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and Traditional Knowledge with
reference to India's Biodiversity Regime**

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on Access and Benefit Sharing**



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KALPAVRIKSH



This briefing paper has been prepared for the NGO Alliance on CBD (India) and has been supported through WWF-India's CSO initiative.

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Designed & Printed at:

Systems Vision, A-199, Okhla Industrial Area Phase-I, New Delhi-110020

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Foreword

CHASING 'BENEFITS'

The word 'chase' implies pursuing with an intent to catch. That was what biodiversity-rich countries were intending through an international regime on access and benefit sharing (ABS) – hunting down 'bio-piracy'. The chase has been long and hard, lasting for over nine years. Amidst the fatigue of the last hours, the text thrust in their faces at the finish line is hardly the prize countries like India were hoping for. So yes there is a global *Nagoya Protocol* on paper under the Convention on Biological Diversity (CBD).¹ But no, the pursuit is not yet over for provider countries of genetic resources (GR). Neither is it the end of the pirating of their people's biodiversity-based knowledge. Catching their breath, both countries and communities have to look within as they chart their next steps for the road ahead. For the user countries still give chase, and access continues while 'benefits' remain illusory.

¹ The *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity* is an international agreement. It was adopted by the Conference of the Parties to the Convention on Biological Diversity at its tenth meeting on 29 October 2010 in Nagoya, Japan. The Nagoya Protocol opened for signature by Parties to the Convention from 2 February 2011 until 1 February 2012 at the United Nations Headquarters in New York. It will come into force 90 days after 50 countries have ratified it.

Understanding Access

Access with respect to biological resources has today become increasingly synonymous with trade. The world's crops, cures and cosmetics are derived from these resources and the knowledge associated with them. Globally the interdependence of countries with varying biological resources and therefore the need for access is taken as a given. But nationally, given the fact that bio-trade seems to dominate and both local communities and *in situ* conservation have not proportionately benefited, there is no consensus on whether access to biological resources and people's knowledge should at all be allowed by governments for corporations.

Access under the Convention on Biological Diversity (CBD) is meant to be of genetic resources from countries of origin or those countries that have acquired the resources as per CBD-compliant rules. The Convention (1993) and its Bonn Guidelines (2002) preceding the ABS Nagoya Protocol (2010) explicitly set the facilitation of access to genetic resources as a main objective. This approach makes it difficult for provider countries to refuse access to genetic resources. The default assumption is that a national level authority *will* grant access. Hence every refusal will have to be grounded, and every refusal can be appealed.

The practise of the National Biodiversity Authority (NBA) in India (set up under the Biological Diversity Act, 2002 hereafter referred to as BD Act) too has shown that access is granted more often than not (Kalpavriksh and GRAIN, 2009)². In the words of officials from the overseeing Ministry of Environment and Forests (MoEF), India believes in *facilitative* access and not in *prohibitive* access to biological resources. And so even though the implementing Biological Diversity Rules (2004) give the NBA power to restrict or prohibit the request for access to biological resources on six grounds, including adverse environmental impact, genetic erosion or national interest, this provision has hardly ever been invoked.³

A big 'stakeholder' that cuts across all countries is industry, which has made huge inroads in these past nine years. The bio-industry and the governments supporting it are the key players in the rule-setting on access. As of date, 193 countries of the world are part of the CBD (with the exception of USA). Each of these, depending on the extent of biological wealth they possess and the technological prowess they command, is either a user and/or provider country of *genetic resources*. The idea of an international regime (IR) had emerged in the CBD meetings to develop a set of globally applicable rules when genetic material, related knowledge and products developed from either of them move across borders. But access of the nature dealt with is talked of as per the requirement of the (biotechnology) industry, including researchers and not as for local communities. When this material or knowledge is used by industry to derive 'benefits', how these will be shared and to what extent has long been an issue.

What also needs to be stated is that neither the CBD, nor the BD Act in India (as discussed in the next section) use the words Access and Benefit Sharing (ABS) together. However, given the context in which

² 6 Years of the Biological Diversity Act in India - A status report compiled by Kalpavriksh and GRAIN, January 2009

³ Rule 16 of the Biological Diversity Rules, 2004

the global treaty and national legislation operate, ABS has begun to be spoken as a fixed term, inseparable and interlinked. But that is not the reality on the ground. For the practices worldwide point to the fact that access takes precedence over any benefit-sharing for both communities and conservation. It is no win-win for either of those. This is the case with both genetic resources and traditional knowledge.

a) Genetic resources (GR)

Communities on the ground do not perceive their local resources as 'genetic resources'. That viewpoint comes from both the science and commerce that is focussed on the gene. The dominant technological discourse also prevailed in the negotiations on an IR on ABS at the CBD. The bio-rich countries fought hard in the days before the Protocol to have *derivatives* covered by the rules of the Protocol. To them it was not enough that simply access to 'genetic materials' be made subject to globally agreed rules. The industry actually uses derivatives to make commercial products and not always simply the genetic material. Thus industry is particularly interested in the final shape both global and local rules will take and what they will cover. As even the definition of genetic resources determines for what and how much they will need to share. Yet, industry is not putting all its eggs in one basket. Already, two other globally agreed ABS frameworks for genetic resources have been developed outside of the CBD. One in the context of exchange of crops and forages important to the world's food and agriculture in FAO's Plant Treaty Multilateral System.⁴ The other for sharing influenza virus samples under WHO's Pandemic Influenza Preparedness Framework.⁵

b) Traditional knowledge (TK)

This is by far the most complicated to 'regulate' under dominant access regimes. It is at the insistence of the developing countries that access to TK finds mention in specific stand-alone Articles in the Protocol.⁶ Procedures for access to TK, if they are also to respect Article 8(j)⁷ of CBD, ought to insist on both *prior informed consent* (PIC) and *mutually agreed terms* (MAT) requirements when access has to take place. Yet the issue of access to publicly available TK is still a thorny one. India was the one to insist that such TK ought not be available sans PIC and MAT. Meanwhile, attempts are being made for the 'protection' of TK outside of the CBD processes, both at the global and the national level. The World Intellectual Property Organisation (WIPO)'s Inter Governmental Committee (IGC)⁸ is moving into text-based talks with an eye on a future treaty on TK protection. In India, under a WIPO-supported endeavour, the Federation of Indian Chambers of Commerce and Industry (FICCI) is tasked by India's Department of Industrial Policy and Promotion (DIPP) to develop a draft TK law for India. How these will influence a fledgling Protocol and its access requirements with respect to TK, is to be seen.

