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Revisiting the Debate on Intellectual Property Rights and Traditional Knowledge of Biodiversity: Accommodating Local Realities and Perspectives

Ujjal Kumar Sarma

Indian Institute of Forest Management, uks_wildlife@yahoo.co.in

Indrani Barpujari

The Energy and Resources Institute, indrani.barpujari@teri.res.in

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Abstract

The international and national debates and developments on the applicability of an intellectual property rights regime for protecting traditional knowledge associated with biodiversity is over a decade old. Nevertheless, this continues to be an area fraught with difficulties for many reasons, such as inherent mismatch between the nature of intellectual property rights regimes and that of traditional knowledge, lack of an effective international framework, and alleged lack of will on the part of developed countries. The paper argues that the possible non-inclusion of traditional knowledge holders in the process and the lack of their practical capacity is another key reason for non-effectiveness of existing or envisaged legal instruments. It takes the position that a major lacuna of this discourse is that it is not strongly positioned in the local economic, political, and social contexts in which local and Indigenous communities find themselves today. Using a field-based case study of an Indigenous scheduled tribe, the Karbis in the northeastern state of Assam, the paper makes the case for discarding commonly held, often non-realistic 'assumptions' about local and Indigenous communities and accommodation of their realities and perspectives in enacting 'rights based' law and policy on these issues.

Keywords

traditional knowledge (TK), intellectual property rights (IPR), biodiversity, Indigenous communities, sui generis, Karbis

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Revisiting the Debate on Intellectual Property Rights and Traditional Knowledge of Biodiversity: Accommodating Local Realities and Perspectives

The international and national debate on extending legal protection, mainly Intellectual Property Rights (IPR) to traditional knowledge (TK) of biodiversity was triggered over a decade ago. Some famous instances of biopiracy, related to basmati, neem, and ayahuasca¹ brought to the world's attention, particularly the developing world, that it was imperative to secure IPR protection over TK, in order to pre-empt misappropriation. Developing countries played an active role in bringing this issue to the forefront in international forums, like the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Council, the Convention on Biological Diversity, the World Intellectual Property Organisation (WIPO), the Food and Agriculture Organisation, and others. Apart from urging for international action, many of them took the lead in amending existing laws and developing *sui generis* regimes, specifically designed to recognize and protect the IPR of local and Indigenous communities over their TK of biodiversity.

Despite these developments, extending IPR protection to TK of biodiversity continues to be fraught with difficulties even today. One main obstacle is the gap in the existing legal mechanisms (WIPO, 2008) that has been circumvented through specially designed *sui generis* regimes. Two other key reasons for the non-effectiveness of existing or envisaged legal instruments are the lack of concerted international action and the non-inclusion of TK holders in the process.

Objective and Methodology

This paper revisits the debate on extending IPR protection to TK of biodiversity and examines the participation of local and Indigenous communities in the process. While the objective of the research is primarily academic, it attempts to affect policy change with regard to the role of these communities in framing policy both at the national and international levels. It presents the argument that the realities of local and Indigenous communities, which could actually differ substantially from commonly held assumptions about them, must be taken into account. The paper relies on a field-based case study of an Indigenous scheduled tribe² – the Karbi of Assam (a state situated in the northeastern region of India) with rich TK of biodiversity, particularly traditional healing through the use of medicinal plants. It examines the traditional context of their knowledge, their perceptions about sharing knowledge, and IPR over it. It also investigates the agents of change operating in the community and the traditional context in which TK has flourished.

The methodology of the study includes a desk-based review and fieldwork in two Karbi villages of Assam, using the standard tools of interviewing and focus group discussions. Here, it may be mentioned that most Karbis speak both the Karbi dialect and the Assamese language with equal fluency. The different tribes and caste groups of the state of Assam mainly communicate in Assamese. The interviews and focus group discussions with respondents were conducted in Assamese because it is the mother tongue of both the authors.

¹ In these cases, patents were being taken out in the developed countries on genetic resources and associated traditional knowledge from developing countries, without the consent of their original holders and without much actual innovation or novelty being added to the existing knowledge or resource.

