Chapter 4

Role of Traditional Knowledge Databases and Registers with Special Reference to India

1 Introduction

Indigenous and local communities have maintained virtual databases or registers of traditional knowledge for centuries, most frequently storing and passing it on through oral traditions, without which their knowledge would have disappeared.

Since the CBD entered into force, traditional knowledge related to medicinal plants, agricultural practices, etc. used and adapted by modern science and technology, have been acknowledged as important factors in the search for sustainable development, community progress and overall well-being (Laird, 2002). Biopiracy is another factor for the need to protect traditional knowledge. However, indigenous people have identified much wider range of internal and external causes for the loss and erosion of their traditional knowledge. This includes loss of control over education and health, promotion of inappropriate marine and agricultural extension programs, adverse influence and frequent intolerance of organized religion, reluctance of elders to transmit traditional knowledge to uninitiated youth, and disenchanted youth seeking solutions to their needs from foreign science instead of traditional knowledge (Tobin and Swiderska, 2001). Strategies of protection of traditional knowledge must therefore employ measures that not only secure control over use but also create incentives for preservation and maintenance of traditional knowledge and removal inappropriate policies with a view to secure respect for the value and importance of diversity of knowledge bases.

One measure that has received attention from all actors has been documentation of traditional knowledge is databases and registers. This has resulted in the formation of a wide variety of databases and registers reflecting diverse opinions on what constitutes ‘protection’ of traditional knowledge. Although databases and registers may not in
themselves be sufficient to protect traditional knowledge it needs to be considered how they might help in the absence of concrete traditional knowledge protection mechanisms. Today these registers and databases are looked upon as source of defensive as well as positive protection of traditional knowledge.

Documentation of traditional knowledge in the form of databases and registers and technical issues surrounding them have been raised throughout the IGC sessions of WIPO for various purposes such as defensive protection, positive protection, protection from erosion and for purpose of recording rights. The Asian Group submitted a document entitled ‘Technical proposal on databases and registers of traditional knowledge and biological/genetic resources’ (WIPO/GRTKF/IC/4/14) at the fourth session of the IGC. The document contains identification, technological, and security standards related to traditional knowledge databases and registers. Added to this, individual countries have also given their support to creation of traditional knowledge databases and registers.

Downes and Laird( et al, 1999) distinguish databases from registers where the latter is not merely a list or database designed to provide information to users. It is a list or database where people put information in order to gain legal rights relating to that information. ‘Registering’ something in a registry ‘puts it on the record’ and puts the public ‘on notice’ that the registrant asserts a claim.

Thus registration of information in a register is linked to granting of rights. Though registration secures relevant rights the register itself does not grant rights but rather

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16 See India’s statement on behalf of the asian group in the WIPO IGC second session (WIPO/GRTKF/IC/2/16 (in english) paragraph 118). The group stated that it is appropriate to establish traditional knowledge registers for purposes including prior art searches and prevention from erosion.

17 Panama stated that the register and database established by law 20,2000 did not only provide information but also recorded traditional knowledge rights (See WIPO/GRTKF/IC/2/16 (in English) paragraph 133)

18 Countries including Algeria, Venezuela, Peru, Mexico, USA, Korea, Australia and groups including African Regional Industrial Property Organisation (ARIPO) and the Saami Council during the fourth session of the WIPO IGC gave their support for the establishment of a tool kit for traditional knowledge documentation (See WIPO/GRTKF/IC/4/5)
records such rights. Registers are generally open to public scrutiny. Databases on the other hand need not necessarily be open to the public. (UNU,2004: 12) Databases organize information in a specific manner. This organizational effort may be subject to legal recognition through IPRs. traditional knowledge databases have been used for defensive protection by making the information readily available for prior art searches in IPR offices.

2. Comparative Study of Registers and Databases of Traditional Knowledge

UNU-IAS (2004) lists several types of registers and databases formed. These include the indigenous registers and databases prepared by the Inuit of Nuvanik, Canada, institutional databases, which includes the Biozulua database in Venezuela and the TKDL library in India, and the databases formed by NGOs and state cooperatives like the database of Farmers' Rights Information System (FRIS) and Honey Bee Network database, both in India.

