



Traditional Knowledge Digital Library: What could we Learn from India?

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Abstract

Should we protect and preserve traditional knowledge? There is no doubt that the answer ‘yes’ has been given by many academics, government agencies, industries, lay man, and especially the holder or guardian of traditional knowledge itself both in Thailand and around the world.² The most important question to be asked is “How to protect traditional knowledge?” The selection of systems and methods for traditional knowledge protection is still widely debated. Different strategies have been proposed ranging from horizontal to vertical, self-protection to legal protection, human rights to intellectual property rights, manual to technological, and national level to international level.

The need to preserve the existence, promote the use and prevent the misuse or misappropriation of traditional knowledge combine with the absence of an effective sui generis system for the protection of traditional knowledge at both the international and national, calls for a deeper understanding. Thus, the Indian traditional knowledge digital library that could not only preserve, but also prevent misappropriation of, traditional knowledge has been selected as an alternative measure to be examined in this paper.

Keywords: Traditional Knowledge, Traditional Knowledge Digital Library, India.

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² Kudngaongarn, P., (2009), **Protection of traditional knowledge and indigenous resources: Concepts and analysis**, (Nonthaburi: Sukhothai Thammathirat Open University Publishing house), 30.



I. Introduction

Heritage is not lost and found, stolen and reclaimed. It is a mode of cultural production in the present that has recourse to the past.

B. Kirshenblatt-Gimblett³

A man can only attain knowledge with the help of those who possess it. This is must be understood from the very beginning. One must learn from him who knows.

George Gurdjieff⁴

Traditional knowledge (TK), sometimes referred to as indigenous knowledge, is not easy to define. It encompasses a wide range of tradition-based arts, crafts, innovations and sciences, and extends to expressions of culture. It is now a well-documented fact that TK plays a significant role in the global economy and is valuable not only to those whose livelihood depends on it but also to modern industry and agriculture.

Providing effective protection to TK is not only as a matter of protection of proprietary rights, but also, as a matter of fundamental importance to the dignity and cohesion of traditional, indigenous and local communities. Various strategies have been suggested in order to provide an effective protection to TK whether positive or defensive.

The objective of this article, therefore, is to examine how TK is protected in India especially the way that Traditional Knowledge Digital Library (TKDL) has been used as an alternative means to safeguard its TK. Thus, this could be used as an experimental case for Thailand to develop its own TKDL in the future. However, before doing that general knowledge relating to TK such as its definition, value, and destruction would be outlined in order to emphasize the significant of TK safeguarding.

³ Kirshenblatt-Gimblett, B., (1995), "Theorizing heritage," **Ethnomusicology**, 39 (3), 370., Retrieved March 25, 2016, from <https://www.nyu.edu/classes/bkg/web/semheritage.pdf>

⁴ Gurdjieff, G., (1877–1949), "Greek-Armenian religious teacher, mystic," In **Search of the Miraculous: Fragments of an Unknown Teaching**, Harvest Book, Ouspensky, P. D. and Williamson, M., (2001), (Mariner Books, Orlando, FL), 39-40.



II. What is Traditional Knowledge?

TK has been described in many different ways. World Intellectual Property Organisation (WIPO) has collected a variety of definitions of TK in its report,⁵ these definitions share similar characteristics:⁶ for example, it is the knowledge that relates to one's way of life and things that surround it;⁷ also, TK is the knowledge that has been created and developed through time, from observing nature and experimenting for better results, and that has been passed on from one generation to the next, with each generation contributing to the develop of such knowledge;⁸ as well, it is collective in nature because the knowledge has been shared within the community.⁹

III. Treatment of traditional knowledge under the TRIPS Agreement¹⁰

The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement)¹¹ came into force, in 1995. The Agreement aimed to protect Intellectual Property Rights (IPRs) within a framework that would reduce 'distortions and impediments' to international trade without itself creating barriers to achieving this aim.¹² The TRIPS

⁵ The Secretariat, (2002), **Traditional knowledge – operational terms and definitions**, (WIPO/GRTKF/IC/3/9, World Intellectual Property Organization (WIPO).

⁶ Graber, C. B. and Girsberger, M. A., (2006), "Traditional knowledge at the international level: Current approaches and proposals for a bigger picture that includes cultural diversity," In **Recht Des ländlichen Raums. Festgabe Für Paul Richli Zum**, Jörg Schmid and Hansjörg Seiler, (eds.), (Geburtstag: Schulthess, Zürich), 60, 243, 247.

⁷ The Secretariat, **Traditional knowledge – operational terms and definitions**.

⁸ Ibid. ; Simon, B. S., (2005), "Intellectual property and traditional knowledge: A psychological approach to conflicting claims of creativity in international law," **Berkeley Technology Law Journal**, 20, 1613, 1645 ; Graber, C. B. and Girsberger, M. A. (2006), "Traditional knowledge at the international level: Current approaches and proposals for a bigger picture that includes cultural diversity," 243.

⁹ Ibid.

¹⁰ **Marrakesh agreement establishing the world trade organization, opened for signature 15 April 1994, 1867 UNTS 3 (entered into force 1 January 1995), annex 1C (agreement on trade-related aspects of intellectual property rights)**, Retrieved March 15, 2016, from http://www.wto.org/english/docs_e/legal_e/27-trips.pdf

¹¹ In fact, TRIPS Agreement is Annex 1C of the Marrakech Agreement Establishing the World Trade Organization.

¹² **Marrakesh agreement establishing the world trade organization, opened for signature 15 April 1994, 1867 UNTS 3 (entered into force 1 January 1995), annex 1C (agreement on traderelated Aspects of Intellectual Property Rights)**, Preamble.



Agreement is a comprehensive international agreement on IPRs which created a common set of international intellectual property rules establishing minimum, but strong, levels of Intellectual Property Rights protection to be provided by each Member State.¹³ Though, there is no provision in TRIPS that makes directly reference to the protection of traditional knowledge.

