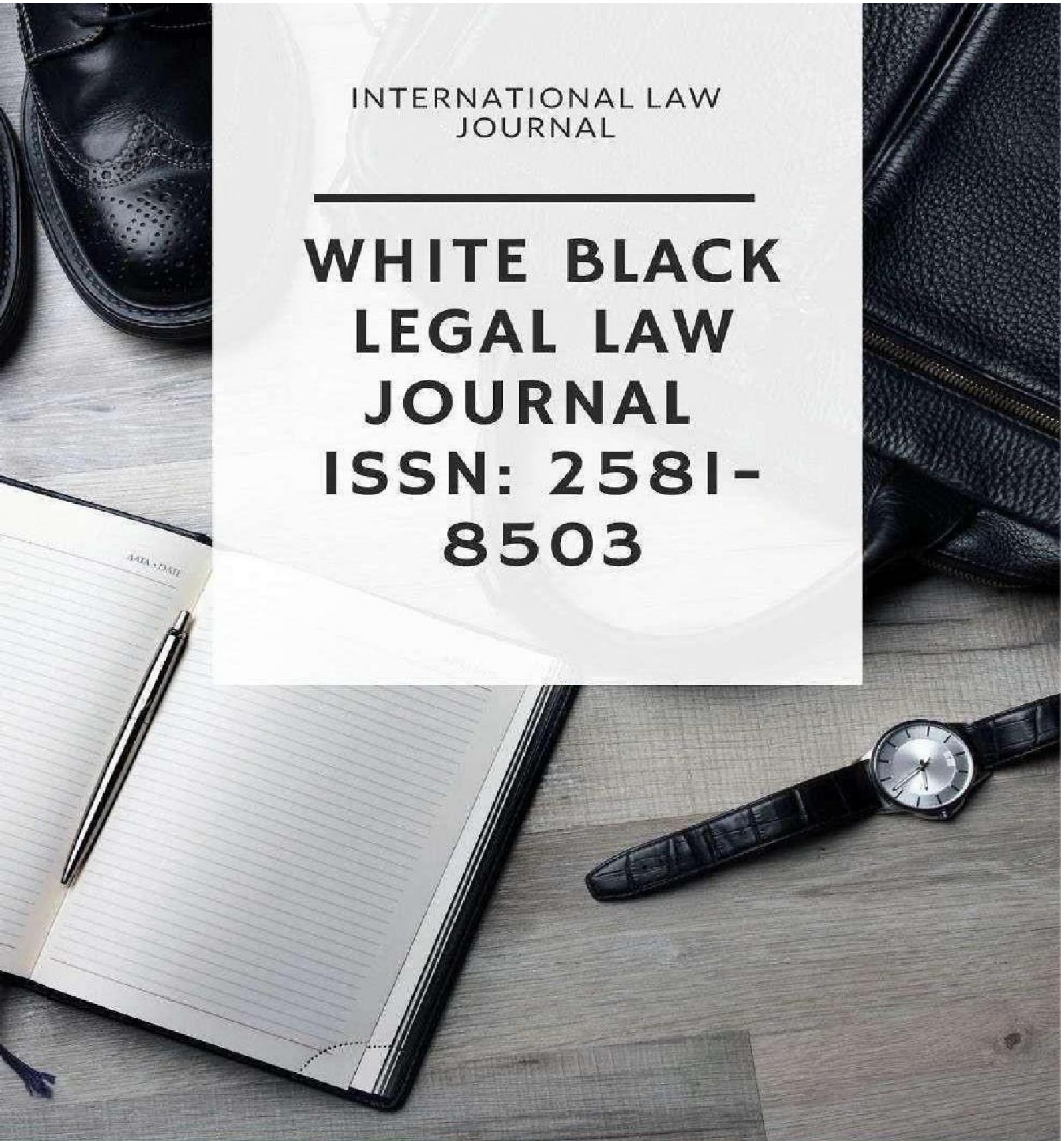




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A REVIEW OF IPR RESEARCH GAPS: AN ANALYTICAL STUDY WITH SPECIAL REFERENCE TO PATENT

