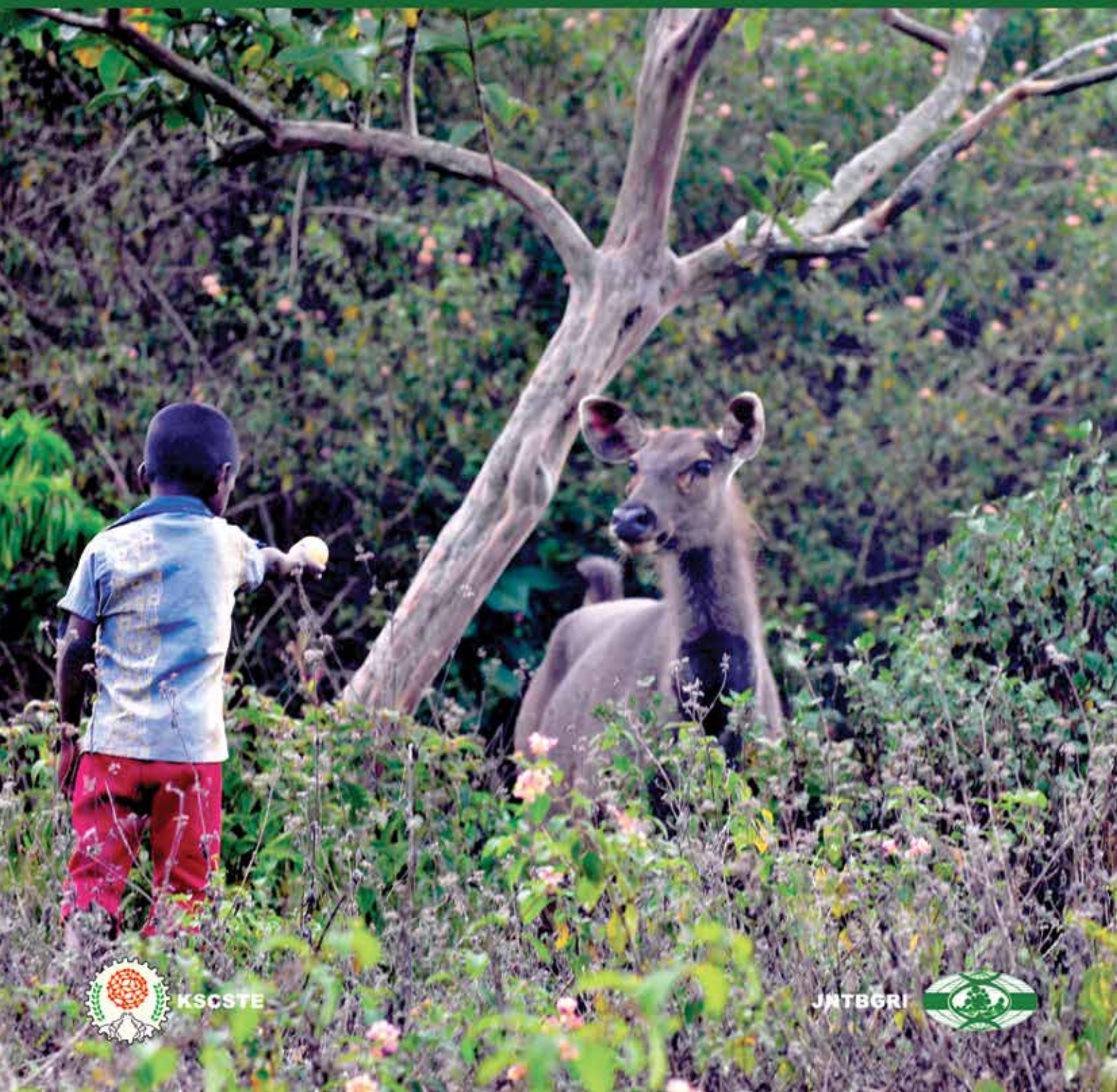
Volume 06 | Number 02 | December 2018

ISSN 2278 - 5906

JOURNAL OF TRADITIONAL AND FOLK PRACTICES



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JNTBGRI

Volume 06 Number 2 December 2018 ISSN 2278 - 5906

JOURNAL OF TRADITIONAL AND FOLK PRACTICES

JTFP online : http://www.jtfp.jntbgri.res.in

KSCSTE JNTBGRI

Volume 06 (2) December 2018, 3-12
ISSN 2278 - 5906
https://doi.org/10.25173/jtfp.2018.6.2.100
http:/www.jtfp.jntbgri.res.in

