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Introduction

Welcome to the Indian Journal of Legal Affairs and Research (IJLAR), a distinguished platform dedicated to the dissemination of comprehensive legal scholarship and academic research. Our mission is to foster an environment where legal professionals, academics, and students can collaborate and contribute to the evolving discourse in the field of law. We strive to publish high-quality, peer-reviewed articles that provide insightful analysis, innovative perspectives, and practical solutions to contemporary legal challenges. The IJLAR is committed to advancing legal knowledge and practice by bridging the gap between theory and practice.

Preface

The Indian Journal of Legal Affairs and Research is a testament to our unwavering commitment to excellence in legal scholarship. This volume presents a curated selection of articles that reflect the diverse and dynamic nature of legal studies today. Our contributors, ranging from esteemed legal scholars to emerging academics, bring forward a rich tapestry of insights that address critical legal issues and offer novel contributions to the field. We are grateful to our editorial board, reviewers, and authors for their dedication and hard work, which have made this publication possible. It is our hope that this journal will serve as a valuable resource for researchers, practitioners, and policymakers, and will inspire further inquiry and debate within the legal community.

Description

The Indian Journal of Legal Affairs and Research is an academic journal that publishes peer-reviewed articles on a wide range of legal topics. Each issue is designed to provide a platform for legal scholars, practitioners, and students to share their research findings, theoretical explorations, and practical insights. Our journal covers various branches of law, including but not limited to constitutional law, international law, criminal law, commercial law, human rights, and environmental law. We are dedicated to ensuring that the articles published in our journal adhere to the highest standards of academic rigor and contribute meaningfully to the understanding and development of legal theories and practices.

SCIENTIFIC JUSTICE OR LEGAL MIRAGE: ANALYSING FORENSIC PROVISIONS UNDER THE NEW CRIMINAL LAWS

AUTHORED BY - RHYTHM[1] & SONALI[2]

ABSTRACT:

The introduction of the Bharatiya Nyaya Sanhita (BNS),Bharatiya Nagarik Suraksha Sanhita (BNSS)and Bharatiya Sakshya Adhiniyam (BSA) has created a clear Scientific revolution in Criminal Justice System of India, by changing the old system of criminal justice which was dependent exclusively on confession by the accused to a new system based on Objective Scientific Evidence. This research paper will provide an in-depth, critical analysis of the new forensic provisions of the laws and examine the relationship between Law and Forensic Medicine within the framework of the new legislation. Legislative intent supporting the application of Technology and Scientific Evidence for the purpose of carrying out fair and unbiased investigations is apparent; however, there is a fundamental disconnect between the laws that have been enacted and the existing Systemic and Physical Infrastructure of India.

The research draws upon a combination of both Doctrinal Research, as well as Case Study Analysis to highlight a number of systemic flaws, as well as the Physical Limitations that hinder the successful application of Forensic Science. There are significant and unacceptable shortages of Laboratories that are properly equipped to perform forensic tests and the majority of Laboratories that exist rely upon out-of-date Technology; additionally, there is a severe shortage of Forensic Scientists and trained professionals working in the Investigative Agencies in India. The lack of standardized for the handling of evidence and for quality control protocols will ultimately prevent evidence from being considered scientifically valid in Court and will cause evidence to be reported late, or be questioned due to the inability of State run Laboratories to keep up with the high volume of cases.

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1. INTRODUCTION

India is currently trying to reform their criminal justice system to include new criminal laws that rely more on scientific evidence and forensic methods than traditional methods that rely heavily on oral testimony. In order to accomplish this transition, the new legal codes require forensic intervention in investigations that have previously not been subject to forensic evidence. By implementing these changes, the government intends to modernize the way justice is delivered and increase the reliability of forensic evidence presented to the courts.

However, with this transition comes the realisation of a vast rift between what is required (by law) and what is actually available (in an investigative capacity). Specifically, there are countless numbers of poorly trained forensic experts in India, laboratory equipment that is either outdated or deficient, and no standard forensic protocols (there has been little or no standardisation). All in all, it appears that these reforms will only alter the system on paper and are more about creating a false image than actual reform. To answer this question, this research will examine the current state of India's forensic institutions and identify and make recommendations regarding the existing systemic barriers that will need to be overcome in order to provide defendants with the right to a fair trial.

2. RESEARCH METHODOLOGY USED

This study employs qualitative methodology using the case study technique. It looks at the gaps, those that show up between the theoretical framework or those that are present, for instance in new criminal legislation. All of this against their actual forensic investigations. The study looks at how procedural requirements pertaining to forensic science are carried out. Under judicial principles derived from jurisprudence, we evaluate whether the existing forensic infrastructure really satisfies the established standards.

This study is analytical as well as descriptive. Under law, it reveals the scope and purpose as well as the actual loopholes that emerge. As inquiry proceeds, the selected case study approach helps to provide a realistic grasp of these significant, sensitive subjects. Analysis examines the significant compliance activities as well as the ultimate results based on the clauses. This contrast reveals what law says and, on the other hand, what happens.

The present investigation mostly draws on secondary data. Limited primary sources are utilized wherever this is found to be practical. Included in secondary data are legislative papers including rules and past documents. Regarding implementation, reports from ministries or other authorities might augment news periodicals, scientific papers, and research pieces. Should this be achievable, views could get skilled presentations with reality. These strategies help to close gaps regarding legislation and implementation at the front by pointing faults and shortcomings. Reform science starts from studies, so making judgements turns law into reality.

3. REVIEW OF LITERATURE

Shifting Away From a Confession: Based on a Science-Based Justice System.

Several current literature reviews collectively demonstrate how India has undergone a transformation from a criminal justice system that relied on confessions and ocular evidence to one that relies on objective scientific evidence. The way that many in the field of law view the Bharatiya Nyaya Sanhita, Bharatiya Nagarik Suraksha Sanhita, and Bharatiya Sakshya Adhiniyam is that they represent a "new age of justice" in India, specifically in their formalization of the use of forensic science in fairly investigating criminal activity and replacing obsolete provisions of the colonial justice system with a modern, technology-driven system.

The Infrastructure-Implementation Gap: One of the issues that has been noted repeatedly in many recent studies is the significant gap between the legislative intent and the actual (technical and training) capabilities of law enforcement agencies in India. Researchers have noted that there are many "deficiencies" in India's forensic infrastructure that continue to present significant challenges and prevent forensic experts from solving major felonies since, although the law now requires the use of forensics in cases of serious crimes, there is a serious shortage of trained forensic scientists; there are many heavily burdened state-operated forensic laboratories; and there is a continued reliance upon obsolete forensic technologies. All authors of the reviewed literature have agreed that without addressing these deficiencies, the legal mandates will not change the functioning of the criminal justice system in India.

Systematic barriers and implementation reliability: Several sources will mention that the quality of forensic products and practices is directly correlated to the extent to which individual rights are protected and the rate of conviction. In addition, there are systemic barriers — including unsophisticated processes for handling evidence and the lack of formalized accountability systems

— that frequently lead to delayed or "questioned" forensic reports. Some research suggests that existing laws refer to the issue of quality assurance as being "silent" because they don't reference necessary quality assurance procedures associated with the scientific legitimacy of evidence used in a court of law.