² A scheduled tribe is defined in Article 366 (25) of the Constitution of India as “such tribes or tribal communities or parts of or groups within such tribes or tribal communities as are deemed under Article 342 to be Scheduled Tribes for the purposes of this Constitution”. The criteria followed for specification of a community as a scheduled tribe are indications of primitive traits, distinctive culture, geographical isolation, shyness of contact with the community at large, and backwardness (Ministry of Tribal Affairs, n.d.). According to the International Work Group for Indigenous Affairs (n.d.), in India, these scheduled tribes are considered to be the Indigenous peoples, also referred to as *Adivasis*, literally meaning Indigenous people.

Extending IPR Protection to Traditional Knowledge of Biodiversity: Issues and Challenges

A number of arguments have been offered for the imperative of extending IPR protection to TK of biodiversity. The main advantages of protection would be preventing the misappropriation of knowledge by unauthorised parties without prior informed consent and ensuring that the holders of TK benefit. It is also assumed that this would help promote the use of TK in development, help preserve traditional practices and culture, and lead to the conservation of biodiversity. Also, considerations of justice and equity demand that the knowledge created by local and Indigenous communities in fields and forests must be recognized as the property of its creators just as the knowledge created in the laboratories is acknowledged as the property of the innovators (Sahai & Barpujari, 2006). Article 8(j) of the Convention on Biological Diversity (CBD, 1992) provides the primary legal basis internationally for ensuring protection of this knowledge by explicitly stating that,

Each contracting Party shall, as far as possible and as appropriate: Subject to national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge innovations and practices.
(p. 6)

A number of issues and challenges, however, get in the way of extending effective protection to TK of biodiversity and the TK holders themselves. One main problem is believed to be the inherent mismatch between the nature of intellectual property (IP) and that of TK. As observed by the Working Group on Article 8(j) and Related Provisions of the Convention on Biological Diversity (Working Group, 2007) TK at the community level works under customary rules and this context is lost when the knowledge escapes into foreign systems. It observes that, while IPR aim to commodify or commercialize certain pieces of knowledge, this is generally not the purpose behind customary rights in TK. Further, the idea of 'exclusivity' of rights under the IP system may conflict with customary law concepts of how knowledge and resources should be treated (Working Group, 2007). However, as discussed later in the paper, it would be presumptuous to assume that Indigenous communities do not have the concept of individual ownership of knowledge.

Many countries have sought to address this gap by enacting *sui generis* IP regimes. The term *sui generis* is used in IP law to describe a regime designed to protect rights that fall outside the traditional patent, trademark, copyright, and trade secret doctrines (Black, 1968). It is, thus, a special system adapted to a particular subject matter, as opposed to protection offered by one of the main systems of IP protection. *Sui generis* regimes, like the Indian Biological Diversity Act (2002), recognize the need for equitable sharing of benefits arising out of the commercialisation of biological diversity and associated knowledge, and try to provide an institutional framework for regulating access and according IP protection. The Act is, however, largely silent on the issue of IPR of the TK holders over their knowledge. *Sui generis* regimes, like Peru's Law No. 27,811, 2002, Philippines' Indigenous Peoples Rights Act, 1997, Thailand's Act on Protection and Promotion of Traditional Thai Medicinal Intelligence, B.E. 2542, 1999 have opted to go a step further by recognizing the IP of the TK holders over their knowledge and right to withhold access. Some regimes, like the case in the Philippines, have sought to accord recognition to the pre-eminence of customary law in these matters. In fact, the Working Group on Article 8(j) and Related Provisions of the Convention on Biological Diversity (2007) recommend the use of the principles of customary law as the basis for developing a range of *sui generis* mechanisms, which could provide a means to strengthen and maintain core traditional values, while allowing communities the flexibility of responding and adapting to changing circumstances, opportunities, and threats. This, is, however, not easily reflected in most legislation of this kind.