The Inuit have prepared a comprehensive system of registers as a means to document their land and resource use strategies and rights as part of their efforts to secure land rights. It was designed to inform particular governmental decision making process and the data is generally considered to be confidential between Nuvanik and accessing government parties. As a closed system with limited access, the database has primarily a promotion, preservation and maintenance role within the particular Inuit communities. One reason for ensuring the closed status of the database is the lack of protective mechanisms within the existing Canadian IPR regime. (UNU-IAS, 2004:15)

The Biozulua database of Venezuela was established by the Fundacion para el Desarrollo de las Ceincias Fisicas y naturals (Fudeci) from Venezuela. It is an academic scientific database which contains information and data of indigenous communities of Venezuela.
related to traditional medicine, ancestral technologies and traditional knowledge pertaining agriculture and nutrition. The database is of a confidential nature and Feduci allows its use on a case by case basis for scientific research mainly.(p17) However, the Biozulua database cannot assign any rights over traditional knowledge in favour of indigenous people or local communities.(UNU-IAS,2004: 16-17)

Apart from these, national laws in a number of countries have established registers for protection of traditional knowledge. This includes administrative, legislative and policy measures. Some of the countries and regional groups that have taken steps are the Indian Biological Diversity Act 2002, Kenya’s register of traditional healers, Panama’s law on folklore, Peru’s collective regime on TK, Portugal’s traditional knowledge law and Thailand register of traditional medicine, as well as measures within the Andean Community, the Organization of African Unity and the South Pacific Forum providing for the registration of TK(UNU-IAS,2004:99).

Peru’s regime for the Protection of Collective Knowledge of Indigenous People Related to Biodiversity is the first effort by a developing country to develop a sui generis regime for the protection of rights over traditional ecological knowledge. The Peruvian law provides for three types of registers- a national public register, a national confidential register and local registers to be administered by communities themselves. The national public register will incorporate traditional knowledge which is in the public domain(Article 15)The public register will be open and available to interested parties. However the exact role of a confidential traditional knowledge register administered by the national authority is still unclear. In case of the local registers the law simply states that these can be organized and designed according to indigenous peoples traditional uses and practices. The law makes no specific provision for the recognition of local registers as sources of prior art and it is unclear what exactly the relationship, if any, will be between the local and national registers.
3. Documentation and Registration of Traditional Knowledge in India

Misappropriation of traditional knowledge in the form of biopiracy has great implications for India. A measure to recognize and reward community knowledge has been incorporated in the CBD in Article 8(j). This is a significant measure for India, rich as it is, both in the form of classical medical systems such as Ayurveda, Siddha and Unani and in folk knowledge of plants related to agriculture and medicine. Attempts to document such knowledge in parlance with modern science began with early contacts of Europeans with India. *Hortus Malabaricus* composed between 1678 and 1703 by van Reede, a Dutch resident of Kochi, documented the knowledge of four local physicians (Manilal, 1980). In the 19th century the British organized the systematic exploration and documentation of Indian uses of biodiversity, culminating in the “Wealth of India” series. (Gokhale et al., 243) Many other texts and research papers continue to be published without giving credit to knowledge providers.

India has been one of the most important testing grounds for registers and databases—be it in the form of institutional database such as the TKDL initiated by CSIR or NGO cooperative databases such as FRIS and Honey Bee Network database or even the local biodiversity registers in the form of PBRs mandated by Biodiversity Act 2002 legislations.

4. Traditional Knowledge Digital Library (TKDL)

Databases are an important source of information on prior art for authorities reviewing patent applications to determine whether they achieve the levels of novelty and inventiveness necessary for granting intellectual property protection. It was felt that the traditional knowledge available in India lacked a structured classification which made it difficult for the patent offices to search and examine cases related to it. As a result the Indian Council for Scientific and Industrial Research (CSIR) has launched a 30 million
page project known as Traditional Knowledge Digital Library (TKDL) incorporating 120,000 remedies contained in the country’s ancient written medical literature of Ayurveda, Siddha and Unani (TKDL, source http/ www.niscair.res.in) with an objective of defensive protection of the codified traditional knowledge on Indian Systems of Medicines. The TKDL classified the entire traditional knowledge related information in a modern system as per the format of International Patent Classification(IPC), into sections, classes, subclasses, main groups and sub groups. This classification system evolved by India is known as Traditional Knowledge Resource Classification(TKRC) (GuptaV.K,2006:249-253) TKRC has been developed for Ayurveda, Unani, and Siddha systems of medicine where 8000 subgroups have been created for classifying the codified (published) traditional knowledge information particularly with respect to Indian System of Medicine.