Journal of Traditional and Folk Practices

Community based traditional knowledge and protection by *Sui generis* and Intellectual Property Rights (IPR)

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Received: 25 July 2018 Accepted: 27 Dec 2018

Abstract

Ancient people of India held a cosmic view of the Universe and understood the intrinsic importance of various elements that constituted the Universe. They had learned to value and respect even the tiniest element in the Universe. The presence of the Universal Supreme being in the tiniest *paramanu* as well as in all other living and non-living things were recognized by them. They developed that the biodiversity played a sustaining role in the planet. They considered biodiversity as an inseparable part of life and culture of ancient Indians. In the ancient treatises like *Manusmruti*, one can find direct and indirect instructions regarding the conservation of plants and animals. Such instructions can be seen in our ancient folklores, epics, songs and dramas. The unique position of earth in the solar system made it possible for the evolution of life. Air, water, soil, sunlight and biodiversity are the life support systems of earth. A "*Sui generis*" system simply means "one that is of its own kind". In this case it refers to the creation of a new national law or the establishment of international norms that would afford protection to intellectual property dealing with genetic resources or biodiversity - and the biotechnology that might result. *Sui generis* elements shall ensure the rights of knowledge collectors. The *Sui generis* elements shall cover the entire spectrum of human endeavour and enterprises ranging from arts, music, literature to environment and technology.

Keywords: *Sui generis*, Intellectual Property Rights, Traditional Knowledge, Ayurveda, Benefit Sharing, Bonn Guidelines

Introduction

India, enviously rich in biodiversity, is as rich in cultural diversity with the associated Traditional Knowledge (TK). Only a fraction of the available traditional knowledge is utilized now and it offers great potential for the country. With the new international conventions and agreements, India has opportunities as well as challenges. Intellectual Property Rights (IPR) and Benefit Sharing are assuming new meanings. The famous cases of neem, turmeric, etc., getting patented abroad point to the pressing need for checks and balances globally, also the need to promote national self interest. WTO/TRIPS agreement (1995) do not recognize any informal knowledge/innovations of traditional community for granting Intellectual Property Rights. Moreover, WTO and TRIPS do not insulate TK from IPR piracy by interested groups. Intellectual Property Rights is recognized by national and international laws and patents can be sold like any other commodity. Starting with industrial applications, later on arts and literature were also covered under the regime of the General Agreements in Tariff and Trade (GATT). The attempt to include TK under the IPR regime is the latest development.

Government of India has enacted necessary statutes and established several national bodies as in the case

of Biodiversity Act (2002), Biodiversity Rules (2004), National Biodiversity Authority and Biodiversity Boards, Protection of Plant Varieties and Farmers Rights Act (2001) and Protection of Plant Varieties and Farmers Rights Rules (2003), etc. Since Traditional Knowledge is the core strength of India, unlike technology lead innovations in developed countries, a *Sui generis* regime for Traditional Knowledge is felt essential for the country, on a case to case basis and with due care taken on benefit sharing with indigenous communities. The complex and vast area of TK in India, with millions of uses for biodiversity requires a mammoth effort to streamline. The present effort is an attempt in this direction. The AIHBPD team lead by the PI of this project has played important roles in the national and global debates in promoting TK, IPR and Benefit Sharing with the backup of technology. TK and modern technology has to be interlinked for optimum returns. However, the legal and operational areas are to be strengthened. With this objective in view, a National Conference entitled "Dhishana – 2008 Streamlining India's TK towards formulating a *Sui generis* Regime" was organized from 23-25th May, 2008 at Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram. The recommendation of the conference in the form of Thiruvananthapuram Declaration was issued by a group of eminent scientists, traditional knowledge stakeholders, academicians and activists. The important among the 22 recommendations are included here:

1. That the Government of India establish a statutory Authority for Traditional Knowledge, with central, state and district level systems, to regulate it and efforts be made to stop its further erosion and support promotion through appropriate funding and other measures.
2. There has to be collective efforts to promote fair and equitable sharing of benefits arising from the use of biodiversity, traditional knowledge and its components and any attempt to pilfer it without consent and benefit sharing be punished by international laws formed with mutual consent.
3. That the Government of India accord a special status to Tribal Healing, after due processes of screening the healers, and accord legal status, and allow them legitimate access to forest and other resources.
4. We demand that equal importance be given to the native streams of healing and other vocations, as now given to predominant systems like modern medicine, and these be made part of the health care apparatus of each country, that is in India Ayurveda and native healing techniques be made primary systems with due honor to the practitioners.

