

SUSTAINABLE DEVELOPMENT THROUGH THE PRISM OF INDIGENOUS KNOWLEDGE: A REVISIT TO INTELLECTUAL PROPERTY RIGHTS ISSUES DURING COVID PANDEMIC

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Abstract

Traditional notions of sustainable development have strong inter-generational considerations striving for sustainable utilization of resources. The sustainable development and intellectual property rights though traditionally have different areas of operation but the nexus between the two in contemporary world is extremely interesting to study. The existence of rich biodiversity on this earth is the greatest gift from God to mankind and the maintenance of the same for a better future is the collective responsibility of world community. The indigenous communities inhabiting the biodiversity rich areas, owing to their close association with nature plays remarkable role in conserving the environment and maintaining the ecological balances through indigenous knowledge. With the advent of biotechnology, biopiracy and commercial exploitation of such indigenous knowledge for economic gains have become rampant affecting adversely not only the very indigenous community but also certainly hampering the sustainable development goals. This paper shall be an attempt to (i) view sustainable development through the prism of indigenous knowledge and the related intellectual property rights concerns (ii) examine the IPR issues in the contemporary pandemic period and (iii) analyse the resilience of indigenous people in COVID-19 crisis and the lessons therefrom.

I Introduction

IN THIS decade, no other term is used in multi disciplinary perspective than the term – ‘sustainable development’. It has significance and vital importance in all fields ranging from environment to economics and from national deliberations to international dialogues. ‘Sustainable development’ is a term of many connotations varying according to the context in which it is used. However, the principles of conciliation, harmonious construction and integration remain at the core. This concept assumed importance in the context of environmental issues with a view to balancing the human development needs *vis-à-vis* ability of natural resources and ecosystems to cater to these rapidly increasing needs from the broader perspective of meeting the needs and aspirations of future generations. Sustainable development aims a kind of development which is all-encompassing in nature, *i.e.*, it involves the orchestration of divergent interests. The conservation of biodiversity which is the store house of flora and fauna harmoniously constructed with the nature is beneficial not only for the concerned living creatures but

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also to the humans thriving heavily upon it and an intimate part of sustainable development scheme.

These biodiversity rich areas are mostly inhabited by various indigenous communities possessing indigenous knowledge (IK) who live in close association with nature and the ecosystems. These communities develop a body of knowledge consisting of certain practices and customs as a part of their traditional culture and for their better survival in harsh climatic conditions. It is their close association with nature which makes them integral part of sustainable development schemes as indigenous knowledge plays a crucial role in environmental conservation. With the advent of technology, especially biotechnology, the world is witnessing rampant misuse of the indigenous knowledge developed and conserved by these indigenous communities without due credits to the concerned. Biopiracy is becoming a regular phenomenon which ultimately affects the rights of these indigenous communities over the body of knowledge of which they are the true owners. Considering the importance of sustainable development, the conservation of these indigenous communities and protection of their rights is equally important which involves establishment of a system providing amicable settlement of various intellectual property rights (IPR) issues involved therein. This paper, in the stated backdrop, shall be an attempt to highlight the crucial role played by the indigenous communities towards sustainable development and address the various IPR issues in detail and suggest solutions thereof. An elaborate attempt shall be made to have insight as to the true import of sustainable development in the given context, assessment as to suitability of indigenous knowledge as an assistant to sustainable development planning, especially in the view of present pandemic, and examine the sufficiency of existing intellectual property right laws to accord adequate protection to indigenous knowledge.

II Indigenous knowledge

The expression 'indigenous community' has become a buzz word in international literature; it has growing prominence in human right jurisprudence and many discussions have taken place in international forum concerning the special rights of indigenous people. However, in intellectual property jurisprudence, a unique reference and emphasis is given to the 'indigenous knowledge' and its inestimable uses even in the modern scientific word. Quite often specific intellectual properties such as patent come into direct conflict with indigenous knowledge.

Etymologically, the word "indigenous" means 'belonging to', or 'native', or 'naturally occurring'. This term has received many interpretations from writers and policy makers. The term indigenous knowledge, in the context at hand, refers to the set of knowledge, skills, know-how, practices *etc.* developed, nurtured and conserved by the indigenous communities as opposed to the modern 'scientific knowledge'. In other words, local and indigenous knowledge refers to the understandings, skills and philosophies developed

by societies with long histories of interaction with their natural surroundings.¹ It forms the sound base for local-level decision making in these communities. The term “indigenous communities” in various international instruments have been characterized in the tune of marginalization, nativeness, aboriginality, and self-governing groups having their distinct identity and governed by their own set of customs or traditions or *via* some special laws enacted by the concerned country where they live in. International Labor Organization, Convention 169, Indigenous and Tribal Peoples Convention, 1989, explains ‘indigenous people’ in following manner:²

- (a) tribal peoples in independent countries whose social, cultural and economic conditions distinguish them from other sections of the national community, and whose status is regulated wholly or partially by their own customs or traditions or by special laws or regulations;
- (b) peoples in independent countries who are regarded as indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonisation or the establishment of present state boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions.

Characteristically, indigenous knowledge is adaptive, dynamic, inter-generational, cumulative, holistic and unique. It is *adaptive* as this body of knowledge is based on experiments through ages and is receptive to need based changes. Since, it is accommodating of changes into its ambit, it is not static in nature. Its dynamism lies in its changing nature with the change in geographical, climatic and societal changes. The indigenous knowledge is collectively owned by the entire community with concerns for the future generations, thus, there exists strong *inter-generational* considerations. The knowledge is transmitted, for beneficial purposes, from generations to generations. It is cumulative, holistic and unique as this set/body of knowledge is so integral to the indigenous community that it often becomes the very identity thereof.

Relation between indigenous knowledge and traditional knowledge

In general parlance, there exists no distinction between traditional knowledge and indigenous knowledge. Laymen use these terms interchangeably meaning the one and the same thing. The various expressions, *viz.* traditional knowledge, indigenous knowledge, and local knowledge are interchangeably used to refer to the matured long-standing traditions and practices of certain regional, indigenous, or local communities

1 UNESCO, “Local and Indigenous Knowledge Systems” 2019, *available at*: <https://en.unesco.org/links#:~:text=Local%20and%20indigenous%20knowledge%20refers,day-to-day%20life> (last visited on Aug. 12, 2021).