However, Article 1 - Nature and Scope of Obligations provided flexibility for Member Parties in their enacting the legislation to protect traditional knowledge.¹⁴ Therefore, the TRIPS Agreement can be amended to accompany the protection of traditional knowledge.¹⁵ Although the Agreement is said to have that kind of flexibility to accompany protection for traditional knowledge, it was not created with such an intention in mind. Instead, it was created based on the Western thinking, so it would not perfectly fix for solely providing protection to traditional knowledge;¹⁶ for example copyrights and trademarks do not protect information per se.¹⁷

Moreover, many reasons have been putting forward explaining why the current IPRs system cannot provide adequate protection to traditional knowledge.¹⁸ For instance,

¹³ Tarasofsky, R. G., (July 1997), "The relationship between the TRIPs agreement and the convention on biological diversity: Towards a pragmatic approach," **Review of European Community and International Environmental Law (RECIEL)**, 6(2), 149.

¹⁴ Dutfield, G., (1997), Can the TRIPS agreement protect biological and cultural diversity?, (Biopolicy International Studies No 19, NAIROBI: African Centre for Technology Studies (ACTS)), 24.

¹⁵ Ibid.

¹⁶ Kelsey, J., (ed.), (2003), "Free trade at any price?: The world trade organisation doha round (ARENA, Christchurch," In Sinclair, G. F., (2006), "Pacific TRIPS: Strategies for the protection of traditional Knowledge by small island developing states in the pacific region," **The New Zealand Postgraduate Law E-Journal (NZPGLEJ)**, (3), 1-25, Retrieved December 17, 2007, from [http://nzpostgraduatelawejournal.auckland.ac.nz/PDF%20Articles/Issue%203%20\(2006\)/5_guy.pdf](http://nzpostgraduatelawejournal.auckland.ac.nz/PDF%20Articles/Issue%203%20(2006)/5_guy.pdf) ; International Council for Science, (2002), **ICSU series on science for sustainable development no.4: science, traditional knowledge and sustainable development**, (The International Council for Science and the United Nations Educational, Scientific and Cultural Organization), 16 ; Dutfield, G., (2006), **Protecting traditional knowledge: Pathways to the future (Issue Paper No. 16)**, (Geneva: International Centre for Trade and Sustainable Development), 21.

¹⁷ Kuanpoth, J., (2007), "Protection of traditional knowledge in the face of globalisation: Balancing mechanism between CBD and TRIPS," **Intellectual Property and International Trade Law Forum**, (Special Issue 2007), 90.

¹⁸ Varkey, E., (2003), **Traditional knowledge - The changing scenario in india' (paper presented at the IP, cultural heritage and the public domain**, (University of Edinburgh, AHRC Research Centre for studies in Intellectual Property and Technology Law), 4 ; Kuanpoth, J., "Protection of traditional knowledge in the face of globalisation: Balancing mechanism between CBD and TRIPS," 90-91.



it favors individual and corporate (private) ownership rather than the holistic collective ownership associated with traditional knowledge.¹⁹ As well, it is designed for fixed timeframes rather than accommodating the generation-to-generation practices of traditional knowledge transfer.²⁰ Finally, its focus is closed, on invention for ‘novelty’ and application in industry, rather than representing the ongoing gradual informality of traditional knowledge innovation.²¹

IV. Principal examples of misappropriation of traditional knowledge

Much TK has been used in the commercial arena. For example, Turmeric, a plant growing widely in India and Pakistan, has its commercial value in the yellow powder extracted through boiling the plant’s rhizome or roots.²² This powder is used: as a colorant for leather, textile and food; as a cosmetic, a cooking ingredient, and an art repellent; and as a traditional medicine.²³ In 1995, the United States Patent and Trademark Office (USPTO) granted a patent to two Indian-American scientists for ‘the use of turmeric in wound healing’.²⁴ In 1998, after a challenge by the Indian Council of Scientific and Industrial Research (CSIR) on the grounds that the patent was not novel, citing the prior art in the TK of India, the USPTO cancelled the patent.²⁵

In another example, Neem (*Azadirachta Indica*), a tropical evergreen tree native to the India sub-continent, which contains useful substances in its bark, leaves, flowers, oil, and seed, has traditionally been used as medicine, toiletries, contraception, fuel,

¹⁹ Ibid.

²⁰ Ibid.

²¹ Ibid.

²² Ghosh, S., (2003), “Traditional knowledge, patents, and the new mercantilism (Part II),” **Journal of the Patent and Trademark Office Society**, 85 (11), 885, 898 ; Puri, K., (2006), “Indigenous knowledge and intellectual property rights - The interface,” In **Intellectual property rights and communications in Asia - conflicting traditions**, Ninan, P. T. and Servaes, J., (eds.), (India: Sage Publications), 116, 123.

²³ Ibid ; Slack, A., (2004), **TED case studies number 770, 2004: Turmeric, trade environment database (TED)**, Retrieved May 5, 2008, from <http://www.american.edu/ted/turmeric.htm>

²⁴ Patent No. 5,401,504 as cited in Ghosh S., (2003), “Traditional knowledge, patents, and the new mercantilism (Part II),” 885, 899.

²⁵ Ibid.



pesticide, and fertilizer.²⁶ Patents have been issued for various products made from neem.²⁷ However, the most significant one, in terms of 'the world's first legal challenge to a biopiracy patent',²⁸ is the 1994 Patent no. 0436257 issued by the European Patent Office (EPO) to W.R Grace and the US Department of Agriculture (USDA) jointly on a fungicide formation from the neem's seeds.²⁹ A legal opposition to this patent was lodged on the ground that the patent was not new and did not involve an inventive step, considering that it has been known and used by Indian for centuries.³⁰ As a result, the patent was revoked by the Opposition Division of the EPO on 11 May, 2000. On March 8, 1995, the decision was reconfirmed by the Technical Board of Appeal of the EPO; consequently, the patent for neem was entirely revoked.³¹

In Thailand, a further example is the medicinal uses of Plao-noi (*Croton sublyratus*), a Thai's local plant which contains medical substances with primary use to cure ulcer, which have been recorded in Thailand's traditional palm leaf books for centuries.³² In 1975, the active ingredient in the plant, plaonotal, was extracted and

²⁶ Hasan, S., (2002), **TED case studies number 665, 2002: The neem tree, environment, culture and intellectual property, trade environment database (TED)**, Retrieved May 5, 2008, from <http://www.american.edu/TED/neemtree.htm> ; Shiva, V. (n.d.), The neem tree - a case history of biopiracy third world network (TWN), Retrieved April 17, 2007, from <http://www.twinside.org.sg/title/pir-ch.htm> ; Ghosh, S., (2003), "Traditional knowledge, patents, and the new mercantilism (Part II)," 910 ; Puri, K., "Indigenous knowledge and intellectual property rights - The Interface," 122.

