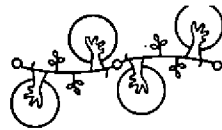


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Farmers' Rights and Biodiversity: A Gender and Community Perspective

Proceedings of a Workshop



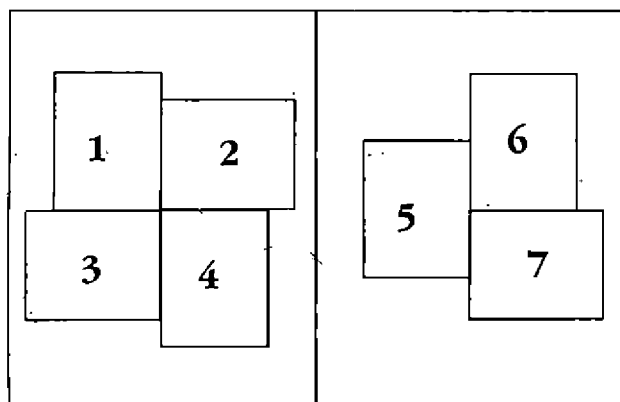
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1. Woman engaged in seed selection in the Jeypore tract, Orissa (L. R. Gopinath)
2. *Kalajeera*, a traditional variety of rice cultivated in the Jeypore tract, Orissa (Susanta Sekar Chaudhury)
3. *Veliyan*, a traditional variety of rice cultivated in Wayanad, Kerala (G. Girigan)
4. *Vilari*, an evergreen shrub found in the Kolli Hills, Tamil Nadu (E. D. Israel Oliver King)
5. Interactive session with farmers in Wayanad, Kerala (G. Girigan)
6. Folk songs in the Kolli Hills, Tamil Nadu (E. D. Israel Oliver King)
7. Street play in Jeypore tract, Orissa (L. R. Gopinath)

CONTENTS

Foreword	i
About the Workshop	iii
Acknowledgements	vi
Executive Summary	vii

Section I: The Outcomes

1. Legal and Gender Issues	3
2. Documentation of Traditional Knowledge	11
3. Information Dissemination	13

Section II : The Recommendations

1. Additional Recommendations on Draft Rules for the PPVFR Act, 2001	19
2. Additional Recommendations on Draft Rules for the BD Act, 2002	23

Section III : The Inputs

1. Protection of Plant Varieties and Farmers' Rights Act : What are Farmers' Rights and Why They are Important S. Bala Ravi and Suchitra Padmanabhan	39
2. A Gendered Critique of the Plant Varieties Protection and Farmers' Rights Act, Draft Rules and Related Legislation Mahalakshmi Parthasarathy	49
3. Key Issues in the Biological Diversity Act - M. K. Ramesh	55
4. Community Rights in the Biological Diversity Act - L. R. Gopinath	58
5. Some Remarks on the Biological Diversity Act - Sumi Krishna	66
6. Case Studies - MSSRF Team	68

Annexure

1. List of Participants	85
2. Workshop Schedule	92
3. Group Work Guidelines	95
4. Case Studies Team	97
5. List of Abbreviations	98

Foreword

This workshop represents a proactive exercise in an analysis of the various issues involved in the implementation of the 'Protection of Plant Varieties and Farmers' Rights' (PPVFR) Act (2001) and the 'Biological Diversity' (BD) Act 2002. The Government of India is currently engaged in preparing the implementation Rules relating to these Acts. M. S. Swaminathan Research Foundation (MSSRF) had earlier developed a set of draft implementation Rules relating to PPVFR Act (2001) and forwarded them to the Ministry of Agriculture for consideration. The present analysis deals with both the Acts in an interactive manner, since both of them have similar aims, namely conservation of agro biodiversity, its sustainable use, as well as the equitable sharing of benefits arising from the use both of the genetic material and the knowledge conserved and developed by rural and tribal women and men over the ages. The two Acts are designed to recognise and reward the invaluable contributions of local communities to genetic resource conservation and enhancement through selection and identification of their value in medicine, agriculture and nutrition. A National Gene Fund and a Biodiversity Fund have been proposed for use in extending financial reward and support to such community conservation.

The workshop was particularly concerned with the following issues:

- Will the Rules be gender sensitive?
- Does the term 'farmer' include women?
- What is the definition of the term 'community'? What will be the procedure adopted to recognise and reward the contributions of communities, in contrast to individuals?
- What will be the procedure adopted in identifying and declaring local level heritage sites? Will the procedures adopted tend to dispossess some rural communities of their traditional land and dwellings and thus of their biological heritage and traditional knowledge.

The workshop has brought out quite clearly the need for awareness building in the form of a movement for legal and genetic literacy. A team of 'barefoot lawyers' (representatives from people's movements, Panchayat leaders, biodiversity networks, local organisations/ NGOs etc.) will need to be trained for proficiency in the subject so that community conservation gains recognition in the law and in its enforcement.

We are very grateful to the Swiss Agency for Development and Cooperation (SDC), New Delhi and to Ms. Lucy Maarse and Dr. N. R. Jagannath for their support to the project, 'Biodiversity Conservation, Integrated Natural Resource Management, and Poverty Reduction'.

I thank Prof. P. C. Kesavan, Executive Director, MSSRF, Dr. S. Bala Ravi, Prof. V. Arunachalam, Dr. V. Arivudai Nambi, and the staff of the SDC supported project for organising this consultation. My special thanks goes to Ms. Suchitra Padmanabhan for her dedicated work in compiling this publication.

D. P. Swaminathan

M. S. Swaminathan
Chairman, MSSRF

About the Workshop

This publication presents the work of MSSRF in the area of 'engendering' the recent national legislation on PPVFR, 2001 and BD, 2002. The project, 'Biodiversity Conservation, Integrated Natural Resource Management and Poverty Reduction' supported by the Swiss Agency for Development and Cooperation (SDC) aims, in coordination with the Uttara Devi Resource Centre for Gender and Development, to mainstream gender concerns in biodiversity management – the concepts of 'conservation, sustainable utilisation and equitable sharing of benefits' elaborated in the Convention on Biological Diversity (1992). One of the tasks was to analyse the gendered implications for community conservation of the two recently enacted legislation – PPVFR and BD.

Possible cases that have potential to be examples of benefit sharing, and reward and recognition in the light of the two Acts were identified through a series of internal brainstorming sessions held at the Foundation. Three cases, one from Jeypore tract of Orissa, one from Kolli Hills in Tamil Nadu, and one from Wayanad in Kerala were examined in depth.

The three cases were used as possible paradigms in a series of field level workshops held at the sites in order to communicate the contents of the two Acts. Locally popular forms of communication like street plays (Jeypore, Orissa), folk songs (Kolli Hills, Tamil Nadu) and talks on the relevant aspects of the Acts (Wayanad, Kerala) in the regional languages were used to provide relevant information. The local communities showed great interest and enthusiastically interacted with the Foundation scientists at the field sites on the contents of the Acts. The feedback received from the communities helped to incorporate their perception of genetic resources in the case studies.

These case studies were presented and discussed in the workshop on 'Farmers' Rights and Biodiversity Act: A Gender and Community Perspective' held at MSSRF, Chennai during February 27-28, 2003. The workshop was structured to facilitate a dialogue among the various institutions, organisations and individuals working in this area to

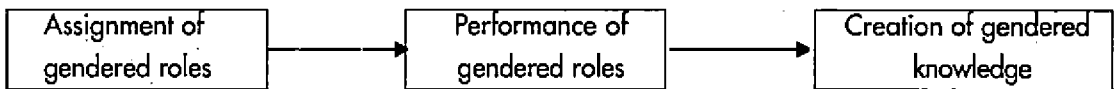
- examine gender dimensions in the PPVFR Act and associated legislation in the light of the rights of a community, in particular, women and traditional knowledge (TK),
- enhance the understanding of TK (components and categories) from a gender perspective,

- develop material for disseminating information on the legislation at different levels, and
- build a network with organisations working on the areas dealt with.

Gender served also as an entry point to address other broad social dimensions, for instance, gender concerns integrated with crosscutting social variables like class, caste and tribe. In the context of women’s personal rights, women were viewed not only as individuals, but also as those having their spousal or natal rights and rights as members of the ‘community’.

In dealing with community rights over resources and associated TK, the complex term ‘community’ had to be partitioned into its simple components for a clear understanding of the issues from a gender perspective. Unlike individual owned knowledge, collective knowledge of a resource, with admissible ownership and benefit sharing is neither well defined in the legislation nor adequately operationalised in the Rules being developed. Those lacunae were therefore addressed in the workshop.

A conceptual framework linking gender as a social construct governing the roles and responsibilities in a given cultural context and leading to the generation of gendered knowledge can be illustrated as



A purposive choice of participants to the workshop brought together important stakeholders including lawyers, academics, gender specialists, scientists, farmers’ groups, and NGOs working in the broad areas of agro biodiversity and community conservation. Such a multi-disciplinary participation facilitated desired interaction and discussion of a range of perspectives.

The workshop provided the participants an opportunity to get technical features of the legislation clarified. The process was greatly facilitated by two presentations on the Acts, while the case studies provided a backdrop for addressing main issues of community rights from a gender perspective.

Group work was an important feature of the workshop. Not only did it ensure close interaction and exchange of ideas on key issues, but it also built a group consensus on the mode of addressing them, in addition to developing a common action plan. The themes – Legal and Gender Dimensions of the Acts, Documentation of TK, Information Dissemination and Benefit Sharing and Field Interventions were identified and discussed in four groups in which participation was voluntary. At the end, discussion was structured through a set of key questions (Annexure 3) in addition to those arising from the plenary session. While English was the general language of communication, participants were encouraged to use their own preferred language in the group discussions for conveying their ideas uninhibited. The recommendations from the groups were presented and consolidated in the concluding session.

The workshop concluded with the commemoration of National Science Day and a valedictory address by Prof. M. S. Swaminathan on 'Gender Dimensions in Biodiversity Management' focusing also areas discussed in the workshop.

This report, 'Farmers' Rights and Biodiversity: A Gender and Community Perspective' in presenting the outcomes and the deliberations on the themes provides a broad perspective of the Acts. A variety of deficiencies that would have an impact on the rights of a community are brought up along with possible suggestions for remedial action during implementation of the Acts. The important papers and case studies are presented as the key inputs.

Acknowledgements

We wish to acknowledge the following for their valuable contributions to this work:

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- Prof. V. Arunachalam, Distinguished Fellow for his incisive comments and time in reworking sections of the report,
- Dr S. Bala Ravi, Director (Biodiversity) for his critical comments and inputs into the workshop as well as shaping this publication,
- MSSRF staff who were involved in the field level workshops and preparation of case studies,
- Mr. L. Pushpakumar, Education Officer (Environmental Law) C. P. Ramaswamy Iyer Environment Education Centre and Ms. Mahalakshmi Parthasarathy for their valuable inputs and assistance in framing Additional Recommendations on the Draft Rules for the PPVFR and BD Acts,
- All the resource persons and participants in the workshop for their valuable time and inputs that made this publication possible, and
- The Swiss Agency for Development and Cooperation (SDC) for the financial support that made organising the workshops and this publication possible as well as facilitating participation of SDC/ Inter Cooperation partner NGOs in the workshop.

Executive Summary

Increasing commercialisation of agriculture and its negative impact on resource-poor communities and their agro-eco systems have received international attention. India has responded to this challenge in a number of ways, the most significant being the enactment of two Acts, the PPVFR Act, 2001 and BD Act, 2002. They seek to address the concerns of the communities engaged in agriculture and biodiversity conservation, as part of their goal.

MSSRF played a major role in the development of these two Acts and has been working since on the issue of 'engendering' the biodiversity legislation with particular attention to 'conservation, sustainable utilisation and equitable sharing of benefits' (CBD, 1992). In that process, a series of internal brainstorming sessions and intensive fieldwork to document community perceptions of TK were held culminating in a workshop on 'Farmers' Rights and Biodiversity: a Gender and Community Perspective' held on February 27-28, 2003 at MSSRF, Chennai. In that workshop, an attempt was made to understand in depth the term 'community'. In particular, the questions, 'who' in the community receives reward and recognition and how women's rights as individuals, and members of the family and community are safeguarded in that process, were sought to be answered.

It was further noted that, despite all the recent international and national developments, the area of 'community conservation', including community conserved bioresources and associated traditional knowledge, remains relatively unrecognised and unprotected. In keeping with the Foundation's mandate, it was that area of 'community conservation' that was the hub of deliberations in the workshop. There was a specific focus on the emerging gender issues concerning the rights of the community on bio-resources and traditional knowledge in the PPVFR Act.

To firm up suggestions as guidelines for implementation of the Acts, the workshop chose an interactive mode with participation of a range of stakeholders, from lawyers, academics, and gender specialists to farmers' groups, and NGOs working in the area of biodiversity and community conservation. Expert presentations on the two Acts led the group discussions on four broad themes, namely, Legal Dimensions, Documentation of TK, Information Dissemination and Benefit Sharing and Field Interventions.

The following three issues were deliberated intensively:

1. Community Rights – understanding implications of the legislation concerning community rights over bio-resources and TK,
2. Gender – a systematic analysis of women’s rights influencing community conservation and traditional knowledge, and
3. Gendered Knowledge – examining the basis of knowledge in a given cultural context determined by gendered roles and responsibilities.

The following broad recommendations were made with reference to the two Acts.

The PPVFR Act

- The vague definitions of the terms ‘farmer’, ‘farmers’ variety’, the absence of definition on ‘community’ and lack of gender perspective to them requires remediation in the national context.
- Guidelines are needed in the Rules for implementation of the Acts to identify who constitutes the ‘community’ for purposes of registration and benefit sharing.
- Guidelines have to be specific in order to identify and reward the claimants of benefit sharing. The Rules must further provide for joint ownership of rights, sharing of technology, monetary compensation etc. in the context of collective rights.
- While identifying benefit claimers, representation and rights of women should be specifically provided for.
- Exemption provided for farmers or a village community from any fee for processing legal cases in the PPVFR Act while welcome, is inadequate and access to legal aid to farmers should also be provided for.
- A clear plan of action highlighting advocacy based on legal issues and gender concerns should be forwarded by MSSRF to the Ministry of Agriculture for incorporating in the Rules of implementation under preparation.

The BD Act

- A network of organisations and professionals working in the area of biodiversity and community conservation needs to be organised for effective dissemination of information and capability building at varied levels.

- A set of Draft Rules for the BD Act reflecting the concerns emerging from the workshop should also be developed. [Since then the Ministry of Environment and Forests (MoEF) notified the Draft Rules, and the recommendations emerged from the workshop were conveyed to the MoEF].
- Documentation of TK in the light of the provisions in the two Acts may be taken up and lead to evolving optimal avenues of dissemination of information. MSSRF may collate the models followed by various agencies involved in that area and facilitate a discussion on this subject.

In an immediate follow up, recommendations highlighting gender concerns in the PPVFR Act were consolidated and submitted to the Ministry of Agriculture. In the case of the BD Act, the recommendation was to convene a meeting to formulate Draft Rules. While these proceedings were under preparation, the MoEF published the Draft Rules for the BD Act with an extended deadline of June 4th, 2003 for sending comments and suggestions on these Rules. Therefore, the concerns emerging from the workshop and other issues relating to the draft Rules were consolidated and submitted to the MoEF for consideration.

The efforts made by MSSRF on specific cases from Jeypore (Orissa), Kolli Hills (Tamil Nadu) and Wayanad (Kerala) provided helpful illustrations to the process and pathways by which communities become eligible for benefit sharing under both the Acts. The workshop helped to delineate 'community' for the purpose of varietal registration under PPVFR Act and highlighted criteria by which communities could be identified for reward and recognition.

SECTION I

The Outcomes

1. Legal and Gender Issues
2. Documentation of Traditional Knowledge
3. Information Dissemination

Legal and Gender Issues

In general, the role and functions of various committees set up under both the Acts was examined.

With the central theme of mainstreaming a gender and community perspective in the Acts, the broad areas — the coverage of the definition, registration of farmers' varieties, and legal aid were analysed in the PPVFR Act.

In the BD Act, it was sought to evaluate researchers' concerns, benefit-sharing issues, earmarking 'heritage sites', prior informed consent, and assessment of biodiversity for its value (BD value).

The PPVFR Act

Definition

Section 2 of this Act provides definitions. These definitions are notable either for its vagueness in some cases or omission of expressions critical for the implementation of the Act. In addition definition of 'farmer,' which is central to the Act, lacks a gender perspective. This would entail serious inequity implications during implementation of the Act. Women who are already disadvantaged in ownership of property and control over assets in agriculture, in general may not derive any advantage implied in the Act.

Definition of 'farmer' and 'farmers' variety'

The discrepancies in the use of expressions 'wild species' and 'wild relative' in the definitions of the terms 'farmer' and 'farmers' variety', respectively require clarification in the Rules.

Section 2 (k) (iii) defines a 'farmer' as "any person who conserves and preserves, severally or jointly, with any person any *wild species* or traditional varieties, or adds value to such *wild species* or traditional varieties through selection and identification of their useful properties" (italics added);

Whereas, Section 2 (l) (ii) defines a 'farmers' variety' also includes a "*wild relative* or land race of a variety about which the farmers possess common knowledge" (italics added).

Thus, while a person who conserves, preserves or adds value to a wild species is considered a farmer, such wild species are not defined as farmers' varieties; but only the wild relative is recognised as farmers' variety. Such discrepancy in the use of expressions 'wild species' and 'wild relative' may cause a problem in registering a

wild species to which farmers have added value or about which the farmers possess common knowledge. Hence this discrepancy in definitions has to be rectified in the Rules.

Definition of 'community'

The term 'community' is central to both the Acts. However, it is left undefined both in the Act and the Rules. It is recognised that the term community assumes varied connotations in the Indian context. While the law drafted in English may be based on models provided by Western countries where the word 'community' has basically geographic connotations, in India the concept is very dynamic with several ramifications, involving vocation, caste, tribe, ethnicity, religion, etc.

PPVFR Act carries expressions such as 'community of farmers' (Section 16(1) (d)) and 'village or local community' (Section 41(1)). BD Act has expressions such as 'local bodies', (Section 21(1), 47), 'Local Biodiversity Fund' (Section 43) and 'local people' (Section 21(2)(d)). All expressions on community and local people are used without defining who constitutes the community, how the different communities are distinguished and how local community and local people differ, if they do. In the case of BD Act, while 'local body' is defined and it has equivalence with 'Local Biodiversity Fund', it is not clear whether 'local body' and 'local people' have commonality in geographical limitation. As long as these expressions are not defined either in Rules or regulation, it shall be left to the discretion of the concerned Authority or Government of India to define them. It is recognised that notwithstanding the fact that absence of a fixed definition may facilitate a case-by-case application of the law, the desirability of putting in place guidelines in the Rules or Regulations to determine who constitutes the types of communities referred in the Act for purposes of: (a) registration and (b) benefit sharing would be welcome to minimise subjective interpretation. Such definition of community should give relevant consideration to geographical location, user groups, occupation, caste/class distinctions, etc, depending on the context and circumstances with due recognition to gender equity.

Definition of 'benefit claimers'

The BD Act defines 'benefit claimers' as the conservers of biological resources, their byproducts, creators and holders of knowledge and information relating to the use of such biological resources, innovations and practices associated with such use and application;

This definition, on the face of it, is very broad and could include individuals, groups and communities. For purposes of benefit sharing as provided under subsections (1), (2) and (3) of Section 21, guidelines have to be specific in order to identify and

reward the claimants. In the case of knowledge pertaining to biological resources, there is seldom a single holder / owner. Therefore, the Rules must specifically define who constitute 'conservers' and 'holders of knowledge'. Rights over resources and knowledge are usually held in the common. Therefore, it is important that the Rules provide guidelines for joint ownership of rights, sharing of technology, monetary compensation, etc. in the context of collective rights.