Despite countries taking measures domestically to provide protection to TK of biodiversity, the weak international framework is a major hurdle towards effective protection. The Convention on Biological Diversity (1992) is the major international instrument that recognizes the crucial role of local and Indigenous

communities in biodiversity conservation; it has incorporated specific provisions mandating that contracting parties take measures for the protection of their knowledge, innovations, and practices associated with biodiversity (Article 8(j)). Negotiated within the Convention, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization aims to ensure that TK associated with genetic resources is accessed with prior and informed consent or approval, along with the involvement of local and Indigenous communities. Mutually agreed terms have been established; however, numerous criticisms of both the CBD and the Protocol prevail, owing to the use of ‘soft language’, the primacy accorded to the state vis-à-vis the rights of knowledge holders over their TK, and their silence on the question of IPR of local and Indigenous communities (Koutouki, 2011).

Further, the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS, 1994), which lays down minimum standards of IPR protection in World Trade Organization (WTO) member countries, does not deal with TK; however, a number of its provisions could have a bearing on TK, namely provisions on patents, geographical indications, and standards for the protection of undisclosed confidential information. The TRIPS provisions on patents are the most controversial as there is no legal obligation on WTO members to offer protection to TK in their national legislation. In most cases, TK does not meet the patentability criteria of novelty because most TK has been in existence since antiquity and handed down inter-generationally. Since the agreement fails to recognize any IPR over TK, the laws of many developed countries that allow inventions based on TK amount to misappropriation. While the TRIPS agreement does not obligate WTO members to protect TK, at the same time, there is nothing in TRIPS that prevents them from providing IPR protection to TK. Developing countries have tried to use this space in the agreement to lobby for the inclusion of TK within the ambit of IPR protection. There have been arguments in the TRIPS Council about the need to amend TRIPS to prohibit the patenting of inventions based on TK or those violating Article 15 of the CBD, which mandates that access to genetic resources shall be with prior informed consent and ensure fair and equitable sharing of benefits (submission by Brazil, India, China, and others at the TRIPS Council, 2002). Suggestions have also been mooted regarding the role of disclosure requirements in preventing patents based on genetic material and TK that is misappropriated – a harmonisation of TRIPS and CBD is being sought. While many countries have amended patent and biodiversity laws to incorporate a disclosure requirement, such provisions fail to have the expected deterrent effect in the absence of international laws. It is also unlikely that such provisions would be enacted in the near future considering the strong opposition offered by the developed world to this proposal.

From the above discussion, as well as from an overview of available literature, it may be broadly surmised that IPR measures (including *sui generis* measures) advocated for protecting TK broadly assume two forms: defensive and positive protection. Defensive mechanisms mainly seek to prevent IPR claims to TK being granted to unauthorised entities and may take the form of a disclosure requirement, prior informed consent, documentation to establish prior art, etc. Positive protection, on the other hand, refers to a situation where the TK holders themselves acquire IPR, such as patents or alternative rights provided in a *sui generis* system. This implies that exclusive ownership rights over TK have been granted and the IP of the community that holds such knowledge has been protected (Sahai & Barpujari, 2006). It also involves active exploitation of the TK by the originating community itself through its own commercial enterprise or through license to others and the right to structure and define the financial or other benefits from this authorized use (WIPO, 2003a). The WIPO recommends the use of both defensive and protective measures, in conjunction, to achieve the goal of comprehensive legal protection of TK (WIPO, 2003b).

Role of Local and Indigenous Communities: Hurdles to Meaningful Participation

The WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge, and Folklore explicitly recognizes that the protection of TK should be guided by the aspirations and expectations expressed directly by TK holders. The rights of TK holders and custodians of TK should be respected, and the protection provided should directly reflect the actual aspirations, expectations, and needs of TK holders (WIPO, 2006). This is easier said than done considering the fact that local and Indigenous