²⁷ Sahai, S., Pavithran, P. and Barpujari, I., (2007), **Biopiracy: Imitations not innovations**, (New Delhi: Gene Campaign), 35. ; Ghosh, S., (2003), "Traditional knowledge, patents, and the new mercantilism (Part II)," 910. ; Hasan, S., **TED case studies number 665, 2002: The neem tree, environment, culture and intellectual property, trade environment database (TED)**.

²⁸ Puri, K., "Indigenous knowledge and intellectual property rights - The interface," 123.

²⁹ Sahai, S., Pavithran, P. and Barpujari, I., **Biopiracy: imitations not innovations**, 14, 13, 34-35.

³⁰ Ibid, 34-35. ; Puri, K., "Indigenous knowledge and intellectual property rights - The interface," 122-123.

³¹ Puri, K., "Indigenous knowledge and intellectual property rights - The interface," 123 ; Thermo Trilogy Corp. et al. v Aelvoet, Magda, MEP, The green group in the European parliament, et al. (2005) Case No. T-0416/01 - 3.3.2, The technical board of appeal, (n.d.), **European Patent Office**, Retrieved June 20, 2008, from <http://legal.european-patent-office.org/dg3/pdf/t010416eu1.pdf>

³² Changthavorn, T., et al., (2007), **Report of study: Conception of Thai's local knowledge protection**, (Pathumthani: National Center for Genetic Engineering and Biotechnology), 21-23. [รายงานการศึกษา: กรอบความคิดการคุ้มครองภูมิปัญญาท้องถิ่นไทย] ; Assisi Foundation, et al., (May 1998), **Biopiracy, TRIPS and the patenting of Asia's rice bowl: A collective NGO situationer on IPRs on rice, Gaia foundation and genetic resources action international (GRAIN)**, Retrieved June 6, 2007, from <http://www.grain.org/briefings/index.cfm?id=29>



consequently patented by Sankyo, the second largest pharmaceutical company in Japan.³³ The company cultivates more than 1,000 ha of Plao-noi in Prachuabkeereekhan province and sells it in tablet form as “Kelnac”, to treat ulcers. Sankyo’s earnings from Kelnac were estimated to be around \$40 million in 1987.³⁴

In the last example, the result of long development of breeding, nurture, selection and storage of seed using knowledge that has passed through generations of Thai peoples is Jasmine rice, a variety of long-grain white rice that higher yields and higher resistance to diseases and insect pests grown only in Thailand.³⁵ The rice is indigenous to Thailand and very famous because of its unique aroma and soft texture when cooked.³⁶ Since the mid-1960s, Thailand has been the world’s leading rice exporter.³⁷ In 2007, Thailand’s rice exports hit a historic high by earning US \$ 3.6 billion from exporting 9.55 million tonnes of rice,³⁸ accounting for around 34.5 percent of global rice exports.³⁹ Although in 2013 the number drop to 6.6 million tonnes in shipments, but at the end of 2014 the volume of rice shipments had reached 10.9 million tonnes,⁴⁰ value at US \$ 5.2 billion.⁴¹ It is projected that 9 million tonnes which worth about

³³ GRAIN and Kalpavriksh, (November 2002), **Traditional knowledge of biodiversity in Asia-pacific: Problems of piracy and protection**, (Genetic Resources Action International (GRAIN) and Kalpavriksh (KV).

³⁴ Assisi Foundation, et al., **Biopiracy, TRIPS and the patenting of Asia’s rice bowl: A collective NGO situationer on IPRs on rice**.

³⁵ Robinson D., F., (2006), **Governance and micropolitics of traditional knowledge, Biodiversity and intellectual property in Thailand: Research report**, (National Human Rights Commission of Thailand, University of New South Wales and University of Sydney), 49.

³⁶ Ibid.

³⁷ The Nationmultimedia.com, (15 June 2008), **“Thai rice gurus predict long-term sellers’ market,” The Nation**, Retrieved February 25, 2016, from <http://www.nationmultimedia.com/headlines/Thai-rice-gurus-predict-long-term-sellers-market-30075556.html>

³⁸ Ibid.

³⁹ Workman, D., (April 16, 2008), “Leading Rice Export Countries,” **Suite101.com: Business and finance**, Retrieved May 7, 2008, from http://internationaltradecommodities.suite101.com/article.cfm/leading_rice_export_countries

⁴⁰ Office of Agricultural Economics, Total exports -- rice (total): The monthly export volume and value, Retrieved February 29, 2016, from http://www.oae.go.th/oae_report/export_import/export_result.php

⁴¹ The Nationmultimedia.com, (23 December 2014), **Thailand set to reclaim top rice exporter title, The Nation**, Retrieved February 25, 2016, from <http://www.nationmultimedia.com/business/Thailand-set-to-reclaim-top-rice-exporter-title-30250443.html>



US\$4.3 billion would be shipped this year.⁴² Because annual rice sales provide income for around 40 percent of Thailand's population,⁴³ any patent or trademark acquired by other countries over Thai Jasmine rice would make a significantly dire impact on Thai economic.⁴⁴ For example, the RiceTec case which the Texas based company won trademark over a brand of rice called "Jasmatic", allowing the company label on its rice package the "Texas-grown copy of jasmine rice from Thailand".⁴⁵

In many circumstance, intellectual property protection especially patent protection has been granted to both non-Thais and Thais over Thai TK-related inventions without any acknowledgement of the sources or agreement on sharing the benefit back to the community that guard over such knowledge. These could be done because TK has been infamously classified by Western as knowledge in the public domain thus free for all.⁴⁶ However, these could not justify the granting of intellectual property protection over invention or creation that directly arises from TK without or very little involvement of inventive step or novelty because the related prior art could not be found in printed publication. As Tarasofsky puts it, 'in some jurisdictions, such as the United States, oral evidence of prior art – which is all that may exist of some TK – is not admissible in the