Further, women are also largely involved in conservation and sustainable use of bioresources and most often are equal holders of knowledge associated with these resources. Guidelines for identifying benefit claimers must ensure that representation and rights of women are specifically provided for.

Provisions for registration of farmers' variety

Section 39 (1) (ii) provides "notwithstanding anything contained in this Act, the farmers' variety shall be entitled for registration if the application contains declaration as specified in clause (h) of sub-section (1) of section 18".

Section 18 (1) provides that "...in case where the application is for the registration of farmers' variety, nothing contained in clauses (b) to (i) shall apply in respect of the application and the application shall be in such form as may be prescribed";

Further, clause (h) of sub-section 18 (1) states, "every application for registration ... shall contain a declaration that the genetic material or parental material acquired for breeding, evolving or developing the variety has been lawfully acquired";

These two sections when read together manifest contradictory requirements. While Section 18 (1) provides an exemption to the farmer in complying with the several requirements in that section including clause (h), Section 39(1) makes it mandatory for the farmer to provide a declaration that the genetic material has been lawfully acquired.

Access to legal aid

PPVFR Act provides (Section 44) total exemption to farmer or group of farmers or a village community from paying any fee in any proceedings before the Authority, or the Tribunal or the High Court on matters related to this Act. Considering the financial capability and legal literacy of majority of Indian farmers, it was felt that such fee exemption alone is inadequate and there should be a facility for free access to quality legal aid to farmers on any possible legal proceedings against them related to farmers' rights.

The BD Act

Researchers' concerns in the BD Act

It is recognised that the two Acts will have profound impact on community ownership of biodiversity and knowledge systems as well as on researchers and research institutions engaged in scientific research, which is directly linked to commercial utilisation of the biodiversity or the knowledge system.

There is apprehension that Section 5 of the BD Act on "collaborative research projects between institutionsof India, and such institutions in other countries" may adversely impact on access to fund on biodiversity related research and development activities taken up by NGOs, even when such activities shall not entail either transfer or exchange of biological resource or information relating thereto, except the mandatory need for submitting project progress report to the donor agency. While the need for such provisions are appreciated, the apprehension arises from the possible bureaucratic procedures and delays, which may institutionalise to the detriment of conservation of bioresources and capability building of local people and institutions in assessment of biodiversity, sustainable use, etc. Therefore, the governmental guidelines on this provision have to be unambiguous and the administrative mechanism well streamlined to promote resource flow for promotion of the causes espoused by this Act as well as protection of the interests of local communities.

Benefit sharing

In the context of vagueness in the definition of 'local people' and the breadth in the definition of 'benefit claimers', the benefit sharing modalities envisaged in the BD Act (Section 21) carry the potential to go astray. While the BD Act had made notable attempt to incorporate the concerns of women and men engaged in conservation, the concern that benefit sharing could become unfair in equity terms remains. Under Sections 21 and 41(2) related to determination of equitable benefit sharing and finalising mutually agreed terms and conditions between the person applying for a patent, on one hand, and of the concerned local bodies and the benefit claimers, who are the actual conservers of the concerned biodiversity or the innovators of concerned traditional knowledge, on the other, there are inconsistencies to the disadvantage of the local people. Under Section 41(2) the role of local people who are the conservers of concerned biodiversity and the innovators of associated traditional knowledge are left out, while the concerned Biodiversity Management Committee is to be merely consulted without making its concurrence mandatory. This essentially shifts the decision making on access, mutually agreed terms and benefit sharing away from the concerned local people and local institutions to the National Biodiversity Authority. How far such a shift in decision-making on such

critical issues, which have direct implications to conservation and sustainable use, shall serve to achieve the goals of this Act remains an enigma.

Heritage sites

Serious concern was expressed over Section 37, which authorises the State governments to declare any area of biodiversity importance as biodiversity heritage sites and in particular the subsections (2) and (3) where local body has no role in influencing the government on the Rules for the management of such heritage sites and on the schemes for compensating or rehabilitating people economically affected by such declarations. The history of environmental legislation shows that 'effective compensation for displaced communities' is a mirage. For, displacement of communities dependent on the natural resources of a defined geographic area for their livelihoods, amounts not only to a loss of livelihood but also a corresponding erosion of traditional knowledge on those resources and their utilisation. This provision, in effect, takes away from communities the very rights that biodiversity legislation ought to have provided to them, while regulating access and sustainable utilisation of biodiversity.

The original purpose of such a provision on heritage sites had been to promote *in-situ* conservation in the form of sacred groves and keystone species therein. The purpose and the vision behind it has however been diluted through the actual provision of the Act. Therefore measures to safeguard the rights of the communities in these 'hotspot' regions have now to be included in the Rules of implementation.

Further, the Act fails to define what constitutes 'heritage'. It was felt that the term 'heritage' should encompass the cultures and lifestyles of peoples and their association with their local biodiversity, and that 'heritage' should not mean bio-resources alone. It was emphasised that the choice of heritage sites should be done only by the Panchayat Level Biodiversity Management Committee and not merely by the Biodiversity Authority. Biodiversity pockets like sacred groves must also be recognised as *peoples' heritage sites*.

On the legal front, it was pointed out that the important areas of biodiversity as mentioned under Section 37 (1) have already been defined, however, under different legislation for the protection of biodiversity areas and include protected forests, eco-sensitive areas, national parks and sanctuaries, community conserved sites etc. Therefore, the Rules will have to reconcile any consequent differences.

Prior informed consent

The BD Act was developed following the guidelines prescribed by the CBD, 1992. One of the important objectives of the CBD is to ensure that provisions for prior informed consent from the owners / conservers of biological resources and associated

knowledge are incorporated into national legislation governing access and use of those resources. But the BD Act requires prior approval from the National Biodiversity Authority and the State Biodiversity Boards, with no explicit requirement for obtaining prior informed consent from the local individuals / communities conserving and using these resources.

Section 21 provides that the Authority may prescribe equitable sharing of benefits when the resource / knowledge has been accessed from a specific individual / group or organisation, but there is no explicit reference to obtaining their prior informed consent. This is one important aspect to be considered while framing the Rules. Another alternative is that the National Biodiversity Authority or the State Biodiversity Boards consult and concur with the local people conserving and using these resources and local authority, before granting approval for commercial utilisation of the resources.

Assessment of biodiversity value

Assessment of biodiversity and associated knowledge is important to the process of prior informed consent and decisions on developing mutually agreed terms and equitable benefit sharing. It was also suggested that any land assessment for special land acquisition, or denotification by the Ministry of Environment and Forests etc., must essentially include the estimated value of biodiversity in such areas.

Common concerns

Committees set up under the two Acts

Delineation of mandates of Plant Variety Registry and Agro biodiversity Authority

Sections 3 and 12 of the PVPFR Act provide for the establishment of a Protection of Plant Varieties and Farmers' Rights Authority and a Plant Varieties Registry, respectively for purposes of administering the PPVFR Act.

Section 13 of the BD Act provides that a Committee may be constituted by the National Biodiversity Authority to deal with agro biodiversity specifically (where agrobiodiversity means biological diversity of agriculture related species and wild relatives).

The setting up of such an Agro biodiversity Committee could overlap with the mandates of the PPVFR Authority as both deal with plant varieties and species of agricultural importance. Therefore, the functions and powers of each of those bodies require harmonisation without overlap.

Delineation of duties of various committees

Apart from the National Biodiversity Authority (NBA) and the State Biodiversity Boards (SBB), local bodies are to set up Biodiversity Management Committees (BMCs). All of them are involved with the conservation and sustainable use of biological resources. Further, at each level, the committee in charge can collect fees and charges for access and use of biological resources. In order to avoid overlapping of duties, and multi-point fee collections, specific functions and the powers of each of those committees must be defined in the implementation Rules of the Act.

There could also be further overlap with the committees set up under other legislation, such as the Joint Forest Management Committees, SC/ST Federations and others as the areas of jurisdiction and the resources contained therein are often the same. Therefore, there is a need to reconcile at this stage itself, any conflicts that are likely to arise in operationalising the Act.

Mainstreaming gender

Two aspects, representation and property rights, were highlighted for an effective incorporation of gender dimension. It is important to recognise that the issue of representation is not just one of numbers and ensuring a certain percentage of women in administrative bodies, but of allowing for effective decision-making power in them. Recognising women's interests and their actual representation can only ensure this. For instance, with respect to the BD Act, it is necessary to examine 'who are the managers and conservers of biodiversity at the local level' and how to address their concerns in engendered manner.

Property rights presents a tough picture but remains central to the debate on women's empowerment. Since a farmer is defined as a person who cultivates or has the means to cultivate, the issue of women's access and control over property becomes relevant.

It is in this respect that we need to consider women's rights keeping in mind her status as an individual, inheritor/ natal, matrimonial/ spousal, and member of the community.

Under the present Indian law, women have no right even to the matrimonial home and could be, to the farm as well. Therefore, the Acts have to take into account the varied legislation that govern women's access and control over any property in different ethnic groups/ minorities etc.

In a pioneering effort, benefits from a tribal community identified source, that led to a commercial product, *Jeevani*, were shared with the source tribe, *Kani*, in Kerala. But, the gender dimension had been ignored in the process; with the result no benefits

were specifically directed to the women in the 'community'. This illustrates the gender insensitivity or a systemic neglect of women for reward and recognition at the level of the community.

While links to other environmental legislation (such as the Wildlife Protection Act, Seeds Act etc.) are currently seen as mandatory, property rights and associated legislation are not even acknowledged. Therefore, additional space for accommodating them needs to be created. Joint *pattas* on residential property enforced in some states could be a valid example. Since the BD legislation has no precluding clause, it is possible to make room for effective gendered representation in the Rules for implementation.

A specific suggestion to incorporate gender equity in the Rules governing registration of farmers' varieties under Section 16 is that in the case of farming families, it shall be made essential that applications for registration of a plant variety arising from a farm family shall always include the names of both spouses (woman and man) as applicants and additionally any other individual, in or outside the concerned farm family, who have had a role in the development or conservation of the candidate variety. In the case of all farmer applicants, who are married, the term 'applicant' shall be deemed to involve both the spouses. However, in the case of families headed by women (where the male spouse may not be living or living but has deserted the family), the application shall include the name of the woman and not that of her spouse.

Similarly, in Section 41 (1), which provides for the rights of communities in staking a claim for the benefits, the equitable entitlement of both women and men should be recognised while granting the benefits.

Documentation of Traditional Knowledge

The major areas on documentation of TK considered were:

- Purpose - why and for whom the documentation,
- Safeguards - how and what safeguards in the documentation, and
- Approaches – what possible effective approaches for the documentation.

Why and for whom?

Two fundamental issues that emerged were (a) the semantics of the terms 'indigenous' and 'traditional', and (b) the exclusive economic perspective with which documentation was done in the past.

An examination of words used in various Indian languages to describe the term 'traditional' reflected different perspectives of space, time and social context, such as individual/family and community; local and regional; regional and national; familial and generational. Across many languages and perspectives, the two most common terms used to describe 'traditional' were the equivalents in Hindi/Sanskrit languages, *sampradayik* and *paaramparik*, which could roughly be translated in English as 'traditional'. A consensus emerged that the term 'indigenous' did not have relevance in the Indian context.

Knowledge was part of a 'world-view', related to many different aspects of peoples' lives and their specific material and social worlds. If documentation were from the people's perspective and attempted to include all components of culture, this would also usefully serve the interests of conservation and sustainable development. Hence documentation should be done in a holistic manner, to protect the interests of the community concerned, its livelihood security in particular, and in a manner that the community derives benefits out of this documentation.

The terms used to define knowledge, the definition itself, and the perspectives from which this was done all carried value judgments that reflected implicit power relations between groups of people (such as the creators of knowledge and researchers who documented knowledge). So the consensus was that the 'politics' (of class, caste, gender and age) in such relations needs to be recognised in order to protect the interests of all sections of the community and ensure equitable sharing of the benefits from documentation.

A lively discussion on existing social mechanisms that govern conservation, use and benefit sharing led to the conclusion that there already exists a set of traditional norms, rules and regulations that govern access and control over local bioresources.

These need to be studied and given due recognition while framing Rules so that conflict between traditional structures and new legislation is minimised.

How and what safeguards?

It is recognised that

- elders in a community, women and men, were important as 'carriers' of knowledge,
- documentation should be done in a participatory manner and by using various means including the people's own traditional, audio and visual modes, as also modern audio-visual technology. For example, audio/video tapes could be created, stored and accessed by the community and for the use of others,
- scientists and other professionals could facilitate the process of documentation, presentation and storage, and
- documentation should necessarily involve prior informed consent.

Transmission of knowledge within a community could be hindered by barriers such as those of gender, age and class, as well as cultural relationships among different communities, which should be explicitly recognised during any process of documentation.

Approaches to documentation

Some methods adopted in different states were described briefly. They included documentation (a) in the form of Panchayat Register as done by a Village Panchayat in Madurantakam, Tamil Nadu, (b) of agricultural practices by a farmer's association from Virudhunagar, Tamil Nadu, (c) as done in Jeypore, Orissa, by MSSRF, (d) as done by a project of the SDC among the Jenu Kurumbas in Karnataka, and (e) of traditional agricultural practices and animal health healing facilitated by 'Anthra' in Andhra Pradesh and Maharashtra.

The multiplicity of approaches drove home the point that no single protocol could be formulated and optimal models would have to be selected to suit different contexts.

Finally, it was suggested that MSSRF could undertake collation of the various approaches and outcomes, and facilitate a further discussion on the topic.

Information Dissemination

While the nuances of law cannot and indeed need not be communicated to the general public since it requires a certain degree of legal expertise, the implications of the law in terms of its relevance to livelihood systems could be easily conveyed. Long-term consistent communication should be preferred over scattered efforts so that awareness can be built in a sustainable manner. The key issues discussed on dissemination of information were:

- What to communicate?
- To whom? and
- How?

What to communicate?

The possible ramifications of engaging in public discourses on the conservation and sustainable use of biodiversity suggest the need for capacity-building exercises at various stages and levels to build public awareness and facilitate an informed debate. Considering the exigent needs of the BD Act, the following priority aspects were set for communication:

- Positive current benefits derived from conserving biodiversity and its future potential,
- Salient features of important plant species, their current status and immediate threats,
- Peoples' rights, responsibilities and the need for community/stakeholder cooperation, and
- Appropriate, locally relevant and user-friendly technologies for biodiversity conservation.

Effective communication of the provisions for registration of farmers' varieties, procedure for accessing benefit sharing, and provisions for gender equity was stressed in the case of PPVFR Act.

For whom?

An analysis of components of all the stakeholders should first be done to decide what communication is relevant and how to reach it to the desired target groups. A gendered lens should be employed to identify stakeholders lest the recognition to the contribution of women and their benefit from the laws escape in the process. It will equally be essential to prioritise the stakeholder groups to channel the limited resources optimally.

Being a relatively new area of expertise that requires concurrent attention on all stakeholders, it is imperative to include policy makers, government officials and administrators in the effort. A coherent network of NGOs and other organisations working in the area, if formed, would help in avoiding duplication of efforts (like documentation and validation) in addition to facilitating sharing of resources and information.

How to communicate?

Some of the elements important in the communication process are:

- Importance to secondary sources of information along with the primary data like the bio-resources sourced through the Community Biodiversity Registers, for example,
- Dissemination of information would require efforts at several levels and stages and in varied forms ranging from sensitisation, engaging in dialogue, and building proactive partners to environmental activism. Capacity building exercises need to be undertaken at various levels, such as Panchayats, NGOs, lawyers and administrators before the law can be made operationally effective,
- Use of training manuals made in vernacular and easily understandable style as tools for communication,
- Making available training manuals to the NGOs to assist their capacity-building exercises of local level institutions like Panchayats,
- Governmental support in funding the publication, information dissemination and capacity building efforts,
- A collaborative effort with all concerned institutions (NGOs, Community Based Organisations (CBOs) Government Organisations, Village Level Institutions, etc.) for an effective dissemination of information. The form of communication should be adapted to the target audience and their receptivity. Varied forms of communication such as the mass media (TV, Radio, street theatre, newspapers/periodicals etc.), audio-visual aids (slide shows/OHP/PowerPoint presentations in local language using local/most relevant examples), exhibitions and field visits were some possible means of communication, and
- Information must reach local people, farmers, communities and villages. A possible approach is publication of a journal in different local languages, which may effectively disseminate the information on the two Acts, guidelines on registration of farmers' plant varieties, on accessing benefit share and for notifying

registration applications already allowed. This journal must be made available to all local authorities set up under both the Acts. The consensus on the need for such journal remained to be matched with identifying the party responsible for publication and dissemination.

In the end, it was recommended that both the Acts should be made available in regional languages along with appropriate explanations and the training modules. The government may be requested to provide support by funding the competent agencies for developing training modules and capacity-building programmes with respect to these two Acts. A structured training module is the urgent need for awareness generation programmes on these Acts suiting to different levels such as the community, local level institutions, NGOs working in the area and officials implementing these Acts. Efforts need to be made to include the contents of the Acts and associated aspects in education curricula. Special certificate courses could be arranged through Indira Gandhi National Open University (IGNOU) and other educational institutions to strengthen the rural capability on these legislation.

SECTION II

The Recommendations

1. Additional Recommendations on Draft Rules for the PPVFR Act, 2001
2. Additional Recommendations on Draft Rules for the BD Act, 2002

Additional Recommendations on Draft Rules for the PPVFR Act, 2001

As discussed earlier under Section I entitled ' The Outcomes', the workshop identified a few deficiencies or inadequacies in the body of the Act, which possibly in the opinion of the group, could be rectified with appropriate drafting of the Rules. In addition, the workshop also resolved the approaches to framework Rules for engendering the Act with respect to critical areas, where rights of women have to be explicitly defined. These recommendations are highlighted hereunder in bold letters. The recommendations are contextualised with reference to the numerical order of Draft Rules developed and submitted by the MSSRF to the Government of India in February 2002. The following recommendations have been separately conveyed to the Ministry of Agriculture, Government of India.

1. Usage of terms 'wild species' and 'wild relatives'

Section 2 (k) (iii) of the Act defines 'farmer' as any person who "conserves and preserves, severally or jointly, with any person any wild species or traditional varieties, or adds value to such wild species or traditional varieties through selection and identification of their useful properties".

Under section 2 (l) (ii) 'farmers' variety' is defined as a variety, which "is a wild relative or land race of a variety about which the farmers possess the common knowledge".

These definitions give scope for confusion that whether the expressions 'wild species' and 'wild relative' are to mean the same or different. All cultivated species may have one or more wild species with not all of them believed to have contributed to the origin of the cultivated species. In that case, does the expression 'wild species' cover all wild species including those which have not contributed to the origin of the referral cultivated species and does the expression 'wild relative' include only those wild species which is (are) believed to be the progenitor of the cultivated species? In order to prevent any misinterpretation, it is suggested to provide a clarification in the Rules as follows:

Rule 2 (21) "Wild Species" for the purpose of this Act and the Rules, the expressions 'wild species' and 'wild relatives' means the same and includes all those species which are held to be wild and related to the cultivated species.

2. Definition/Guidelines for the term 'Community'

The Act uses expressions such as "village community" [section 41 (1)]; "community of farmers" [section 16(1) (d)] and "local community" [section 41 (1)]. However, these expressions, particularly the term 'community' is not defined in the Act.