communities have seldom had an active voice in international and national exercises that frame the laws impacting them. Highlighting the lack of participation of Indigenous communities in the TK debate, Professor Coombe opines that “although indigenous peoples are now recognized as key actors in this global dialogue, it will need to be expanded to encompass a wider range of principles and priorities ... only when indigenous peoples are full partners in this dialogue, with full juridical standing, and only when their cultural worldviews, customary laws, and ecological practices are recognized as fundamental contributions to resolving local social justice concerns will we be engaged in anything we can genuinely call a dialogue” (cited in Yu, 2003, p. 242). While participation of Indigenous actors in the global dialogue needs to be ensured, Yu (2003) cautions that many members of the traditional community remain reluctant to participate in the negotiation process, partly due to their concern about further abuse, misappropriation, and exploitation of their arts and crafts and partly due to the secretive nature of some of the Indigenous creations and practices, in particular sacred symbols and religious rituals. He also stresses that policymakers have to be vigilant and constantly evaluate whether the negotiation process contains any systematic bias or barriers that make participation difficult. Also, as pointed out by some authors, ensuring participation of local and Indigenous communities in the global dialogue is not enough if these communities lack expertise. They point out that fairness demands that, when poor and excluded people are confronted with the very complicated issues involving IP, they should have access to expert advice and representation (Overwalle, 2005). To fill this need, the Public Interest Intellectual Property Advisors was set up as an independent international service and referral organisation. Despite this, such efforts remain few and far between.

Local realities may also impede attempts to protect TK of biodiversity through legalistic proposals framed on the Western model. Solutions like disclosure of origin, prior art databases, geographical indications, and even *sui generis* approaches all rely on a democratic process and assume that Indigenous peoples have equal rights, are empowered, and are involved in the decision-making process; however, the daily reality may be very different. In the case of the San in Southern Africa, for example, their voice remains unheard and politically they continue to be excluded from the mainstream (Vermeulen, 2005). In such a case, meaningful participation of the community cannot be achieved by redesigning IPR legislation, even if the government was to show an interest in granting more power and ownership rights to them.

Scholars have also expressed the view that the discourse on TK and IPR should, first of all, be placed in the local social and economic context in which communities are living (Strathern, 2000). They caution against oversimplifying and romanticising Indigenous realities and suggest that probing beneath the ‘false’ generalisations made in the context of these communities is required (Strathern, 2000). It is also argued that novel mechanisms to protect TK of biodiversity must be built from the bottom up and not the top down. Vermeulen’s (2005) study of the San in Southern Africa is a case in point, which challenges some of the ‘myths’ regarding Indigenous communities that the mainstream debate has propagated to a large extent. Her study indicates that, contrary to popular beliefs, property rights exist in all societies. Individual property rights over knowledge are not necessarily absent from many traditional societies; they are often accompanied by duties (Vermeulen, 2005). According to Posey (1990), rather than debating the suitability of IPR to TK, each group, whether Indigenous or not, should have the right to determine to what extent and under what circumstances they want to enter market economies and the IPR regime. Posey further states that this process is certain to open a ‘Pandora’s box’, but to not open this box is to accept the ethical and moral responsibility of a paternalism – the assumption that those from ‘advanced societies’ know what is good for the ‘native’.

Again, a basic premise of the argument for conferring enhanced IPR protection to the local and Indigenous communities in their TK of biodiversity is the recognition of their stewardship of the resource, the associated TK, and the intimate relationship between the two. It is often taken as a given that the worldview and religious beliefs of many Indigenous communities living in close communion with nature are often rooted in nature and speak of affinity with the plant and animal world, which, in turn, leads to sustainable use and conservation of nature (Western & Wright, 1994). The assumption is also that this symbiotic relationship translates into a rich knowledge base on many aspects of human life. The term ‘ecological ethnicity’ has been used to denote such cultures and communities that maintain the rhythm of circularly appropriate

cosmovisions by observing related rituals and practicing prudence in the ways that they care about nature, harvest from nature, nurture nature, and are nurtured in turn (Parajuli, 2001). One must, however, be aware of the pitfalls involved in romanticizing the issues or beliefs in an ideal 'Indigenous ecological ethos.' The only constant in the world is 'change' and, as Indigenous communities the world over are exposed to the various forces of the modern world, levels of ecological consciousness will vary significantly with the material conditions, nature of livelihoods, level of technological development in which different tribal communities live, and market forces (Sarma & Barpujari, 2011). Vermeulen's (2005) study indicates that the idea of the San as 'pristine hunter-gatherers' is a myth and finds that, over time, their cultural identity has become multi-layered and complex and they have become increasingly drawn into the local, if not world, economy.