⁴ International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) and its provisions on Access in Article 12 and Benefit Sharing in Article 13 www.planttreaty.org/mls_en.htm

⁵ *Landmark agreement improves global preparedness for influenza pandemics* www.who.int/mediacentre/news/releases/2011/pandemic_influenza_prep_20110417/en/index.html

⁶ Articles 5 bis and 9 of the Nagoya Protocol

⁷ Article 8(j) states that each contracting Party shall, as far as possible and as appropriate, subject to national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge innovations and practices. (<http://www.cbd.int/traditional/>)

⁸ Established by the WIPO General Assembly in October 2000, the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC) is undertaking text-based negotiations with the objective of reaching agreement on a text of an international legal instrument (or instruments) which will ensure the effective protection of traditional knowledge (TK), traditional cultural expressions (TCEs)/folklore and genetic resources. [<http://www.wipo.int/tk/en/igc/>]

India's "Regulated" Access

Access to biological resources and people's knowledge for research, for commercial utilisation including intellectual property rights (IPR) was in parts unregulated and in parts dealt with on a case-by-case basis in India. This was until the Biological Diversity (BD) Act, 2002 was legislated. With the increase in instances of bio-piracy and growing emphasis on bio-trade, the clear need to regulate access was felt. In the decade after which India became signatory to the CBD in 1993 and the BD Act was enacted in India, the discourse had moved towards establishing a global access regime.

There were also two notable and related changes in India's position at international fora. One, its paradigm shift from 'no patents on life forms' to patents on biological resources on fulfilment of certain conditions.⁹ Two, its pushing of a so-called 'biodiversity amendment' of the WTO TRIPS Agreement premised on the rationale that an international IPR law such as TRIPS can be wed with a multilateral environment agreement like CBD, without divorcing either's opposing objectives. This brought to the fore that fact that the CBD too was, for those who were now driving it, ultimately about trade. Meanwhile, ABS negotiations at the CBD have continued. But the question to ask upfront is whether the discussions around both determining access and sharing of benefits (as its necessary corollary) did create a robust system whereby bio-piracy could be checked.

The same year the BD Act was passed in both houses of the Indian Parliament, the call for the implementation of the CBD's benefit sharing provisions was given at the World Summit on Development at Johannesburg.¹⁰ Interestingly, the discussions on ABS at the global level and those at the national level in India have run in parallel these last nine years. So there was ample opportunity for the Indian side to inform the global discussions with its experiences from the ground and influence the outcomes of the developing IR on ABS.

The BD Act has three stated objectives derived from the CBD. These are conservation, sustainable use and equitable sharing of benefits arising out of that use. These three tenets by virtue of their inclusion in a legal framework have ensured that access to both genetic material and traditional knowledge can be obtained if a due procedure is followed. Anything acquired outside of that would be regarded as illegal access. It also presumed that many of the larger ethical and social issues that centred around the purposes and nature of access were thus "resolved". Once a regulatory structure facilitating access was put into place, there could not be any further debate on whether such access should have been allowed in the first place. Therefore when an application is received, there is no longer a debate on the merits of the use of such material or knowledge for trade, commercially driven research or IPR application. The debate has centred around the nature of agreements and contractual obligations both with respect to access or benefit sharing that is to follow.

⁹ A patent is an exclusive right granted by a government patent office to an inventor for a term of twenty years giving him/her a bundle of economic privileges and legally enforceable rights vis-a-vis the invention.

¹⁰ Johannesburg Summit 2002 – the World Summit on Sustainable Development www.johannesburgsummit.org/html/basic_info/basicinfo.html

The BD Act does not lay out a specific definition of what it prescribes as access. However the nature of what is sought to be accessed is inherent in the procedures that the law lays out for both foreign and Indian entities. The Act lays out a fairly straightforward procedure to access for the purposes of research, commercial use or transfer to an agency outside India. The procedure includes submission of an application to the National Biodiversity Authority (NBA) for foreigners and intimation to a State Biodiversity Board (SBB) when it comes to Indian entities. In both instances a final agreement cannot be signed unless there is consultation with the concerned Biodiversity Management Committee (BMC)/s at the village or urban ward level.

The request for access to biological resources or traditional knowledge is required to be made to the NBA in prescribed Forms listed at the end of the Biodiversity Rules, 2004. Once the request is accepted, agreements in the prescribed format are signed between the NBA and the applicant. Today, at the most the agreements between the NBA and the applicant require payment of a royalty fees, which *change(s) on a case to case basis and will be regulated by the ABS Guidelines*. NBA imposes an upfront administrative and service charge equivalent to 5% of assessed benefits in every case. This is in line with Biodiversity Rule 20(9) as standard operating procedure. In some instances a user agency has stated a commercial purpose upfront, yet NBA has limited itself to this percentage.

In early 2010 much after several approvals for access were granted, the NBA put out a draft set of Guidelines on ABS for public comments on its web site (See Annexure I). These were prepared by a legal consultant engaged by the NBA who has corporate experience and training on IPR from a WIPO programme.¹¹ The maximum comments on the draft were received from FICCI.¹² On content, these Guidelines are narrow in terms of how they interpret benefit sharing in particular. Even within the existing limitations of the very concept of ABS, the BD Act allows for non monetary benefits, opening possibilities of being able to move beyond mere monetary contractual settlements. The NBA's ABS Guidelines instead of broadening the scope of the various mechanisms of benefit sharing which could also include continued access to that particular resource or knowledge by communities, gave prominence to monetary benefits and possible ways to have accessors deposit money in the National Biodiversity Fund. Non-monetary benefits therein are merely sought as an optional extra. The NBA has since neither moved forward on the draft ABS Guidelines. Nor has the NBA yet made any significant progress on the issue per se, particularly in the absence of an NBA Chairperson – the position lying vacant since last year (2010).

Currently there are two Expert Committees appointed under the NBA to look into the matter of ABS. They are (kindly see Annexure II for full list of members):

1. Expert Committee on Access and Benefit Sharing for Processing the Applications (EC-ABS)
2. Expert Committee to study the existing Agreement Formats and suggest amendments

In 2009 it was decided that the expert committee on access, patent, transfer of research results and third party transfer and expert committee on determination of benefit sharing would be merged into one. So EC-ABS is a merger of both. It is considered as a standing committee.

