A PRIMER ON BIOLOGICAL DIVERSITY LAWS, ACCESS AND BENEFIT SHARING

A PRIMER ON BIOLOGICAL DIVERSITY LAWS, ACCESS AND BENEFIT SHARING

Joint Publication of

Centre for Environmental Law, Education, Research & Advocacy
National Law School of India University, Bengaluru

United Nations Development Programme (UNDP)

ISBN No. 978-93-83363-53-7

Online hosting at: www.nlsabs.com

Printed at:
National Printing Press, Bengaluru-96

MESSAGE

Life becomes worth living only because of the rich biological diversity around us. Life will be denuded of its significance and will peter out into a "Vegetative State" sans the components of biological diversity. Hence dissemination of information pertaining to biological diversity is an idea whose time has come.

CEERA of National Law School of India University deserves to be complimented for taking such a laudable initiative of coming out with a Primer on Biological Diversity and Access and Benefit Sharing that is intended to provide an overview and guidance to relevant researchers, legal professionals and industry personnel regarding the framework of the existing laws on Access and Benefit Sharing (ABS) and Biological Diversity.

This Primer on Biological Diversity is one of the most enriching of the diverse and varied activities of CEERA and I congratulate Prof. M K Ramesh and Prof. Sairam Bhat and their able lieutenants for the same.

I am sure this Primer will make 'Access and Benefit Sharing' more meaningful.

Prof. (Dr.) R. Venkata Rao
Vice-Chancellor,
National Law School of India University, Bengaluru

MESSAGE

India is a pioneer in adopting a legislative, administrative and policy framework to promote fair and equitable sharing of benefits arising from the utilization of biological resources and associated knowledge. India has an exemplary record in implementing the access and benefit sharing (ABS) mechanism, which creates incentives to conserve and sustainably use biological resources and protect associated traditional knowledge. This Primer is an important chronicle of these efforts.

The ABS mechanism allows local communities better opportunities to benefit from the use of their knowledge, innovations and practices related to biological diversity. The India Biodiversity Awards were set up by the Ministry of Environment, Forest and Climate Change (MoEFCC) and the United Nations Development Programme (UNDP) to, among others, incentivize the efforts of stakeholders such as the Biodiversity Management Committees, local communities, industry and research institutions to promote outstanding models of ABS in the country.

This Primer has been developed as part of the Global Environment Facility-UNDP Global ABS project on strengthening human resources, legal frameworks and institutional capacities to implement the Nagoya Protocol. It will serve as a ready reference guide for law academicians, scientists, researchers and other stakeholders seeking information on key national and international instruments related to ABS.

We appreciate the efforts of National Law School India University in preparing this document, which will enhance the capacity of public and private academic and research institutions to better understand relevant legal provisions and guidelines. UNDP is proud to partner with MoEFCC, the National Biodiversity Authority and the National Law School India University in making what promises to be a significant contribution to the body of literature on ABS.

Ms. Marina Walter
Country Director a.i.
United Nations Development Programme

ACKNOWLEDGEMENTS

This Primer on Biological Diversity Laws and Access and Benefit Sharing is an outcome of the research conducted by the Centre for Environmental Education, Research and Advocacy (CEERA), NLSIU, Bengaluru. It is the initial research output of the UNDP-GEF Project: Strengthening human resources, legal frameworks, and institutional capacities to implement the Nagoya Protocol for which NLSIU is the lead technical agency.

The main aim of this Project is to:

a. Map the research and literature on Biological Diversity Laws and Access and Benefit Sharing

b. Train legal professions, researchers and persons from relevant industries on Biological Diversity and Access and Benefit Sharing

c. Disseminate knowledge and information on Biological Diversity laws and the ABS framework in multiple states through the Trainers that were trained hitherto

Given the expansive scope and intricacy of the subject, this Primer is an output of the research that was conducted with limited resources and information accessible and available to the institution.

We would like to acknowledge the guidance of the Prof. (Dr.) R. Venkata Rao, Vice Chancellor, National Law School of India University, Bengaluru for his constant supervision in the research carried out by CEERA, which was material to the compilation of this Primer. We also express our deep felt gratitude to Dr. Amita Prasad, IAS for her unconditional support to our Institution in general and CEERA in particular.

We are also grateful to Dr. B. Meenakumari, Chairperson, National Biodiversity Authority and Shri. T. Rabikumar, Secretary, National Biodiversity Authority for all their support and the information provided for the compilation of this Primer.

Most importantly we would like to acknowledge and thank Ms. Marina Walter, Country Director, UNDP India and Smt. Ruchi Pant, Programme Analyst, UNDP India for their vision, technical inputs and persistence in the execution of this Primer.

Thank You

Prof. M.K. Ramesh, Professor of Law
Mr. Manjeri Subin Sunder Raj, Asst. Prof. of Law
Prof. Sairam Bhat, Professor of Law
Ms. Raagya Zadu, Teaching Associate
Ms. Architha Narayanan, Teaching Associate

EXECUTIVE SUMMARY

This Primer on Biological Diversity Laws and Access and Benefit Sharing is intended to provide an overview and guidance to relevant researchers, legal professionals and industry personnel regarding the framework of the existing laws on Access and Benefit Sharing (ABS) and Biodiversity. The purpose of the Primer would be to give an understanding of the Domestic as well as the International Legal and Policy scenario on Biodiversity and ABS.

In order for relevant stakeholders to be equipped with the necessary tools to deal with ABS and Biodiversity related issues, it is necessary that the domestic and international legal framework regarding the same is understood. Multiple case studies and examples are provided in the Primer to understand the application of the legal framework in practical instances.

There are around 8.7 million species estimated to be in existence in the World. India's share of the global diversity is an impressive 8.1% of the total, despite it having only 2.4% of the land area of the World. Being home to such tremendous variety of species and one of the 12 mega diversity countries of the World makes it imperative on the State to protect this treasured characteristic of our land and take all the possible measures to conserve the life of such species that inhabit our Country.

In 2002, the Government of India enacted the Biological Diversity (BD) Act in order to achieve the obligations prescribed under the Convention on Biological Diversity. India became a party to the Convention on Biodiversity in 1994 and enacted the BD Act and subsequent Rules at the Centre and State levels to adopt the goals of the CBD nationally, which is to conserve biodiversity, ensure sustainable use of its components and to have fair and equitable sharing of the benefits arising from genetic resources.

The key topics that would be first dealt in this Primer would be that of the policy and legislative framework that exists with regard to Biological Diversity and Access and Benefit Sharing in India. The evolution of the relevant polices and laws would be first charted out with the focus then shifting to the crucial provisions and procedures that are present in the domestic legislation i.e. Biological Diversity Act, 2002 along with a brief overview of the structure of the various bodies created and governed under the Act.

A detailed study of the Authorities (National Biodiversity Authority, State Biodiversity Boards and the Biodiversity Management Committees) under the Act would then be looked into which would involve the composition, constitution, function and powers of the said Authorities.

The next part of the Primer would focus on the case studies and would chart out the evolution of the jurisprudence on biodiversity and access and benefit sharing from the period prior to the enactment of the Biological Diversity Act and the Convention on Biological Diversity (Kani Case of Arogyapaccha) to the developments that have taken place post the international conventions and national legislations on Biodiversity and Access and Benefit Sharing. Cases concerning the intersection of multiple legislations such as that of Wildlife Protection, Intellectual Property Rights, etc. would also be looked at.

Various international legal instruments relating to Biological Diversity and Access and Benefit Sharing, especially the Convention on Biological Diversity and its two supplementary Protocols (Cartagena Protocol on Biosafety and the Nagoya Protocol on Access and Benefit Sharing) would then be explained along with a comparative analysis of the biodiversity and access and benefit sharing laws and policies of multiple countries.

The next section of the Primer would cover aspects relating to Wildlife Crimes in India and the domestic and international legal framework on the same. The current situation with regard to wildlife crime and its impact on biodiversity as well as the intersection between the laws related to wildlife crimes and biodiversity would also be looked at.

The importance of marine genetic resources and their usage and most crucially the legal structures regulating marine genetic resources would be analysed in the next part of the Primer. The international laws that mainly deal with the ocean resources are the United Nations Convention on the Law of the Sea and Convention on Biological Diversity, which has been critically looked into to understand the position of ABS and marine species resources.

The following section would discuss Invasive Species and the threat they pose to biodiversity. There are various international and domestic mechanisms that have been framed for the regulation of Invasive species. This along with multiple examples of such species in India

is provided to understand how the Indian legal system deals with the menace of Alien Invasive Species.

The last part of the Primer looks into the crucial subject of bio resources, traditional knowledge and intellectual property rights. In this part, the usage of bio resources for commercial purposes and associated knowledge and its intersection with the Intellectual Property Regime has been focused on. The various national and international legal instruments governing bio resources and intellectual property rights have been enumerated along with practical examples of the implications of the IPR regime on the cultural and traditional rights of indigenous communities that possess such traditional knowledge.

****

LIST OF ABBREVIATIONS

ABS	Access and benefit sharing
ABNJ	Areas beyond National Jurisdiction
AICPRE	All India Coordinated Research Project on Ethnobiology
AK	Associated Knowledge
AVP	Arya Vaidya Pharmacy
BD	Biological Diversity
BHS	Biological Diversity Heritage Site
BMC	Biodiversity Management Committee
BS	Benefit Sharing
CAG	Comptroller and Auditor General
CBD	Convention on Biological Diversity
CSIR	Council of Scientific & Industrial Research
CoP	Conference of the Parties
CMS	Convention on Migratory Species
CITES	Convention on International Trade in Endangered Species
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
EPO	European Patent Office
ESG	Environmental Support Group
EU	European Union
FD	Forest Department
GM	Genetically Modified
ILBI	International Legally Binding Instrument

IPR	Intellectual Property Rights
IUCN	International Union for Conservation of Nature
MoEF&CC	Ministry of Environment, Forest & Climate Change
MAT	Mutually Agreed Terms
MTA	Material Transfer Agreement
NBA	National Biodiversity Authority
NGT	National Green Tribunal
NTC	Normally Traded Commodity
PIC	Prior Informed Consent
PIL	Public Interest Litigation
SBB	State Biodiversity Board
SEIAA	State Environment Impact Assessment Authority
SLP	Special Leave Petition
TBGRI	Tropical Botanic Garden and Research Institute
TRIPS	Trade-Related Aspects of Intellectual Property Rights
UoI	Union of India
UNCLOS	United Nations Convention on Laws of Sea
USDA	United States Department of Agriculture
VAPs	Value Added Products
WP	Writ Petition
WWF	World Wildlife Fund

CONTENTS

DOMESTIC BIOLOGICAL DIVERSITY AND ABS LAWS, POLICIES AND PRACTICE IN INDIA*

1

In 2002, the Government of India enacted the Biological Diversity (BD) Act in order to achieve the obligations prescribed under the Convention on Biological Diversity (CBD), an internationally legally binding agreement that was adopted in 1992. India became a party to the CBD in 1994 and enacted the BD Act and subsequent Rules in 2004 to adopt the goals of the CBD nationally, which is to conserve biological diversity, ensure sustainable use of its components and to have fair and equitable sharing of the benefits arising from genetic resources.[1]

There are two relevant protocols that have been adopted under the CBD.

a. The Cartagena Protocol on Biosafety in 2000 and
b. the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization, 2010.

Before the CBD came into being, biological resources were considered common heritage of mankind and were exchanged freely. The country providing raw material for developing useful products rarely ever got any benefits from commercialisation of those products. This situation was perceived to be inequitable, especially by the biodiversity rich countries and that is why the concept of Access and Benefit Sharing was introduced in CBD.

The first protocol of CBD is the Cartagena Protocol on Biosafety for regulating the movement of living modified organisms between countries. After several years of negotiation, the Cartagena Protocol on Biosafety to the Convention on Biological Diversity was finalized and adopted in Montreal in 2000. This Protocol is considered to be a major step forward in the matter of Biosafety and has helped enable a situation for the environmentally sound

---

* Architha Narayanan, Research and Teaching Associate, National Law School of India University, Bengaluru.

1 *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*, The Convention on Biological Diversity, United Nations (2011), https:// www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf.

application of biotechnology and the use of living modified organisms while minimizing the possible risks to human health and environment.

The second protocol of CBD is the Nagoya Protocol which focuses on Access and Benefit Sharing (ABS). India along with other megadiverse countries played an important role in shaping the Protocol. ABS refers to the way in which genetic resources may be accessed, and how the benefits that result from their use are shared between the people or countries using the resources (users) and the people or countries that provide them (providers).[2]

The benefits to be shared can be monetary, such as sharing royalties when the resources are used to create a commercial product, or non-monetary, such as the development of research skills and knowledge.[3]

In order to implement the provisions of the Biological Diversity Act, the National Biodiversity Authority, the State Biodiversity Boards (SBBs) and local level Biodiversity Management Committees (BMCs) were established under the BD Act in 2002. With respect to ABS, the NBA deals with requests for access to bio resources and granting approvals for access subject to the mutually agreed terms and conditions set forth in the ABS Agreement. This is done in order to ensure equitable sharing of befits from the use of biological resources and associated knowledge.

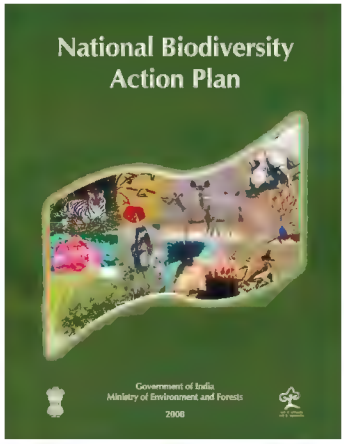
The structural and procedural framework for accessing biological resources and sharing the benefits of that access has been extensively dealt under the Biological Diversity Act, 2002.

1.1. Existing and the Historical Development of Policies on ABS and BD

Prior to the enactment of the Biological Diversity Act in 2002, there was no formal legal regime regarding conservation of biodiversity, access to and sharing of benefits from the access to bio resources and traditional knowledge. Article 6 of the Convention on Biological Diversity of which India became a signatory in 1992, states that the Parties to the Convention must prepare their own strategies, plans and policies to ensure

2 Evason Chege Kamau & Gerd Winter & Peter-Tobias Stool, Research and Development on Genetic Resources: Public Domain Approaches In Implementing The Nagoya Protocol Routledge (2015).