Local Realities and Perspectives: The Case of the Karbi of Assam, India

The Karbi, a scheduled tribe, constitute an important ethnic group in Assam, the northeastern region of India. They belong to the Indo-Mongoloid stock and Tibeto-Burman linguistic group. They are mainly concentrated in the Karbi Anglong district and are also scattered in the North Cachar Hills district, Nagaon, Sonitpur, and Lakhimpur districts of Assam. The district of Karbi Anglong is particularly rich in biodiversity and TK based on it. Jain and Borthakur (1980) found that the Karbi used plants to treat ailments as varied as leprosy, malaria, ulcers, dysentery, fever, and gynecological problems. A more recent study documents that almost 434 species of medicinal and aromatic plants found in Karbi Anglong are used to treat many ailments (Sarma, 2007).

Fieldwork was conducted in the Karbi villages of Inglepathar and Chandra Singh Rongpigaon, situated close to the Kaziranga National Park in Karbi Anglong district. Inglepathar, the oldest Karbi village on the fringes of the Park, has a population of 247 who are adherents of the traditional Karbi religion based on animism or worship of nature. The village of Chandra Singh Rongpigaon with a population of 232 has converted to Christianity. The findings from the field on TK of biodiversity, particularly medicinal plants, and the local perceptions and realities about the possibilities of extending IPR protection are now discussed.

TK of Biodiversity among the Karbi: Traditional Context

In the particular context of TK of medicinal plants and healing, the Karbi generally possess two kinds of knowledge: common and specialist. Most men and women, particularly the elderly, possess common knowledge about the available herbs and plants that are used to treat minor ailments. Interviews and focus group discussions with the villagers indicate that such knowledge is transmitted from one generation to the next through the oral tradition. Also, the practices are learned through observation or knowledge is shared with others. A Karbi elder in Inglepathar observed that such knowledge might not be very specific to the Karbi community because much of it could be common to the other tribes and caste groups of Assam, who live close by. Such common knowledge could also have become enriched by borrowing and learning between the different tribes and caste groups.

Specialist knowledge is, however, confined to a few; there is an intimate connection between specialist and ritualistic knowledge. In most Karbi villages that practise animism, such as Inglepathar, the religious officiates such as the *kurisar* (head priest) and *deuri* (priest) perform the role of healers, combining ritual healing with intimate knowledge of medicinal plants. In the Karbi traditional healing system, disease is attributed to both natural and supernatural causes. An ailment is diagnosed by performing a *sang-lang* or divination (to find out the deity or spirit whose displeasure is responsible for it); then, herbal concoctions, *aatams* (sacred incantations), rites, and rituals are administered to appease the deity or spirit concerned.

As the positions of head priest and priest are usually confined to the members of the priestly *kur* or clan, the implication is that specialist knowledge is generally confined to the 'higher' social group in the community and is transmitted from one generation to the next within the same family or clan. Certain specialists, known as *bez*, are exceptions. They acquire the skill of using magic and divination to cure ailments and an intimate

knowledge of medicinal plants through the teacher-disciple tradition. This training is given to a very few individuals.

Specialist knowledge is also gendered, with socially defined masculine and feminine works. An elderly male in Inglepathar stated that the reason behind this restriction is that Karbi women are generally of a timid nature and would not be able to deal with the malevolent spirits residing deep in the forests where medicinal plants have to be collected. Interviews with female members of the society revealed two versions. The conformists see this gender division as part of the Karbi tradition that has always designated a line of demarcation between the work done by men and women. The alternate view is that such reasoning often serves as a means of excluding women from positions of power, which is evident in other aspects of the Karbi community. Among the Karbi, a woman can never be the village head or aspire to be a priest. Women are excluded from participating in many religious rites and rituals, menstruating women cannot brew the local rice beer *harlang*, and women have been customarily forbidden from entering the bachelor's dormitory or *jirkedam* (although this particular tradition is now dying).