2 ILO, Indigenous and Tribal People Convention, 1989: art. 1.1.

which are often expressed through stories, legends, folklore, rituals songs, and even laws.³ Nevertheless, WIPO has distinguished between the two concepts evidently.

Following points reflect upon the characteristics of traditional knowledge (TK):

- i. Inter-generational transmission of knowledge;
- ii. It is usually transmitted orally; written form is found rarely;
- iii. It is held by the community collectively; no single proprietorship is vested in any individual;
- iv. Its learning process includes continuous observation, practice and experience including improvisation of such knowledge.⁴
- v. It forms an inextricable part of the very community being intimately associated with the traditional and cultural life of its members;
- vi. Tracing its origination and the originator is extremely difficult, usually impossible task, and;
- vii. Traditional knowledge is considered as 'traditional' because its creation and use is intimate part of the cultural traditions of the community, where it is developed and practiced; 'traditional' does not imply that the knowledge is ancient or static in any way.⁵

Traditional knowledge is basically the set of information which is developed, observed and practiced continuously by the members of a given community on the basis of their experience and adaptation to local culture and environment from years. Owing to the similarities in characteristics (mentioned above), often the expression 'traditional knowledge' is used interchangeably with 'indigenous knowledge' however, the two are not exactly the same. The term 'traditional knowledge' is a term of wider connotation including within its ambit the following:

- i. Cultural knowledge,
- ii. Artistic knowledge, medicinal knowledge,
- iii. Biodiversity/natural resources knowledge,
- iv. Agricultural knowledge,
- v. Sacred knowledge, *etc.*

Such knowledge could be developed, observed and conserved in any community not necessarily any indigenous tribal community. For example, traditional knowledge of using anti-infectious and wound healing properties of turmeric is not necessarily an indigenous

³ L. P. Lukose, *Interface Between Intellectual Property and Traditional Knowledge* 68 (LAP, Germany, 2013).

⁴ Alankrita Mathur, "Traditional Knowledge: Need for a Sui Generis System of Law" in S.K. Babbar and R.K. Sharma (eds.), *Transforming Ideas into Viable Solutions* 299-309 (Macmillan, 2019).

⁵ *Ibid.*

knowledge in particular. Indigenous knowledge is that knowledge which is observed, and conserved by the people who identify themselves as indigenous to a place and having distinct identity due to their unique cultural interaction with the nature owing to their geographical placements. Traditional knowledge includes indigenous knowledge developed and held by the members of indigenous communities but all traditional knowledge could not be termed as indigenous knowledge.

Importance of indigenous knowledge

Indigenous knowledge forms an intimate part of cultural and communal expressions of the very community where it has been held and used from generations to generations. It forms an inseparable part of the cultural life of the members that often it becomes a crucial means of identification as a distinct group. It mostly involves those practices and customs and traditions which are used by the indigenous people to meet their day-to-day needs and for their survival in harsh climatic conditions and thus, are of great importance to the indigenous people practicing it. An IK system, therefore, provides the basis for decision-making, which is operationalized through indigenous organizations, which provide the foundation for local innovations and experimentation.⁶ Indigenous knowledge which is maintained by the indigenous people assist not only its holders in meeting their everyday needs but also help in maintaining and exposing the tremendous nature's wealth, for the betterment of humankind, which mostly remains hidden from the world community. It is important to note that development, observation and conservation of indigenous knowledge by such communities is aimed to meet the basic needs of a community and not for any economic profits from commercial exploitation of the same. Further, the indigenous knowledge which gives indigenous communities a distinct identity thereby adds cultural and traditional variety, enriching the world culture. Distinct, unique and rich cultural heritage possessed by the aboriginal communities has the potentiality to solve several contemporary problems even where the modern science and technology fail.

III Role of indigenous knowledge in sustainable development

“Knowledge is perhaps the major factor that will determine whether humankind will be able to create a sustainable future on this planet.”

*Ismail Serageldin, Environmentally Sustainable
Development, World Bank*

Before reflecting upon the role played by the indigenous knowledge in sustainable development, it is necessary to understand the true import of the concept of sustainable

⁶ Amare Desta and Steve Smithson, “Indigenous Knowledge in The Context of Natural Resource Management: An Information Systems Perspective” *UK Academy for Information Systems Conference Proceedings* (2010).

development. A need of 'sustainable' development was felt decades ago considering the rapid depletion of natural resources, and reckless man-made developments posing potential threat to the environment. A development with a view to sustain the claims of present generations while preserving resources for the optimal utilization by the future generations is mostly desired. The concept of sustainable development put forth in the Brundtland Report is worth taking note of in the context at hand, which reads thus:⁷

Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Sustainable development is an umbrella concept, which strives for integration and harmonious construction of various activities from all spheres with a view to promote holistic development of a nation. It demands reconciliation of conflicting interests to sustainably achieve environmental protection, social development as well as economic development with primary focus on the equity principles and the inter-generational considerations.

In the broader framework of environmental conservation concerns, the sustainable development besides preserving the needs of future generation assumes significant role in guarding the interests of those marginalized sections of the society, indicating here at indigenous people, which lacks the ability and the platform to do the same. Sustainable development goals ensure balancing between the present competing interests of various communities of the world whereby the principal need to protect the environment, thirst for technological and economical development and the essential need to protect the indigenous communities playing key role in the environmental conservation are orchestrated into harmonious and holistic development.⁸

The indigenous communities inhabiting the biodiversity rich areas certainly play crucial role in environmental conservation, preservation of biodiversity and plant genetic resources because of their close association with the nature. These indigenous people can safely be termed as the 'real managers' of the forest resources and ecosystem as the employment of simple tools and techniques which though done for their personal reasons results into excellent management of natural resources conserving the biodiversity and environment. DeWalt talks about characteristics of indigenous

7 Report of the World Commission on Environment and Development: Our Common Future, available at: <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf> (last visited on Sep. 20, 2021).

