

India's Biodiversity Act 2002 and its role in conservation

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Abstract: This paper summarizes the main features of India's Biological Diversity Act 2002 (BD Act) and its role in biodiversity conservation in the country. In order to implement this Act, in accordance with its section 8, a National Biodiversity Authority (NBA) was established in the year 2003. The BD Act provides provisions for regulated access to biological resources by bonafide end-users for various purposes including scientific research, commercial activities and sustainable use of non-timber forest produce. The Act is implemented through three functional bodies *viz.*, NBA at the national level, State Biodiversity Boards (SBBs) in different states, and Biodiversity Management Committees (BMCs) at the level of local community (Panchayat). At the national level, NBA is responsible for decisions pertaining to access and benefit sharing (ABS), approval for access to and transfer of biological resources, results or technology of scientific research to foreign citizens, companies or non-resident Indians and several other matters related to conservation of India's biodiversity. The Act insists upon appropriate benefit sharing under mutually agreed terms related to access and transfer of biological resources or knowledge occurring in or obtained from India for various purposes.

Resumen: Este artículo resume las principales características de la Ley de Biodiversidad de la India de 2002 (Ley BD) y su papel en la conservación de la biodiversidad en el país. Para instrumentar esta ley y de acuerdo con su sección 8, en el año 2003 se estableció una Autoridad Nacional de la Biodiversidad (ANB). La Ley BD ofrece disposiciones que regulan el acceso a los recursos biológicos por los usuarios finales *bonafide* para varios propósitos incluyendo la investigación científica, las actividades comerciales y el uso sostenible de productos forestales no maderables. La ley se instrumenta a través de tres cuerpos funcionales: la ANB a nivel nacional, los Consejos Estatales para la Biodiversidad (CEBs) en diferentes estados, y los Comités de Administración de la Biodiversidad (CABs) a nivel de la comunidad local (Panchayat). A nivel nacional, la ANB es responsable de las decisiones que tienen que ver con las formas de acceso a los beneficios y de compartirlos, con las maneras de aprobar el acceso a los recursos biológicos y los resultados de la tecnología o la investigación científica y su transferencia a ciudadanos o compañías extranjeros, o a ciudadanos indios no residentes en el país, y con varios otros asuntos relacionados con la conservación de la biodiversidad de la India. La Ley hace énfasis en un reparto adecuado de los beneficios bajo términos de mutuo acuerdo relacionados con el acceso y la transferencia de recursos y conocimiento biológicos que existen o que fueron obtenidos en la India con varios propósitos.

Resumo: Este artigo sumariza os aspectos principais do Acto Legislativo de 2002, na Índia, sobre a Diversidade Biológica (BDAct) e sobre o seu papel na conservação da biodiversidade no país. Com o fim de implementar esta Acto, de acordo com a secção 8, foi

estabelecida em 2003 a Autoridade Nacional sobre a Biodiversidade (NBA). Esta legislação proporciona provisões sobre o acesso regulado aos recursos biológicos por utilizadores finais *bonafide* para vários propósitos incluindo a investigação científica, actividades comerciais e uso sustentável de produtos florestais não lenhosos. O Acto é implementado através de três corpos funcionais *viz.*, NBA a nível nacional, Juntas Estatais de Biodiversidade (SBBs) nos diferentes estados, e os Comités de Gestão da Biodiversidade (BMCs) a nível das comunidades locais (Panchayat). A nível nacional, a NBA é responsável pelas decisões que se relacionam com o acesso e partilha dos recursos biológicos (ABS), aprovação do acesso e transferência de recursos biológicos, resultados ou tecnologia de investigação científica a cidadãos estrangeiros, companhias ou indianos não-residentes e várias outras matérias relacionadas com a conservação da biodiversidade na Índia. O Acto insiste sobre a partilha apropriada dos benefícios de acordo com termos mutuamente acordados relacionados com o acesso e transferência biológica de recursos ou conhecimento ocorrendo na ou obtido da Índia para vários propósitos.

Key words: Access and benefit sharing, biodiversity act, convention on biodiversity, National Biodiversity Authority, Peoples' Biodiversity Register.