AUTHORED BY - DR. KAVVASHREE N¹

I-INTRODCTION

Intellectual Property Right are exclusive rights granted by government for protection of originality of work of first or true inventor or the person who has put all his hard work or labour. In Simple, it is intangible creation of human mind. It includes Patent, Trademark, Trades secretes, Geographical Indications Industrial design, Protection of New Plant Variety, Layout design and Copyright oriented rights. Intellectual property refers to creations of the mind, inventions in artistic, literary, scientific and industrial field. It is important application for Protection of invention of inventor and maintaining the quality as well as standard of work of inventor. This intellectual property right is the rights given to people over the creation of their minds. They usually give the creator an exclusive right over the use of his/her creations for a certain period. If people are to enjoy the benefits of the law, including intellectual property law, they need access to an effective system of justice. Only a fraction of the world's population, however, has the knowledge and financial means to take advantage of IP legislation and use it to promote innovation and creativity. Robust IP Strategies underpin the success of innovation focused organizations. Gaps in critical IP information or management can put years of product development in jeopardy and leads to legal risks. Many researchers are not able to cover over all aspects of the paper, as concept like patents and specification are all technical papers and drafting of claims. Growth in patent and non-patent publications and media makes it increasingly difficult to find every possible source of prior art that can threaten patentability. The present review describes these are important for maintaining the quality, safety, efficacy of any Pharmaceutical product and services. It is certification authority and standard authority for certification and identification of product in would wide market.

The knowledge economy and intellectual capital is recognized as the most important asset of many of the world's largest and powerful companies, it is the foundation for the market dominance and continuing profitability of leading corporations. It is that the knowledge system

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which pre-supposes the whole body of awareness about human life, environment and universe, cultural creations, literature and practices of industrial production or economic activities.²

II – THE – K-NO-WLEDGE -ERA

The 21st century belongs to the knowledge era and is driven by the knowledge economy- an economy that creates, disseminates and uses knowledge to enhance its growth and development. Traditionally, monetization of knowledge has never been the norm in India. While laudable and altruistic, this does not fit with the global regime of zealously protected IPRs. Hence, there is a need to propagate the value of transforming knowledge into IP assets. This requires a major paradigm shift of how knowledge is viewed and valued - not for what it is, but for what it can become.

Innovation and creativity influencing different spheres of society are highly essential for the holistic growth and development of a country. The evolution of new creations and innovative ideas, research and development and their application in production of goods and services as well as in generating knowledge is the basis of progress of any nation. Hence, promotion and protection of such creations and innovations in the form of intellectual property and intellectual rights is significant for not only safeguarding them from adverse exploitation but also manage them as precious knowledge assets. This calls for the need to establish a robust and an effective Intellectual Property Rights (IPR) regime that encourages and incentivizes innovation and creativity along with securing collective interest of the society.³ In view of significance of a strong IPR regime, the Department Related Parliamentary Standing Committee on Commerce, in this Report, has observed and analysed the overall scenario of IPR regime in India and its contribution in promoting innovation and entrepreneurship in the country.⁴

The Creation of human mind value addition and human intellect is an ongoing concept and a traditional concept of property which has undergone a drastic change in various forms for the requirement of the society at large. The lack of property rights or a situation where a person's property can be used by anyone, can be economically imbalances and hence protection of

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² Prof. Ishwar Bhat. P Historical Evolution and Development of Intellectual property rights: A Focus on some themes, Kare Law Journal no 1, 2005 November, page no.2-3

³ Review of the intellectual property rights regime in india, 161st report of parliament of India, Rajyasabha Secretariat 2021, available at <https://rajasabha.nic.in> accessed at 12.30 pm on 6/03/2023

⁴ ibid

property rights has come into existence and this has led to economic need to protect property rights legally. The legal right gives enough scope for each person claim with their property and what others cannot do with regard to the same property. Legal rights also endow on those people who possesses property, if their rights are violated by legal remedies. The treating of creations, innovative things, and new products as property has become the order of the modern millennium.

All that which is produced or originated by labour, skill, judgment and efforts of man is called the intellectual property. Intellectual property of whatever species is in the nature of intangible incorporeal property. In each case it consists of a bundle of rights in relation to certain material object created by the owner. Intellectual property is therefore a property created by human brain “the legal regime is developed to recognize certain kinds of intellectual labour as property and granted certain rights in protecting such property. IPR’s are the legal expression of the privileges granted by the State to the inventors for the use of their creations. The Intellectual Property broadly relates to both Commercial and Industrial activities of a person and includes the activities of Industrial and commercial interests. They may be called inventions, creations, new products, process of manufacture, new designs or model and a distinctive mark for goods etc. These rights are negative rights; they are rights to stop others doing certain things.⁵ The Intellectual Property Rights, which include Industrial Property Rights and rights, are in the form of Patents, Copyright, Trademarks, New Designs, viz., the rights granted to any new inventive solutions. This exclusive grant privilege for inventors is for the encouragement of invention.