8 *Supra* note 4.

knowledge system which makes it appropriate assistant in sustainable development planning. Some of them, as acceded by various critics, are as follows:⁹

- i. *conformity to high labor and low capital demands*- the tools and techniques employed are extremely simple and are implemented by the members themselves without assistance from any external source;
- ii. *dynamics, having evolved over centuries*- indigenous knowledge system has evolved over a period of time coupled with need based improvisations from time to time;
- iii. *locally appropriate nature*- such system is developed aiming to meet the everyday needs of a particular community in a given set of natural and geographical conditions;
- iv. *cognizance of diversified production systems*- since indigenous people inhabit in biodiversity rich areas, the resources available at their disposal are in abundance. There is no burdening over a single source;
- v. *emphasis on survival first and avoidance of risk*- the exploitation of resources is basically for the survival not for any commercial gains, thus, limited in nature;
- vi. *rational decision-making*- As they develop knowledge, technique and practices to solve their day to day practical problems by finding answer within their environment;
- vii. *adaptation of various adaptive strategies for use at times of stress (e.g. drought and famine)*- shows it is flexible in nature;
- viii. *prevalence of strong inter-generational considerations*- the indigenous knowledge system is developed and conserved by the indigenous communities from generations to generations, the communal and cultural ties are so strong that there exists automatic concern and compassion for the future generations' needs.

United Nations Declaration on the Rights of Indigenous People adopted in 2007 has recognized the crucial role played by the indigenous communities in sustainable development in the following words:¹⁰

Recognizing that respect for indigenous knowledge, cultures and traditional practices contributes to sustainable and equitable development and proper management of the environment.

9 Billie R. DeWalt, "Using Indigenous Knowledge to Improve Agriculture and Natural Resource Management" 53 *Human Organization* 123-131 (1994).

10 See, Department of Economic and Social Affairs Indigenous Peoples, *available at*: https://www.un.org/development/desa/indigenouspeoples/wpcontent/uploads/sites/19/2018/11/UNDRIP_E_web.pdf (last visited on Sep.10, 2021).

The Intergovernmental Panel on Climate Change in its report titled as '*Climate Change 2007 – Impacts, Adaptation and Vulnerability- Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*' also recognizes the crucial role of indigenous knowledge system in sustainable development planning relating to ecology. The indigenous people owing to their close association with nature coupled with centuries old experiences help in gathering, predicting, interpreting and decision-making in relation to weather. For example, in Arctic Canada, traditional knowledge was used as part of an assessment which recognized the implications of climate change for the ecological integrity of a large fresh water delta.¹¹ Such knowledge if used judiciously in association with the modern scientific knowledge proves to be cost-effective, participatory and sustainable.

The indigenous knowledge system which has been developed over centuries is a self-sufficient system for supporting the livelihood of a community that it makes magnificent contributions not only towards ecological maintenance, and conservation of biodiversity but also offers tremendous growth opportunities in health and agricultural sectors. The distinctive indigenous agricultural practices, unique mechanisms of crop production and usage of particular technique in integration with experience in understanding of soil, moisture, fertility, art of seed selection and weather forecasting provide for sound growth in agricultural sector in that particular geographical area. In Zimbabwe, for example, farmers are able to predict the onset of rain using such signs as changes in leaf color of some tree species, shifts in wind direction, cloud formation, temperature and relative humidity fluctuations, and bird and beetle songs and their seasonal migration.¹² The deep knowledge and understanding as to medicinal properties of plants, usage of particular parts thereof, alone or in combination with other natural materials is highly useful in pharmaceutical sector. It is important to note that the traditional medicine system is not only about the plants and parts thereof, it is all together a traditional system of healing and improvising the health of individual embodying traditional and sacred techniques and therapies. Argueta, an ethnobiologist with the Mexican National Indigenist Institute, a participant in World Bank Conference on 'Traditional knowledge and Sustainable Development', 1993 highlights the importance of traditional medicine system in following words:¹³

For an estimated 4 billion people in the world, traditional health care is very important. The materials and the procedures, the beliefs and ideology, the sacred places and the holy plants—the whole thing—provides health for many people in the world. . . . More and more people from western societies are using non-western medicinal plants and traditional health systems.

11 Climate Change Report, 2007.

12 Shelton H. Davis and Katrinka Ebbe (eds.), "Traditional Knowledge and Sustainable Development" United Nations International Year of the World's Indigenous Peoples' Conference-*World Bank Conference Proceedings* (The World Bank, United States, 1993).

13 *Ibid.*

The indigenous knowledge is inextricable part of the community marked by strong sense of belongingness and communal ties that it encourages development of sensitive and caring attitudes towards its members, present and future, consequently promoting a vision for sustainable existence and further future growth. It is important to note that these indigenous communities live in harmony with nature and utilize these natural resources to meet their daily needs without impairing nature's capacity to regenerate them. There exists judicious and sustainable utilization of available resources and no over exploitation of the same. In many cases, indigenous knowledge includes sacred knowledge where nature and natural resources are revered and form intimate part of communities' traditional and cultural life. Conservation and sustainable utilization of the same, in such cases is not a choice rather an obligation owing to spiritual connotations being attached with it.

IV Biopiracy

In simple terms, biopiracy is the unauthorised commercial exploitation of the biological resources and related information by obtaining IPR rights over associated inventions coupled with no sharing of benefits arising from such commercial exploitation with the communities responsible for its conservation. Merriam Webster dictionary defines biopiracy as "the unethical or unlawful appropriation or commercial exploitation of biological materials (such as medicinal plant extracts) that are native to a particular country or territory without providing fair financial compensation to the people or government of that country or territory." With the advent of biotechnology, the economic value of IK/TK has increased manifold as it narrows down the search cost. Availability of IK/TK and related plant genetic resources comes handy, saving time and finances, when it is about searching the relevant plant resources and associated knowledge from millions of varieties available on earth. The intimate relationship of biopiracy with indigenous knowledge and the IPRs is excellently explained by Vandana Shiva as:¹⁴

Biopiracy refers to the use of intellectual property right systems to legitimize the exclusive ownership and control over biological resources and biological products and processes that have been used in centuries in non-industrialized cultures. Patent claims over biodiversity and indigenous knowledge that are based on the innovation, creativity and genius of the people of the Third World are act of 'biopiracy'.