Institutional independence and modernization: The current literature also identifies the need for forensic laboratories to function with "institutional independence" and professional autonomy. Recent Government initiatives — such as the construction of new CFSLs or NFSGs and growth of NFSU's footprint — are cited as examples of where the availability of Administrative and Scientific personnel can be addressed. However, the literature returns to the idea that a scientifically based criminal justice system will be achieved only if the above-mentioned foundational changes in infrastructure occur at the same pace as the enactment of properly formulated legislation.

4. EVOLUTION OF FORENSIC SCIENCES IN INDIA

Thousands of years back are the roots of Indian forensic science. Indian society understood the scientific investigation techniques even in antiquity. Kautilya's Arthashastra from about 300 BC notes methods somewhat like those of contemporary crime detection. Long before they were formally acknowledged, Indians analyzed skin patterns and grasped the singularity of fingerprints, according to historical evidence. Originally regarded as ceremonial, fingerprints were once used by the uneducated as signatures; later they became scientifically accepted for identification.[3]

Realizing the need for scientific assistance in criminal investigations, especially in cases of poisoning, the British government established the first chemical examination laboratory in Madras in 1849, followed by others in Calcutta (1853), Agra (1864) and Bombay (1870). These laboratories oversaw toxicology, biological samples, and chemical analysis related to public health and crime.[4]

In 1892, the Anthropometric Bureau was set up in Calcutta, following the French system of identification. Soon after, India pioneered one of the most important forensic developments, that

[3] Nishka Prajapati, "History and Development of Forensic Science in India", *Legal Services India*,https://www.legalserviceindia.com/legal/article-2975-history-and-development-of-forensic-science-in-india.html (last visited on Nov 7, 2025)
[4] *Ibid.*

is, the establishment of the world's first Fingerprint Bureau in 1897. Spearheaded by Edward Henry, with crucial contributions from Indian officers this marked a major global milestone in personal identification through fingerprints.[5]

With the growth of explosives for disruptive activities, the Department of Explosives was founded in 1898 at Nagpur to investigate such explosions and enforce safety rules. Around the same time, the (GEQD) was created in Shimla in 1906 to analyze handwriting, forged documents, and secret communications, during World War II.[6]

In 1910, the Serology Department was established in Calcutta to examine blood and biological evidence. Other specialized forensic departments also emerged, a Footprint Section in 1915, a Note Forgery Section in 1917, and a Ballistics Laboratory in 1930 under Calcutta Police to examine firearms and ammunition.[7]

It was in Calcutta that the first multidisciplinary state forensic science laboratory (FSL) was established in 1952, uniting several scientific departments under a single organization. This was the beginning of modern forensic laboratory systems in India. Originally established in 1905, the Central Fingerprint Bureau was revived in 1955 .It was later subsumed under the National Crime Records Bureau.[8]

CDTS was Established in Calcutta in 1956, and it later opened sites in Hyderabad (1964) and Chandigarh (1973) .Central Forensic Science Laboratories (CFSL) were Established for subjects like physics, chemistry, and ballistics, established individually at Calcutta (1957), Hyderabad (1965) and Chandigarh (1961). In Calcutta, they established the Central Forensic Institute (CFI) along with GEQD and CDTS

By the 1990s, most states had their own FSLs, and CFSLs' role was standardization. Each CFSL was assigned a specialized domain. For eg biological sciences in Calcutta, chemical sciences in Hyderabad, and physical sciences in Chandigarh. In 1998, India achieved another milestone with the establishment of the first DNA Laboratory at Calcutta, introducing advanced methods like PCR

[5] *Ibid.*
[6] Growth of Forensic Science in India, available at https://facultyblog.sandipuniversity.edu.in/growth-of-forensic-science-in-india/ (last visited on Nov 6, 2025)
[7] *Ibid.*
[8] *Ibid.*

and (STR) analysis. This advancement revolutionized forensic investigations in cases involving murder, rape, organ transplantation etc.[9]

Today, India's forensic science system continues to grow through central and state laboratories, academic programs, and ongoing modernization under the BPR&D.

5. FORENSIC MANDATES UNDER The BNSS, The BNS AND The BSA 2023

According to a report published in the Hindu, Poorly managed crime scenes severely hampered the investigation of the 26/11 Mumbai terror attacks according to forensic experts. This was a failure caused due to weak evidence collection and poor chain of custody. Experts stated that forensic scientists were often not called to the scene in time which left untrained police personnel to collect important pieces of evidence. This lack of coordination led to mishandling, contamination, and loss of important evidence that could have strengthened the case.[10]

Former officials like N.S. Rao and Rukmini Krishnamurthy emphasized that forensic specialists are trained for systematic evidence identification, but their role is often overlooked. They highlighted the need for better communication between police and forensic departments.

This case highlights why India needed the 2023 criminal law reforms. The new laws focus upon mandatory forensic involvement, digital documentation of crime scenes, and stronger evidence collecting procedures and protocols. These provisions aim to correct these kinds of procedural lapses and forensic neglect which were seen during the 26/11 probe which would ensure more scientific and reliable investigations throughout the country.

Following are the major provisions relating to forensics incorporated into the new criminal laws:-

Section 176(3)[11] BNSS mandates that the forensic evidence at the crime scne is to be collected by a 'Forensics expert' for the offences in which punishment is imprisonment of 7 years or more.

Section 54[12] BNSS permits recording statements of identifiers during TIP using audio-video technology if the identifier is mentally or physically disabled.

[9] *Ibid.*
[10] "26/11 probe: poor crime scene management, say experts" *The Hindu*, Nov 17,2021
[11] The Bharatiya Nagarik Suraksha Sanhita, 2023 (Act 46 of 2023), s. 176(1)
[12] The Bharatiya Nagarik Suraksha Sanhita, 2023 (Act 46 of 2023), s. 54

Section 349[13] expands Judicial Magistrates' power with reference to ordering forensic investigation. It empowers JMIC to order sample collection for investigations including finger impressions and voice samples. BNSS had a wider scope as compared to Cr.P.C as it allows sample collection without prior arrest.

Section 329[14] states that a report of experts would be considered as expert evidence and can be submitted without oral testimony in court, expanding categories of experts. BNSS has extended its applicability to "any other scientific expert" specified or certified by the State or Central Government. Again, BNSS widens the scope of proper investigation because Cr.P.C allows the submission of reports by scientific experts certified by the central government only.

Section 39[15] (1) BSA says that the court can call upon experts in certain cases to assist the court. When the case involves any question relating to a specific science, handwriting, or piece of literature, the court can take help from those individuals who have expertise in those fields.

Section 40[16] BSA says that the facts which are not generally relevant can become relevant in certain cases, i.e. when the facts are not consistent with the expert's reports.

