases maintained by various ministries and cultural bodies while implementing standardised data protocols to ensure interoperability. A unique feature of the mission is its emphasis on community participation, engaging local communities, traditional knowledge holders, and cultural practitioners in the identification and documentation process, thereby ensuring authenticity and cultural sensitivity in the mapping exercise.

14.2 Technology Framework and Implementation Strategy of NMCMR

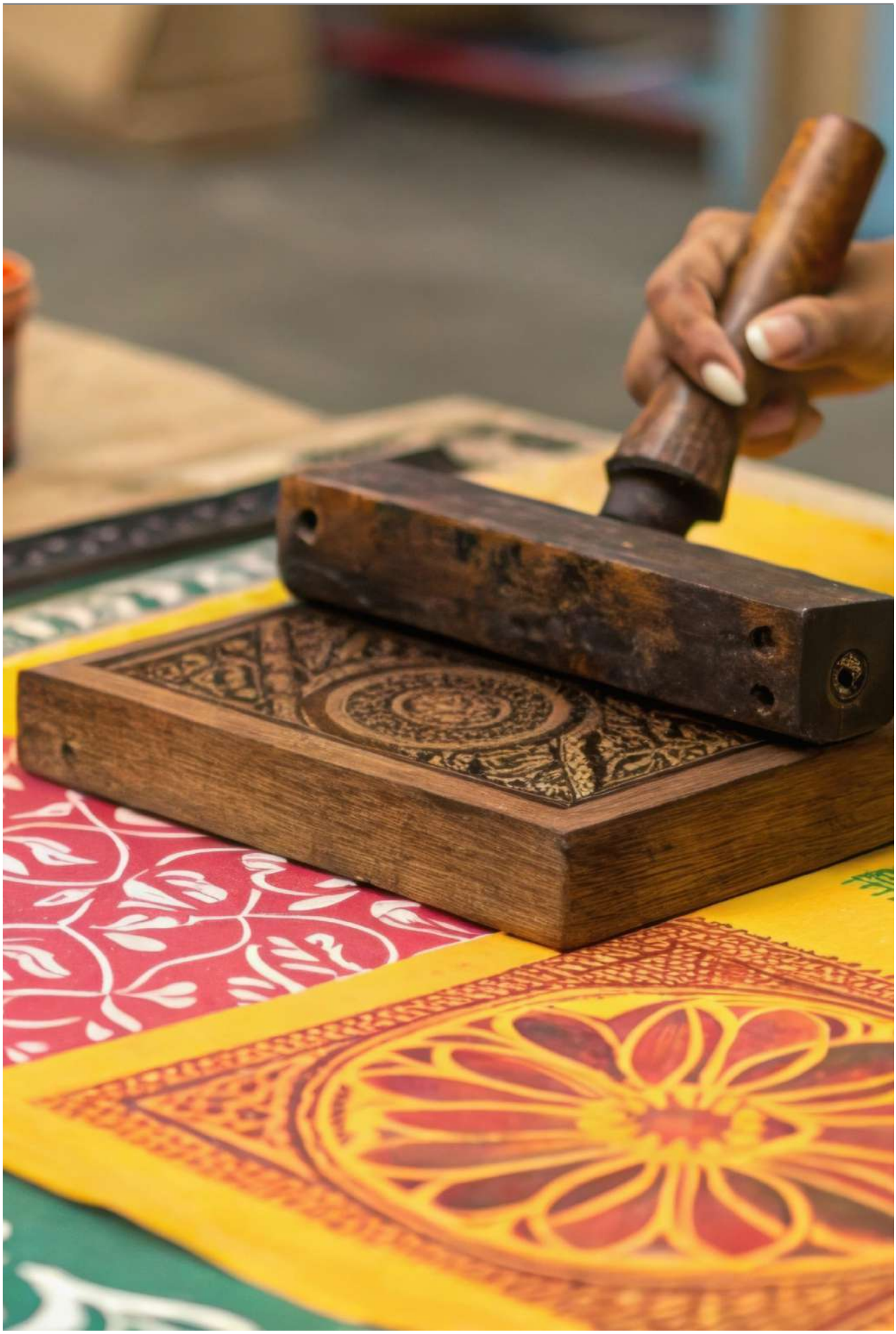


The technological backbone of the National Mission on Cultural Mapping comprises several integrated components designed to facilitate comprehensive cultural documentation and accessibility. At its foundation lies a centralized database architecture that employs a hierarchical taxonomic system classifying cultural elements across domains, forms, sub-forms, and styles. This database incorporates geospatial technology for precise location mapping, multimedia capabilities for audio-visual documentation, and blockchain-based verification mechanisms to authenticate cultural information and protect intellectual property rights.

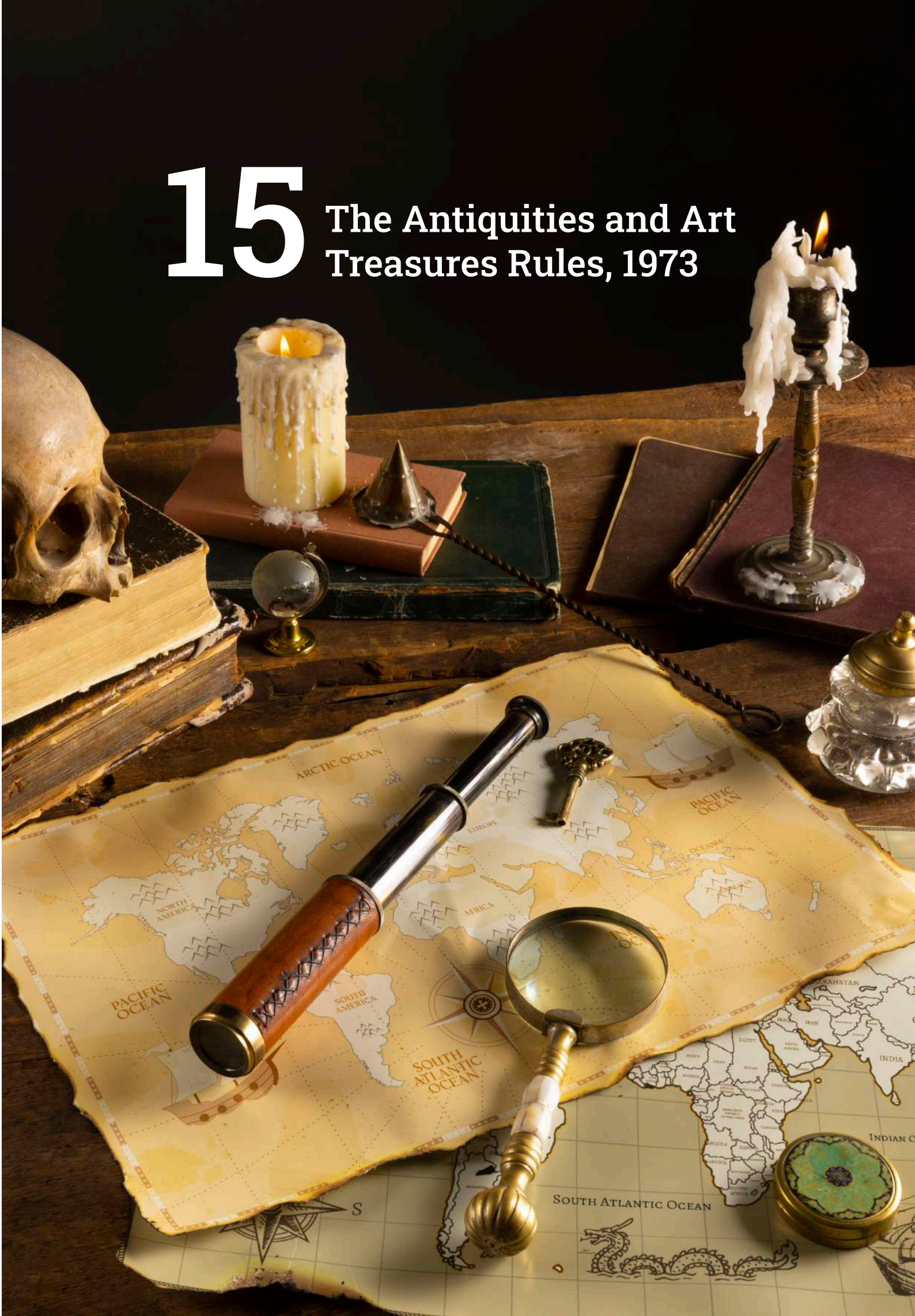
The mission's implementation strategy employs both top-down and bottom-up approaches. The top-down component involves systematic data collection through trained field researchers, cultural institutions, and academic collaborations. The bottom-up approach utilizes crowdsourcing through mobile applications that allow artists and cultural practitioners to register themselves and upload relevant documentation. This dual approach ensures comprehensive coverage while enabling direct participation from grassroots cultural stakeholders.