(5 to 21 are not relevant here)

22. That the government and media accept the forest dwelling tribals as the core culture of India, as the first people and give them due honor as it is this culture that has helped conserve the primary survival systems, the forests.

Formulation of a *Sui generis* regime to protect Traditional Knowledge

1. Shortcomings in existing law

It is difficult to evolve an uniform legal measure to establish an universally acceptable system for governing fare and equitable sharing mechanisms as the issues are complex and overlapping. The problems are rather complicated vis a vis acknowledging and compensating the contributions of local and indigenous communities, developing mutually agreeable terms and conditions for providing economic incentives and sharing royalties or license fees with local and indigenous communities and addressing protection of IPRs of traditional farmers, local innovators, etc. Since these problems vary from country to country, it is necessary to evolve new patent laws and a *Sui gen*eris system to develop appropriate terms and conditions for regulating access to genetic resources and transfer of associate knowledge and equitable benefit sharing, protection of sovereignty, IPRs, etc.

2. Need for a *sui generis* protection system

A *Sui generis* legislation on traditional knowledge that recognizes its autonomous, economic, cultural and development character is necessary to ensure a more objective valuation of TK from a benefit sharing perspective. Thus national *Sui generis* legislation would facilitate the interest of the country as well as the knowledge holders.

3. Definition of terms

The evolution of a new definition of IPR is necessary in the context of the *Sui generis* system.

1. The new definition of IPR shall include traditional knowledge, systems and practices and the products which are derived from them.
2. Other terms which are to be defined are :
   a. Knowledge holders
   b. Knowledge collectors
   c. Knowledge custodians
   d. Knowledge utilizers

Sui generis elements for protection of the rights of knowledge holders shall include:

- Individuals who are the sole holders of TK
- Families who are in possession of TK
- Communities as a whole
- Communities in a specific geographic region
- Linguistic groups
- Sovereign states

Sui generis framework after due verification shall confer ownership rights to the knowledge holders and shall protect their interest whenever the knowledge base is utilized for innovative enterprises by the users.

I. These could include individuals, local self governments, regional and national government agencies, NGOs, Industries, academic and research institutions, International agencies and multinational companies. Each category shall be covered with appropriate statutory regulations.

II *Sui generis* elements shall cover the knowledge utilizers which may include individuals, research institutions, NGOs, Government institutions and industries. Besides, the knowledge utilizers may include those who utilize traditional knowledge as a means of livelihood and non commercial institutions which may simply document TK with the sole purpose of conservation. Each of these groups are to be dealt with separately.

III *Sui generis* regime shall cover the mechanism of benefit sharing between the holders of TK, collectors of TK, prospectors of TK, producers of utility goods based on TK and the State.

IV *Sui generis* regime shall cover the mechanism of granting IPR to the knowledge holders through a less expensive and simplified procedure.

V *Sui generis* elements specifying domestic or extant PVP may include:

The conferral of exclusive extant variety and farmers' variety protection similar to new plant variety protection. This approach presents a more complex system that will require a greater commitment by PVP staff, breeders, and communities, whilst still presenting a range of potential problems (e.g. legitimate authority to register extant varieties, discouragement of traditional seed exchange, and potential "anti-commons issues"). It is probably not recommended for countries wishing to avoid a complex and substantial administrative burden (involving considerable establishment of authorities and committees in local government and provincial government, which has been complemented in India by their Biological Diversity Act), including, in particular, least developed countries in the region with limited administrative capacities;

VI. *Sui generis* elements for new PVP could include

- Rules for registration similar to those of the UPOV Acts, but which develop existing flexibilities in the UPOV model (see the next two points);
- A requirement that applicants disclose the source, origin or legal provenance of genetic or parent materials, as well as the contributions of others to the evolution of the variety. This could include disclosure of any relevant TK involved;
- Different lengths of protection could be offered from those stated in the UPOV model.

VII. *Sui generis* elements for PIC and/or MTAs could include

- Clarification of the legal standards employed for the fulfillment of PIC requirements. This should include, within PIC mechanisms, clear designation of the national authority providing consent, consent procedures for local communities and farmers where appropriate, and sufficient advance warning for the grant of access;
- Detailed information requirements for PIC, such as identity of the legal entity/person seeking access, intended uses, IPRs, benefit sharing, etc. and basic requirements for mutually agreed terms;
- Mutual transfer agreements could be adopted within the law or regulations as a formal contract

for the streamlined transfer of agricultural genetic materials, particularly when extracted from *ex situ* sources.