The dynamic nature of any Indian community, as we perceive it, precludes its straight-jacketing within a rigid definition. Nevertheless, the assorted composition of any Indian community may cause administrative problems in identifying legitimate members of a community for ownership of a variety or dispensing benefit share arising there from. Hence there is a need for an operational definition of the term 'community' under the guidelines of this Act. Such guidelines may take into cognisance the following parameters:

"Community" shall mean and include, subject to the context in which the term is being used

- (i) Geographical limitation, wherever required,**
- (ii) User groups,**
- (iii) Occupation,**
- (iv) Caste or class distinctions within a sect or population, tribal or ethnic groups, etc. who have played a significant role in conservation of agro biodiversity and associated traditional knowledge or association with the development / utilisation of varieties including wild species and wild relatives,**
- (v) Or any other parameter the Authority may deem appropriate to include, according to the circumstances of the case.**

3. Contradiction between Section 18(h) and Section 39 (1) (ii)

Section 18 (1) of the Act prescribes the necessary details to be given in every application filed for registration of a variety including a farmers' variety. The proviso to Section 18 (1) states that for registration of farmers' varieties, nothing contained in clauses 18(b) to (i) shall apply.

However, section 39 (1) (ii) states that "farmers variety shall be entitled for registration if the application contains declaration as specified in clause (h) of sub-section (1) of section 18", which has been specifically exempted by the proviso to Section 18 (1).

Section 18 (1) (h) states that the application must "contain a declaration that the genetic material or parental material acquired for breeding, evolving or developing the variety has been lawfully acquired." While section 18 recognises the difficulty of farmers, particularly the community of farmers, in discerning the parental material of traditional varieties and in providing a declaration on the lawful acquisition of parental material, this privilege is removed by the section 39 (1) (ii).

While applying for registration, the farmer may not know which section to follow. This contradiction has to be effectively addressed in the Rules.

4. Incorporating gender justice into the Rules

Indian agriculture is notable for equal contribution of man and women, whether it is seed selection, cultivation or conservation. When farmers' rights are granted in recognition of these roles of farmers through this legislation, it is important that these rights are accessible with gender justice. The Rules of this Act, hence, have to reflect this concern with equity and justice. With this in view, the following suggestions are made for incorporation in the Rules:

- (i) Under the Rule 11 which deals with 'Appointment and Functioning of the Standing Committee', a sub rule may be included as follows: –

Rule 11 (6) The Chairperson shall nominate to the Standing Committee a person knowledgeable on the issues related to the roles of women in agriculture and agrobiodiversity conservation.

- (ii) Under Rule 9 on 'Powers and Duties of the Chairperson', sub rules to the following effect may be included–

Rule 9 (13) The Chairperson, shall prior to the grant of registration to farmers' varieties, applied by individual or group of farmers, verify and satisfy whether name(s) of applicant(s) provided in the registration application do truly reflect the contributions of the women members of the family or families of the applicant(s) in the derivation of the candidate variety.

Rule 9 (14) The Chairperson shall while discharging all powers and duties provided under the Act ensure gender justice, including in the plant variety database particularly on farmers' varieties.

- (iii) Section 16 of the Act provides for registration of a plant variety by a successor of a breeder. There is a danger of this succession right being interpreted against

women due to variable successor right on their personal laws. Hence, there is a need to provide special safeguard in the Rules, so that the succession right provided therein is equitable in gender perspective. Hence the succession right may be dealt with as follows under the Rules:

Rule 20 (8) Where an application is made by virtue of succession, the legal successor should be seen in the context of the various succession rights as provided under the respective personal laws applicable to the concerned developer of plant variety and in case any of these laws prevents or denies any women from receiving her equitable successor right, the Authority shall ensure that gender justice is prevailed according to the contribution made by the applicant.

- (iv) Provision of National Gene Fund is another unique feature of this Act. It is also well recognised that woman play important role in seed conservation. Hence the relevant Rules on constitution and functioning of NGF should adequately and explicitly reflect the gender concerns. The following suggestion may be considered for inclusion in the Rules.

Rule 36 (10) The Authority shall ensure gender justice while determining benefit sharing among farmers, community of farmers including tribal and rural communities engaged in conservation, improvement and preservation of genetic resources and the knowledge associated therein.

5. Constitution of a Legal Cell in every Plant Variety Registry Office

The Act represents a landmark legislation in respect of the farmers' rights. However, the low literacy, particularly the legal literacy, of Indian farmers shall be bottlenecking the access to these rights by many farmers, particularly the poor and marginal. Hence there is an unqualified need for providing legal aid back up to farmers for accessing their rights as well as protecting them from legal harassment. Therefore, the Rules may provide for appointment of one legal officer with every plant variety registry office to provide free legal aid service to farmers.

Rule 17 (8) The Authority shall constitute a legal cell in every plant variety registry with an exclusive Law Officer in order to provide free legal aid services to the farmers.

Additional Recommendations on Draft Rules for the BD Act, 2002

Following are the recommendations developed on the Draft Rules for the BD Act, 2002. A proposal to consider these recommendations was submitted to the Ministry of Environment and Forests, Government of India. The additional or amended Rules are highlighted hereunder in bold letters.

1. Definitions

The following terms have found reference in the Act and require further clarification in the Rules as suggested below.

- (a) **Heritage sites: Biodiversity heritage site means and includes any area where there is rich diversity of biological resources, terrestrial and aquatic, encompassing culture, beliefs, customs, traditional knowledge and practices and lifestyles of the local community created out of their interaction with the local biodiversity.**
- (b) **Conserver: means an individual, group of individuals or a community engaged in protection, cultivation, propagation, sustainable utilisation in perpetuation of the components of biological diversity in their natural habitats.**
- (c) **Holders of knowledge: means an individual, group of individuals or a community who possess knowledge relating to biological resources, their occurrence, properties and usages acquired through their interaction with local biodiversity.**

2. Inclusion of women in the National Biodiversity Authority

The contribution of women in conservation of biodiversity and traditional knowledge is enormous. In community biodiversity conservation, women play a major role. They have been protecting and conserving a variety of indigenous plants and animals and the associated knowledge for over many centuries. Conservation movements like the '*Chipko Andolan*' were led by women. There have also been a number of women '*vaidis*' and village doctors who have been specialising in indigenous medicine. In this process they have improved many qualities of materials derived from plants and animals and hold the knowledge relating to them. In all benefit sharing agreements, they will have a definite stake. While deciding benefit sharing, it is necessary to have a representative to defend the interests of women and deliver gender justice.

Rule 6. Nomination and Term and Allowance of non-official Members

- (4) **While appointing non-official members, the Central Government shall appoint at least one woman member knowledgeable in biodiversity and women's issues drawn from among National Commission for Women/ professionals/ women's organisations.**

3. Expert committees for better implementation

The documentation of locally available biodiversity is left in the hands of local authorities. The Biodiversity Management Committees (BMCs) are given the task of documenting biological diversity and chronicling of traditional knowledge. As of now, local authorities are not equipped to undertake such technical jobs. This Act does not create any mechanism to monitor, access and coordinate the activities of the BMCs either by the State Biodiversity Board (SBB) or by the NBA. In this scenario, if exclusive committees for the purposes of monitoring documentation and capacity building are set up they will facilitate better implementation of the Act. Likewise, a committee on risk assessment will also be helpful.

An expert committee on benefit sharing is essential because of the complexity of issues involving traditional knowledge and the need to recognise contribution of women, taking into account existing traditional mechanisms of benefit sharing. Community recognition and reward present special challenges and there is need for an Expert Committee to work out modalities for recognising and rewarding the contributions of holders of traditional knowledge and conservers of biodiversity based on the principle of gender equity and justice.

The above-mentioned expertise can be accommodated by appointment of the expert committees as mentioned below:

Rule 11. Appointment of Expert Committee by the Authority and their Entitlements

- (3) **The authority shall constitute separate committees on each of the following:**
- (i) **Expert Committee on Documentation, to coordinate and guide the maintenance of People's Biodiversity Registers in each state and compile it for the national database.**
 - (ii) **Expert Committee on Benefit Sharing, for advising and developing equitable benefit sharing mechanisms among holders of traditional knowledge and conservers of biodiversity, based on gender equity and justice.**
 - (iii) **Expert Committee on Capacity Building, for fostering biodiversity literacy and for monitoring awareness programmes on the Biodiversity Act and Rules for relevant target groups in each state.**

(iv) **Expert Committee on Risk Assessment, to monitor the effect of access and research over biological and genetic resources, environment, eco system, and livelihood of people.**

(4) **In each committee, the authority shall appoint at least one woman member knowledgeable in the special issues for which such committee is constituted.**

4. Engendering the Rules and implementation

Rule 12. General Functions of the Authority

(viii) Organise through mass media a comprehensive programme regarding sustainable conservation of biodiversity, sustainable use of its components and fair and equitable sharing of benefits arising out of the use of biological resources and knowledge, **and awareness on the 'gendered' nature of traditional knowledge on biodiversity.**

(ix) Plan and organise training of personnel engaged or likely to be engaged in programmes for the conservation of biological diversity and sustainable use of its components **and ensure that such training has a gendered component as its integral part.**

5. Promotion of research on biodiversity

(i) Under Rule 15 which deals with 'Procedure for access to biological resources and associated traditional knowledge' the following may be added

Rule 15 (1) Any person seeking approval of the Authority for access to biological resources and associated knowledge for research or for commercial utilisation shall make an application in Form I as given in schedule. Every application shall be accompanied by a fee of Rs. 10,000/- in the form of a cheque or demand draft. **The fee may be Rs.100/- so that M.Sc. and Ph.D scholars are not discouraged from taking small-scale enterprises, taking advantage of the Agri-business Scheme of the Government of India.**

(ii) The term 'as far as possible' will give room for the Authority to take any length of time to decide on an application. The Authority is not bound to dispose of the application within the stipulated time. In such case, most of the applications may not be concluded within the time and some may even take years for disposal. This will ultimately discourage scientific and research activities. Hence it is suggested that the term 'as far as possible' be omitted and the Rule reads 'as follows:

Rule 15 (2) The Authority after due appraisal of the application and after consultation with the concerned local bodies and after collecting such additional information, as it may deem necessary shall decide the application, within a period of six months of receipt of the same.

Rule 15 (4) The approval for access shall be in the form of a written agreement duly signed by an authorised officer of the Authority and the applicant. The form of agreement shall be decided by the Authority and may include the following:

- (iii) While giving access to biological resources, it is always good to specify a time frame for access. Otherwise, it may become life long access for individuals and even more in the case of institutions, which will ultimately lead to over-exploitation of biological resources. This may even pave the way for the disappearance of the biological resources, which is contrary to sustainable use and conservation of biological resources, one of the objectives of the Act and hence a modification to include a time frame has been mentioned below:

Rule 15 (vii) To adhere to a limit set by the Authority on the quantity and specification of the quality of the biological resources for which the applicant is seeking access along **with a time frame for access.**

Rule 15 (ix) Submitting to the Authority a regular status report of research and other developments **every six months.**

Rule 15 (x) Commitment to abide **by** the provisions of the Act and rules and other related legislation **for the time being** in force in the country.

- (iv) While mentioning the commitment in the agreement to facilitate measures for conservation and sustainable use of accessed biological resources, it is useful to include the manner of contribution in definite monetary terms to avoid future complications / disputes as stated below.

Rule 15 (xi) Commitment to facilitate measures for conservation and sustainable use of biological resources accessed **with an explicit statement of the manner in which it will be done.**

- (v) Submission of an EIA report will ensure conservation and sustainable use of biological resources, and at the same time, the NBA will be able to turn down any access at the initial stage itself, if it is found that access will seriously affect the biological resources, environment, ecosystem or livelihood of the people. Accordingly a modification in Rule 5 (4) (xii) and an additional Rule (6) has been suggested.

Rule 5 (4)(xii) Commitment to minimise environmental impacts of collecting activities and **submit an Environmental Impact Assessment (EIA) report as per the guidelines fixed by the authority.**

Rule (6) The Authority may reject the application for access if it considers that the request cannot be acceded to after recording the reasons therefor. Before passing an order of rejection, the applicant shall be given the opportunity of a hearing.

6. Withdrawal of permission for access to bioresources

Rule 16. Revocation of access/approval

Rule 16 (1) The Authority may, either on the basis of any complaint or *suo moto*, withdraw any approval granted for access and revoke the written agreement under the following circumstances after due investigation and enquiry:

- (i) violation of any of the provisions of the Act or the Rules
- (ii) failure to comply with any of the conditions of access;
- (iii) failure to comply with the terms of agreement;
- (iv) **overriding public interest or for protection of environment and conservation of biological diversity;**

Rule 16 (2) The Authority shall send a copy of such revocation order to the **person to whom the access was granted and** concerned State Biodiversity Board and the Biodiversity Management Committees for prohibiting the access and also to assess the damage, if any, caused and take steps to recover the damage **from the person to whom the access has been granted.**

7. Protecting livelihoods of local communities

Rule 17. Restriction on activities related to access to biological resources

(1) The Authority if it deems necessary and appropriate shall take the steps to restrict or prohibit the request for access to biological resources for the following reasons:

- (iii) The request for access may likely to result in adverse effect on the livelihoods of the local people **with particular reference to women.**

8. Transfer of research results

- (i) Rule 18. Procedure for seeking approval for transferring results of research relating to

Rule 18 (1) Any person desirous of transferring results of research relating to biological resources obtained from India for monetary consideration **or otherwise** to foreign nationals, companies and NRIs, shall make an application to the Authority in the Form II as given in schedule. Every application shall be accompanied by paying a fee of Rs. 5,000/- in the form of a Bank draft or Cheque etc.

- (ii) The term 'as far as possible' will give room for the Authority to take any length of time to decide on an application. The Authority is not bound to dispose of the application within the stipulated time. In such case, most of the applications may not be concluded within the time and some may even take years for disposal. This will ultimately discourage scientific and research activities. Hence it is suggested that the term 'as far as possible' be omitted to read as follows:

Rule 18 (2) The Authority after due appraisal of the application and after collecting any additional information, on the basis of merit shall decide the application within a period of three months from the receipt of the same.

9. Approval of requests on IPRs

- (i) Rule 19. Procedure for seeking prior approval before applying for intellectual property protection

Rule 19 (1) Any person desirous of applying for a patent or any other intellectual property **rights** based on research on biological material and knowledge obtained from India shall make an application in Form III as given in schedule. Every application shall be accompanied by paying a fee of Rs.500/-.

- (ii) The term 'as far as possible' will give room for the authority to take any length of time to decide on the application. The Authority is not bound to dispose of the application within the stipulated time. In such case, most of the applications may not be concluded within the time and some may even take years for disposal. This will ultimately discourage scientific and research activities. As the Act in Section 6 (1) states that the application has to be disposed off within 90 days, the term 'as far as possible' will go against the spirit of Section 6 (1). Hence, omission of the term is recommended.

Rule 19 (2) The Authority shall after due appraisal of the application and after collecting any additional information, on the basis of merit, decide on the application, within a period of three months of receipt of the same.

10. Time frame for deciding on applications

The term 'as far as possible' will give room for the Authority to take any length time to decide on an application. The Authority is not bound to dispose of the application within the stipulated time. In such case, most of the applications will not be concluded within the time and some may even take years for disposal. The term may be omitted such that the Rule reads as below.

Rule 20. Procedure for third party transfer under Section 20 (2)

(2)The Authority after due appraisal of the application and after collecting any additional information, on the basis of merit shall decide on the application within a period of six months of receipt of the same.

11. Benefit sharing modalities

- (i) This Rule states that the quantum of benefit sharing shall be based on mutual agreement between the parties. If mutual agreement could not be arrived at, what will happen to benefit sharing? The Rules do not suggest any alternative method for benefit sharing. Hence the below- mentioned modification is suggested.

Rule 21. Criteria for equitable benefit sharing (Section 21)

(3)The quantum of benefits shall be mutually agreed upon between the persons applying for such approval and the Authority in consultation with the local bodies and benefit claimers and may be decided in due regard to the defined parameters of access, the extent of use, the sustainability aspect, impact and expected outcome levels, including measures ensuring conservation and sustainable use of biological diversity. **In case mutual agreement could not be arrived at during the process of fixing quantum of benefit sharing, the decision of the Authority made in consultation with the local body shall be final.**

- (ii) Nowhere does the Act or Rules give any role to the District Administration. As the SBBs are constituted in each state, it is not advisable to give the responsibility of disbursement of amount of benefit sharing through the district administration. It can be done by the SBBs as mentioned below.

Rule 21(6) Where biological resources or knowledge is accessed from a specific individual or a group of individuals, **community or organisations, the Authority may take steps to ensure that the agreed amount is paid directly to the identified parties through the concerned State Biodiversity Board and the same shall be intimated to the Authority. In the case of community, the amount shall be paid to the recognised representative/s of the community as identified by the local**

Biodiversity Management Committee. Where such individuals or group of individuals or organisations cannot be identified, the monetary benefits shall be deposited in the **local Biodiversity Fund of that area.**

Rule 21 (7) 5% of the accessed benefits, **in all cases** shall be earmarked for the Authority/Board towards administration and service charges.

12. Time frame for notification of threatened species

Rule 25 Manner of notification of threatened species under Section 38

(4)The Central Government shall take such steps as are necessary **to declare them as threatened species within a specified time frame.**

13. Ensuring connectivity and networking of data

Rule 26 Designation of Repositories under Section 39

(1)The Central Government **may**, in consultation with the Authority, designate national premier institutions, involved **in** various categories of biological diversity as repositories; such as Botanical Survey of India, Zoological Survey of India, National Bureau of Plant Genetic Resources, National Bureau of Animal Genetic Resources, National Bureau of Fish Genetic Resources, Institute of Microbial Technology, National Institute of Oceanography etc., **for maintaining networked databases on Biological resources including information documented in People's Biodiversity Registers.**

(2)The repositories designated **under** sub-rule (1) shall take steps for safe custody of biological material accessed including DNA fingerprints, if necessary.

14. Undertaking on the import of biological material/ components

The Draft Rule requires an undertaking from the importers of exempted commodities to the effect that materials shall be used only for the purpose for which they have been imported and not for any R&D purposes. This would be more appropriate if we extend this for exporters also. Because we are mainly worried about the movement of our genetic resources to other countries.

Rule 27. Exemption for certain biological resources normally traded commodities

(2)**In case of export and import of biological material exempted as commodities in Sub rule (1), the exporter or the importer as the case may be shall give an undertaking to the effect that the material exported or imported shall be used only for the purposes for which they have been exported or imported and shall not be used for any Research and Development purposes and for the development of any new processes or products for further commercialisation or otherwise.**

15. Composition of Biodiversity Management Committee

Rule 28. Constitution of Biodiversity Management Committees (Section 41)

(2) The Biodiversity Management Committee under sub-rule (1) shall consist of a Chairperson and not more than six persons nominated by the local body, of whom two should be women (regardless of caste) and one should be a member of a Scheduled Caste/ Scheduled Tribe (regardless of gender) keeping in mind their occupation and prolonged residence in the area to ensure knowledge of local biodiversity. One of the nominated members should have sound knowledge in documentation of biodiversity and related knowledge.

16. Dispute settlement

Rule 29. Appeal for settlement of disputes (Section 50)

(1) In case of any dispute between the Authority and State Biodiversity Board(s) or between the State Biodiversity Boards with regard to the implementation of any order/direction or on any policy decision, an appeal may be preferred in Form V under Section 50

- (i) to the Secretary, Ministry of Environment and Forests, Government of India, in case of dispute between the Authority and a State Biodiversity Board(s);
- (ii) to the Chairperson, National Biodiversity Authority, in case of dispute between the State Biodiversity Boards.