A distinctive technological feature is the Artist Unique ID system, which assigns individual identification codes to artists and cultural practitioners. This system facilitates targeted benefit delivery, recognition programs, and opportunity mapping. Additionally, the mission employs machine learning algorithms to analyse cultural patterns, identify endangered art forms, and suggest preservation priorities. The technological framework includes multiple access interfaces4web portals, mobile applications, and interactive kiosks at cultural centers4ensuring accessibility across diverse user groups.

The mission's implementation prioritizes data security and privacy, employing robust encryption protocols and tiered access controls for sensitive cultural information. It also incorporates interoperability standards to facilitate data exchange with other cultural databases nationally and internationally. The technological architecture is designed to be scalable and adaptable, allowing for the incorporation of emerging technologies such as augmented reality for immersive cultural experiences and natural language processing for multilingual access, reflecting the mission's forward-looking approach to cultural documentation and promotion.



15 The Antiquities and Art Treasures Rules, 1973



15 The Antiquities and Art Treasures Rules, 1973

15.1 Legal Framework

The Antiquities and Art Treasures Rules, 1973, form the operational framework for implementing the Antiquities and Art Treasures Act, 1972, which serves as India's primary legislation for protecting, preserving, and regulating trade in culturally significant objects. These rules provide detailed procedural guidelines for various provisions of the parent Act, establishing mechanisms for registration, licensing, export control, and conservation of antiquities and art treasures across the country.

The legal framework defines "antiquity" as any coin, sculpture, painting, epigraph, or other work of art or craftsmanship, any article, object or thing detached from a building or cave, any article, object or thing illustrative of science, art, crafts, literature, religion, customs, morals or politics in bygone ages, any article, object or thing of historical interest, and any article, object or thing declared by the Central Government to be an antiquity, which has been in existence for not less than one hundred years. "Art treasure" is defined as any human work of art, not being an antiquity, declared by the Central Government to be an art treasure, having regard to its artistic or aesthetic value. These definitions establish the subject matter jurisdiction of the rules.

The Antiquities and Art Treasures Rules establish a comprehensive regulatory mechanism centered around registration, licensing, and export control. Rule 3 mandates that every person who owns, controls, or possesses any antiquity must register it with the designated registration officer within the prescribed timeframe. The registration process requires detailed documentation, including photographs and particulars regarding the antiquity's provenance, acquisition, and physical characteristics. Rule 10 prohibits the export of any antiquity or art treasure except under a special license issued by the Central Government, creating a stringent control mechanism to prevent the outflow of cultural heritage items.

For commercial dealings, Rule 6 requires any person engaged in the business of selling antiquities to obtain a license from the licensing officer. These licenses are subject to specific conditions regarding record-keeping, reporting of transactions, and periodic inspections by authorised officers. The rules empower Archaeological Officers to inspect premises, examine records, and seize unregistered antiquities or those being traded in contravention of the rules. This comprehensive regulatory framework aims to balance legitimate commerce in antiquities with the imperative of heritage preservation, creating a documented trail for significant cultural objects while preventing unauthorised exportation and illicit trafficking.