VIII. *Sui generis* elements for addressing farmers' rights concerns could include

- Protection of the right of farmers to: save, use, sow, resow, exchange, share, or sell their farm-saved seed;
- Direct participation of farmers in policy-making and decision-making, including positions on PVP committees;
- Recognition and benefit sharing, where TK has contributed to a variety's development;
- Marketing and labelling requirements;
- Restrictions on potentially immoral or harmful technologies, or those contrary to public order, which may include GURTS and certain GMOs.

IX. *Sui generis* elements addressing food sovereignty and rural poverty could include

- Punishments for deceptive marketing regarding the yield, quality or characteristics of a protected variety;
- Policies of micro-credit for poor farmers and innovators, as well as appropriate debt-reduction strategies.

The Bonn Guidelines

One of the significant outcomes of CBD's work on ABS is the development of the "*Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization*" at the October 2001 meeting of the Ad – hoc Open – ended Working Group on Access and Benefit Sharing held in Bonn, which were adopted at the Sixth Meeting of the Conference of Parties held in April 2002 in the Hague (COP Decision VI/24). The Bonn Guidelines are voluntary in nature and are a useful first step of an evolutionary process in the implementation of relevant provisions of the CBD related to access to genetic resources and associated traditional knowledge and sharing of benefits arising from the commercial or other utilization of such resources, with the exclusion of human genetic materials. The Guidelines are intended to provide the Parties and Stakeholders with a transparent framework to facilitate access to genetic resources and ensure fair and equitable sharing of benefits through standard practices and procedures of PIC, MAT, MTA, and other relevant agreements. The Guidelines provide details of an overall strategy and the essential steps, elements and principles to be adopted in developing access and benefit sharing regimes by the Parties and Stakeholders. Several countries have already incorporated the key elements as suggested in CBD and the Bonn Guidelines in to their national/regional policies and legal framework. (UNEP/CBD/COP3/20/1996; GRAIN/BRL/Access & Benefit Sharing – *www.grain.org*, accessed on 12/10/2004).

WIPO and ABS & Article 8 (j)

The CBD Secretariat and ABS Work Group have been studying the possible mechanisms to address the ABS issues regarding prior informed consent, benefit-sharing agreements, technology transfers on the basis of mutually agreed terms and other relevant provisions with reference to WIPO, UNCTAD, and other organizations. The LMMC Group, who was the first to raise these issues for discussion in the context of CBD, however, objects any idea of a strong collaboration with WIPO due to the apprehension that the interests of these countries would not be addressed appropriately at WIPO, whose prime concern is to negotiate and implement the IPR policies concerning the monopolistic rights of individual or corporate innovators. The WIPO's Intergovernmental Committee (ICG) on Intellectual Property and Genetic Resources and Traditional Knowledge and Folklore is now examining the issues of ABS and traditional knowledge (WIPO, 2001).

Access and Benefit Sharing: Common Approaches

CBD and ITPGR, and the Bonn Guidelines provide a broad framework for ABS procedures. The main features of ABS mechanisms include: (i) Prior Informed Consent (ii) Mutually Agreed Terms (iii) Material Transfer Agreements, and (iv) Benefit Sharing agreements through monetary and non-monetary means. Apart form the frameworks as suggested in the above international policy documents and guidelines, several other national, international, and regional institutions, agencies and community organizations have developed different models of Access and Benefit Sharing agreements, MTAs,

MATs, etc. (Laird, 2002). A few examples of such model agreements on ABS contracts, bioprospecting partnerships include: *The Andean Pact Decision 391 and Contracts* (1996); *The Pew Conservation Fellows Biodiversity Research Protocols* (1996); *Royal Botanic Garden Policy on Access to Genetic Resources and Benefit Sharing* (RBG, Kew 1998); *Common Policy Guidelines for Participating Botanic Gardens on Access to Genetic Resources and Benefit Sharing*. *Community Biodiversity Registers and Honey Bee Network for chronicling and protection of Local People's Innovations (India); Draft Research Policy for Protected Areas in Cameroon* (www.wwf.cameroon.org); etc. Although these frameworks and models are useful in developing appropriate ABS agreements, they cannot serve as absolute or comprehensive mechanisms as the objectives, standards and procedures of ABS will vary considerably from Parties to Parties. As outlined in the Pew Conservation Fellows Biodiversity Research Protocols (1996), any biodiversity research contract in general and the ABS agreements in particular may cover the following five categories: (1) Non – extractive, non – commercial research (2) Extractive but primarily non – commercial research (3) Non – extractive research with possible commercial potentials (4) Extractive research intended for commercial development, and (5) Conservation research intended for protection of biodiversity (Laird, 2002).

