
THE OWNERSHIP DILEMMA IN PUBLICLY FUNDED SEMICONDUCTOR INNOVATION: REASSESSING LICENSING AND LAYOUT-DESIGN RIGHTS UNDER INDIA'S DLI SCHEME

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ABSTRACT

India's Design Linked Incentive (DLI) Scheme and India Semiconductor Mission have increased the publicly funded semiconductor design innovation¹, yet the ownership and licensing of the semiconductor layout-design rights generated through such funding remains largely subjected to uncertainty. The ownership and licensing of the semiconductor layout-design rights generated through such funding remains largely uncertain. In so far as the intellectual property rights arising from semiconductor innovation have been explored within the contemporary scholarship relating to India's semiconductor sector, this has revolved primarily around the domain of industrial policy, manufacturing incentives, and technological sovereignty while the allocation and commercialization of such government-backed SLD have received meagre attention.²

Adopting a doctrinal and comparative legal methodology, the study evaluates whether existing Indian IP regime, more specifically the Semiconductor Integrated Circuits Layout-Design Act 2000³, would suffice in adjudicating ownership and licensing rights that arise from public funded semiconductor innovation. Focusing on the new age DLI assisted chip-design ventures, this paper assesses whether Indian law provides certainty regarding ownership, commercialization, and public-interest safeguards for SLD. This paper advocates that although India has laid down a special 'sui generis' system for protection of layout-designs in the semiconductor sector, the existing statutory framework fails to determine who owns it and licensing obligations when semi-conductor layout design rights

¹ Arvind Virmani & Charan Singh, *India's Semiconductor Strategy: Building a Domestic Ecosystem through Industrial Policy and Innovation Incentives*, 59 Econ. & Pol. Wkly. 41, 43–46 (2024).

² Ashok Chandak, *India's Semiconductor Mission: Opportunities and Challenges for Building a Domestic Ecosystem*, 54 Econ. & Pol. Wkly. 23, 24–27 (2024).

³ Semiconductor Integrated Circuits Layout-Design Act, No. 37 of 2000, India.

emerge from publicly funded innovations. By taking the Bayh–Dole framework as an example the study calls for a semiconductor specific ownership and licensing regime which combines innovator ownership, government march-in rights, and public interest licensing obligations.

Such a framework would more likely align with India's intellectual property regime with the objective of DLI Scheme and the India semiconductor mission.

Keywords: Publicly Funded Intellectual Property, Semiconductor Sovereignty, Innovation Ownership, Government March-In Rights, Design Linked Incentive Scheme

1.INTRODUCTION

Indian strategy on semiconductors is radically different from earlier conceptions and encouragement of technological competence. Earlier India was active only in design services, software services and the assembly related activities where high value Semiconductor IP (Intellectual Property) of semiconductor was held in very few countries of the world for decades⁴ but the Indian Policy is now attempting to make a vast array of changes to make it not only to participate but also to promote Indian made semiconductor IP.⁵ As such, semiconductor design has now taken the centre stage as a national priority and the interplay between state funding, technological innovation, and IP creation. This is epitomized in the launch of India Semiconductor Mission and the Design Linked Incentive Scheme which reveals the intention of the Nation to move more towards advanced semiconductors.⁶

Unlike in the past, where state policies focused primarily on attracting manufacturing investment, such programmes are now designed in a manner that they promote indigenous capability for designing chips.⁷ The State has now started directing resources towards encouraging creation of domestic semiconductor design architectures, integrated circuit (IC) designs and layout-design assets to realize long-term technological and commercial potential. This effectively means that the state has finally moved from being just a facilitator of

⁴ Douglas B. Fuller, Akintunde Akinwande & Charles Sodini, *The Globalization of R&D's Implications for Technological Capabilities in MNC Home Countries: Semiconductor Design Offshoring to China and India*, 120 Tech. Forecasting & Soc. Change 14, 14–18 (2017).

⁵ *How DLI Scheme Is Helping India Build Its Own Semiconductor IP*, ETManufacturing (Nov. 20, 2025), <https://manufacturing.economictimes.indiatimes.com/news/hi-tech/how-dli-scheme-is-helping-india-build-its-own-semiconductor-ip/125387494> (last visited June 28, 2026).

⁶ Rajat Kathuria & Anirudh Burman, *India's Semiconductor Mission: Industrial Policy, Technological Capability and Strategic Autonomy*, 59 Econ. & Pol. Wkly. 34, 36–38 (2024).