3 *Id.*



conservation and the sustainable use of bio resources. Post the CBD, a National Policy and Macro level Action Strategy on Biological Diversity was developed and submitted to the CBD secretariat. This was done after an extensive consultative process with the relevant stakeholders and after getting approval of the Committee of Secretaries in 1999.[4]

The Ministry of Environment and Forests, in 2002, finally implemented the National Biological Diversity Strategy and Action Plan (NBSAP). Under this Plan multiple action plans were made for the conservation of biological diversity. On the basis of these action plans, a final technical report of NBSAP project was prepared. This report, though accepted, could not be adopted until a National Environment Policy (NEP) existed. So after the Cabinet approval of the NEP in 2006, the National Biodiversity Action Plan (NBAP) was prepared by utilizing and revising the two reports (the National Policy and Macro level Action Strategy and the technical report: National Biodiversity Strategy and Action Plan) while also taking into account congruence of the said reports with the National Environmental Policy. The NBAP was approved by the Cabinet in 2008.[5]

Along with the preparation of the National Biodiversity Strategy and Action Plan (Article 6), the CBD enjoins another mandatory unqualified obligation on its Parties. Article 26 of the Convention on Biological Diversity requires the parties to present continuous National Reports to the Conference of the Parties (CoP) regarding the measures taken by the member Nations for the implementation of the Convention and the effectiveness of those measures. Currently five National Reports have been presented by India. The fifth Report was presented in March 2014 and the sixth report is due to be presented on March 2018.[6]

4 Ministry of Environment and Forests GOI, National Biological Diversity Action Plan (NBAP), The Ministry of Environment And Forests, GoI (Nov. 11, 2017), http://envfor.nic.in/division/nationalBiological Diversity-action-plan-nbap.

5 *Id.*

6 Ministry Of Environment, Forest and Climate Change, Convention on Biological Diversity, Biological Diversity Act and Related Issues, The Ministry of Environment and Forests, GoI (Nov. 11, 2017), http://www.moef.gov.in/sites/default/files/Biological%20Diversity.pdf.

Before the Convention on Biological Diversity came into being, it was considered that bio resources were the common heritage of mankind and were free for exchange.[7] But as instances of bio piracy and other countries extracting the resources of biodiverse rich nations for commercial gains rose, it was perceived that steps need to be taken to counter the inequity that the bio diverse countries, which were also not very economically well to do, were facing. Due to such instances, the concept of Access and Benefit Sharing was introduced in the CBD. The Convention reaffirmed the sovereign Rights of the States over their genetic resources and gave authority to National Governments to legislate the manner in which such resources could be accessed and benefits could be shared.[8]

The Nagoya Protocol, which is a supplementary agreement to the CBD entered into force on the 12 Oct 2014 and aimed to further develop the Access and Benefit sharing framework that was provided by the CBD.[9] India has designated the Ministry of Environment Forests and Climate Change as its national focal point and the National Biodiversity Authority as the competent national authority for the Nagoya Protocol.[10]

The Indian Constitution encompasses the protection of Environment and this sentiment is enshrined in Article 48A[11] and 51A ((g))[12] which states that "the State shall endeavour to protect and improve the environment and to safeguard the forests and wild life of the country and that it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures."

7 The Convention on Biological Diversity, United Nations Environment Programme, (Nov. 12, 2017), https:// www.cbd.int/gbo1/chap-02.shtml.

8 COP 10 Decision X/1, UNITED NATIONS ENVIRONMENT PROGRAMME (Nov. 12, 2017), https://www.cbd.int/ decision/cop/?id=12267.

9 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, Convention on Biological Diversity United Nations,(2011), https://www. cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf.

10 COP 10 Decision *Supra at 8.*

11 INDIA CONST. art. 48, cl. A.

12 INDIA CONST. art. 51, cl. A. sub cl. g.

In efforts to realise the Constitutional mandate of environmental protection, India has planned and executed multiple policies, programs and laws. One of the important laws in relation to biodiversity access, utilization and conservation and bringing into effect the Convention on Biological Diversity (CBD) is the Biological Diversity Act 2002. There are about 36 Acts and Rules related to Biological Diversity in India such as the Indian Forests Act, 1927, the Air (Prevention and control of Pollution) Act 1981, Protection of Plant varieties and Farmer's Rights (PPVFR) Act, 2001 etc.[13] India was one of the first few countries to bring about a comprehensive legislation on Biological Diversity conservation and the BD Act and Rules notified in 2004 give effect to the various objectives of the CBD along with the provisions relating to Access and Benefit sharing.[14]

1.2 The Biological Diversity Act Discussed With Focus on the Procedural Aspects As Well As The Functions of the Authorities Under The Act.

The Access and Benefit Sharing mechanism, which is set out in the Nagoya Protocol is implemented in India through the domestic legislation, Biological Diversity Act 2002 and is done so through a three tiered mechanism: the National Biodiversity Authority (NBA), State Biodiversity Boards (SBBs) and local level Biodiversity Management Committees (BMCs). The Biodiversity Management Committees which are at the local level are required to prepare People's Biodiversity Registers (PBRs). These registers are maintained to contain all the information on local biological resources and associated knowledge. The State Biodiversity Boards (SBBs) are constituted by the State Government and are required to deal with applications and matters related to access to biological resources and traditional knowledge that are made by Indians.[15]

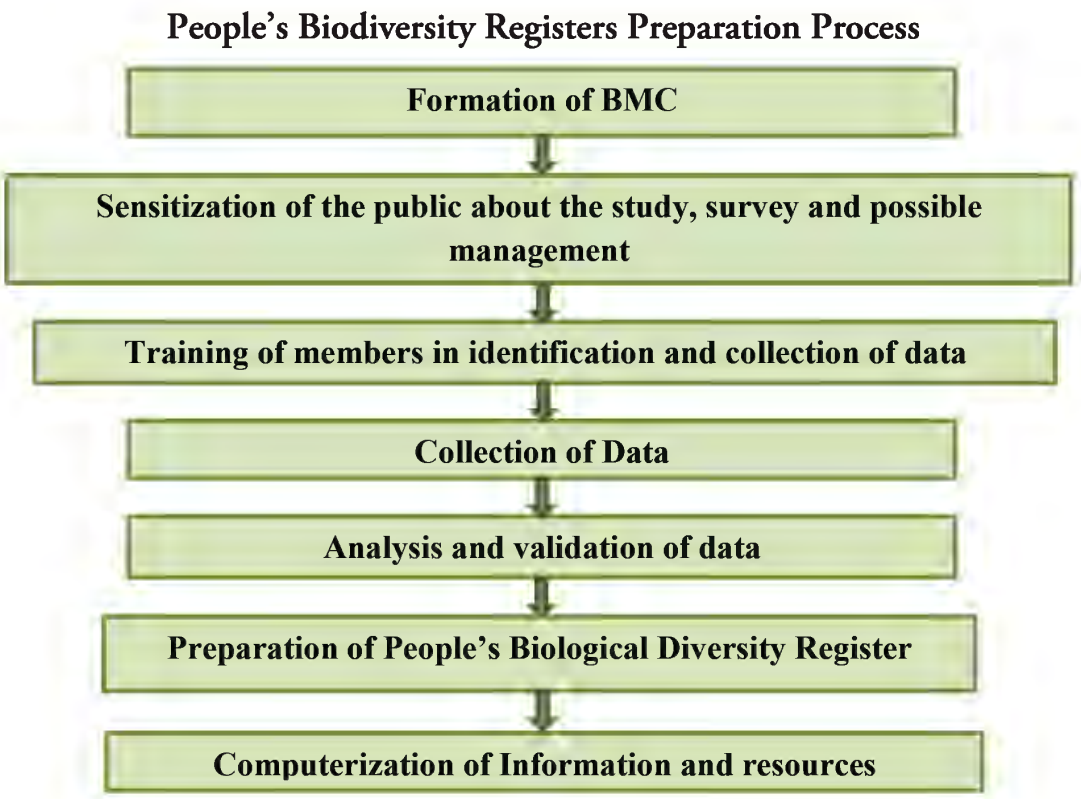
Did You Know?

Wayanad was the 1st District in Kerala to have prepared and submitted to its SBB, the PBRs for all its Local Bodies in 2014.

13 Ministry of Environment, Forest and Climate Change, Convention on Biological Diversity, Biological Diversity Act and Related Issues, The Ministry Of Environment And Forests, GOI, (Nov. 12, 2017), http://www.moef.gov.in/sites/default/files/Biological%20Diversity.pdf.

14 Section 41 (1), the Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).

15 Section 23 (b), the Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).



Matters relating to requests for access to biological resources and associated knowledge (AK) by "non-Indian individuals or entities (body corporates/associations/organizations) having non-Indian participation (in its share capital/management)"for research and/or commercial utilization; for transfer of results of research by any person (Indians/non-Indian individuals/entities) to non-Indian individuals or entities with non-Indian participation is dealt with by NBA. Also, applications from any person seeking approval before applying for an Intellectual Property Right (IPR) based on research/information on biological resources obtained from India is dealt by NBA. Further, NBA also deals with applications for transfer of the approved biological resources and/or AK to a third party, the approval from NBA is mandatory. NBA grants approvals subject to mutually agreed terms and conditions on the access to biological resources and/or AK which is set forth in the ABS Agreement so as to make the sharing of the benefits more equitable.[16]

16 Section 19, 20, 21, the Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).

The BD Act exempts certain persons from the obligation of taking approval or permission from the authorities for access to biological resources and associated knowledge. These persons include local people and communities that have free access to such resources, cultivators, growers, vaids and hakims or practitioners of traditional medicinal systems. The exemptions also include a list of biological resources referred to as Normally Traded Commodities (NTC) that have been notified by the Central Government in exercise of the powers conferred by Section 40 of the Biological Diversity Act 2002.[17] The list includes commodities such as Barley, Common Millet, Bengal Gram, Ground Nut, Rice bean etc. and consists of 385 commodities in total with subcategories of certain items. Since these are food crops and forages, they are exempted from Section 3[18] & Section 4[19] of Biological Diversity Act 2002.

Sections 3 and 4 are also not applicable to collaborative research projects 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.[20] The collaborative research projects shall have to conform to the policy guidelines issued by the Central Government and have approval by the Central Government.[21]

Did You Know?

Accessing Value Added Products containing portions/extracts of plants and animals in unrecognizable and physically inseparable form are excluded from the definition of Biological Resources.

The provisions of the Act also states that all collaborative research projects that were

17 Ministry Of Environment, Forest and Climate, 2016, Change, No., S.O. 1352(E), Acts Of Parliament, 2016. (India).

18 Section 3(2), National Biological Diversity Authority, 2002, No. 18 of 2003, Acts of Parliament, (India).

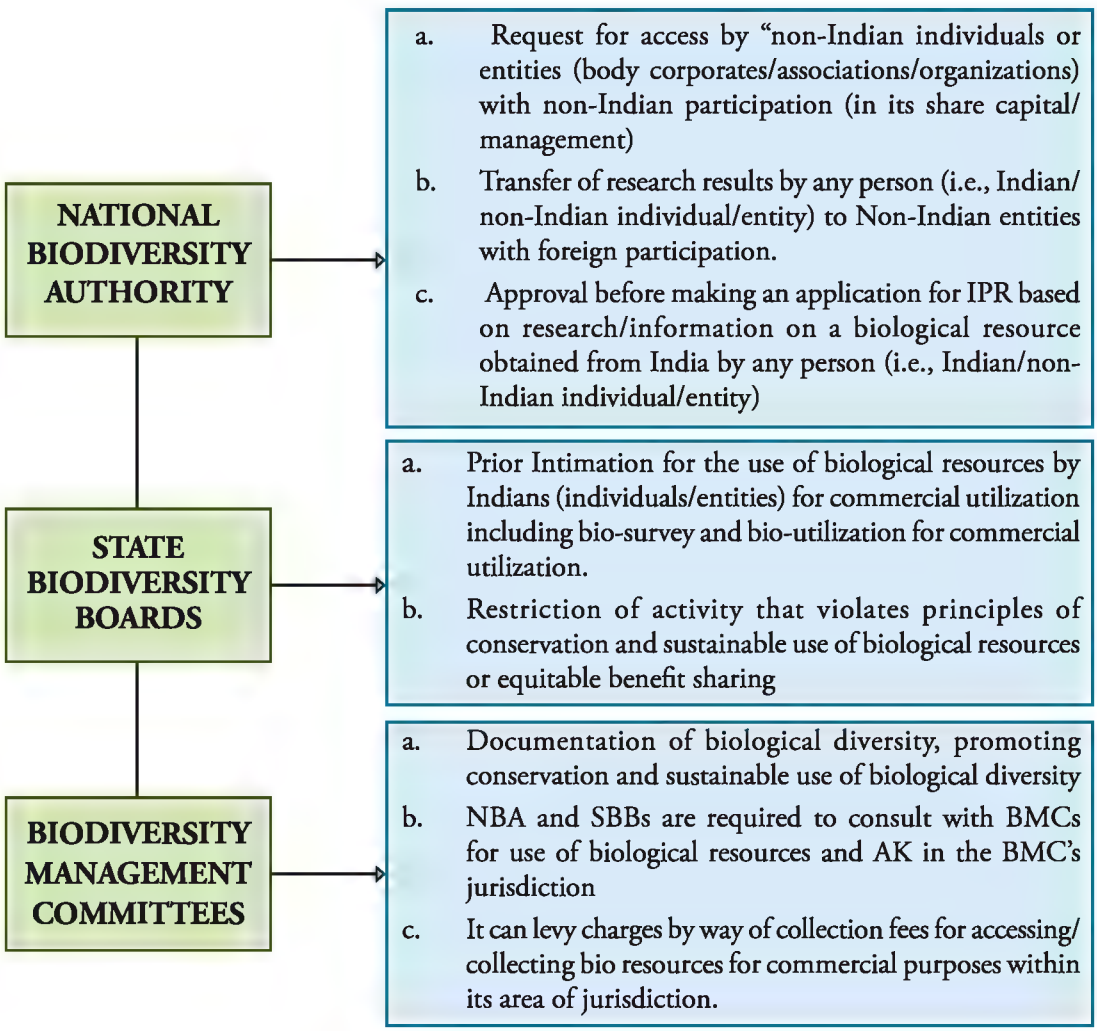
19 Section 4, National Biological Diversity Authority, 2002, No. 18 of 2003, Acts of Parliament, (India). "No person shall, without the previous approval of the National Biological Diversity Authority, transfer the results of any research relating to any biological resources occurring in, or obtained from, India for monetary consideration or otherwise to any person who is not a citizen of India or citizen of India who is non-resident as defined in clause (30) of section 2 of the Income-tax Act, 1961 or a body corporate or organization which is not registered or incorporated in India or which has any non-Indian participation in its share capital or management",

20 Section 5(1), The Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).

21 Section 5(3), The Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).

based on agreements concluded before the commencement of the Act and in force, will, to the extent the provisions of agreement are inconsistent with the provisions of this Act or any guidelines stated in the Act, be void.[22] This provision applies to collaborative research projects other than the projects that are mentioned in Section 5(1) of the Act.