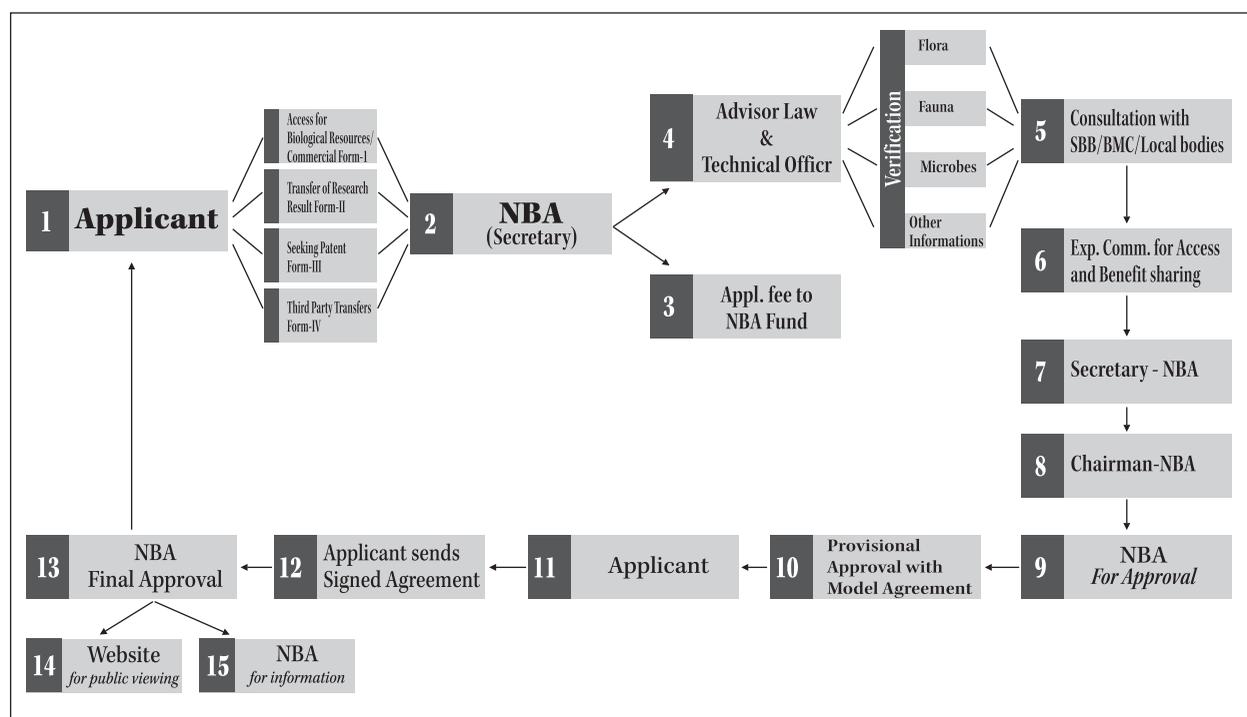
¹¹ http://www.entetelegale.com/PDF/DRAFT_ABS_GUIDELINES_NBA_INDIA.pdf

¹² National Consultation on Access and Benefit Sharing (ABS) – Comments received http://nbaindia.org/whatsnew/pdf/ABS_Comments_received-12th_April_2010.pdf

There are some specifics about how the access regime has been working:

- As of early 2011 the NBA has granted approval for access, IPR and transfer of research results in 607 instances. Out of this 437 were permissions for applying for IPR alone.
- In none of these instances have there been any mandatory local level consultations with the relevant BMCs out of the total 31,542 across India today.
- The NBA has only two reported instances to show for benefit sharing. These are still in the process of being finalised. In one instance the NBA has received a royalty amount from an Indian firm Bio India Biologicals, towards the export of neem leaves. INR 20,000 (approx 312 EUR) of this amount received has been transferred to the Amarchinta BMC. The BMC has reportedly utilised the money for awareness programmes, planting of saplings and fencing.
- The NBA in 2007 entered into a benefit sharing agreement with PepsiCo India Holdings Private Limited. The company paid INR 37.26 lakhs (approx 62,400 EUR) to the NBA for a type of dry sea weed (*Kappaphycus alvarezii*) accessed from the Gulf of Munnar area in the southern Indian State of Tamil Nadu. PepsiCo signed a yearlong agreement with the NBA to export this to Indonesia, Malaysia and the Philippines for commercial utilisation in the food and cosmetics industry. In reply to a Right to Information application, in July 2010 the NBA admitted that the money received is “yet to be ploughed back to the benefit claimers”. The delay is explained by the fact that guidelines for utilisation of such monies deposited in the National Biodiversity Fund are yet to be finalised.¹³

Schematic presentation of processing of applications under Biological Diversity Act, 2002 and Rules 2004



Source: NBA Annual Report 2009-2010

¹³ For more on this read *of Brackets and Brass Tacks* <http://www.cbd.int/ngo/square-brackets/square-brackets-2010-10-en.pdf>

- Novozymes Biologicals Inc. of USA, has been granted approval to access for commercial purposes bacteria of Bacillus and Psuedonomas to screen for plant growth from Malampuzha forest division in Kerala. This will be used in a laboratory for the promotion of crop production of tomato, lettuce, rice etc. Novozymes is a multinational corporation with expertise in microbiology, biotechnology and gene technology. The NBA has charged Novozymes 5% annual royalty from the sale of the product derived from biological resource.

The fact is India's ABS regime today is more an access regime sans much 'BS'. As the above discussion shows approvals for access continue to be given. But the benefit sharing framework is still in-the-making. Thus after all these years of the Act, Rules, Committees and Draft Guidelines in India there are hardly any benefit sharing cases to speak of. (The only case talked about as the Indian example, that of the Kani tribes in Kerala was pre-CBD.) On the other hand, access has been so tight so as not even allow bona fide Indian researchers to use biological materials without long bureaucratic hurdles.¹⁴

Perhaps the point to take note of is that the access is not people-friendly for a provider country's own peoples. In fact one big set of people, despite the law that otherwise defines them as legitimate benefit claimers, are in practise not even present in the application and approval procedures between government departments and applicants (who are largely companies or public sector institutes). So a non-inclusive process can not effect inclusive growth and guarantee a share from the trade. And even if there is 'consultation' as the law prescribes, it entails bringing to the same table people with highly unequal tools, powers, visions and interests, and forces them to engage as though they share a level ground. The results of this type of situation will always overwhelmingly be in favour of the most powerful.

¹⁴ For more on this issue please see *Biological Diversity Act, 2002: Shadow of permit-raj over research* <http://eprints.atree.org/90/>

‘Benefits’ revisited

Benefits that might ensue from the use of genetic resources are perceived very narrowly in ABS regimes. These may include the sharing of the results of research, the training of local scientists, etc., which supposedly will contribute to development of capacity in the provider countries. The Convention and rules or laws under it are premised on the belief that technology transfer is making sustainable development possible! If what are being transferred in return for access are the likes of genetic manipulation (GM) technologies (that too IPR-ridden) with possible risks to human and ecological health and large social fall-outs, then they are neither neutral nor desirable for ‘development’. In such a scenario how can that access to technology be regarded as a ‘benefit’?

The most perverse aspect of the “sharing back” that companies do is that they will by contract force communities to accept patents and other forms of intellectual property over life forms and knowledge. This will restrict the latter’s own access and freedom to use biodiversity. The sharing so far seems to be a one-way road in which local communities are expected to give, pass on and share their know-how with the formal scientific system or enter it in formal collections – registers, databases, or through audio-visual medium, etc. But the products derived from the use of that are not available freely for sharing! They are subject to IPR and accessible only on payment of royalties and with the permission of the “inventor”. This is a world-wide trend that neither CBD nor the new IR laid out in the Protocol helps to challenge.