⁷ Ministry of Electronics & Information Technology, Government of India, *Design Linked Incentive (DLI) Scheme Guidelines* ¶¶ 1.1–1.3, at 3–5 (Dec. 30, 2022).

industrial growth to being a direct producer of IP for semiconductors.⁸ Such an expansion of state involvement in financing of semiconductor design innovation inevitably raises an important question for the State and IP legal community of who owns the title of intellectual property created by state funding mechanisms, and What are the legal consequences when the State finances the creation of semiconductor design assets under schemes such as the Design Linked Incentive (DLI) programme and who will be ascertained with the ownership in that case is still a matter of ambiguity.⁹

Such designs could be commercially exploited, license generated, help secure investment, aid technology transfer and create an entry barrier in the market.¹⁰ However, current IP law, specifically related to layout-designs for semiconductor integrated circuits, was formulated by keeping in mind only the commercial innovation and may not appropriately deal with publicly-funded design innovation like the Design Link Incentive(DLI) programme.¹¹ With the rise of numerous domestic start-ups focusing on design for semiconductors under the funding of the Indian government, this issue has now become more critical and is important to deal with it in a steadfast manner to avoid possible conflicts arising out of it.

One contemporary example illustrating this emerging ownership dilemma is Mindgrove Technologies which is working to develop native microcontroller architectures.¹² The development of the home-grown micro-controller tech implies that publicly supported innovation in the design for semiconductors has moved from a mere intention to a reality. However, the successes of such firms pose a fundamental question about whether public funding would belong to the innovation or also be shared by the funding government body, with a set licensing condition.¹³ Who has ownership rights over the IP generated when public funds help create the commercial and lucrative semiconductor layout design? The importance of such questions can be illustrated by the fact that licensing not only contributes to making design projects commercial, technology transfer but can also help in expanding technological know-how. This requires determining not only who owns the design, but also the terms on

⁸ Raj S. Davé, Heena Goswami, Mansi Meena, Neil Davey, Ramakrishna T. & S.K. Murthy, *Need for a Legal Framework to Enable Public-Funded Organizations in India to Build a New Paradigm for Innovation and Utilization of Intellectual Property (IP)*, 29 J. Intell. Prop. Rts. 413, 414–16 (2024).

⁹ Bayer Corp. v. Union of India, 2014 SCC OnLine Bom 1503, ¶¶ 77–82.

¹⁰ Ashish Arora & Alfonso Gambardella, *The Market for Technology*, in *Handbook of the Economics of Innovation*, <https://www.sciencedirect.com/science/article/pii/S0169721810010154> (last visited June 28, 2026).

¹¹ Semiconductor Integrated Circuits Layout-Design Act, No. 37 of 2000, Acts of Parliament, 2000 (India).

¹² *IIT-M Start-up Mindgrove Technologies Launches First Indigenously Designed Microcontroller Chip*, Indian Institute of Technology Madras, <https://www.iitm.ac.in/hi/node/16320> (last visited June 28, 2026).

¹³ *Entertainment Network (India) Ltd. v. Super Cassette Indus. Ltd.*, (2008) 13 S.C.C. 30, ¶¶ 113–116.

which the government can ensure its technology contributes to wider industrial growth and overall semiconductor capabilities. In a legal void which is brought in by the new scheme, this may create complications for the government's ability to enforce such rights or achieve its goals for expanding national capacity.

So far, the sources in India which talk about semiconductors have primarily concerned themselves with industrial policy, manufacturing-based concerns, supply-chain resilience, technological autonomy, and broader strategic implications. While there have been numerous analyses of the motivations, benefits and potential negatives of the drive for domestic semiconductor manufacturing and IP development, relatively little has been focused on the issues surrounding the ownership and licensing of publicly-financed semiconductor design IP,¹⁴ particularly those relating to semiconductor layout-designs.

Such analysis usually assumes that intellectual property incentives automatically spur from innovations and typically fails to consider the legal implications of government funding of the innovative process itself, particularly with respect to layout-design rights. Accordingly, this study will examine whether India's legal framework, as enshrined in the Semiconductor Integrated Circuits Layout-Design Act, 2000 and associated legal principles, is well equipped to govern ownership and licensing issues of semiconductor layout-design rights resulting from government funding under the India Semiconductor Mission and Design Linked Incentive scheme. The primary argument in this paper is that India's strategy to foster semiconductor innovation through public funding has outpaced its IP framework, creating ambiguity in the determination of ownership and licensing rights for publicly-financed semiconductor layout-design assets, potentially putting brakes in the process commercialisation and overall national objectives for semiconductor capability building.

A specialised framework for ownership and licensing is therefore urgently needed to effectively channel publicly funded semiconductor innovation, promote legal clarity, encourage commercial exploitation, and uphold public accountability. The paper continues by discussing the nuances of this ownership question, assessing current legal provisions, reviewing relevant comparative practices, and ultimately presents a framework that can effectively tackle this challenge.

¹⁴ William W. Keller & Louis W. Pauly, *Innovation in the Indian Semiconductor Industry: The Challenge of Sectoral Deepening*, 11 Bus. & Pol. 1, 2–4 (2009)

Literature Review:

The existing literature which focuses on India's semiconductor ecosystem has mainly placed its focus on industrial policy and technological self reliance. In the article "India Semiconductor Mission and the Quest for Technological Self-Reliance," the authors Kasthuri's and Burman examine the India semiconductor mission as a strategic move brought in to reduce the dependence on foreign countries and become self-reliant. Similarly the article "Building India's Semiconductor Ecosystem: Opportunities and Institutional Constraints," authored by Chandak analyses the structural limitation and the opportunities created by the policy by creating a semiconductor base in India. These articles only talk about the strategic importance of semiconductor development, but fails to address the intellectual property consequences created by the publicly funded innovations.