In recent years, world has witnessed number of biopiracy cases where there have been misappropriation of IK/TK and related biological resources using IPRs and the concerned communities (inhabiting under-developed biodiversity-rich countries) had to fight a tough battle to claim back their right to the concerned knowledge

14 Vandana Shiva, *Protect or Plunder: Understanding Intellectual Property Rights* (Zed Books Ltd., London, 2001) and Vandana Shiva, *Biopiracy: The Plunder of Nature and Knowledge* (North Atlantic Books, California, 2016).

unauthorizedly used. At times, it is also seen that the patentable invention is nothing but the bare indigenous knowledge clothed into invention with no element of novelty attached to it. Lack of well-structured legal system (both at international and national level) according effective and efficient protection to the IK/TK as core subject matter is responsible for harbouring biopiracy.

V Response of indigenous communities in COVID-19 and lessons therefrom

It is a fact that though indigenous peoples are the guardians and chief custodians of earth's biological, cultural and linguistic diversity, they remain to be the most vulnerable in many parts of the globe. COVID-19 crisis has affected their communities and life in doleful ways, especially their health and education. Indigenous people around the world are under-equipped in terms of healthcare and medical facilities; and they already suffer from limited access to healthcare and want of essential services. The COVID-19 adversity has worsened their situation. Their several political, social, cultural, economic, linguistic and community rights stand suspended during the lockdown and COVID period.

Despite these disadvantages, they have developed their own established responses and coping mechanisms to address various health crisis and to ensure that their communities survive. During the COVID pandemic, they have followed successfully their traditional practices and customs to deal with the situation: enclosure of their territories, voluntary isolation, home-based care *etc.*

They follow through generations established responses and coping mechanisms grounded in traditional knowledge, customs, and practices to different circumstances affecting their communities. An example of indigenous community adopting its own unique lifestyle suiting to the situation is '*tengam/ ubaya*' - closing off the community to all'. Declaration of '*tengam/ ubaya*' requires every community member to remain at home and they shut off the community from interlopers and outsiders too. No one can exit and enter the community when '*ubaya*' is in force. Indigenous community in Cordillera, Philippines practices 'closing off' during disasters and epidemics. This is aimed at even protecting the outsiders who want to visit the indigenous community if the community has communicable disease. Hoisting a knotted leaf or branch at the community entrance would signal '*ubaya*', which would strictly be complied by the members. Indigenous communities in Thailand and Indonesia have similar mechanisms of closing off.

Their fundamental principle of existence- *ayyew* (not to waste anything, even particle of food)¹⁵ is strictly enforced during the pandemic. As a logical response and defence to pandemic, indigenous people in Malaysia and Amazon have decided to go back to the forest which is home for several medicines and source of food.

15 This indigenous principle also embraces the concept of recycling and reusing all forms of waste, see, "Indigenous Livelihood in Philippines", *available at*: <https://stories.minorityrights.org/lifeatthemargins/chapter/supporting-indigenous-livelihoods-in-baguio-city/> (last visited on Sep., 2021).

Indigenous communities also follow *binnadang* or *badang* during COVID and extend *pro bono* help to others. It can be described as “a traditional practice of helping especially those in need; by volunteering oneself in a community work or contributing any resources one has in times of others’ need.”¹⁶ Leeftink describes *binnadang* as ‘non-reciprocal help’ an attitude to help others from the heart, which is purely ‘voluntary, direct and automatic.’¹⁷ Exchange of labour, sharing of eatables by those who have extra with those who have less are regular during disasters. Dried food preserved for monsoon is being shared amongst the community members. People wish each other ‘*kasiyana*’¹⁸ – a social assurance to help those in distress and giving them hope that everything will be well.¹⁹ It affirms that in the same way, after every dark night there is a brighter day, the balance of life would be regained soon. The elders of the community admonish ‘*inayan*’ – an instruction not to do anything that harms or adversely affects others in the community; and every single member in the community abides the *inayan*.²⁰

The pandemic reveals more about their resiliencies, potentialities, cultural practices, traditional methods and ways to handle the current crisis. It teaches the rest of the world ‘what role does indigenous culture play during a health crisis?’ For example, African indigenous people demonstrate their cooperation and solidarity in particular way by ‘helping each other, reaching out to remote communities and promoting solidarity across borders.’”

VI COVID and IPR issues

The simple but deterrent and enforceable rules of indigenous communities assume importance in the wake of ‘adverse effect’ of IP during COVID world-wide. However, it is pertinent to access the IP issues related to COVID vaccine and treatment.

There is a proven interplay between IPRs and public health domain. For instance, African HIV epidemic have proved how patent ownership can extremely influence universal access to healthcare. The international IP law regime has incorporated certain inbuilt check and balancing mechanism to deal with deleterious impact of IPRs especially

16 Khavee Agustus Botangen, Shahper Vodanovich and Jian Yu, “Preservation of Indigenous Culture among Indigenous Migrants through Social Media: The Igorot Peoples” in *Proceedings of the 50th Hawaii International Conference on System Sciences* (2017).

17 Leeftink F., *Coping after Typhoon Pepeng: A Case Study of Indigenous Practices and External Aid in the Cordillera, Philippines* 41 (Wageningen University, Netherlands, 2014).

18 Minnie Degavan, “Kasiyanna, An Indigenous Community Coping Mechanism for Disasters like Pandemics”, available at: <https://www.iucn.org/news/commission-environmental-economic-and-social-policy/202004/kasiyanna-indigenous-community-coping-mechanism-disasters-pandemics> (last visited on Sep. 11, 2021).