System of intellectual property protection has two-fold objectives. The first is to promote investments in knowledge creation and business innovation by establishing exclusive rights to use and sell newly developed technologies, goods and services. The second goal is to promote widespread dissemination of new knowledge by encouraging holders of rights to place their invention and ideas in the market.

The objectives of intellectual property rights are traditionally justified by the public policy interests of nation states. In the olden days intellectual property regulation has been a territorial matter both as to subject matter and the scope of rights recognized. There was great confidence

⁵ W.R Cornish, Intellectual Property Third Edition, 2ND Indian reprint, universal law publishing Co.Pvt ltd, page No5-6

on the axiomatic international law principle of sovereignty and its concomitant attributes, most notably the right to make laws and exercise authority over Nationals, as a starting point to assess conditions under which domestic laws could be extended extraterritorially. Even such assessments, however, were generally directed at accomplishing domestic interests reflected in the national law at issue. The central motivation, even in the earliest efforts to extend trans-border protection for intellectual property rights was the public interest of the nations (both economic and cultural).

With the harmonization of intellectual property rights and opportunities, to secure stronger protection for these rights, new statutes were added at international level. As the global protection for intellectual property rights jurisprudence was strengthened by effective implementation of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), concluded under auspices of the World Trade Organization, numerous questions arise about impacts on prospects for economic growth. This has expanded the definition of trade. It's no longer just buying and selling of goods. Now, the definition of trade encompasses a whole range of issues from services to intellectual property rights.

The Agreements on trade-related aspects of intellectual property rights which is popularly known to the world as "*TRIPS*". The Agreement is one of the three pillars of the World Trade Organization system. The law on patent in the post TRIPS regime, has grown vertically and horizontally across the globe and have played a vital role in harmonizing the National laws of the member countries. The global protection regime strengthens to implement TRIPS, concluded under the auspices of the World Trade Organization, numerous questions arise about impacts on prospects for economic growth.⁶

After the TRIPs developing countries no longer have the policy options and flexibilities, which developed countries, had. This led to the process of expanding international IPR subject matter, creating new forms of rights and progressive standardization of the basic features of IPR. With the growth of international trade and the establishment of world trade organization's agreement on trade related aspects of intellectual property rights (TRIPs Agreement) nations have been

⁶Keith.E.Maskus, Intellectual Property Rights and Economic Development, Prepared for the Series "Beyond the Treaties: A Symposium on Compliance with International Intellectual Property Law", organized by Fredrick K. Cox International Law Centre at Case Western Reserve University. (2000) 471-506, www.colorado.edu/economics/mcguire/workingpapers/cwrurev.doc

obliged to focus in increasing attention on the role of patents in economic development as an economic driver.

III – PATENT

A patent is a legally enforceable right granted by a country driving their rights from the inventor, for a limited number of years. The first patent grant can be traced as far back as 500 B.C. This grant was for the promotion of culinary art. For it conferred exclusive rights of sale to any individual who first invented a delicious dish? This practice was extended to other Greek cities and to other crafts and commodities.

Evidences of grant to private individuals by kings and rules of exclusive property rights to inventors' dates back to the 14th Century, but their purpose had varied throughout the history. In England during the 16th and 17th Century the inventor's patent of monopoly had become of great national importance. With a motive to protect the British, during the 18th century it was first attempted to legislate in India.

In India after independence two committees has reported on the revision of the patent, then the law relating to Patents is contained in the Patents Act, 1970, which has been amended by the Patents (Amendment) Act, 2002. The provisions of the present Act were incorporated keeping in view of past experiences, where the Trans National Corporations patent monopoly created many problems to the indigenous firms. It also took into consideration the National Plans that have been formulated for the economic up liftment of the country, rising of the standard of living of its people basing the needs of the community, constitutional goals and objectives.