15.2 Institutional Mechanism and Implementation of Antiquities Rules

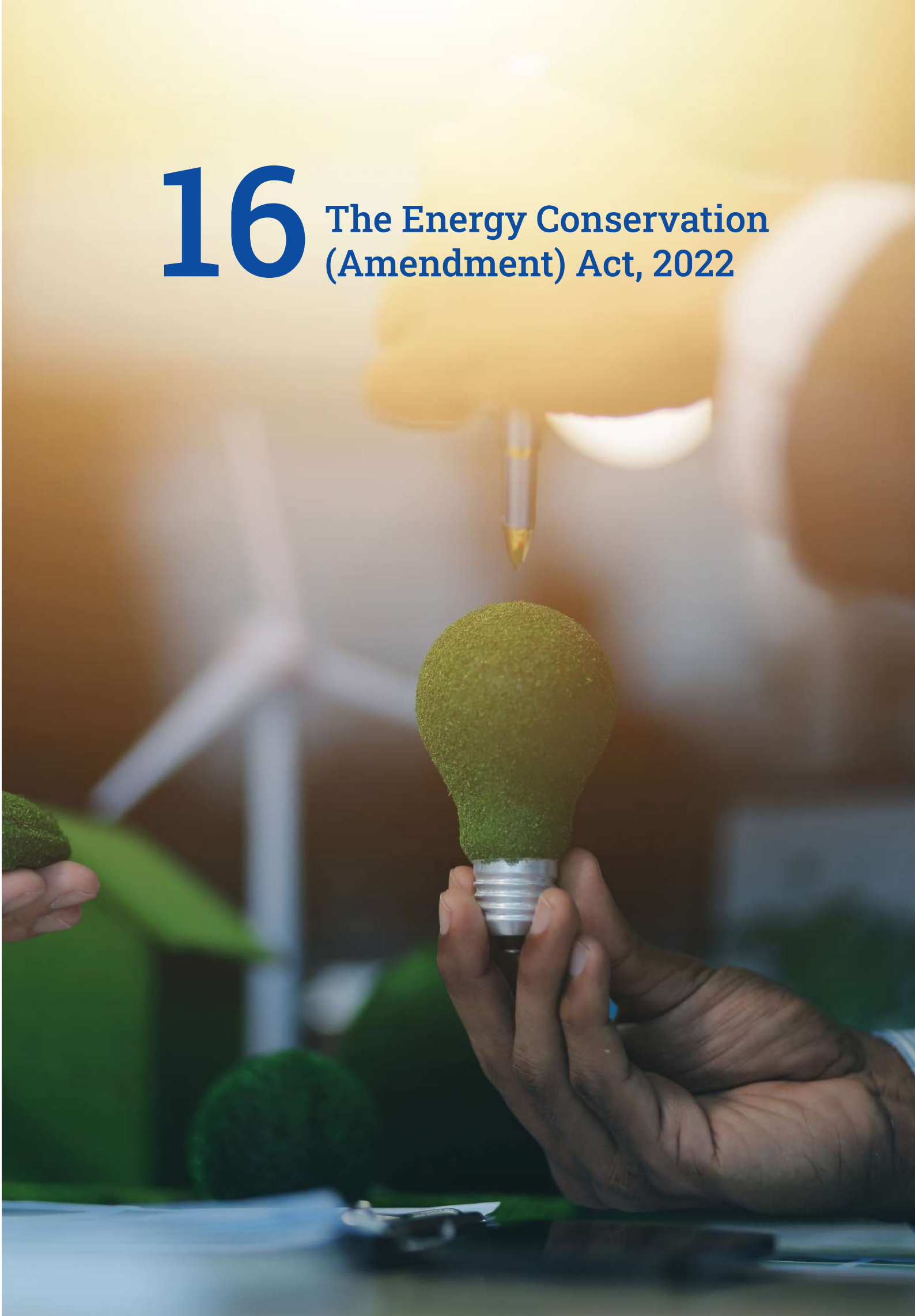
The Antiquities and Art Treasures Rules are implemented through a hierarchical institutional structure with the Archaeological Survey of India (ASI) serving as the nodal agency. At the national level, the Director General of ASI functions as the Central Antiquities Registration Officer, overseeing the implementation of the rules across the country. Regional registration officers, typically senior ASI officials, operate at state levels, supported by district-level antiquity inspectors who conduct field verifications and inspections.

The registration process follows a standardised protocol wherein antiquity owners submit applications in Form I, accompanied by photographs and supporting documentation establishing provenance. Registration officers verify the information, examine the objects, and issue certificates of registration in Form II, which serve as legal acknowledgement of reported antiquities. For items being offered for sale, a similar documentation process applies, with dealers required to maintain detailed records of acquisitions and disposals in prescribed formats (Form III) and submit quarterly reports to licensing authorities.

Export control represents a particularly stringent aspect of implementation. Applications for export licenses require extensive documentation, expert evaluation, and clearance from a committee comprised of archaeological experts, art historians, and government representatives. The committee assesses the cultural significance of the object, its rarity, and importance to national heritage before recommending approval or rejection. Temporary export licenses for exhibition purposes follow a similar but expedited process, with additional guarantees required for the object's return.

Enforcement is primarily conducted through periodic and surprise inspections of registered premises by authorised officers. These inspections verify compliance with record-keeping requirements, examine unregistered antiquities, and investigate suspected violations. The rules prescribe procedures for seizure, confiscation, and prosecution in cases of non-compliance. Additionally, customs authorities at international borders coordinate with ASI to prevent unauthorised exports, operating under protocols established in the rules for identifying and intercepting cultural objects leaving the country without proper authorisation.

16 The Energy Conservation (Amendment) Act, 2022



16 The Energy Conservation (Amendment) Act, 2022

16.1 Background and Context

The Energy Conservation (Amendment) Act 2022 builds upon the foundation established by the original Energy Conservation Act of 2001, which created the Bureau of Energy Efficiency (BEE) and established initial frameworks for improving energy efficiency across the Indian economy. The 2022 amendment represents a significant expansion of regulatory scope and authority, driven by India's evolving climate commitments and recognition of the urgent need to address energy consumption patterns.

India's energy landscape presents unique challenges that necessitated this legislative update. Despite significant renewable energy expansion, the country remains heavily dependent on coal, which accounts for approximately 70% of electricity generation. Energy demand continues to grow rapidly, projected to increase by over 35% by 2030 as industrialisation accelerates and living standards improve. This rising demand trajectory conflicts with India's international climate commitments, including its Nationally Determined Contribution targets under the Paris Agreement.

The amendment was developed through extensive stakeholder consultation, including industry representatives, energy experts, and environmental organisations. It underwent thorough parliamentary scrutiny before receiving presidential assent in December 2022. The legislative process addressed concerns regarding implementation timelines, compliance costs for businesses, and balancing regulatory mandates with market incentives.

The Act aligns with other national policies, including the National Action Plan on Climate Change, the National Electricity Plan, and India's commitment to achieve net-zero emissions by 2070. It provides the regulatory architecture necessary to implement many aspects of these broader policy frameworks, particularly regarding energy efficiency and carbon reduction strategies across sectors.

16.2 Key Provisions of the Energy Conservation (Amendment) Act, 2022

1

Enhanced Building Energy Efficiency Standards

Mandates energy consumption standards for commercial, residential, and industrial buildings with specified minimum connected load. Requires energy performance certificates for designated buildings. Expands BEE authority to enforce compliance through inspections and penalties.

2

Carbon Market Framework

Establishes legal foundation for domestic carbon trading by authorising the central government to implement carbon credit trading schemes. Specifies mechanisms for credit issuance, trading rules, and compliance obligations. Creates registry systems for tracking carbon credits and transactions.

3

Renewable Energy Purchase Obligations

Mandates minimum renewable energy consumption for designated consumers including industries, commercial establishments, and transport facilities. Authorises penalties for non-compliance. Establishes monitoring mechanisms to verify renewable energy usage.

4

Energy Conservation Standards for Equipment

Expands mandatory energy efficiency standards to additional categories of equipment and appliances. Strengthens testing, certification, and labelling requirements. Increases penalties for manufacturing or selling non-compliant products.

The Act significantly expands the regulatory authority of the Bureau of Energy Efficiency, providing it with enhanced enforcement capabilities, including the power to conduct inspections, issue compliance orders, and levy penalties for violations. It also establishes more stringent reporting requirements for designated consumers of energy, requiring regular submission of energy consumption data and energy-saving certificates.

Implementation timelines vary across provisions, with a phased approach designed to allow adequate adjustment periods for different sectors. The Act creates a framework for standardised measurement and verification protocols to ensure consistent evaluation of energy savings and emissions reductions across programmes and sectors.

16.3 Implementation Mechanism and Institutional Framework for the Energy Conservation (Amendment) Act

The Energy Conservation (Amendment) Act 2022 establishes a robust institutional architecture to ensure effective implementation across multiple sectors. The Bureau of Energy Efficiency (BEE) serves as the central implementing agency, with significantly expanded powers and responsibilities. The BEE is tasked with developing technical standards, certification methodologies, monitoring protocols, and enforcement mechanisms necessary to operationalise the legislation's provisions.