6. IMPORTANCE OF FORENSIC SCIENCE IN CRIMINAL TRIALS

- Evidence based Justice: Forensic investigations help to get evidence based justice. Forensic investigations are backed with scientific reasoning, proper tests and reports which are admissible in the court of law as expert evidence.
- Certainty in trials: Since these reports are based on sound and foolproof process these are more certain as compared to other forms of evidence. Human beings can sometimes err in their judgement of situations and can form a defective perspective or view of things, while scientific evidence is more accurate and trustworthy if conducted using proper tools and procedures.
- Less dependence on oral testimony: Oral testimony, though not preferred in court is still admissible as per Section 54[17] BSA. According to the Best evidence rule, documentary

[13] The Bharatiya Nagarik Suraksha Sanhita, 2023 (Act 46 of 2023), s. 349
[14] The Bharatiya Nagarik Suraksha Sanhita, 2023 (Act 46 of 2023), s.329
[15] The Bharatiya Sakshya Adhiniyam, 2023 (Act 47 of 2023), s.39
[16] The Bharatiya Sakshya Adhiniyam, 2023 (Act 47 of 2023), s.40
[17] The Bharatiya Sakshya Adhiniyam, 2023 (Act 47 of 2023), s.54

evidence is preferred over oral evidence.[18] In the case of Shri Pratap Singh vs Shiv Ram,[19] The honourable court held that oral evidence can be adduced in the court of law even being contrary to the records but documentary evidence prevails over oral evidence. The court states that 'documents don't lie' is the golden rule. Thus forensic reports cause less dependency on oral evidence.

- Reconstructing the crime scene: Forensic evidence helps in reconstructing the crime scene. Technology in forensics has improved over time. Gunshot residue can help to detect the revolver which was used, the kind of injury helps to determine whether death was accidental or a murder, rigor mortis (muscle stiffening after death) can help to determine the time of death.[20] Thus the court can form a view of how the chronology or series of events took place.

- Ensures the protection of rights: Forensic evidence protects the rights of the accused person. They reduce the reliability on custodial interrogations and thus protect the person's rights under article 20[21] of the Constitution. They reduce the chances of custodial torture and discourage coercive policing methods. In India, the number of custodial deaths has increased significantly. As of August 2024, there were 1372 judicial custodial deaths in the year 2024 as per NHRC reports.[22] Forensic investigation reduces the possibility of such instances.
- Helps to evaluate conflicting versions: Whenever the court is in a state of dilemma, forensic evidence comes to the rescue. While evaluating conflicting versions, the court can place reliance upon forensic evidence. When the prosecution and the defence show contradictory versions of the case, forensic evidence acts as an impartial assistant. It becomes easy for the court to decide such cases with the help of corroboration.
- Speedy trial procedures: Timely forensic reports reduce delays in trials. They help to avoid unnecessary adjournments. District courts in India have 4.6 crore pending cases and high

[18] Oishika Banerji, " Best Evidence Rule: Any overview",*Ipleaders* (December 15, 2021), available at: <https://blog.ipleaders.in/best-evidence-rule-an-overview/> (last visited on December 10, 2025)
[19] AIR 2020 SC 1382
[20] Michelle Castro, " Rigor Mortis", Britannica (December 6, 2025) available at: <https://www.britannica.com/science/rigor-mortis> (last visited on December 9, 2025)
[21] The Constitution of India, Art. 20
[22] US Department of State, " Country Reports on Human Rights Practices for 2024", 2 (2024)

courts have 63 lakh pending cases.[23] This distressing situation can be resolved and trials can be concluded efficiently within lesser time. Thus pendency in criminal courts can be addressed.

- Aids in appeals and revisions: sometimes, in appeals and revisions the court may infer that the investigation process was defective. In such cases, if the forensic samples are preserved properly, they can be of use. Thus long term fairness is ensured in criminal justice. The appellate court or the revision bench can re-examine the findings and can require re-testing of the samples to come to a fair conclusion.
- Crucial in Sexual Offences: In sexual offences, testing of semen samples, DNA fingerprinting, toxicology and injury examination can be of great use. These can provide irrefutable evidence establishing guilt of the accused person. More importantly, in the cases where the victim is in vegetative state and cannot give oral statements, such reports can be helpful.

- Cybercrimes and Terror Attacks: With Modernisation in the global world, criminals have also modernised. New kinds of electronic media based crimes have become more prevalent. Organised crimes and Cybercrimes mostly involve digital footprints such as IP logs, financial trails and call records, as these are committed through online streams. These can be assessed through forensic technology. In case of terror attacks, the Ballistic branch can provide information such as firearms or ammunition used, distance and trajectory, thus connecting the weapons to the suspect.

7. EVIDENTIARY VALUE OF FORENSIC REPORTS IN TRIALS

Evidentiary value of the forensic reports is dependent upon the evidence or basically the kind of evidence which is presented in the court. It was held in the case of Madan Gopal Kakkad vs Naval Dubej[24], that once the Expert evidence is corroborated by the court, it ultimately becomes the opinion of the court.

[23] Ishita Sharma, "Over 4.6 crore cases pending in lower courts, Centre tells Rajya Sabha" *The Hindu*, July 31, 2025
[24] 1992 SCC (3) 204

But it is to be understood that forensic reports are not binding upon the courts. As it was held in the case of Dayal Singh vs. state of Uttaranchal,[25]Forensic reports provide for certain facts with some relevant information which acts as a guide for the courts to understand the facts of the case properly. However, it is not necessary that it will always have evidentiary value. It is upon the discretion of the court to decide after careful examination, how much weight will the forensic report hold.

The final discretion rests with the court and corroboration is not always the rule. The court may require corroboration but, no corroboration is not a ground for rejection of expert evidence.[26]

Forensic reports are not conclusive in nature, they need to be supported by other evidence. In the case of Magan Bai vs. State of Punjab,[27] The court held it to be hazardous to base conviction only upon expert evidence. Same was stated in the case Of State of Gujarat vs Vinay Chander Chhota Lal[28] and Balakrishna Das Agarwal vs Smt Radha Devi[29] . In Fakhruddin vs. State of Madhya Pradesh[30], it was held, for corroboration the evidence can be direct or circumstantial.

It was held in the case of Titli vs. Jones,[31] Along with the reports of experts, reason should be given and all materials should be put before the court which led to the conclusion for the court to apply its judicial mind and form a judgement.

The court clarified in the case of Ramesh Chandra Aggarwal vs. Regency Hospital[32] that mere Assertions without express mention of basis isn't evidence, even if given by an expert. Even exp

There are certain requirements which need to be fulfilled for admissibility of expert evidence as given in the case of Ramesh Chandra Aggarwal[33] –

1. Expert should have proper expertise in the recognised field
2. Reports of expert must be based on scientific principles
3. Experts should possess proper knowledge according to the directions given by the appropriate government.