Prior Informed Consent (PIC)

The provisions of Prior Informed Consent (PIC) as stipulated in Article 15.5 of CBD is the first essential step in the best practice for any Access and Benefit Sharing involving genetic resources and indigenous or traditional knowledge. PIC helps the Parties and other participating stakeholders involved in an ABS contract/ agreement to take informed decisions pertaining to all administrative, legal and ethical matters on access, benefit sharing, technology transfer, capacity building and other relevant matters with greater transparency and accountability. PIC also helps facilitate prior negotiations and structured discussions on the shared objectives, scope, duration, legal certainty and clarity on ABS process, benefit sharing and other agreements based on mutually agreed terms among all relevant stakeholders.

Mutually Agreed Terms (MATs)

Article 15.7 of CBD stipulates that the results of scientific research and development and any other benefit arising from the sustainable use of a genetic resource accessed by a Party shall be shared with the Contracting Party providing the resource in a fair and equitable manner based on "mutually agreed terms". The basic principles for developing MATs are almost the same as discussed above under PIC, but may focus more specifically on terms and conditions that both the Parties will agree up on for an effective and transparent, legally binding ABS process. The Bonn Guidelines suggest the following basic requirements for arriving "mutually agreed terms" between the provider and user countries for access and granting of genetic resource:

MATs in written formats may contain the following indicative parameters and terms:

(i) Type and quantity of genetic resources, and the geographical/ecological area of activity.

(ii) Any limitation on the possible use of the material accessed.

(iii) Recognition of the sovereign rights of the country of origin.

(iv) Capacity – building in various areas to be identified in the agreements.

(v) A clause on renegotiation for any change of use for which the consent was granted.

(vi) Whether or not to transfer genetic resources to third parties without ensuring the third parties enter into similar agreements except for taxonomic and systematic research that is not related to commercialization.

(vii) Protection to local knowledge, innovations and practices of indigenous and local communities and promotion of customary use of biological and genetic resources in accordance with traditional practice of local and indigenous communities.

(viii) Treatment of confidential information.

(ix) Provision for benefit sharing resulting from the commercial or other utilization of genetic resources and their derivatives and products.

Benefit Sharing Agreements related to Access to Genetic Resources

"Mutually Agreed Terms" in accordance with Article 15.7 of CBD should pay adequate attention to reaching an agreement on fair and equitable sharing of benefit arising from the commercial or other utilization of the resources accessed. The terms and conditions for benefit sharing may vary from case to case depending up on the type of the access deal that has been agreed up on by the Parties/stakeholders concerned.

Material Transfer Agreements: Key Elements (MTAs)

All access permits or license or any other means of granting access to genetic resources and associated knowledge should be appended with a standard "Material Transfer Agreement" by the provider country to the user as per prior informed consent and mutually agreed terms. MTAs may vary in their formats and contents depending up on the type of resources and knowledge being accessed and the terms mutually agreed up on by the participant countries.

Prior Informed Consent System and Benefit-Sharing Procedures: The NIF Model

The National Innovation Foundation (NIF), an autonomous society established under the Department of Science and Technology, Government of India in 2000, works for recognizing, respecting and rewarding innovations and outstanding traditional knowledge at the grass roots. NIF and the HONEY BEE Network under SRISTI (Society for Research and Initiatives for Sustainable Technologies and Institutions), an NGO based at Ahmedabad, have been scouting for documenting local innovations and linking their innovations for further valorization with Science and Technology experts, investors and entrepreneurs. NIF maintains a separate National Register for green Grassroots Technological Innovations and Traditional Knowledge. Until 2003, NIF has pooled a database of over 310,000 technological ideas, innovations and traditional knowledge practices (not all unique, not all distinct) from over 608 districts of the country. NIF has till date recognized 847 grassroots innovators and school students at the national level in its various National Biennial Grassroots Innovation Award Functions and annual Dr A P J Abdul Kalam Ignite Children Award functions. In collaboration with various research & development (R&D) and academic institutions, agricultural & veterinary universities and others institutions, NIF has helped in getting several hundred grassroots technologies validated and/or value added (NIF, 2018)

The PIC model of NIF has both advantages and disadvantages. The whole process of disclosure and dissemination of the local innovations, either partially or fully, needs to be examined, whether they affect adversely in eventual exclusion of potential innovations from possible valorization and IPR claims and also any possible misappropriation of such potentially useful innovations by others, and thereby depriving the local innovator of his/her intellectual property and customary rights.