⁴² Arunmas, P., (28 January 2016), "Rice exporters pessimistic about market prospects," **Bangkok Post**, Retrieved February 29, 2016, from <http://www.bangkokpost.com/business/news/842220/rice-exporters-pessimistic-about-market-prospects> <http://www.bangkokpost.com/business/news/842220/rice-exporters-pessimistic-about-market-prospects>

⁴³ Food Market Exchange, (December 24, 2001), "The controversy surrounding Thai Hom Mali," **Laws & Regulations: Hot topics**, Retrieved May 5, 2008, from http://www.foodmarketexchange.com/datacenter/laws/detail/dc_lr_reference_THM.htm

⁴⁴ For more details on patent and trademark of Jasmine rice see Robinson D., F., **Governance and micropolitics of traditional knowledge, biodiversity and intellectual property in Thailand: Research report**, 46-49.

⁴⁵ Ibid.

⁴⁶ Correa, C. M., (2001), **Traditional knowledge and intellectual property: Issues and options surrounding the protection of traditional knowledge, A discussion paper**, (The Quaker United Nations Office (QUNO), 3 ; Roht-Arriaza, N., "Of seeds and shamans: The appropriation of the scientific and technical knowledge of indigenous and local communities," In **Borrowed power: Essays on cultural appropriation**, Ziff, B. and Rao, P. V. (eds.), (1997), (New Brunswick, N.J.: Rutgers University Press), 258 ; Kutty, V. G., (1999), "Use of existing intellectual property system to protect folklore," as cited in Puri, K., **Indigenous knowledge and intellectual property rights - The interface**, In Thomas, P. N. and Servaes, J., (eds.), (2006), **Intellectual property rights and communications in Asia - conflicting traditions**, (India: Sage Publications), 116, 117.



patent process'.⁴⁷

V. Consequences of non-protection of traditional knowledge

If TK is still not protected, the number of biopiracy cases will increase⁴⁸ because of the usefulness of TK. Without legal protection at national level, TK will obviously be more freely explored and misappropriated.⁴⁹ There would be no economic gain from knowledge that originally belongs to these source countries, while at the same time they would have to watch others receive many benefits. However, even though a country may establish legal protection over TK, without a legally binding international agreement, such protection will not be enforceable outside the State.⁵⁰ In this case, researchers can obtain a sample of raw biological materials, including the valuable genetic information,⁵¹ from a source country and take it out of that country for research towards derivative products.⁵² These products may then be patented by their producers in many countries, including

⁴⁷ Vadi, V., (October 2007), "Intangible heritage: Traditional medicine and knowledge governance," **Journal of Intellectual Property Law and Practice**, 2 (10), 682, 685.

⁴⁸ McGown, J., (2006), **Out of africa: Mysteries of access and benefit sharing**, (Africa: Edmonds institute in cooperation with African centre for biosafety) ; See biopiracy cases in Table 1 in GRAIN and Kalpavriksh, **Traditional knowledge of biodiversity in Asia-pacific: Problems of piracy and protection**, 7-8 ; This view has also been shared with Hansen, S. A. and VanFleet, J. W., (2003), **Traditional knowledge and Intellectual property: A Handbook on issues and options for traditional knowledge holders in protecting their intellectual property and maintaining biological diversity**, (Washington, DC: American Association for the Advancement of Science (AAAS)), 5.

⁴⁹ This view has been shared with many academics for example: Dutfeld, G., **Protecting traditional knowledge: Pathways to the future** (Issue Paper No. 16). ; Twarog, S. and Kapoor, P., (2004), **Protecting and promoting traditional knowledge: Systems, national experiences and international dimensions**, (New York, Geneva: United Nations Publication).

⁵⁰ Kuanpoth, J., "Protection of traditional knowledge in the face of globalisation: Balancing mechanism between CBD and TRIPS," 78. ; Twarog, S., (2004), "Preserving, protecting and promoting traditional knowledge: National actions and international dimensions," In **Protecting and promoting traditional knowledge: Systems, national experiences and international dimensions**, Twarog, S. and Kapoor, P., (eds.), (New York, Geneva: United Nations Publication), 420, 461.

⁵¹ Biber-Klemm, S. and Berglas, D. S., (2005), "Problems and Goals," In Biber-Klemm, S. and Cottier, T., (eds.), **Rights to plant genetic resources and traditional knowledge: Basic issues and perspectives**, (Cambridge, MA: CABI Pub.), 24.

⁵² Kuanpoth, J., "Protection of traditional knowledge in the face of globalisation: Balancing mechanism between CBD and TRIPS," 78.



the source country, which might prevent the owners from both practicing the methods prescribed in the patent claims, and from continuing their traditional development of knowledge regarding the biological materials.⁵³

In addition, when there is no protection, value, acknowledgement or respect attaching to TK, such as when TK is free for everyone to explore and the guardian of TK receives no benefit from utilizing this knowledge, then the next generation would abandon or ignore the inheritance: therefore there would be no next generation to pass the knowledge on because when such knowledge cannot provide income, which they need for living, it is useless to inherit.⁵⁴ As a result, there would be no development contributing to such knowledge and, in the worst case, the knowledge would be lost at some point in time.⁵⁵

Evidence shows that 80 percent of biological diversity lies in tropical developing countries.⁵⁶ In those countries, most TK has developed because of the abundance of biological resources.⁵⁷ At the same time the diversity of genetic resources is the result of conservation and genetic enhancement by farmers and local people using such

⁵³ Ibid, Visser, C. J., (2004), "Making intellectual property laws work for traditional knowledge," In **Poor people's knowledge: Promoting intellectual property in developing countries**, Finger, J. M. and Schuler, P., (eds.), (Washington, D.C.: Co publication of the World Bank, Oxford University Press), 207, 213.