[25] AIR 2012 SC 3046
[26] *Murari Lal vs State of M.P* AIR 1980 SC 531
[27] AIR 1977 SC 1091
[28] AIR 1967 SC 778
[29] AIR 1989 All 133
[30] AIR 1967 SC 1326
[31] AIR 1934 All 237
[32] (2009) 9 SCC 709
[33] *Ibid.*

8. GROUND REALITY OF FORENSIC INFRASTRUCTURE IN INDIA

- Recently, Kerala State Legal Services Authority (KeLSA) filed a petition in Kerala High court. The petition was filed seeking an order from the court to the state government and the state Public Service Commission to fill the existing vacancies. The KeLSA alleged that the vacancies and the failure to appoint scientific assistants in the labs adversely impacted the conduct of trials. This was seen mainly in POCSO and NDPS cases.[34]
- According to the 2025 India Justice Report, nearly half of the 7,997 sanctioned forensic positions across India remain unfilled, causing major delays in criminal investigations and court proceedings. On a national scale, only about one-third of scientific posts are occupied, and District Mobile Forensic Units, which are supposed to be the first responders at crime scenes, are also severely understaffed — only 341 scientific personnel are managing 582 units. The shortage means that while administrative officers are in place to oversee budgets and infrastructure, there are far too few experts actually performing forensic tests, analyzing evidence, and preparing technical reports crucial for trials. This staffing crisis is straining the justice system, delaying investigations, and undermining the credibility of evidence.[35]
- The In Focus podcast by The Hindu explores why DNA evidence, often seen as the gold standard in criminal investigations, is frequently unreliable in India. Recently, the Supreme Court has also issued new guidelines focusing on how DNA samples must be carefully collected and sealed and how they need to be transported and documented to ensure that they are not contaminated or tampered with. This move came after several court cases where DNA evidence had to be rejected because of poor handling and a lack of procedural discipline.[36]

  Shreya Rastogi, Director at NALSAR's Square Circle Clinic explained that while DNA technology has the power to make investigations faster, India's forensic labs are struggling. Most are not adequately funded, short-staffed, and have a lack of modern equipment. Often,

[34] The Hindu Bureau, "Delay in appointing scientific officers, staff in forensic science labs: Kerala",*The Hindu* (Jul 3,2025)
[35] Tata Trust, " India Justice Report 2025" retrieved from https://indiajusticereport.org/indicator/131/ijr-4/large-states/map (last visited on Nov 12, 2025)
[36] Zubeda Hamid, "In Focus Podcast | Why is DNA evidence in India often not reliable?", The Hindu (Oct 6,2025)

samples are not preserved properly or are tested by untrained personnel which leads to errors that can break a case.[37]

The discussion makes one thing clear, that science alone isn't enough; it must be supported by strong systems. Without proper infrastructure and without proper accountability along with training, even the most advanced forensic tools lose their credibility. The Supreme Court's guidelines are an important step, but unless the country invests in improving forensic capacity, justice will continue to be delayed or worse, denied. Such guidelines need to be implemented properly, only then, they can be of actual use. Otherwise they are mere words on paper. Without administrative will, judicial interpretations and directions cannot bring real change. They act as symbolic directions and ineffective instruments of justice with no practical applicability. However, if there is stronger coordination between the judiciary and the executive, these mandates under the new regime of criminal laws can act as a great reformation measure towards seeking justice.

- According to an article published in Hindustan Times on April 15, 2025, there has been a huge backlogs in Delhi FSL. Over 20 thousand reports were still pending causing delays in trial procedures. These reports are concerned with four major divisions, which are the ballistic branch, cyber branch, chemistry branch and biology branch. Over 7 thousand reports were pending in the cyber unit, followed by 5 thousand reports in the chemistry unit, 4.6 thousand reports in the ballistic branch and around 4 thousand pending DNA reports.[38]

  Even before the introduction of the official mandate under BNSS 2023, the Home Minister -Mr. Amit Shah had announced in the month of November 2022 that forensic investigation is to be made compulsory in cases involving punishment of imprisonment over 6 years. Yet, after such a long period of time, the pile of unresolved reports is mounting with innocent families waiting for closure.[39]

[37] *Ibid.*
[38] Sanjeev K Jha, "With 20k+ reports pending, Delhi FSL backlogs delays key trials", *Hindustan Times* (April 15, 2025)
[39] *Ibid.*

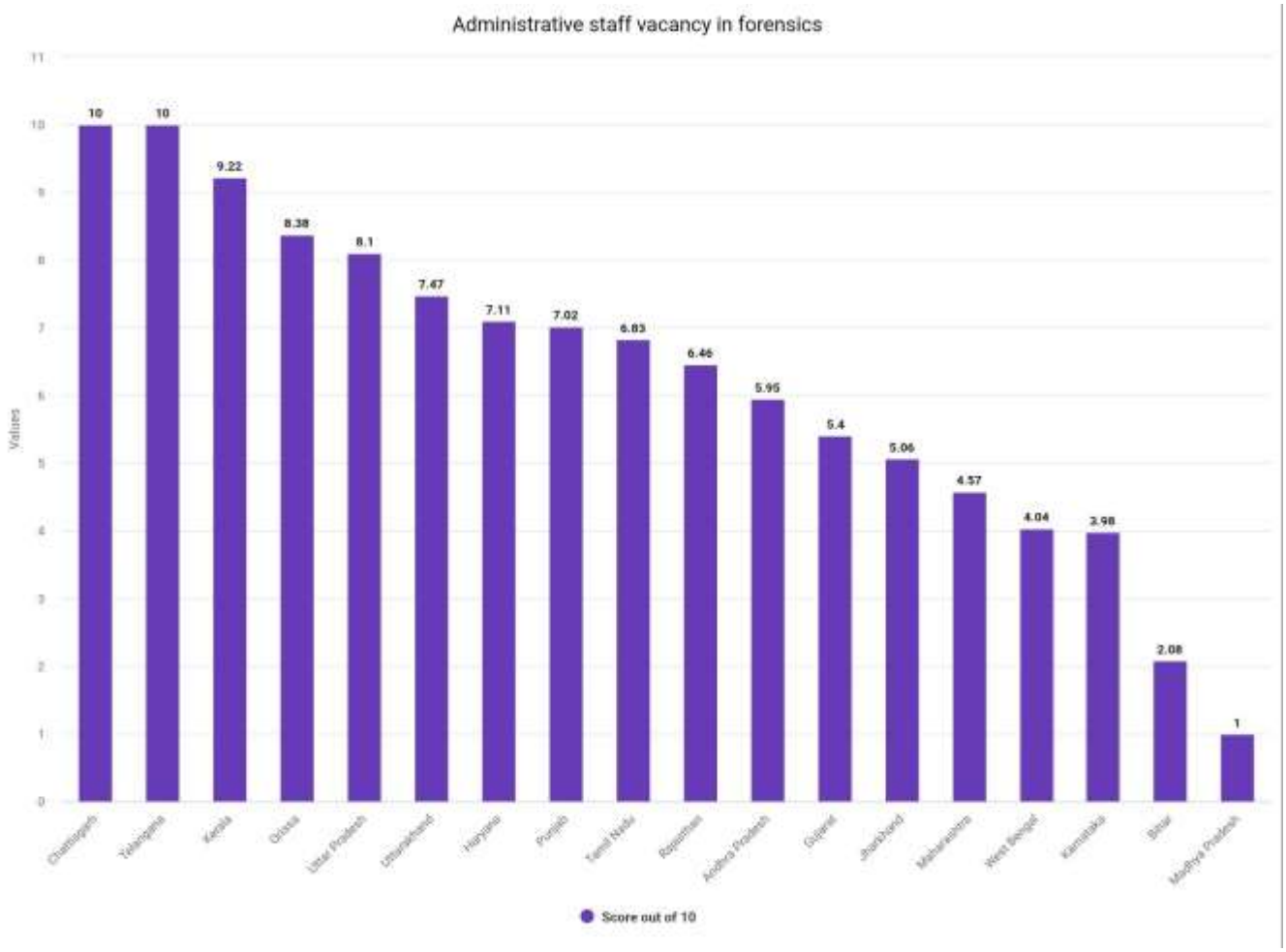
- Bombay High Court also raised concerns over pending Cases in Mumbai FSLs in January 2025. The Court highlighted the pendency of around 45000 cases in Forensic science labs of Mumbai and Thane.[40]