Introduction

India is one of the 12 mega biodiversity countries of the world and one among the 194 signatories to the Convention on Biological Diversity (CBD) at Earth Summit in Rio de Janeiro in 1992. By virtue of a wide variety of physical and climatic conditions, India harbours varied ecosystems ranging from the tropical rain forests to high alpine cold deserts, grasslands, wetlands and coasts. India embraces three major biological realms, *viz.* Indo-Malayan, Eurasian and Afro-tropical and is adorned with 10 biogeographic zones and 26 biotic provinces (Rodgers & Panwar 1990). With only 2.5% of the earth's land area, India accounts for 8% of the recorded species of the world which includes millions of races, subspecies and local variants of species and the ecological processes and cycles that link organisms into population, communities, and all different ecosystems (Venkataraman 2006). Demographically, it is the second largest populated country in the world and a majority of its population directly depends on biological resources for livelihood.

It is estimated that India has approximately 45,000 species of plants representing as much as 11% of the world's flora (Mudgal & Hajra 1997). This includes about 17500 species of flowering plants, 48 species of gymnosperms, 1200 species of

pteridophytes, 1980 species of mosses, 845 species of liverworts, 6500 species of algae, 2050 species of lichens, 14,500 species of fungi and 850 species of bacteria. At the national level a number of organizations including the Botanical Survey of India have been engaged in systematic inventory and documentation of floral diversity. The faunal wealth is equally or more diverse. The total estimate of animal species in India is about 89,450, of which insects alone include 59,353 species. Other faunal components include mammals (372 species), birds (1230 species), reptiles (428 species), over 300 species of amphibians, and 5000 species of molluscs (Anonymous 1994). Amongst invertebrates, parasitic forms and soil fauna, (Annelida) exhibit a very high degree of endemism. Overall, 34.90% of entomofauna are endemic to the Indian region and more than 40% of Indian annelids, freshwater sponges and molluscs also show endemism. Among vertebrates, highest degree of endemism at species level is seen in Amphibia followed by Reptilia, Aves, Mammalia and Pisces. Fisheries in India play an important role in socio-economic development of local communities. More than six million fishermen and fish farmers in India depend on fisheries and aquaculture for their livelihood. The harvestable potential of marine fishery resources in the Indian Exclusive Economic Zone has been estimated at about 3.9234 million tonnes. A total fish

production of 8.09 million tonnes (3.26 million tonnes from the marine sector and 4.83 million tonnes from the inland sector) has been achieved at the end of the 2007.

India holds a prominent position among the eight Vavilovian Centres of origin of cultivated plants, which is the geographic region where crops exhibit maximum diversity in terms of number of races and botanical varieties (Vavilov 1926). Today, about 166 crop species and well over 324 species of wild relatives of crop plants are recognized and utilized for food production. Wild edible plants account for nearly 1000 species serving various purposes: 145 as roots/tubers, 526 as leafy vegetables/greens, 101 for buds/flower, 647 for fruits and 18 for seeds and nuts (Anonymous 1994).

Though, India can boast of having an impressive range of biological diversity, there is hardly any scope for complacency. Ever mounting human population, rapid expansion of agriculture, industry, urbanization and large scale developmental projects such as dams, highways, mining have led to habitat destruction, fragmentation, degradation and over exploitation of biological resources. Coupled with these factors unsustainable resource use practices and illegal trade of high value wildlife products have severely threatened many species of flora and fauna. The agro-biodiversity has also suffered seriously due to introduction and promotion of few 'high yielding' varieties. Yet very little has been done to harness the traditional knowledge on biodiversity inherited by a large number of local communities, given that India has had rich tradition of conserving nature and natural resources. Worship of trees, forests, rivers, ponds, mountains and association of animals and birds with gods and goddesses had contributed immensely to their conservation during historic past. This calls for a concerted effort towards scientific research, education and policy back up so as to conserve the extant biodiversity while ensuring economic and ecological security.

Policy initiatives and legal framework

International conventions

India has taken a number of policy initiatives towards conservation of nature, natural resources

and biodiversity at international, national and regional levels. Some of the significant initiatives include the World Heritage Convention (1972), Convention on International Trade in Endangered Species of Flora and Fauna (CITES) 1975, Ramsar Convention on Wetlands (1975), FAO's International Undertaking on Plant Genetic Resources (1983), Convention on Biological Diversity (1992), UN Convention to Combat Desertification (1994), Trade Related Intellectual Property Rights (WTO-1994) 1994, Cartagena Protocol for Biosafety to CBD (2000), International Treaty on Plant Genetic Resources for Food and Agriculture (FAO 2001), Global Strategy for Plant Conservation (2002), the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the benefits arising out of their utilization (2002) among others. Consequent upon the ratification of CBD by India on 18th February 1994 and in pursuance of the Conference of Parties the Government of India, predominantly the Ministry of Environment and Forests, has taken steps to implement the CBD provisions by promulgating the Biological Diversity Act, 2002 in the Parliament of India. Recognizing the urgent need to develop human resources, capabilities and public policy in order to take an active part in the new economy associated with the use of Biological Diversity and Biotechnology, seventeen biodiversity rich countries have formed a group known as Like Minded Mega-diverse Countries (LMMC). In a recent meeting held in New Delhi (2005), this group has adopted the "New Delhi Ministerial Declaration of LMMCs on Access and Benefit Sharing", which is a new beginning towards international regime on access and benefit sharing as a legally binding instrument (http://www.lmmc.nic.in/prologueLmmc_new.php?Section=two).