The Patents (Amendment) Bill, 2005, introduced in the Parliament in March, 2005 with the objective of making the Patents Act compatible with India's international obligations, particularly under the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS Agreement).⁷

Indian intellectual property jurisprudence has undergone significant evolution in all forms and in case of patents in recent years. Courts increasingly engage with complex scientific international patent principle and competing public interest consideration, judicial

⁷ www.ipindia.gov.in/writereaddata/images/pdfreport_of_technical_expert_group.pdf accessed the web on 8/03/2023 at 9pm.

interpretation now play decisive role in defining the contours of patent protection, enforcement and revocation.⁸

These developments are influencing domestic innovators and multinational corporations alike as India continues to strengthen its position within the global intellectual property ecosystem. Pharmaceutical patents continue to attract close judicial attention due to public health implications.

Sec.3(d) operates as a safeguard against evergreening, courts assess whether a claimed invention improves therapeutic efficacy rather than mere physiochemical properties. Supreme Court's decision in *Novartis AG v. Union of India* remains authoritative.

High court apply this principle consistently, patent applicant must demonstrate clinical or pharmacological improvements supported by empirical data, judicial reasoning reflected a balance between innovation incentives and access to medicine.⁹

THE – RE-VIEW

It was suggested to the committee for review of intellectual property rights that after five years of its implementation, a review and evaluation of the IPR policy is necessary in order to evaluate the progress achieved in strengthening IPR regime. The review of the policy would assist in identifying the existing challenges in the implementation of the policy and the corrective measures that need to be taken for its effective execution. The committee, therefore, recommends the department to undertake a holistic review of IPR policy at the earliest. Revisiting of policy should be intended at instituting changes such as elaborating more on expanding innovation ecosystem of the country.¹⁰ State governments should be encouraged and assisted in formulating IPR policy for its implementation within their respective regimes. The committee was apprised that the main reason for such low filing of patent by Indian entities is the lack of awareness of intellectual property rights in India. One of the major issues is in the context of determining novelty requires proper awareness and pursuit of knowledge as well as scientific temperament and guidance. Imparting of such knowledge of establishing novelty in

⁸ Recent judicial developments shaping patent rights in India by Avesh Kayser, published on 24/02/2026 at SCCOnline.com/developments-patent-rights-India. Accessed on 1/08/2026 at 7pm.

⁹ *ibid*

¹⁰ Httsrajyasabha.nic.in/review/committee. Site-file/report file accessed on 7/3/2023 at 2.25pm

any creation or innovation in India is inadequate. The legacy of sourcing technology from foreign players rather than similar technology indigenously is a hindrance in strengthening the IPR regime in the country.¹¹ Also the education sector of India suffers with shortage of funds to boost research and development by both government owned as well as privately owned universities is considerably low.

The Government of India announced its national intellectual property policy, but the country needs to address the gaps in it to attract more foreign direct investment and global talent.¹² government of India to follow through on goals such as educating entrepreneurs about intellectual property streamlining IP registration process and facilitating IP licensing arrangements. If India must take full advantage of the transformative benefits of a strong IP system unless and until it addresses gaps in its IP Laws and regulations.¹³ In its current form, it does not fully addresses structural concern regarding patent eligibility, including for computer related inventions and new forms and of biopharmaceutical products. Sec(3) of the patent act regulatory data protection, modernization of copyright laws and appropriate civil and criminal remedies for IP Infringement to provide a deterrent level of enhancement . the IPR policy is a good start especially because it priorities empowering local entrepreneurs but it is only useful to the international community, if India is willing to put further policies into place to address the systematic issues that the international community is most concerned about.¹⁴

IV- ANALYSIS OF THE CONTRIBUTIONS OF INTELLECTUAL **“PROPERTY” RIGHTS TO THE GLOBAL ECONOMY &** **COMMITTEE RECOMMENDATIONS**

Strengthening of IPRS in developing countries from the year 2010 records that 1% increase in trademarks protection increases FDI by 3.8%. 1% improvement in patent protection increases FDI by 2.8%. 1% improvement in copyright protection increases FDI by 6.8% contribution of trademark industries to GDP varies between 20 to 335 and the main contribution to sector has been manufacturing industry. As per a study of WIPO in 45 countries on copyright industries, it was found that copyright industry contributes about 2 to 10% to GDP and 5.34% to national

¹¹ ibid

¹² India's ipr policy a good first step needs to address gaps available at [www.economic times,com](http://www.economic-times.com) accessed the web on 5/3/2023 at 12 am.