The article titled "Publicly Funded Research and Intellectual Property Governance in India," is a work by Dave which established the uncertainty over ownership and commercialisation of publicly funded research technologies and the impeding effects it can have over technological transfer. Similarly Arora, Fosfuri and Gambardella in their work "Markets for Technology and the Role of Licensing," shows that clear licensing structures are quintessential in order for converting research outputs into commercially valuable technologies. However, the central point of the problem is that these discussions remain largely technology-neutral and do not engage with any specific legal character of the semiconductor layout designs.

Bhatia and Sinha in their work "Semiconductor Design Intellectual Property and India's Innovation Ecosystem," establishes the growing importance of chip design capabilities and also the role of intellectual property designs in India's Innovation landscape. Nonetheless, only a very little amount of importance has been given to the ownership and licensing of the semiconductor layout design rights generated through publicly funded Design Linked Incentive Scheme and the India Semiconductor Mission. This paper seeks to fill the void by examining the adequacy of the current legal framework in assigning ownership and licensing of publicly funded semiconductor layout-design rights.

Research Objectives:

1. To examine the legal implications of the Design Linked Incentive (DLI) Scheme and the India Semiconductor mission on the ownership rights of semiconductor layout-design rights arising out of publicly funded innovation.
2. To analyse the adequacy of the existing Intellectual property framework in India in governing the ownership, licensing, and commercialization of publicly funded semiconductor layout-design rights.
3. To comparatively assess international legal approaches in dealing with ownership and licensing of publicly funded semiconductor intellectual property.
4. To propose a specialised legal framework to govern the ownership and licensing of publicly funded semiconductor layout-design rights in India.

2.THE LEGAL FRAMEWORK OF PUBLICLY FUNDED SEMICONDUCTOR LAYOUT-DESIGN RIGHTS

Semiconductor layout-designs represent a very unique form of intellectual property, as they protect not only the technological ideas or finished commodities, but the unique three-dimensional configuration of the integrated circuit's elements. Their commercial value derives from technical novelty, as well as from their potential to provide royalty income to the innovators, facilitate technology transfer, attract funding, and ensure market exclusivity in the long term. As chip design increasingly contributes the greatest portion of value in the semiconductor supply chain worldwide, the possession of layout-design rights assumes far greater legal importance than the right itself and the matter has been more complicated in the Indian legal framework.¹⁵ By taking these factors into account, the Indian Parliament passed the Semiconductor Integrated Circuits Layout-Design Act, 2000 which is a "sui generis" regime that is designed to grant rights, separate from patents and copyright, to such layout-designs through the system of registration, licensing, and assignment.¹⁶

Nevertheless, this legislation was drafted at a time when private companies led the innovation in the semiconductor field, implicitly proceeding on the premise that ownership is determined in the standard manner via private contractual arrangements and not taking into account what

¹⁵ Supra Note 4. Pp.14-18.

¹⁶ Supra Note 3.

would happen when publicly funded innovations come into play. The latter assumption is no longer applicable given the launching of the India Semiconductor Mission and the DLI Scheme, under which the Government supports indigenous semiconductor designs. This implies a transition from mere regulation to strategic investment in commercially exploitable semiconductor IP, however, the exact legal and ownership implications are not clearly spelt out in both of these policies which stems out to be a matter of concern. It remains uncertain whether publicly financed layout design rights will belong to the innovator alone or there will be a shared ownership regime or some other such structure. This is bound to impact the licensing practices, certainty of investment and the transfer of technology, thus creating a big distinction between national industrial policy and IP law framework, the addressing of which may become critical for strengthening the indigenous ecosystem in the future.¹⁷

India's Semiconductor Integrated Circuits Layout-Design Act, 2000 is the primary legislation to govern the protection of semiconductor layout-designs in the country.¹⁸ Passed to implement India's international commitments under the TRIPS Agreement, the Act grants exclusive rights to the registered owner to reproduce, assign and commercially exploit the registered layout-designs. Though the Act is a robust "sui generis" regime that shields semiconductor designs against undue commercial exploitation, its design structure mainly revolves around safeguarding existing proprietary rights as opposed to one determining ownership over the layout-designs where innovation arises from government-funded research and the government spends money for such designs..The Semiconductor Act assumes, within its structure regarding ownership, licensing and assignment, that there is a concept of private ownership in semiconductor layout-designs, and does not set down principles governing the ownership of semiconductor layout-designs originating from publicly-funded innovation, or any residual government right from such public funding. Consequently, the statutory framework also creates an uncertainty regarding whether the proprietary rights should vest in the funded enterprise, the individual designer, or the Government that financed the innovation, thereby making government funded valuable semiconductor design rights without a clearly identifiable legal owner.¹⁹

¹⁷ Meenakshi Thakur, *How DLI Scheme Is Helping India Build Its Own Semiconductor IP*, ETManufacturing (Nov. 20, 2025), <https://manufacturing.economictimes.indiatimes.com/news/hi-tech/how-dli-scheme-is-helping-india-build-its-own-semiconductor-ip/125387494> (last visited July 5, 2026).