⁵⁴ This view has been shared with Gupta, A. K., (2003), "Conserving biodiversity and rewarding associated knowledge and innovation systems: Honey bee perspective," In **Intellectual property: Trade, competition and sustainable development, Proceeding of the world trade forum**, Berne, 27-28 August 1999, Cottier, T., Mavroidis, P. C. and Panizzon, M., (eds.), (Ann Arbor, Michigan: University of Michigan Press) ; World intellectual property organizations (WIPO), (2001), **Intellectual property needs and expectations of traditional knowledge holders**, (World Intellectual Property Organizations (WIPO) **Report on fact-finding missions on intellectual property and traditional knowledge** (1998-1999). (World Intellectual Property Organizations), Biber-Klemm, S.and Berglas, D. S., "Problems and goals," 24.

⁵⁵ Ibid.

⁵⁶ Raven, P. H. and Wilson, E. O., (13 November 1992), "A Fifty-year plan for biodiversity surveys," **Science**, 258 (5085), 1099 as cited in Straus, J., (July 2001), "Biodiversity and Intellectual Property," In **Rethinking international intellectual property: biodiversity & developing countries, extraterritorial enforcement, the grace period, and other issues: Proceedings of the 2000 high technology summit conference, University of Washington, seattle, CASRIP symposium publication series number 6**, Hill, K. M., Takenaka, T. and Takeuchi, K., (eds.), (Seattle, WA: CASRIP, University of Washington School of Law), 141-142.

⁵⁷ Changthavorn, T., et al., **Report of study: Conception of Thai's local knowledge protection**, 10 ; Biber-Klemm, S.and Berglas, D. S., "Problems and goals," 23.



knowledge for the benefit of the next generation, therefore TK and biological resources are counterparts.⁵⁸ Loss of one will affect the other. Loss of TK will contribute to the loss of biological resources and the diversity of such resources.⁵⁹ Besides, loss of information about a particular species will mean it will no longer be used in the way previously discovered.⁶⁰ As already mentioned, giving protection to TK provides the incentive to share such knowledge with outsiders without protection; if TK holders already feel that they have been taken advantage of over their knowledge, TK might be kept secret.⁶¹

VI. Indian Approach for TK Protection – Traditional Knowledge Digital Library (TKDL)

Currently, while number of nations might already have installed some legal mechanisms to provide protection to its TK, but as already mentioned without a legally binding international agreement, such protection will not be enforceable outside the State. However, India has provided a very interesting and alternative way to give a shield to its TK that could work outside its jurisdiction in the name of Traditional Knowledge Digital Library (TKDL) as it acts as a prior art database which could pre-empt the grant of patents relating to Indian TK in foreign jurisdictions. At the International Conference on the Utilization of the Traditional Knowledge Digital Library as a Model for Protection of Traditional Knowledge, Delhi in 2011, Mr. Pawan Kumar Bansal, India's Minister of Science and Technology, Earth Sciences, and Parliamentary Affairs, stated that "TKDL has been and immensely effective tool for the protection of TK...a powerful weapon to fight biopiracy"⁶² (or misappropriation).

⁵⁸ Ibid., 10-17 ; Ibid., 23.

⁵⁹ Ibid.

⁶⁰ Biber-Klemm, S.and Berglas, D. S., "Problems and goals," 23.

⁶¹ World Intellectual Property Organizations (WIPO), **Intellectual property needs and expectations of traditional knowledge holders, (World intellectual property organizations (WIPO) Report on fact-finding missions on intellectual property and traditional knowledge (1998-1999), Part II.**

⁶² WIPO, (22 March 2011), **WIPO and India partner to protect traditional knowledge from misappropriation**, Retrieved March 15, 2016, from http://www.wipo.int/pressroom/en/articles/2011/article_0008.html



1. Background

Republic of India is a nation of approximately 1.295 million people (2014).⁶³ It covers a total land area of 3,287,590 square kilometres,⁶⁴ accounts for 2.4 percent of the global land area and is the world's seventh-largest country.⁶⁵ India is one of the 17 megadiverse countries and accounts for 7-8 percent of the recorded species of the world including over 45,000 species of plants and 91,000 species of animals.⁶⁶ The country's rich biodiversity is seen in the fertile culture, abundance of food and herbal medicines.⁶⁷

In the Turmeric case, as mentioned above, even though the utility of turmeric was known to every Indian household, the patent was revoked on the ground of existing of prior art (lack of novelty) only when the Council of Scientific and Industrial Research (CSIR) could provide documentary evidence of TK including ancient Sanskrit text and a paper published in 1953 in the Journal of the Indian Medical Association.⁶⁸ The total cost CSIR paid to win this case was 500,000 rupees which equal to US\$ 14,000 (exchange rate in 1997) with almost two years of time spent (a re-examination was requested in 1996, the claims were rejected for a second time in 1997, and the re-examination certificate was issued which bring the case to a close in 1998).⁶⁹ The cost and time spent on this case because of the lack of adequate documentation of prior knowledge (in general, TK has been orally passed down from generation to generation with some parts has been described in ancient classical and other literature which often

⁶³ World Bank, **Population, total**, Retrieved March 15, 2016, from <http://data.worldbank.org/indicator/SP.POP.TOTL>

⁶⁴ Department of South Asian, **Middle east and African affairs**, "**Republic of India: Basic information**," **ministry of foreign affairs, Kingdom of Thailand**, Retrieved March 15, 2016, from <http://sameaf.mfa.go.th/th/country/south-asia/detail.php?ID=9>

⁶⁵ Ministry of Environment and Forests, (2014), **India's fifth national report to the convention on biological diversity 2014**, (New Delhi: Government of India), xiii.

⁶⁶ Ibid.

⁶⁷ Ibid ; Jagdale, S., (7 October 2015), "**Battle against bio-piracy**," **Express pharma**, Retrieved March 16, 2016 from <http://www.financialexpress.com/article/pharma/cover-story/battle-against-bio-piracy/147258/>

⁶⁸ Datt, D. and Nischal, S., (eds.), (2010), **Looking back to change track**, (New Delhi: TERI Press), 123.