National legislation and implementing agency

The Government of India brought the CBD into force from 19th May 1994. This convention provides a framework for the sustainable management and conservation of India's natural resources. In order to regulate access to biological resources of the country with the purpose of securing equitable share in benefits arising out of the use of biological resources and associated knowledge, to conserve and sustainably use

biological diversity a legislation was required. Legislation was also required in order to respect and protect traditional knowledge of local communities and to secure benefit sharing with local people who have conserved the biological resources and inherited knowledge and information relating to their use of biological resources. Accordingly the Biological Diversity Act 2002 (BD Act) was formulated after intensive consultation with various stakeholders. In accordance with the Section 8, of this Act a National Biodiversity Authority (NBA) was established in the year 2003 which is responsible for its implementation. The NBA also performs functions such as laying down the procedures and guidelines to govern the activities such as access and benefit sharing and Intellectual Property Rights, in accordance with the Article 8 (j) of the Convention on Biological Diversity (CBD). The authority also coordinates the ABS activities of the State Biodiversity Boards (SBB) and Biodiversity Management Committees (BMC) by providing them with technical assistance and guidance. NBA advises the government on matters relating to the conservation of biodiversity, sustainable use of its components and equitable sharing of benefits arising out of the utilization of biological resources, select and notify the areas of biodiversity importance as biodiversity heritage sites under this act and perform other functions as may be necessary to carry out the provisions of the act. The NBA on behalf of the Government of India takes measures to protect the biological diversity of the country as well as oppose the grant of intellectual property rights to any foreign country on any biological resource obtained from India or knowledge associated with such resources.

The NBA is chaired by an eminent person having adequate knowledge and expertise in the conservation and sustainable use of biological diversity and in matters relating to equitable sharing of benefits appointed by Government of India. The NBA consists of 10 senior officials from government departments and five additional specialists as members (http://www.nbaindia.org/act/act_ch3.htm). The Authority meets once every three months to oversee the work of the NBA, SBAs and BMCs to approve applications for access to India's biological resources.

Role and Provisions of Biodiversity Act 2002

Mechanism for access and benefit sharing

The BD Act (2002) primarily addresses the issues concerning access to genetic resources and associated knowledge by foreign nationals, institutions or companies, and equitable sharing of benefits arising out of the use of these resources and associated knowledge by the country and its people (http://www.nbaindia.org/act/act_english.htm). The Act governs access and benefit sharing (ABS) through a three tier system, i.e., NBA at the national level, the State Biodiversity Board (SBB) and Biodiversity Management Committees (BMCs) at local levels. The NBA deals with the requests for access to bio-resources and associated traditional knowledge by foreign nationals, institutions or companies, and all matters pertaining to the transfer of research findings to any foreign national, imposition of terms and conditions to secure equitable sharing of benefits, establish sovereign rights over the bio-resources of India and approval for seeking any form of Intellectual Property Rights (IPRs) in or outside India for an invention based on research or information pertaining to a biological resource and associated traditional knowledge obtained from India. SBBs deal with matters relating to access to bio-resources by Indians for commercial purposes and restrict any activity which violates the objectives of conservation, sustainable use and equitable sharing of benefits. The mandate of the BMCs is conservation, sustainable use, documentation of biodiversity and chronicling of knowledge relating to biodiversity. NBA and SBAs would consult BMCs on matters related to use of biological resources and associated knowledge within their jurisdiction. In order to safeguard the interests of the local people and to allow research by Indian citizens within the country, free access to biological resources for use within India for any purpose other than commercial use for Indian people has been given to the traditional physicians (*Vaid*s and *Haqims*) and other citizens.