Authorities, jurisdiction and responsibility for Access and Benefit Sharing in India



22 Section 5(2), the Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).

1.3 Regulation of Access to Biological Diversity

Chapter II of the BD Act of 2002 deals with the Regulation of Access to biological diversity. Section 3 of the said Act deals with persons who are not to undertake biological diversity related activities without approval of NBA. Section 3(1) of the Act is applicable to the persons mentioned in sub section (2) of Section 3 which includes (a) a person who is not a citizen of India; (b) a citizen of India, who is a non-resident as defined in clause (30) of section 2 of the Income-tax Act, 1961; (c) a body corporate, association or organization which is not registered in India or incorporated or in India under any law for the time being in force or which has any non-Indian participation in its share capital or management.

Section 3(1), which is probably the most important provision of the BD Act states that "no persons mentioned in Section 3(2) as stated above shall obtain any biological resources occurring in India or knowledge associated thereto for research or for commercial utilization or for bio-survey and bio-utilization without the approval of NBA."

Definitions of terms present in Section 3(1) in the Biological Diversity Act 2002

Biological Resources [Section 2(c)]	Plants, animals and micro-organisms or parts thereof, their genetic material and by-products (excluding value added products) with actual or potential use or value, but does not include human genetic material;
Value added products [Section 2 (p)]	Products which may contain portions or extracts of plants and animals in unrecognizable and physically inseparable form.
Research [Section 2 (m)]	Study or systematic investigation of any biological resource or technological application, that uses biological systems, living organisms or derivatives thereof to make or modify products or processes for any use.
Commercial Utilization [Section 2(f)]	End uses of biological resources for commercial utilization such as drugs, industrial enzymes, food flavours, fragrance, cosmetics, emulsifiers, oleoresins, colours, extracts and genes used for improving crops and livestock through genetic intervention, but does not include conventional breeding or traditional practices in use in any agriculture, horticulture, poultry, dairy farming, animal husbandry or bee keeping.

Bio-Survey And Bio-Utilization [Section 2 (d)]	Survey or collection of species, subspecies, genes, components and extracts of biological resource for any purpose and includes characterization, inventorisation and bioassay.

Another important provision of the BD Act with respect to regulation of Access is Section 4. This Section deals with the transfer of results of research to certain persons without the approval of NBA. The provision states that "No person shall, without the previous approval of the National Biodiversity Authority, transfer the results of any research relating to any biological resources occurring in, or obtained from, India for monetary consideration or otherwise to any person who is not a citizen of India or citizen of India who is non-resident as defined in clause (30) of section 2 of the Income-tax Act, 1961 (43 of 1961) or a body corporate or organisation which is not registered or incorporated in India or which has any non-Indian participation in its share capital or management."

The explanation to this particular section elucidates that the term 'transfer' is not to include publication of research papers or dissemination of knowledge in any seminar or workshop, if such publication is as per the guidelines issued by the Central Government. This explanation of the term transfer is applicable only for the purpose of this section. I.e. Section 4.

The next Section i.e. Section 5(1) lays down the instances where Sections 3 and 4 regulating access would not apply. Section 5(1) talks about certain collaborative research projects and the non-applicability of Sections 3 and 4 to such projects. The Section states that "The provisions of sections 3 and 4 shall not apply to collaborative search projects 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, if such collaborative research projects satisfy the conditions specified in sub-section (3)."

Subsection 3 of Section 5 states what collaborative research projects are included for the purpose of Section 5(1). Projects that (a) conform to the policy guidelines issued by the Central Government in this behalf; (b) be approved by the Central Government would be considered as collaborative research projects for the purpose of Section 5(1).

Section 5(2) further talks about collaborative research projects which are based on agreements that were concluded before the commencement of the BD Act. It states that "All collaborative research projects, other than those referred to in sub-section (1) which are based on agreements concluded before the commencement of this Act and in force shall, to the extent the provisions of agreement are inconsistent with the provisions of this Act or any guidelines issued under clause (a) of sub-section (3), be void."

Section 6 of the BD Act, 2002 talks about prior approval from the NBA before an application for Intellectual Property Rights is made. Section 6(1) states that "No person shall apply for any intellectual property right, by whatever name called, in or outside India for any invention based on any research or information on a biological resource obtained from India without obtaining the previous approval of the National Biodiversity Authority before making such application".

The provisos to Section 6(1) state that "if a person applies for a patent, permission of the National Biodiversity Authority may be obtained after the acceptance of the patent but before the sealing of the patent by the patent authority concerned" and "that the National Biodiversity Authority shall dispose of the application for permission made to it within a period of ninety days from the date of receipt thereof."

The subsections to Section 6 cover other aspects related to Intellectual property rights in relation to the BD Act.

Important Sections of the Biological Diversity Act, 2002

Sections of BD Act 2002	Activity Covered	Purpose
Section 3	Obtainment of any biological resource occurring in India or knowledge associated thereto.	Research, Commercial Utilization, Bio-survey and Bio-utilization.
Section 4	Transfer of results of any research relating to any biological resource occurring in, or obtained from India, to any person covered under Section 3.	Transfer of research results for monetary consideration or otherwise.

Section 6	Application of any IPR in or outside India for any invention based on any research or information on a biological resource obtained from India	Obtaining IPR, by whatever name called, in or outside India.
Section 5(exemption from S. 3 & 4)	The collaborative research project must be between institutions including government sponsored institutions and such institutions in other countries. • The collaborative research project must be approved by the Central Government. • The collaborative research project must conform with the Central Government guidelines	Transfer or exchange of biological resources or information relating thereto between the collaborating institutions. No IPR exemption is provided.
Section 19	Submission of application to NBA for prior approvals under Sections 3, 4 and 6. • All application to be accompanied by fee prescribed. • NBA to make enquiries as it may deem fit. • NBA to consult an Expert Committee if necessary. • Approve or reject the application.	Rule 14, 17 and 18 of the Biological Diversity Rules, 2004, read with Form I, II and Form III thereto are the applicable provisions for applications under Sections 3, 4 and 6 respectively.
Section 20	***Procedural Provisions:*** Submission of application to NBA for prior approvals for transfer of biological resources already accessed as per Section 19, to third parties. All application to be accompanied by fee prescribed. NBA to make enquiries as it may deem fit. NBA to consult an Expert Committee if necessary. Approve or reject the application.	Rule 19 of the Biological Diversity Rules, 2004, read with Form IV thereto are the applicable provisions for applications under Section 20.

1.4 Procedures for Access and Benefit Sharing

The Act lays out a fairly straightforward procedure for access for the purposes of research, commercial utilization, obtaining approval before applying for an IPR or for transfer to a third party within or outside India. The procedure includes submission of an application to the NBA for non-Indian entities with foreign participation and intimation to SBBs when it comes to Indian entities. In both instances a final agreement cannot be signed unless there is consultation with the concerned BMCs at the village or urban ward level.

The request for access to biological resources or AK is required to be made to the NBA in the prescribed Forms listed at the end of the BD Rules, 2004. Once the request is accepted, agreements in the prescribed format are signed between the NBA and the applicant. Today, agreements between the NBA and the applicant require payment of royalty fees which changes on a case to case basis and are regulated by the ABS Guidelines 2014. When NBA grants approval for research for commercial utilization, for transfer of results of research, for Intellectual Property Rights or for third party transfer, a charge equivalent to 5% of accrued benefits is applied, out of which half of the amount is retained by the NBA and the other half may be passed on to the concerned SBB for administrative charges.[23] 95% of the accrued benefits are supposed to go to the concerned BMCs and/ or benefit claimers.[24]

Types of Access Applications to the NBA and the Application Fees

TYPE	FEE
Application for Access to Biological Resources and/or AK(Form I)	**Rs. 10,000**
Application seeking approval for transferring results of research (Form II)	**Rs. 5000**
Application for seeking prior approval of NBA for applying for Intellectual Property Right (Form III)	**Rs. 500**
Application for 3rd party Transfer (Form IV)	**Rs.10,000**

23 Section 15(a), Guidelines on Access to Biological Resources and Associated Knowledge and Benefits Sharing Regulations, 2014.

24 Section 15(b), Guidelines on Access to Biological Resources and Associated Knowledge and Benefits Sharing Regulations, 2014.

Currently, there is one Expert Committee (EC) that looks look into the matter of ABS out of the 5 total expert committees that are presently appointed under the NBA. This committee is called the Expert Committee on Access and Benefit Sharing for Processing the Applications (EC-ABS). In 2009, it was decided that the Expert Committee on Access, Patent, Transfer of Research Results and Third Party Transfer and the Expert Committee on Determination of Benefit Sharing would be merged into one. So EC-ABS is a merger of both the above mentioned committees. It is considered as a standing committee and its function is to provide guidance to the Authority in the matter of processing applications that are received and deciding on the benefit sharing component.[25]

1.4.1 Procedures for Access

The main function of the NBA is to deal with requests for access to biological resources and/or associated knowledge by "non-Indian individuals or entities (body corporates/associations/ organizations) with non-Indian participation (in its share capital/management)"and also deal with applications from any persons (both Indians/non-Indian individuals/entities) with respect to transfer of research results to a non-Indian individual/entity with foreign participation or for applying for an IPR or transfer to a third party.

NBA can grant approval subject to any regulations or conditions as it deems fit including the imposition of charges by way of royalty.[26] Any persons mentioned above making an application for access to biological resources and/or associated knowledge for the purpose of research and/or commercial utilization or bio-survey and bio-utilization must make the application under the form and payment prescribed.[27]

The NBA on the receipt of the application can make enquires as it deems fit and if necessary consults an expert committee constituted for this purpose. After doing the above, it can grant approval subject to certain conditions and regulations as discussed above. In cases where the application is rejected by the NBA, it must record the reason for the same in writing.[28] It is mandatory that the NBA provide an opportunity of being heard to the

25 *Supra at 2.*
26 Section 19(3), the Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).
27 Section 19(1) and (2), the Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).
28 *Supra at 2.*

person affected in cases where an order for rejection has been passed[29] and also give public notice in cases where approval has been granted.[30]

1.4.1.1 Procedure for granting approvals for Access under the BD Act and ABS Guidelines

Access to biological resources and/ or associated knowledge for research or bio-survey and bio-utilization for *research*

Persons who intend to obtain access to biological resources and/or associated knowledge for research or bio-survey and bio utilization for research would need to apply to the National Biodiversity Authority (NBA) in Form I of the Biological Diversity Rules, 2004 accompanied with a fee of ten thousand rupees in the form of a cheque or demand draft drawn in favour of the Authority.[31] After being satisfied with the application, the NBA can enter into a Benefit Sharing Agreement with the applicant that would be deemed as a grant of approval.[32] In cases where the application is for a biological resource having high value, the Benefit Sharing Agreement may contain a clause to the effect that the benefit sharing shall include an upfront payment by the applicant, of an amount as agreed between the NBA and the applicant.[33]

Procedure for access to biological resources, for commercial utilization or for bio-survey and bio-utilization for commercial utilization

Persons intending to obtain access to biological resources including access to biological

29 *Id.*

30 Section 19(4) The Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).

31 Section 1(1), Guidelines on Access to Biological Resources and Associated Knowledge and Benefits Sharing Regulations, 2014, Ministry of Environment, Forests and Climate Change (National Biological Diversity Authority), No G.S.R 827, Acts of Parliament, Nov. 21, 2014, (India).

32 Section 1(2), Guidelines on Access to Biological Resources and Associated Knowledge and Benefits Sharing Regulations, 2014, Ministry of Environment, Forests and Climate Change (National Biological Diversity Authority), No G.S.R 827, Acts of Parliament, Nov. 21, 2014, (India).

33 Section 1(2) Proviso, Ministry of Environment, Forests and Climate Change (National Biological Diversity Authority), No. G.S.R 827, Acts of Parliament, Nov. 21, 2014, (India).

resources harvested by Joint Forest Management Committee (JFMC)/ Forest dweller/s Tribal cultivator/ Gram Sabha, would need to apply to the NBA in Form-I of the Biological Diversity Rules, 2004 accompanied with a fee of ten thousand rupees in the form of a cheque or demand draft drawn in favour of the Authority or to the State Biodiversity Board (SBB), in such form as may be prescribed by the SBB, as the case may be, along with Form 'A' annexed to these regulations.[34]

After the application is submitted to the NBA or SBB, they can enter into a Benefit Sharing Agreement with the applicant if they are satisfied with the application. In such instances, entering into the Benefit Sharing Agreement by the NBA or SBB with the applicant would be deemed to be the grant of approval for the access to the biological resource. This access is in relation to commercial utilization, bio-survey and bio-utilization for commercial utilization.[35]

Procedure for transfer of results of research relating to biological resources If a person intends to transfer the results of research relating to biological resources that occur in or is obtained from India to persons who are not citizens of India, are non-residents or a body corporate/association/organization not incorporated or registered in India or which is incorporated but has any non-Indian participation in its share capital or management, has to apply to the NBA. The application has to be made in Form II of the Biological Diversity Rules, 2004 accompanied by a fee of five thousand rupees in the form of a Bank draft or Cheque drawn in favour of the Authority. The evidence has to be provided to the NBA by the applicant for access to the bio resource and AK involved in research.[36] Every application received by the NBA should be decided upon by the Authority as far as possible within a period of three months from the receipt of the same.[37]

34 Section 2(1), Guidelines on Access to Biological Resources and Associated Knowledge and Benefits Sharing. Regulations 2014, Ministry of Environment, Forests And Climate Change (National Biological Diversity Authority), Nov. 21, 2014, No G.S.R 827, Acts Of Parliament, 2014, (India).

35 Section 2(2), Guidelines on Access to Biological Resources and Associated Knowledge and Benefits Sharing Regulations, 2014, Ministry of Environment, Forests And Climate Change (National Biological Diversity Authority), No G.S.R 827, Act Of Parliament, Nov. 21, 2014.

36 Rule 17(1) & 17(2), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament, 2004, (India).

37 Rule 17(3), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament, 2004, (India).

If the NBA is satisfied with the application, it can enter into a Benefit Sharing Agreement with the applicant which would be deemed as the grant of approval.[38] If the Authority does not approve an application, it has to record the reasons for it in writing.[39]

Procedure for obtaining Intellectual Property Rights (IPR)

Persons who intend to obtain any IPR in or outside India for any invention that is based on any research or information on any biological resource that is obtained in India will have to make an application to the NBA in Form III of the BD Rules, 2004 accompanied by a fee of five hundred rupees.[40] Persons who are not citizens, are non-residents or body corporates that are not incorporated /registered in India or are having any non-Indian participation have to provide evidence of approval from the NBA for access of the bio resource or AK used in the research leading to the invention.[41]The NBA after appraising the application and collecting any additional information that may be required would grant the approval on the basis of merit within a period of 3 months as far as possible from the receipt of the application.[42] The Authority must record the reasons in case of rejection of the application and must give an opportunity of hearing to the applicant before passing the order for rejection.[43]

But persons applying for any right under the Protection of Plant Varieties and Farmers' Rights Act, 2001 (53 of 2001) shall be exempted for making an application to the NBA.[44]

38 Rule 17(4) & 17(5), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament, 2004, (India).

39 Rule 17(6), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament, 2004, (India).

40 Rule 18(1) & Rule 18(2), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament,2004, (India).

41 Section 8, Guidelines on Access to Biological Resources and Associated Knowledge and Benefits Sharing Regulations, 2014, No. 612, Acts Of Parliament, Nov. 21, 2014, (India).