India’s BD Act has clear definitions of who constitutes “benefit claimers”. They are conservers of biological resources, their by-products, creators and holders of knowledge and information relating to the use of such biological resources, innovations and practices associated with such use and application.¹⁵ The Act also elaborates what can comprise fair and equitable sharing on benefits once access is permitted and benefit claimers identified. These include grant of joint ownership of IPR, transfer of technology, location of production, research and development units in the area of access, and creation of an association of Indian scientists, benefit claimers and the local people with research and development in biological resources and biosurvey and bioutilization.¹⁶ There are also direct financial mechanisms that can be proposed as benefit sharing which include setting up of venture capital funds and payment of monetary compensation to the benefit claimers as the NBA may deem fit. The NBA also is mandated under the law to frame guidelines to effect benefit sharing.¹⁷

The guidelines also need to regulate the activities of state agencies. Bio-piracy also occurs by the public sector from the informal sector. This is something most national ABS laws ignore. For example, in the USAID-funded Bt brinjal development programme for South and South East Asia, public sector agricultural universities passed on local varieties of brinjal/eggplant to Monsanto in India, which inserted its proprietary transgenic event into them.¹⁸ Farmers are feeling violated by their own National Agriculture Research System (NARS), which they thought would keep their varieties ‘safe’.

¹⁵ Section 2(a) of the Biological Diversity Act, 2002

¹⁶ Section 21 of above

¹⁷ Section 21(2)(4)

¹⁸ The Agricultural Biotechnology Support Program II www.absp2.cornell.edu/; The NBA MAHYCO Agreement http://www.nbaindia.org/approvals/form-ii/agr-pdf/ag_form2_68_usha.pdf

Research itself can create benefits, but for one side! In parts of Asia, the Japan Bioindustry Association (JBA) has been actively involved in the CBD-ABS implementation since over 15 years, for instance through mainstream research cooperation in Malaysia, Thailand and Indonesia and in being part of processes leading up to other provider countries' rule-making on ABS, as in India.¹⁹ Its objective is to provide support first to the bio-industry and academe/researchers keen to access germplasm from bio-rich regions of the world. Many Japanese companies have or are in the process of establishing their laboratories in the provider countries. This is the kind of market, research too can open up for user countries' – another 'win' situation for the industry. Because of power differences, if a company decides not to pay back anything, countries and communities will have no tools to prevent it, except maybe refusing access the next time that company requests a permit. But then the company will go to a different place to obtain what they want. There is little evidence of the "trickle-down" of wealth.

In India the NBA sharing some of the practical problems it faces in identifying the rightful "benefit claimers", points to the illegal trade in medicinal plants both across borders and within the country, which makes it impossible to trace the community or local healers that know of or grow these. In such a case recovery of "benefits" from the pharmaceutical company making the money from commercialisation becomes a challenge.²⁰

The industry has a vested interest in saying "benefit sharing" does work, for it wants continual "access" and limits on the benefits to be shared. So the first thing to correct in this situation is to recognise and acknowledge that SHARING is NOT taking place and might never.

When India signed on to the Protocol, the representative of MoEF, stated that:

*"genetic resources and associated traditional knowledge can be used to develop a wide range of products and services for human benefit, such as medicines, agricultural practices, cosmetics etc. It is expected that the ABS Protocol which is a key missing pillar of the CBD, would address the concern of misappropriation or bio-piracy of genetic resources. He also remarked that (t)he Protocol will contribute to the meaningful implementation of two objectives of the CBD relating to conservation and sustainable use, since benefits accruing from utilization of genetic resources would act as an incentive for biodiversity-rich countries and their local communities to conserve and sustainably use their biodiversity."*²¹

If local peoples are kept bereft from benefits derived from their biological resources and the knowledge they have of them, then this will be a denial of biodiversity justice. Next the issue of justice for biological resources themselves. In defence of ABS regimes it is being argued that the monetary benefits generated from the grant of access to use biological resources, will support conservation itself. The funds from access agreements collected under the BD Act and deposited in the National Biodiversity Funds and State Biodiversity Funds, are meant to be utilised for conservation of biological resources and socio-economic development of bio-rich areas.²² The development is put on hold till any 'benefits' actually accrue. So if ABS systems don't deliver, then the so-called 'incentive' for conservation and sustainable use will also be lost. These are critical concerns vis-a-vis benefit sharing.

¹⁹ *Making Access to Genetic Resources Possible: Experiences from India* www.ias.unu.edu/sub_page.aspx?catID=35&ddlID=194

²⁰ At the National Forum for Policy Dialogue on "Six Years of the Implementation of the Biological Diversity Act 2002" co-organised by Kalpavriksh and GRAIN at New Delhi on 3rd February 2009

²¹ *21 Parties have now signed the Nagoya Protocol CBD* Secretariat Press Release, 11 May 2011 <http://www.cbd.int/doc/press/2011/pr-2011-05-11-nagoya-en.pdf>

²² Articles 27 & 32 of the BD Act

The Protocol

The main outcome of the CBD COP10 gathering of governments and peoples in the city of Nagoya, Japan that will be remembered is the Nagoya ABS Protocol. It is here that an IR on ABS was agreed upon by 193 countries. The IR contained in the Protocol lays down a text by which 'benefits' arising out of any kind of use of biological material and associated traditional knowledge when accessed need to be followed through. But the question is whether it makes things any better for providers countries, and in doing so does it guarantee 'benefits' to local communities or further conservation?

The Nagoya Protocol is a compromise text and almost never saw the light of day. In fact even after the Protocol was issued out, countries in the Latin American region have put on record at CBD that they do not accept a Protocol that does not meet the minimum requirements of preventing bio-piracy. The text and its 30 articles have not been able to settle legal uncertainties on ABS procedures per se.

Yet at New York on 2nd February 2011, representatives of Colombia, Yemen, Brazil and Algeria signed the Nagoya Protocol. The Mexican Government followed on 24th February, 2011. India's Union Cabinet gave its consent to the Protocol on 20th April 2011. Subsequently, India signed the Protocol on 12th May 2011. The Protocol is open for signature for another year until February 1, 2012. As of May 2011, over 20 countries have signed on.

There are a few key contentious issues with the Protocol's premise, which echo the very concerns articulated when the CBD Ad hoc working group was first set up.²³ The Protocol in its preamble emphasises limitedly the economic value of both the biological resources and associated traditional knowledge. If the profits are shared as benefits, it would encourage conservation, it states.

The Protocol also accepts that biological matter is the raw material for seed, medicines and the energy industry, most of which are either controlled by or physically based in the global North i.e. the 'developed' world. It is bio-rich countries like India (in the South) where these industries find their leads and will be invited to trade in genetic material and associated knowledge.