4.1 Scope of the Project:
For TKDL(ayurveda), in the first phase, information on 64 ayurvedic texts listed in the Indian Drugs and Cosmetics Act are taken. 59,000 formulations are being transcribed in patent application format in five international languages- English French, German, Spanish and Japanese. TKDL for Unani system of medicine is being created for 77000 formulations from 42 unani texts, which are in Arabic, Persian and Urdu. Similarly, for Siddha System of medicine practiced in southern India, 10,000 formulations are being transcribed from 45 siddha texts.

Traditional knowledge classification shall be integral to TKDL database along with background on concepts and definitions on Indian systems of medicines, scientific basis of Indian systems of medicines, details of practitioners, hospitals and dispensaries. TKDL database shall act a bridge between ancient Sanskrit/Urdu/Arabic/Persian/Tamil verses and a patent examiner at a global level, since the data will be provided in modern and a local name in a language and format understandable to patent examiners. It is expected that the gap on prior art shall be minimized.
4.2 Strategy for preventing misappropriation of and abuse of TKDL

To prevent the misuse of TKDL, access to patent offices will be based on signing an Access Agreement on non-disclosure, i.e., there will not be any third party disclosure unless it is essential for search purposes.

TKDL has been able to set international specifications and standards for setting up of traditional knowledge databases and registries on TKDL specifications. This was presented at the 4th session of Inter Governmental Committee (IGC) of WIPO on Intellectual Property and Genetic Resources, Traditional Knowledge and Expressions of Folklore. The Committee adopted the technical standards presented by India in the fifth session of the IGC held in 2003. TKDL being a maiden effort has become a model for other countries. Countries like South Africa, regional organizations like SAARC, African Regional Industrial Property Organization (ARIPO) and ASEAN through WHO have already been interacting with India to build TKDL for their own region.

5. Traditional Knowledge Registers in India

The concept of “Community Biodiversity Registers (PBR)”, was initiated in 1995 as an attempt by the Foundation for Revitalization of Local Health Traditions (FRLHT), Bangalore to record the rapidly eroding folk knowledge of medicinal uses of plants. However, it has made little progress in sharing this knowledge or in disseminating benefits to knowledge providers (Gokhale:244) More recently it has begun to execute PIC statements with knowledge providers. While these PIC declarations ensure that folk knowledge providers are made aware of activities related to their knowledge, FRLHT does not take any specific responsibility over how it will use this knowledge, how the knowledge providers can participate in the use of that knowledge, or how knowledge providers may benefit from the use of the knowledge. Kerala Sastra Sahitya Parishad, the
leading People’s Science Movement of the country went on to prepare PBRs covering all 85 gram panchayats of the district Ernakulam over 1998-99 as an element of the people’s planning movement in the Kerala state. The M.S. Swaminathan Research Foundation of Chennai has prepared PBRs in Wynaad district of Kerala and Paschim Banga Vigyan Manch and Society for Environment and Development of Kolkata at several sites in West Bengal with a similar motivation. However, the most systematic attempt of preparation of PBRs, covering 52 sites in 7 states and UTs, was undertaken by a network coordinated through the Indian Institute of Science, Bangalore, initiated as a part of the Biodiversity Conservation Prioritization Programme sponsored by WWF (India) over 1996-98.

Since documentation of knowledge associated with biodiversity is clearly pertinent in the context of the provisions of CBD for equitable sharing of benefits with traditional knowledge holders, Indian Institute of Science broadened the scope of FRLHT’s community biodiversity registers, creating ‘people’s biodiversity registers’ (PBRs) to include documentation of local biodiversity, people’s knowledge of biodiversity in context of medicinal as well as other uses and their perceptions of ongoing and desired patterns of biodiversity management (Gokhale, 244). With experience and availability of technology, the program has been refined so that much of the information so generated can be pooled together and organized with the help of a relational database management system. In 2002, the Ministry of Environment and Forests, Government of India proposed that these exercises be made a part of the Millenium Ecosystem Assessment (MA). This proposal has been accepted and the exercise has served as the Indian contribution to the sub global assessments component of the MA. (Gokhale, 244)

5.1 People’s Biodiversity Registers (PBRs) as stipulated under the Biological Diversity Act, 2002 and Biological Diversity Rules 2004

India acceded to the CBD in 1994. Two of the CBD’s provisions – sovereign rights of countries of origin over their biodiversity and the issues related to Access and Benefit
Sharing are of interest to India. As mentioned in Chapter 3, the Biological Diversity Act 2002, provides for detailed Acess and Benefit Sharing provisions. It stipulates setting up of National Biodiversity Authority (NBA) and State Biodiversity Boards and Biodiversity Management Committees (BMCs) at the level of all local bodies namely village and town councils and city municipalities. The NBA is required to consult the BMCs in any decision related to access to biological resources and associated traditional knowledge of India and also when agreeing to any patent application.