¹⁸ Supra Note 3

¹⁹ Raj S. Davé et al., *Need for a Legal Framework to Enable Public-Funded Organizations in India to Build a New Paradigm for Innovation and Utilization of Intellectual Property*, 29 J. Intell. Prop. Rts. 413, 414–18(2024)

It does not define the question whether the entity which received public funding, the individual designer or the Government itself should possess the right to commercialize protected semiconductor layout-designs. Such an absence of a clear statutory regime for ownership and licensing gains importance considering the fact that in India, an entity like Design Linked Incentive Scheme involves government funding in bringing into existence and in commercializing semiconductor related Intellectual Property (IP) that can gain proprietary protection. This statutory silence cannot be dismissed as a mere drafting omission because ownership constitutes the legal foundation upon which assignment, licensing, commercialization and technology transfer ultimately depend. In the case of Entertainment Network (India) Ltd. V. Super Cassette Industries Ltd., the Supreme Court held that a licensing mechanism must be devised in a way that could balance both property exclusivities along with the public interests.²⁰ This case shows that the statutory recognition of intellectual property is conceptually different from the legal regime that governs its exploitation. Thus, any silence on the issue of licensing of public semiconductor layouts cannot be rectified by recognizing proprietary rights through the SICLD Act.

A very similar reasoning was given by the Bombay high court in the case of Bayer Corporation v. Union of India where it held that intellectual property rights were not absolute and can be regulated by statute where public goals could be justified.²¹ These principles therefore require a renewed significance in the light of publicly funded semiconductor innovation, where there is an absence of express ownership and licensing framework threatening both commercial certainty and also the effective realization of India's semiconductor policy objectives.

The design-linked incentive or DLI scheme marks a shift from previous Indian policies regarding semiconductors. The scheme allows for the government to directly provide incentives to the domestic semiconductor design activities including the creation of integrated circuits, system-on-chips (SoCs), chipsets, IP cores, and semiconductor-linked designs. Instead of giving specific importance to the expanding domestic fabrication industrial capacity, the scheme seeks to stimulate indigenous semiconductor intellectual property through direct support for chip-design infrastructure and design-linked financial incentives. The scheme signifies a shift in the government's strategy from the former one of incentivizing the industries through manufacturing to that of establishing semiconductors'

²⁰ *Entertainment Network (India) Ltd. v. Super Cassette Indus. Ltd.*, (2008) 13 S.C.C. 30, ¶¶ 113–116.

²¹ *Bayer Corp. v. Union of India*, 2014 SCC OnLine Bom 1503, ¶¶ 77–82.

proprietary technologies within the country.²² However, in its policy architecture, the DLI scheme appears to have overlooked a critical legal lacuna. Although it specifies eligibility requirements, financial incentives and milestone-based disbursements, the scheme has made no provisions regarding proprietary outcomes of state funding.

Neither the DLI Scheme Guidelines nor the India Semiconductor prescribes the conditions under which publicly financed layout-design rights remain exclusively with the funded enterprise, become subject to government residual rights, or carry mandatory public-interest licensing obligations.²³ In short, the legal scheme incentivises the creation of semiconductor intellectual property without delineating the legal incident of its ownership and commercial exploitation. Similarly, research on the economics of semiconductor IP highlights that a substantial amount of value captured by semiconductor designs arises from effective IP management rather than solely from the existence of statutory protections.²⁴ Such a deliberate silence by the statutory creates an uncertainty regarding whether proprietary rights should be vested with the funded enterprise, the individual designer, or the Government that spent a huge amount for the research, thereby increasing the likelihood of ownership disputes and transactional uncertainty during commercialisation.

The consequent disconnection between industry policy and intellectual property law is the primary legal gap in India's modern approach to semiconductors. The DLI Scheme reveals an overarching tension between industrial policy and IP regulation; the design and development of semiconductor assets is being boosted through public investment, yet the existing regime for controlling IP ownership remains largely unchanged. Unless the executive or the parliament introduce a semiconductor specific framework which governs ownership allocation, licensing obligations and governmental residual rights, India's objective of transforming public investment into commercially valuable semiconductors having intellectual property remains largely vulnerable to avoidable legal certainty.

²² Yanyan Shang, India's Design-Linked Incentive Scheme for the Semiconductor Sector: How Businesses Can Maximize Benefits, India Briefing (Nov. 19, 2025) <https://www.india-briefing.com/news/india-design-linked-incentive-scheme-semiconductor-sector-supply-chain-40767.html/> (last visited July 6, 2026).

²³ Supra Note 8, Pp: 414-418.