Most Karbi traditional healers collect plants from the wild, with the exception of a few species that they cultivate within the village and generally use for treating common ailments. Many villagers know how the concoctions are prepared; however, numerous customary prohibitions govern the collection and use of medicinal plants and other forest produce. These restrictions are more stringent for the forests, which are believed to be the home to malevolent spirits. Interestingly, most of the medicines prepared for serious/chronic illnesses come from these sacred spaces; for instance, according to the Karbi elders in Chandrasing Rongpigaon, the forests in the Singhason Hills area in Karbi Anglong district are home to the dreaded Khenglong-po who is imagined to be a huge, hairy wild-man who likes human flesh. Villagers pointed out that some of the very precious medicinal plants can be found only in remote inaccessible parts of the forests, which are inhabited by malevolent spirits; hence, only those who know the incantations or *aatams* to counter their effects can venture into these places.

Perceptions on Knowledge, Knowledge Sharing, and Intellectual Property Rights

While the Karbi generally have no reticence regarding the sharing of the common knowledge, the specialist knowledge is, however, closely guarded and remains confined to a very small group in the community. When interviewed, the specialists observed that such knowledge can only be transmitted to a worthy recipient as such knowledge could be dangerous in the hands of someone who cannot 'handle' it. A specialist has to adhere to a number of restrictions in his personal life, and it is only in his hands that the knowledge is able to affect a good cure. According to one specialist, he would not mind sharing the knowledge about the medicinal properties of different plants; however, in his opinion, such knowledge would fail to have the desired efficacy without the *aatams* or sacred incantations. These incantations cannot be shared with people from the same village, let alone outsiders. One *bez* reported that he was reluctant to talk about his knowledge to outsiders until he got permission from his dead guru. Accordingly, permission was sought through a small ritual ceremony.

The specialists, on being questioned about their perceptions regarding ownership and commercialization of knowledge, expressed the general opinion that they are its owners and custodians and it is their sacred duty to use it for the welfare of humanity. Commercialization, in their view, would result in handing over the knowledge to outsiders, in whose hands it would fail to have the desired efficacy. One specialist also observed that outsiders would put a price on the knowledge, which would clash with their 'ethics.' Such knowledge is only meant to be used for the welfare of humankind, not for profit. It may be mentioned here that, in the traditional context, specialists do not charge for their services; they have to eke out a livelihood through other activities just like other villagers. Their services are, however, acknowledged by the community through an enhanced status and respect that is symbolically expressed, such as being offered a designated sitting place at a community feast. Also, the recipient of the services might offer a token remuneration in the form of betel nut and leaf, the locally brewed rice beer (*harlang*), or something from the first harvest.

A marked difference is, however, observed between the perceptions of the older and younger generations. The youth, particularly those who are educated, are of the view that the tribe should have proprietary rights over its knowledge and if this knowledge is commercialized (which is acceptable to most of them), then the community, in general, and the specialists, in particular, should be entitled to a share of the profits. Many young people feel that, if any gain comes out of this knowledge, the community should be acknowledged and that some portion of the proceeds could be used for the welfare of the villagers directly, like building a community hall, a library, school, etc. There is an apparent vagueness in the other ideas coming from the young people; for example, they suggest raising funds for the local self-help groups and youth clubs. Many of them clearly failed to imagine any extra benefit that could be earned from the knowledge of older folks.

An educated young member of the priestly clan who is training to be a priest believes that it is important for the knowledge to be documented, protected through legal means (including IPR), and utilized in a 'modern' context to benefit the wider society, with benefits accruing to the Karbi. He further feels that, if the knowledge is to survive and continue to be relevant in the modern world, it cannot be kept isolated from the rest of the world. He expressed the view that the 'superstitions' of the older generation will have to be overcome and the government, particularly the Karbi Anglong Autonomous District Council authorities, should create awareness and build the capacity of the local youths to safeguard, as well as facilitate, the use of the knowledge of their forefathers. Interestingly, this perspective on the need to derive commercial benefits from TK is generally shared by the younger educated generation who do not possess much TK, while the specialist knowledge holders believe in the need to guard this knowledge against outsiders. Specialists indicate that their reluctance is mainly because TK is deeply embedded in the religious beliefs of the group and also because the traditional Karbi ethos permits the use of this knowledge only for the welfare of society and not for profit.