Some of the other core concerns with the Protocol are:

- **Creating Biological Commodities:** The Protocol presumes that genes and know-how can be regarded as the property of one or a few. With this Protocol the CBD drops any pretence about treating our biological world as a service, which can be sold and traded. It turns away from the fact that many local uses and traditional practises cannot be attributed to one person or a few territories. Over the years biological materials and their uses have traveled across villages, states and even international boundaries. Thereby, attributing its association with "identified" benefit claimers or granting ownership to a few makes it impossible to be fair and equitable in determining shares.

²³ An Ad hoc Open-ended Working Group on ABS (WG ABS) set up under CBD in 2000.

- Isolating Access, Conservation Imperative missing: With this Protocol, the CBD has further accepted that the use of biological resources for research or commercial purposes is a given, even though it prefixes the word 'sustainable' use to it. While, CBD can do little to take action when countries by their use deplete or threaten biodiversity, the industry has shown little commitment to conservation. The Protocol does not caution or correct if access goes against the first two objectives of the the CBD, namely conservation and sustainable use. There such access should be liable for rejection.
- **Reliance on Domestic Regulations :** The Nagoya Protocol essentially relies on the strength of a country's domestic regulation for taking forward any of its requirements, keeping in mind the CBD's emphasis on a country's sovereign rights over natural resources. It is for this purpose that the Protocol seeks the establishment of a national focal points and competent authorities for ABS. In fact the Protocol goes beyond the CBD and expressly requires provider countries to have national laws for their biodiversity regime. As illustrated in the previous section and elaborated in the next point, India's biodiversity regime is weak. Thus in its present form it is unable to take forward the few progressive clauses of the Protocol. The experience of implementation has too not instilled much hope of benefits being realised and that too in such cases of access which are directed towards conservation and livelihood enhancing use.
- **FPIC based on domestic legislation:** The Nagoya Protocol in an attempt to acknowledge the rights of local and indigenous communities to take decisions on their resources lays down *full prior informed consent* (FPIC) as a must before any access takes place. But it relies almost entirely on national laws and a CBD-country's own mechanisms to effect FPIC. But the implementation of this is once again dependent on the how the signatory country takes it forward in its domestic legislation. In India the BD Act pays mere lip service to FPIC. The letter of the law requires only a mere consultation with local level committees, which are yet to be formed in most parts of the country.²⁴ As mentioned in the previous section, none of the approvals given till date have even followed the mandatory consultation requirement.
- **Overlooking *sui generis* Knowledge Protection:** Prior to the issuance of any ABS related guidelines, the 2010 Nagoya Protocol or any of its earlier formats have not ensured that access not interfere with the *sui generis* measures for protection of knowledge of local people relating to biological diversity. Going by the original principles of CBD, this needs to be a precursor to the ABS process which appears to have been put on the back-burner ever since the process of the Ad hoc Working Group was put into place. However, the Nagoya Protocol prescribes minimum requirements including setting up of model contract clauses for benefit sharing arising out of traditional knowledge utilisation. Access in this regard is not differentiated, be it private or community, commercial or non-commercial etc.
- **Non-commercial Research:** The Protocol defines utilisation of genetic resource to include broadly, "research and development on the genetic and/or biochemical composition of genetic material, including through the application of biotechnology". In subsequent sections also differentiate between research being carried out purely for commercial purposes from the kind which is directed at conservation and supporting people's livelihoods. But the Protocol stops short of figuring out a mechanism to resolve the fast merging and thin line dividing the two. There is a substantial increase in public-private partnerships or collaborations in sectors where biodiversity based resources are a critical component which includes agriculture, pharma, wildlife and energy. The Protocol so far does not provide checks or monitoring mechanisms to address this.

²⁴ Section 41(2) of the BD Act

- **Narrow Non-monetary Benefits:** The Protocol in its Annex does list a number of monetary and non-monetary benefits, but ironically can't help being boxed within the parameters of mainstream science and economic considerations. The non-monetary benefits that the Protocol provides centre around joint ownership of IPRs, collaboration, cooperation and contribution in "scientific research" and development, particularly biotechnology, technology transfer and capacity to receive the same or access to scientific information including databases. In two broad points such benefits include food and livelihood security benefits as well as social recognition. It may be added there that food and livelihood security benefits can be arrived at clearly from allowing from continued access to the genetic material or living propagation of knowledge, which the Protocol significantly misses elaborating upon.

Some additional concerns around the Protocol are:

- The struggle of some Indigenous Peoples (IPs) was to get the rights within the UN Declaration on the Rights of Indigenous Peoples (UNDRIPS), effected as hard treaty law by inclusion in this proposed ABS Protocol. This is only mentioned in passing in the Preambular paragraph 25, which is non-enforceable!
- The issue of derivatives, what they mean, etc. too has not yet been resolved. The irony is that the Protocol defines them and also expressly states in another Article that the Protocol will apply to genetic resources and the *utilisation of genetic resources*.²⁵ Yet, developed and developing countries are taking varying interpretations by which the latter insist that derivatives are covered for access, benefit sharing and compliance. A set of user countries would like to believe that biochemical compounds can be obtained from utilising a genetic resource without having to access it formally. Since no FPIC requirement will ensue sans an ABS procedure, no benefit sharing obligation would then arise from the user side.
- The time from when the Protocol will be applicable is still ambiguous. With the date of the applicability of the Protocol yet to be agreed upon at an operational level it is unenforceable. The question is whether it applies to access only post-CBD, or even pre-Protocol.
- More critically, the IR is not a step towards challenging the IPR system but about learning to live with it. In fact the Protocol expressly states that it shall not affect the rights and obligations of any Party under any international agreement. This language includes international IP treaties and bilateral trade and investment agreements, which impose TRIP-plus IPR standards on developing countries.
- Shared genetic resources and TK shared by one or more countries, as in Ayurveda known both in India and Sri Lanka, will have to wait for a global multilateral benefit sharing mechanism to be set up under the Protocol.
- It is presumed that the IR will be able to reign in non-Parties to the CBD, particularly countries such as the United States of America (USA), a country with a large stake in the bio-industry.

As stated by the Namibian representative in the course of negotiations, so far biodiversity's contribution to poverty reduction has remained a dream. In essence the IR nails the idea that bio-trade has been going on, and that it will and must continue but in a somewhat different manner.

²⁵ Articles 2 & 3 of the Nagoya Protocol

Cutting the chase

There is no time to sit back and sigh either in relief or regret. Much work still needs to be done on the front of both communities and conservation.

First, only if other countries sign the Nagoya Protocol early so that it can enter into force, will the first Meeting of Parties of the Protocol take place in India in October 2012, when we host CBD COP 11.²⁶

Perhaps this in itself is the main obstacle – the fact that many diverse interests, varying expectations and hugely different world-views on living resources and people’s knowledge, are at stake. And what is put on the table – biological resources and traditional knowledge, ought not to have been under the purview of global trade in the very first place.