¹³ IBIP

¹⁴ ibid

employment creation.¹⁵

The Report of the Department of Science and Technology, on R&D expenditure, India spends a mere 0.7 per cent of its GDP on R&D which is lesser than the other countries such as, China (2.1%), Brazil (1.3%), Russia (1.1%), and South Africa (0.8%). It was also apprised by the Department that the total R&D funding in USA was USD 580 billion in 2018. Hence, the Committee was informed that the higher spending on R&D in these countries leads to 11 higher claims for patents and thus higher grants. It was further learnt that in countries like China, involvement of local bodies in strengthening IPR regime has boosted registration of IPRs. Extending tax rebates and incentives to the companies and innovators at the local level on filing of patents and granting additional rewards on their approvals by local Governments in China has increased IPR participation in that country. The data regarding Patents, Trademarks and Designs as regards to the filing, examination and registration in China, U.S. and India. Also, the rate of increase in number of patents in India in the last four years has not been very impressive compared to that seen in U.S. and China. It is a matter of *concern* that less filing and grants of patents in India is co-related to a microscopic spending on Research and Development activities which is a meagre to an extent of 0.7 per cent of India's GDP. The Committee **recommends** the Government to emphasize upon increasing the spending on Research and Development (R&D) activities by allocating specific funds on R&D in each Department/Ministry. Also, R&D activities should be encouraged not only in Governmental and educational institutions but also in businesses and private companies. It recommends the Government to provide incentives to private businesses and companies for undertaking R&D activities which would be a proactive step in augmenting research capabilities of the country. The Committee also recommends that every industry with certain specified turnover may be directed to put funds under CSR for R&D activities.

Generating of awareness of IPRs amongst Medium, Small and Micro Enterprises (MSMEs) is crucial to create a robust IPR regime in the country. However, due to lack of appreciation amongst MSMEs about the significance of IPRs as a major business tool for furthering innovation and competition which would generate more profits and revenue, the filing of IPRs by MSMEs is quite low in the country. Moreover, procedural issues in obtaining a patent application as well as high investment in converting a patent into a final product and marketing

¹⁵ Supra7

the same compels the MSME sector to refrain from focusing on IPRs, that a specific legislation to curb counterfeiting and piracy should be enacted to restrain the growing menace of such IP crimes in India. It is of the opinion that a determinate method to estimate the revenue losses being incurred due to counterfeiting and piracy and the level of such crimes being committed in India should be devised. This would act as a significant tool in analysing the *adverse impact* of Counterfeiting and Piracy on India's economy and for implementing corrective measures to curb the rising incidents of such crimes.¹⁶

The utility of IPRs as intangible assets in the financial sphere is a way forward in improving finances of a country and in enhancing financial innovation, easy availability of credit, and increasing capital base. It, however, observes that despite great potential to accrue economic benefits to a nation, IP backed financing is still an evolving area in India. It further views that the Government vide its National IPR Policy, 2016 has slated the objective of boosting IP commercialization in India, yet it has been lackadaisical in executing it on ground. The Committee opines that such a *half-hearted* approach needs to be replaced by earnest efforts by Government in buttressing financial institutions and business community to adapt to non-traditional methods of IP backed financing.¹⁷

The Department, in close coordination with financial institutions/ stakeholders or banks, should encourage adaptation to non-traditional forms of collateralisation and securitization by conducting trainings and workshops on scrutinizing and regulating IP financing and extending necessary support to business community. It also urges the Government to explore plausible ways to devise a uniform system of valuation of IP as an intangible asset in the country which would ensure a better evaluation of assets by financial institutions. A mechanism also needs to be put in place to recognize and appoint IP evaluators in the country. The Committee also recommends that Insurance sector may be involved in covering/ protecting against the rise of financial losses faced by an IP to minimize monetary risks by suitable amendments in Insurance Act. The Committee takes cognizance of the absence of any specific legislation on IP Financing that exclusively covers IP Financing, creation of security interest in IP Financing, statutory protection to financial innovation and intangible assets as IPRs, rights and obligations on IP financial transactions, etc. It recommends the Department that such a specific law on IP