42 Rule 18(3), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament, 2004, (India).

43 Rule18(6), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament, 2004, (India).

44 Section 8, Guidelines on Access to Biological Resources and Associated Knowledge and Benefits Sharing Regulations, 2014, No. 612, Acts Of Parliament, Nov. 21, 2014, (India).

Procedure for transfer of accessed biological resource and/ or associated knowledge to third party for research/ commercial utilization

If a person intends to transfer the bio resources and/or AK which has earlier been given access to by the NBA to a third party for commercial utilization or for research would have to apply to the NBA in Form IV of the BD Rules 2004 accompanied by a fee of ten thousand rupees in the form of Bank draft or cheque drawn in favour of the Authority.[45]The Authority shall after collecting any additional information, decide upon the application as far as possible within a period of six months of receipt of the same.[46]The approval to access shall be in the form of a written agreement duly signed by the authorized officer of the Authority and the applicant.[47]

1.4.1.2 Revocation of access or approval

The NBA[48]or SBBs[49] may either on the basis of any complaint or suo moto withdraw the approval granted for access and revoke the written agreement due to certain conditions, such as when the person who has been granted approval fails to comply with the terms of the agreement or conditions of access granted.

The approval can be revoked also on account of public interest or for protection of environment and conservation of biological diversity.[50] The Authority, under the BD Rules is required to send a copy of every order of revocation issued by it to the concerned State Biodiversity Board and the Biodiversity Management Committees for prohibiting the access and also for assessing the damage, if any caused and in order to take steps to recover the damage.[51]

45 Rule 19(1) & 19(2), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament,2004, (India).

46 Rule 19(3), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament,2004, (India).

47 Rule 19(5), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament,2004, (India).

48 Section 11, 12, Guidelines on Access to Biological Resources and Associated Knowledge and Benefits Sharing Regulations, 2014, No. 612, Acts of Parliament, Nov. 21, 2014, (India).

49 Section 16, Karnataka Biological Diversity Rules, 2005, No. 151 ENV, Acts of Parliament, 2005, (India).

50 Rule 15(1), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament,2004, (India).

51 Rule 15(2), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament,2004, (India).

1.4.1.3 Appeals by the persons aggrieved by any determination of benefit sharing

Any person who is aggrieved by the determination of benefit sharing or order made, on or after the commencement of the National Green Tribunal Act, 2010, by the National Biodiversity Authority or a State Biodiversity Board under the provisions of the Biological Diversity Act, 2002, may, within a period of thirty days from the date on which the order or decision or direction or determination is communicated to him, prefer an appeal to the National Green Tribunal. The Tribunal may, if it is satisfied that the appellant was prevented by sufficient cause from filing the appeal within the said period, allow it to be filed within a further period not exceeding sixty days.[52]

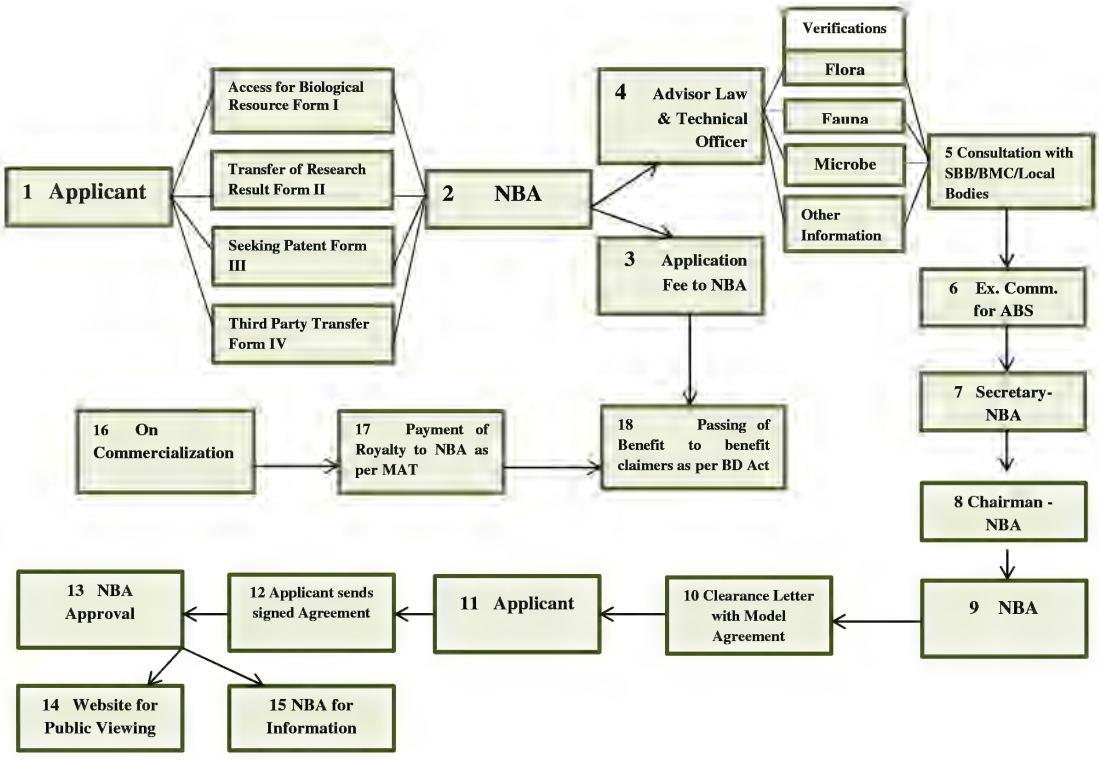
1.4.1.4 Penalties

According to the Biological Diversity Act, 2002, a person who contravenes or abets the contravention of provisions that deals with the undertaking of Biological Diversity related activities[53], transfer of results of research[54] and applying for intellectual property rights[55] without approval of National Biodiversity Authority, shall be punishable with imprisonment for a term which may extend to five years, or with fine which may extend to ten lakh rupees.[56] In cases where the damage caused exceeds 10, 00,000 rupees, the fine may be commensurate with the damage caused, or with both.[57]

Persons who contravene or abets the contravention of provisions that deals with prior intimation to be given to the State Biodiversity Board for obtaining biological resource for certain purposes[58]or any orders passed by the State Biodiversity Board under Section 24(1) of the BD Act, 2002 are punishable with imprisonment for a term which may extend to three years, or with fine which may extend to five lakh rupees, or with both.[59]

52 Section 16(j), The National Green Tribunal Act, 2010, No. 19, Acts of Parliament, 2010, (India).
53 Section 3, The Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).
54 Section 4, The Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).
55 Section 6, The Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).
56 Section 55(1), The Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).
57 *Id.*
58 Section 7, The Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).
59 Section 55(2), The Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).

The ABS Process in India



1.5 ABS and Biological Diversity in Practice

The National Biodiversity Authority was established under Chapter III of the BD Act, 2002 by the Central Government in 2003 to implement India's BD Act (2002). The NBA is a Statutory Body and it performs facilitative, regulatory and advisory functions for the Government of India on issues of conservation, sustainable use of biological resources and fair and equitable sharing of benefits arising out of the use of biological resources.

India ratified the Nagoya Protocol in 2014. However, the domestic legislation containing provisions for Access to Biological and Genetic Resources and sharing the equitable benefits which arise therefrom was already present in 2002.

The role of the NBA as established under the BD Act is to regulate access of biological resources and/or associated knowledge occurring in or obtained from India and to provide for conservation, sustainable use of biological diversity by ensuring equitable sharing of benefits arising from its access/utilization/transfer.

Receipt of Applications under different categories

Form	Category	Applications Received since 2004
Form I	Access to biological resources and /or associated knowledge for research/commercial utilization	**395**
Form II	Transferring results of research for monetary consideration or otherwise	**51**
Form III	Seeking no objection to obtain Intellectual Property Rights	**1575**
Form IV	Third Party Transfer of accessed biological resources and/or associated knowledge	**82**
Form B	Conducting non-commercial research for emergency purpose outside India by Indian researchers/ government institutions using biological resources	**67**
	Not applied in prescribed form and fee	**13**
Total		**2183**

Source: NBA, Total Applications Received as of 31-03-2018

As of 31 March 2016, all 29 States in India have established SBBs but BMCs which have been facilitated to protect the loss of genetic and biological resources have been inactive or non-functional in quite a few States. The NBA's website[60] as of 2018 listed 62,502 BMCs across all states and union territories in India. But neither the NBA nor SBB officials deny the huge challenges that they face in trying to operationalise BMCs as per the law. They admit that the numbers on paper do not imply that all BMCs are desirably functional or adequately empowered.[61] Since its inception, NBA has received 1758 applications from

60 (Jan ,28.2018), http://nbaindia. org.

61 Biological Diversity Management Committees, Lost in Numbers Kanchi Kohli, Shalini Bhutani, Economic & Political Weekly, April 19, 2014 Vol XlIX no 16. (Dec,09,2017), http://www.kalpavriksh.org/images/CCCBD/BMC%20Lost%20in%20Numbers_EPW_16%20April_2014.pdf.

different stakeholders. Even though the number of applications received in the past few years has been steadily increasing, the number of Applications still appears to be quite low for 15 years of the Authority functioning; therefore it is possible that a substantial chunk of access is still taking place without approvals.[62]

Recently there have been cases in the Bombay High Court[63] and the Uttrakhand High Court[64] where loss of Biological Diversity and the hasty management of the State and Central authorities have been highlighted. Such issues and challenges in the functioning of the various Authorities under the BD Act would be brought forth in the case studies in the next chapters. Appropriate suggestions must be found in order to construct a strengthened Biological Diversity regime which would ensure better conservation of biological resources and make the ABS mechanism more efficacious.

Did You Know?

Kerala is held up as the first state to have BMCs in all its 978 village panchayats, 60 municipalities, and five corporations

****

62 Kohli, K. & Bhutani, S (2013). THE BALANCING ACT: Experiences with Access and Benefit Sharing under India's Biological Diversity Regime. Kalpavriksha and Swissaid, India.

63 Central India Ayush Drugs Manufacturers Association & Ors. v. State of Maharashtra, W.P No. 6360/2015.

64 M/s Vishwanath & Ors. v. State of Uttarakhand, Writ Petition No.1425 of 2016.

AUTHORITIES UNDER THE BD ACT: NBA, SBBs AND BMCs*

2

2.1 The National Biodiversity Authority

The NBA, established under Chapter III of the Biological Diversity Act, 2002 is the authority responsible chiefly for the regulation of access to biological and genetic resources in India. To regulate access to such resources and to ensure there is no exploitation of any kind, NBA has been given certain powers and privileges to roll out conditions and procedures wherever required. The NBA also has the power to provide for penalties in case of any violation of the orders of the NBA or of the SBBs, and/or violation of any provision under the Act.

2.2 State Biodiversity Boards

The functions of the SBB, a body corporate[65] established by the State Governments under and for the purpose of the BD Act,[66] include advising the State Government on matters relating to biological diversity conservation, sustainable use of its components, and equitable sharing of the benefits.[67] The SBB is responsible for regulating the grant of approvals and requests for bio-survey, bio-utilization or commercial utilization of biological resources by Indians. It also has to perform any such function that is deemed necessary to carry out the BD Act or as is prescribed by the State Government.[68]

Under the BD Act, any citizen of India, organization, body corporate or association that is registered in the country who is intending to obtain any biological resource for commercial utilization, or bio-survey and bio-utilization for commercial utilization can do so only after giving prior intimation to the concerned SBB.[69] The SBB, on receipt of intimation for the

---

* Raagya Zadu, Research and Teaching Associate, National Law School of India University, Bengaluru.

65 Section 22(3), Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).

66 Section 22(1), Biological Diversity Act 2002, No. 18, Acts of Parliament, 2003, (India).

67 Section 23(a), Biological Diversity Act 2002, No. 18, Acts of Parliament, 2003, (India).

68 Section 23(b) & (c), Biological Diversity Act 2002, No. 18, Acts of Parliament, 2003, (India).

69 Section 24(1), Biological Diversity Act 2002, No. 18, Acts of Parliament, 2003, (India).

above purposes can prohibit or restrict any such activity after consulting with the concerned local bodies. It can do so if in its opinion the activity is detrimental to the objective of conservation and sustainable use of biological diversity or equitable sharing of benefits.[70]

Such orders can be made by the SBB only after the opportunity of being heard is given to the affected persons. The information given by the applicant in the prescribed form to the SBB would have to be kept confidential and undisclosed by the Board.[71]

2.2.1 Constitution of the National Biodiversity Authority and State Biodiversity Board

The National Biodiversity Authority according to the Act is required to have a Chairperson with the requisite qualifications who is to be appointed by the Central Government, 3 ex officio members, two of whom are representing the Ministry dealing with Environment and Forests (one of whom should be an Additional Director General of Forests or the Director General of Forests) and the other one member representing the Ministry dealing with Tribal Affairs, all of whom would be appointed by the Central Government.[72]

Seven other ex officio members are to be chosen by the Central Government representing the Ministries of Agricultural Research and Education, Biotechnology, Ocean Development, Agriculture and Cooperation, Indian Systems of Medicine and Homoeopathy, Science & Technology and Scientific and Industrial Research.[73] Five non- official members would be appointed from amongst specialists and scientists who have special knowledge of or experience in matters related to biological diversity and conservation.[74]

The State Biodiversity Boards under the BD Act, 2000 are required to consist of a Chairperson an eminent person having adequate knowledge and experience in the

70 Section 24(2), Biological Diversity Act 2002, No. 18, Acts of Parliament, 2003, (India).

71 Section 24(2) proviso & Section 24(3), Biological Diversity Act 2002, No. 18, Acts of Parliament, 2003, (India).

72 Section 8(4) (a) & (b), Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).

73 Section 8(4) (c), Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).

74 Section 8(4)(d), Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).

conservation and sustainable use of biological diversity and in matters relating to equitable sharing of benefits.[75] The Chairperson is to be appointed by the State Government.[76]

The Act states that not more than five ex officio members are to be appointed by the State Government to represent the concerned Departments of the State Government[77] and not more than five members to be appointed from amongst experts in matters relating to conservation of biological diversity, sustainable use of biological resources and equitable sharing of benefits arising out of the use of biological resources.[78]

2.2.2 Annual Reports and Budgets

The NBA[79] and the SBBs[80] are required to prepare an annual report in a prescribed form each financial year, which gives an account of its activities during the previous financial year and the Authorities are required to furnish the reports to the Central Government and State Government respectively each year before the prescribed dates and also furnish the audited copy of its accounts together with the auditor's report to the respective Governments. The NBA has to prepare a budget, maintain proper accounts and other relevant records and is also required to prepare an annual statement of account in such form as prescribed by the Central Government in consultation with the Comptroller and Auditor General of India.[81]