  Even in 2024, Bombay High Court's Nagpur bench took suo motu cognizance to deal with increasing delays in FSL reports. A division bench comprising Justice Vrushali Joshi and Justice Nitin Sambre directed for a PIL To be filed. An officer was also appointed as amicus curiae to gather relevant documents within a time period of one week. The court expressed how these delays were detrimental to social and criminal justice.[41]

  Earlier, in the month of October 2024 also, the court presided over by Justice Govinda, throwing light upon the situation described it as a grim state of circumstances and stated that if this current state would continue, it would lead to criminal trials coming to a standstill.[42]

9. FACTS AND FIGURES: PUBLIC RECORDS

[40] Omkar Gokhale, " Bombay High Court raises concerns over pendency of 45,000 cases with FSLs in Mumbai, Thane for 5yrs", *The Indian Express* (January 30, 2025)
[41] Vaibhav Ganjapure, " HC lived over delays in forensic reports in state", *The Times of India* (December 11, 2024)
[42] *Ibid.*



Source: India Justice Report 2025 (This bar diagram shows scores out of 10 of 18 Indian states)

- The India Justice Report chart on "Administrative Staff Vacancy" in Forensics presents an unsettling snapshot of how unevenly India's forensic infrastructure is distributed. Among 18 large and mid-sized states, Chhattisgarh and Telangana are at the top, with a perfect 10 out of 10. They are followed by Were (9.22), Odisha (8.38), and Uttar Pradesh (8.10) which show moderate institutional presence in their forensic services.[43]

  However, beyond this small top cluster, the scores begin to fall showing. This shows a widening gap in capacity that threatens the credibility of forensic investigations. In the mid-tier, states like Uttarakhand (7.47), Haryana (7.11), Punjab (7.02), and Tamil Nadu (6.83) show declining performance. These scores reflect partial infrastructure, a handful of functional laboratories, and inconsistent administrative support. For example, while Tamil

[43] *Supra note* 41 at 19

Nadu has invested in modern forensic techniques, vacancies in supporting roles still delay report generation and sample handling. This unevenness results in Justice by geography, where the outcome of a forensic Investigation can depend largely on the state in which it is conducted.[44]

The lower half of the table is more alarming. Rajasthan (6.46), Andhra Pradesh (5.95), Gujarat (5.40), Jharkhand (5.06), and Maharashtra (4.57) demonstrate declining institutional strength despite being economically stronger states. The shortfall here is because of lack of prioritisation, forensics continues to be seen as an auxiliary or an extra service rather than being important for justice. When even relatively prosperous states perform below average, it becomes clear that India's forensic reform is not about money alone, it is about systemic neglect and policy disconnect.[45]

At the very bottom, West Bengal (4.04), Karnataka (3.98), Bihar (2.08), and Madhya Pradesh (1.00) illustrate the most critical administrative vacancies. These numbers reflect near-collapse of institutional presence - laboratories either understaffed or functioning without qualified personnel.Madhya Pradesh, which is one of India's largest states, scores just 1 out of 10. It implies that more than 90% of administrative positions in its forensic infrastructure are unfulfilled.[46]

This sharp inequality shows how some states operate with near-complete forensic setups, while others barely sustain the structure required by law. This imbalance exposes the fragility of India's new legal framework. It heavily relies on forensic science for criminal investigation. Forensics is the bridge between crime and conviction. It is the gallant language through which evidence speaks- uncoloured by blast or memory. Yet in India, that language remains incomplete.

The new criminal laws of 2023 claim to place science at the centre of Investigation. They mandate forensic collection in serious offences and envision a technology driven justice system. However, as the data shows, these laws have been written without ensuring the manpower or technical capacity to implement them. It is like designing a bridge without building its pillars. Vacancies in forensic departments translate directly into delays, errors,

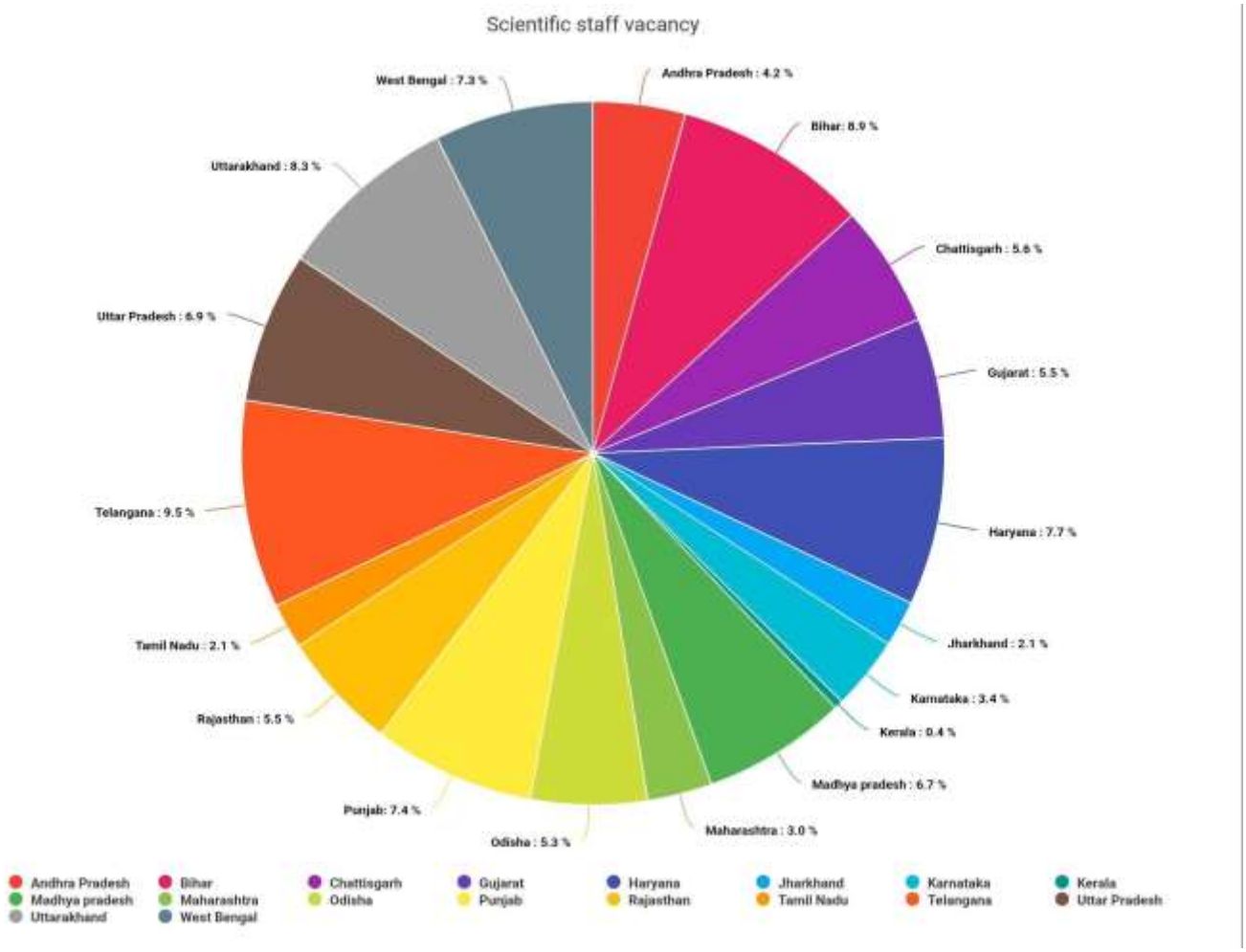
[44] *Ibid.*
[45] *Ibid.*
[46] *Ibid.*

and injustice. A report pending in a forensic lab can hold up an entire criminal trial. Even in top ranked states, trained staff are concentrated in urban centres which has left rural and district laboratories severely handicapped. Evidence often gets misplaced or mishandled or sometimes degraded before analysis. Behind every statistic lies the same failed procedure, a delayed charge sheet, a prolonged trial, and a family waiting for closure.