The Act introduces a multi-tiered governance structure with clearly defined roles for central, state, and local authorities. State Designated Agencies (SDAs) bear primary responsibility for on-ground implementation, including conducting building inspections, verifying compliance with renewable purchase obligations, and enforcing equipment standards within their jurisdictions. The Central Electricity Authority coordinates with the BEE on matters related to power sector energy efficiency and renewable integration.

For implementation of carbon market provisions, the Act authorises the establishment of a dedicated Carbon Credit Registry and Trading Platform, overseen by a regulatory body with representation from the Ministry of Environment, Forests and Climate Change, Ministry of Power, and financial sector regulators. This body develops market rules, accreditation standards for verifiers, and methodologies for baseline setting and credit issuance.

Funding for implementation comes through multiple channels, including budgetary allocations to the BEE and SDAs, a dedicated Energy Conservation Fund sustained through penalties and fees, and international climate finance accessed through multilateral mechanisms. The Act also enables innovative financing approaches including energy service company (ESCO) models for building retrofits and performance-based incentives for efficiency achievements.

Implementation Timeline

The Act employs a phased implementation approach with different provisions becoming effective over a 2-5 year period. Building energy standards apply first to large commercial structures (2023), then to smaller commercial buildings (2024), and finally to qualifying residential buildings (2025). Carbon market mechanisms begin with voluntary participation phases before mandatory compliance periods.

Compliance Mechanisms

The Act significantly strengthens enforcement through expanded inspection powers, higher financial penalties for non-compliance (up to ₹10 lakh for first offence and ₹10,000 daily for continuing violations), creation of Energy Conservation Courts for adjudication, and requirements for annual compliance reporting from designated consumers.

Technical Support Systems

Successful implementation relies on technical infrastructure including accredited energy auditors, certified measurement and verification professionals, testing laboratories for equipment certification, and digital platforms for data reporting and certificate trading. The Act mandates development of these support systems through public-private partnerships.

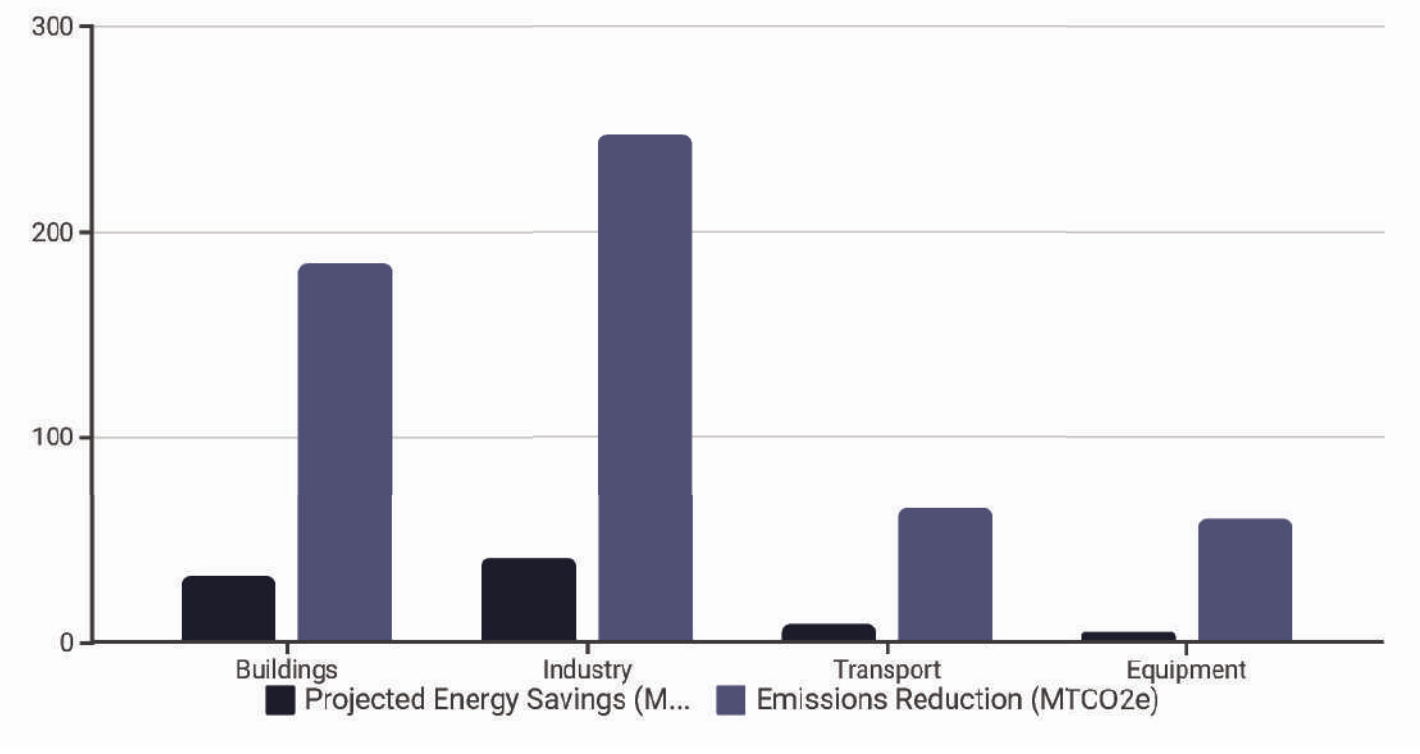
16.4 Economic and Environmental Impacts of the Energy Conservation Act

The Energy Conservation (Amendment) Act 2022 is projected to deliver substantial economic and environmental benefits whilst posing implementation challenges for certain sectors. Comprehensive impact assessments conducted by the Ministry of Power estimate that full implementation of the Act's provisions could reduce India's energy consumption by 86 million tonnes of oil equivalent annually by 2030, representing approximately 8-10% of projected business-as-usual consumption.

From an economic perspective, the enhanced energy efficiency standards are expected to generate net savings of approximately ¹12 lakh crore (£114 billion) through 2040 by reducing energy bills for businesses and households. These savings significantly outweigh the estimated ¹3.5 lakh crore in compliance costs for building upgrades, equipment replacements, and system modifications. The building energy efficiency provisions alone are projected to save over 250 billion kilowatt-hours of electricity annually once fully implemented.

Environmental benefits include an estimated reduction of 557 million tonnes of CO2 equivalent annually by 2030, representing approximately 15% of India's projected emissions under business-as-usual scenarios.

This contribution is critical to achieving India's Nationally Determined Contribution under the Paris Agreement. Additional environmental co-benefits include reduced air pollution from decreased fossil fuel combustion, with associated improvements in public health outcomes including lower incidence of respiratory illnesses.