A concrete information base needs to be created to permit meaningful consultation by the NBA with thousands of village and town councils and municipalities that cover India. To this end the Act provides for the setting up of BMCs for documentation of biological diversity “including preservation of habitats, conservation of land races, folk varieties and cultivars, domesticated stocks and breeds of animals and micro-organisms and chronicling of knowledge relating to biological diversity” (Section 41(1) Biological Diversity Act, 2002). It also empowers the BMC to levy charges by way of collection of fees from anyone accessing any biological resource falling within its jurisdiction.

Significantly, BMCs would serve to take science right down to the grass roots, since, the Biodiversity Rules 2004, specifies the main function of the BMC is to prepare People’s Biodiversity Register in consultation with local people. The Register shall contain comprehensive information on availability and knowledge of local biological resources, their medicinal or any other use or any other traditional knowledge associated with them. (Section 22(6)). The other functions of the BMC are to advise on any matter referred to it by the State Biodiversity Board or Authority for granting approval, and to maintain data about the local vaids and practitioners using the biological resources. (Section 22(7))

The National Biodiversity Authority (NBA) is authorized to take steps to specify the form of the People’s Biodiversity Registers, and the particulars it shall contain and the format for electronic database. (Section 22(8)). The NBA and the State Biodiversity
Boards will also provide guidance and technical support to the Biodiversity Management Committees for preparing People’s Biodiversity Registers. (Section 22(8)).

The People’s Biodiversity Registers shall be maintained and validated by the Biodiversity Management Committees. (Section 22(10)) The Committee will also maintain Register giving information about the details of the access to biological resources and traditional knowledge granted, details of the collection fee imposed and details of the benefits derived and the mode of their sharing. (Section 22(11))

5.2 Safeguarding IPRs of Information in PBRs Provided by Traditional Knowledge holders

However, PBRs also raises questions on ways to protect the rights of traditional knowledge holders whose information has been documented. This apprehension arises more in the eventuality of the document being made public and being accessed to. If information is made available through open access databases, it becomes a potential mine of information freely available to all visitors without any obligation to seek PIC for its use.

The PBRs would also record people’s knowledge of potential commercial application, and it is therefore essential that measures be instituted to appropriately protect their IPRs. If all the PBR information is open to public, there is no way to ensure benefit sharing, specially in cases where the products are developed and sold in markets outside India. There is no international agreement in place today to permit India’s NBA to persuade foreign enterprises operating outside India to share benefits in such a case.

It is therefore essential that details of such knowledge are kept confidential. At the national workshop on PBRs 2006, it was proposed that one possible agency to do so is the National Innovation Foundation (NIF) established by the Government of India in March 2000. (Gadgil, 2006: 20-21) ‘NIF is presided by the head of India’s Council for
Scientific and Industrial Research. It maintains an information base called National Register that is a repository of all socially and environmentally acceptable information flowing to it from a number of channels including village level exploratory trips. There is a provision to maintain the confidentiality of some of the information lodged with the National register. The Governing body of the NIF has decided that NIF would set an additional database to be named as People’s Knowledge Database(PKD) to supplement the existing National Register(NR). The PKD will serve as an electronically searchable, multi lingual and multi-media, repository of all people’s knowledge recorded through PBRs and other means. This will be available as publicly accessible or as confidential knowledge as specified by knowledge providers, giving full credit to individuals or communities concerned. All entries in the PKD will be scrutinized and those that meet the criteria evolved by the NIF pertaining to environmental and social sustainability will be transferred to the National Register, again maintaining specified restrictions on access and providing an indication of the content to the public in a synoptic form. The entries not included in the National Register, will continue to be maintained in the PKD. The PKD and National Register would form part of India’s Biodiversity Information System that would also incorporate other relevant scientific, technical, IPR and market related information and serve as the knowledge base for the NBA, SBBs and BMCs. (ibid)

5.2.1 Registers and PIC

The Indian Institute of Science, Bangalore and NIF have also sought to explore use of National Register as a repository of confidential information pertaining to use of biodiversity provided by communities or individuals in the course of PBR preparation. A model of Information management was evolved during a brain storming session at the Governing body of NIF on March 9, 2004(Gadgil, 2006:21-24)The model proposes that NIF execute a Memorandum of Agreement with the knowledge providers, in place of a simple PIC. The Memorandum would acknowledge NIF’s acceptance of certain conditions laid down by knowledge providers under which their knowledge may be shared with third agencies. These would primarily be research and commercial organizations interested in developing products on the basis of the knowledge. The
knowledge providers may specify the kind of agencies that may be allowed access to their knowledge, how these agencies may further manage this knowledge and the expected benefits from these agencies. NIF may make available their knowledge only after these conditions are met.