States like Madhya Pradesh and Bihar, which score at the bottom, show how chronic neglect of forensic capacity leads to paralysis in the system. The BNSS may mandate forensic examination in every heinous offence, but without adequately staffed laboratories, this mandate becomes impossible to fulfil.

Ultimately, this data highlights a painful contradiction. India aspires to make a science driven criminal justice system, but continues to operate with outdated tools and insufficient human resources. The problem is not in the vision of the laws, but actually in the vacuum of their implementation. Forensics is not a luxury, it is the very foundation of truth in justice. Until every laboratory is staffed and every officer trained, India's forensic reforms will remain hollow. It will be a framework without a foundation and a promise without a pulse.[47]

[47] Tata Trusts,"India Justice Report 2025" retrieved from https://indiajusticereport.org/indicator/131/ijr-4/large-states/map (last visited on Nov 12, 2025)



Source: India Justice Report 2025 (this pie chart shows vacancies in scientific staff in forensic labs in 18 Indian states)

- The India Justice Report (2025) table on "Scientific Staff Vacancy in Forensics" paints a grim picture of India's investigative capacity. Among 18 large and mid-sized states, Kerala, TamilNadu, Jharkhand and Karnataka top the chart, indicating better staffing and operational efficiency in their forensic departments. Kerala tops the list with just 0.4 percent Vacancy followed by Jharkhand and Tamil Nadu with Vacancy of 2.1 percent. These states show availability of better forensic facilities. [48]

  Chattisgarh (5.6percent), Gujarat (5.5 percent), Orissa(5.3 percent) and Rajasthan(5.5 percent) show moderate Vacancy rates. These states, though not at the bottom, show low

[48] *Supra note* 41 at 19

development rate. Rajasthan being India's largest states by area showing such figures is an example of rampant underdevelopment.[49]

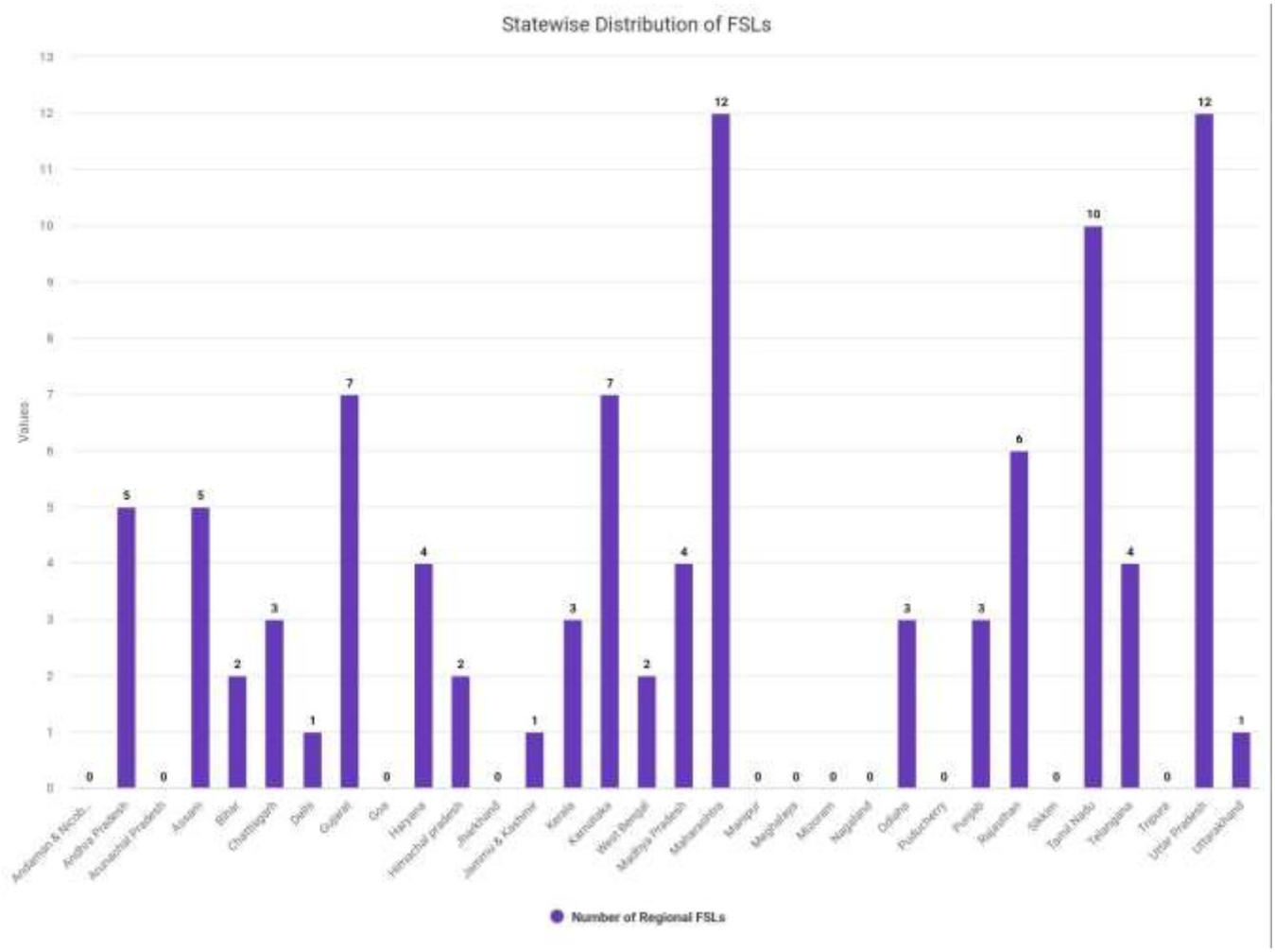
However, the majority of states fall drastically behind. Bihar and Telangana sit near the bottom, revealing a near-collapse of scientific manpower essential for credible investigations.

If explained in simple words, this means that in some states, four out of five sanctioned posts for scientific experts remain vacant. Even well resourced regions like Madhya Pradesh and Gujarat are struggling to fill their vacancies. These numbers expose a structural imbalance where the availability of forensic expertise depends entirely on geographical areas

Behind these figures are the actual stories of laboratories running with minimal staff and evidence piling up for months with important samples losing their evidentiary value. A single expert in some districts handles hundreds of cases, often without updated equipment or training. The result is not just administrative inefficiency, but the erosion of truth itself. Forensic science which should be the backbone of modern investigation, has just been reduced to a procedural formality in many states.