²⁴ Sanjna Pramod, *The Law on Semiconductor Integrated Circuits Layout Design in India* 4–7 (Jan. 30, 2013).

3.THE DILEMMA OF OWNERSHIP AND LICENSING IN THE INDIAN INTELLECTUAL PROPERTY FRAMEWORK

The ambiguity surrounding ownership in publicly funded semiconductor layout-design rights extends inevitably beyond just proprietary entitlement and directly undermines the legal architecture which takes care of licensing, commercialisation and technology transfer. Licensing provides for us to identify a legal owner. Where property entitlement itself remains indeterminate, the legal authority to assign, license, or commercially exploit semiconductor layout-design rights become equally uncertain. Under the existing intellectual property(IP) Framework, the licensing mainly works through private contractual arrangements once the ownership has been legally established. This system of allocation, however, breaks down when layout-design rights for semiconductors come from considerable government money through the DLI Scheme. Licensing is not an independent proprietary entitlement but it is a legal incidence which flows from the ownership. Subsequently, unless the law first recognises the identity of the rights holder, every subsequent act of licensing or commercial exploitation remains largely indeterminate.²⁵

The legal dispute thus goes beyond that of ownership to that of which party is legally competent to manage access to the publicly financed innovations in semiconductors. Invariably, investors require certainty about exclusive licensing rights to risk capital in technology intensive sectors. Likewise, government institutions investing in innovation will be interested in ensuring that public funder IPR are used to enhance national technical capacity rather than remain under the sole control of one or more commercial ventures. Comparative innovation-governance literature consistently establishes that licensing mechanisms as well as ownership must function in tandem together if publicly funded research is to generate private investment and socially beneficial technology diffusion.²⁶

The main problem in India's current legal framework therefore does not lie in its recognition of semiconductor layout-design rights but in its failure to regulate their post-creation governance.²⁷ The Indian case laws regarding intellectual property like in the case of Novartis

²⁵ Supra Note 8, Pp:415-416

²⁶ David J. Teece, Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing and Public Policy, 15 Res. Pol'y 285, 289-94 (1986).

²⁷ Sudhir Chowdhary, *From Design to Silicon IP – The Complex Path of Owning Intellectual Property*, Fin. Express (Apr. 16, 2026),

AG v. Union of India, (2013) has constantly recognised that the property rights remain subjected to the statutory limitations enacted in furtherance of the public interest.²⁸ This principle is particularly relevant to the semiconductor sector, where public-funder layout-design rights have both commercial and strategic national significance.

The recent discourse on policy similarly indicates that India's semiconductor ambitions ultimately rest on it as much as upon legal certainty in intellectual property governance as financial incentives for the innovation. Until then, India's publicly funded semiconductor innovation sector is likely to remain bogged down by unnecessary legal uncertainty that could ultimately deter investment and restrict meaningful development of strategic IPR.

Even if ownership is granted to the DLI funded enterprise, the statutory framework remains largely incapable of determining the legal consequences of such ownership. The Semiconductor Integrated Circuits Layout-Design Act, 2000, acknowledges both the assignment of rights in, and voluntary licensing of the registered semiconductor layout-designs.²⁹ However, there is no explicit regime governing the licensing of intellectual property rights created as a result of substantial public investment.³⁰ This allows entities such as those availing of financial assistance under the Design Linked Incentive (DLI) Scheme to have significant discretion over how they license the exploitation of the public investment-backed semiconductor assets without any clear statutory responsibility towards broader technology dissemination or public good.

It is especially important because semiconductor innovation is commercially valued not just on account of legal protection but because licensing structures facilitate technology transfer, collaboration and the development of subsequent industrial applications. Contemporary work on public-funded intellectual property has emphasised that ownership of protected intellectual assets does not by itself maximise innovation but that requires the availability of a suitable licensing framework that is capable of managing public-funded private rights effectively, just as economists emphasize that well-designed licensing arrangements are crucial for ensuring that such intellectual property ultimately stimulates technology markets.³¹ Similarly Indian

<https://www.financialexpress.com/life/technology/from-design-to-silicon-ip/4208609/lite/> (last visited July 8, 2026).

²⁸ Novartis AG v. Union of India, (2013) 6 S.C.C. 1, ¶¶ 180–191.

²⁹ Supra Note 3

³⁰ Supra Note 6, Pp:36-38.

³¹ Ashish Arora, Andrea Fosfuri & Alfonso Gambardella, *Markets for Technology and Their Implications for Corporate Strategy*, 58 Indus. & Corp. Change 641, 646–50 (2001).

case law highlights that any notion of intellectual property right is intimately linked to the assignment or licensing rights attached to that property. *Indian Performing Right Society Ltd v. Eastern India Motion Pictures Association* is a copyright matter, where the Supreme Court observed that statutory existence of such a right would not by itself decide a question relating to ownership of right, assignment of it or license with regard to it but would depend upon the legal basis of it and also the contractual relation between the parties.³²

Though the matter relates to copyright, the observation has wider relevance for semiconductor layout-design rights in which public money is significantly utilized. The silence offered by the statute therefore creates a vacuum rather than a mere drafting omission, because it leaves unresolved the allocation of proprietary control over strategically significant semiconductor intellectual property generated through public investment. If no such framework is legislatively enacted, this legal ambiguity concerning the commercial exploitation of public investment in semiconductors might well discourage investment and frustrate the broader ambitions of India's innovation strategy.