To enable outside agencies indication of the nature of the confidential knowledge, the National Register would provide a synopsis of the same. It has been hoped that if the arrangement works, it would be an excellent way to bridge the gap between the local and national scales. (Gadgil, 2006:24)

However, a number of issues still need to be addressed. NIF has to develop a good system of links with the government, academic and commercial research and development agencies to facilitate value addition to such knowledge. It has to ensure that the confidentiality of the knowledge within its repository is not violated during the process of collection and storage of the knowledge elements. Moreover the NBA has to decide on the way in which it will organize a countrywide Indian Biodiversity Information System (IBIS) including the mechanism for maintaining the confidentiality while at the same time promoting value addition to the knowledge flowing from the gram panchayats through state biodiversity Boards to the national level. NBA has to decide on the possible role of the NIF in this process. (Gokhale, :249)

At the National Workshop on PBRs held in June 2006, various recommendations were made. These included that PBRs must be “documents of the people, by the people and for the people”. At the workshop the following set of activities were sought be undertaken:

- “Developing, within the next 6 months to 1 year, ways and means of effectively providing control of the PBRs to the relevant communities, including through appropriate legal means (such as Rules under the Biological Diversity Act), administrative mechanisms, and local empowerment; this should include all PBR
exercises/documents/collections, including those that communities desire not to incorporate into the national database...(recommendation1)

- Preparing, within the next 6 months, guidelines for the formation of BMCs (in view of the fact that PBRs are essentially to be prepared by BMCs, which therefore presupposes the existence of strong and effective BMCs)...”(Recommendation 2)

These recommendations have not yet been implemented even though there was a time limit.

The NBA has proposed a format of PBR including the kind of information collected and the people to whom recording of information is to be assigned. At the Workshop on PBRs, a Relational Database Management System (RDMS) designed for PBR exercises called PeBInfo had been proposed. (Gadgil, 2006:44). In response to this and the recommendation at the PBR workshop in 2006, for developing guidelines for PBR formation (recommendation -2), it has been opined that “there should be a framework for the principles to be adopted in the process of documentation, and in particular where government agencies are to be involved, with an emphasis on these agencies facilitating and supporting community-led processes rather than dictating models from above”(Satheesh, 2007: 4).

5.3 BMCs and PBRs Formed

While state Biodiversity Boards have been formed in Andhra Pradesh, Arunachal Pradesh, Chattisgarh , Goa, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Manipur Mizoram Nagalaland, Punjab Sikkim and Uttar Pradesh (http://www.nbaindia.org/sbb/sbb.htm.) BMCs have been formed in West Bengal, Kerala, Karnataka, Goa and Madhya Pradesh. West Bengal has formed 10 BMCs and initiated PBRs, Kerala has formed 5 BMCs, and Karnataka has formed 621 BMCs with 67 being involved in PBR preparation. In Goa 5 BMCs have been identified and 5 villages for PBRs have been identified. MP Biodiversity Board has initiated the preparation of Peoples Biodiversity Registers of 96 villages to various NGOs. Besides this State Forest Research Institute, Jabalpur is preparing PBRs of 32 villages. So far 75
PBRs have been prepared. At present it has been decided by the Biodiversity Board that State Forest Department shall prepare PBRs with funds provided by the MP State Biodiversity Board. ([http://www.nbaindia.org/bmc/](http://www.nbaindia.org/bmc/)) With the passage of the Biological Diversity Act 2002, the Madhya Pradesh Biodiversity Board has vigorously propagated the preparation of PBRs in representative localities in all of the state’s eco-regions over 2004-05

6. Observations on formation and use of PBRs in 5 Villages of Yawatmal\(^{19}\), Maharashtra.

Though Biological Diversity Act, 2002 envisages the formation of Biodiversity Management Committees at the panchayat level to form PBRs in consultation with the local communities, in states such as Maharashtra it is yet to be activated. The process of documentation, in Yawatmal district has thus been taken up NGOs such as SRUJAN. Formed by Ajay and Yogini Dolke, who have been associated with Madhav Gadgil of Indian Institute of Science, Banglaore, who had proposed a model PBR Manual in 2006, the organization works in Yawatmal District of Maharashtra, in Pandarkauda’s villages which are mostly tribal villages.