The benefit sharing mechanism suggested by NIF's PIC models include four kinds of benefits viz. 1. **Monetary Individual (MI**) includes: monetary awards, license fees or royalty from commercial exploitation of technology or traditional knowledge, or any other monetary gain by entrepreneurial process. This will be firstly paid to the individuals, who may in turn share part of this with the community, innovation promotion fund and institutions helping the value chain 2. **Monetary Collective (MC)** covers: trust funds, micro-venture funds, common property infrastructure, etc to be shared with the communities 3. **Non Monetary Individual (NMI)** such as recognition, a citation in a public function, dissemination of one's creativity through media or in workshops or other public function, or using appellation on the product developed, business venture, etc 4. **Non Monetary Collective (NMC)** includes: recognition to communities at appropriate levels for their collective wisdom, knowledge and social or cultural organizations, etc.

The NIF benefit-sharing procedures also suggest separate formula and modules for each kind of innovation on a case-to-case basis. Benefit sharing formula involving valorization with public or private R&D and the community or individual innovators needs to be evolved based on stakeholder consultations and on the degree of contributions by each stakeholder through an effective cost-benefit analysis. The existing complexities in the structure of the traditional knowledge domain itself, and also the very nature

of the existing IPR system that accord protection only for the formal innovation based on the criteria of novelty, non-obviousness and utility, are some of the major impediments in evolving any uniform guidelines or model for access protection and benefit sharing involving traditional knowledge systems held in traditional communities or the grass root level innovators. However, NIF's efforts to networking with the grass root innovators so as to promote the local innovation and valorization of such knowledge, protection of the intellectual property rights, and equitable benefit sharing are gaining wider acceptance and credibility both nationally and internationally.

Community Register and Peoples' Biodiversity Register

The community gene bank and community agro biodiversity register programmes and Peoples Biodiversity Register (PBR) spearheaded by the MS Swaminathan Research Foundation (MSSRF), Chennai, the Foundation for Revitalization of Local Health Traditions (FRLHT), Bangalore, and the Centre for Ecological Sciences at Indian Institute of Science, Bangalore are examples of other useful mechanisms and methods to chronicle the biogenetic resources and associated knowledge systems of the traditional communities and local or rural people of the country. PBR is now accepted as a viable mechanism for documenting people's knowledge and biological resources under the Biodiversity Management Committees established under the Indian Biological Diversity Act 2002. Development of comprehensive PBRs at local level is a highly rewarding exercise which would not only help to inventory and document the local biological and genetic resources along with the various actual uses and potential values of such resources, but also to conserve and sustainably use the biocultural diversity for gainful income generation and IPR generation through value addition and benefit-sharing processes (MSSRF, 1998; Ghate *et al.* 2001; Kumar *et al.* 2003; Sahai 2003a). PBR also ensures active involvement of the local and traditional communities in all decision-making processes related to biological diversity and traditional knowledge, including issues of access and benefit sharing. BMCs are entrusted with the preparation of PBRs and to assist the SBBs and NBA in matters on ABS related to local biogenetic resources and traditional knowledge.

The success story on compilation of community biodiversity registers and community gene bank programmes involving tribal communities of the Jeypore tracts of Orissa with the guidance and support from MSSRF is a good case study that demonstrates how the potential benefits of such community biodiversity programmes help enhance the livelihood options and security of the local and traditional people. This model of community agro-biodiversity programme has won the UN-Equator initiative Prize for poverty eradication and community empowerment at World Summit for Sustainable Development (WSSD) at Johannesburg in August 2002 (see *www. undp.org./equator initiative/ /equator prize_2002 html).*

Another community-based participatory conservation programme that has won international acclaim through the Equator Award of 2002 is the medicinal plant conservation and cultivation work achieved by Medicinal Plants Conservation Centre, (MPCC), Pune with the support of FRLHT (see *www.undp. org./equator initiative/ /equator prize_2002 html).* The MPCC with an effective involvement of local communities has developed a decentralized system of nurseries, raising 50,000 plants of 50 different species and linking them with a network of herbal production centers. The propagation and cultivation of medicinal plants in nurseries have helped to reduce the pressures of collection from the wild and hence promoting the conservation of such valuable resources. The linkage with herbal production centers has helped provide economic incentives to the communities involved in the MPCC programme. Such community network programmes on bio-resources conservation and management contribute to significantly to the implementation of national policies and programmes on biodiversity, and intellectual property rights and access and benefit sharing involving genetic resources and traditional knowledge.