Access to biological resources and associated traditional knowledge

The Act stipulates norms for access to biological resources and traditional knowledge in three ways:

- (i) Access to biological resources and traditional knowledge to foreign citizens, companies and non-resident Indians (NRIs) based on 'prior approval of NBA' (Section 3, 4, 6 of the Act and Rule 14-20).
- (ii) Access permits to Indian citizens, companies, associations and other organizations registered in India on the basis of 'prior intimation to the State Biodiversity Board' concerned (Section 7 of the Act).
- (iii) Exemption of prior approval or intimation for local people and communities, including growers and cultivators of biodiversity, and *Vaid*s and *Haqim*s, practicing indigenous medicines (Section 7 of the Act).

The key procedures to be followed for access to biological resources and traditional knowledge are dealt with under Rule 14 of the Biodiversity Rules 2004. These provisions are laid down to ensure effective, efficient and transparent access procedures through written agreements and applications in prescribed formats. Applicants seeking access to biological resources and traditional knowledge are required to submit an application in Form I (<http://www.nbaindia.org/applications/ruleform14.htm>) along with an application fee of INR 10,000/- (<http://www.nbaindia.org/applications/application.htm>). Once the application is approved for access, an agreement has to be signed by the applicant for access of bio-resources.

The NBA through appropriate consultation mechanisms, approves the applications and communicates its decision to grant access or otherwise to the applicant within a period of six months from the date of receipt of the application. The authority is required to communicate the grant of access to the applicant in the form of a written agreement duly signed by an authorized official of the authority and the applicant. The rule 14 also stipulates the authority to provide reasons in writing in cases of rejection of an application and give reasonable opportunity to the applicant to appeal. Provision has been made that the authority shall publish the approval granted through print or electronic media and also shall monitor the compliance of the conditions agreed to at the time of accordance of approval of grant for access, by the applicant (<http://www.nbaindia.org/approvals.htm>). The access procedures are only

regulatory in nature, not prohibitive in any manner to any applicant irrespective of their nationality, affiliations and origin. Since inception, NBA has received over 298 applications for access and transfer of bio-resources and patent (http://www.nbaindia.org/approvals/status_approval_s.htm).

Revocation of access or approval

Revocation of access or approval granted to an applicant will be done only on the basis of any complaint or *suo moto* under the following conditions: (i) violation of the provisions of the Act or conditions on which the approval was granted (ii) non-compliance of the terms of the agreement (iii) failure to comply with any of the condition of access granted (iv) on account of overriding public interest or for protection of environment and conservation of biodiversity (Rule 15, Sub rule 1). After having withdrawn the access permit, the Authority is required to send an order of revocation to the concerned BMC and the SBB for prohibiting the access and to assess the damage, if any, caused and steps to recover the damages (Rule 15, Sub rule 2) (<http://www.nbaindia.org/rules.htm>).

Restrictions for access to biological resources

The Act imposes certain restrictions on request related to access to biological resources and traditional knowledge if the request is on: (i) endangered taxa (ii) endemic and rare taxa (iii) likely adverse effects on the livelihood of the local people (iv) adverse and irrecoverable environmental impact (v) cause genetic erosion or affect ecosystem function (vi) purpose contrary to national interests and other related international agreements to which India is party (Rule 16, Sub rule 1) (<http://www.nbaindia.org/rules.htm>).

Procedure for prior approval of transfer of research results

Guidelines on collaborative research projects (under Section 5 of the BD Act) involving transfer or exchange of biological resources or information relating thereto between institutions, including government sponsored institutions of India and such institutions in other countries has been prepared and notified (<http://www.nbaindia.org/docs/so-1911-english.pdf>). Establishment of

Designated National Repository (DNR) (Section 39) is an essential part of the infrastructure for biodiversity conservation. DNR consists of service providers and repositories of preserved specimen consisting of all fauna, herbarium (dried plant material for research), the living cells, genomes of organism, and information relating to heredity and the functions of biological systems. DNRs also contain collections of culturable organisms (e.g. micro-organisms, plant, animal and human cells), replicable parts of these (e.g. genomes, plasmids, viruses, cDNAs), viable but not yet culturable organisms, cells and tissues, as well as databases containing molecular, physiological and structural information relevant to these collections and related bioinformatics." The NBA has prepared guidelines on DNR and it is in the process of notification. The other guidelines such as access to bio-resources or associated knowledge for research or for commercial purpose by foreigners (Section 3 of the BD Act) and determination of equitable benefit sharing arising out of the use of accessed biological resources, their by-products, innovations and practices associated with their use and applications and knowledge (Section 21 of the BD Act), transfer of results of any research relating to any biological resources occurring in or obtained from India for further research or for commercialization (Section 4 of BD Act), intellectual property rights of invention based on any research or information on a biological resources obtained from India (Section 6 of the BD Act), biological resources normally traded as commodities (Section 40 of the BD Act), and areas of importance as Biodiversity Heritage sites (Section 37) are in the process of notification under the Act.