Preparations for the PBR involve the following activities:

- Obtaining peoples approval for the documentation
- Identification of different biodiversity user groups
- Identification of knowledgeable individuals in distribution and uses of biodiversity
- Interview with different user groups and knowledgeable individuals
- Mapping the landscape of the study site.

\(^{19}\) Observations are based on a field visit to 5 villages in Pandarkawda and discussions with people responsible for the documentation in each village.
• Discussions with outsiders related to the resource use such as nomadic shepherds and artisans and government officials.

6.1 Observations on PBR formation

In an interview with individuals responsible for documentation in 5 villages of Yawatmal, i.e. Moolgawan, Madapur, Pandarwani, Mazra and Shibla, it was observed that there is a gap between the official purpose and peoples' perception of the same. People were unable to relate to issue such as threats of biopiracy, need for PIC, benefit sharing and the larger goal of documentation for the purpose of protection of IPRs of traditional knowledge holders.

The possibility of natural resources and the knowledge associated with it, which has always been shared freely, becoming the property of a single individual or corporation is alien to their culture and thus the inability to understand the threat of patents and such claims on IPRs.

Contribution to the register also varies from one occupational group to another. The villages have come up with their own mechanisms to prevent misappropriation of the information in the registers. Moreover, SRUJAN has used the PBR as tool for empowering the villagers as against the mere registration of information on biodiversity and knowledge related to it.

In order to encourage participation among community members, the reason given to them for documentation varied from locating the history of the village, to assessment of natural resources that were becoming scarce, and finally encouraging the village community in participation of this documentation so that after assessment, the available resources could be used to generate monetary benefits for the community.
One of the threats to protection of information recorded in the PBRs is that it could be appropriated for wrong purposes. In this regard there is awareness about controlling access to the PBRs. The communities are therefore careful to allow access to the registers only to trusted parties such as NGOs working with them. Moreover, documentation is made in the local language with can generally be understood by individuals familiar to the locality. Also, the details of certain forms of knowledge such as the medicinal properties of plants available are not mentioned in detail.

6.2 Commercial Application of traditional knowledge of Biodiversity Resources

SRUJAN began its PBR related work in Madapur and has thereafter expanded its activities to 10 other villages. These include Kundi, Pandarwani, Mazra, Bhimnara, Mandwa, Murugawan, Tembi, Chikhandu. Inhabited mostly by tribes, majority of the families live below poverty line. Low level of literacy, and high infant and maternal mortality are prevalent. Agriculture is the main source of sustenance, besides cattle rearing and occasional hunting of animals from the nearby forests. In these areas, SRUJAN had during the process of documentation, discovered that the data collected about floral biodiversity available in the region could be used to spread awareness regarding the maximum utilization of resources for the benefit of the villages.

As a part of the documentation process it was realized that the region has abundance of *Mahua (Madhuca Longifolia)* trees, the fruits of which have been traditionally used by the people to produce liquor, and as an edible in various forms. SRUJAN therefore offered to mobilize the village communities to obtain maximum value for their product. Through ECONET the *Mahua* was bought at the available market price which was 6-7 Rs/kilo and then stored in the village itself for a few more months. Finally when a higher rate was available, the flowers were sold in the market for 12-15 Rs/kilo, and the resultant profits were obtained, benefiting the collectors.
This process started in 2005 and has continued till date. Efforts are now on to repeat the exercise for other available products such as lac, and gum. The villagers were also made aware of the role of Tribal development Council and its responsibility in procuring and assisting tribal villages in obtaining the best possible price for their products.

7. Community Biodiversity Registers (CBRs) by Deccan Development Society (DDS)²⁰, Hyderabad.

DDS is a grassroots organization working with 5000 women farmers in the semi-arid tract of the Deccan Plateau. Its work in the Medak District of Andhra Pradesh has resulted in more than 50 community gene banks in which local land races are being protected by the farming community. DDS has used CBR as a tool to restore control over biodiversity and the knowledge that surrounds them into the hands of the community. This means involving the community in a dialogue around the issues that surround them. It is also important to regenerate the pride and understanding that the community has, in the knowledge of its biodiversity.