Implementation challenges vary by sector. Industrial consumers face significant capital costs for efficiency upgrades and renewable integration, though these are typically offset by operational savings within 3-5 years. The building sector faces challenges regarding retrofitting existing structures, particularly in the residential segment, where enforcement capacity is limited. Small and medium enterprises may experience disproportionate compliance burdens, necessitating targeted support mechanisms, including concessional financing and technical assistance programmes.

17 E Vehicle Policy

17 E Vehicle Policy

17.1 Strategic Framework and Objectives

India's Electric Vehicle Policy represents a comprehensive strategy designed to accelerate the nation's transition to electric mobility whilst simultaneously addressing multiple strategic objectives. The policy was developed through extensive consultation with automotive manufacturers, technology providers, transportation experts, and environmental organisations to create an integrated approach that balances ambitious targets with practical implementation pathways.

The policy establishes a clear vision for India's automotive future, targeting 30% electric vehicle penetration for private cars, 70% for commercial vehicles, and 80% for two and three-wheelers by 2030. These targets align with India's broader climate commitments, including reducing emissions intensity of GDP by 45% from 2005 levels by 2030. Beyond environmental goals, the policy explicitly aims to position India as a global manufacturing hub for electric vehicles and components, reducing import dependence and creating high-skill employment opportunities.

The strategic framework is built upon four interconnected pillars: demand stimulation through purchase incentives and usage benefits; supply-side interventions supporting manufacturing and technology development; charging infrastructure expansion through public and private investments; and supportive regulatory frameworks including standardisation and grid integration protocols. This holistic approach recognises the complex ecosystem requirements for successful EV market development.

Implementation follows a phased approach, with initial focus on electrifying public transportation and commercial fleets where operational economics and environmental benefits are most immediately compelling. The policy establishes different intervention strategies for various vehicle segments, acknowledging their distinct market dynamics, technical requirements, and adoption barriers. Special provisions address the needs of rural areas and lower-income populations to ensure inclusive access to electric mobility solutions.

Governance mechanisms include a National Electric Mobility Mission Plan under the Ministry of Heavy Industries, with a dedicated Electric Mobility Coordination Committee comprising representatives from relevant ministries, state governments, industry bodies, and research institutions to ensure coordinated implementation across jurisdictions and sectors.

17.2 Key Components of the Electric Vehicle Policy

Demand Incentives

- Direct purchase subsidies through the Faster Adoption and Manufacturing of Electric Vehicles (FAME) scheme, with ₹10,000 crore allocated for Phase II (2019-2024)
- GST reduction to 5% for electric vehicles compared to 28% for conventional vehicles
- Income tax deductions up to ₹1.5 lakh on EV loan interest
- Road tax and registration fee waivers in participating states
- Priority lanes and dedicated parking in urban centres

Manufacturing Support

- Production-Linked Incentive (PLI) scheme offering 2-12% incentives on incremental sales of EVs and components, with total outlay of ₹25,938 crore
- Manufacturing zones with plug-and-play infrastructure in designated automotive clusters
- Reduced import duties on critical components during transition period
- Simplified FDI policies with automatic approval for up to 100% foreign investment
- Funding for R&D consortia focused on battery technologies, motors, and control systems

Charging Infrastructure

- National programme for installation of 7,000 public charging stations along highways and urban centres
- Subsidies covering up to 50% of charging equipment costs for public infrastructure developers
- Mandated charging provisions in building codes for new constructions and parking facilities
- Standardisation of charging protocols and establishment of battery swapping standards
- Special electricity tariff categories for EV charging, typically 15-30% lower than commercial rates

The policy establishes a robust regulatory framework including vehicle safety standards, battery disposal and recycling requirements, grid integration protocols, and consumer protection measures. It creates a standardised ecosystem for battery swapping and charging that ensures interoperability across vehicle manufacturers and charging providers.

Implementation is supported by capacity building initiatives including skill development programmes for automotive workforce transitioning to EV production, training for service technicians, and awareness campaigns for consumers. The policy acknowledges the need for just transition measures to address potential employment disruption in traditional automotive supply chains.

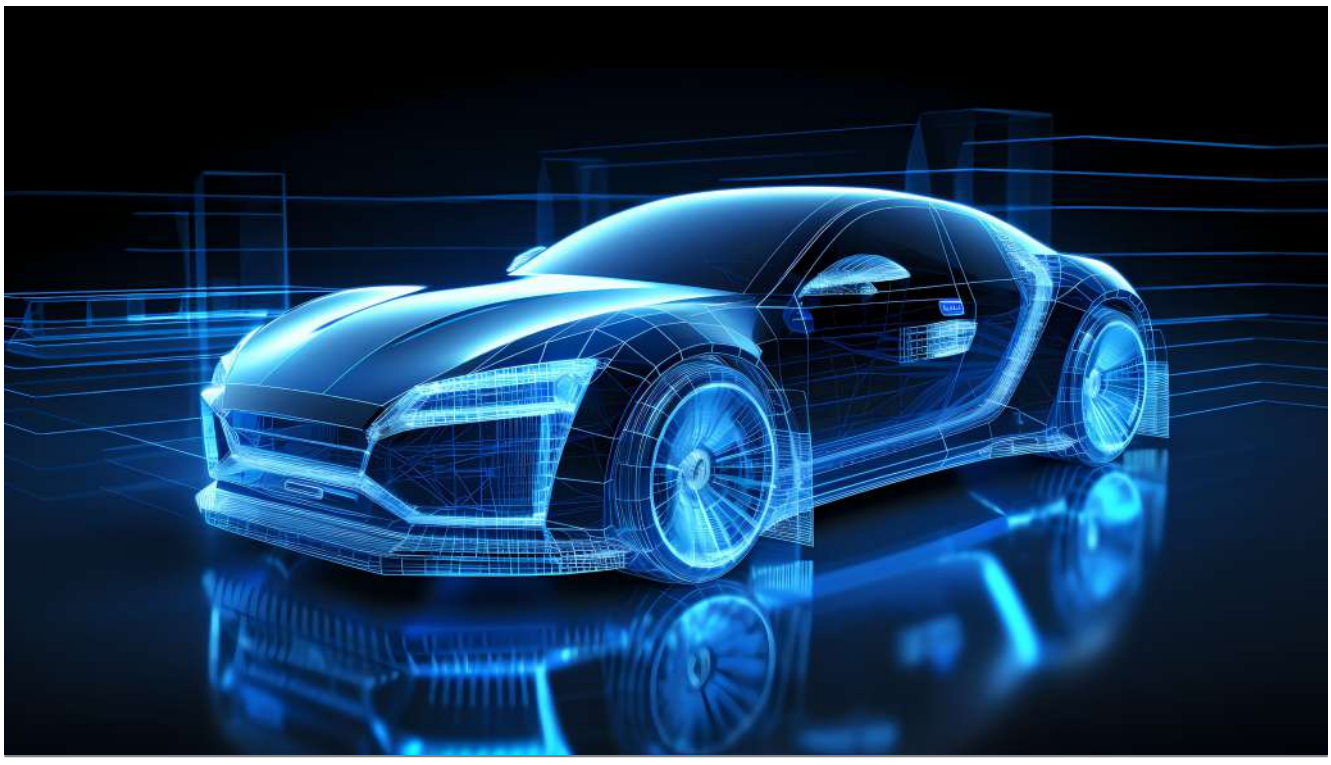
Funding mechanisms combine central government allocations with state-level matching programmes, public-private partnerships for infrastructure development, and dedicated financial instruments including green bonds and electric mobility funds. Special financing schemes address affordability barriers, including low-interest loans and innovative leasing arrangements for commercial fleet operators.