17. Procedure for giving notice

Rule 30. Manner of giving notice (Section 61)

(1) The manner of giving notice, under clause (b) of Section 61, shall be as follows namely: -

- (i) The notice shall be in writing in Form VII as given in schedule.
- (ii) The person giving the notice may send notice to
 - (a) the Chairperson of the National Biodiversity Authority, if the alleged offence has taken place in an Union Territory
 - (b) to the Chairperson of the State Biodiversity Board, if the alleged offence has taken place in a State

FORM I
The Biological Diversity Act, 2002
(see Section 19 (1), Rule 15)

Application form for access to Biological resources and associated traditional knowledge

Part A

1. Full particulars of the applicant
 - (a) Name:
 - (b) Permanent address:
 - (c) Address of the contact person / agent, if any, in India:
 - (d) Profile of the organisation (personal profile in case the applicant is an individual). Please attach relevant documents of authentication):
 - (e) Nature of business:
 - (f) Turnover of the organisation in US\$ **and Indian Rupees**:
2. Details and specific information about nature of access sought and biological material and associated knowledge to be accessed
 - (a) Identification (scientific name) of biological resources and its traditional use:
 - (b) Geographical location of proposed collection:
 - (c) Description / nature of traditional knowledge (oral / documented):
 - (d) Any identified individual / community holding the traditional knowledge:
 - (e) Quantity of biological resources to be collected (give the schedule):
 - (f) Time span in which the biological resources is proposed to be collected:
 - (g) Name and number of person authorised by the company for making the selection:
 - (h) The purpose for which the access is requested including the type and extent of research, commercial use being derived and expected to be derived from it:
 - (i) Whether any collection of the resource endangers any component of biological diversity and the risks, which may arise from the access:
3. Details of any national institution, which will participate in the R&D activities.

4. Primary destination of accessed resource and identity of the location where the R&D will be carried out.
5. The economic and other benefits including those arriving out of any IPR, patent obtained out of accessed biological resources and knowledge that are intended, or may accrue to the applicant or to the country that he/she belongs
6. The biotechnological, scientific, social or any other benefits obtained out of accessed biological resources and knowledge that are intended, or may accrue to the applicant or to the country that he/she belongs
7. Estimation of benefits, that would flow to India/ communities **or individuals in India** arising out of the use of accessed bioresources and traditional knowledge
8. Proposed mechanism and arrangements for benefit sharing.
9. Any other information

Part B Declaration

I/ we declare that:

- Collection of proposed biological resources shall not adversely affect the sustainability of the resources;
- Collection of proposed biological resources shall not entail any environmental impact;
- Collection of proposed biological resources shall not pose any risk to ecosystems;
- Collection of proposed biological resources shall not adversely affect the local communities;
- **The access to biological resources and associated traditional knowledge and the after use shall not contravene any of the provisions of the Act or Rules or any other law in force.**

I/we further declare the Information provided in the application form is true and correct and I/ We shall be responsible for any incorrect / wrong information.

Place:

Date:

Signed

Name

Title

FORM II
The Biological Diversity Act, 2002
(see Section 20, Rule 18)

Application for seeking prior approval of NBA for transferring the results of research to foreign nationals, companies, NRIs, for commercial purposes.

1. Full particulars of the applicant
 - (a) Name
 - (b) Address:
 - (c) Professional profile:
 - (d) Organisational affiliation (Please attach relevant documents of authentication):
2. Details of the results of research conducted (**A copy of final report of the research to be attached**)
3. Details of the Biological resources and /or associated knowledge used in the research.
4. Geo-graphical location from where the biological resources used in the research are collected
5. Details of any traditional knowledge used in the research and any identified individual/ community holding the traditional knowledge
6. Details of institution where R&D activities carried out.
7. Details of the individual / organisation to whom the research results are intend to transfer.
8. Details of economic, biotechnological, scientific or any other benefits that are intended, or may accrue to the individual /organisation due to commercialisation of transferred research results.
9. Details of economic, biotechnological, scientific or any other benefits that are intended, or may accrue to the applicant seeking approval for transfer of results of research.
10. Details of any agreement or MOU between by the proposed recipient and applicant seeking approval for transfer of results of research. (**A copy of Agreement/MOU to be attached. In case the agreement/MOU is not finalised at this stage, the same shall be submitted to the authority within two months from the date of approval.**)

Declaration

I/we declare the Information provided in the application form is true and correct and I/We shall be responsible for any incorrect / wrong information.

I further declare that the purpose of transferring the results of research will not in any way contravene any of the provisions of the Act or Rules or any other law in force.

Place:
Date:

Signed
Name
Title

FORM III
The Biological Diversity Act, 2002
(see Section 19 (2), Rule 19)

Application for seeking prior approval of NBA for applying for IPRs

1. Full particulars of the applicant
 - (a) Name
 - (b) Address:
 - (c) Professional profile
 - (d) Organisational affiliation (Please attach relevant documents of authentication):
2.
 - (a) **Nature of IPRs sought (A copy of IPR application to be filed within two months from the date of filing of the same to any authority from which IPR is sought.**
 - (b) Nature of IPR protection intended to be claimed (patent or any other form of IPR protection)
 - (c) The country in which IPR protection is intended to be claimed
3. Details of the Biological resources and /or associated knowledge used in the invention.
4. Geo-geographical location from where the biological resources used in the invention are collected
5. Details of any traditional knowledge used in the in the invention and any identified individual /community holding the traditional knowledge
6. Details of institution where R&D activities carried out.
7. Details of economic, biotechnological, scientific or any other benefits that are intended, or may accrue to the applicant due commercialisation of the invention.

Declaration

I/we declare the Information provided in the application form is true and correct and I/We shall be responsible for any incorrect / wrong information.

I further declare that the purpose of transferring the results of research will not in any way contravene any of the provisions of the Act or Rules or any other law in force.

Place:
Date:

Signed
Name
Title

FORM IV
The Biological Diversity Act, 2002
(see Rule 20)

Application form for seeking approval of NBA for third party transfer of the accessed Biological resources and associated traditional knowledge.

1. Full particulars of the applicant
 - (a) Name
 - (b) Address:
 - (c) Professional profile
 - (d) Organisational affiliation (Please attach relevant documents of authentication):
2. Details of the biological material and traditional knowledge accessed.
3. Details of the access contract entered (Copy to be enclosed)
4. Details of the benefits and mechanism / arrangements for benefit sharing already implemented.
5. Full particulars of the third part to whom the accessed material / knowledge is intended to transfer.
6. The purpose of the intended third party transfer.
7. Details of economic, social, biotechnological, scientific or any other benefits that are intended, or may accrue to the third party due to transfer of accessed biological material and knowledge.
8. Details of any agreement to be entered between the applicant and the third party.
9. Estimation of benefits that would flow to India/ communities arising out of the third party transfer of accessed biological resources and traditional knowledge
10. Proposed mechanism and arrangements for benefit sharing arising out of the proposed third party transfer.
11. Any other information

Declaration

I/we declare the Information provided in the application form is true and correct and I/We shall be responsible for any incorrect / wrong information.

I further declare that the purpose of transferring the results of research will not in any way contravene any of the provisions of the Act or Rules or any other law in force.

Place:

Date:

Signed
Name
Title

SECTION III

The Inputs

1. Protection of Plant Varieties and Farmers' Rights Act: What are Farmers' Rights and Why They are Important
2. A Gendered Critique of the Plant Varieties Protection and Farmers' Rights Act, Draft Rules and Related Legislation
3. Key Issues in the Biological Diversity Act
4. Community Rights in the Biological Diversity Act
5. Some Remarks on the Biological Diversity Act
6. Case Studies

Protection of Plant Varieties and Farmers' Rights Act: What are Farmers' Rights and Why They are Important

S. Bala Ravi and Suchitra Padmanabhan

Laws and customs are created primarily to construct and retain socio-economic-ethical order in communities. With changing social, economic and civil value systems, communities are continuously restructuring their customary laws. The evolution of political systems of governance and sovereign nationhood demanded space for national laws superseding the customary laws of constituent communities. Globalisation marked by the founding of United Nations has been demanding increasing space for legislative harmonisation across national boundaries with respect to certain key domains. More recently, involvement of countries in multilateral agreements, global conventions and treaties have been enforcing the need to design or modify their national legislation in compliance with these international instruments, whether or not such legislation are redeemable domestically. However, when law originates away from communities, the need for legal literacy increases.

The legislation of independent India on intellectual property rights (IPRs), devised to suit the science and technology capability and national development needs, were at variance with similar legislation in other countries, particularly the developed countries. For example, the Indian Patent Act (IPA), 1970, did not allow patent for any method of agriculture or horticulture and for any biological organism including plant varieties, animals and microorganisms or their independently maintainable components like cells, cell lines, genetic material, etc. The IPA, in addition, disallowed patent to products derived from chemical, pharmaceutical and food processing industries and allowed only shorter time for patents on these processes. Although the national preference, by and large, is for continuation of such a patent regime, India's membership to the World Trade Organisation (WTO) enforced a compulsion to bring in sweeping changes in the above said patent regime.

Intellectual Property Rights

The Trade Related aspects of Intellectual Property Rights (TRIPS) required India not to exclude innovation from any field of science and technology, including agriculture and horticulture, from the purview of patents. More specifically, the TRIPS required India to provide patent protection not only to process but also to products, microorganisms, microbiological processes and plants and animals produced by non-biological processes. In addition, TRIPS mandated India to offer protection to plant

varieties either by patents or an effective *sui-generis* system or by a combination of both.

Need for a *sui generis* system

While the significance of patent is widely known, similar understanding is lacking on *sui generis* system of intellectual property protection. The Latin word *sui generis* means 'unique by itself' or 'its own type'. 'Effective *sui generis*' means the type of unique IPR protection devised by a country shall be satisfying to all or most of the essential elements of an intellectual property protection. From the TRIPS specified requirement for plant variety protection, it is very obvious that a country has an absolute option to offer such protection either by patent, or by *sui generis* system or by a combination of both of them.

It is pertinent that India's requirement to establish a legal framework for protection of plant varieties has arisen from its commitment to the World Trade Agreement (WTA) concluded at Marrakesh in 1994. India has also committed to other international treaties and conventions. Its commitment to the United Nations Convention on Biological Diversity (CBD) in 1992 and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) under the auspices of the Food and Agriculture Organisation of the United Nations in 2001 are relevant to the present context. The CBD mandates that IPRs on innovations arising from biodiversity shall be subject to national legislation and international law in order to ensure that such rights are supportive of and do not run counter to the objectives of this Convention (Article 16.5). The objectives of the CBD "are conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising out of the utilisation of genetic resources including by appropriate access to genetic resources and by appropriate transfer or relevant technologies, taking into account of all rights over these resources and to technologies, and by appropriate funding" (Article 1). The CBD under Article 15.7 mandates each contracting party "to take legislative, administrative or policy measures, as appropriate ... with the aim of sharing in a fair and equitable way the results of research and developments and the benefits arising from the commercial and other utilisation of genetic resources ...". Vide Article 8(j), CBD allows the right to contracting parties to create national legislation to respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional life styles relevant to the conservation and sustainable use of biological diversity and encourage the equitable sharing of the benefits arising from the utilisation of such knowledge, innovations and practices".

In the context of developing countries, the traditional and local communities are essentially rural communities engaged in agriculture. Therefore, the above referred

“knowledge, innovations and practices” also implies farmers’ knowledge related to the whole gamut of traditional agriculture, crop varieties, their wild relatives, animal strains and their innovations on all aspects of productions, processing and use.

The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), in its preamble, affirms the rights recognised in this treaty on plant genetic resources. To save, use, exchange and sell farm saved seed and other propagating material, and to participate in decision making regarding and in the fair and equitable sharing of the benefits arising from the use of the plant genetic resources for food and agriculture, are fundamental to the realisation of Farmers’ Rights as well as promotion of Farmers’ Rights at national and international levels”. It also affirms that that basis of farmers’ rights is the “past, present and future contributions of farmers in all regions of the world, particularly those in centres of origin and diversity, in conserving, improving and making available these resources”. In the context of this affirmation, Farmers’ Rights are more important from the Indian point of view, in view of the rich biodiversity of the country and the past, present and future roles of farmers in the domestication of many economically important crops such as rice, grams, several vegetable and fruit plants and evolution and conservation of thousands of varieties of these and all other crop plants, which constitutes the basis of Indian agriculture.

Therefore, a legislative framework offering intellectual property protection on plant variety in compliance with Article 27 (3) (b) of TRIPS should also not violate the Articles 16 (5), 8 (j), and 15 (7) of the CBD and the farmers’ rights recognised under ITPGRFA. It is important to note that the WTA, CBD and ITPGRFA are legally binding on India and all these instruments were also ratified by the Indian Parliament. As a matter of fact, CBD is endorsed by more number of countries than the WTA. Therefore, the national commitment to comply with these instruments shall be guided by the principle of equality of these international instruments. It shall not be prejudiced by the ongoing international debate on harmonising TRIPS with CBD and ITPGRFA in respect of effectiveness of intellectual property rights on plant variety *vis-à-vis* farmers’ rights and equitable sharing of benefits for the commercial use of plant genetic resources innovated and conserved by farmers. A sovereign country, which is party to all the three international instruments, need not cave in to pressure from some developed countries and their private transnational interests to selectively strengthen the intellectual property commitments arising from TRIPS with crass denial of farmers’ rights and equitable benefit sharing.

Seed as the principal input for agriculture

Seed is the principal input for agriculture, and more so in a low capital and low input farming system. Given this agricultural scenario in developing countries, either

traditional varieties or low cost new varieties bred by the public research gain preference in spread and here the spread of seed is largely achieved by the traditional farm saving, exchange and sale. In contrast, a monopoly, (single or few agency) regulated seed market may take many years for a wider spread of varieties in a country like India, where agriculture is managed by more than 1.2 million farm holdings. The strength of this traditional seed exchange system was adequately demonstrated by the Indian 'Green Revolution' where the seed supply from the organised public and private sector was below 20 % of annual seed demand. A consequence of such seed use is that majority of farmers continue to use the same seed with infrequent replacement with genetically pure seed. For example, the seed replacement facilitated by public and private agencies during 1997-98 for various crops is as follows (Table-1).

Table-1 Seed replacement rate (SRR) of major crops (1997-98)

Crop	Area (in m.ha.)	Seed rate (kg/ha.)	Seed required (in lakhs qtls)	Seed distributed (in lakhs qtls)	SRR (%)
Rice	43.45	25	108.6	20.22	18.02
Wheat	26.70	100	267.0	24.22	9.15
Maize	6.32	10	9.5	2.36	24.84
Jowar	10.80	12	13.0	2.83	21.76
Bajra	9.67	4	3.9	1.63	41.79
Red gram	3.36	15	5.1	0.59	11.57
Gram	7.56	75	56.7	1.06	1.87
Groundnut	7.09	150	106.4	6.81	6.40
Sunflower	1.74	10	1.8	0.75	41.67
Soya bean	5.99	75	44.9	3.68	8.20
Cotton	8.87	20	17.7	2.87	16.21
Potato	1.21	3000*	363.0	6.83	1.88

*as seed tuber

The higher SRR in rice, maize, jowar, bajra, cotton and sunflower is due to the use of hybrid varieties in these crops. Thus, thirty years after the 'Green Revolution', farm saved seed and its exchange continues to play a predominant role in national agriculture. The adverse consequences for Indian agriculture and the livelihood of many farmers that may arise from the denial of farmers' rights on seed are very obvious.

The Indian legislation

In this overall context, the Indian *sui generis* legislation on PPVFR Act, 2001 is a decisive step in many respects, particularly from the developing country perspective, where agriculture is the exclusive economic mean and livelihood source for the

millions of poor and marginal farmers. In corollary, absolute Intellectual Property Rights to the owners of plant varieties, which *inter alia* deny farmers' right to save, exchange and sell seeds of right protected varieties, as is being practiced in developed countries is unsuitable to the developing countries. Here access to seed by informal and traditional channels play a critical role in the promotion of sustainable livelihoods for farmers, fostering agricultural development and national food security.

Another important aspect of an IPR on plant variety is that no new variety is innovated *de novo*. All plant varieties, extant and new, are derived or bred from pre-existing varieties with the help of common knowledge available on the special characteristics of such varieties. Scientific plant breeding based on the genetics is less than 100 years old. Much younger is the organised institutional plant breeding. It was farmers who all along the long history of agriculture, improved all cultivated crops from their initial semi-wild state during domestication and evolved thousands of varieties with intensive knowledge on their suitability to different agro-climatic, use and ethnic requirements. This process of selection and evolution of varieties by farmers persists, particularly in developing countries having rich agro biodiversity. There are several examples of ruling commercial varieties of crops identified by farmers, who had left these varieties in the public domain, staking no rights on them. Thus, farmers as individuals or as a community, apart from being cultivators and conservers of several crop varieties and their wild relatives are also breeders of these varieties.

Farmers' Rights in PPVFR Act emerge from the recognition that the farmer is the cultivator, the conserver of agro biodiversity and the breeder of plant varieties [Section 2 (c) and (k)]. The Act provides an exclusive but not exhaustive chapter (Chapter-IV) on Farmers' Rights with eight sections. Some other aspects of Farmers' Rights discussed in this paper are spread across the chapters of this Act. In general, for simplicity, Farmers' Rights provided by this Act could be dealt with under the nine heads.

1. **Protection of traditional right of farmer on seed:** Section 39 (1) (iv) of the Act entitles farmer to save, use, sow, re-sow, exchange, share or sell his/her farm-produced seed of a variety protected under this Act in the same manner as he/she was entitled before the coming into force of this Act. The Act, however, provides that the farmer shall not be entitled to sell branded seed of a protected variety. It means that while the farmer is entitled to sell seed of a protected variety, which is grown in his/her farm, such sale cannot be done in commercial packages including use of containers, common in market place with labels indicating the registered name of the variety. This shall by no way hamper the traditional right of the farmer on the seed of a variety or the rapid farmer-to-farmer spread of varieties, particularly of the self-pollinated and vegetatively propagated crop plants. This right on saving, using and exchanging can be

totally denied to farmers with genetic use restriction technologies like the "terminator technology". In such cases, the seeds of varieties having the terminator technology shall not retain viability and this will in reality deny the right of farmers on seed. To comprehensively exclude such situations, the Act enforces a total ban on such technologies in any plant variety seeking registration [Section 18 (c)].

- 2. Right to register plant varieties by farmers:** For the purpose of registration, the Act discerns plant varieties into three groups; new variety, extant variety and farmers' variety [Section 14 and 15]. Farmer as an individual or a group is entitled to register new and farmers' varieties and they can also submit a registration application through an authorised assignee [Section 16(1) (d) and (e)]. The new variety is defined under Section 15 (3) (a) shall be eligible for registration, if it satisfies the distinctiveness, stability and uniformity attributes described under Section 15 (3) (b), (c), and (d). The Act defines the farmers' variety as the one either traditionally cultivated and evolved by farmers or a wild relative or land race, about which the farmers possess common knowledge [Section 2 (l)]. According to Section 14 (c) all crop varieties coming under the definition of farmers' variety are registrable under this Act. It is expected that for the purpose of registration, distinctiveness, uniformity and stability shall be required for farmers' varieties.

While there are several essential requirements, including payment of prescribed application fee, to be satisfied for making a registration application [vide Section 18 (1)], applications on farmers' variety are exempted from these requirements and payment of fees. Thus the Act is totally farmer-friendly in registration of farmers' varieties. It is expected that the Plant Variety Protection Authority shall extend the required assistance for determining the characteristics of distinctiveness, uniformity and stability for farmers' varieties.