P.V. Satheesh, the Director of DDS describes CBR as "a term that signifies the "communal" character of the community knowledge" revealed that the process of sharing helps this knowledge to grow and adds value to it. When the community is disengaged from this process of building CBRs, they become individualized knowledge, "which suits the IPR regime and scientists". Disagreeing with the PBR process as visualized by Madhav Gadgil he said that, the "PBR process hinges on identifying knowledgeable individuals in the community and becomes an individual interaction between these individuals and the community."

²⁰ Observations are based on visit to Hyderabad and Zaheerabad the project office of DDS and also on the basis of interview and discussion with P.V. Satheesh the Director of DDS.
The DDS has tried to imbue the community sense in all stages of production of CBR. Here the entire village community is invited to engage in the process together. Thus there is no single ‘knowledgeable individual’ in the community. Every individual member, women, men, upper and lower castes have some knowledge to contribute.

The process of CBR formation is marked by the following features:

- The CBR is generated through collective community matrixes
- Women play a central role in the effort
- The knowledge generated is non hierarchical
- It is born out of community dialogue
- It uses PRA as a tool and therefore becomes entirely visual in nature, thus enabling the non literate members of the rural community to easily participate in the process, witness the register evolve in front of their eyes, contribute, correct and analyse the knowledge generated.
- People design the parameters for the register themselves and therefore design their own perceptions, values and preferences
- Since the entire community is participating in it, the process becomes a horizontal transfer between different sections of the community: across gender, age, caste and class.
- When the CBR finally evolves, it is marked by community sharing and community consensus
- It is endorsed by the entire community.
- More significantly women and marginalized sections play a key role

The process of formation of CBRs restores the control and importance of biodiversity for the community and also the knowledge of the resources for the contemporary world. A typical CBR formation process underway at village Khasimpur in Medak district involves the following steps.
Step I: Crops are inventorised by the village community

Step II: Peoples’ statements are diligently recorded

Step III: People evolve parameters. In this exercise, 32 parameters were recorded. These included soil types, seed ratio, seed source, seed selection, crop diversity, fodder diversity, sowing methods and seasons, cultural issues, pest incidence and management.

Step IV: Each crop is evaluated against each parameter. Women take the lead in the process of the CBR formation. Intercropping methods are demonstrated. Elders of the village also share their knowledge. A complex matrix is developed in the presence of the entire community. They depict all parameters designed by the community and their evaluation of each crop against the parameters. A constant dialogue is on between the informant, the facilitator and the community making it a shared knowledge of the community. Women’s knowledge is centre staged and complimented by other women.

Step V: A matrix of peoples’ knowledge is created.

Step VI: Matrix prepared by the people on the ground is registered.

Step VII: Community consensus is evolved

Step VIII: Community endorsement is obtained.

At the Gram Sabha meeting, attended by all villagers including women, small and marginal farmers, the issues that were discussed included the meaning of biodiversity registers and the reasons for loss of biodiversity and the need to protect it.

The Efforts of DDS has included forming a Sangam of a group of 40 odd women from the village. The sangams are encouraged to save seeds of the traditional varieties which members are free to borrow, on condition that they return the same amount or double the amount. The CBRs are not merely documentation efforts to be made available to the National Biodiversity Authority. They have also been evolved as means to involve community participation in biodiversity conservation, to discuss issues related to food security by means of sustainable utilization of natural resources and the traditional knowledge associated with them. Issues such as biopiracy may not be understood by
everyone, but an interview with a group of eleven women in the Pastapur village showed that the head of a *sangam* is aware of the need protect the traditional knowledge of crops and plants in the village. A significant outcome of the preparation of CBRs has been a reawakening of farmers' interest in the traditional crop varieties. This is in part prompted by the escalating costs of cultivation of HYVs and the emergence of a market for produce of organic agriculture. As a result the farmers in many villages engaged in CBRs activities have set up “seed banks” of traditional varieties and taken to their multiplication. These farmers may also be rewarded in future under the Protection of Plant varieties and Farmers’ Rights Act as farmer conservators.