19 CPA Philippines “Elders for Genuine Regional Autonomy and the Common Good”, available at: <https://cpaphils.wordpress.com/2016/09/08/elders-for-genuine-regional-autonomy-and-the-common-good/> (last visited on July 5, 2021).

20 *Ibid.*

pharmaceutical patents. Compulsory licensing,²¹ acquisition of inventions by governments,²² revocation of patents²³ *etc.*, may be cited as some instances of these inbuilt balancing arrangements. Even though article 8 of TRIPS Agreement recognises the need to promote public health for protection of public interest, the patent system gives rise to several public health concerns ranging from forsaking of ‘neglected diseases’ without venturing into research and development and drug discovery, to preventing access to medicines. IP exclusive rights facilitate IPR holder to charge higher than competitive prices²⁴ resulting in increased price for essential medicines. Additionally, giant pharma companies adopt several practices such as patent evergreening, patent thickets, reverse payments or pay-for-delay settlements²⁵ and product hopping *etc.* to counter the aforementioned check and balancing mechanism. These practices indubitably amount to abuse and misuse of patents.

History has witnessed several pandemics that had profound and everlasting impact on human kind for centuries. Though COVID 19 is not the first pandemic in the human history, it is certainly the first pandemic in the post TRIPS regime. This disease is different from other diseases during the post TRIPs period such as SARS, Swine flu, Ebola, Zika, Disease X,²⁶ Measles, Yellowfins fever, Dengue, Nipha *etc.*, mainly because of its global outbreak. These diseases had effective medicinal remedy as well. However, as WHO endorsed, there is no licensed medicine for completely curing COVID 19 till the time of writing this paper.²⁷ When the COVID posed unprecedented threat even to rich countries who have full-fledged health system, the threat it caused to the poor countries and indigenous population are needless to highlight. India’s and South Africa’s proposal to the WTO for suspension of patents linked to COVID-19 treatment till ‘global immunity is achieved’ reflects these concerns.

The TRIPS Agreement, which is the most comprehensive and enforceable global treaty on IPR, has significant impact on “medical products ranging from protective equipment to contact tracing software, medicines and diagnostics, as well as vaccines and treatments.” The poor countries which have no local drug manufacturing capacities have to wait for the rich nations’ mercy for accessing the vaccine. As per the statistics, developing

21 Indian Patent Act, 1970, ss. 84 and 92A of.

22 *Id.*, ss. 99, 100 and 102.

23 *Id.*, ss 64 and 85.

24 Drug Pricing and Pharmaceutical Patenting Practices, CRS Report, 2020.

25 The settlement with generic or biosimilar product manufacturers to stay out of the market.

26 Damir Huremovic, *Psychiatry of Pandemics: A Mental Health Response to Infection Outbreak* 7-35 (Springer, 2019).

27 WHO, COVID-19, *available at*, https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public?gclid=Cj0KCQiA0fr_BRDaARIsAABw4Ety-eFYyJrAoxjDiZ8jbFhPQVIn-Ze_2cIOgbktNC7SGbJxm-3zZjYaApALEALw_wcB (last visited on July, 12 2021).

countries represent 21 percent of the pandemic's death toll²⁸ though there are reports regarding undercounting and covering up of corona deaths,²⁹ removing of corona death data from public domain³⁰ and unrecording of deaths especially in third world countries.³¹ As *Schellekens* assesses, if such deaths are recorded, developing countries' share in global fatalities could raise from 21 to 69 percent.³² The mortality rate of COVID is associated with the demographic character and the prevalence of auto-immunity. In lower and middle income countries, though the reported death rate is not alarming, the issues of accessibility, availability and affordability of vaccines are of great concern. For example, even after one month of administration of COVID vaccines in UK, developing countries like India did not start its distribution due to multiple factors. It shows impediments in equitable access of vaccines.

Some vaccines which have shown comparatively better results require ultra-cold storage facilities,³³ which is available only in economically sound countries. Another issue is related to patented technology which in itself is a complex web. San Diego-based Allele Biotech had already filed patent infringement suit against Pfizer and BioNTech for using the mNeon Green fluorescent protein in developing the vaccine.³⁴ It shows that multiple IP claims over the ownership of the patented technology can lead to complicated legal battles in the process of development of COVID vaccines and medicines for the world. Pharma companies like Moderna has announced that it will not 'enforce' its COVID-19 vaccine patents 'as long as' the pandemic lasts.³⁵ Similarly, AstraZeneca, the exclusive licensee of Oxford vaccine (Oxford vaccine is developed with United Kingdom

28 *Schellekens, Philip; Sourronille, Diego. 2020. COVID-19 Mortality in Rich and Poor Countries: A Tale of Two Pandemics? Policy Research Working Paper; No. 9260. World Bank, Washington.*

29 Vignesh Radhakrishnan, Sumant Sen and Naresh Singaravelu, Is India undercounting its COVID-19 deaths? *The Hindu* (May 20, 2020) and Joe Wallen, Ben Farmer, Ashfaq Yusufzai *et al.*, Asia's hidden deaths: coronavirus fatalities are being covered up and undercounted, *Telegraph* (May, 22 2020).

30 Brazil removes COVID-19 data from public view, hiding soaring death toll (June 7, 2020).

31 According to WHO, two-thirds of annual global deaths and its reasons are not registered with local authorities. It is impossible to get the actual number of deaths in many countries due to variety of reasons. The unaccounted number of deaths go unrecorded in vital statistics. See, Pranav Basker, "Why the Pandemic Could Change the Way We Record Deaths", *available at*, <https://www.npr.org/sections/why-the-pandemic-could-change-the-way-we-record-deaths> (last visited on July, 12 2021).

32 *Ibid.*

33 *E.g.* vaccines from Pfizer and BioNtech, Moderna *etc.*

34 Pfizer-BioNtech, Regeneron sued for patent infringement with COVID-19 products, *available at*, <https://www.fiercepharma.com/pharma/pfizer-biontech-regeneron-sued-for-infringement-allele-patent-their-covid-19-products> (last visited on July 10, 2021).