¹⁶ Rajyasabha secretariat, press release, department related parliamentary standing committee available on parliament website accessed on 06/03/2023 at 11 am

¹⁷ *ibid*

Financing should be promulgated at the earliest that would provide a concrete framework and determine standards for the protection and promotion of IP backed financing in India.¹⁸ It is that out of 16,134 patents filed during the last 5 years, only 4,345 were granted patents. The Committee recommends that necessary steps may be taken to expedite the process of examining/ granting patents. (Para 18.4) 50. The Committee appreciates the initiatives of the Department of Pharmaceuticals in bolstering Research and Development activities in pharmaceuticals sector. The Committee acknowledges the fact that the research in generic segment of medicines as well as its successful patenting under Indian Acts has made India a strong generic player in the world. It, however, opines that for sustaining growth in global pharmaceutical market, research should be oriented towards niche segments and new drugs discovery. In this direction, joint research with global pharma players on discoveries of new molecules and compositions should be undertaken by the Department. The Committee recommends that to encourage research and development in the Pharmaceutical Sector, policies for attracting investments from both the public and private sector may be explored by providing incentives such as tax rebate, reducing processing time and through industry academia partnership.

IV (A) - SENSITISATION OF IPR & JUST LEGAL FRAME: A REQUIREMENT

Unless the entire population is sensitized, it will be difficult to foster a culture of respect for IPR laws. A fair and equitable growth of IPRs in India needs improvisation and streamlining of legislative, administrative, adjudicative and enforcement mechanisms. Conformity of legal provisions to the changing dynamics of innovation, recruitment and appointment of adept officials, swift handling of IPR cases and an efficient judicial system are imperative to build a robust IPR regime in India. This should also be in compliance with International agreements, rules and norms as well as compatible with other nations and foreign entities.

Many IP holders are unaware of the benefits of IP rights or of their own capabilities to create IP assets or the value of their ideas. They are often discouraged by the complexities of the process of creating defendable IP rights. Conversely, they may be unaware of the value of others' IP rights and the need to respect the same. The policy proposes to tackle both perspectives through outreach and promotion programs. A nation-wide program of promotion should be launched with an aim to improve the awareness about the benefits of IPRs and their

¹⁸ Supra 5

value to the rights-holders and the public. Such a program will build an atmosphere where creativity and innovation are encouraged in public and private sectors, R&D centres, industry and academia, leading to generation of protectable IP that can be commercialized. It is also necessary to reach out to the less-visible IP generators and holders, especially in rural and remote areas. Emphasis would be laid on creating awareness regarding the rich heritage of India in terms of our Geographical Indications, Traditional Knowledge, Genetic Resources, Traditional Cultural Expressions and Folklore¹⁹

The steps to be taken towards attaining this objective are outlined below:

1.1. Adopt the national slogan “Creative India; Innovative India” and launch an associated campaign on electronic, print and social media, including by linking the campaign with other national initiatives such as “Make in India”, “Digital India”, “Skill India”, “Start Up India”, “Smart Cities” and other new initiatives in the future.

1.2. Create a systematic campaign for promotion of India’s IP strengths by conveying to all stakeholders the value and benefits of IP by:

1.2.1. Customizing programs for specific needs of industries, MSMEs, start-ups, R&D institution’s, science and technology institute’s, universities and colleges, inventors and creators, entrepreneurs; 1.2.2. Reaching out to the less visible and silent IP generators and holders, especially in the rural and remote areas, through campaigns tailored to their needs and concerns. These would include small businesses, farmers/ plant variety users, holders of traditional knowledge, traditional cultural expressions and folklore, designers and artisans;

The profile of IP filings and registrations/grants is one of the parameters, though not the only one, to assess the current status and potential of IP creation in a country. In India, the number of patent filings has increased in the last few years, but the percentage of filings by Indians is relatively low.²⁰

It is an acknowledged fact that a strong and balanced legal framework encourages continuous flow of innovation and is among the bare necessities to fuel a vibrant knowledge economy.