The Account of the NBA is audited by the Comptroller and Auditor-General of India at the intervals specified by him[82] and the SBBs[83] accounts are audited and maintained in a particular manner in consultation with the Accountant-General of the State. The accounts of NBA certified by the CAG along with the audit report are forwarded annually to the Central Government and the report is laid out before the Parliament.[84] Similarly the SBB

75 Section 22 (4) (a), Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).
76 *Id.*
77 Section 22 (4) (b), Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).
78 Section 22 (4) (c), Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).
79 Section 28, Biological Diversity Act 2002, No. 18, Acts of Parliament, 2003, (India).
80 Section 33, Biological Diversity Act 2002, No. 18, Acts of Parliament, 2003, (India).
81 Section 29(1), Biological Diversity Act 2002, No. 18, Acts of Parliament, 2003, (India).
82 Section 29(2), Biological Diversity Act 2002, No. 18, Acts of Parliament, 2003, (India)
83 Section 34, Biological Diversity Act 2002, No. 18, Acts of Parliament, 2003, (India).
84 Section 30, Biological Diversity Act 2002, No. 18, Acts of Parliament, 2003, (India).

are also required to furnish the audited copy of accounts together with auditor's report to the State Government before the prescribed date. The State Government will then lay out the annual report and auditor's report before the House of State Legislature as soon as it is received.[85]

States that have enacted and notified their State Biological Diversity Rules (As of 2016)

Sl. No.	Name of the State	Notification No.	Date of Notification
1	Andhra Pradesh	G.O.MS.No.70	21.08.2009
2	Arunachal Pradesh	G.O.No. SFRI/APBB/3/10	01.07.2011
3	Assam	G.O.No.FRN/57/2005/187	24.02.2010
4	Chhattisgarh	08-04/2011/10-02	01.06.2015
5	Gujarat	WLP/2003/1777/2009(45)/W(Part-II)	18.02.2010
6	Jharkhand	Vanyaprani-03/2005/5014	30.08.2007
7	Jammu and Kashmir	SRO-200	29.06.2015
8	Karnataka	FEE 151 ENV 2005	03.05.2006
9	Kerala	G.O.(P)No.1/2008/Envt	10.06.2008
10	Madhya Pradesh	F-1-2-2002-L VII	17.12.2004
11	Maharashtra	WLP.1004/C.R.226/F-1	10.12.2004
12	Manipur	428	05.03.2009
13	Meghalaya	FOR/57/2002/244	30.08.2010
14	Mizoram	11015/26/2010-FST	25.04.2012
15	Nagaland	FOR/WORKS-11/2004	22.09.2012
16	Odisha	10-F(TR)52/2012/22461/F&E	03.12.2012
17	Punjab	G.S.R.78/C.A.18/2003/S.63/2016	11.11.2016
18	Rajasthan	G.S.R.99	02.03.2009
19	Sikkim	504/F	14.09.2006
20	Tripura	F.8(31)A/for-WL/98/Part-ll/6919-7308	16.06.2008
21	Telangana	G.O.MS.No23	14.05.2015
22	Uttar Pradesh	570/XIV-5-2010-57/2006	09.04.2010
23	West Bengal	En/136/T-ll-7/005/2004	27.01.2006

Source: Compendium of State Biological Diversity Rules (National Biological Diversity Authority)

85 Section 34 & 35, Biological Diversity Act 2002, No. 18, Acts of Parliament, 2003, (India).

2.2.3 Appeals for Settlement of Disputes among the Biodiversity Authorities

For disputes arising between one or more State Biodiversity Boards and the National Biodiversity Authority with regard to a policy decision or the implementation of an order or direction, the parties can prefer an appeal to the Central Government, Secretary MoEF.[86] In the instance of a dispute between one or more State Biodiversity Boards, the aggrieved parties can prefer the points of dispute to the Central Government, which then will refer the same to the National Biodiversity Authority.[87]

The appellant is required to submit a Memorandum of appeal to the Central Government mentioning the facts of the case, the grounds relied upon by the appellant for preferring the appeal and the relief sought for along with the authenticated copy of the order, direction or policy decision that the appellant is aggrieved by.[88]

The Central Government after hearing the parties may dispose the appeal and may modify, vary or cancel the impugned order, direction or policy.[89] The NBA in adjudicating disputes among State Biodiversity Board is required to follow the principles of natural justice and should follow the same procedure adopted by the Central Government in adjudicating disputes as far as possible.[90]

2.2.4 Meetings of the Authority

The National Biodiversity Authority is required to meet at least four times in a year at the headquarters of the Authority or at any such place which is decided by the Chairperson of the Authority.[91] In instances where a written request is made to the Chairperson of the Authority by not less than five members of the NBA or when a direction of the Central Government is given to do so, the Chairperson is required to call a special meeting.[92]

86 Rule 23(1), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament, 2004, (India).
87 Rule 23(2), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament, 2004, (India).
88 Rule 23(3) and (4), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament, 2004, (India).
89 Rule 23(7) and (8), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament, 2004, (India).
90 Rule 23(9), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament, 2004, (India).
91 Rule 23(7) and (8), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament,2004, (India).
92 Rule 23(9), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament,2004, (India).

A notice of at least fifteen days is required to be given to the members if an ordinary meeting is being held. In case of a special meeting, a notice of at least three days along with the specifications regarding the purpose, the time and place where the meeting is to be held has to be given.[93] The meeting of the Authority is to be presided over by the Chairperson and in his absence a presiding officers has to be elected by the present members.[94]

The quorum at every meeting of the Authority would be five members and each member has one vote.[95] A decision at a meeting can be taken by a simple majority of the members present and voting and the Chairperson or the member presiding (in the Chairpersons absence).[96]The vote of the member presiding would be a second or casting vote.[97]

The Rules require that no member should bring forward any matter for consideration in the meeting without a notice of that matter being brought up, at least ten days prior to the meeting.[98] An exception to this would be if the Chairperson in his discretion would allow a member to do so.[99]

2.2.5 Removal of Members

The Central Government has the authority to remove any member from the National Biodiversity Authority who in its opinion has been adjudged as insolvent, been convicted of an offence which involves moral turpitude, has become mentally or physically incapable of acting as a member, has abused his position as to render his continuance in office detrimental to public interest or has acquired such financial or other interest as is likely to affect prejudicially his functions as a member.

2.3 Biodiversity Management Committees (BMCs)

Section 41 of the Biological Diversity Act talks about the constitution of Biodiversity Management Committees and states that every local body is required to constitute a BMC

93 Rule 10(1), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament,2004, (India).
94 Rule 10(2), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament,2004, (India).
95 Rule 10(3), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament,2004, (India).
96 Rule 10(4), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament,2004, (India).
97 Rule 10(7) and (6), Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament,2004, (India).
98 Rule 10(8) Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament,2004, (India).
99 *Id.*

within its area of jurisdiction for the purpose of promoting conservation, sustainable use and documentation of biological diversity including preservation of habitats, conservation of land races, folk varieties and cultivars, domesticated stocks and breeds of animals, microorganisms and chronicling of knowledge relating to biological diversity.[100] The constitution of the BMC must be done in accordance with Rule 22(1) of the Biological Diversity Rules, 2004. The composition of the BMC consists of a Chairperson with a tenure of 3 years and six persons nominated by the local body, of which one-third are women and 18% are Scheduled Castes / Tribes.[101]

2.3.1 Functions of BMC

Did You Know?

Dudhai village of Dehradun district was the first village to get the best Biodiversity Management Committee (BMC) in the country in 2016

Under the BD Act, 2002 wide powers are given to the BMC to promote conservation, sustainable use and documentation of biological diversity which includes the preservation of habitats, conservation of land races, folk varieties and cultivars, domesticated stocks and breeds of animals and microorganisms. It is also required to document biological resources and chronicle knowledge related to those resources.[102]

But the BD Rules of 2004 limits the role of BMCs and make the function of preparation, maintenance and validation of People's Biological Diversity Register (PBR) in consultation with the local people, as its main function. The SBBs are to guide them in carrying out this particular function.[103] The PBRs are required to contain comprehensive information on availability and knowledge of local biological resources, their medicinal use, other use or any other traditional knowledge associated with them.[104]

BMCs are to maintain a Register giving information about the details of access to biological resources and traditional knowledge granted, details of the collection fee imposed and

100 Section 41, Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).
101 Rule 22(2) Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament,2004, (India).
102 *Supra* at 98.
103 Section 22 (6) Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament,2004, (India).
104 *Id.*

details of the benefits derived and the mode of their sharing. It is required to maintain data about the local vaids and practitioners using the biological resources.[105] According to the Rules, the other main function of the BMCs is to advise on any matter referred to it by the State Biodiversity Board or National Biodiversity Authority for granting approval.

Biological Diversity Management Committees (BMCs)
As on 17/07/2017

Sl. No.	STATE	No. of BMCs
1.	Andhra Pradesh	2738
2.	Arunachal Pradesh	58
3.	Assam	205
4.	Bihar	--
5.	Chattisgarh	45
6.	Goa	112
7..	Gujarat	6900
8..	Himachal Pradesh	322
9.	Haryana	--
10	Jharkhand	569
11.	Jammu & Kashmir	--
12.	Karnataka	4,900
13.	Kerala	1034
14.	Madhya Pradesh	23,406
15.	Maharashtra	16,492
16.	Manipur	62
17.	Meghalaya	203
18.	Mizoram	222
19.	Nagaland	10
20.	Odisha	1036

105 Section 22 (7) Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament,2004, (India).

21.	Punjab	69
22.	Rajasthan	95
23.	Sikkim	27
24.	Tamil Nadu	16
25.	Telangana	2402
26.	Tripura	361
27.	Uttar Pradesh	106
28.	Uttarkhand	907
29.	West Bengal	205
	Total	**62,502**

Source: http://nbaindia.org/content/20/35/1/bmc.html

****

CASE STUDIES: ACCESS AND BENEFIT SHARING AND BIOLOGICAL DIVERSITY CONSERVATION*

3

3.1 Biological Diversity Conservation: The Initial years

Before the enactment of the BD Act in India in 2002, cases related to biological diversity mostly involved issues relating to the destruction and disregard of biodiversity in our Country. For example, in the case of *Vellore Citizens Welfare Forum v. Union of India*[106]the Court reiterated the need for all stakeholders to be mindful towards biological diversity and further conservation efforts. It stated that there should be a commitment of all citizens and the State towards the objectives of the CBD, to which India was a party. The focus of the judgment, while considering biological diversity and biological resources was on the conservation and furtherance of the principles of sustainable development.

Similarly, in another important case of *S. Jagannath v. Union of India*[107], emphasis was given to the conservation of all biological and genetic resources which the Court stated must be protected at all times. Since this judgment came prior to the Biological Diversity Act being enacted in 2002, the Court focused on the stated violations of the provisions of the Environment Protection Act, 1986 and Rules[108]as well as other environmental legislations such as the Water Act, 1974.[109] This case was regarding the ecological and social implications of commercial shrimp farming in India. It was noticed that the traditional shrimp culture system used by Indian fishermen had begun to give way to more intensive methods of shrimp culture which could produce thousands of kilograms per hectare. A large number of private companies and multi-national corporations had started to invest in shrimp farms and the issue in this case was regarding the implications of such intensive shrimp farming systems on the ecology and biological diversity of areas where it was being practiced.

---

* Raagya Zadu, Research and Teaching Associate, NLSIU Bengaluru.

106 Vellore Citizens Welfare Forum vs. Union of India & Ors, (1996) 5. SCC 647 (India).

107 S. Jagannath vs. Union of India (1997) 2 SCC 87: AIR 1997 SCC 811 (India).

108 Rule 5 (3)(d), Environment (Protection) Rules, 1986, No. S.O. 844 (E), Acts of Parliament, 1986, (India).

109 Section 25, the Water (Prevention & Control of Pollution) Act, 1974, No. 6, Acts of Parliament, 1974, (India).

The Court in this case cited various reports including the Justice Suresh Committee Report[110] and commenting on Shrimp Culture the judgment reiterated the necessity to conserve the habitat of shrimps so as to protect the particular genetic resource. It focused on aspects such as environmental impact assessments needing to take into account the social impact of the industry on different populations in the area before permission was granted to install commercial shrimp farms. The Courts using the "Precautionary Principle" and "the Polluter Pays" principles directed that no shrimp culture pond, as defined in the Coastal Zone Regulation Notification[111] could be constructed or set up within the coastal regulation zone. It also directed that an authority was required to be constituted under the Central Government according to the provisions of the Environment Protection Act, 1986[112] for ensuring the regulation of such activities in the coastal regulation zone.

3.2 Access and Benefit Sharing Case Studies

A case study that inevitably comes into picture while discussing the origins of Access and Benefit Sharing in India is that of the Kani Tribe, which is a case from the late 1980s. This case was considered to be one of the flagship cases in the arena of Access and Benefit Sharing and took place even before the mandate of the BD Act or the CBD existed. This case is a good example of how access to indigenous biological resources was handled equitably and the profits arising were shared in a bonafide manner with the tribal community, who possessed the traditional knowledge related to the particular biological resource. But there were also various criticisms with regard to the agreement that took place in this case, which went on to inform subsequent decisions on the matter of ABS in India.

3.2.1 The Kani Case of Arogyapaccha: Brief Background

The Kani Tribe of the Agasthyamalai Hills in Kerala are one of the oldest tribal communities, who have traditionally lived in the forests of the Agastya Koodam ranges. In 1987, a research team from the All India Coordinated Research Project on Ethnobiology

110 The Water (Prevention & Control of Pollution) Act, 1974, No. 6, Acts of Parliament, 1974, (India), "Expert Committee Report on Impact of Shrimp Farms Along the Coast of Tamil Nadu and Pondicherry"

111 The Coastal Regulation Zone Notification, 1991, No. S.O. 944 (E), Act of Parliament, Dec. 15, 1990, (India).

112 Section 8(3), the Environment Protection Act, 1986, No. 29, Acts of Parliament, May. 23, 1986, (India).

(AICPRE) arrived in the area inhabited by the particular tribe and sought permission from the Chief Tribesman to launch a small expedition in their territory for certain research purposes.[113] The permission was granted to the scientists and some local Kani tribals were sent on this expedition along with the research team as guides. It was during this expedition that the team discovered the unique fruit of the Arogyapacha plant (Trichopus zeylanicus) that the native tribes consumed and of the fruits medicinal qualities of improving fatigue and providing energy.