This crisis reveals the hollowness of India's new criminal laws — the Bharatiya Nyaya Sanhita, Bharatiya Nagarik Suraksha Sanhita, and Bharatiya Sakshya Adhiniyam — all of which emphasise scientific evidence as central to fair investigation. But without scientists, labs, or proper funding, these legal mandates remain words without weight. Forensics cannot serve justice if it has no human force behind it. Until India fills these scientific vacancies and strengthens its forensic infrastructure, the promise of evidence-based justice will remain a legislative illusion — beautiful on paper, broken in practice. [50]

[49] *Ibid.*
[50] *Supra* Note 22 at 15



- The above table gives information about the number of regional FSLs (Forensic Science Labs) in different states and Union Territories of India as of 1st July 2024.[51] All of the above states have One state FSL each but the number of regional FSLs varies from area to area.

  Maharashtra and Uttar Pradesh have 12 Regional FSLs each which shows greater level of development — being two of India's most populous states with population of 112.3 million and 199.8 million respectively.[52]

[51] Ministry of Home Affairs, " FORENSIC LABS AND FORENSIC INFRASTRUCTURE", retrieved from https://www.pib.gov.in/PressReleasePage.aspx?PRID=2085688&reg=3&lang=2 (last visited on December 11,2025)
[52] Data Commons, " Ranking by Population- States in India" retrieved from https://datacommons.org/ranking/Count_Person/State/country/IND?h=wikidataId%2FQ677037 (last visited on December 11, 2025)

Tamil Nadu has 10 Regional FSLs followed by Gujarat and Karnataka with 7 FSLs each which also show satisfactory level of development, with Tamil Nadu being the 7th most populous state and Karnataka and Gujarat being 9th and 10th respectively.[53] Assam is not densely populated in comparison with other states which justifies the Number of FSLs set up in the state, i.e, 5. But at the same time, Andhra Pradesh also has 5 FSLs being the 5th most populous state with a population of 84.5 million which is deficient.[54]

States like Bihar and West Bengal have shown a very poor performance. Bihar is the 3rd largest state with reference to population and West Bengal is ranking 4th. But in deep contrast, they have only 2 FSLs. Thus they show a glaring deficiency in scientific infrastructure which has been one of the major footstones of formulating the new laws in 2023. This weakens the very purpose of introduction of the new laws.

10. WAY FORWARD

India mainly needs to focus on establishing a system where law and science work hand in hand. Strengthening forensic capacity should be treated as a priority. This includes establishing more well equipped laboratories and upgrading the existing labs with modern technology. There is a need to ensure that every region has easy access to forensic services.

With the development of infrastructure, human expertise should also be developed. Regular training for police officers and prosecutors, and even judges on forensic procedures will help reduce errors. Digital evidence management systems can further ensure transparency and help in maintaining the chain of custody properly. This will help to ensure credibility of the evidence

Institutional independence is also important at the same time. Forensic laboratories should function with professional autonomy. They need adequate funding to maintain impartiality and quality. Collaboration between universities, research institutions, and law enforcement agencies can also foster innovation and help in building a strong research ecosystem in relation to forensic science.

In the long run, these reforms can transform the criminal justice process. They can transform it from a system dependent on confessions and witness testimony to one grounded in objective scientific proof. The new criminal laws have opened the door for such transformation.

[53] *Ibid.*
[54] *Ibid.*

Union Home Minister formally opened the new CFSL building at Rajarhat, close Kolkata, on June 1, 2025. The facility is expected to be instrumental in improving forensic capacity throughout eastern and northeastern India, hence assisting investigators in using a more scientific and all-encompassing approach in solving difficult cases.

Mr. Shah characterized the occasion as a turning point in the Centre's ongoing attempts to underpin a contemporary, technology driven criminal justice system. He underlined that every new forensic facility improves the chain of scientific inquiry and enables quicker, more dependable administration of justice. Referring to the recent criminal law changes under the Bharatiya Nyaya Sanhita (BNS), he emphasized a considerable speed-up in investigations; chargesheets are now filed within 60 days in nearly 60% of cases. Indicating a national increase of forensic capability, he also unveiled proposals to create seven more CFSLs in different states.

Further strengthening this dedication, on June 22, 2025, Mr. Shah laid the foundations stones for a National Forensic Science University campus and a new Central Forensic Science Laboratory at Nava Raipur Atal Nagar in Chhattisgarh in the presence of CM Vishnu Deo Sai, and other senior State officials. The Home Minister emphasized the Centre's goal to include forensic education, sophisticated research, and practical investigation inside one scientific structure.

Deputy Chief Minister Vijay Sharma, claims that the Chhattisgarh Government has designated 40 acres of land for the NFSU campus. This campus will be built by the Centre at an estimated cost of Rs 2,400 crore. Also, the new CFSL will be made on a 6-7-acre site close to the university campus to become a regional hub for forensic study.

These projects show the Central Government's resolute attempts to modernise India's forensic and investigative infrastructure which would assist in closing the ongoing gap between legislative change and actual capacity. Setting up new CFSLs and NFSU sites shows a cultural change toward openness and accountability in the criminal justice system.[55]

11. SUGGESTIONS

Following are certain steps or measures that can be undertaken to resolve the above stated issues

[55] Vijaita Singh, "New criminal laws from July 1, Centre approves ₹2,254 crore to upgrade forensics",*The Hindu* (June 19, 2024)

- Regional coverage: There is a need to establish Regional forensic labs in areas with higher population, thus reducing the burden of State FSLs. This would give larger states adequate time to properly analyse samples
- Fast Track filling of vacancies: There is a need for recruitment drives for forensic science as well as administrative experts. The State or the Central government should hold regular exams or set up an equivalent mechanism for recruitment of such officials and fill the existing vacancies.
- Training to placement pipelines: There should be investment in training centres where vocational Training can be given to students with appropriate qualifications. Such students can later be absorbed directly into the FSLs who would have proper degree of experience and knowledge.
- Investment in new digital technology: Better technology can be used in place of existing technology to increase efficiency and reduce time lags. New and better technology can be imported if needed which can provide more reliable results in a shorter time period. This would decrease the manual workload on the already existing meagre staff.
- Creation of national forensic staffing standard: this would act as an example for states to work on the betterment of forensic infrastructure in their respective area. States would understand how many toxicologists, DNA analysts, ballistic experts etc. would they need.
- Mobile Forensic Units: other than the existing kinds of labs, mobile FSLs can be set up in areas with higher crime rate for urgent cases like rape cases, acid attacks etc. This would give instant reports and would maintain the authenticity of the evidence. There have been many cases where contamination of evidence had led to their non admissibility. Such smaller and easily accessible units would help avoiding Evidence tampering.
- Guidelines on chain-of-custody: proper guidelines should be given to maintain chain of custody while Evaluation of forensic samples. Although many court judgments exist giving such guidelines, there is a need for an integrated approach to remove confusions and form an uniform system to be followed in each lab.
- Public private partnerships: more FSLs can be set up through public private partnerships. But strict protocols should be followed where private owners work as investors and do not intervene much in the functioning of the labs to maintain the integrity of the system. The

government should appoint certain officials to have strict watch over such labs to prevent mishandling or tampering of evidence.