⁶⁹ Mashelkar, R. A., (2001), "Intellectual property rights and the third world," **Current Science Special Section: Science in the Third World**, 81 (8), 959-960.



inaccessible to the common man and even when accessible rarely understood)⁷⁰ are the reasons that led to the creation of Traditional Knowledge Digital Library (TKDL), Traditional Knowledge Resource Clarification (TKRC), and an inclusion of TK in the International Patent Clarification (IPC) System.⁷¹

2. What is TKDL?

In order to prevent other from being granted intellectual property rights especially patent over TK at the first stage itself rather than waiting till the stage of opposition, one of the most basic and straightforward ways is to organize TK in such a way that it is easily found during prior art searches.⁷² As to get a patent protection, one of the requirement is novelty, so if the invention is already in the public domain it would be considered as prior art and therefore is not patentable. In 2001, therefore, the CSIR together with the Department of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homeopathy (AYUSH), authored by Dr. V K Gupta, established TKDL.⁷³ It is being implemented by CSIP through an inter-disciplinary team of experts from traditional medicine, patent examiners, IT experts, scientists and technical officers.⁷⁴

TKDL is a searchable digital knowledge repository of publicly available TK, especially about medicinal plants and formulations used in Indian systems of medicine.⁷⁵ As of March 2016, a total number of 150 books, which derived from 75 books on Ayurveda, 10 on Unani, 50 on Siddha, and 15 on Yoga, has been transcribed.⁷⁶ These 34 million A4-size pages of information which contains a total of 292,662 formulations, including scanned images of relevant prior art existing in the original traditional literature, consequently converted into five international languages understood by most Patent examiners namely English, German, French, Japanese and Spanish.⁷⁷

⁷⁰ CSIR - Traditional Knowledge Digital Library Unit, (n.d.), **Traditional knowledge digital library: about TKDL**, Retrieved March 24, 2016, from <http://www.tkdlib.res.in/tkdlib/langdefault/common/Abouttkdl.asp?GL=Eng>

⁷¹ Mashelkar, R. A., "Intellectual property rights and the third world,"

⁷² Balasubramanian, N., (26 March 2012), "Extent of use of TKDL in patent offices: Trends and concerns," **SSRN**, 1, Retrieved March 18, 2016 from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2032161

⁷³ CSIR - Traditional Knowledge Digital Library Unit, **Traditional knowledge digital library: About TKDL**.

⁷⁴ Ibid.

⁷⁵ Ibid.

⁷⁶ Ibid.

⁷⁷ Ibid.



Moreover, in order for TK contained in TKDL to be understood by International Patent examiners not only the language barriers needed to be eliminated but the database's format is also required to be structured in the way that easily to be retrieved. For the conventional Patent, the International Patent Classification (IPC) system is used in carrying out prior art searches. Before 2005, with few sub-groups relating to TK and only one sub-group (A61K 35/78) dealing with medicinal plants, therefore, the IPC was not very well structured when it came to TK, especially in the area of medicinal plants.⁷⁸ According to Namita Balasubramanian, "there was lack of efficiency when it came to examination of traditional medicine based patent applications and that was one of the reasons that inventions based on traditional knowledge were erroneously granted patents".⁷⁹ Thus, with TKDL database, Indian has invented a classification tool, called the Traditional Knowledge Resource Clarification (TKRC) which based on the structure of the IPC.⁸⁰ It introduces a new main group A61k 36/00 consisting of 207 sub-groups covering different categories of plants to the IPC system, hence enabling effective search and examination process.⁸¹

It should be noted that TKDL is not a diagnostic or usage database and also not the prior art in itself rather it acts as a bridge between the TK information existing in local languages and format and the patent examiners at the International Patent Offices (IPOs), thus the gap on lack of prior art knowledge is minimized.⁸²

3. Accessibility of TKDL

According to a document submitted by India at the Meeting of International Authorities under the Patent Cooperation Treaty (PCT) held in Tokyo in 2015, TKDL can be soon in two version: a public search and a full search facilities.⁸³

⁷⁸ Ibid ; Balasubramanian, N., "Extent of use of TKDL in patent offices: Trends and concerns," 5.

⁷⁹ Ibid.

⁸⁰ CSIR - Traditional Knowledge Digital Library Unit, **Traditional knowledge digital library: About TKDL.**

⁸¹ Ibid.

⁸² Gupta, V. K., (13-16 December 2005), **Traditional knowledge digital library**, (paper presented at sub-regional experts meeting in Asia on intangible cultural heritage: Safeguarding and inventory-making methodologies, Bangkok), 3.

⁸³ India, (19 January 2015), **PCT minimum documentation: Indian traditional knowledge digital library**, (Meeting of International Authorities under the Patent Cooperation Treaty (PCT) No.PCT/MIA/22/8), Retrieved March 25, 2016, from http://www.wipo.int/edocs/mdocs/pct/en/pct_mia_22/pct_mia_22_8.pdf



A public search facility available at <http://tkdl.res.in/> shows the general scope of the system, allowing advanced Boolean search of a limited, representative database of 1200 traditional medicinal formulations,⁸⁴ using keywords, IPC codes, more detailed (TKRC) codes, titles, bibliographic information or disease names.⁸⁵ The results are shown as a summary of the matching formulations in the chosen one of the five interface languages as previously mentioned.⁸⁶

A full search facility of TKDL is available only to various patent offices who have entered into bilateral access and non-disclosure agreements with India.⁸⁷ Besides the Indian Controller General of Patents Designs and Trademarks (CGPDTM) itself, since 2009, several patent offices are allowed to use TKDL namely European Patent Office (EPO), United State Patent and Trademark Office (USPTO), Canadian Intellectual Property Office (CIPO), German Patent and Trademark Office (DPMA), United Kingdom Patent and Trademark Office (UKPTO), Intellectual Property Australia, Japan Patent Office (JPO) and the National Institute of Industrial Property of Chile.⁸⁸ Negotiations are said to be in advance stage for conclusion of the Access Agreement with Russian Patent Office (ISA) and Malaysian Patent Office (MyIPO).⁸⁹ However, a full access comes with responsibilities and obligations that the user (IP Office) shall not disclose any information to third parties, use information only for the purposes of the patent grant procedure, and provide statistical reports such as the number of times the TKDL was cited throughout the year.⁹⁰

4. Impact of TKDL on the protection of TK

Prevention the grant of wrong patents with lesser cost and time: With documenting TK in TKDL, the minute TK is recorded in TKDL, it legally becomes public domain knowledge which under the patent law means that it is considered to be prior

⁸⁴ CSIR - Traditional Knowledge Digital Library Unit, **Traditional knowledge digital library: About TKDL**.