Juhi Saklani/CC-BY-SA-4.0

The tribal physicians of Kani called Plathi were considered to be the exclusive holders of the traditional medical knowledge of the tribe, which itself had a long tradition of using the plants found in the forests of the region for health purposes. The Kani tribe had a custom wherein only the Palthi had the right to transfer and disseminate their traditional knowledge on the medicinal plants. Initially, during the expedition, the Kani guides were reluctant to share the source of the fruit and with some persistence of the AICPRE team led them to the Arogyapacha plant.[114]

The term Arogya pacha in Malayalam translates into "healthful green". Samples of plant were taken back to their laboratory and after conducting phytochemical and pharmacological studies on the samples, the scientists came to the conclusion that the plant possessed certain immunity-enhancing and anti-fatigue properties.[115]

After seven years of the research on the plant, around 12 active chemical compounds were isolated and combined with certain other plants and the end result of this research project was the development of a drug called Jeevani. Jeevani which translates to "giver of life" was prepared using the leaves of the plant, and not the fruit, as was the case with the Kani tribe and their usage. The first patent with regard to this case was awarded to the Regional

113 (Dec. 17,2017), http://www.wipo.int/ipadvantage/en/details.jsp?id=2599, "Using Traditional Knowledge to Revive the Body and a Community."

114 *Id.*

115 Chaturvedi, Sachin (2007) Kani Case. A Report for GenBenefit, available at:www.uclan.ac.uk/genbenefit.

Research Laboratory, Jammu team in 1994[116] on the process for isolation of glycolipid in the Arogyappacha plant.[117] After that by TBGRI, four patents were applied for. Among them one was on the process for the herbal drug Jeevani.[118] A patent was also granted on an anti-diabetic herbal drug developed at the TBGRI in 1996.[119] Similarly, an herbal sports medicine was developed called 'Vaji' for which a patent was granted.[120] The TBGRI also received a patent for herbal medicinal components for cancer treatment from the Janakia arayalpathra root and Trichopus zeylanicus leaf.[121]

But TGBRI, though being responsible for the invention of Jeevani could not commercialize it, since it was a research institution and did not have the capacity to do so.[122]In 1996, the technology for making this drug was transferred to Arya Vaidya Pharmacy Ltd (AVP) in Coimbatore, which was one of the largest herbal pharmacies in India. The technology was transferred for a licensing fee of US$50,000 and 2 per cent royalties at ex-factory sale.[123]

The TBGRI proposed to share the benefits at a 1:1 ratio with the Kani Community, which amounted to fifty percent of the licensing fee and royalties. For this purpose, a separate trust for the Kanis, The Kerala Kani Community (Samudaya) Welfare (Kshema) Trust was registered in November 1997. This was done to regulate and direct the inflow of money received by the Kanis as benefits.[124]

116 A process for the isolation of glycilipid fraction from Trichopus zeylanicus possessing adaptogenic activity File No: 88/Del/1994, (Joint patent obtained by RRL, CSIR Jammu and TBGRI).

117 Anitha Ramanna-Pathak, Benefit Sharing: Reframing India's Policy, Fridtjof Nansen Institute, (Oct. 11, 2017), https://www.fni.no/getfile.php/134134/Filer/Publikasjoner/FNI-R0117.pdf.

118 Rajasekhran S. and George V., (1996), Patent application number 959/MAS/96 dated June 4, 1996, (India), "'A process for the preparation of a novel immune-enhancing, anti-fatigue, anti-stress and hepatoprotective herbal drug (Jeevani)' (Pushpangadan P)."

119 A process for the preparation of a Glycolipid fraction from Trichopus zelyanicus possessing adpatogenic activity, (Butani, D. K., Taggi B. S., Anand K. K., Kapil R. S., Pushpangadan P., and Rajsekhran S., 1994, Patent application number 88/Del/94).

120 958/MAS/96 dated June 4, 1996.

121 A process for the preparation of a novel herbal medicinal composition for cancer treatment from Janakia arayalpatra and Trichopus zeylanicus leaf. Awarded patent No. 193609 dated 22.09.2006.

122 *Id.*

123 (Dec. 17, 2017), http://web.worldbank.org/archive/website00297C/WEB/IMAGES/KANI.PDF.

124 New York: UNDP. Equator Initiative (2002), 'The Innovative Partnership Awards for Sustainable Development in Tropical Ecosystems'.

There were a number of legal and mostly ethical issues which were raised in this case. Some of them being:

- Whether the community was adequately represented in the Kani Trust and whether it received appropriate benefits from the commercialization of the Arogyapacha Plant and their AK.
- Whether the people for the Kani community as a whole had acquiesced to the commercialisation of their traditional knowledge, considering the fact that the community was initially reluctant to share its indigenous knowledge with the AICPRE research team.

This case arose much before India signed or ratified the CBD and is still noted for creating a model for access and benefit sharing which tried to take into regard the rights and the benefit sharing privileges of the indigenous community.

Legal and Ethical Issues Involved:[125]

This case occurred quite some time before any Biological Diversity laws had come into force in India. Therefore, in the pre-CBD/BDA context, the issues which were raised were few. They were:

First Issue: Fears were raised by the Kerala Legislative Assembly on the amount being given to the Kanis as benefits being very low, considering the huge economic potential of the manufactured drug Jeevani.

Second Issue: It was contended that the licensing of the indigenous know-how and traditional knowledge relating to the Arogyapacha plant must not have been given to the privately owned and run Arya Vaidya Pharmacy Ltd. It was proposed that it would have been better to give it to a Government Company or a Public Sector Undertaking.

Third Issue: Objections were raised by the Kerala Institute for Research, Training and Development of Scheduled Caste and Scheduled Tribes, which stated that the Kanis had in overall received an unfair deal. The Institute specified that the Kani's were no longer a unified community that stayed together. Their population was dispersed, therefore the

125 Chaturvedi, Sachin (2007) Kani Case, Report for GenBenefit, (Oct. 11, 2017), https://www.uclan.ac.uk/research/explore/projects/assets/cpe_genbe neift_kani_case.pdf.

agreement with the tribe had been done only with those who were found available at that time and those few tribes' people did not represent the whole community. The Panchayat Head of the village, which consisted of a number of Kani people wrote to the Chief Minister of Kerala stating the same. He also expressed his concern regarding the area where the plant was cultivated and that it may be affected due to its commercialization.

But despite this letter being sent in October 1995, the TBGRI, under the Chairmanship of Kerala's Chief Minister, struck an agreement of Transfer of Technology with Arya Vaidya Pharmacy Ltd. and decided to transfer the technology of manufacturing Jeevani for a consolidated sum of US$50,000 and amount made on 2 percent of the future drug sales.

Fourth Issue: The drug company ran into manufacturing issues due to lack of raw material since the Forest Department (FD) in Kerala refused to permit the collection of leaves for the drug's manufacture. It stated that the area where the Trichopus zeylanicus plants were naturally found was within the Core area of the Reserved Forest and cited concerns of excessive leaf-plucking that may cause the plant to become rare. TBGRI in response to the FD's action proposed an Integrated Tribal Development Program which would aim at aiding the cultivation of the plant and stated that only the leaves of the plant would be purchased without destroying the plant itself. They proposed that this was a sustainable solution to the issues posed by the FD regarding the plant becoming rare and also stated that additional benefit that would be received by the Kani community from the sale of the plant.[126]

Core Outcomes:[127]

The Kani case is an example illustrating the complexities of a benefit sharing agreement. This case came into existence before a legal mandate on such issues existed and also earned the criticism of various stakeholders in the process. The criticism regarding the transfer of technical and technological know-how to a private company instead of a government owned company was countered by TBGRI with the argument that no PSU had Good Manufacturing Processes for the production of Jeevani. Throughout the process of

126 *Id.*

127 Chaturvedi, Sachin (2007) Kani Case, Report for GenBenefit, https://www.uclan.ac.uk/research/explore/projects/assets/cpe_genbe neift_kani_case.pdf. (Oct. 11, 2017).

determining the equation of benefit-sharing, it was witnessed that the 50-50 division of profit earned between the Institute and the Community was the safest thing to do. And instead of giving the monetary amount directly to the Community, a Trust had been registered that was responsible for distributing the money equally among the community.

In 2000, NutriScience Innovations LLC, a US-based supplier of nutritional and functional food ingredients applied for a trademark on Jeevani in the United States Patent and Trademark Office and had started the sale of the product without informing TBGRI.[128]A dispute ensued between TBGRI and NutriScience which led to the US Company abandoning its trademark application. Another such incident with regard to the trademark on Jeevani happened in the same year in the United States, where a similar company, Great Earth Inc. started to market an energy drink that had the same ingredients as that of Jeevani. The issue in this instance was that of TBGRIs inability to challenge this move, since it had not filed for any trademark on Jeevani in the United States Patent and Trademark Office and this technically meant that there was no Intellectual Property infringement with regard to the plant in the United States, where many companies now have started to sell products containing Jeevani. The plant materials for such products are now being purchased from sources other than AVP. The conclusion here is that a lot of commercially viable business is now being done based on this plant product with no benefits from such business coming to the Kani Tribe members. The recourse of contesting for a trademark is also very difficult since the cost of such a contestation is very high in the United States.[129]

3.2.2 The Monsanto India Limited Case: A Brief Background

This case was regarding the Genetic Manipulation of plants and the creation of hybrid seeds which claimed to have ill effects on not only the existing ecology, but also on the lives of the farmers who used these seeds for cultivation. Monsanto India Limited was setup in India in the early 1970s, which was much before any legal framework for Biological Diversity or environmental protection existed. The American giant is today well known for its efficiency in biotechnology and manufacturing Genetically Modified Crops. While gaining entry into the Indian Market in 1988, soon after the World Bank sanctioned a

128 (Dec. 18, 2017), http://web.worldbank.org/archive/website00297C/WEB/IMAGES/KANI.PDF.
129 *Id.*

loan of $150 million to deregulate the Indian Seed Industry, this company took interest in the vast agricultural sector that was present in India.[130]

Their first product was the Bt. Cotton seed, which produced a certain pesticide which made the cotton Bollworm resistant. Monsanto however ran into certain legal and social issues with regard to their seed prices and also because of their strict seed usage terms and conditions. They charged around Rs. 900 for 450gms of seed and disallowed farmers to reuse the seeds in the second year of sowing. It had been reported widely that such practices of the Company played a huge part in the farmer debts and suicides that had occurred in the State of Maharashtra.[131]

In 2007, the Andhra Pradesh State Biodiversity Board complained to the Board of Monsanto and later to the National Biodiversity Authority regarding the bacteria gene information used by the company to develop the Bollguard-II cotton seed. This bacteria gene information was claimed by the Board to be indigenous to the State of Andhra Pradesh and demanded that the company should give a certain amount of royalty to the State of Andhra Pradesh for the same.[132]

In the recent years, Bio-Piracy cases have also been filed by the NBA against MahycoMonsanto for the genetically modified Bt. Brinjal, wherein the company accessed sixteen local varieties of Brinjal in the states of Karnataka, Tamil Nadu and others to develop a GM variety of the vegetable.

The Monsanto India case is important in order to discuss the issue of the effect of the legal framework and Biological Diversity procedures over large business houses such as Monsanto. The Monsanto Case was originally an issue of Intellectual Property Rights, namely that

130 (Dec. 17, 2017,) The Privatisation of Seeds, https://en.reset.org/knowledge/privatisation-seeds.

131 (Dec. 17, 2017,) http://www.thehindu.com/opinion/op-ed/The-battle-over-Bt-cotton/article15424211.ece.

132 Dr Vandana Shiva, How Monsanto Wrote and Broke Laws to Enter India, (Dec. 17, 2017) http://vandanashiva.com/?p=260.

of patent and further a socio-legal issue of the company misusing its dominant position in the market. This position was used for unfair pricing of seeds which was claimed to be causing excessive debt and an ensuing suicide crisis among farmers in India. This even forced the Competition Commission of India to enforce a price-capping on the Company's product. The ABS issue in this particular case was not considered to be of an urgent nature. Environmental concerns however were limited to the extent of Genetically Modified plants feasibility to be introduced in the market and the prospective effects of the GM varieties on the native/indigenous variety.[133]

Legal Claims against Monsanto: The Bt. Brinjal Case[134]

The charge of bio piracy against Monsanto in the case of its genetically engineered Brinjal, which used 16 indigenous varieties of the vegetable, was taken up quite seriously under the BD Act, 2002. The NBA passed a resolution in this regard in the year 2011.[135] Certain legal procedures were agreed to be followed against Monsanto, Maharashtra Hybrid Seeds Company [(Mahyco) 26 per cent of which is held by Monsanto], University of Agricultural Sciences (UAS) and Sathguru Management Consultants Limited. The NBA decision charged these three entities with violation of the Biological Diversity Act, 2002 which included the violation of the provision for "accessing and using the local brinjal varieties for development of Bt brinjal without prior approval of the competent authorities".[136] The action taken was in pursuance of a complaint made by a Non-Governmental Organisation, Environmental Support Group (ESG) in Bengaluru,

133 Chasing Benefits, Issues on Access to Genetic Resources and Traditional Knowledge with reference to India's Biological Diversity Regime A post-Nagoya Protocol view on Access and Benefit Sharing, Kanchi Kohli and Shalini Bhutani, (Oct. 10, 2017), http://awsassets.wwfindia.org/downloads/ chasing_benefits.pdf.

134 Aruna Rodrigues v. Union of India (2012) 5 SCC 331 (India).

135 Walid Abdelgawad. The Bt Brinjal Case: The First Legal Action Against Monsanto and Its Indian Collaborators for Biopiracy. Biotechnology Law Report, Mary Ann Liebert, 2012, 31 (2), 136 (Oct. 13, 2017), <http://online.liebertpub.com/doi/abs/10.1089/blr.2012.9926>. <10.1089/blr.2012.9926>. <hal-01131401>.

136 (Oct. 13, 2017), www.nbaindia.org/docs/20th_Proceedings_10_ 08_2011.pdf.

Karnataka. The State Biological Diversity Board informed NBA on 28 May 2011 that six local varieties for development of Bt. brinjal were accessed in the State by the particular companies without prior approval from State Biodiversity Board/ National Biodiversity Authority.[137]

First Issue: The violation of Sections 3 and 4 of the BD Act- Section 3 requires non-Indian individuals or entities (body corporates/associations/organizations) having non-Indian participation (in its share capital/management) who seek access to bio resources to obtain the prior approval of the NBA. The same requirement of prior approval of the NBA is stated in Section 4 for transfer of any research result related to biological resources to such entities. An exemption is provided by Section 5 (1), which holds that the prior approval of NBA is not required in the case of a "collaborative research project" involving Indian and non-Indian entities and institutions under the conditions that such project (1) "be approved by the Central Government," and ii) "conform to the policy guidelines issued by the Central Government."[138]

After examining the subject matter, NBA concluded that "the said research project seemed prima facie to fall outside the scope of guidelines issued by the Central Government." As a result, the Authority stated that the three parties of the sublicense agreement had no right to an exemption under Section 5 (1) and thus were required to have obtained NBAs approval.