The practical implications of this omission by the legislative becomes apparent when it is tested against India's emerging semiconductor ecosystem. Assuming that a DLI-assisted enterprise such as Mindgrove Technologies develops a commercially valuable semiconductor layout-design and it is registered under the Semiconductor Integrated Circuits Layout-Design Act, 2000.³³ In this case neither the governing legislation nor the design linked incentive scheme whether proprietary control vests in the enterprise, remains subjected to government residual rights or attracts public interest licensing obligations. By taking into account the innovations which are made worldwide by public funding it has been proved again and again the certainty over ownership plays a crucial role and licensing rights in the success of private investment, technology transfer, and the successful commercialisation of publicly financed Research and Development outputs.³⁴ Therefore the resulting uncertainty is institutional rather than contractual, because the dispute concerns the original allocation of proprietary rights instead of subsequent exercise of contractual freedom.

Indian scholarship on publicly funded innovation consistently identifies the absence of

³² *Indian Performing Right Society Ltd. v. Eastern India Motion Pictures Association*, (1977) 2 S.C.C. 820, ¶¶ 18–22.

³³ *Supra* Note 12

³⁴ Amit Shovon Ray & Sabyasachi Saha, *Patenting Public-Funded Research for Technology Transfer: A Conceptual–Empirical Synthesis of US Evidence and Lessons for India*, 14 J. World Intell. Prop. 75, 88–93 (2011).

coherent ownership allocation as a main and principal obstacle to effective commercialisation and technology transfer.³⁵ This ambiguity assumes a great amount of significance in the semiconductor sector, given the strategically vital nature of layout-design protection, with profound implications for both national technology competitiveness and long-term industrial capability. Thus, the central deficiency of the semiconductor intellectual property regime in India therefore lies not in the absence of statutory protection for layout-design rights, but in the absence of an institutional framework which is capable of governing ownership allocation and licensing consequences once those rights emerge from public investment. Accordingly, the principal dearth on certainty over ownership within India's semiconductor intellectual property regime is not in the absence of statutory protection for layout design rights but it lies in the absence of coherent governance framework which is capable of allocating ownership regulating licensing, and preserving public interests once publicly funded semiconductor innovation starts to flood the commercial market.

4.COMPARATIVE APPROACHES AND POLICY REFORM OF INDIA'S INTELLECTUAL PROPERTY FRAMEWORK

4.1. Comparative analysis of publicly funded Innovations

There exists an ambiguity regarding the ownership of publicly funded semiconductor layout-design rights in sharp contrast to the structured allocation model which is adopted by the United States under the Bayh-Dole Act.³⁶ The Bayh-Dole framework acts on the basis that public funding by itself does not justify governmental ownership of intellectual property. Instead it statutorily allocates the proprietary rights to the parent institution of those innovations while carefully preserving defined governmental rights. The legislative rationale on which the Bayh-Dole framework relies on is that commercialisation is most effectively achieved when proprietary control vest with the entity which is capable of translating the research into marketable technology, subjecting it to narrowly tailored governmental oversight.³⁷

Furthermore, in the case of *Leland Stanford Junior University Board of Trustees v. Roche*

³⁵ Supra Note 14, Pp:2-4.

³⁶ Bayh–Dole Act, 35 U.S.C. §§ 200–212 (2018).

³⁷ David C. Mowery, Richard R. Nelson, Bhaven N. Sampat & Arvids A. Ziedonis, *The Growth of Patenting and Licensing by U.S. Universities: An Assessment of the Effects of the Bayh–Dole Act of 1980*, 30 *Research Pol'y* 99, 104–08 (2001).

Molecular Systems, Inc., it was decided that public grants for research cannot, in the absence of specific provision of law or agreement, automatically transfer title to the intellectual property.³⁸ Therefore the significance of the Bayh-Dole framework does not lie in the governmental ownership of publicly funded innovations but it rest in the structured allocation of proprietary rights when it is coupled with precisely defined licensing obligations and governmental march-in powers.

Taiwan and South Korea follow a straight opposite policy to that of the United States where the publicly funded semiconductor innovation is approached through technology transfer mechanism rather than ownership legislation alone. The Taiwanese semiconductor industry shows that ownership certainty will have practical utility if there is an institution with which such utility can be facilitated through licensing and technology transfers between universities and industries.³⁹ Instead of emphasizing government proprietary rights over public research outputs, the Taiwanese model strives to ensure that public research is rapidly commercialized into semiconductor products through established methods for ownership and clear procedures for licensing. The Taiwanese therefore treat ownership allocation and commercialisation as additional legal functions rather than independent policy objectives.