Indian Experiment in Benefit Sharing: "JNTBGRI Model" or "Kani Model" or "Pushpangadan Model"

India has the distinction of being the first country in the world in experimenting a benefit-sharing model that implemented the Article 8(j) of CBD, in letter and spirit. It was the Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI)

in Kerala (where Dr. P. Pushpangadan was Director) that demonstrated indigenous knowledge system merits support, recognition and fair and adequate compensation. The model, which later came to be known as "JNTBGRI Model" or "Kani Model" or "Pushpangadan Model", relates to the sharing of benefits with a tribal community in Kerala, the Kanis, from whom a vital lead for developing a scientifically validated herbal drug (Jeevani) was obtained by scientists of JNTBGRI. The JNTBGRI Model got wide acclaims, acceptance and popularity the world over, because it was the first of its kind that recognized the resource rights and IPR of a traditional community by way of sharing equitably the benefits derived out of the use of a knowledge that has been developed, preserved and maintained by that community for many generations (Anand 1998, Anuradha, 1998, Bagla 1999, Gupta, 2002). Further, it demonstrates the vast and as yet under - explored or untapped potentials of the Indian traditional knowledge systems, particularly the traditional health care practices of the local and indigenous people in India. It would, therefore, be interesting to give brief background information regarding the traditional medicine system of India and the genesis and operation of an ambitious programme -"All India Coordinated Research Project on Ethnobiology (AICRPE)" which led to the JNTBGRI Benefit Sharing Model.

The Tribal Settings in India and their Knowledge Base

There are about 104 million tribes belonging to over 550 communities. They are in possession of a treasure of rich traditional knowledge system associated with the conservation and use of wild flora, fauna and other natural resources. The inroads of modernization are presently posing imminent danger to this rich and varied knowledge system of these communities, and it is likely that it may be completely lost to the humanity for all time to come. Recognizing this danger, Prof. M.S. Swaminathan, the then Director General of Indian Council of Agricultural Research (ICAR) mooted the idea of starting a research programme to document the knowledge system of the tribal communities of India in 1976. Consequently, an All India Coordinated Research Project on Ethnobiolgy (AICRPE) was prepared under the guidance of Dr T.N. Khoshoo, the then Director of the National Botanical Research Institute (NBRI) at Lucknow. Government of India finally launched the AICRPE under the Man and Biosphere (MAB) Programme in 1982. The overall objective of AICRPE was to make an in-depth study and analysis of the multidimensional perspectives of the life, culture, tradition and knowledge system of the tribal communities of India. Initially the project was under the Department of Science and Technology, but later transferred to the Ministry of Environment and Forests, Govt. of India. The author, then a Senior Scientist at Regional Research Laboratory (RRL), Jammu (now known as IIIM) (a constituent laboratory of the Council of Scientific and Industrial Research – CSIR), was appointed as the Chief Coordinator of this massive programme in 1983. It was operated at 27 centres in the country and about 600 scientists drawn from botany, zoology, sociology, anthropology, ayurveda, chemistry and pharmacology worked in this project that lasted for 16 years (1982-1998). AICRPE project documented various aspects of the life, culture, tradition and knowledge systems including those associated with the use of over 10,000 wild plants used by tribes for meeting a variety of their requirements (AICRPE Final Technical Report 1982-1998; Pushpangadan 2002).

The Kani tribe and Arogyappacha (=Elixir of health)

The Kani tribe, a semi nomadic community, is the predominant tribe inhabiting the forests of the southern, most parts of the Western Ghats in Kerala (in the districts of Thiruvananthapuram, Kollam and Pathanamthitta), Kerala India. Traditional occupation of Kani tribe includes craftwork like basket making, mat making using *Ochlandra* stem, cane works, etc. They are also engaged in collection of non-timber forest produces (NTFPs) like honey, bee wax, medicinal plants, python fat, etc. The Kanis are well known for their rich knowledge on medicinal plants of the region.

In one of the field expeditions in the mountainous forests of the southern Western Ghats in Kerala, a few young Kani men accompanied the AICRPE team led by its Chief Coordinator. During the arduous trekking across the forests, the scientists noticed that the tribals frequently ate some fruits, which kept them energetic and agile. The Chief Coordinator and the accompanying scientist (Dr. S. Rajasekharan, an Ayurvedic specialist) were almost exhausted at one

time when they were offered these strange seeds. After consuming the same the Scientists also felt a `sudden gush of energy and strength'. When asked about the source of the fruits, the Kani young men were first reluctant to reveal their secret. The team convinced the Kani men that if they passed on the information to them they would not misuse it and that they would conduct scientific investigation and, if found promising, a drug would be developed for the welfare of the humanity. As the team leader Dr Pushpangadan also assured the Kanis that if any marketable drugs/ products were developed from this plant, the financial benefits accrued from the same would be equally shared with them and their community. The Kani men then showed the plant to the scientists from which the fruit was obtained. The scientists identified the plant as *Trichopus zeylanicus.* subsp. *travancoricus* Burkill ex Narayanan. The Kanis call it as `Arogyapacha', meaning 'evergreener of health' or 'elixir of health'.