- Strengthening of medico legal System: Whenever victims are in need of medical help , they are taken to hospitals. Such hospitals should be given a set of rules to be followed where they should collect the needed forensic evidence and send it to the nearest forensic labs maintaining chain of custody. These rules are much needed in specific cases such as rape cases or murder cases. Such rules should not only be mandatory for public hospitals but also private hospitals.
- Forensic legal education: Forensic should be a part of legal education. It should be imparted in law colleges and universities. This would lead to proper use of existing facilities. In many cases, the prosecution fails to establish the case beyond reasonable doubt. Forensic investigation provides reports with reasonable backing which could be helpful in such cases to establish guilt. Forensic investigations would be conducted whenever necessary thus increasing the credibility of the evidence.
- Court - laboratories interface to be strengthened: Liaison officers need to be appointed to provide better communication. They would form a link between the FSLs and the courts and would be helpful in expert testimony preparation. They could act as officers of court and could be called in case of unclear reports or incomprehensible reports. Since they would be having a better knowledge of the science, they would be able to explain the report properly. This would reduce delays and provide for a fast track system of justice delivery.
- Sample preservation centres: Sometimes the cases are not resolved in initial trials, leading to appeals or revisions where questions may arise regarding the admissibility or reliability of the evidence. Thus sample preservation centres could be helpful in such cases. They would help in preservation of samples for a reasonable period of time, so that they can be reproduced whenever needed.

- International partnerships: International partnerships can also be helpful in setting up FSLs. But, again the credibility of the evidence cannot be compromised. The government will have to ensure that, although the labs have been opened in partnerships, major control remains in the hands of the government. The functioning of the labs should not be

intervened with. This would help in the introduction of foreign technologies which can be cost and time efficient.

- Long term fiscal plans: 2024-2025 central scheme should be treated as the baseline for long term fiscal plans. At the same time it should not be treated as an endpoint keeping a wider scope for capacity building in future. The budget allocation should be such that it does only focus on one time capital investment but should also reserve a part of the budget for maintenance and depreciation cost in the near future. The operation budgets should be sustainable so that the one time capital Investments are also not wasted because of lack of maintenance.
- Community outreach and victim awareness programs: The new provisions need a wider reach among the masses. The citizens need to be made acquainted with the new procedures. Victims should be made aware about their rights and the formulated timelines. They should be made to understand the importance of early reporting and how it helps in evidence preservation.
- Encouragement of interstate resource sharing: Since the resources in different states vary drastically, there is a need for interstate resource sharing. As section 176[56] BNSS provides that it is mandatory for Cases which have been provided with punishment of 7 years imprisonment or more need to be investigated in presence of forensic experts, the states need to assist each other until appropriate segregated infrastructure is available in each state. The section[57] also provides for a gestation period time limit that is 5 years which means the states have 5 years to establish the required forensic facilities in their respective areas. So till that time the states need to aid each other.

12. CONCLUSION

The introduction of (BNS), (BNSS), and (BSA) represents a major turning point in India's criminal justice reform. For the very first time, these laws formally recognise the role of forensic science in fair investigations. They aim to replace outdated provisions with a modern system where scientific methods lead to the discovery of truth.

[56] The Bharatiya Nagarik Suraksha Sanhita, 2023 (Act 46 of 2023), s.176
[57] *Ibid.*

However, the success of these reforms depends on the country's readiness to implement them. At present, India's forensic infrastructure continues to face deep-rooted challenges. There is a shortage of trained personnel, there are limited laboratories with outdated technology, and procedural discrepancies. As a result, even though the law mandates the use of forensic tools in investigations, the system often struggles to apply these provisions properly. This gap between legislation and practice reduces the reliability of forensic findings during trials.

REFERENCES

Online Sources

Nishka Prajapati, "History and Development of Forensic Science in India", Legal Services India, https://www.legalserviceindia.com/legal/article-2975-history-and-development-of-forensic-science-in-india.html (last visited on Nov 7, 2025)

Growth of Forensic Science in India, available at https://facultyblog.sandipuniversity.edu.in/growth-of-forensic-science-in-india/ (last visited on Nov 6, 2025)

Tewari RK, Ravikumar KV, "History and development of forensic science in India", retrieved from https://www.santoshraut.com/forensic/forensicscinindia.htm (last visited on Nov 8,, 2025)

Tata Trusts,"India Justice Report 2025" retrieved from https://indiajusticereport.org/indicator/131/ijr-4/large-states/map (last visited on Nov 12, 2025)

Data Commons, "Ranking by Population- States in India" retrieved from https://datacommons.org/ranking/Count_Person/State/country/IND?h=wikidataId%2FQ677037 (last visited on December 11, 2025)

Ministry of Home Affairs, "FORENSIC LABS AND FORENSIC INFRASTRUCTURE", retrieved from <https://www.pib.gov.in/PressReleasePage.aspx?PRID=2085688&reg=3&lang=2> (last visited on December 11, 2025)

Statutes

- The Bharatiya Nagarik Suraksha Sanhita, 2023 (Act 46 of 2023)
- The Bharatiya Sakshya Adhiniyam, 2023 (Act 47 of 2023),

Newspaper Articles

- The Hindu Bureau, "Delay in appointing scientific officers, staff in forensic science labs: Kerala",The Hindu (Jul 3,2025)
- "Amit Shah lays foundation stones for NFSU campus, Central Forensic Lab in Nava Raipur", The Hindu, June 22, 2025
- Zubeda Hamid, "In Focus Podcast | Why is DNA evidence in India often not reliable?", The Hindu (Oct 6,2025)
- "26/11 probe: poor crime scene management, say experts" The Hindu, Nov 17,2021
- Vijaita Singh, "New criminal laws from July 1, Centre approves ₹2,254 crore to upgrade forensics",The Hindu (June 19, 2024)
- Sanjeev K Jha, "With 20k+ reports pending, Delhi FSL backlogs delays key trials", Hindustan Times (April 15, 2025)
- Omkar Gokhale, " Bombay High Court raises concerns over pendency of 45,000 cases with FSLs in Mumbai, Thane for 5yrs", The Indian Express (January 30, 2025)
- Vaibhav Ganjapure, " HC lived over delays in forensic reports in state", The Times of India (December 11, 2024)

Case Laws

- *Balakrishna Das Agarwal vs. Smt Radha Devi,* AIR 1989 All 133
- *Dayal Singh vs. State of Uttaranchal,* AIR 2012 SC 3046
- *Fakhruddin vs. State of Madhya Pradesh,* AIR 1967 SC 1326
- *Madan Gopal Kakkad vs. Naval Dubej,* 1992 SCC (3) 204
- *Magan Bai vs State of Punjab,* AIR 1977 SC 1091
- *Murari Lal vs. State of M.P,* AIR 1980 SC 531
- *Ramesh Chandra Aggarwal vs. Regency Hospital,* (2009) 9 SCC 709
- *Selvi vs. State of Karnataka,* AIR 2010 SC 1974
- *State of Gujarat vs. Vinay Chander,* AIR 1967 SC 778
- *State of Himachal Pradesh vs. Jai Chand,* (2013) 10 SCC 298
- *Surendra Koli vs. State of Uttar Pradesh,* (2011) 4 SCC 80
- *Titli vs. Jones,* AIR 1934 All 237