- 3. Requirement to get consent from farmer(s) when an essentially derived variety produced from a farmers' variety is to be commercialised:** The essentially derived variety (EDV) as defined under Section 2(i) of the Act is that variety which is predominantly derived from an initial variety and conforms to such initial variety for most of the essential characteristics, except one or few that resulted from the process of derivation. The Act grants Researchers' Right (discussed later) allowing use of any variety, including registered variety, for the purpose of breeding new varieties, including EDVs. In the case of EDV, its breeder is required to enter into an agreement with the breeder of the initial variety from which the EDV was derived, on mutually agreed terms, for the purpose of its commercialisation [vide Section 23]. Whenever such an initial

variety happens to be a farmers' variety, the need for consent or agreement with the owner farmer or community of farmers is emphasised in the Act [vide section 43].

4. **Right to receive equitable share of benefits when farmers' variety is used to breed a registered new commercial variety:** As mentioned earlier, all new varieties are bred from pre-existing varieties. If any of these parental varieties happened to be farmers' varieties, the legal or natural right holders on such farmers' varieties are eligible for an equitable share of benefits as per Section 26 of the Act. Entitlement for such benefit may either flow naturally from the declaration furnished by the breeder on the parentage of the new variety, or from intrusive establishment of such parentage claim. The latter approach requires better awareness of the ongoing process of variety registration and fair understanding of the characteristic profile of the new variety *vis-à-vis* the genetic diversity available for creating such character profile. The Authority on the basis of the genetic contribution of the concerned parental variety to the new variety and the obvious overall commercial significance of such genetic contribution may determine the magnitude of the benefit share.
5. **Right to get adequate supply of the seeds of registered varieties:** All intellectual property protections seek to balance the private interests of the right holder and the public interest sought to be achieved by the IP protected innovation. In the case of plant breeder's right, which is conferred through registration of a variety under this Act, such a grant is made to facilitate the breeder to make commercial gains by excluding others from making commercial production of the propagating material, through its sale and marketing. However, this exclusive right for production, sale and marketing is not to be used merely to the profiteering end but also to meet the intended public good by making available adequate quantity of propagating material at a reasonable cost to farmers, who intend to cultivate the variety for their own advantage. A right holder of plant variety, according to Section 47 (1), is bound to satisfy such public demand for its planting material at reasonable prices. Failure of a right holder in satisfying this public responsibility, shall invite compulsory licensing provision of the Act to ensure satisfactory supply of planting material to farmers at reasonable price. Hence the provision on compulsory license is helpful to farmers in accessing benefits of a good variety.
6. **Right to claim compensation for under performance of a registered plant variety:** Seed trade in India is not regulated with adequate enforcement. It is not uncommon that seeds which are either spurious or with tall claims on their

performance are sold to unsuspecting farmers. In view of this, the PPVFR Act under Section 39 (2) has provided for farmers' entitlement to claim compensation for underperformance of a registered variety, which was claimed to give high performance. A registered variety may require to be commercialised in a notified area with declaration on its performance under a prescribed management regime. The Act provides to grant compensation to farmers who may prove that the performance claim tagged to the registered variety is unrealistic under the recommended crop management conditions. The precautionary aspect of this section is that it may discourage the seed market from befooling farmers with falsified or exaggerated performance claim on a new variety.

7. **Reward and recognition for conservation of plant genetic diversity:** Tribal and rural communities, largely involving farmers are the principal conservers of agro biodiversity comprising the folk, traditional or farmers' varieties and also the wild relatives of cultivated crops. The importance of such conservation is increasing with the increasing capability of few high yielding varieties to sweep away many traditional varieties. Their conservation against such losses is of high importance for the future of agriculture, since many of these traditional varieties possess several economically valuable traits other than high yield. The best way for their conservation is '*in situ* or *ex situ* on-farm conservation', which in the case of thousands of traditional varieties is not possible without the participation of farmers and communities. In recognition of this fact, the Act under Section 39 (1) (iii) grants entitlement to farmers for receiving reward and recognition from the National Gene Fund [vide Section 45] for conservation of landraces and wild relatives of economic plants and their improvement through selection. Such institutionalised promotion of conservation is of vital significance not only to countries having rich plant genetic diversity, but also to the long-term interest of global agriculture.
8. **Protection to farmers from first innocent infringement of the PPVFR Act:** One of the disadvantages of legislative process under centralised and globalised context is that the laws moves far ahead of the subject communities creating a wide gap between the law and the communities concerned. In this context, the Indian farming community is particularly disadvantaged in view of low literacy, especially legal literacy. Realising that the PPVFR Act one way or the other impinges on their day-to-day life, placing them in a highly vulnerable position to commit innocent infringement of this Act, a special safeguard to prevent harassment to such farmers is provided under Section 41 of the Act. This provision protects against legal action on a farmer who at the time of an alleged infringement of a right established under this Act was not aware of the existence of such rights.

9. **Exemption to farmers from paying any official fee in court proceedings and registration and maintenance of farmers' varieties:** Again in recognition of the economic disability of the vast majority of Indian farmers, the Act provides [Section 44] for their exemption from paying any fee in any proceedings before the Authority or Registrar of Plant Varieties or the Plant Varieties Protection Appellate Tribunal or the High Court. According to the Act, prescribed fees are payable for making application for registration of a plant variety [Section 18 (1) (g)], for the maintenance of a variety registration [Section 24 (6)], for claiming equitable benefit from a registered variety [Section 26 (c)] and opposing registration of a plant variety [Section 21 (2)]. In the case of farmers, no fee is payable by them either for registering their varieties, maintaining such a registration, making a claim for equitable benefit share or making an opposition to a plant variety registration.

Some other aspects of the PPVFR Act

The duration of protection provided under this Act is 18 years for trees and vines and 15 years for other kind of plants. The period of protection initially granted along with registration, however, is nine years for the varieties of tree and vine species and six years for the varieties of other species [vide Section 24 (6)]. According to this Act, the crop species whose new plant varieties are to be registered is to be regulated by the Government of India. Varieties of species and genera excluded under Section 29 (2) shall not be eligible for protection under this Act. A registration granted can get lapsed on non-payment of prescribed registration maintenance fee and get revoked on public interests, either *suo moto* or on complaint.

Another important feature of this Act relevant to the developing countries with evolving agricultural research and development system is the Researchers' Rights [vide Section 30]. This section offers unrestrained freedom to individuals and researchers to freely access any variety registered under this Act for use in experiment or research, including its use as parental variety for creating new varieties. This researcher's right, however, does not include right for repeated use of a registered variety as a parental line either in crossing programmes or in commercial production of seed. It is notable that researchers' right is applicable to EDVs.

In conclusion the PPVFR Act grants a *sui generis* system of intellectual property protection on plant varieties. The right conferred therein is the right of registration or plant breeders' right (PBR), which offers an exclusive right on the breeder (or the right holder) to produce, sell, market, distribute, import or export the propagating material of a variety. This PBR is exclusive of the Farmers' Right (FR) on the seed of

the protected variety, and researchers' rights (RR) to use the registered variety for research including its use for creation of new varieties. This *sui-generis* system of protection is not only effective, but also healthy by striking a balance between the private interest inherent in all IPRs and the public interest flowing from all innovations. The IPR here is not absolute as the patent right in as much as the new plant variety development is not totally comparable to industrial innovation, in respect of originality and *de novo* nature.

A gigantic task ahead for realisation of Farmers' Rights

No law by its mere enactment and enforcement benefits all stakeholders. Stakeholder capability in understanding the law and using it to his/her advantage alone may help in achieving the goals of legislation. Indian farmers are the principal stakeholders of this Act apart from the professional plant breeders. Several aspects of Farmers' Rights provided under this Act shall remain unaccessed by farmers in the absence of adequate awareness about this Act. Such awareness may also save them from possible acts of innocent infringements and facing consequent legal harassment from prosecutors. Considering the level of literacy among farmers, and the complex and tedious legal language used in the Act, the task of generating adequate awareness on this Act is indeed daunting. Equal or better level of awareness on this Act is also important for the elected representatives of the Panchayat system, governmental and non-governmental agricultural development functionaries at the village level. There is also lack of wider understanding of this Act at Central and State government levels. For all these reasons, the limited official efforts to create awareness are not going to be adequate to address this massive problem. All institutions governmental and non-governmental, possessing capability on this Act have to be encouraged to effectively tackle this task in a harmonised manner to ensure that Indian farmers do gain all benefits intended by the lawmakers. It would be advantageous that such an effort is integrated with the awareness programme on another equally important legislation, the BD Act, 2002.

A Gendered Critique of the Plant Varieties Protection and Farmers' Rights Act, Draft Rules and Related Legislation

Mahalakshmi Parthasarathy

This paper visualises rights of women in the context of the PPVFR Act, as an individual, a citizen and as a member of a community. Women in the context of the Act are related either as an individual breeder, a co-breeder with her immediate family, or within a community in developing a plant varieties and/or its conservation. As the PPVFR Act, 2001 has consequences on women either in her capacity as an individual, as an inheritor through succession, as a spouse through matrimonial property rights and as a member of the community, all these which have a bearing on recognition and benefit sharing of Intellectual Property Rights with emphasis on gender justice.

Why gender?

It is important to note that the women farmers in India mostly are involved in developing plant varieties along with their family, and mostly the agricultural land is registered under the name of a male member of the family. The social norms of farming communities have tuned women to accessing and controlling a wide variety of knowledge pertaining to their domain, making them more conversant with issues related to food crops and vegetables and the food basket in general since, they are the ones who collect vegetables and process, prepare and cook food for their families, usually with the assistance of the girl child. The gender 'roles' stereo-typing has other social implications for indigenous and local knowledge systems. For one thing, participation in such roles creates associated needs and interests particular to each gender but which are not necessarily similar. These have to be met by the ecosystem with the use of local knowledge. Yet, women's interests, knowledge and priorities are neither consulted nor are they considered important for inclusion in most development programmes aimed at managing agro biodiversity.

Gender bias and gender blindness however persist: farmers are still generally perceived as 'male' by policy-makers, development planners and agricultural service deliverers. For this reason, women find it more difficult than men to gain access to valuable resources such as land, credit and agricultural inputs, technology, extension, training and services that would enhance their capacity for production .

Women in India, as in many countries have/ been traditionally denied access to land rights. Property rights regime is a thorny issue.

In this context, the PPVFR Act and the BD Act that constitute the legal framework for addressing biodiversity conservation, and equitable benefit sharing, needs serious

scrutiny, in order to foster special recognition to "women farmers" for their contribution to the conservation and improvement of genetic resources. The "feminisation of poverty" phenomenon is also on the increase. Basically, women are increasingly the ones who suffer the most poverty. This then also affects children, which makes the dire situation even worse. Poverty, trade and economic issues are very much related to women's rights issues due to the impacts they can have.

Women and the PPVFR Act

One of the ways to tackling these issues is by providing legal protection to their rights for better intra-household bargaining power, which is preconditioned by the outcomes of extra-household bargaining with the community and the State. This will be given a boost by the legal recognition of their contribution in developing the plant varieties.

The Preamble of the PPVFR Act mentions that the Bill is being enacted to recognise and protect the rights of "farmers" in respect of their contribution made at any time in conserving, improving and making available plant genetic resources for the development of new plant varieties. The definition of farmer under the Act is, "k(iii) any person under the Act which includes any person who conserves, preserves severally or jointly, with any person, any wild species or traditional varieties, or adds value to such wild species or traditional varieties through selection and identification of their useful properties"

This is relevant to the majority of Indian women, who have little or no access to land rights and are only contributing their knowledge along with their husbands/fathers to help in begetting a plant variety. This gives legitimacy for getting recognition for their contribution in terms of Intellectual Property/Knowledge though not holding any legal pattas.

Provisions for incorporating gender concerns in the Act

Some of the following considerations attempt to incorporate the systematic inclusion of a gender perspective in the PPVFR Act:

- The Protection of Plant Varieties and Farmers' Rights Authority comprises of 15 members including a chairperson. Relevant here is that it includes a representative from National and State level women's organisations associated with agricultural activities to be nominated by the Central Government.

- In term of Expert Committees: Under Section 5 these are to be appointed by authority, as may be necessary for the efficient discharge of its duties. The expert committee appointed for farmers' rights, which comprises of tribal conservers and women farmers again is clearly an attempt to put the gender perspective into the Farmers' Rights. Gender concerns can be reflected in the Standing Committee, mandated to be appointed as per Section 3 (7) of the Act to advise the Authority on all issues including Farmers' Rights, by an addition in (Draft) Rule No 11 asking for a representation on gender and women's rights, in the Standing Committee.
- An additional recommendation that can be considered is the provision for appointing a committee on Awareness of Farmers' Rights and empowerment of farmers, to ensure equity amongst the farming community. This committee can formulate guidelines to ensure gender justice. The duties imposed on the Authority are, in particular in subsection (f) collecting statistics with regard to plant varieties, including the contribution of any person at any time in evolution or development of any plant variety in India or in any other country, for compilation and publication. This is a significant provision as it can be effectively used to ensure that women's contribution is given due encouragement and thereby ensure the protection of women's rights.

On succession rights

Section 14 (read with Section 16 (1)) states that any legal successor of the breeder of the variety may apply for registration (the copies of necessary documents issued by the competent authorities to prove the right of the applicant) of the specified/ extant /farmers' variety. The legal successor (Section 28(1)) is also conferred the right to sell, market, distribute, import or export the variety. In the case of an extant variety, the successor needs to establish her right (who in the first place could have been a contributor in developing the variety) either in her capacity of a wife or daughter to get a share from the benefits accruing on account of the registered variety. It is important to recognise that women's succession claims are likely to depend on the following factors:

- The existing inheritance laws
- The social legitimacy of her claim, that is, whether the claim (even if legally valid) is perceived as socially valid by her community
- Her educational status and legal literacy

- Her access to government officials who administer these matters, register inheritance claims, etc
- Her access to economic and social resources for survival outside the support systems provided by contending claimants such as brothers or kin and
- Her economic and physical access to legal machinery.

Some special aspects of succession rights

- Right to succession of Hindu women under the Hindu Succession Act 1956, the coparcenary and how only some States have amended their State laws to grant equal rights to daughter in a coparcenary property including Andhra Pradesh, Tamil Nadu and Maharashtra, from the dates of commencement of the Act in these States.
- Law for the Scheduled Tribes (ST): it is clearly stated that the Hindu personal laws shall not apply to members of any ST. The ST are specified State-wise and therefore a person claiming to be a member of a tribe in one State may not be considered as a member of a ST in another State, if the community does not find place in the Schedule of the latter State. Similarly a woman who does not belong to a Scheduled Tribe but is married to a man belonging to a Scheduled Tribe would be considered as a member of the Scheduled Tribe of the husband. It is clear that there is no comprehensive law, which takes into account varied customary laws governing tribals through out the country.
- For Muslim women: no woman is excluded from inheritance on the basis of her sex, and has equal share in the property of the deceased. The inheritance according to Hanafi law recognises three classes of heirs- sharers, residuaries and distant kindred (cognates who can inherit only in absence of the first two classes) The Islamic law mentions that a childless widow is disqualified to inherit a property of a deceased Muslim.
- Succession rights of Christian women: The Indian Succession Act, 1925, does not differentiate between those who are related to a person deceased through his father and those who are related to him through his mother.

On benefit sharing

In the case of benefit sharing it will be practical to add a section clearly mentioning that assets created, monetary or otherwise on account of developing and successful

commercialisation of new plant variety, must be treated as community property for all communities. And the contribution made by the wife, either in giving actual assistance for developing the new plant variety or as contribution to the marriage partnership (inclusive of management of household duties, provision of money, child care) must be recognised and she must be an equal partner in the benefit sharing accruing from the registered new plant variety.

In this context the following concepts and the issues relevant to matrimonial property law need to be juxtaposed to gain a clearer understanding of how women would fare in accessing benefits accruing from the commercial success of a plant variety. It is important to mention at the outset that the law and society have failed to recognise marriage as an economic partnership. In this context domestic work is not recognised as productive work and asset holdings are disproportionate primarily due to the 'nature and nurture' burden.

Some principles relating to matrimonial property law according to the personal laws in India:

- (I) Islamic principles with regard to matrimonial property state: husband and wife being equal are entitled to inherit each other but then some near females and cognates are also recognised and enumerated as heirs.
- (II) The Hindu Succession Act in Section 14 clearly states that: Any property possessed by a female Hindu, whether acquired before or after the commencement of this Act, shall be held by her as full owner thereof and not as a limited owner (i.e. with restricted use) and has abolished the practice of reversion on her death.
- (III) The Married Woman's Property Act: 1874; (to Christian and Parsi women); Sec 4 of the Act provides for married woman's earnings to be their separate property.

The benefits accruing from developing and commercial success of a plant variety by a farmer/ breeder should also be shared with his wife, who would have contributed to the marriage partnership by giving assistance to him in the actual work or looking after the domestic duties. Thus she should be entitled for an equal share in the benefits accruing from the newly developed plant variety.

In the Indian context it would be prudent to mention in the PPVFR Rules that if money for supporting the development of the new plant variety is from the "*Streedhan*" then it should be construed to be under her sole authority, and there should be a mechanism

to get a prior approval from the wife to ensure that she is aware of her contractual capacity, and that her control over her assets is no way diminished.

Engendering the term 'community'

The following points need to be kept in mind to incorporate women's concerns at the level of the community. In the current context, these include;

- (a) She can appear before the Authority/Biodiversity Management Committees/ Panchayat
- (b) If it is family, the wife needs to be examined separate and apart from her husband
- (c) It is very important that she should acknowledge that she knows her rights and that she is signing on the consent instrument freely and without compulsion

While the above measures are certainly not foolproof they have been outlined as an attempt to make a clear space for women in the law. These spaces, which have been identified here for advocating gender concerns, need to be strengthened by active participation of civil society.

Key Issues in the Biological Diversity Act

M.K. Ramesh

With respect to the recently enacted BD legislation, this paper will focus on outlining on the salient features of the BD legislation such that the implications for including a gender and community perspective in the law could be highlighted. The CBD (1992) undertakes to promote the 'conservation, sustainable utilisation and equitable sharing of benefits' of biodiversity. The CBD further deviates from the earlier charters declaring Biodiversity as a human heritage to defining the role of the nation state by granting it sovereign rights over the governance of diversity within its territorial jurisdiction. Implicit in the conservation of biodiversity is the associated protection of the knowledge systems, which govern the usage and protection of the ecosystem. Both the evolution of TK and 'recognition and reward' for the generators of these, i.e. TK holders have been accorded due weightage in this system. India is a party to both the CBD and the TRIPS agreement, which places conflicting demands on the governing system. PPVFR and BD Act are some of the major current efforts of Government of India in evolving a *sui generis* model for managing biodiversity in India.

Major features of the new law

The BD legislation in its current form underwent many changes in the parliament and it has been formed through extensive consultations with varied stakeholders including researchers, academics, industry etc. The legislation has been formulated in the wake of recent disputes occurring in the international arena over extraction and utilisation of products such as turmeric, neem, basmati etc and the controversy associated with granting IPRs to the 'innovators' from the industry without giving due consideration to the role played by local communities in the preservation and generation of that knowledge.

The current legislation therefore aims at governing access and control over the nation's bioresources through the establishment of regulatory mechanisms at the central, state and local level to prevent misappropriation and biopiracy. Key to the core of the Act is the concern regarding the conservation of biodiversity, biosafety regulations and prevention of biopiracy. At the outset, it is important to keep in mind that the BD legislation is not an umbrella legislation and does not have the powers to override other environmental legislation. It needs to be seen therefore in consonance with other environmental legislation such as the Wildlife Amendment, Seeds Act etc.