Ownership certainty is subsequently valuable because it enables predictable licensing, attracts investment and reduces transaction costs associated with technology transfer. However, South Korea uses a unique strategy in which it maintains more government control over semiconductor innovations that are funded by the government without taking away the ownership of intellectual property rights.⁴⁰ Its legislative and policy instruments therefore impose commercialisation and collaboration obligations which permits the private entities to retain proprietary rights over publicly founded innovations. As a result of this the government largely assumes a regulatory character rather than a proprietary character, allowing strategic national objectives to exist along with private ownership. Despite the differences reflected by these countries, the United States, Taiwan and South Korea converge upon one fundamental principle which is that public funding alone cannot justify governmental ownership and

³⁸ Office of Technology Transfer, Syracuse University, The Bayh–Dole Act, <https://techtransfer.syr.edu/about/bayh-dole/> (last visited July 9, 2026).

³⁹ Shih-Fang Lo & Keun Lee, Innovation Systems and the Evolution of Taiwan's Semiconductor Industry, 47 Technological Forecasting & Soc. Change 245, 251–56 (2019).

⁴⁰ President of the Republic of Korea, Remarks by President Moon Jae-in at Presentation of K-Semiconductor Strategy (May 13, 2021), <https://www.korea.net/Government/Briefing-Room/Presidential-Speeches/view?articleId=198239> (last visited July 9, 2026).

cannot permit ownership to remain legally indeterminate as well. Each jurisdiction establishes an explicit statutory mechanism which governs ownership allocation, commercialization, licensing obligations and governmental intervention. The problem with India's Intellectual property is that this certainty remains absent within Semiconductor Integrated Circuits Layout-Design Act, 2000 and the Design Linked Incentive Scheme, thereby necessitating a specialised licensing and ownership framework which is capable of reconciling public investment with private innovation.⁴¹ This coordinated legal architecture is noticed by its absence in India's semiconductor regulatory regime and informs the rationale of the proposed specialised ownership and licensing regime.

4.2. Towards a specified framework for ownership and licensing of publicly funded semiconductor layout design rights in India

The central point of shortcoming in India's semiconductor regulatory architecture does not lie in the absence of financial support for semiconductor innovation, but it lies in the absence of a proper legal framework in governing the proprietary consequences of that investment. As discussed in the previous chapters, the Design Link Incentive Scheme helps in financing the creation of valuable semiconductor intellectual property while remaining silent on the legal consequences of its ownership allocation, licensing obligations and governmental residual rights. For this reason, India needs a special legal regime governing the ownership, licensing, and regulation of publicly funded semiconductor layout design rights after commercialization as an essential part of the Design Linked Incentive Scheme, and not something separate from this scheme. Such a framework ought to both preserve private sector incentives to invest and innovate, as well as, ensure public investment continues to serve India's technological and strategic objectives.

The framework which is proposed should adopt a presumption that ownership of every semiconductor layout-design which is generated under the design linked incentive scheme initially vests in the innovating enterprise or the designer responsible for its creation. Automatically giving ownership to the government would significantly weaken the investment incentives, diminish the commercial value of the protected design and discourage the private enterprises from actively participating in publicly funded semiconductor research.

Proprietary rights conferred on the inventors serve to increase legal clarity, ease venture

⁴¹ Supra Note 1, Pp: 43–46.

financing, aid licensing discussions and contribute to effective technology transfer. This would, therefore, ensure that the Government, through its funding of such projects, retains a regulatory oversight rather than an ownership interest in the underlying innovations.

Secondly, all DLIS beneficiaries should be mandatorily required to undertake detailed reporting obligations in addition to the current existing guidelines. Every semiconductor which can be registered and developed with public funded assistance should be disclosed before a designated authority within a prescribed short period of time together with periodic reports concerning registration, licensing, commercial deployment and technology transfer activities. The disclosure obligation therefore ultimately functions as an instrument of regulatory accountability rather than a limitation upon proprietary ownership.

The proposed framework should further incorporate "march-in" rights into the Semiconductor Integrated Circuits Layout-Design Act, 2000. These powers could only become exercisable where narrowly defined statutory thresholds are satisfied. The governmental power of intervention should be used sparingly and invoked under specific statutory circumstances, such as the patentee's failure to reasonably commercialise the layout design, demonstrable threats to national security, important public interest considerations that necessitate greater technology access, or anti-competitive conduct on the part of the owner of the rights. March-in rights should, nonetheless, be coupled with judicial review, prior notice, and a hearing to deter arbitrary governmental interference and bolster the credibility of India's chip design ecosystem.

In conjunction with march-in rights, a well-circumscribed public interest licensing regime should be established, applicable only to such exceptional circumstances in which a given public- interest argument is compelling. In contrast to standard compulsory licenses, this regime should specifically pertain to layout design rights generated with substantial public investment. In such cases, public interest licensing should be invoked only in the event that a strict legal threshold has been satisfied, such as repeated refusal to license strategically important chip design technology, imposition of excessive restrictions on downstream innovation, or necessity of broad public access to chip design technology for national capabilities - and that government intervention is the most appropriate means of meeting such criteria. Such intervention constitutes a regulatory safety valve rather than an alternative mechanism for routine commercialisation.