A major difference between the PBR process undertaken by SRUJAN and the CBRs by DDS was that while DDS does not subscribe to the benefit sharing mechanism from commercialization of traditional knowledge of the farmers, SRUJAN believes in helping the communities retrieve a share of the benefits from commercialization of their knowledge. This is because, Satheesh feels that any benefit sharing mechanism puts the two parties with unequal bargaining strength against each other. Besides, it is difficult to define knowledge holders of a particular crop or plant or its variety, as the same knowledge is often prevalent in more than one community or locality. In such a situation defining the beneficiaries of the benefit sharing becomes problematic. However, in both cases of documentation there has been an increase in the awareness about the need to protect the traditional knowledge of communities against unauthorized appropriation and conservation and sustainable utilization of these knowledge systems for the benefit of the communities.

8. Conclusion

Database and registers of traditional knowledge can serve to protect traditional knowledge in a number of ways ranging from promoting documentation, preserving and maintaining TK, providing means to assist patent search procedures and identify prior art, identify communities which may be entitled to benefit sharing, provide the means for recording the existence of traditional knowledge over which positive rights have been
recognized under national or customary law; and serve as a means of protecting traditional knowledge through *sui generis* database protection. However database and registers alone do not provide the means for the effective protection of traditional knowledge. Rather it must be seen as one element in a wider system of traditional knowledge governance including national Access and Benefit Sharing legislation, and *sui generis* traditional knowledge law and practice. (UNU-IAS Report, 2004: 38)

Today databases can play an effective role in serving as defensive protection as prior art. However as demonstrated by the Biozulua and Inuit cases, the existing law and policy – both domestically and internationally are insensitive to sources of prior art, its confidentiality and even the interests of indigenous people over its future use. Requiring that traditional knowledge be placed in public domain as a condition for recognizing it as prior art is a double edged sword since it requires renunciation of rights over traditional knowledge in order to prevent weakness in IPR regimes being utilized as a means for it misappropriation (UNU-IAS, 2004:38).

Be it the development of an international regime or a national one, the diversity of indigenous and local communities and their customary laws, sensitivity to local realities is required in documentation and registration of traditional knowledge. For this there is a need of full participation of the indigenous and local communities in the development of the registers.

In India, means for protection of data in the TKDL has been devised. However, as mentioned above, legal protection of PBRs has still not been provided. The move to integrate PBRs into a national database without either providing them legal protection or ensuring effective community control, enhances the risk of biopiracy.

Concern has also been raised that while PBRs are supposed to be prepared by Biodiversity Management Committees in each *panchayat*, there is still no framework of processes by which such Committees were to be formed.
In considering the utility of establishing the National Register through PBRs, it is also pertinent to consider the potential implication for protection of knowledge which is not registered. The field experience in five villages of Yawatmal, Maharashtra, shows the reluctance of the local vaids to part with their knowledge of herbs.

Though PBRs have been envisaged as a part of the National Biodiversity Rules 2004, to act as a defensive protection for traditional knowledge, people’s perception about its role, in the villages where these are documented, are different. This is also the reason for (in a few cases) reluctance to provide full details of the knowledge possessed by these communities. However, PBRs if used in a participatory way, empowering communities to use the data available in the PBRs for their betterment would lead to greater participation in the documentation process. Also it is imperative to make them realize the threats to their interests in a manner that is more comprehensible to these communities. Thus making them realize that they would lose right to access if the knowledge is not documented and making them aware about assets that could be valuable to them would enable greater participation in the PBR making process.

To the extent that there is gender based division of labour, to that extent there is gender based local knowledge. Given that women do most of the process of gathering, women would have more of the knowledge of plant substances and their uses. Similarly the types of trees that are best for fuel, their regeneration and harvesting are matters that women would tend to know more about than men. It is therefore important to involve women’s participation in the documentation.

It would also be a better documentation process if a communal participation of the whole village in the documentation of the traditional knowledge of agriculture and other plant genetic resources. Creation of a PBR with the involvement of the entire community participating together in the exercise would produce more authentic documents as there would always be interference and correction of wrong information that is being recorded. The community’s knowledge about its existing biological resources would also increase.
Communal participation would also ensure a sense of pride and awe in the communities when the range and depth of the knowledge of the community is presented to it cumulatively. Documentation of biodiversity and related knowledge as a means to conservation has been acknowledged, but it has also been felt that this needs to be voluntary and not imposed upon local communities. The same is the case when it comes to linking their existing or ongoing documentation and/or PBRs to any regional, national and international databases. (Satheesh et al, 2007)

Ultimately the question arises whether the adoption and application of criteria for registration based upon notion of individual property rights established by IP regimes is appropriate when there is still no consensus internationally on the scope of traditional knowledge protection through *sui generis* means.