35 Adysha Samal, COVID-19 Vaccines: Patent Ownership and the Barriers to Equitable Access, *available at*: <https://spicyip.com/2020/12/covid-19-vaccines-patent-ownership-and-the-barriers-to-equitable-access.html> (last visited on July 8, 2021)

government funds) also have announced to ‘sell the vaccine at cost price till the pandemic lasts’. However, it is surprising to note that, AstraZeneca retains with itself ‘the power to declare the pandemic over as early as July 2021’ as reported by Financial Times.³⁶ Hence, the very definition of pandemic in such agreements are in question in the light of public health concerns of developing countries and indigenous population, because there is no possibility to ensure that their entire population would undergo vaccination by that time.

It is important to note that all vaccine companies have applied for their patents claiming their exclusive rights over the new COVID preventive technology/vaccine. The same saga will continue with COVID treatment technology once the clinical trials are complete. Unless and until the availability of vaccines in sufficient quantities are ensured, the equitable distribution of vaccines will be a nightmare. The numerous bilateral pre-purchase agreements indicate stockpiling of vaccines by higher-income countries which will further create impediment for lower income countries and their indigenous populations. For example, 82 % of Pfizer’s COVID vaccine which is to be developed till the end of 2021 has been pre booked by the UK and 51% of world COVID vaccine has been pre booked by higher income countries.³⁷

The preferable solutions in such situations are no-profit or non-patent enforcement agreements, government funded vaccine development³⁸ (taxpayer-funded technology or ‘public-private partnership vaccines) vesting rights with governments, open licensing, sharing of technology, WTO facilitated patent access pools, etc. in order to ensure equitable and global access of Covid vaccines so that the indigenous population is not singled out.

VII Legislative and policy initiatives

The indigenous knowledge is ruthlessly being misappropriated everywhere. Of late, bloom in pharmaceutical sector with advancement in biotechnology has increased the popularity of indigenous knowledge many folds. Researches in this field involve fine selection as to medicinal properties of a plant and availability of indigenous knowledge in that context not only narrows down the search, which otherwise is strenuous task to find from millions of varieties available on earth but also makes the very research cost and time effective. For this aforementioned reason, today, biopiracy is rampant. Exploitation of this indigenous knowledge by the well-established organizations without due credits to the indigenous communities for developing, conserving and sharing such knowledge is regarded as ‘theft’ of such knowledge and a kind of ‘cheating’ upon

36 “AstraZeneca Vaccine Document Shows Limit of No-profit Pledge,” *available at*: <https://www.ft.com/content/c474f9e1-8807-4e57-9c79-6f4af145b68ial> (last visited on July 8, 2021).

37 *Supra* note 33.

38 To illustrate, US government has entered contracts with pharmaceutical companies for COVID-19 related technologies.

the members of such communities which shared their wealth (which is in the form of knowledge) for betterment of humanity. Such unauthorized access, exploitation of knowledge without credits and commercial gains using such knowledge with no sharing of benefits call for legislative and policy initiatives to regulate the same in order to accomplish the larger goal of sustainable development.

At the international level, protection of indigenous knowledge, communities possessing such indigenous knowledge and their rights are reflected in many instruments concerning environmental conservation and/or protection of indigenous people's rights. Some of them are:

- i. Rio Declaration on Environment and Development, 1992 (hereinafter Rio Declaration);
- ii. The Convention on Biological Diversity, 1992 (CBD);
- iii. The Mataatua Declaration on Cultural and Intellectual Property Rights of Indigenous Peoples, 1993;
- iv. An Inter-governmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore was established by the WIPO in 2000 (with a view to increase the participation of indigenous people at the international level);
- v. Bonn Guidelines on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising out of their Utilization, 2002 (Bonn Guidelines);
- vi. UN Declaration on the Rights of Indigenous Peoples, 2007, and;
- vii. The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS) to the Convention on Biological Diversity, 2010 (Nagoya Protocol).

The Rio Declaration, 1992 acknowledges the significant role played by the indigenous people in environmental conservation as "Indigenous people and their communities, and other local communities, have a vital role in environmental management and development because of their knowledge and traditional practices. States should recognize and duly support their identity, culture and interests and enable their effective participation in the achievement of sustainable development",³⁹ mandating the state parties to design legislative framework in such style and fashion as to incorporate and render adequate protection to indigenous people and IK possessed by them with a view to achieve sustainable development. United Nations Conference on Environment and Development, Rio de Janeiro, Brazil, 1992, AGENDA 21, a key instrument seeking global consensus and political commitment at the highest level on development and environment co-operation. Its chapter 26 in particular recognizes the key role played by

39 Rio Declaration, 1992: Principle 22.

indigenous people in sustainable development thus: “Indigenous people and their communities have an historical relationship with their lands and are generally descendants of the original inhabitants of such lands... They have developed over many generations a holistic traditional scientific knowledge of their lands, natural resources and environment... In view of the interrelationship between the natural environment and its sustainable development and the cultural, social, economic and physical well-being of indigenous people, national and international efforts to implement environmentally sound and sustainable development should recognize, accommodate, promote and strengthen the role of indigenous people and their communities.” With a view to ensure effective protection to IK possessed by indigenous communities, recommendation is made to adopt and strengthen related policies and laws that will render protection to indigenous intellectual and cultural property and their right to preserve customary and administrative systems and practices.

The Convention on Biological Diversity, 1992 in its Preamble recognizes “the close and traditional dependence of many indigenous and local communities embodying traditional lifestyles on biological resources, and the desirability of sharing equitably benefits arising from the use of traditional knowledge, innovations and practices relevant to the conservation of biological diversity and the sustainable use of its components.” The need to share the benefits arising out of commercial exploitation of knowledge, on the basis of equity considerations, with the concerned indigenous community which is the owner of such knowledge in actual sense has been thus highlighted from the broader perspective of sustainable development.