Further, the framework ought to include a narrow, limited contractual revenue-sharing arrangement to reconcile public funding and private ownership. While proprietary rights in the semiconductor layout-designs should be vested with the innovator and the innovator shall have commercial and exclusive rights to sell and license its designs, a small percentage of revenues arising from commercialisation in instances in which substantial government funding played a critical role in the creation of such a layout design shall be paid to the government. The revenue which is generated through these means should be earmarked for semiconductor research grants, advanced design infrastructure, collaboration between universities and industries and future DLI-supported innovation. Such revenues would not constitute a governmental stake in the venture but would be solely allocated for reinvestment in subsequent research and development initiatives, incubated start-ups, and advanced chip-design infrastructure, ensuring a self-perpetuating innovation cycle.

These matters should not only remain as matters of executive discretion alone but should rather receive express statutory recognition through legislative amendment. The Semiconductor Integrated Circuits Layout-Design Act, 2000 ought to be amended to introduce specific provisions related to the determination of ownership, mandatory disclosure of all publicly financed designs, the nature of governmental residual rights, public interest licensing, and post-commercialization government oversight. Additionally, Intellectual Property Regulations pursuant to the DLIS should set out uniform contract terms for ownership, licensing, revenue-sharing, and technology transfer. Therefore the objective of the framework which is proposed is not to enlarge governmental ownership of semiconductor innovation, but to introduce certainty regarding proprietary allocation, commercialisation and public accountability. A legal framework which distinguishes between ownership and governmental oversight would also simultaneously strengthen investor confidence, accelerate technology transfer and safeguard the public interest without undermining private incentives for innovation. Such a framework would transform the Design Link Incentive Scheme from financial incentive programme into a comprehensive legal architecture which is capable of converting publicly funded semiconductor into strategically valuable and commercially sustainable intellectual property.

CONCLUSION

India's semiconductor policy has fundamentally altered the very relationship which exists between industrial policy and intellectual property law by transforming the state from a mere regulator into an active financier of semiconductor intellectual property. This institutional transformation has exposed one of the foundational shortcomings of the existing intellectual property framework as to who owns, governs, controls and commercialises semiconductor layout-design rights created through substantial public investment. The Government of India now accounts for a significant chunk of the money needed to commercially develop the country's best chip designs under schemes like the India Semiconductor Mission and the Design Linked Incentive Scheme — an all-time high for the country's semiconductor chip design sector. While these policy interventions have stimulated indigenous chip design capabilities, they have also simultaneously created a class of publicly funded semiconductor intellectual property whose proprietary rights remain legally indeterminate.

The Semiconductor Integrated Circuits Layout-Design Act, 2000 provides proprietary rights upon registration of a layout-design, but makes no provision for allocation of such rights where such designs arise from the extensive application of public funds, nor lays down a rational framework of licenses in which private commercial incentives can be balanced with the legitimate concerns of the government. This paper therefore reveals that the principal weakness of India's semiconductor regime lies not in the absence of intellectual property protection but in the absence of a specialised legal framework governing the allocation, licensing and post commercialisation governance of publicly funded semiconductor layout-designs. The comparative experiences gained from the US, Taiwan and South Korea shows that legal certainty is in itself an innovation incentive. Public funding leads to more advanced technological creations but only determinate ownership and licensing rules enables that innovation to become commercially transferable, investment-ready and strategically valuable.

Accordingly, this paper states that India's next phase of semiconductor development must focus on the legal aspect rather than the financial aspect alone. The success of the semiconductor mission in future will depend less upon expanding legal incentives than upon establishing a predictable statutory regime which is capable of allocating proprietary rights, regulating licensing relationships and preserving carefully calibrated governmental

safeguards. By establishing an adequate legal governance regime providing for default assignment of rights to the innovator and incorporating requirements such as compulsory disclosure, government's march-in rights, government licensing for public interest and transparent revenue-sharing agreements, the framework will ensure a balance between private profit motives and public accountability. Only such a framework would recognise that public investment would also justify public accountability, but does not justify automatic governmental ownership of privately created intellectual property.

Therefore the issue of ownership is not merely an issue of private property entitlement but is a question of institutional governance which will determine whether publicly funded semiconductor innovation ultimately becomes a commercially sustainable national asset or remains as a legal uncertain policy ambition. Ultimately, India's dream of becoming a global semiconductor power cannot be solely determined by the scale of public investment committed, but lies with the legal certainty with which it governs the intellectual property generated from that investment. Therefore the true measure of technological sovereignty lies not only in the capacity to design semiconductor chips, but in the ability of the legal system to allocate, commercialise and also regulate the rights arising from those designs with certainty, transparency and public legitimacy.

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