⁸⁵ Hirwade, M., (3 January 2010), **Protecting traditional knowledge digitally: a Case study of TKDL**, (paper presented at national workshop on digitization initiatives & applications in indian context, DNC, Nagpur), 10-11.

⁸⁶ India, **PCT minimum documentation: Indian traditional knowledge digital library**, see Annex I summary of the Indian traditional knowledge digital library, 1.

⁸⁷ Ibid.

⁸⁸ Ibid.

⁸⁹ Ibid.

⁹⁰ Ibid, 1-2, see also Annex II traditional knowledge digital library (TKDL) access agreement.



art and therefore, is not patentable.⁹¹ Moreover, as prior art has been interpreted differently in different jurisdictions, in the US for example its Patent Act, Section 102 (a) states that a person shall be entitled to a patent unless the invention was patented or described in a printed publication in a foreign country.⁹² Consequently, as mere use of the invention in a foreign country would not suffice to oppose the grant of patent in the US, documented evidence of prior art is needed otherwise it would be very difficult to form the case. TKDL has overcome this problem by providing a printed proof of pre-existing knowledge. Thus, when Patent examiners could easily access and check this database, the rejection of any patent application on the ground of mere copying of existing TK would be effortlessly done. Then, it would help to prevent any misappropriation or biopiracy cases.

Statistic shows that in 2000, according to CSIR, approximately 80 percent of the 4,896 references to individual plant based medicinal patents in the USPTO related to just seven medicinal plants of Indian origin which 360 out of 762 patents in medicinal plants studied could be characterized as traditional.⁹³ There were around 15,000 patents on Indian TK spread over US, UK and other registers of patent offices in 2003.⁹⁴ In 2005 and 2008, this number had risen to over 35,000 and 85,000 respectively.⁹⁵ It is estimated by the TKDL expert group that around 2,000 numbers of wrong patents concerning Indian traditional medicine were being granted every year at international level.⁹⁶ In 2004, it is found that 249 patents taken on Yoga which was risen to 2300 in patent, 2315 in trademarks, and nearly 150 copyrights at USPTO in 2005.⁹⁷ In 2007, close to 131 Yoga-related patents were traced at the USPTO.⁹⁸ This could be done due

⁹¹ Hirwade, M. and Hirwade, A., (May 2012), "Traditional knowledge protection: An Indian prospective," **Journal of Library & Information Technology**, 32 (3), 246.

⁹² Patent Act, 35 U.S.C. § 102 (a).

⁹³ Balasubramanian, N., "Extent of use of TKDL in patent offices: Trends and concerns," 2 ; Sen, N., (10 May 2002), "'TKDL' - A safeguard for Indian traditional knowledge," **Current Science**, 82 (9), 1070.

⁹⁴ Sen, S. and Chakraborty, R., (25 May 2014), "Traditional knowledge digital library: a distinctive approach to protect and promote Indian indigenous medicinal treasure," **Current Science**, 106 (10), 1341.

⁹⁵ Ibid.

⁹⁶ Balasubramanian, N., "Extent of use of TKDL in patent offices: Trends and concerns," 2.

⁹⁷ Hirwade, M. and Hirwade, A., "Traditional knowledge protection: An Indian prospective," 242.

⁹⁸ Sen, S. and Chakraborty, R., "Traditional knowledge digital library: A distinctive approach to protect and promote Indian indigenous medicinal treasure," 1342.



to language and format barriers presented in traditional literature of Indian TK.⁹⁹ TKDL has stepped in to break these barriers by translating the information into five international languages and creating TKRC which based on IPC, thus it would be easy for Patent examiners to work on.

Since 2009, with the help of TKDL, 5,100 patent applications relating to Indian medicinal knowledge at various Patent Offices accessible to TKDL have been identified.¹⁰⁰ Until December 2014, Third party observations (TPOs) submitted by CSIR has been filed at pre-grant stage under relevant provisions at these Patent Offices in more than 1,000 cases.¹⁰¹ According to document submitted by India, success has been achieved in 196 cases where the patent applications have been withdrawn/cancelled/declared dead/claims amended by applicants/rejected by the Examiner(s), on the basis of TKDL prior art evidences in few weeks and without any cost.¹⁰² Without the database of TKDL, the process of revoking a patent can be a costly and time-consuming affair. It takes, on average, five to seven years and costs between 0.2-0.6 million US dollars to oppose a patent granted by a patent office.¹⁰³

Studies by the TKDL team have also shown that there has been a sharp decline of around 44 percent in the filing of patent applications related to Indian systems of Medicine in the EPO.¹⁰⁴

Preservation of knowledge: The survival of the knowledge is at stake as mentioned in section V. above. With the existing of database containing information on TK, it is vital for the preservation of such knowledge for the next generation. Thus, TK documenting would help in preservation, dissemination, use and management of this knowledge. Moreover, these information would help for biodiversity conservation and advancements in botanical and zoological research globally.¹⁰⁵ Besides, Indian

⁹⁹ Hirwade, M. and Hirwade, A., "Traditional Knowledge Protection: An Indian Prospective," 242.

¹⁰⁰ India, **PCT minimum documentation: Indian traditional knowledge digital Library**, see Annex I Summary of the Indian Traditional Knowledge Digital Library, 3.

¹⁰¹ Ibid.

¹⁰² Ibid.

¹⁰³ WIPO, (June 2011), **Protecting India's traditional knowledge, WIPO magazine**, Retrieved March 25, 2016, from http://www.wipo.int/wipo_magazine/en/2011/03/article_0002.html

¹⁰⁴ Balasubramanian, N., "Extent of use of TKDL in patent offices: Trends and concerns," 5.

¹⁰⁵ Sen, N., "'TKDL' - A safeguard for Indian traditional knowledge," 1070.



strategies might also be employed to protect other areas of TK such as sacred cultural manifestations like sacred symbols or words from being registered as trademarks.