17.3 State-Level Implementation of Electric Vehicle Policies

India's federal structure necessitates coordinated yet customised approaches to EV policy implementation across states. The national framework establishes overarching objectives and support mechanisms, while states develop context-specific policies addressing their unique industrial capacities, transportation needs, and fiscal circumstances. This multi-level governance approach has resulted in a varied landscape of EV policy implementation that reflects regional priorities and capabilities.

Leading states have emerged as pioneers in aggressive EV promotion. Delhi's comprehensive EV policy targets 25% of new vehicle registrations to be electric by 2024 through substantial purchase incentives (up to ¹30,000 for two-wheelers and ¹1.5 lakh for cars) supplementing central subsidies. The policy includes road tax waivers, registration fee exemptions, and interest subventions on loans. Delhi has also mandated that all government vehicle procurements be electric and has implemented innovative "EV only" areas in congested commercial districts.

Maharashtra has positioned itself as an EV manufacturing hub through its Industrial Policy 2019, offering production incentives, capital subsidies for charging infrastructure, and electricity duty exemptions for manufacturing units. The state provides additional purchase subsidies of up to ¹2.5 lakh for electric cars and has set ambitious targets for electrifying public transportation fleets in major cities, including Mumbai and Pune



State	Target EV Penetration	Key Policy Features	Implementation Status
Karnataka	20% by 2030	Manufacturing focus, R&D cluster development, charging infrastructure on highways	Established Bengaluru EV manufacturing zone, deployed 300+ charging stations
Tamil Nadu	30% by 2030	100% road tax exemption, manufacturing subsidies, dedicated EV parks	Attracted ¹50,000 crore in EV manufacturing investments, 5% fleet conversion complete
Gujarat	25% by 2030	Capital subsidies for charging infrastructure, reimbursement of SGST for manufacturers	Developing Lithiumion battery gigafactory, converted 10% of public transport
Kerala	15% by 2025	Focus on the public Transport electrification, battery swapping infrastructure	1,000 electric buses deployed, e-mobility training centres established

Coordination challenges between central and state implementations include variation in subsidy disbursement mechanisms, inconsistent registration procedures across state borders, and differing technical standards for charging infrastructure. The NITI Aayog has established an EV Policy Coordination Platform to harmonise approaches and share best practices while respecting state autonomy in policy design.

17.4 Economic and Environmental Impacts of the Electric Vehicle Policy

India's Electric Vehicle Policy is projected to deliver substantial economic benefits across multiple dimensions. The automotive sector, which contributes approximately 7.1% to India's GDP and employs over 37 million people directly and indirectly, is undergoing a fundamental transformation driven by this policy.

Analysis by NITI Aayog and Rocky Mountain Institute estimates that full implementation would create a market opportunity exceeding ¹19.7 lakh crore (£188 billion) by 2030 in vehicle sales, charging infrastructure, batteries, and components.

Employment impacts are expected to be net positive, with an estimated 10 million new direct and indirect jobs created in EV manufacturing, battery production, charging infrastructure, and services. However, these gains will be partially offset by employment disruption in traditional vehicle manufacturing and petroleum distribution. The policy includes specific provisions for workforce retraining and transition assistance to mitigate negative employment effects in affected sectors.

Fuel import reduction represents a significant economic benefit, with full implementation projected to decrease petroleum imports by 156 million barrels annually by 2030, improving India's trade balance by approximately ¹1.2 lakh crore (£11.5 billion) per year. This reduction in import dependence enhances energy security and insulates the economy from oil price volatility. Domestic value creation through localised battery production and vehicle manufacturing is expected to capture 80% of the EV value chain within India by 2030, compared to only 35% of value captured in traditional vehicle manufacturing.

64% CO2 Reduction	35% NOx Reduction	55% PM2.5 Reduction
Projected reduction in road transport emissions compared to business-as-usual by 2040	Projected reduction in nitrogen oxide emissions in major urban centres by 2030	Projected reduction in particulate matter from transport in target cities by 2030

Environmental benefits extend beyond carbon reduction to include significant improvements in urban air quality. Transport-related air pollution currently causes an estimated 74,000 premature deaths annually in India and economic damages exceeding ¹1.7 lakh crore (£16.2 billion). The health benefits from reduced pollution alone are valued at approximately ¹73,000 crore (£7 billion) annually by 2030, representing substantial savings in healthcare costs and productivity improvements.

Challenges to realising these benefits include infrastructure investment requirements, with public charging network costs estimated at ¹30,000 crore (£2.9 billion) by 2030. Grid integration presents technical challenges, requiring an estimated ¹22,000 crore (£2.1 billion) in distribution network upgrades to accommodate EV charging demand. These costs must be balanced against the substantial long-term economic and environmental benefits of the transition to electric mobility.

18 Carbon Credit Trading Scheme, 2023

18 Carbon Credit Trading Scheme, 2023

18.1 Conceptual Framework

The Carbon Credit Trading Scheme (CCTS) 2023 establishes India's first comprehensive domestic carbon market, creating a framework for monetising emissions reductions and accelerating the transition to a low-carbon economy. The scheme builds upon earlier market-based mechanisms,including the Perform, Achieve, Trade (PAT) scheme for industrial energy efficiency and the Renewable Energy Certificate (REC) market, but significantly expands scope and ambition to create an economy-wide carbon pricing system.

Conceptually, the CCTS is designed as a hybrid market mechanism combining elements of baseline-credit systems with cap-and-trade components. This innovative approach was developed specifically to address India's circumstances as a rapidly developing economy with differentiated sectoral capabilities for emissions reduction. The scheme establishes absolute emissions caps for mature industrial sectors, including power generation, steel, cement, and chemicals, while applying intensity-based reduction targets for rapidly growing sectors and smaller enterprises where absolute caps might constrain necessary development.

The theoretical foundation of the CCTS rests on the economic principle that market-based mechanisms can identify and incentivise the lowest-cost emissions reduction opportunities across the economy. By establishing a price on carbon, the scheme creates a financial incentive for businesses to invest in cleaner technologies and processes. The trading component enables enterprises with higher abatement costs to purchase credits from those that can reduce emissions more cost-effectively, thereby achieving overall reduction targets at minimum aggregate cost.

Target Setting: Sectoral emissions reduction targets established based on technical potential, historical emissions, and development needs

The scheme incorporates significant flexibility mechanisms designed to balance environmental effectiveness with economic adaptation. These include banking provisions allowing entities to save excess credits for future compliance periods, limited borrowing from future allocations to manage short-term compliance challenges, and sectoral gateways that permit restricted credit flows between different segments of the economy to prevent price distortions whilst maintaining market liquidity.