Some thoughts on way forward include:

1. Redefining ‘benefits’ is perhaps one of the most critical aspects to making headway. It is only mega-diverse countries such as India that will have an interest to push such a discussion.
2. Attempting both a people’s reading of the IR and asking for an official interpretation of the Protocol from the relevant Indian authorities, such that it is favourable to the country’s particular socio-political realities. There is also the practical need to assess what provisions of the BD Act, Rules or the regulatory process may need to undergo change to be able to genuinely take forward the Protocol.
3. Getting more people’s voices from diverse sectors into this exercise of designing ABS frameworks. This task is too important to be left merely to government departments and trade negotiators.
4. Being watchful for any future carve-outs, which make the Protocol irrelevant. It must be noted that the international agricultural research centres and the seed industry are happy with the Protocol. They are looking at other access instruments.
5. Most importantly the opportunity that a post-Protocol scenario provides to re-evaluate domestic FPIC processes should not be lost. The success of the Protocol and its compliance will be determined by the capacity of ABS regimes to internalise the real experiences from the ground.

Meanwhile, access to and trade in genetic resources is still centre-stage in the discussions, as against community concerns and conservation imperatives. The pre-occupation with IPR laws, memorandum of understanding (MoUs) in Public Private Partnership (PPP) mode and contractual arrangements between the state and the private sector clearly shows the pro-industry bent. Till the above and other concerns are addressed, for both – governments of biologically rich regions and more so resource-dependent peoples, pinning their hopes on ‘benefits’ from such regimes may just turn out to be chasing another mirage.

²⁶ www.cbd.int/abs/becoming-party/

References

Re-situating the benefits from biodiversity
<http://www.grain.org/seedling/?id=327>

Further Reading

Access and Benefit Sharing laws from across the world on GRAIN's Resource BRL – Biodiversity Rights Legislation, which incorporates both emerging and existing texts
<http://www.grain.org/brl/?typeid=20>

Relevant web links

The Nagoya Protocol on Access and Benefit Sharing
www.cbd.int/abs/

National Biodiversity Authority
www.nbaindia.org

Biological Diversity Act, 2002
www.nbaindia.org/act/act.htm

Biological Diversity Rules, 2004
www.nbaindia.org/rules.htm

Application Forms and Fees for Access, etc.
www.nbaindia.org/applications/application.htm

ANNEXURE I

DRAFT GUIDELINES ON ACCESS AND BENEFIT SHARING

(as downloaded from the National Biodiversity Authority web site in March 2010 and reproduced as is)

I. Preliminary

1. Objectives

- 1.1 These Guidelines on Access and Benefit Sharing Regarding the Utilization of Biological Resources and knowledge associated thereto (hereinafter “the Guidelines”) provides an objective and non-discriminatory framework for granting approvals for access to Biological Resources and Knowledge associated thereto and the fair and equitable sharing of the benefits arising from their utilization, in conformity with the Biological Diversity Act 2002 (hereinafter “the Act”) and the Biological Diversity Rules 2004 (hereinafter “the Rules”).
- 1.2 The Guidelines lay out the conditions under which access to Biological Resources and Knowledge associated thereto shall be granted and under which the sharing of benefits arising out of the utilization of Biological Resources and Knowledge associated thereto shall be qualified as fair and equitable.
- 1.3 The CBD recognized the sovereign rights of States over the genetic resources within their jurisdiction and accordingly the Act requires that all Users of Biological Resources shall, unless otherwise provided in the Act, seek the consent of the State prior to access to Biological Resources.

2. Definitions

- 2.1 In these Guidelines, unless the context otherwise requires:
 - a) Access means any access to the Biological Resources and/or knowledge associated thereto made under the Act
 - b) Net Profit means profit after expenses have been deducted from gross revenue.
 - c) Provider means any natural or legal person(s) which has the legal right of disposal over the Biological Resources and/or knowledge associated thereto being made available to the Users
 - d) User means any natural or legal person(s) which has requested for Access to Biological Resources and/or knowledge associated thereto under the Act.
- 2.2 words and expressions used but not defined in these Guidelines and defined in the Act and/or Rules shall have the meaning respectively assigned to them in the Act and/or Rules.

II. User Obligations

3. User Obligations Prior to Access

3.1 The Users shall request for Access by using the appropriate Forms provided for in the Rules and shall, in addition to the details therein, disclose the following:

A. Biological Resources which are Plants, their parts or Genetic Material

- i. Whether cultivated or collected from natural areas
- ii. Whether BR procured from Private Land or Public Land
- iii. If Public Land, is it a protected Area, Forest, National Park, etc.
- iv. If the access is made directly from the source or there are Agents
- v. Whether the BR is endemic
- vi. Whether the BR is endangered species

B. Biological Resources which are Animals, their parts or Genetic Material

- i. Whether domesticated or wild
- ii. Whether BR procured from Private owners or from Public Land
- iii. If Public Land, is it a protected Area, Forest, National Park etc
- iv. If the access is made directly from the source or there are Agents
- v. Whether the BR is endemic
- vi. Whether the BR is endangered species

C. Biological Resources which are Micro organisms, their parts or Genetic Material

- i. Whether developed/maintained in controlled conditions or collected from natural areas
- ii. Whether BR procured from Private areas or Public areas
- iii. If Public Area, is it a protected Area, Forest, National Park etc
- iv. If the access is made directly from the source or there are Agents
- v. Whether the BR is endemic
- vi. Whether the BR is endangered species

D. Knowledge associated with Biological Resources

- i. Whether the knowledge is owned by individual, family, group, organisation or a community
- ii. What BR is associated with the knowledge?
- iii. What Benefit Sharing is proposed by the owners?

3.2 The Users shall submit a report on the possible impact to environment that may be caused by their relevant activities prior to Access. The User shall continue to report changes to this report as and when the User identifies any such changes at any stage during or after the Access.

Provided that in the event, the User reports a possibility of any adverse impact on environment, the report shall also mention the ameliorative measures in place and precautions taken to cause no damage to the environment or Biological Diversity. Any Access falling within this proviso will require the approval of the NBA prior to access and in the event the report is made during or after the Access, the User shall ensure that it shall stop any and all activities of Access.

- 3.3 The users are encouraged to make an audio video recording of the negotiations with the Providers and in the event such a recording is made, a copy of the same shall be deposited with the concerned SBB or the NBA.

4. User Obligations During and After Access

- 4.1 The Users shall after collecting the Biological Resources and Knowledge associated thereto, describe and record all relevant data and share the same with the nodal agency identified by NBA for the Purpose. Users shall respect customs, traditions and values of the Provider, if any during and after Access.