¹⁹ National intellectual property rights policy 2016 Government of India Department of Industrial Policy & Promotion available dpiit.in.gov at the website and accessed on 6/3/2023 at 11.30am

²⁰ *ibid*

India recognizes that effective protection of IP rights is essential for making optimal use of the innovative and creative capabilities of its people. India has a long history of IP laws which have evolved taking into consideration national needs and international commitments. The existing laws were either enacted or revised after the TRIPS Agreement and are fully compliant with it. These laws along with various judicial decisions provide a stable and effective legal framework for protection and promotion of IPRs. India will continue to utilize the legislative space and flexibilities available in international treaties and the TRIPS Agreement, even as it continues to engage constructively in the negotiation of such international treaties and agreements. India shall remain committed to the “**Doha Declaration**” on TRIPS Agreement and Public Health. The value and economic reward for the owners of IP rights comes only from their commercialization. A concerted effort should be made for capitalizing the existing IP assets in the country. Entrepreneurship should be encouraged so that the financial value of IPRs may be captured. Existing mechanisms including Incubators and Accelerators set up to promote entrepreneurship should be strengthened with IP oriented services.

V - IPR NATIVE - RESEARCH GAPS IN INDIA

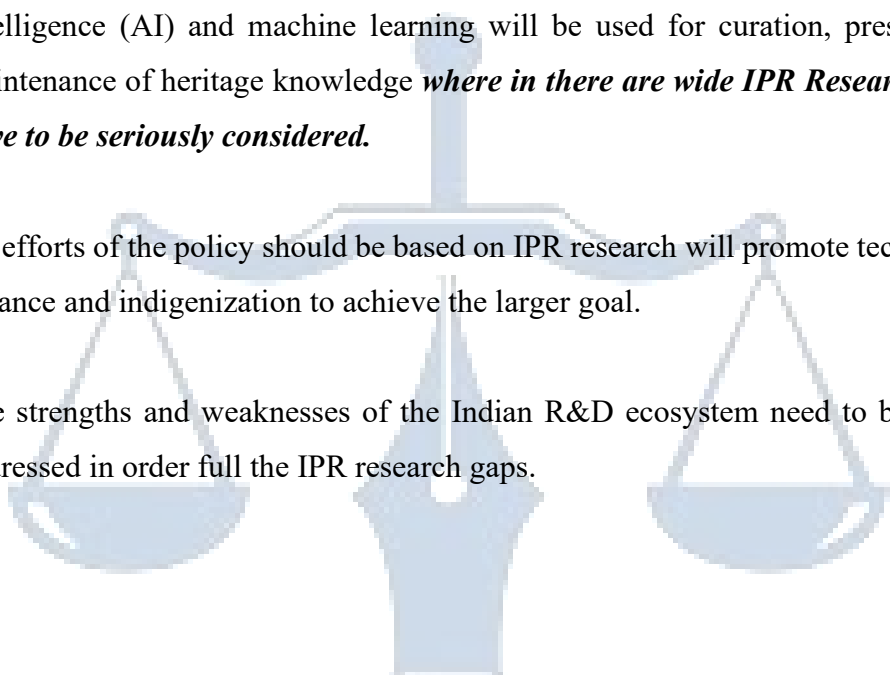
- a) The *IPR* scenario is dynamic and fast changing with increasing globalization, advancement of technologies, digital environment, development imperative's and global public policy issues, ***an identification of IPR research gaps is must..***
- b) It is important to build National capacity for providing thought leadership in the IPR field. Continuous policy research is also needed on empirical and topical IPR areas of relevance with an interdisciplinary perspective at the national and international level. This ***GAP research in if considered***, will enrich the process of policy, law, strategy development and international negotiations at the government and organizational levels.
- c) The research at the apex level institutes or bodies exist for most sectors of National importance, such an institution is ***yet to be*** established for intellectual property rights development.
- d) In order to harness the full potential research of IPRs for economic growth, it is essential to develop an increasing pool of IPR professionals and experts in spheres such as policy

and law, strategy development, administration and enforcement should fill the research gaps.