Governance architecture places the scheme under a newly established Carbon Market Authority with representation from the Ministries of Environment, Power, Industry, and Finance. This Authority has regulatory oversight of market operations, methodology approval, registry management, and enforcement functions, with technical support from expert committees on methodology development, market monitoring, and verification standards.

18.2 Design Elements and Operational Mechanism of the Carbon Credit Trading Scheme

The Carbon Credit Trading Scheme incorporates sophisticated design elements to ensure environmental integrity, market efficiency, and fair participation across India's diverse economic landscape. The scheme's coverage encompasses approximately 4,500 entities responsible for an estimated 65% of India's greenhouse gas emissions, with phased expansion planned to reach 80% coverage by 2030.

Credit generation occurs through two distinct pathways. Compliance entities operating under caps or intensity targets generate credits by reducing emissions below their assigned thresholds. Project-based credits are generated by implementing specific emissions reduction activities following approved methodologies, similar to Clean Development Mechanism approaches but with streamlined procedures and India-specific parameters. All credits, regardless of origin, represent one tonne of CO¢ equivalent reduction and are fully fungible within permitted sectoral boundaries.

The market infrastructure includes a centralised electronic registry tracking credit issuance, ownership, transfers, and retirement. Trading takes place on designated exchanges including the Indian Energy Exchange and BSE, with a unified clearing and settlement system supervised by the Securities and Exchange Board of India. Price discovery occurs through continuous trading, with options for periodic auctions to enhance liquidity and price signals. Market stability mechanisms include price floors and ceilings during initial implementation phases, a market stability reserve that adjusts credit supply based on predefined triggers, and circuit breakers to prevent excessive price volatility.

Compliance Obligations

- Annual submission of credits matching emissions or intensity requirements
- Three-month reconciliation period following each compliance year
- Progressive penalties for non-compliance starting at ₹2,000 per credit shortfall and increasing for repeated violations
- Public disclosure of compliance status for all regulated entities

Monitoring, Reporting & Verification

- Standardised emissions calculation methodologies across sectors
- Mandatory continuous emissions monitoring systems for major point sources
- Annual emissions reports verified by accredited third-party auditors
- Random audits by regulatory authorities to ensure system integrity
- Public accessibility of emissions data through online portal

Market Participation Rules

- Compliance entities with mandatory participation based on emissions thresholds
- Voluntary participants including smaller businesses and project developers
- Financial intermediaries providing liquidity and risk management services
- International linkage provisions for future connection to global carbon markets

The scheme incorporates a comprehensive capacity building component to address knowledge and technical gaps. This includes training programmes for compliance entities on emissions monitoring methodologies, verification procedures for auditors, trading strategies for market participants, and project development capabilities for credit generators. A dedicated help desk and technical assistance facility provides ongoing support, particularly for smaller entities with limited internal resources.

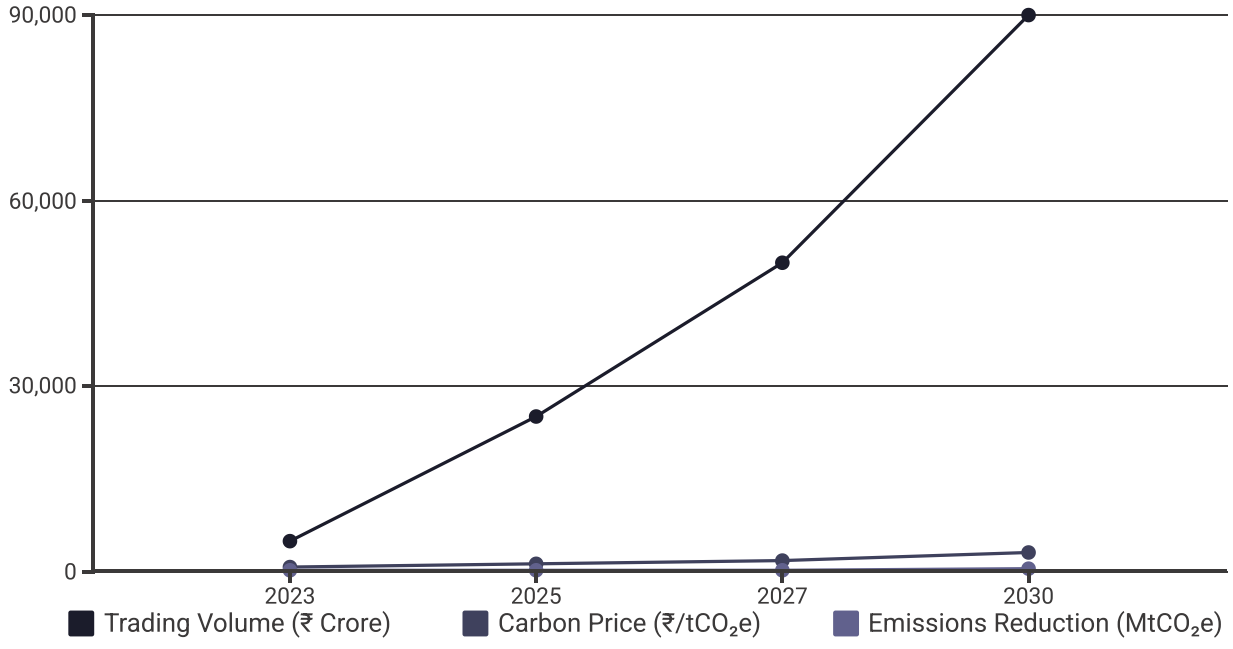
Implementation follows a carefully designed timeline with three distinct phases: a pilot phase (2023-2024) covering select sectors with no compliance obligations; a transition phase (2025-2027) introducing binding but modest reduction requirements; and a full implementation phase (2028 onwards) with progressively stringent targets aligned with India's NDC commitments and long-term low emissions development strategy.

18.3 Economic Implications and Market Projections for the Carbon Credting Trading Scheme

The Carbon Credit Trading Scheme is projected to create a substantial new market within India's financial ecosystem, with trading volumes expected to reach ¹90,000 crore (£8.6 billion) annually by 2030. Economic modelling conducted by the Ministry of Finance indicates that an effective carbon price of ¹2,400-3,600 per tonne CO¢e (£23-34) is likely to emerge by 2030, sufficient to incentivise significant technology transformation whilst remaining manageable for regulated entities.

Cost-benefit analysis demonstrates compelling economic rationale for the market-based approach. The scheme is projected to achieve the same environmental outcomes at approximately 40-45% lower aggregate cost compared to command-and-control regulations imposing uniform standards across sectors. This cost efficiency derives from the market's ability to direct abatement activities to locations and technologies with the lowest marginal costs. The cumulative cost savings through 2030 are estimated at ¹3.2-3.8 lakh crore (£30.5-36.2 billion) compared to regulatory alternatives.