Provided that in the event of Knowledge associated with Biological Resources are accessed, the same shall be handled by the User in the manner requested by the Provider.

- 4.2 Users shall utilize Biological Resources and Knowledge associated thereto strictly for the purposes for which the Access was made obtained. Any change in the purpose shall be notified to NBA and NBA shall at its sole discretion allow such use or direct fresh application to be made under the Act.
- 4.3 Users shall conduct scientific study on the Accessed Biological Resources to ensure the conservation and sustainable use of the Biological Resources. The Users shall ensure that this knowledge shall be transferred free of cost to the Providers.

III. Provider Obligations

5. Provider Obligations

- 5.1 Once the Access is approved by the NBA, the Providers shall ensure that the Access is facilitated within the prescribed time.
- 5.2 If the Provider feels the need of professionals in assisting them with the negotiations with the Users, the Providers shall make a request for the same to the BMC, SBB or NBA and it shall be the responsibility of the BMC, SBB or the NBA as the case may be to provide the requested professionals to the Providers to assist them with the negotiations
- 5.3 The Providers shall record the advantages and disadvantages as informed to them by the Users while negotiating the terms for the Access to Biological Resources and Knowledge associated thereto. In the event the Providers are not in a position to record the same, the User shall notify the concerned BMC, SBB or the NBA and the BMC, SBB or the NBA as the case may be shall ensure the presence of a suitably qualified person who shall record the negotiations under this Clause.
- 5.4 Providers shall ensure the conservation and sustainable use of the Biological Resources and if need be request the Users to conduct further studies under clause 4.3 after reporting their findings to the Users to ensure the conservation and sustainable use of the Biological Resources.

IV. NBA Approvals and Benefit Sharing principles

- 6.1 Where the Access to Biological Resources is obtained for Commercial utilization from Providers who are owners of the same, the User shall ensure that the Access ensures Sustainable Livelihoods²⁷ to the Providers. The User shall further share with the Providers its knowledge of best practices to ensure conservation and sustainable use of the Biological Resources.

²⁷ Sustainable Livelihoods For eg. Would mean direct procurement of the BR from the farmers through contract farming with a pre determined price for the produce and supply of the best seeds/insuring the produce etc. If the procurement is with the involvement of Agents, then a undertaking from the Agents about having paid the producers/farmers minimum wages for their labour etc.

- 6.2 Where the Access to Biological Resources is obtained for commercial utilization from local communities who collect the same from Public Land, the Users shall make fair payments²⁸ to the Providers and shall ensure ___% of the total price of the purchase towards welfare measures²⁹/NBF for the community. The User shall further share with the Providers its knowledge of best practices to ensure conservation and sustainable use of the Biological Resources.
- 6.3 Where the Access is made for Research Purposes, the User shall ensure effective participation of Providers, wherever possible or collaborate with any research institution (collaborative Research) identified by the NBA.
- A. In case of non commercial research
- i. The research shall ensure the participation of at least one researcher from a research institute designated by NBA and all results of research shall be shared freely with the government research institutions and any know how for production shall be passed to non commercial producers free of any costs.
 - ii. Any IP rights sought shall have the name of a government research institute designated for this purpose as one of the inventors or co owners of the IP.
- B. In case of Collaborative Commercial Research
- i. Where the research is a Collaborative Research, any IP rights sought shall name the research institution involved as one of the inventors or co owners of the IP. Any know-how required for the production shall be transferred free of any costs if requested by the NBA for any use by government entities or if the products are required by the Government for Public good.
 - ii. ___% of the Net Profit shall be paid to the National Biodiversity Fund and in the event of involvement of any community as Providers of the Biological Resources, the NBA may also direct the User to provide any of the non monetary benefit sharing measures provided for in Annexure I
- C. In case of non Collaborative Commercial research
- i. Where results are shared
In cases where the results of a non collaborative commercial research is shared with any designated Government Research Facilities, the User shall pay to the NBF ___% of the Net Profit and the NBA shall also direct the User to provide any of the non monetary benefit sharing measures provided for in Annexure I
 - ii. Where Results are not shared
In cases where the results of a non collaborative commercial research is not shared, the User shall pay to the NBF ___% of the Net Profit and the NBA shall also direct the User to provide any of the non monetary benefit sharing measures provided for in Annexure I
- 6.4 Where the NBA approval is sought for seeking any Intellectual Property Rights under sec 6 of the Act, the following benefit sharing shall be qualified as fair:
- i. Where the IP is for non commercial use
The User shall file an affidavit with the NBA stating that the IP is for non commercial use and the same shall be made available to the Government use free of cost. In the event the IP is later sought to be commercialized then sub clause (ii) of clause 6.4 shall be applicable.

²⁸ Fair payment means the payment fixed by the Government for such products (JFM's) or a minimum wage per day prescribed by the government

²⁹ Welfare measures may be building community centers/infrastructure/scholarships etc. for the community

ii. Where IP is for commercial use

The User shall pay to the NBF __% of the Net Profit and the NBA shall also direct the User to provide any of the non monetary benefit sharing measures provided for in Annexure I

6.5 Where the Access is made for knowledge associated with Biological resources The Benefit Sharing shall be in accordance with the terms and conditions negotiated between the Users and Providers and the NBA shall interfere only in the event of a gross inadequacies to the disadvantage of the Providers is found in the negotiated terms. The Benefit sharing may have a monetary part and any non monetary benefits that may be listed in Annexure I of these

Guidelines or any legislation/mechanism made on TK.

6.6 The NBA while determining the mode for the sharing of benefits shall consider the short, medium and long term interests of all stakeholders involved. NBA acknowledges that some modes of benefit sharing may become effective immediately, whereas others become effective only in the distant future due to the period of time needed for the benefits to arise.

7. Certification of Compliance

The NBA shall develop a system of certification and a certification mark will be provided for by the NBA that shall certify the compliance with the Act and highlight the fair and equitable benefit sharing.