It is useful to remember that The BD Act is primarily a regulatory mechanism that governs access to and control over biodiversity and we can't expect from it any other conservation/ protection goals.

In terms of administration, the Act envisages a three-tier management structure that includes a National Biodiversity Authority, State Biodiversity Board and Biodiversity Management Committee. A procedure for obtaining permission from the required authorities before accessing local bioresources has been established. The implications for research and industry are indeed manifold and the provisions of the Act outlining the regulating features have received much criticism for in effect turning the legislation on its head by over centralising and bureaucratising its core provisions. A participatory local level led initiative would have been the ideal management structure, which has been forsaken to ensure compliance with government procedures and allow minimum room for misappropriation of resources.

Community conservation interests

The modification of the legislation went through, in the parliament, that took away its control over Forests and Wildlife laws and structures of governance there under, has robbed the real object and effectiveness of a law that was originally intended to deal with every aspect of the bio resource, traditional knowledge associated with it and protection of community interests. If the intent was only to come up with a law that predominantly dealt with agro biodiversity, such an important exercise, with several rounds of consultancies and drafting exercises, were not warranted. The Act, strangely subordinates the supposedly specialised and expert authority like the NBA to the whims and fancies of the Central Government. Concerns of conservation and biosafety receive very little attention in the Act. Tolls of conflict resolution and conflict avoidance get very little attention. Panchayats and other local self-government perform very peripheral roles in the whole scheme of things.

With reference to the current point at issue on the concerns regarding community conservation and the incorporation of a gendered perspective, a starting point is to understand where and at what point do we address the issues of community and gendered interests in the law? Since the legislation is-attempting to provide a system of security and safety to conservation efforts at the local level, it is pertinent that both community conservation and gendered interests therein form a critical component of this discourse.

It is with particular reference to IPRs that the legislation has overarching implications. It is well recognised that community rights over resources and associated TK continue to be a hazy domain both in law and practice. The relatively new concept of IPRs also remains blind to the nuances and intricacies involved in attributing reward and recognition to a group/ community of conservers for their efforts which has led to the increasingly controversial and contested nature of legal claims. The current legislation too has not made a distinction between individual rights to intellectual property and community rights. It is evident that the implementation will need to address this dichotomy, which has so far not received adequate attention in any legal procedure.

The statute and the Draft Rules being circulated now, give the impression of a law that facilitates bioprospecting and monetarily compensates for use and loss of traditional knowledge in a bureaucratic fashion.

Community Rights in the Biological Diversity Act

L.R. Gopinath

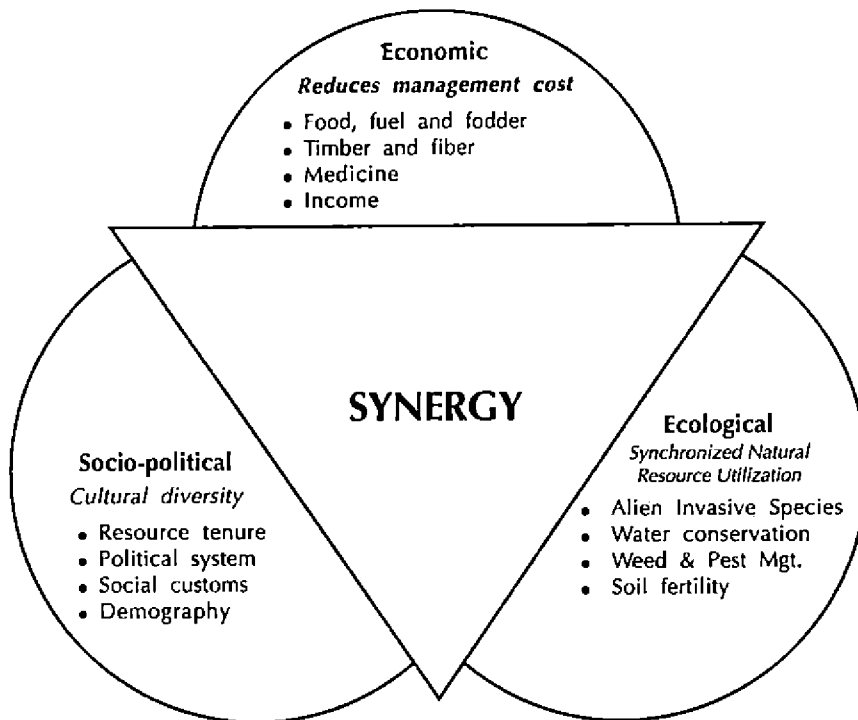
Ever since humans evolved, biological diversity has played a vital role in their culture and social behavior starting from hunting gathering to modern agriculture. The human population has increased in a much more rapid rate after moving out of forests and settling along the rivers giving rise to new civilizations. Civilizations gradually spread over an area and managed the natural resources for their benefit. These civilizations with different social status and power relations were managed through evolution of Kingdoms or States. States evolved to protect human interests over biological diversity for their economic and social prosperity. In the process of spatial divide among human race various regulatory mechanisms were evolved to smoothen the relationships between different states and their interests. As a result various agreements were signed between the states and within states to strike a balance between competing interests of different states and communities within the states. The BD Act is one such agreement within the state in line with international agreements signed to protect the interests of the communities in India. The present paper attempts to critically review the (a) evolution of different international and national agreements and the BD Act towards the protection of community's natural wealth and (b) provision of community rights over their resources and their traditional knowledge with reference to the BD Act.

The relationship of humans to biological diversity

Food, fuel, fodder and shelter were obtained from existing biological diversity through empirical learning by human kind. Using empirical knowledge and scarcity of their resources, human beings learnt the art of cultivation. During this phase, knowledge was to the extent of differentiating among different species. Further this knowledge expanded towards selecting different varieties depending upon their taste, yield, smell and other physical stress conditions like drought, flood, poor soil conditions, etc. The continuous cultivation across time and space to their understanding of various stress conditions like drought, pest attack, loss soil fertility and other physical parameters like light, wind etc., led to the selection of different landraces (genes) depending upon local stress conditions. Though human beings had settled and moved away from the forest patches, whenever they had trouble on the farm they went into the forest to seek solutions for their problems. Thus techniques of shifting cultivation, mixed farming, agroforestry, mixed cropping, manure application, pest and disease control were evolved. Depending upon such long-term interactions, cultural and

socio-political conditions were created. Such overwhelming knowledge now available with traditional communities along with the resources led modern science towards comprehensive solutions for various issues faced by humankind. Although biological diversity played a vital role in cultural, socio-political and sustainability of natural systems in the past, in the recent past the economic function of biodiversity has played a vital role (Gopinath, 2002) and reflects in the farmers' choice (Fig.1).

Fig.1 Functions of Biodiversity



Ecological functions operate towards maintenance of soil fertility, water conservation, weed and pest management, aesthetics etc, utilising the natural resources in a synchronised manner. The economic functions include food, fuel, fodder, timber, fiber, medicine etc, contributing to local incomes both on farm and off farm. This economic function reduces management costs. Among traditional communities when the economic service of livelihood systems is low, quite often-such systems are highly valued socially such as sacred groves/species. The nature of biological resources and their relationship with the communities that depend on it lead to different tenure systems (private or public property). Such relationships have a major

impact on the demography of the region, political system and social customs, which gets reflected as cultural diversity. Sustainability of a species or diversity of species in a system depends upon the level of synergy between these three functions.

From an anthropogenic viewpoint this synergy is lost when there is a reduction in the economic function of the system. This reduction in the local economy is caused directly by negative environmental impacts, which further leads to reduction or loss of local biodiversity and hence a disorganised social system.

Evolution of regulatory mechanisms

In the ecological sense different species co-exist under different relationships like competition, predations, parasitism, symbiosis, commensalism and mutualism. Although humans are a part of this relationship, they have been able to control nature because of their intelligence. Anthropologically such control over natural resources leads to sharing and being shared among different individuals within the community and among the communities. Thus sharing among the different complex communities evolved various regulatory mechanisms. Individuals and groups possessing highly valued resources evolved these and were in a position of controlling resources socio-politically and economically. However, collective regulatory mechanisms also evolved simultaneously through community networks. Among the different natural resources land, which supported vegetation, played a vital role in developing regulatory mechanisms. These lands could be further classified into broader categories land, which has naturally regenerated vegetation, and land on which human beings vegetated. In these two classes, though human beings were dependent on both, only those vegetated by them were regulated since they were individual owning and referred to as agricultural lands. The other category of land was widely referred to as forests, on which human beings largely had no controls till three centuries ago.

Thus gradual evolution of regulatory mechanisms through individual ownership of material and knowledge in the agricultural sector reached its international level through The Union for the Protection of New Varieties of Plants (UPOV) established by the International Convention for the Protection of New Varieties of Plants. The Convention was adopted in Paris in 1961 and it was revised in 1972, 1978 and 1991. The objective of the Convention is the protection of new varieties of plants in the form of intellectual property protection. The UPOV Convention is an international agreement, which sets rules for rights over crop varieties. After three revisions of the UPOV convention to protect the interests of plant breeders, it was able to attract only 37 countries mostly belonging to highly industrialised countries.

To build consensus and promote international commitment to plant genetic resources, Keystone Dialogue Series was initiated in 1988 under the chairmanship of Prof. M. S. Swaminathan and began with a definition of Farmers' Rights and the relationships between the Food and Agricultural Organisation of the United Nations, (FAO) Commission on Plant Genetic Resources and the International Board for Plant Genetic Resources (IBPGR) at Colorado, United States. The second plenary session held at M. S. Swaminathan Research Foundation (MSSRF) at Chennai, recognised that more food and other agricultural commodities will have to be produced under conditions of shrinking land and water resources and expanding biotic and abiotic stresses (Anonymous, 1990).

Evolution of Convention on Biological Diversity (CBD)

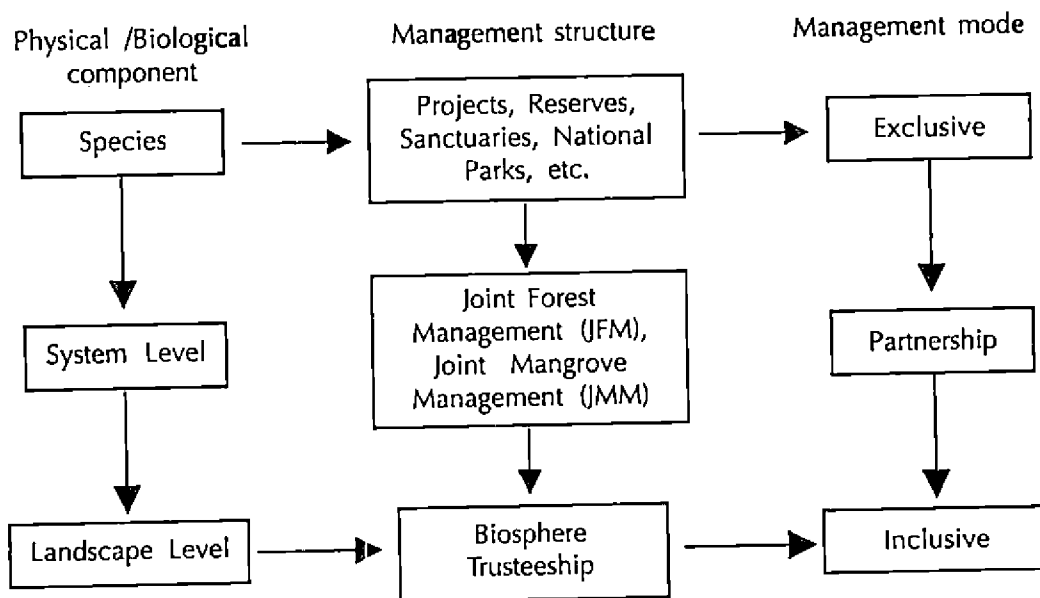
In the forestry sector though at the national level different states developed various regulatory mechanisms they had very few inter linkages and local communities had no role in regulating its production potential. International consensus on their role in maintaining conducive environment for human beings began only during the first of the UN's environmental conferences held in Stockholm in 1972. The industrialised and developing countries had gathered to discuss the right of humanity to a healthy productive environment. In 1983, the World Commission for Environment and Development was evolved with a task to formulate a world programme for change. The Bruntland Commission made a historic mark by defining sustainable development through its report in 1988. The name of this Commission came from its chairwoman, the Norwegian Prime Minister Gro Harlem Bruntland. The UN Assembly also adopted a resolution in December 1989 to convene a UN Conference on Environment and Development in Brazil in June 1992 to focus on issues related to Biotechnology, Biological Diversity and Natural Resource Management (NRM) bridging the forestry sector.

Historically NRM tended to focus on a package of physical and biological entities such as soil, water and individual species within ecosystems but the challenge lies in integrating other factors such as human livelihoods into NRM. Therefore there is a need to balance the competing interests of individuals and society in the multiple use of natural resource.

Since the colonial period, forest management has been a challenging and productive field for research, management and policy making. Protection of forest laid routes for 160 national parks and 698 wildlife sanctuaries in India (Anonymous, 1990). These sanctuaries mostly approached conservation at species level through sanctuaries for different wild animals and plants and restricted human interaction with the forest. In

the wake of participatory approach the degraded forest patches nearing the villages were opened for Joint Forest Management where forest ecosystem is conserved and its services are extended to the human beings partly. This system level approach (Fig. 2) begins to yield results towards a sustainable management of the natural resources. However, it includes human component only as partners not as one among the different components of the forest and also raises several legal issues particularly the tenure aspects.

Fig.2 Evolution of Conservation Strategy



In the process of ecological evolution of conservation strategies, landscape level approaches proved to more effective and sustainable in the recent past (Ramakrishnan, 2002). This leads to evolution of Biosphere concept global level, where Man and Biosphere Programme (MAB) played a vital role. Now the attentions of the global funding agency like Global Environment Facility (GEF), United Nations Education, Scientific and Cultural Organisation (UNESCO), International Union for Conservation of Nature and Natural Resources (IUCN), etc., concentrating more on this concept.

The international conservation movement also grew over a period of time from protecting individual species through reserves and projects to systems approach with national parks and now into landscape level with Biosphere concept. In the process of evolution, conscious efforts have been made to consider all living beings naturally evolved on the earth as universal property and access and control of its use in various purposes across the countries need not be regulated. This initiated a lot of discussion in the developing world particularly in South Asian Association for Regional Cooperation (SAARC) countries and led to the declaration of living things in a country

as their sovereign property rights. There were also simultaneously discussed in the IUCN's general assembly at San Jose, Costa Rica, where under the Chairmanship of Prof. M. S. Swaminathan, the then President of IUCN the Convention on Biological Diversity (CBD) was evolved and later adopted at Rio de Janeiro in 1992. CBD was signed in 1992 to emphasise three main goals: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising from the use of genetic resources. More than 170 countries signed the agreement to create necessary mechanisms to ensure realisation of the above three goals. The efforts for conservation of natural resources continued in World Summit on Sustainable Development, 2002 at Johannesburg.

Evolution of PPVFR Act and Biological Diversity Act of India

In this changing scenario, the trade sector also underwent changes in the General Agreement on Trade and Tariffs (GATT) Uruguay Round particularly through Trade Related Intellectual Property Rights (TRIPS). The World Trade Organisation's (WTO) TRIPS Agreement obliges all members to provide intellectual property protection for plant varieties at the national level, either through patents or "an effective *sui generis* system" or both (Art. 27.3 (b) of CBD) attracting investment in biotechnology to uplift their economies and improve food security. The 69 developing country members of WTO agreed to implement Art. 27.3(b) of TRIPS by January 2000. However, only 43% of the developing country members of WTO have implemented this Article by enacting various form of plant varieties protection law.

India signed both CBD and WTO and initiated legal procedures and evolved other management strategies during the past one decade. With the CBD on one hand and WTO on the other hand, India as a culturally rich and biologically diverse country initiated its national consensus through evolving PPVFR Act under the chairmanship of Prof. M.S. Swaminathan at MSSRF in Chennai through meetings and consultation between 1994 and 1996. This Act ensured the protection of national interest in the agricultural sector, and made a simultaneous effort to conserve and protect its biological diversity and knowledge related to it. An expert committee on biological diversity met at Chennai under the chairmanship of Prof. M. S. Swaminathan and drafted the first BD bill for the parliament of India in 1997. Though the bill was drafted in 1997 the bill was accepted and passed in parliament with several modification in the year 2002.

The PPVFR Act in the midst of both CBD and WTO ensures Agenda 21 of the CBD for conservation of traditional varieties and TRIPS agreement in the WTO through enhancing the breeders' rights to access and control over his own novel varieties.

However, PPVFR has largely its own national characteristics ensuring that traditional farmers benefit as a conserver, cultivator and breeder.

The BD Act has a three-tier management structure - the Biodiversity Management Committee (BMC) at the local Panchayat level, State Biodiversity Board (SBB) at the State level and National Biodiversity Authority (NBA) at the national level. These three in coordination manage access and control of biological diversity of the country. The Act ensures protection of the national sovereignty within the framework of CBD and in equilibrium with the PPVFR Act.

Biological Diversity Act and community rights

Biodiversity is the product of constant interaction of human species with plants and animals. In this context such biological diversity cannot be saved without the support of local communities through sharing responsibilities for addressing livelihoods needs and providing rights and recognition to them. The CBD (Article 8j and 10c) emphasises the sovereign rights of indigenous and local community knowledge and practices by providing incentives for conservation, taxation on biodiversity based industries and bio-safety measures with regard to in biotechnology. The biosafety measures also restrict both Indian residents and non-residents for research and education. However, the BD Act attempts to strike a balance with the PPVFR Act.

The PPVFR Act while addressing CBD on one side recognises farmers as conserver through providing access to national gene fund, on the other addresses TRIPS by recognising farmer as a breeder through IPRs and also has its unique position in recognising the farmer as a cultivator through rights to sow, re-sow, exchange, and sell. Similarly BD Act within the framework of CBD addresses the community as conserver through insisting on benefit sharing with the community at the local level and recognises the community as knowledge holder within the IPR regime.

The conservation of biological resources through BD Act was attempted through rights over National Gene Fund (NGF). However, benefit sharing through National Biodiversity Fund (NBF) / State Biodiversity Fund (SBF) (Art. 17/18 of BD Act) needs some more clarification (Chauhan, 2001).

Conclusion

The three tier management structure of the BD Act NBA, SBB and BMC, has little information about the BMC's responsibility and its legal status (Article 10 of BD Act) While revising the draft prepared under the chairmanship of Prof. M. S. Swaminathan

the statement on gender representation in NBA and SBB has been removed giving possibility for gender imbalance in the functioning of these institutions. On the whole the passed BD Act enforces stringent measures for access to resources by both Indian citizens and foreign nationals. This would restrict research and collaborative research within the country and abroad. All the above apart from providing community rights to some extent restricts pathways through which the benefits could be obtained. Knowledge is a continuum (Swaminathan, 2000) and to make this true the BD Act needs to take care of such control over access while drafting the Rules.

The PPVFR and BD Acts are unique ventures to achieve conservation of biological diversity and ensuring equitable sharing of benefits therein.

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Some Remarks on the Biological Diversity Act

Sumi Krishna

An observation that the PPVFR Act, 2001 and the BD Act, 2002 are 'farmer-friendly' and a 'shining example' of democracy at work, may need modification. Indeed, most environmental legislation and Government Orders since the Forest Act of 1927 have been strongly undemocratic, centralising and authoritarian even as these are couched in the rhetoric of democracy.