Scientific investigation on Arogyappacha & development of the herbal drug 'Jeevani'

Dr. Pushpangadan collected samples of this plant and took it to his ethnopharmacology laboratory at RRL, Jammu where he was working at the time. He and his team at RRL carried out phytochemical and pharmacological evaluation of this plant. The study revealed that the plant contained various biodynamic compounds notably certain glycolipids and non-steroid compounds with profound adaptogenic and immuno-enhancing properties. RRL filed two patents on the same. In the meantime in 1990, Dr. Pushpangadan moved to Trivandrum to assume the position of Director, Tropical Botanical Garden and Research Institute (JNTBGRI). At JNTBGRI, he organized an ethnopharmacology division and recruited a multidisciplinary team of scientists drawn from Ayurveda, ethnobiology, biochemistry, phytochemistry, pharmacy and pharmacology. At JNTBGRI, an Ayurvedic drug was developed named'Jeevani'with Arogyappacha as one of the constituents. This drug after scientific validation and necessary clinical trials was transferred to Arya Vaidya Pharmacy (AVP) Coimbatore Ltd., against a license fee of Rs. 10 lakh/ (US$ 25,000) and royalty of 2% at ex-factory is sale rate. While transferring the technology, JNTBGRI with the approval of its competent authority agreed to share the license fee and royalty received from AVP with the Kani tribe.

Kani tribe is an unorganized forest dwelling semi-nomadic tribe. Our prime concern in the beginning was therefore to evolve a viable mechanism for receiving such funds and utilizing the same for the welfare of the community. Several ways of sharing the benefits were discussed at many levels and it was finally decided to set up a Trust fund of the tribe. The very idea of the Trust fund had originated from very useful and protracted discussion Dr Pushpangadan had with Prof. Anil K. Gupta, the founder and coordinator of SRISTI and Honey Bee Network. It took however, almost two years to transfer the benefits to the tribe. JNTBGRI scientists with the help of some motivated government officials, the tribes were encouraged to form a registered trust with Kani adults as its members. The trust was fully owned and managed by the Kani tribe. About of 60% of the Kani families of Kerala are now members of this Trust. In February 1999, the amount due to them (Rs. 6.5 lakhs) and which was till then kept by JNTBGRI in a separate account was transferred to the Trust. As per the rules of the Trust the license fee and royalty received on account of the sale of `Jeevani' drug will be in a fixed deposit and only the interest accrued from this amount will be utilized for the benefits/welfare of the members of the Kani tribe.

This model was thus developed and perfected over a period of about 12 years starting from 1987 to 1999 in full consultation with the Kani tribe. In fact, the whole process of this benefit sharing started much before the CBD was evolving. It took almost 3 years for the Kani tribe to receive this benefit. The delay was mainly due to the inherent inability and absence of any organized mechanism for Kani tribe to receive such benefit. The Secretary of Scheduled Caste and Tribal Department, Government of Kerala played a crucial role in the formation of the Kani Trust and also in effecting a smooth transfer of the amount due to the Kanis from JNTBGRI to the Kani Trust. The Kani Trust received the accrued royalty.

All along these years, starting from 1987, it was the mutual trust, respect, transparency and frequent interaction and communication between JNTBGRI and the Kani tribe that contributed to the success of this Benefit Sharing model.

In addition to the license fee and royalty that Kani Trust received, a large number of Kani families got

benefit from the cultivation of Arogyapacha and supply of the raw-material (i.e. the leaves of the plant) to the pharmaceutical company for the production of the drug. JNTBGRI had trained many tribal families for the cultivation of `Arogyapacha' in and around their dwellings in the forest.

The patent period of 'Jeevani' was over in 2008 with the AVP, Coimbatore. JNTBGRI then decided to transfer the technology of the drug 'Jeevani' to Oushadhi in association with Kani tribe. The discussion is in progress.

Acknowledgements

The author expresses his sincere thanks to the Hon'ble Founder President Dr. Ashok K. Chauhan and to Dr. Atul Chauhan Chancellor, Amity University and President, Ritnand Balved Education Foundation for their valuable support and for providing the facilities for carrying out this work. I also want to express my thanks to Mrs. Sunija C George for patiently typing this manuscript.

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