Annexure I – Non Monetary Benefit Sharing³⁰

- a) Sharing of research and development results;
- b) Collaboration, cooperation and contribution in scientific research and development programmes, particularly biotechnological research activities
- c) Participation in product development;
- d) Collaboration, cooperation and contribution in education and training;
- e) Admittance to ex situ facilities of genetic resources and to databases;
- f) Transfer to the provider of the genetic resources of knowledge and technology under fair and most favourable terms, including on concessional and preferential terms where agreed, in particular, knowledge and technology that make use of genetic resources, including biotechnology, or that are relevant to the conservation and sustainable utilization of biological diversity;
- g) Strengthening capacities for technology transfer to facilitate abilities of indigenous and local communities to conserve and sustainably use their genetic resources;
- h) Institutional capacity-building;
- i) Human and material resources to strengthen the capacities for the administration and enforcement of access regulations;
- j) Training related to genetic resources with the full participation of providing Parties
- k) Access to scientific information relevant to conservation and sustainable use of biological diversity, including biological inventories and taxonomic studies;
- l) Contributions to the local economy;

³⁰ This list contains the non monetary benefits identified and set out in Bonn Guidelines

- m) Research directed towards priority needs, such as health and food security, taking into account domestic uses of genetic resources in India
- n) Institutional and professional relationships that can arise from an access and benefit-sharing agreement and subsequent collaborative activities;
- o) Food and livelihood security benefits;
- p) Social recognition;
- q) Joint ownership of relevant intellectual property rights.
- r) Collaboration in education and training;
- s) Collaboration in scientific research and development programs;
- t) Participation in product development;
- u) Joint ventures;
- v) Co-authorship of publications.
- w) Admittance to ex situ facilities of genetic resources and to databases;
- x) Admittance to taxonomic, biochemical, ecological, horticultural and other information and data;
- y) Transfer of knowledge and technology, in particular knowledge and technology that make use of genetic resources, including biotechnology, or that are relevant to the conservation and sustainable utilization of biological diversity.

ANNEXURE II

Relevant Expert Committees under the National Biodiversity Authority

1. Members of the Expert Committee on Access and Benefit Sharing and Processing Applications (as of 15 May 2011)

Chair: Dr. R. S. Rana, Former Director, National Bureau of Plant Genetic Resources, New Delhi

1. Dr. Braham Singh, President, World Wellness Forum, New Delhi
2. Shri R. P. S. Katwal, Mandi District, Himachal Pradesh
3. Dr. R. J. Sharma, Former Dean, College of Veterinary and Animal Sciences, Pant Nagar, Uttarakhand
4. Smt. Upma Chaudhary, Jt Secretary (Seeds), Dept. of Agriculture and Cooperation, ICAR, New Delhi
5. Dr. T. P. Rajendran, ADG (TP), ICAR, New Delhi
6. Dr. D. J. Bhagyaraj, Department of Agricultural Microbiology, University of Agricultural Sciences, Bangalore
7. Dr. A. G. Ponnaiih, Director, Central Institute of Brackish Water Agriculture, Chennai
8. Dr. Ananth Kumar, Director, National Research Centre on Plant Biotechnology, ICAR, New Delhi
9. Dr. Suman Sahai, Gene Campaign, New Delhi
10. Shri Ranjit Puranik, Hon. General Secretary, Ayurvedic Drug Manufacturers Association, Mumbai
11. Dr. Suresh Pal, Head, Division of Agricultural Economics, IARI, New Delhi
12. Shri V. Rengaswamy, Asst. Controller of Patents and Designs, Patent Office, Chennai
13. Ms. C. S. Ramalakshmi, Addl PCCF (Environment Cell), Andhra Pradesh Forest Department, Andhra Pradesh
14. Dr. Sudhanshu Gupta, Secretary, ICFRE, Dehradun
15. Dr. D. Narasimhan, Reader, Madras Christian College, Chennai
16. Dr. K. Venkataraman, Sr. Consultant, National Biodiversity Authority, Chennai
17. Shri C. A. Reddy, Secretary, National Biodiversity Authority, Chennai

5 new members inducted in May 2011.

18. The Director (or his nominee), Zoological Survey of India, Kolkata
19. The Director (or his nominee), IMTECH, Chandigarh
20. The Director (or his nominee), Botanical Survey of India, Kolkata
21. Shri Sudhir Kumar, Member Secretary, Madhya Pradesh Biodiversity Board
22. Shri A. K. Gupta, Member Secretary, Jharkhand Biodiversity Board

2. Members of the Expert Committee to study the existing Agreement Formats and suggest amendments (as of 15 May 2011)

Chair: Dr. R.S. Rana, Former Director, National Bureau of Plant Genetic Resources, New Delhi

1. Dr. Uppendar Dhar, Member, National Biodiversity Authority
2. Shri P. Raghuvver, Addl PCCF and Director, A.P. Forest Academy, Hyderabad
3. Dr. T. C. James, Director, National Intellectual Property Organisation, New Delhi
4. Dr. H.R. Bhojwani, Advisor (SIT & DOD), Council for Scientific and Industrial Research (CSIR), New Delhi
5. Prof. A. D. Ambrose, Prof. (Legal Studies), Department of Legal Studies, University of Madras, Chennai
6. Dr. S. Balaravi, MS Swaminathan Research Foundation (MSSRF), Chennai
7. Shri Yeshwanth Shenoy, Advocate and Legal Consultant to the NBA (Member Convenor)
8. Shri K. Chitarasu, Advisor (Law), NBA
9. Dr. K. P. Raghuram, Technical Officer (BS), NBA

ANNEXURE III

ANNEX I OF THE NAGOYA PROTOCOL

MONETARY AND NON-MONETARY BENEFITS

1. Monetary benefits may include, but not be limited to:
 - Access fees/fee per sample collected or otherwise acquired;
 - Up-front payments;
 - Milestone payments;
 - Payment of royalties;
 - Licence fees in case of commercialization;
 - Special fees to be paid to trust funds supporting conservation and sustainable use of biodiversity;
 - Salaries and preferential terms where mutually agreed;
 - Research funding;
 - Joint ventures;
 - Joint ownership of relevant intellectual property rights.

2. Non-monetary benefits may include, but not be limited to:
 - (a) Sharing of research and development results;
 - (b) Collaboration, cooperation and contribution in scientific research and development programmes, particularly biotechnological research activities, where possible in the Party providing genetic resources;
 - (c) Participation in product development;
 - (d) Collaboration, cooperation and contribution in education and training;
 - (e) Admittance to ex situ facilities of genetic resources and to databases;
 - (f) Transfer to the provider of the genetic resources of knowledge and technology under fair and most favourable terms, including on concessional and preferential terms where agreed, in particular, knowledge and technology that make use of genetic resources, including biotechnology, or that are relevant to the conservation and sustainable utilization of biological diversity;
 - (g) Strengthening capacities for technology transfer;
 - (h) Institutional capacity-building;
 - (i) Human and material resources to strengthen the capacities for the administration and enforcement of access regulations;
 - (j) Training related to genetic resources with the full participation of countries providing genetic resources, and where possible, in such countries;

- (k) Access to scientific information relevant to conservation and sustainable use of biological diversity, including biological inventories and taxonomic studies;
- (l) Contributions to the local economy;
- (m) Research directed towards priority needs, such as health and food security, taking into account domestic uses of genetic resources in the Party providing genetic resources;
- (n) Institutional and professional relationships that can arise from an access and benefit-sharing agreement and subsequent collaborative activities;
- (o) Food and livelihood security benefits;
- (p) Social recognition;
- (q) Joint ownership of relevant intellectual property rights.

This briefing paper has been prepared for the NGO Alliance on CBD (India) and has been supported through WWF-India's CSO initiative.