For example, in 1979, at the height of the '*Chipko Andolan*' against commercial tree felling, the Uttar Pradesh government passed an 'immediate action' order suspending all green fellings. This was ostensibly in response to a fast undertaken by one of the *Chipko* leaders, Sundar Lal Bahuguna. Many liberal supporters of *Chipko* welcomed the Government Order. They did not realise its implication: commercial felling would be stopped temporarily but forest-dwellers too would not be able to get vital requirements of small timber for house construction or to make agricultural implements. The order curtailed rather than enhanced the people's rights.

The BD Act too like other environmental legislation is strongly centralizing, bureaucratic and anti-people. By increasing bureaucratic authority, it might well lead to corroding the very rights of the communities that a biodiversity legislation should seek to protect. Indeed, the legislation includes provisions that could be termed anti-community, even draconian.

Consider the concentration of powers in the National Biodiversity Authority. Apart from an 'eminent' Chairperson, the Authority includes 10 official members appointed by the Central Government, representing the Ministries of Tribal Affairs, Environment and Forests, and the Director General of Forests, and seven other related Central Ministries. Only five non-official members are included who will represent scientists, industry and the creators and conservers of biodiversity. The Act also says that decision-making will be through majority vote. Regardless of inter-Ministry differences it is likely that the three-plus-seven official representatives would promote a consensus of the Central Government's interest on issues. The five non-official members, however, representing diverse sections of the population are unlikely to have common views, and if they did, could be out-voted. So, whose rights are we talking about?

The Constitution of India recognises the complexity of rights, to some extent. While individual rights are upheld, community rights are also supported in certain cases. This is a positive aspect of the Constitution. The same Constitution, however, sanctions the continuation of pre-Constitutional personal laws which evolved in a pre-democratic

era which was not marked by gender egalitarianism and individual rights. The negative impact of this with regard to Farmers' Rights, the BD Act and other environmental legislation needs to be more deeply examined.

At the superficial level of gender-neutral grammar, the BD Act seems to have benefited from the criticisms of the PPVFR Act. The law-drafters have been careful to use the gender-balanced he/she throughout the text and the neutral term 'Chairperson' (Although towards the end of the Act, we find the Chairperson placing 'HIS casting vote!') At a deeper level, however, the patriarchal mindset of the lawmaker is clearly visible. An Article exempting local people from the requirement of prior intimation for obtaining biological resources, specifically mentions '*vaids* and *hakims*', indigenous medicine practitioners. What about *dais* (traditional birth attendants) and other women healers? Would we have to take recourse to the general Indian law, which states that legally 'he' includes 'she'? And so argue that male '*vaids* and *hakims*' include female *dais*?

One approach is that the Rules under an Act can compensate for any vagueness in the Act. Yet, we also have the very well documented evidence of Rules being used to derail major policy initiatives. The working of Joint Forest Management is well documented. We now know how communities in different States have used seemingly simple Rules (such as for quorum at a meeting) to subvert gender-egalitarian functioning. As was pointed out in an earlier intervention, the BD Act gives the State Government the power to notify 'biodiversity heritage sites'. Read together with the Article on 'compensating or rehabilitating' those who are 'economically affected', this is deeply disturbing. Despite the fact that Rules cannot go beyond the Act itself, we could campaign for Rules, which would subvert some of the negative aspects of the Act such as the references to the heritage sites.

Can local people's interests be protected through the local Biodiversity Management Committees set up under the Act? (Incidentally, it should be noted that the size of a Panchayat is very varied and may include hundreds of villages in Assam or Orissa. The 'territorial jurisdiction' of such Committees and their relationship to the Panchayats is a grey area.) The BD Act seeks to regulate the use of biological resources at the national level, but does not address the traditional knowledge of biodiversity, which is currently in the public domain. This is of great significance to the livelihoods of many resource-poor groups. It is this traditional knowledge, and the process of its evolution, that needs to be acknowledged and protected more comprehensively from the people's point of view.

Case Studies

MSSRF Team*

Ex-situ and *in-situ* systems of conservation of genetic resources (GR) practised by professional individuals and institutions have received legal recognition in general. But these laws do not define or recognise the rights of rural, tribal and farming communities who have been continually engaged in on-farm conservation and improvement of landraces, folk varieties, medicinal and other economically important plants and animal breeds and own a wealth of associated TK.

Community conservation systems operate on a defined functional set of norms and rules governed by gender roles and intra-community relationships. They are gendered frameworks and need to be recognised as such.

MSSRF is advocating GR and TK as two dimensions of conservation and recognition of the underlying gendered roles within the community. Unlike codified laws protecting the individual or IPRs on plant varieties and knowledge systems, customary and traditional laws place more emphasis on the community entitlements, larger public good and benefit sharing.

The legislation, PPVFR Act, 2001 and BD Act, 2002 recognise the role and entitlement of the community *vis-à-vis* the rights of individuals and institutions. There is also global recognition of entitlement of local communities to preserve and maintain knowledge, innovations and practices relevant to the conservation and sustainable use of biological diversity and for equitable share of benefit arising from utilisation of such biodiversity, knowledge and practices (CBD, 1992). Legislative implementation of such entitlement not only requires definition of entitlements, but also delineation of groups and communities eligible for fair sharing of benefits and reward and recognitions with engendered equity. The socio-economic benefits possible to the rural communities with such legislation on biodiversity and associated knowledge will not be fully accessed without their empowerment with relevant information on these legislation and capability building on the GR and TK assets created and conserved by them. Such capability building may include assisting the community in establishing database of their resources and continuing the conservation at low social cost. All conservations are costly, particularly that of the agrobiodiversity, where the components assume different economic importance in space and time. Value addition of traditional varieties and promoting niche market for such varieties is one approach followed by the MSSRF to sustain rural interest in agrobiodiversity

* Case studies team led by Dr. V. Arivudai Nambi, Programme Coordinator. See Annexure 4 for details.

conservation. Some of these aspects, which have direct relevance to the community entitlements arising from the PPVFR and BD Acts, are presented in three case studies, which however, are not models but only indicative at this stage.

The case studies

The three case studies were identified from the fieldwork areas, where MSSRF is involved in participatory conservation of agrobiodiversity with rural or tribal communities in the Jeypore tract in Orissa, Kolli Hills in Tamil Nadu and Wayanad in Kerala. Each of these sites is unique with respect to the management and utilisation of local biodiversity and associated TK by the local community. Wayanad in the Western Ghats is a biodiversity hot spot; the Jeypore tract is a centre of origin of rice and Kolli Hills has large genetic diversity in small millets. The case study in Jeypore is on linking conservation in rice with creation of entrepreneurship on landraces conserved by the community to achieve economic benefits. The case study from Kolli Hills attempts for scientific validation of a traditional knowledge to add value to the community innovation and to create opportunity for benefit sharing. The subject is the traditional innovation and the biopesticidal property of a wild shrub, locally called *Vilari*. The case study from Wayanad focuses the traditional role of a community in conserving several land races of rice and stratification within this community in the conservation of specific land race.

Case Study I: *Kalajeera* rice variety from Jeypore, Orissa

Orissa state with 4.7 per cent of India's total landmass has a large concentration of tribal population of seven million (1991 census). Tribal livelihood largely depends on agriculture mainly practiced on traditional knowledge.

Jeypore tract consists of gently undulating plateau and residual hills of the Eastern Ghats at the southern part of Orissa in the Koraput district. Nearly 45% of the land is under cultivation and annual rainfall is 1800mm contributed largely by the South West monsoon.

Agriculture in Jeypore

Rice is the predominant crop cultivated in upland, medium and lowland ecosystems. Nearly 85 % of 19,985 ha. of arable land is grown with rice, mostly under rain-fed conditions. Other important crops are pulses, oilseeds, sugarcane and minor millets, grown in rotations.

A considerable part of the rich genetic diversity in Jeypore tract once represented by about 1750 varieties of rice has now eroded. For example, an explorative survey conducted by the MSSRF during 1995-96 could locate only 324 rice varieties in the very area more than thousand varieties were recorded 40 years before. Jeypore tract also known for 'poverty presented a paradox of 'economic poverty amidst genetic prosperity'. Availability of canal irrigation in the region coupled with high yielding varieties has accelerated the genetic erosion of many traditional landraces.

Amanatya, Bhatara, Bonda, Didayi, Gadaba, Halva, Kandha, Koya, Langia Paroja, and *Saora* and are the original inhabitants of the forest and hills. The *Bonda, Paroja* and *Langia Soara* tribes still practice shifting cultivation along with settled agriculture. The district has a low literacy rate of 24.6%.

Three major cropping patterns are followed depending on the topography of the land. Rice is grown as monocrop in low, medium and uplands and minor millets are grown as mixtures in upland and medium land. Traditionally all agricultural operations are done together by men and women, although there is division of responsibilities between them. Women attend to weeding, storing grain and seed, milling, and cooking while harvesting, threshing and winnowing are jointly done and men attend to ploughing, other field preparations and sowing.

Kalajeera

Kalajeera is a landrace (LR) of rice, preferentially grown in lowland by tribals for their consumption. Their traditional practices of cultivation were no longer efficient to realise the yield potential of this variety.

As implied in the name, *Kalajeera* is a black coloured, fine grain variety. It is traditionally used for consumption, particularly during festivals, marriage and birth ceremonies. It is also used to make puddings. The aroma, taste and other culinary properties of this variety are unique and highly preferred. The tribal custom prefers black-coloured offerings such as black hen, black mustard seeds and black paddy for propitiation of deities.

Box 1: Descriptors of *Kalajeera*

Indicative values of agronomic / morphological characters *

Season of seeding:	Mid- June 2- Early July
Mode of planting:	Nursery raising and transplanting 3 week-old seedlings
Days to flower:	120 days
Days to mature:	153 days
Synchrony of tillering:	Very good
Plant Height:	120 cm
No. of tillers/plant:	7
No. of panicle/plant:	7
Panicle length:	5 cm
No. of filled grains/panicle:	175
1000-grain weight:	15 g
Grain yield/hectare:	3 t
Straw yield/hectare:	5.5 t
Colour of the grain:	Black
Shape of the grain:	Small, oval
Length of the grain:	7 mm
Breadth of the grain:	3 mm
Special character:	Aromatic
Market Potential:	Grain – Rs.750 to Rs.800 /q Rice – Rs.2200 to Rs.3000/ q Seed – Rs.800 to Rs.1000/ q

* The metric values of agronomic/ morphological characters of *Kalajeera* are subject to normal variation across sites, seasons, years and different systems of crop management.

Participatory Role of MSSRF

The tribal community in a participatory stock taking of currently valued/ used landraces, zeroed in on about 30 landraces. These landraces were grown in participatory plant improvement experiments using traditional (T) and modified (M) practices of cultivation. MSSRF provided the modified practices uptuning the tribal practices with scientific input. The very high yields under M compared to T made people realise the value of M for landrace cultivation and decided to switch over to M on their own accord. At harvest, people were provided training on seed selection thus ensuring initiating seed material for the ensuing season. At the end of the experiment, people in coordination with MSSRF scientists, preferentially selected 6 landraces to cultivate on a large scale, 2 each for upland, medium land and lowland. *Kalajeera* is one landrace selected this way for lowland cultivation. Its yield in farmers' small experimental plots of 120 sq.m under traditional and modified conditions clearly demonstrated the high grain and straw yields. People thus became seriously interested in its large-scale cultivation.

As a result of these interventions of MSSRF, *Kalajeera* is now able to compete under varying weather stresses with other modern varieties and its importance has increased both within the community and in the local market. Improved yields realised consistently in farmers' large plots naturally created an increased demand for *Kalajeera* seed. MSSRF has organised training to participatory farmers on purification and production of good quality seed. It has also enabled the establishment of gene-seed-grain banks, to cope with a demand driven self-reliant seed supply and seed security system.

This success story of *Kalajeera* has attracted the attention of several villages under Jeypore, Boipariguda and Kundura blocks. The increased production of *Kalajeera* has also revived the market demand for this grain with favourable market prices. Market studies taken up by MSSRF showed that landraces, in general, command a good market in Orissa. The rice millers are the major buyers and prices offered during the season December to March are better than those offered during the season May to September. The millers offer Rs.380/bag (of 80 kg) for coarse rice varieties like Lalata and Konark, while the fine varieties like *Kalajeera* fetch Rs.500/ bag.

Local marketers inform that *Kalajeera* would also have a market outside Orissa in Jagdalpur and Raipur in Chattisgarh State and would probably have a high demand in the super markets.

Implications of commercialisation of *Kalajeera* for the PPVFR Act

Quality seed production in *Kalajeera* by farmers will cater to expected increased demand for seeds, and at the same time ensure high yields of grain for satisfying farmers' consumption needs and for marketing. To start with, the profits would be shared among the village community. But if the diagnostic attributes of *Kalajeera* were identified and confirmed along with the source community (ies) who owned both the traditional knowledge and seed material initially, this landrace stands the merit of registration under the PPVFR Act. At present, other than the black colour of the grain, which turns white on cooking, no pigmentation is noted. More work on the landrace may help in identifying other phenotypic markers, if present. Demand for this landrace can also be visualised for producing improved commercial derivatives with consequent opportunity for benefit sharing from such commercial varieties within the provisions of the Act.

By enabling self-governance from producing to marketing *Kalajeera*, MSSRF aims to put in place a paradigm of improving a landrace and upgrading it to community benefit both on people's initiative and on the strength of the PPVFR Act.

Case Study II: *Vilari (Dodonaea viscosa)* from Kolli Hills, Tamil Nadu

Kolli Hills, a tribal area in Namakkal district of Tamil Nadu is part of the Eastern Ghats. The hills have altitudes ranging between 1000-1350 m MSL spread over 490 sq.km area consisting of high peaks and ravines. With good rainfall and low temperature, the Kolli Hills abound in biodiversity consisting of undisturbed *sholas*, moist-evergreen and dry-deciduous forests. About 98% of 33,888 population in Kolli Hills (1991 Census), living in 14 revenue villages belongs to a tribal group known as *Malaiyalis* (in Tamil: *malai* = hill or mountain; *yali* = inhabitants or rulers). They are the principal inhabitants of the Talaghat Hills in settlements, namely, Shervaroys, Kalrayans, Chitteris, Kollimalais and the Pachamalais. The average literacy is 13.6%, which is still lower among women.

Agriculture in the Kolli Hills

Agriculture is the mainstay of *Malaiyali* economy and their life style has been shaped on the use and management of various natural resources. They have rich know-how on conservation under the steep terrains of the hills. Diverse food and commercial crops are cultivated in the valleys and terraced slopes and uplands as sole or mixed cropping, following different cropping patterns. The land is utilised by growing rice in lowland, rainfed rice in low slopy land and rainfed millets, pineapple and tapioca in high hilly regions.

Most of the farm families own small land holding where both women and men are engaged equally in all agricultural activities. The staple food of *Malaiyalis* is *samai* or little millet (*Panicum sumatrense*) and rice. *Cumbu (Pennisetum typhoides)* and *thinai* or foxtail millet (*Setaria italica*) are also consumed. Most of their traditional crop varieties are drought tolerant. They are pest/ disease resistant, nutritious and grown with no or low external inputs in the hilly terrain. These traditional varieties with low yield are being confronted by high yielding varieties of rice and cash crops like tapioca. The traditional farming in wetlands includes application of green leaf and farmyard manure. Chemical fertilizers are occasionally used.

Vilari

Vilari is the local name for *Dodonaea viscosa* var. *angustifolia*, an evergreen shrub of wide occurrence. It is considered to be endemic to Australia and Myanmar. It is also found to be widespread in India, more particularly in the Eastern and Western Ghats. There are about 40 species belonging to the genus *Dodonaea*. In Kolli Hills, *Vilari* is found naturally growing all over, from forests to farmlands and wasteland to roadsides. The *Malaiyalis* have innovated multiple uses for this shrub and this has now become an important part of their traditional knowledge, which is practiced equally by both men and women.

Box 2: Descriptors of *Vilari* (*Dodonaea viscosa*)

Habit:	Shrub or small tree
Bark:	Thin; grey in colour
Wood:	Hardy and heavy; useful for making tool handles
Leaves:	Alternate, shining, oblanceolate, simple or pinnate, ex-stipulate
Flowers:	Small polygamous, in axillary or terminal racemes or panicles
Sepals:	2-5, imbricate or valvate.
Petals:	Nil
Disc:	None in male flowers, small in bisexual flowers
Stamens:	5-10; usually 8, inserted without the disc in bisexual flowers, in male around a small pistillode; filaments short, anthers linear oblong
Ovary:	3-6 angled and celled
Style:	3-6 cleft at top
Ovules:	2 in each cell; collateral or superposed
Fruits:	2-6 sided membranous or coriaceous capsule, septicidally 2-6 valved, the valves winged at the back; 1-2 seeded
Seeds:	Lenticular or subglobose, coriaceous, cotyledons spirally convolute
Flowering period:	February-April; August-November
Fruiting period:	Throughout the year

Traditional knowledge on *Vilari*

Vilari is commonly used as a hedge plant in Kolli Hills. Its most important uses are as green leaf manure in paddy fields and as indigenous medicine for common ailments. As green leaf manure, *Vilari* is incorporated in wetlands growing rice. According to the traditional practice, only leaves with small branches are applied. Both men and women fetch the leaves of *Vilari* from the forest and other places where they are abundantly growing. About 20 bundles, each weighing approximately 15 kg is applied on an acre of land. The leaves of *Vilari* are applied to the field and ploughed in. Both men and women join to trample these leaves into mud by applying pressure to crush them. According to local belief, the stickiness of the soil improves by this leaf addition, which indicates the level of good mixing of the leaves. The field manured with *Vilari* is believed to promote better sprouting of the paddy seeds and protects the seedlings from pests. It is also believed that if *Vilari* leaves are not added to the soil, the crop may suffer serious pest attack.

Malaiyalis are also using *Vilari* leaves along with the leaves of two other species, namely, *Clausena dentate* (*Anna thazhai*) and *Cippadessa bassifera* (*Pena thazhai*) as indigenous medicine. The *Vilari* leaves are bitter in taste. According to one medicinal formulation, *Vilari* leaves are crushed with leaves of *Anna thazhai* and *Pena thazhai*, made into a paste or boiled and swallowed. Under another formulation, these leaves are boiled, mixed with onion paste, filtered and taken as a concoction. These administrations are believed to cure stomachache, fever and cold and to function as a purgative. *Vilari* leaves are also used for external applications to cure leg and joint pains. Here the leaves are heated in a mud pot along with little water strained from cooked rice (*Vadi Kanji*) until it becomes a paste. This paste is applied externally on the part of the body having pain and bandaged with a cloth. Repeated use of this for 3-4 days is believed to give relief to the pain.

Validation of TK by MSSRF

MSSRF came across the bio-pesticidal value of *Vilari* during its interaction with *Malaiyalis* in the late 90s. Initial validation studies conducted by MSSRF during 1998-99 in partnership with local people indicated that *Vilari* green manuring appeared to have two possible effects. First, it improved the soil texture to minimise erosion and second, it had some kind of effect on control over rice pests. Further studies were taken up in the laboratory using various kinds of leaf preparations and *Helicoverpa armigera*, a lepidopteran polygamous borer as the test system. Various forms of *Vilari* leaf preparations were tried including powdered leaves, aqueous, hexane and chloroform extracts from leaves. *Helicoverpa* adults treated with the leaf extracts were found to have an altered life cycle with increased fecundity, reduction in hatchability of eggs to the extent of about 30%, extended larval stage, reduction in pupation with variable larval mortality, all finally leading to a significant reduction in pest population. Field trials on cotton and rose confirmed the bio-pesticidal property of *Vilari*.