Fuel future innovation: TKDL is a mechanism with a rich database of information that can provide and enhance innovation capacity and the development of products such as medicines which would be of enormous value to all mankind.¹⁰⁶ As WIPO Executive Director and Chief of Staff Naresh Prasad pointed out that “such knowledge [in TKDL] is a source of innovation and could inspire life-saving medicines”.¹⁰⁷ According to V.K. Gupta, TKDL “has potential to act as a bridge between modern science, modern medicines and TK, and can be used for international advanced research based on information on TK for developing novel drugs.”¹⁰⁸

Assist benefit-sharing: In the case where TK was used by others apart from the TK holders themselves to generate innovation which consequently patent be granted, fair and equitable benefit sharing should be assured (in theory anyway) as put forward by the Convention on Biological Diversity (CBD).¹⁰⁹ It is believed that documenting TK could be utilized as a tool to facilitate tracing of indigenous communities with whom benefits of commercialization of such materials or knowledge has to be shared justly and appropriately.¹¹⁰ Furthermore, TK documentation is also acknowledged as a means of giving due recognition to the TK holders.¹¹¹

Complementarity with positive protection: TKDL is served as a defensive protection against TK misappropriation whether within the host nation or cross border as it helps to prevent granting of patent on something that already existed. However, according to V.K. Gupta, TKDL is only the first step within a comprehensive TK protection policy thus it must be supplemented by positive measures in order to provide adequate

¹⁰⁶ Hirwade, M. and Hirwade, A., “Traditional knowledge protection: An Indian prospective,” 246.

¹⁰⁷ WIPO, (24 March 2011), **International conference concludes TKDL can prevent misappropriation and fuel Innovation, WIPO press releases**, Retrieved March 25, 2016, from http://www.wipo.int/pressroom/en/articles/2011/article_0009.html.

¹⁰⁸ Gupta, V. K., **Traditional knowledge digital library**, 3, 6.

¹⁰⁹ See Article 8(j) of the Convention on Biological Diversity <https://www.cbd.int/convention/articles/default.shtml?a=cbd-08>

¹¹⁰ Hirwade, M. and Hirwade, A., “Traditional knowledge protection: An Indian prospective,” 245.

¹¹¹ Chouhan, V. K., (September – October 2012), “Protection of traditional knowledge in India by patent: Legal aspect,” **Journal of Humanities and Social Science**, 3 (1), 42.



protection for TK holders¹¹² as TKDL alone could not give legal right to the TK holder.

5. Limitation of TKDL

TKDL is only used as a defensive technical tool with no legal protection given to the TK holders. It contains merely those documented knowledge and is limited to the area of medicinal plants of India. Full access is permitted only to International Patent Offices who have entered into bilateral access and non-disclosure agreements with India.

VII. Conclusions

The usefulness of TK has been to contributing to the wealth of industrial countries¹¹³ and to the varieties of biological resources of the world.¹¹⁴ Even though recognition of the value of TK is growing, Western intellectual property laws still regard it as information in the public domain, which freely available for everyone's use.¹¹⁵ Moreover, in some cases, diverse forms of TK have been appropriated under intellectual property

¹¹² Gupta, V. K., **Traditional Knowledge digital library**, 3, 9.

¹¹³ Especially in the case of traditional medicinal knowledge. In 1995, the estimated worldwide market value of pharmaceutical derivatives from indigenous peoples' traditional medicine was U.S. \$43 billion per year. Moreover, it is predicted that the economic value of traditional/indigenous knowledge is to be seen in the herbal medicine and nutraceutical sector which is estimated to touch roughly U.S. \$5 trillion by the year 2020. Indigenous people, biodiversity and health COURTS Canada IPBN factsheet November 1995, as cited in Blakeney, M., (2000), "The protection of traditional knowledge under intellectual property law," **European Intellectual Property Review**, 22(6), 251, 255 ; World Health Organization, (2002), **WHO Traditional Medicine Strategy 2002–2005**, (WHO/EDM/TRM/2002.1, World Health Organization (WHO). ; Sahai, S., (2002), **Protection of indigenous knowledge and possible methods of sharing benefits with local communities**, (BRAC Centre for Development Management), 7.

¹¹⁴ Roht-Arriaza, N., "Of seeds and shamans: The appropriation of the scientific and technical knowledge of indigenous and local communities," 255, 259 ; Berkes, F. and Henley, T., (May 1997), "The usefulness of traditional knowledge: Myth or reality?," **Policy Options**, 18 (4), 55.

¹¹⁵ Correa, C. M., (2001), **Traditional knowledge and intellectual property: Issues and options surrounding the protection of traditional knowledge, a discussion paper**, (The Quaker United Nations Office (QUONO)), 3 ; Roht-Arriaza, N., "Of seeds and shamans: The appropriation of the scientific and technical knowledge of indigenous and local communities," 258. ; Kutty, V. G., (1999), "Use of existing intellectual property system to protect folklore," as cited in Puri, K., Indigenous knowledge and intellectual property Rights - The interface, In Thomas, P. N. and Servaes, J., (ed.), (2006), **Intellectual property rights and communications in Asia - conflicting traditions**, (India: Sage Publications) 116, 117.



rights, especially Patent.

It is believed that the introducing of TKDL as a prior art database could help to eliminate this so call free riding to some extent. In the absence of the International binding agreement, TKDL has giving hope to TK protection and holders that at least patent protection would not be granted over existing TK which might come back to bite the real holders of such knowledge. Other nations are encouraged to set up TKDL in they own countries as WIPO Director General Francis Gurry pointed out *“TKDL is an excellent example of a technical platform which can work alongside legislative frameworks. India’s TKDL could be a good model for others...”*¹¹⁶

At present, TKDL is mainly deal with knowledge existing in the public domain, but in the future when the work is expanded, it needs to be careful when dealing with TK that is not yet in the public domain. Documenting such knowledge in the database might similar to open the Pandora box, thus other measures such as prior informed consent or non-disclosure agreements should be employed to deal with this case. Moreover, a positive measure is still needed to be employed at both national and international level in order to supplement TKDL and give long overdue respect to the TK holder.

¹¹⁶ WIPO, **International conference concludes TKDL can prevent misappropriation and fuel Innovation,”** WIPO Press Releases.

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