Bonn Guidelines and Nagoya Protocol, in the context of utilization of IK resulting into commercial gains and the sharing of these benefits with the community members which has developed, observed and conserved this IK, deserve special mention. It is with the adoption of Bonn Guidelines that the provisions of CBD have been operationalized. The Bonn Guidelines are voluntary guidelines available for state parties to CBD rendering assistance in developing legislative and policy framework for overall access and benefit-sharing strategies. These guidelines help in curbing biopiracy to a great extent by regularizing and channelizing the access to plant genetic resources and the associated TK/IK and mandating the sharing of benefits arising out of utilization of such knowledge. Nagoya Protocol is a supplementary agreement to CBD adopted in 2010 and came into force in 2014. It provides for a transparent legal framework advancing the third objective of CBD *i.e.*, “the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.”⁴⁰ The protocol mandates the state parties to establish sound legal and administrative system ensuring the benefits arising out of utilization of plant genetic resources and associated TK/IK reaches the concerned indigenous people/communities which are the real owner of the same. By ensuring benefit sharing it promotes sustainable utilization of plant genetic resources which in turn facilitates biodiversity conservation and environmental protection.

40 Convention on Biological Diversity CBD, 1992: art. 1.

VIII Areas of conflict-IPR perspective

In the field of biotechnology, the utilization of plant genetic resources, analysis of its chemical compositions and in-depth study into the peculiarities of the subject matter becomes imperative and in such cases availability of related traditional knowledge comes handy and makes the research more efficient and less expensive. The fusion of modern biotechnology with the growing interest of multinational corporations and pharmaceutical organizations into biopatents has given rise to the serious problems of biopiracy and bioprospecting. The term 'biopiracy', in general, connotes the practice of commercially exploiting naturally occurring biological resources, in IPR contexts, it refers to obtaining IPR protection especially in the form of patents for inventions based on IK/TK in a way to restrict its future free use by the custodians/society, and failing to pay fair compensation to the community which is responsible for its conservation. Researchers from developed nations, which owing to geographical positioning lack rich biodiversity, visit these areas which possess rich flora and fauna and after obtaining relevant plant resources and associated traditional/indigenous knowledge, amalgamate it with technology converting the same into patentable invention. Once, IPR protection is achieved over the said TK/IK based product, not only huge economic profits are derived out of its commercial exploitation but owing to monopolistic nature of patents, the very indigenous communities are barred from utilizing the said knowledge of which they are the real owners. Such unauthorized access and exploitation of indigenous knowledge without due credits has devastating effects upon the indigenous people, their identity and survival.

The legal protection to TK/IK requires a balanced approach, strict or rigid protection might put the relevant information out of the purview of the researchers, conversely the construction of a legal structure which accords moderate or liberal protection might result in exploitation of such knowledge jeopardizing the sustainable future of indigenous communities and the environment, if seen from boarder perspective. Currently, the indigenous knowledge is accorded legal protection under various IPR laws in most of the jurisdictions though there is no direct and positive legal mechanism existing in most of the biodiversity rich countries for the protection of IK/TK. However, such defensive protection is highly insufficient considering the increasing biopiracy cases and the unique characteristics of the subject matter, *i.e.*, indigenous knowledge. From legal framework perspective, the structure of indigenous knowledge is extremely peculiaras compared to any other subject matter of particular IPR law. Some are enumerated below:

- i. Creator/ originator is unknown in majority of the cases;
- ii. Its collectively owned by the community, no single person having proprietary right over it;
- iii. It is passed down from generations;

- iv. Usually oral transmission takes place, rarely any codified version of the same is found; *etc.*

The defensive protection in the form of IPR has several loopholes. The insufficiency of IPR laws in rendering adequate and effective protection to indigenous knowledge as an independent subject matter is explicit in the following prevailing IPR laws in India:

(i) *The Patents Act, 1970* accords protection to any ‘invention’ which fulfills the pre-requisites of being a protectable subject-matter under the Act which are:

- i. Novelty, *i.e.*, which has not been anticipated;⁴¹
- ii. Involving inventive step;⁴²
- iii. Capable of industrial application;⁴³ and
- iv. Patentable subject matter.⁴⁴

According to section 3(p), “*an invention which in effect, is traditional knowledge or which is an aggregation or duplication of known properties of traditionally known component or components*” is made a non-patentable subject matter. Further, in the Act, if the invention is anticipated with respect to the knowledge available in any local/ indigenous community is a ground of pre and post grant opposition of patent application as per section 25(1) (k) and 25(2) (k) respectively. The same is also a ground for revocation of patent under section 64(1) (q) of the Act. Any application for obtaining patents, if invention relates to biological material, must disclose the source and geographical origin of the same. The aim of this provision is to keep an effective check on biopiracy. Failure to make such disclosure is fatal.

(ii) *The Copyright Act, 1957* primarily renders protection to the literary, dramatic, artistic and musical works etc. Indigenous knowledge in the nature of ‘folklore’ becomes eligible to be protected under this regime of IPR, however, the same has pitfalls owing to the peculiar nature of indigenous knowledge as a suitable subject-matter. Copyright is accorded to author for the creativity, here in case of IK the same is unknown. Since IK is collectively owned by the entire community, nothing called ‘collective copyright’ exists. Further, copyright protection has temporal limitation attached to it, *ie.*, after certain period of time the work comes into public domain but in case of IK determination of the same is immensely tough task as its origination is unknown; the same is held by the community from centuries.

(iii) *The Geographical Indications of Goods (Registration and Protection) Act, 1999*, the prime aim of which is to protect the valuable geographical indication of the region may

41 *Supra* note 19, ss. 2(1) (l).

42 *Id.*, ss. 2(1) (ja).

43 *Id.*, ss. 2(1) (ac).

44 *Id.*, ss. 3.

possibly be utilized to provide protection to the holders of traditional knowledge in goods so produced using such knowledge and sold using geographical indication tags. But, meeting with the strict statutory criteria to establish 'specific characteristic of the goods' is a stumbling block for protection. Naturally occurring products are not covered under the statute too.

(iv) *The Protection of Plant Varieties and Farmers Rights Act, 2001*, renders bleak protection to indigenous knowledge in the form of farmers' traditional agricultural knowledge.