Implication of *Vilari* validation with respect to BD Act

Further research for the development of appropriate technology to identify the active ingredient responsible for the pesticidal property or development of cost-effective bio-pesticidal formulations from *Vilari* and its commercialisation may entitle the Kolli Hills *Malaiyalis* to claim equitable benefit sharing arising from such commercialisation evolved from their TK, in accordance with the BD Act.

Case Study III: *Veliyan* and other traditional rice landraces of Wayanad, Kerala

The Western Ghats is one of the richest biodiversity spots in India. The valleys of these hill ranges, used for cultivation are rich in agro biodiversity. Wayanad district is located on a high mountainous plateau in the Western Ghats of Kerala, with a geographical area of 2131 sq.km, dotted with peaks ranging from 700 to 2100 m and home to 6,72,000 people (Census, 1991). The district is bound by the district of Nilgiris (Tamil Nadu) and Mysore (Karnataka) in the east, Coorg (Karnataka) in the north, Malappuram district (Kerala) in the south and Kozhikode and Kannur districts (Kerala) in the west. The district can be divided into two distinct ecological zones, the southern wet evergreen forest zone and the northern dry deciduous forest zone, which is largely planted with eucalyptus and teak. The southern zone receives high rainfall while the northern zone receives moderate rainfall. Wayanad is rich in biological and agro biological diversity. The agro biological diversity includes rich genetic resource of rice, legumes, wild species, horticultural and fruit crops, many medicinal plants as well as different breeds of domesticated animals and birds.

Agriculture in Wayanad

Wayanad has a long history of agriculture. Two tribes, who are among the inhabitants of this region from early times, and associated with earliest cultivation of rice in valley wetlands and rainfed millets in uplands, largely by shifting cultivation, are the *Kurichiyas* and the *Kurumas*. The agro-ecological conditions of the area, vastly different from the plains and the virtual isolation of the area from plains due to lack of proper communication and other factors restraining early migration from the plains, the agrobiodiversity conserved and used by the native tribes evolved several unique adaptive properties. Selection of these traits eventually evolved many landraces of rice and other crops unique to the region. Later, which is more recent in historical time, huge migration from the plains and domination of these migrants in influencing the cropping pattern in the uplands led to the total decline of millets and rise of plantation crops. However, the land use pattern in lowlands changed very little, thus helping the retention of many of the unique indigenous landraces of rice. Between the two early cultivator tribes, *Kurumas* lost out to the migrants and became landless farm labour, while *Kurichiyas* retained land ownership and associated agrobiodiversity with the historical continuum, at least in the case of rice. It is thanks to these indigenous people and their penchant for conservation and innovative agriculture that landraces have sustained a place in the midst of improved varieties. Wayanad has a rich repository of rice genetic variability, not only suited to hill agriculture, but also distinct in many other ways.

Many of the farmers realise that time has led to the erosion of several local landraces. Local farmers recognise the existence of about 24 landraces, although a recent survey by MSSRF could locate only 14 of them. While migrants also do cultivate some of these landraces, it is the *Kurichiya* community, which gives solid anchorage to conservation and cultivation. Among the local people, this community stands out for its knowledge on these landraces and their specific advantage in the local agriculture. Some of the landraces more common now in Wayanad are Chennellu, *Chomala*, *Gandhakasala*, *Jeerakasala*, *Njavara*, *Kaima*, *Karuthan*, *Thondi* and *Veliyan*. Among these, *Njavara*, *Gandhakasala*, and *Jeerakasala* have unique medicinal and culinary properties. With the object of highlighting the agrobiodiversity based traditional knowledge and the skill of its conservers in using this knowledge in their agriculture, the *Kurichiya* connection with one of the popular landraces, *Veliyan*, is described.

Veliyan

Veliyan is a long duration (8-10 months) season-bound variety, largely cultivated by the *Kurichiya* community since historic time. With possible circumstantial and other historic evidences, it also appears that this community is responsible for the selection and continued conservation of this variety in this region. *Kurichiyas* are spread across Wayanad district and the adjacent Kannavam in Kannur district of Kerala. Over the long history of existence, this variety appears to have given derivation to different forms, as is normal in any farmer seed selection process. Knowledgeable elderly *Kurichiyas* hold that the initial variety for all these derivations is the original *Chettu Veliyan* (translated as the *Veliyan* most suited to muddy fields). Thus the name *Veliyan* has become generic with the evolution of the following related landraces, the *Chettu Veliyan* or *Mannu Veliyan*, *Pal Veliyan*, *Kodu Veliyan*, and *Mundon Veliyan*. Possibility of the latter three landraces as essentially derived forms of the initial *Chettu Veliyan* cannot be ruled out. Going by the meaning of their names, these derivatives are distinct from the initial land race in specific grain quality or adaptive traits. Among these, *Chettu Veliyan* is most popular and extensively cultivated by the *Kurichiyas*.

Kurichiyas' knowledge on landraces

According to the *Kurichiyas*, who are more knowledgeable on this variety and its varied forms of cultivation, *Chettu Veliyan* has many useful economic and adaptive traits preferred by the local people. These are the bold and red coloured grain, nutritious and tasty rice which gives a feeling of fullness when consumed, resistance to various biotic and abiotic stresses, high fodder yield along with good grain yield and thick straw used as thatching material in olden times, and a combination of tolerance to water logging and moisture stress. *Chettu Veliyan* is cultivated only

during the rainy season (*nancha*). It is more suitable for low-lying fields with water stagnation (*kundu vayal*) or soil having high clay content (*koravu vayal*). Seedlings are transplanted at 90 –110 days. Manuring is largely with farmyard manure and green leaf manure with *Paragam* (*Ficus hispida*), which is believed to have biopesticidal property. High rainfall and topography of the region makes the rice-growing valley vulnerable to sudden flooding during rainy season and moisture stress during summer. *Veliyan* has exceptional capability to adapt to these contingencies. It is also resistant to pests and diseases common in the region. The robustness of the variety and its high tillering capability helps in controlling weeds and resisting squally winds during monsoon. Moreover there is no grain shattering even after lodging. Rice of *Veliyan* is used for ceremonial purposes and community feasts, when *Chennellu* is not available. In the past *Veliyan* was used in brewing home liquor. The burned husk of *Veliyan* is used as homemade tooth powder.

Kurichiyas' skill in using the advantages of genetic diversity in agricultural practices is manifested in the *Valichal* method of *Chettu Veliyan* cultivation. Under this practice, seed is directly sown, instead of the normal transplanting method. When the crop is about 5 – 6 months, cattle are left to graze on the field and then a traditional field leveling implement, *Pakka*, driven by cattle is run on the crop. The rice plants along with all the weeds are trampled into mud. While weeds get decayed, the trampled rice plants regenerate because of the profuse tillering capability of *Veliyan*. Each node produces at least 5 – 6 tillers to re-establish a good crop stand. This method of cultivation with direct seeding, no major cost on weeding and availability of quality green forage during mid-stage of the crop makes the method more profitable than the transplanting method. Skill for *Valichal* is largely confined to *Kurichiyas* and is slowly receding.

Kurichiyas believe that growing a crop of *Veliyan* by mixing the seeds of *Chettu Veliyan* and *Mundon Veliyan*, both having identical duration, offers a kind of crop synergy leading to big harvests. The excellent seed selection sense of the *Kurichiyas* is reflected in their choice of not making any seed selection or saving from crops raised through varietal mixtures. The *Kurichiyas* select seed of a variety from its individual plants based on panicle size. They follow lunar cycle for seed harvest, which is done during the fortnight prior to full moon. *Kurichiyas* believe that seed is protected from pests, if it is collected during such periods and dried day and night on an open ground for fourteen days, until the rise of the new moon and then cleaned and stored in airtight containers *Kutta* or *Mooda* (basket like containers made of bamboo and paddy straw) kept on a wooden base within the house. Before sowing, germination is enhanced by dipping the seed in cow dung water for a specific period. Their solemnity to the faith that these landraces confer household food security is evident from the strong custom that the *Karanavars* (head of the joint

patriarchal family) are not to dispose the grain of *Veliyan* by sale, even if there is marketable surplus.

Kurichiyas follow a patriarchal tradition with defined gender roles. Traditionally all agricultural operations are performed by men and women together within the defined division of responsibilities. Families prefer to share labour among each other in agricultural operations rather than hiring labour. Women are skilled in transplanting, weeding, storing grain and seed, milling, and cooking; men attend to ploughing, other operations like field preparation and sowing, while harvesting, threshing and grain cleaning are done jointly.

Box 3: Descriptors of *Veliyan*

Indicative values of agronomic / morphological characters*

Season of seeding:	Mid June to Early July
Mode of planting:	Nursery raising and transplanting 75 to 80 days old seedling
Days to flower:	156 days
Days to mature:	185 days
Synchrony of tillering:	Very Good
Plant Height:	137.2 cm
No. of tillers/plant:	5
No. of panicle/plant:	5
Panicle length:	25.20 cm
No. of filled grains/panicle:	126
1000 – grain weight:	30.50 gm
Grain yield/hectare:	2.92 t
Straw yield /hectare:	5.0 t
Colour of the grain:	Brown
Shape of the grain:	Medium oval
Length of the grain:	7.75mm
Breadth of the grain:	3.50mm
Special character:	Flood and drought tolerant
Market potential:	Grain – Rs. 700 - 800/ q Rice – Rs. 1200 to 1500/q Straw – Rs. 12/bundle

*The metric values of agronomic/ morphological characters of *Veliyan* are subject to normal variation across sites, seasons, years and different systems of crop management.

Important rice landraces of Wayanad in the context of the PPVFR Act

Promotion of conservation of agrobiodiversity by the community and continuance of its traditional practices in seed selection for sustained enlargement of genetic diversity are one of the important objectives of the PPVFR Act, *inter alia* the farmers' rights provided therein. Hence the Act recognises the rights of community of farmers in registering varieties collectively evolved and/or conserved by them, makes them eligible for benefit sharing arising from the direct or indirect commercial use of such varieties and seeks to promote conservation by individual or community of farmers through rewards and recognitions. The cluster of rice landraces of historic antiquity in Wayanad, most of them possessing a variety of traits of economic, nutritional, ethnical and adaptive importance, evolved or being conserved by the local farming community can be an illustration of a fit case for recognition or reward under the Act. The delineation of the community profile associated with one of these landraces (*Veliyan*) made by MSSRF illustrates how a specific group of farmers (*Kurichiya* community) is distinguished from the larger Wayanad community of farmers, for the purpose of benefit sharing in the event the concerned variety is used commercially, either directly or indirectly or in determining the definition and entitlement of the community in registering such farmers' varieties. These processes reiterate the equal role being played by women in the household and at the community level in seed selection, conservation, and cultivation.

Annexures

1. List of Participants
2. Workshop Schedule
3. Group Work Guidelines
4. Case Studies Team
5. List of Abbreviations

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Workshop Schedule
'Farmers' Rights and Biodiversity Act: a Gender and
Community Perspective'

27-28 February, 2003

Venue: Sambasivan Auditorium, MSSRF, Chennai

THURSDAY: 27 FEBRUARY 2003

9.30am-10:00am	SESSION I WELCOME AND INTRODUCTION Agenda Setting	Dr. V. Arivudai Nambi Principal Scientist, MSSRF Ms Mina Swaminathan Hon. Director, Uttara Devi Resource Centre for Gender and Development
10.00am-10.45am	SESSION II CRITICAL ANALYSIS OF THE PPVFR ACT Key Issues in the PPVFR Act Gender Dimensions	Chair - Prof. M. K. Ramesh Additional Professor, National Law School, Bangalore Dr. S. Bala Ravi Adviser (TRIPS & Biodiversity), MSSRF Ms. Mahalakshmi Parthasarathy Independent Consultant, Bangalore
10.45am-11.00am	----- TEA BREAK -----	
11.00am -1.00pm	SESSION II (Continued...) CASE STUDIES FROM THE FIELD Introduction to Case Studies Case Study from Jeypore, Orissa	Chair - Prof. M. K. Ramesh Additional Professor, National Law School, Bangalore Ms. Suchitra Padmanabhan Scientist, MSSRF Prof. V. Arunachalam Distinguished Fellow, MSSRF

Case Study from Wayanad

Dr. N. Anil Kumar
Principal Scientist & Head CaBC
Wayanad, MSSRF

General Discussion

1.00pm-2.00pm ----- LUNCH -----

2.00pm-3.00pm SESSION III

GENDER AND COMMUNITY
PERSPECTIVE IN
BIODIVERSITY ACT

Chair - Prof. P. C.Kesavan
Executive Director, MSSRF

Key Issues in the Biodiversity
Act

Prof. M. K.Ramesh
Additional Professor,
National Law School, Bangalore

Community Rights in the
Biodiversity Act

Dr. L. R.Gopinath
B.R Barwale Fellow, MSSRF

Remarks

Ms. Sumi Krishna
Independent Consultant, Bangalore

3.15pm-3.30pm ----- TEA BREAK -----

3.15pm-5.00pm SESSION III (Continued...)

Case Study From Kolli Hills

Dr. D. Dhanapal
Principal Scientist & Site
Coordinator, Kolli Hills, MSSR

General Discussion

6.00pm- 8.00pm SESSION IV GROUP WORK

- Documentation of TK
- Dissemination of information
- Lacunae in the law
- Field interventions: Legal and programmatic
- Lobbying and advocacy

8.00 pm ----- DINNER -----

FRIDAY: 28 FEBRUARY 2003

9.00am-9.30am	SESSION V	
	REFLECTIONS ON 'FARMERS' RIGHTS AND BIODIVERSITY ACT: A GENDER AND COMMUNITY PERSPECTIVE'	Prof. M. S. Swaminathan Chairman, MSSRF
9:30am-10: 15 am	<i>General Discussion</i>	
10.15am-10.30am	----- TEA BREAK -----	
10.30am-1.30pm	SESSION VI GROUP WORK (Continued.....)	
1.30pm-2.30pm	----- LUNCH -----	
2.30pm-3.45pm	SESSION VII CONCLUDING SESSION	Chair - Prof. M. S. Swaminathan Chairman, MSSRF
	Group Report Presentation	
	Action Plan	
	Chairman's Summing Up	
3.45pm-4.00pm	----- TEA BREAK -----	
4.00pm – 5.00pm	SESSION VIII	VALEDICTORY
	VALEDICTORY ADDRESS COMMEMORATING NATIONAL SCIENCE DAY ON 'GENDER DIMENSIONS OF BIODIVERSITY CONSERVATION'	Prof. M. S. Swaminathan Chairman, MSSRF
5.00pm	VOTE OF THANKS	Ms. Suchitra Padmanabhan Scientist, MSSRF

Group Work Guidelines

Annexure 3

Group 1: Documentation of TK

Chair: Ms. Sumi Krishna

Co-Chair: Dr. V. Narsimhan

- ◆ Purpose of documentation (prevention of biopiracy/ IPRs/ educational/ dissemination)
- ◆ What to document / what constitutes TK?
- ◆ How to document (what framework to adopt – NIF or other commonly accepted frameworks)
- ◆ How to account for gendered knowledge while documenting TK
- ◆ PIC with regard to accessing genetic resources and TK of communities.
- ◆ Identification of TK holder
- ◆ Limitations of Documentation
- ◆ Elicit other NGO experiences/ methods of documenting TK

Group II: Information dissemination and Modalities of Benefit Sharing

Chair: Dr. G. Poyyamoli

Co-chair: Mr. Yogesh Gokhale

- ◆ What information to communicate
- ◆ Whom to communicate to – target audience (at various levels)
- ◆ Modes of communication
- ◆ Possible partnerships and alliances for communication
- ◆ Protection issues in documenting TK (copyright/ defensive protection)
- ◆ Rights associated with cultural forms of expression (folklore)

Sub Area – Advocacy

- ◆ What is the nature of advocacy required on this issue?
- ◆ What kind of networks and alliances are required for the purpose?
- ◆ What is the output we expect to achieve through this strategy?

Group III: Legal Dimension

Chair: Ms. Sangeetha Udgaonkar

- ◆ Highlight the lacunae that require attention
- ◆ How to address these gaps
- ◆ Examine linkages of PPVFR & BD acts with other legislation
- ◆ Highlight conflicts and contradictions
- ◆ Possible approaches to collective ownership of Genetic Resources and TK

Group IV: Field interventions (programmatic)

Chair: Dr. S. Bala Ravi

Co-chair: Prof. Geetha Kutty

- ◆ Implications of the Acts on existing field interventions of researchers and NGOs
- ◆ What additional efforts are required to operationalised the Act and make it effective in its true sense .
- ◆ How does the Act define and look at collective ownership of resources (common property resources), collective knowledge, community rights, benefit sharing methods etc.
- ◆ What are the indigenous forms of benefit sharing that we have encountered? How equitable and just are they? Should and if so, in what manner must they be incorporated into existing legal frameworks.

Case Studies Team

Annexure 4

Jeypore

Prof. V. Arunachalam
Dr. L. R. Gopinath
Ms. Suchitra Padmanabhan

Kolli Hills

Dr. V. Arivudai Nambi (Team Leader)
Dr. Meera Devi
Dr. Uma Ramachandran

Wayanad

Dr. S. Bala Ravi
Dr. P. Thamizholi
Ms. R. Rengalakshmi

Field Workshop

Jeypore

Mr. Bibhu Prasad Mohanty
Mr. Susanta Sekhar Chaudhury
Mr. Trilochana Ray
Mr. Saujanendra Swain
Mr. Prashant Kumar Parida
Mr. Rashmi Patnaik

Kolli Hills

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Mr. E. D. Israel Oliver King
Mr. P. Bhooopathy
Mr. R. Bhaskar

Wayanad

Dr. N. Anil Kumar
Mr. G. Girigan
Mr. V. Balakrishnan
Mr. M.K. Ratheesh Narayan
Mr. T. Raveendran
Mr. P. A. Rasheed

List of Abbreviations

Annexure 5

BD	Biological Diversity
CBD	Convention on Biological Diversity
CBOs	Community Based Organisations
EDV	Essentially Derived Variety
FAO	Food and Agricultural Organisation
FR	Farmers' Rights
GATT	General Agreement on Trade and Tariff
GEF	Global Environment Facility
Govt	Government
GR	Genetic Resources
IBPGR	International Bureau of Plant Genetic Resources
IGNOU	Indira Gandhi National Open University
IPA	Indian Patent Act
IPRs	Intellectual Property Rights
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
IUCN	International Union for Conservation of Nature and Natural Resources
LR	Landrace
MAB	Man and Biosphere Program
MSSRF	M.S. Swaminathan Research Foundation
NBA	National Biodiversity Authority
NBF	National Biodiversity Fund
NGF	National Gene Fund
NGOs	Non Governmental Organisations
NRM	Natural Resources Management
OHP	Over Head Projector
PBR	Plant Breeder's Right
PPVFR	Protection of Plant Varieties and Farmers' Rights
RR	Researcher's Rights
SAARC	South Asian Association for Regional Cooperation
SBB	State Biodiversity Board
SBF	State Biodiversity Fund
SC	Scheduled Caste
SDC	Swiss Agency for Development and Cooperation
SRR	Seed Replacement Rate
ST	Scheduled Tribes
TK	Traditional Knowledge
TRIPS	Trade Related Intellectual Property Rights
UN	United Nations
UNESCO	United Nations Education, Scientific and Cultural Organisation
UPOV	International Union for the Protection of New Varieties of Plants
WTA	World Trade Agreement
WTO	World Trade Organisation