Second Issue: The NGO, ESG had accused the contracting parties in this case of failing to give prior notice to the Karnataka State Biodiversity Board (KBB). This is mandatory under Section 7 of the BD Act in order to access biological resources "for commercial utilization." This allegation would have been relevant only if there was a "commercial utilization" of Bt eggplant technology. This may not have been the case for the sublicense agreement, which prima facie aimed to transfer technology to UAS-Dharwad without commercial uses. The agreement provided that Mahyco, as a sublicensor, "had agreed to provide access to the technology without any payment for such access." It granted to UAS-Dharwad "a royalty-fee, not-for-profit sublicense" so as to develop or distribute, other

137 Letter from Karnataka Biological Diversity Board to The Secretary, National Biological Diversity Authority, dated 28 May 2011; (Oct. 13, 2017), http://www.esgindia.org/sites/default/files/campaigns/brinjal/press/b-bt-brinjal-kbb-nba-biopiracy-submissio.pdf.

138 Section 5(3) of the Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).

than by sale, licensed domestic eggplant products to resource-constrained farmers. Thus the sublicense agreement, it was contended did not provide for commercial utilization of Bt. eggplant technology.[139]

Third Issue: A violation of Section 41 (2) of the BD Act was contended by ESG. This section states that the "NBA and the State Biodiversity Board shall consult the Biodiversity Management Committee while taking any decision relating to the use of biological resource and knowledge associated with such resources occurring within the territorial jurisdiction of the Biodiversity Management Committee." The word shall here indicates the compulsory nature of the requirement to consult which was not been followed in this case.

Fourth Issue: The contracting parties in this case were accused of accessing six local varieties of Brinjal without the permission of the competent authorities. This was contended to have deprived the local communities of their right (recognized by the Biological Diversity Act) to equitable benefit sharing arising out of commercial use of these resources. This allegation is linked to the first issue and requires that there be a prior violation of the rule related to the formal permission.[140]

By adopting this decision, the NBA issued a firm message to non-Indian entities with foreign participation and their Indians collaborators, indicating that the practice of bio-piracy from now on in India would be prosecuted legally.

Current Legal Status of Monsanto's Activities:

In 2016, a moratorium was imposed by the MoEF on the release of the transgenic brinjal hybrid in India. The then Environment Minister, Sh. Jairam Ramesh commented that this moratorium period was to be used to incorporate newer scientific studies and testing procedures. He stated that it was important to build and regain public confidence in GM food, which was to be taken up during the halted period.[141] There also were suggestions for the moratorium period to be used for developing a separate regulatory authority and simultaneously hold a parliamentary debate on private investment in agricultural biotechnology.[142]

139 *Supra at* 135.

140 *Id.*

141 (Oct. 20, 2017), http://www.thehindu.com/news/national/Bt-Brinjal-Note-by-Ministry-of Environment-and-Forests/article16578296.ece.

142 (Oct. 20,2017), http://www.thehindu.com/news/national/Bt-Brinjal-Note-by-Ministry-ofEnvironment-and-Forests/article16578296.ece

Monsanto recently in 2016 sub-licensed Bollguard I and II, Bt Technology to 49 seed companies. This technology was granted an Indian patent in 2008.[143] In 2015, Monsanto terminated one such sub-licence agreement with a particular company, Nuzhiveedu Seeds.[144]Monsanto alleged that the Indian company had pending 'trait value' of Rs. 165 crore that was due to be paid. In 2015 the maximum royalty fee on cotton seeds or 'trait value' was brought into regulation by the Government which set up a committee to execute its cotton price control. An order to control the prices of cotton was passed by the Agriculture Ministry in 2016 after similar such price control orders were passed by states such as Maharashtra, Andhra Pradesh and Telangana. This was done by the Ministry with the aim of bringing about uniformity in Bt. cotton seed prices as well as an increase in their affordability. This order has been challenged by Monsanto in a separate case.[145]

With regard to Nuziveedu, Monsanto had filed a case against the company for continuing sale of seeds using its patented Bt technology even after the termination of the sub-license agreement.[146] The Delhi High Court in 2017 ruled in favour of Nuziveedu Seeds Ltd, the Indian sub-licensee. The termination of the sub-licence was held to be invalid and illegal and the Court also held that the earlier agreement for the use of Monsantos Bt technology between the two parties would prevail.[147]

3.2.3 Neem, Turmeric and Basmati Patent Case

These three cases, which took place at three different points of time, are considered to be some of the most fundamental cases relating to biological resources, indigenous and traditional knowledge.

143 (Oct. 20, 2017), http://indianexpress.com/article/india/gm-technology-trait-fee-war-betweenmonsanto-and-indian-seed-firms-intensifies-4439264/.

144 (Oct. 20, 2017), http://www.business-standard.com/article/companies/high-court-stays-restorationof-monsanto-agreements-with-nuziveedu-seeds-117041000803_1.html.

145 (Oct. 20, 2017), http://www.livemint.com/Politics/OcprBoleBmUfGAaNgi2gJO/Centre-sets-upcommittee-to-fix-Bt-cotton-seed-prices.html.

146 *Id.*

147 Madhavi Sally, Delhi High Court favours Nuziveedu seeds in Monsanto's case, The Economic Times (March 29, 2017); (14.10.2017), http://economictimes.indiatimes.com/news/economy/agriculture/delhi-high-court-favours-nuziveedu-seeds-in-monsantos-case/articleshow/57882172.cms.

Traditional Knowledge, as considered by the Convention on Biological Diversity and the Nagoya Protocol, is a living accumulation of knowledge which gets passed on from one generation to another and forms a part of the very identity of communities and cultural groups, which must be protected by Intellectual Property rights at all times. The use of intellectual property systems to legitimize the exclusive ownership and control over biological resources and biological products and processes that have been used over centuries in non-industrialized culture can be defined as "bio-piracy". In other words bio-piracy means misappropriation of traditional knowledge with an intention to gain patent protection over that knowledge.[148]

3.2.3.1 The Neem Patent Case

Filed by W.R Grace and Department of Agriculture, USA, this patent was on the process of controlling fungi on plants with the aid of a foliar fungicide comprising solvent extracted neem oil and was granted by the European Patent Office (EPO) in the year 1991. These neem oil pesticides exhibited the ability to prevent fungal growth and kill fungal pests at various life stages.[149]

Since the 1980s, many neem related process and products have been patented in Japan, USA and in European countries.[150] The first US patent was obtained by Terumo Corporation in 1983 for its therapeutic preparation from the neem bark.[151] In 1985, Robert Larson from the USDA (United States Department of Agriculture) obtained a patent for his preparation of neem seed extract and the Environmental Protection Agency (EPA) approved this product for use in the US market. In 1988, Robert Larson sold the patent on an extraction process to the US Company, W.R. Grace & Co (presently known as Certis).[152] Having gathered their patents and clearance from the EPA, four years later, Grace commercialized its product by setting up manufacturing plant in collaboration with P.J. Margo Pvt. Ltd in India and

148 Saipriya Balasubhramaniam India: Traditional Knowledge and Patent Issues: An Overview of Turmeric, Basmati, Neem Cases (Apr. 18, 2017); (Oct. 14, 2017), http://www.mondaq.com/india/x/586384/Patent/Traditional+Knowledge+And+Patent+Issues+An+Overview+Of+Turmeric+Basmati+Neem+Cases.

149 CHANDRA, R. (2010). Knowledge as property: issues in the moral grounding of intellectual property rights. New Delhi, Oxford University Press.

150 *Id.*

151 (Dec. 27, 2017), http://www.neemfoundation.org/about-neem/patent-on-neem/.

152 *Id.*

continued to file patents from their own research in USA and other parts of world.[153]Aside from Grace, neem based pesticides were also marketed by another company, AgriDyne Technologies Inc., USA. The market competition between these two companies was intense. In 1994, Grace accused AgriDyne of a non-exclusive royalty-bearing license. During this period in India, a large number of companies also were developing stabilized neem products and were making them commercially available as well.[154]


J.M.Garg CC-BY-3.0

A legal objection was filed by a New Delhi based research foundation by the name of Research Foundation for Science, Technology and Ecology, in co-operation with the International Federation of Organic Agriculture Movements and Magda Aelvoet, former green Member of the European Parliament.[155] Dr. Vandana Shiva, a prominent environmental activist called this instance as "pure and simple piracy". The oil from neem has been used traditionally by farmers to prevent fungus. It was neither a novel idea nor was it invented.[156]

The EPO identified the lack of novelty, inventive steps and possibly a relevant prior art in this particular matter and thus revoked the patent. Apart from this, several US patents were recently rejected on Neem-based emulsions and solutions."[157]

3.2.3.2 The Turmeric Patent Case:

In 1995, two expatriate Indians at the University of Mississippi Medical Centre were granted a U.S. Patent on Use of Turmeric in Wound Healing. The claim covered "a method of promoting

153 Ethnobotany of India, Volume 5: The Indo-Gangetic Region and Central India. T. Pullaiah, K. V. Krishnamurthy, Bir Bahadur.

154 *Supra at* 151.

155 *Id.*

156 India Wins Neem Patent Case, Reported in The Hindu, Wednesday, (Mar. 9, 2005); (Nov. 14, 2017), http://www.thehindu.com/2005/03/09/stories/2005030902381300.htm.

157 Saipriya Balasubramania, Traditional Knowledge and Patent Issues: An Overview of Turmeric, Basmati, Neem Cases. (Dec. 27, 2017), http://www.mondaq.com/india/x/586384/Patent/Traditional+Knowledge+And+Patent+Issues+An+Overview+Of+Turmeric+Basmati+Neem+Cases.

healing of a wound by administering turmeric to a patient afflicted with wound".[158] In 1996, The Council of Scientific & Industrial Research (CSIR), India, New Delhi requested the US Patent and Trademarks Office to revoke the patent on the grounds of existing of prior art. CSIR did not succeed in proving that many Indians already use turmeric for wound healing although turmeric was known to every Indian household for ages.[159]

Fortunately, it could provide documentary evidence of traditional knowledge including ancient Sanskrit text and a paper published in 1953 in the Journal of the Indian Medical Association that contained relevant evidence of the same. The patent was revoked in 1997, after it was ascertained that there was no novelty.[160]

The United States Patent and Trademark Office, which had granted this patent initially, after looking into the evidence provided by the Indian Council of Scientific and Industrial Research (CSIR), revoked the patent and stated that the use of turmeric and its usage is long engrafted into the traditional and indigenous knowledge of ancient Indians and it must therefore be respected and protected.

This case highlighted the inadequate and insufficient documentation of Indian Traditional Knowledge, because of which many such traditional practices and usages were being subjected to exploitation. It also pointed to the inefficiency of the Indian Patent Offices in the granting of patents wherein an average of five to six years is taken by it to grant one. Due to the delay in granting of patents in India, other persons in the meantime are successful in obtaining patents on such practices and usages from other jurisdictions.

3.2.3.3 The Case of Patent on Basmati Rice

Originating in the India (earlier, inclusive of Pakistan), the Basmati rice fell into sudden controversy when the American company, RiceTec, in 1997 patented some types of

158 (Oct. 14, 2017) http://lifeintelect.com/blog/2013/10/24/traditional-knowledge-and-intellectualproperty-case-of-turmeric.

159 *Id.*

160 *Id.*

this rice and termed it as 'American Basmati'.[161] The patent was objected by two Indian Organisations, The Centre for Food Safety and The Research Foundation for Science, Technology and Ecology. The Council for Scientific and Industrial Research had also objected to this patent. Once the evidence was readied, the Indian government filed an objection and challenged the patent in 2000. According to Dr Vandana Shiva, a leading environmental activist, the main aim for obtaining the patent by RiceTec Inc. was to fool the consumers into believing that there was no difference between spurious Basmati and real Basmati.[162]

Did You Know?

Prior Art in Patent Law refers to any evidence that your invention is already known. It is when someone, somewhere, sometime previously has described or shown or made something that contains a use of technology that is very similar to the said invention.

Moreover, she also claims that the "theft involved in the Basmati patent was threefold: a theft of collective intellectual and Biological Diversity heritage on Indian farmers, a theft from Indian traders and exporters whose markets were being stolen by RiceTec Inc., and finally a deception of consumers since RiceTec was using a stolen name Basmati for rice that was derived from Indian rice but not grown in India, and hence are not of the same quality.[163]Eventually, RiceTec took back 15 out of the 20 claims it had made in its patent and the decision finally was made in India's favour.[164]

Although this case has a more significant purpose in Intellectual Property Rights Law, it has also gained prominence as one of the earliest cases relating to the issue of bio-piracy, biological resources, their genetic information and customary practices relating to cultivation and heritage. One of the steps successfully taken by India in this regard is

161 Denis Vidal. In search of 'Basmatisthan' : agro-nationalism and globalisation. Jackie Assayag and C.J. Fuller (eds). Globalizing India : perspectives from below, Anthem Press, 2005. <ird-0129319>.

162 A Study of the Basmati Case (India-Us Basmati Rice Dispute): Geographical Indication Perspective, (Oct. 21, 2017). http://cabweb01.uncw.edu/people/evensp/classes/BLA361/Intl%20Law/Cases/ Study%20of%20Basmati%20Rice%20Intl%20Case.rtrn.pdf.

163 *Id.*

164 (Dec. 27, 2017), http://www.nytimes.com/2001/08/25/business/india-us-fight-on-basmati-rice-mostly-settled.html.

the development of Traditional Knowledge Digital Library (TKDL), which secures all available aspects of Traditional Knowledge in one place, thus providing a ready reference in situations where such information is required.[165]

3.2.4 The Pepsico Seaweed Case

The Seaweed case is one of the most popular cases cited by the National Biodiversity Authority to illustrate how benefits have reached the local communities from the utilization of bio-resources. However, this case also highlights the inadequate Environmental Impact Assessment (EIA) methodologies adopted while granting permissions for commercial activities.[166] In this case, the company Pepsico India Holdings was contract farming for seaweed (Kappaphycus alvarezi) in the state of Tamil Nadu which was further being exported countries such as Malaysia, Philippines etc.[167]

This seaweed was being cultivated off the Gulf of Mannar in four districts of Ramanathapuram, Thoothukudi, Pudukkottai and Thanjavur in Tamil Nadu. As per the ABS agreement, the exporter paid the NBA 5% of FoB (Free on Board) costs of the seaweed amounting to around 3.9 million rupees. Since 2007, Pepsico India and AquaAgri have contributed over Rs 37 lakh to NBA's National Biodiversity Fund, making it the largest single royalty payment to the NBA.[168]The fund consists of Rs 97 lakh, of which royalties account for Rs 43 lakh and application fees make up the rest. The fund money is meant to be used for conservation of biological resources and the socio-economic development of areas rich in biological diversity.[169]

165 Protecting India's Traditional Knowledge, (Dec. 27, 2017), http://www.wipo.int/wipo_magazine/en/2011/03/article_0002.html.