Forces of Change

As already discussed above, change is evident in the Karbi society in how issues regarding the ownership and commercialization of knowledge are perceived by the younger generation. At the same time, as village elders lament, there is considerable erosion of this knowledge with the younger generation who are not keen to preserve it or undergo the rigorous training and regimen associated with being a specialist. One main reason for this, according to informants in the field, is the non-remunerative nature of traditional healing, which cannot fulfill the aspirations of the younger generation. Many educated youths exhibit less reverence for the TK of the tribe and tend to dismiss many Indigenous healing practices as superstitions. However, ironically, they display considerable enthusiasm for the potential commercialization of this knowledge and the idea of IPR over the knowledge and benefit sharing. Also, at the moment, the youths are keen for the expansion of cooperatives for ginger growers as the market linkage is already established, especially due to the push given by the District Council. They are not very enthusiastic about the potential of other medicinal plant species, mainly because the market linkage is not evident to them.

Also, TK is lost to a large extent with change in the traditional context. As observed in the case of Chandrasing Rongpigaon village, where the people have converted to Christianity, there are no specialist knowledge holders though the elders possess some basic common knowledge regarding the medicinal properties of commonly available plants. With conversion to a different religion, many of the customary prohibitions that have helped sustainable collection and conservation have been lost.

The demands of a market economy also compel changes in the traditional conservation ethos. The youths of both the villages studied here are increasingly being drawn into the lucrative trade of forest produce, such as supplying bamboo to the paper mills. The issue is not extraction of bamboo per se, but rather the way it is extracted that makes it unsustainable. Specialists complain that, in recent times, it is becoming increasingly difficult to procure medicinal plants, and they have to venture deeper into inaccessible areas of the forests to collect certain species. In the opinion of one specialist, this is due to outsiders collecting plants in huge sack

loads and taking them to the market outside, which is not done as stealthily as one would expect. He alleges that local youths, for the sake of easy money, are involved in this. Many of these youths have already garnered considerable political say.

The Way Ahead

The discussion above indicates that local and Indigenous communities, like the Karbi, continue to be the custodians of rich TK with continued relevance. At the same time, like most societies, they are subject to constant change through their participation in a wider world that could, in the long run, lead to an erosion of TK, as well as loss of biodiversity, which has been nurtured over time immemorial. In such a context, a multi-pronged, holistic approach is necessary to protect their TK. The need for recognising IPR over their knowledge persists; at the same time, creating awareness and capacity building to ensure their meaningful participation is a must. Capacity building may also involve disseminating knowledge about the economic value of various endemic plant species and possible market linkages. All these efforts would more likely succeed if the customary institutional structures, such as the village councils and the Karbi Anglong Autonomous District Council, were involved. In addition to IP or legal protection, conditions must also be created for the community to reap the benefits of their rich TK. Mainstreaming TK as an alternative medical system, providing incentives to traditional healers, adding value to medicinal plants by setting up co-operatives, self-help groups, health-tourism, eco-tourism, etc. could offer some encouragement.

Here, it may also be worthwhile to consider the use of a participatory tool, the bio-cultural community protocol (BCP) developed by Natural Justice, an international NGO of lawyers for communities and the environment, as a means of defending the community's bio-cultural heritage against these pressures and threats and asserting their rights over resources and TK. A BCP is "a protocol that is developed after a community undertakes a consultative process to outline their core ecological, cultural, and spiritual values and customary laws relating to their TK and resources, based on which they provide clear terms and conditions to regulate access to their knowledge and resources" (Bavikatte & Jonas, 2009, p. 9). Interconnecting the various aspects of an Indigenous community's way of life also involves ensuring that community members better understand the international and national legal regimes in which their lives are being increasingly played out. Such a protocol can, thus, reconcile a number of challenges confronting a group like the Karbi. It could serve as a platform for asserting rights and affirming responsibilities under customary, national, and international law, particularly in response to opportunities and challenges posed by external actors (Shrumm & Jonas, 2012). At the same time, it could contribute towards the revitalization of the Karbi worldview, conservation ethos, and practices that are under threat owing to a number of external and internal forces.

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