- e) IPR expertise would thus need to be developed and increased in industry, academia, legal practitioners, judiciary, IP users and civil society. In addition, there will be enhancement of **multi-disciplinary** human and institutional capacity for policy development, teaching, training, research and skill building. Such a reservoir of experts will facilitate in increasing generation of IP assets in the country and their utilization for development purposes in which IPR research is most essential.
- f) The Science, Technology and Innovation (STI) are the key drivers for economic growth and human development. For India to March ahead on a sustainable development pathway to include economic development, social inclusion and environmental sustainability for achieving an “Atmanirbhar Bharat”, a greater emphasis will be given on promoting traditional knowledge system, developing indigenous technologies and encouraging grass root innovation.. The emergence of disruptive and impactful technologies poses new challenges and simultaneously greater opportunities are²¹ ***is to be considered at all levels and research gaps to be reduced scientifically are to be considered in.*** STI acts as a key determinant in addressing socio-economic challenges related to critical sectors such as health, environment, education, food, energy, climate change, water etc.
- g) Indian Science and Technology policies post-independent India were predominantly rooted in the ideas of **self-reliance** and indigenous development across the sectors. Through such endeavours India’s capacity for inclusive and cost-effective innovation has been recognized in the global innovation discourse and ***research gaps to be filled on the basis of Indian IPR research.***
- h) The policy envisions strengthening of the overall innovative ecosystem, fostering Science & Technology (S&T) - enabled entrepreneurship, and improving participation of the grassroots levels in the research and innovation ecosystem. An institutional architecture to integrate Traditional Knowledge Systems (TKS) and grassroots

²¹ Science and technology innovation policy, draft SSTIP policy doc 1.4 Government of India Ministry of Science & Technology Department of Science & Technology December, 2020, accessed the website on 8/03/2023 at 2am.

innovation into the overall education, research and innovation system is necessary to fill the IPR research gaps.

- 
- i) The Collaborations between grassroots innovators (the IPR research gaps) and scientists should be facilitated through joint research projects, fellowships and scholarships. Grassroots innovators will also be supported for registration, claiming the Intellectual Property Right (IPR), filing of patent, or any type of legal claim with the help of Higher Education Institute (HEIs). Advanced tools based on Artificial Intelligence (AI) and machine learning will be used for curation, preservation and maintenance of heritage knowledge ***where in there are wide IPR Research Gaps that have to be seriously considered.***
 - j) An efforts of the policy should be based on IPR research will promote technology self-reliance and indigenization to achieve the larger goal.
 - k) The strengths and weaknesses of the Indian R&D ecosystem need to be holistically addressed in order full the IPR research gaps.
 - l) Etc

VI - THE CONCLUDING THOUGHTS

India should emerge as a globally competitive country in strategic fields of research, while simultaneously focusing on unaddressed and under-addressed nationally important problems. A special emphasis on R&D activities in the priority areas will address the current weaknesses in Indian research and ensure strengthening of key areas relevant to the wellbeing and prosperity of India and its people. To become a research leader, India should focus on mission-mode programmes, in priority sectors, with technology and innovation deliverables built on a strong foundation of basic science; ensure that the research is fit for purpose; enhance the quality of research and also increase the ease of doing research. Background During the last decade, India emerged as a major knowledge producer, ranking in the top five countries. However, in terms of impact, India's scholarly citations helped it gain a place in only the top ten countries. Similarly, India also featured in the top ten countries in the total number of patent applications filed. However, the research output from India should also be seen in the light of

the fact that India has significantly lower FTEs (per million population) engaged in R&D activities and GERD than the leading countries such as the USA and China.

The innovation landscape emanating from the socio-cultural, geographical, economic, historical and political contexts will be systematised, strategized and synergised to attain sustainable economic progress and global competitiveness. STI efforts and interventions will be aligned with policies of different sectors and themes, including education, skill development and industrial growth. 5.1.1. The distinct roles of multiple stakeholders including higher-education institutions, research and development organisations, funding agencies, regulatory bodies, nongovernmental organizations and business enterprises in the innovation ecosystem, will be recognised and their inter-linkages are to be strengthened, at the national, the subnational and the sectoral levels.²² The IP covers a vast range of activities, and plays an important role in both cultural and economic life. This importance is recognized by various laws which protect intellectual property rights.

Wherefore, it is now to work on the areas of the IPR research gaps which are necessary for the global development *vis-à-vis Indian development*, since the IP law is complicated: there are different laws relating to different types of IP, and different National laws in different countries and regions of the world as well.²³ There are more areas where the Indian based IPR gaps to be identified and be researched for novelty; it is for the major reasons that India is rich with knowledge with all its heritage and traditional, rational and scientific knowledge...

²² ibid

²³ www.wipo.docsaccessed the website on 8/03/2023