The Act does not permit any person to transfer the results of any research relating to biological resources obtained from India for monetary consideration to foreign nationals, companies or NRIs without the prior approval of the authority (Section 4). Approval for such transfers shall be done on the basis of an application to authority in Form II (<http://www.nbaindia.org/applications/ruleform17.htm>) along with the payment of an application fee of INR 5000/-. The authority within a period of three months from the receipt of an application shall take a decision on it. As in the case of access permits the authority shall communicate the approval for transfer of research

results to the applicant in the form of a written agreement duly signed by an authorized official and the applicant. The authority shall communicate the reasons in case a request for transfer of research results is not granted and shall give reasonable opportunity and time to the applicant for an appeal, if any (Rule 17, Sub rules 1-6).

Criteria for benefit sharing

The Act, according to Section 21 and Rule 20 of the Biodiversity Rules, (<http://www.nbaindia.org/rules.htm>) insists upon including appropriate benefit sharing provisions in the access agreement and mutually agreed terms related to access and transfer of biological resources or knowledge occurring in or obtained from India for commercial use, bio-survey, bio-utilization or any other monetary purposes. The NBA is in the process of developing a guideline based on the provision of the BD Act and the same will be notified with the specific details of benefit sharing formula in an official gazette on a case-to-case basis. While granting approvals for access, NBA will impose terms and conditions so as to secure equitable sharing of benefits. These benefits, *inter alia* include:

- a) grant of joint ownership of intellectual property rights to the NBA, or where benefit claimers are identified, to such benefit claimers;
- b) transfer of technology;
- c) location of production, research and development units in such areas which will facilitate better living standards to the benefit claimers;
- d) association of Indian scientists, benefit claimers and the local people with research and development in biological resources and bio-survey and bio-utilization;
- e) setting up of venture capital fund for aiding the cause of benefit claimers;
- f) payment of monetary compensation and other non-monetary benefits to the benefit claimers as the NBA may deem fit.

The BD Act provides for setting up of biodiversity funds at national, state and local levels. Benefits will be given directly to individuals or group of individuals only in cases where biological resources or associated knowledge are accessed directly through them. In all other cases,

monetary benefits will be deposited in the Biodiversity Fund which in turn is used for the conservation and development of biological resources and socio-economic development of areas from where resources have been accessed. The time frame and quantum of benefits to be shared shall be decided on case-to-case based on mutually agreed terms between the applicant, authority, local bodies, and other relevant stakeholders, including local and indigenous communities. One of the suggested mechanisms for benefit sharing includes direct payment to persons or group of individuals through district administration, if the biological material or knowledge is accessed from specific individuals or organizations. In cases where such individuals or organizations could not be identified, the monetary benefits shall be paid to the National Biodiversity Fund. Five percent of the benefits shall be earmarked for the Authority or State Biodiversity Board towards the administrative service charges.

The ABS procedures stipulated under the Biodiversity Act (2002) are in line with the provisions of international laws and policies, particularly CBD and the Bonn Guidelines. The entire procedures as described in the Act can contribute substantially to facilitate an international regime of ABS on genetic resources and traditional knowledge.

Peoples' Biodiversity Registers (PBRs)

The rules promulgated under BD Act include the provision to constitute the BMCs. The main function of BMC is to prepare Peoples' Biodiversity Registers (PBR) in consultation with the local people. The register shall contain comprehensive information on availability and knowledge of local biological resources or any other traditional knowledge associated with them. Preparation of PBRs involves the active support and cooperation of a large number of people who need to share their common as well as specialized knowledge. The documentation of PBR by the BMCs includes information on bio-resources and associated knowledge gathered from individuals (Gadgil 1996). Establishment of comprehensive PBRs would not only help to inventorize and document the local biological and genetic resources, but also to conserve and sustainably use the bio-cultural diversity for rewarding income generation (Gadgil 2006). PBR also ensures active involvement of the

local and traditional communities in all decision-making processes related to biological diversity and traditional knowledge. BMCs are entrusted with the preparation of PBRs (<http://www.nbaindia.org/docs/comments-the-public.pdf>) and to assist the SBBs and NBA in matters on ABS related to local biogenetic resources and traditional knowledge. With the globalization and increasing influence of IPRs, there is an urgent need to develop appropriate national and international guidelines for implementing the provisions of ABS and thereby preventing misappropriation of traditional knowledge as well as conserving of bioresources for the future.

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