(v) *The Biological Diversity Act, 2002* along with rules framed thereunder address the issues of biological diversity and sustainable use of its components and ensuring the fair and equitable sharing of the benefits arising out of the utilization of such biological and genetic resources and the knowledge associated therewith on mutually agreed terms. Thus, gives power to the indigenous communities to bargain for the protection of their rights and secure sustainable future.

The IPR laws render no positive protection to the indigenous knowledge rather sets only defensive mechanism in case of misuse or exploitation. Seeking core conservation of indigenous knowledge through IPR laws is not possible owing to its own peculiarities, IK fails to fulfill the pre-requisites for obtaining protection under particular kind of prevailing IPR laws. The biopiracy cases, like the *neem* controversy, *turmeric* case, famous *basmati* controversy from India, *Amazonian* ayahuasca case, and *brazzein* berries case, etc. where the challenging parties had a tough time in proving their claim over the IK/TK as basis of the 'invention' in question calls for a collective initiative to design a *sui generis* system of law recognizing and protecting indigenous knowledge as an independent subject matter.

IX *Sui generis* system of law

The term *sui generis* is a Latin phrase meaning 'of its own kind'. From the discussions in the preceding sections, it is crystal clear that there is no dearth of legislative and policy initiatives concerning indigenous knowledge however, there exists no single, comprehensive, effective document according adequate protection to IK/TK as its core subject matter. As already seen from the above discussion that at the international level, the protection to indigenous communities and the indigenous knowledge is accorded through the instruments primarily concerning environmental conservation or cultural expressions of the indigenous/local/tribal communities. At the national level, we have seen that indigenous knowledge is given defensive protection, no positive legal protection with 'IK/TK' as its core subject matter. The available protection is through the existing IPRs, however, owing to the peculiar characteristics possessed by this body of knowledge on one hand and the peculiarities of different kinds of IPRs on the other, a *sui generis* system of legal system specially dedicated to its conservation and protection from misappropriation is very much needed.

A special and unique legal system, *i.e.*, *sui generis* in nature, exclusively drafted with the objective of protecting IK/TK keeping the same as its core subject matter would be highly appreciated if one is to justice to the sustainable development goals in the context at hand. It is important to note that any *sui generis* system, concerning the context, which is too harsh and strict in its operation may result in stagnation of research growth and too liberal may lead to undue exploitation of the knowledge and/or associated plant genetic resources. A legal system, which is of its own kind, must strive to provide following with a view to render holistic effective address to the issues of IK/TK:

- i. Clear, precise and comprehensive definition of IK/TK (could be context bound definition like traditional medicinal knowledge or traditional spiritual knowledge);
- ii. Scope and area of operation;
- iii. Administration of such knowledge *vis-à-vis* its exploitation;
- iv. Sharing of benefits arising out of commercial exploitation of the same;
- v. Identification of beneficiaries;
- vi. Documentation of such knowledge; *etc.*

X Conclusion and suggestions

From the foregoing discussion, the following conclusions can be arrived: sustainable development is a concept of broad notion wide enough to have its legal projections go far beyond its traditional focus on environmental-related issues. The need of sustainable development and its nexus with intellectual property rights is seen in the remarkable role played by the indigenous communities through the indigenous knowledge in sustainable utilization of plant resources which in turn assist in environmental conservation. While assessing sustainable development as a concept in the context of indigenous knowledge it assumes, broadly, two perspectives, firstly, utilization of this concept as ‘sword’ aiming for employment of such developmental strategies as to enable orchestration of various interests and activities striving holistic development keeping inter-generational considerations in mind. Secondly, as a shield guarding the interests and preserving the rights of present marginalized indigenous communities which are not in a position to bargain for their betterment and securing a sustainable future for them.

Considering the unique and peculiar nature of indigenous knowledge, the present legal system, especially IPR system is highly insufficient to accord efficient protection to indigenous knowledge as prime subject-matter. Hence, *sui generis* system of law is imperative defining its content, scope, area of operation, agencies playing key role in its administration, rights and duties, beneficiaries, sharing of benefits system, *etc.*

Since, transmission of indigenous knowledge from generations usually takes place orally, the concrete documentary evidence of its existence is seldom found. Taking advantage

of this loophole the profit oriented organisations utilize such indigenous knowledge to obtain biopatents without giving due credits to the concerned people responsible for its conservation. To curb biopiracy, documentation of the indigenous knowledge and making it available in the form of prior art restricts the patent offices to grant biopatents derived from such indigenous knowledge. For example, Traditional Knowledge Digital Library (TKDL) is an excellent effort made by Indian government to digitize traditional knowledge related to traditional medicines available in public domain from the existing literature related to Ayurveda, Unani and Siddha.

More in-depth studies into the subject-matter are needed to clarify the existing situations as to availability of indigenous knowledge, statistics as to its usage in obtaining commercial benefits to the disadvantage of indigenous communities, ground realities as to implementation of various schemes for the benefit of indigenous communities, distribution of benefits among them, identification of beneficiaries, *etc.*

Since, India has to face several biopiracy cases by foreign MNCs and India is rich with bio diversity related traditional knowledge, it is high time for our country to frame a *sui generis* system of laws rendering effective and positive legal protection for its rich IK/TK. Since, there must also be international consensus at global level to respect IK/TK predominantly owned by have-nots, India has to lead international negotiations owing to its political and economic status amongst the developing countries.

Considering the discussion made above as to availability of vaccines/medicines for third world countries specially ones inhabited by these communities, a well-structured plan coupled with flexibility in pharma-patents rules is very much need of the hour as world could not be expected to function based upon selective inoculation process. Though these communities have exhibited remarkable response during COVID time, however, same cannot be expected to run for long without members being considered during vaccination programs. Further, as it has been rightly said that 'if searched properly, nature has answer to all human problems,' so this COVID. Meaning to say, the treasure available to all mankind in the form of rich bio-diversity on earth may possess simple, viable, and effective remedy to COVID or alike threats to humanity if explored judiciously.