Sectoral impacts vary considerably based on abatement costs and technological options. Energy-intensive industries including cement, steel, and aluminium face the most significant compliance costs in absolute terms, but also benefit from substantial efficiency improvement opportunities. Analysis suggests implementation costs ranging from 0.3-1.8% of production value across these sectors, with cost pass- through capabilities varying based on international competition exposure. The power sector, representing approximately 40% of covered emissions, benefits from rapidly declining renewable energy costs that create substantial credit generation potential.



Revenue utilisation represents a crucial policy dimension. The scheme is expected to generate ¹15,000- 25,000 crore (£1.4-2.4 billion) annually through partial credit auctioning and compliance penalties. This revenue is allocated through a Carbon Finance Mechanism with 60% directed to clean technology adoption in affected sectors, 25% to climate adaptation projects in vulnerable communities, and 15% to administrative costs and market development activities. This recycling of revenue significantly mitigates net economic impacts and addresses distributional concerns.

Macroeconomic modelling indicates modest aggregate impacts on GDP growth, with a projected reduction of 0.15-0.25 percentage points during initial implementation, transitioning to positive contributions of 0.1- 0.3 percentage points by 2030 as efficiency improvements, innovation effects, and international competitiveness benefits materialise. Employment effects follow a similar pattern, with short-term adjustment costs in carbon-intensive sectors offset by job creation in clean energy, environmental services, and market infrastructure.

18.4 Policy Integration and Synergies Across the Framework

The three policies examined in this compendium4the Energy Conservation (Amendment) Act 2022, the Electric Vehicle Policy, and the Carbon Credit Trading Scheme 20234form an integrated policy architecture designed to create mutually reinforcing incentives and regulatory frameworks. This deliberate integration represents a sophisticated approach to addressing the complex challenge of decarbonising India's economy while maintaining development momentum.

The Energy Conservation Act provides the foundational regulatory framework, establishing mandatory efficiency standards and renewable energy requirements across sectors. These regulatory mandates create baseline compliance obligations that drive initial action. The Carbon Credit Trading Scheme then introduces market mechanisms that enable cost-effective compliance with these requirements, allowing enterprises to identify the most economical pathways to meet their obligations while rewarding overperformance. The Electric Vehicle Policy provides targeted sectoral interventions in transportation, addressing the specific technical, infrastructure, and market barriers in this crucial emissions source.

1	2	3	4
Cross-sectoral consistency	Complementary incentives	Reinforcing compliance	Financing linkages
Harmonised definitions, measurement methodologies, and accounting standards across all three frameworks ensure consistent signals to market participants	EV subsidies reduce upfront adoption barriers while carbon pricing addresses ongoing operational economics, creating both immediate and long-term incentives	Carbon market verification systems strengthen enforcement of Energy Conservation Act provisions through market-based monitoring and reporting requirements	Carbon market revenues provide sustainable funding streams for EV infrastructure development and energy efficiency programmes beyond budgetary allocations

These policies also interact with broader national frameworks including the National Action Plan on Climate Change, the National Clean Air Programme, and India's industrial policy. The CCTS creates market incentives supporting the Solar Mission and Energy Efficiency Mission, while the EV Policy contributes directly to urban air quality improvement targets under the Clean Air Programme. Energy efficiency improvements catalysed by the Energy Conservation Act enhance industrial competitiveness, supporting manufacturing growth objectives under the Make in India initiative.

Looking forward, this integrated policy architecture establishes a flexible framework capable of accommodating increasing ambition over time. The carbon market can progressively tighten caps in alignment with India's long-term climate strategy, while maintaining cost-effectiveness. The EV policy contains provisions for phasing out incentives as market transformation advances. The Energy Conservation Act enables regular updates to efficiency standards reflecting technological evolution. This adaptive design allows the framework to evolve with changing circumstances while maintaining policy certainty for long-term investment decisions.

References For Compendium

Model Building by Laws, 2016, by Town and Country Planning Organisation, Ministry of Urban Development
https://mohua.gov.in/upload/uploadfiles/files/MBBL.pdf

The Ancient Monuments and Archaeological Sites and Remains 2010
https://prsindia.org/files/bills_acts/bills_parliament/2017/Ancient%20Monuments%20Amendment%20Bill,%202017.pdf

Minimum Wages Act, 1948
https://maitri.mahaonline.gov.in/pdf/minimum-wages-act-1948.pdf

Pradhan Mantri Awas Yojana - Urban 2.0
https://pmay-urban.gov.in/uploads/guidelines/Operational-Guidelines-of-PMAY-U-2.pdf

Design Act, India (2000)
https://ipindia.gov.in/writereaddata/Portal/IPOAct/1_58_1_design_act_1_.PDF

Patent Act, India (1970)
https://ipindia.gov.in/writereaddata/portal/ipoact/1_31_1_patent-act-1970-11march2015.pdf

Digital Personal Data Protection Act, 2023
https://www.meity.gov.in/static/uploads/2024/06/2bf1f0e9f04e6fb4f8fef35e82c42aa5.pdf

National Strategy for Artificial Intelligence
https://www.niti.gov.in/sites/default/files/2023-03/National-Strategy-for-Artificial-Intelligence.pdf

Copyright Act, 1957 (Amended)
https://www.education.gov.in/sites/upload_files/mhrd/files/upload_document/CprAct.pdf

Intellectual Property Rights (IPR) Policy
https://www.ipindia.gov.in/writereaddata/Portal/Images/pdf/2016-_National_IPR_Policy-2016__English_and_Hindi.pdf

Comprehensive Handicrafts Cluster Development Scheme (CHCDS)
https://handicrafts.nic.in/pdf/Scheme.pdf#page=2

Silk Samargra - 2.0
https://texmin.nic.in/sites/default/files/SILK_SAMAGRA.pdf

The Cinematographic Act, 2023
https://prsindia.org/files/bills_acts/acts_parliament/2023/Cinematograph_(Amendment)_Act,_2023.pdf

National Mission on Cultural Mapping And Roadmap
https://www.indiaculture.gov.in/sites/default/files/CulturalMapping/MissionDocument.pdf

The Antiquities and Art Treasures Rules, 1973
https://www.indiaculture.gov.in/sites/default/files/acts_rules/TheAntiquitiesandArtTreasures-Rules1973_20.03.2018.pdf

Energy Conservation (Amendment) Act, 2022
https://powermin.gov.in/sites/default/files/The_Energy_Conservation_Amendment_Act_2022_0.pdf

E Vehicle Policy
https://static.pib.gov.in/WriteReadData/specificdocs/documents/2024/mar/doc2024315324901.pdf

Carbon Credit Trading Scheme, 2023
https://beeindia.gov.in/sites/default/files/CCTS.pdf

ANANT
NATIONAL
UNIVERSITY
॥ प्रज्वालितो ज्ञानमयः प्रदीपः ॥

India's First
DesignX
University

Anant National University
Sanskardham Campus Bopal-Ghuma-Sanand Road
Ahmedabad 382115, Gujarat, India