166 Curious case of seaweed, (Dec. 27, 2017), http://www.downtoearth.org.in/coverage/curious-case-ofseaweed-39207.

167 Pepsi forays into seaweed farming, (Dec. 27, 2017), http://www.thehindubusinessline.com/2002/08/02/stories/2002080202430100.html.

168 *Supra at* 166.

169 *Id.*

It has been reported though that the biggest inflow of money for benefit-sharing has remained unutilised. The Managing Director at Aquaagri Processing Pvt Ltd. which was set up in 2008 to primarily buyout Pepsico India Holding's seaweed business in Tamil Nadu, in an interview stated that the money to the benefit sharers was still stuck in procedure.[170]

What needs to be focused on however is the nature of the operation being conducted by Pepsico/AquAgri and the biological resource of seaweed. The operation of Pepsico/AquAgri was that of contract farming of seaweed, which was initially started as a corporate social responsibility initiative by Pepsico. The seaweed was grown by the fishing community of the above districts in an area leased from the Tamil Nadu Port Authority. So the question that arises is as to why there was even a requirement for NBAs approval for the cultivation and export of this seaweed. This is because under the BD Act of 2002, all seaweed (whether mined or cultivated) is clubbed together by the Commerce Ministry and requires NBA clearance for exports.[171]Another serious issue is that of the particular species of seaweed discovered as being alien to the area by scientists. This species was assessed by the scientists to have invaded the Gulf of Mannar Marine National Park which might have an impact on the flora and fauna existing there. The question of whether a thorough assessment was done by the NBA before giving its approval then becomes crucial.[172]

3.2.5 Bio India Biologicals: Exporting of Neem Leaves Case

This case was regarding the cultivation of "Neem Leaves" (Azadirachta indica), which was initiated by a Japanese firm which got into collaboration with Bio India Biologicals Company. The Indian company Bio India Biologicals sourced the neem leaves from Amarchinta village in Mahboobnagar district, Andhra Pradesh and Andhra Pradesh State Biodiversity Board helped the village get higher rates for their bio-resource.[173] Bio India Biologicals, based on the Japanese companies inputs decided to work with local communities for collecting the neem leaves without involving any middle men, brokers or traders and under the Biological Diversity Act principles.[174]

170 *Id.*

171 Latha Jishnu, The Curious Case of the Seaweed, Down to Earth, Monday, (Dec 27, 2017) http://www.downtoearth.org.in/coverage/curious-case-of-seaweed-39207.

172 *Id.*

173 (Dec. 27, 2017), http://www.thehindu.com/news/national/andhra-pradesh/A-sweet-tale-of-how-neemtrees-yield-money/article12549014.ece.

174 (Dec. 27, 2017), http://nbaindia.org/uploaded/pdf/ABS_Factsheets_1.pdf.

The company had identified two Neem rich villages and entered into an agreement with local communities, providing them five per cent on procurement price of leaves. The Biodiversity Monitoring Committee of the Andhra Pradesh State Biodiversity Board took care of the processes which included the signing of pacts with local communities and collecting leaves.[175]The leaves were collected from village Biodiversity Management Committee and were dried by undertaking a few special operations by the villagers of Amarchinta before it was handed over to Japanese Company. The NBA was paid a royalty @5% of FOB to the tune of Rs. 55,035.00 by the exporter which transferred a part of the royalty amount to Amarchinta BMC for planting neem saplings and creation of awareness about biodiversity conservation.[176] This is one of the instances where a transfer of a part of the Royalty received by the NBA was made to a BMC.

3.2.6 Czech Republic's Scientists Case[177]

This particular case was regarding the prosecution of two reputed scientists in the Court of the District Magistrate in Darjeeling, West Bengal which was reported in the year 2008. The scientists were charged under Sections 27[178] and 29[179] of the Wildlife Protection Act, 1972 by the West Bengal Forest Department, which dealt with illegal entry into a Protected Area that was punishable under Section 51of the Act.

In addition to those charges, subsequent charges of the violation of Section 3 of the BD Act, 2002, were also made. This section states that no non-Indian entity (person/institution/ body corporate) can access any of India's biological diversity without express permission of the NBA.

The scientists were arrested by the Forest Ranger, Singalila North Range, Wild Life Division and were said to be found in possession of any many as 1500 species of butterflies, insects and moths, most of which were endangered in nature.[180] The scientists in their defence stated

175 (Dec. 27, 2017), http://www.downtoearth.org.in/coverage/the-hunt-for-benefits-39205.

176 *Id.*

177 C.R.Case 48 of 2008 before the Darjeeling Chief Judicial Magistrate.

178 Section 27, Wildlife Protection Act, 1972, No. 53, Acts of Parliament, (Sept. 9, 1972), (India); "Restriction on entry in sanctuary".

179 Section 29, Wildlife Protection Act, 1972, No. 53, Acts of Parliament, (Sept. 9, 1972), (India); "Destruction, Etc., In A Sanctuary Prohibited Without a Permit".

180 Litigating India's Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India); A Study of Legal Cases, Kanchi Kohli and Shalini Bhutani, Foundation of Ecological Security, November, 2016.

that this specie collection was for their personal research and was for a non-commercial purpose. Hence, they did not apply for permissions from the NBA.

However, the Court of the Chief Judicial Magistrate convicted both of the scientists and fined one of the convicted, Rs. 20,000 and the other Rs. 60,000 along with three years of imprisonment.[181] While this case raised concerns about the weakness of the procedural system as well as monitoring of access to biological resources, the issue of curtailment of freedom of research by the BD Act was also subsequently discussed in the scientific community.

Relevant Sections of the Wildlife Protection Act, 1972

Section 27 [Restriction on entry in sanctuary]	No person other than those mentioned under subsection (1) of Section 27 shall enter or reside in the sanctuary, except under and in accordance with the conditions of a permit granted under section 28.
Section 28 [Grant of permit]	(1) The Chief Wildlife Warden may, on application, grant to any person a permit to enter or reside in a sanctuary for all or any of the following purposes, namely:(a) investigation or study of wildlife and purposes ancillary or incidental thereto;(b) photography;(c) scientific research;(d) tourism;(e) transaction of lawful business with any person residing in the sanctuary. (2) A permit to enter or reside in a sanctuary shall be issued subject to such conditions and on payment of such fee as may be prescribed.
Section 29 [Destruction, etc., in a sanctuary prohibited without a permit]	No person shall destroy, exploit or remove any wildlife from a sanctuary or destroy or damage the habitat of any wild animal or deprive any wild animal or its habitat within such sanctuary except under and in accordance with a permit granted by the Chief Wildlife Warden and no such permit shall be granted unless the State Government being satisfied that such destruction, exploitation or removal of wildlife from the sanctuary is necessary for the improvement and better management of wildlife therein authorizes the issue of such permit.

181 *Id.*

Section 51[Penalties]	(1)Any person who [contravenes any provision of this Act [(except Chapter VA and section 38J)]] or any rule or order made thereunder or who commits a breach of any of the conditions of any license or permit granted under this Act, shall be guilty of an offence against this Act, and shall, on conviction, be punishable with imprisonment for a term which may extend to 3 [three years], or with fine which may extend to 4 [twenty-five thousand rupees], or with both.

3.2.7 Monsanto's Wheat Patent on Nap-Hal:[182]

The Writ petition was filed in 2004 by the Research Foundation for Science Technology and Ecology, New Delhi imploring the Centre to take immediate action against the patenting of indigenous wheat by the Monsanto. A patent for a traditional variety of Indian Wheat called Nap hal was filed by Monsanto and this patent had been pending in the European Patent Office (EPO) since its application.

In 1998, the patent was finally granted to Monsanto after it acquired the wheat division of the Anglo-Dutch food giant Unilever.[183] Nap hal was a type of traditional wheat indigenous to India, which as a result of years of crossbreeding had low gluten and elasticity characteristic of soft milled wheat used most commonly for making chapatis and biscuits. This patent was subject to dispute in the Supreme Court in 2004 on the grounds that the US Company had stolen the existing traditional knowledge of the Indian farmers and was now terming it as their own invention, and thus responsible for Bio-piracy.[184]

Bio-piracy does not involve the informed consent of local communities or benefit sharing

182 Research Foundation for Science, Technology & Ecology & Another versus Union of India & Others [WP (Civil) No. 64 of 2004].

183 Patent No. EPO 445929 B1 filed vide Application No. 9130127.

184 Shan Kohil, 'Spicy IP Dellowship 2016-17, Biopiracy in the Context of Plunder of Wheat in India', Spicy IP, March 21st 2016; (13/12/17) https://spicyip.com/2016/03/spicy-ipfellowship-2016-17-biopiracy-in-the-context-of-plunder-of-wheat-in-india.html.

of the money accrued from the commercial exploitation of traditional knowledge (TK) with the local community.

In India, the Plant Varieties and Farmer's Rights Act, 2001 has acknowledged that local communities are instrumental in bringing genetic diversity that is often relied upon by breeders, and has thus granted exclusive rights to these breeders while stipulating a benefit sharing mechanism under section 26(5)(a)[185]. Further the BD Act of 2002 has inserted provisions for the prevention of bio-piracy.

Section 6 of BDA, 2002 stipulates that no patent application can be filed, in or outside India, without the prior approval of the National Biodiversity Authority, if the underlying research comes from biological resources obtained from India. The BD Act has tried to create a benefit sharing mechanism with local communities with shared patent rights, technology transfer or monetary payment with the mechanism.

Lastly with respect to patent applications, the Indian Patent Act, 1970 requires "mandatory disclosure" regarding the source and geographical origin of the biological resource. The Supreme Court in this case issued notices to various departments of the Government of India directing them to take appropriate action to challenge the patenting of wheat before the European Patent Office (EPO). A petition was subsequently filed before the EPO and resulted with the EPO withdrawing the patent on grounds of no commercial viability. The effort of the Government in combating bio-piracy was commended in this case.

An important aspect that can be learnt from this and similar such cases, is of the need to form a system where there is a convergence of Intellectual Property Law and the law on Biological Diversity in India. This is necessary in the interest of preserving biological resources associated knowledge, since the misappropriation of such knowledge from local communities has often occurred through the usage of IPR, which has in the past had serious impact on communities. Even if such a structural framework exists, traditional knowledge could still be vulnerable to exploitation due to the lack of a systematic monitoring mechanism.

185 *Id.*

3.2.8 Japanese National's Case

In this particular case, two Japanese scientists were taken into custody by Wildlife Officials from the Athirapilly Forest[186], Kerala. They were accused of illegally smuggling exotic species of snakes, spiders, scorpions, turtles etc. The Forest Department charged them under various sections of the Wildlife Protection Act, 1972 and the BD Act, 2002 for the offence of smuggling. Upon investigation, it was reported that the two youths, who were scientists of a reputed institute in Japan were taking these reptiles for research purposes.

Section 3(1) of the Biological Diversity Act, 2002 states that access to biological resource and other activities mentioned under the BD Act cannot be undertaken by non-Indian individuals or entities (body corporates/associations/organizations) having non-Indian participation without prior approval of the National Biodiversity Authority. Any violation of the provision, which is a cognizable and non bailable offence, is punishable with imprisonment up to five years, or with a fine up to Rs.10 lakh. In cases where the damage caused exceeds Rs.10 lakh, the fine may be commensurate with the damage caused, or with both according to the Act.[187]

In this case, various sections of the Wildlife Protection Act, 1972 were also applied such as illegal trespass into protected areas of the forest without permission from the Chief Wildlife Warden[188], removal of any wildlife from a sanctuary[189], and their transport into another country without permission.[190]

****

186 K S Sudhi 2015 Japan Nationals to be booked under Biological Diversity Act, The Hindu, June. 24, 2015; (Dec. 12, 2017), http://www.thehindu.com/news/cities/Kochi/japan-nationals-to-be-bookedunder-Biological Diversity-act/article7348752.ece.

187 Section 55(1), Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).

188 Section 27, The Wild Life (Protection) Act, 1972, No. 53, Acts of Parliament, (Sept. 9, 1972), (India).

189 Section 29, The Wild Life (Protection) Act, 1972, No. 53, Acts of Parliament, (Sept. 9, 1972), (India).

190 Section 48 A, The Wild Life (Protection) Act, 1972, No. 53, Acts of Parliament, (Sept. 9, 1972), (India).

INTERNATIONAL AND COMPARATIVE LAW ON BIOLOGICAL DIVERSITY AND ABS*

4

The concept of conservation of wildlife, flora and fauna in the early 20th Century International Legal regime can be found in many international legal instruments such as the International Convention for the Protection of Birds of 1950, Convention on International Plant Protection, 1951, Agreed Measures for the Conservation of Antarctic Fauna and Flora, 1964 etc. This phase marked the beginning of a growing awareness of environmental concerns. With the end of World War II and the unprecedented progress of science and technology, a parallel issue that drew the concern of the international community was that of the exploitation of the nature and its resources that seemed to be accompanying the technological progress.

The first International legal instruments to have noted the importance of environmental conservation and which are still widely regarded as the beginning of the international environmental jurisprudence were the United Nations Conference on Human Environment held in 1972 and the Ramsar Convention on Wetlands adopted in 1971.

4.1 International Legal Instruments on Biological Diversity and ABS

4.1.1 The Convention on Wetlands, 1971 (Ramsar Convention)

The Ramsar Convention on Wetlands is a major International Treaty with regard to environmental conservation. The Convention took place in the city of Ramsar, Iran in the year 1971. This Convention provides a framework for national and international cooperation for the conservation and wise use of wetlands and their resources.[191] The Convention came into force in the year 1975 and since then 169 countries i.e. almost 90% of the United Nations Member States have become contacting parties to the Convention.[192]

---

* Manjeri Subin Sunder Raj, Assistant Professor of Law, NLSIU Bengaluru.

191 (Dec. 09, 2017), https://www.ramsar.org.

192 *Id.*

Under this Convention, the term Wetlands is applied to a various human made and natural habitats which range from lakes, coral reefs, swamps, peat bogs, marshes, bodies of waste (natural, artificial, temporary, and permanent). This instrument encourages the designation of sites that contain rare or unique wetlands, or wetlands that are important for conserving biological diversity.[193] These sites, once designated are added to the Convention's List of Wetlands of International Importance and become Ramsar Sites. The Contracting Parties to this Convention have a duty to protect and promote the conservation of such wetlands. India is one of the contracting parties to the Convention and the convention entered into force in India on 1st February 1982. India currently has 26 sites designated as Wetlands of International Importance (Ramsar Sites), with a total surface area of 689,131 hectares.[194]

Ramsar Sites in India[195]

No.	Name	Date of Declaration	State
1	Ashtamudi Wetland	19 Aug 2002	Kerala
2	Bitarkanika Mangroves	19 Aug 2002	Orissa
3	Bhoj Wetland	19 Aug 2002	Madhya Pradesh
4	Chandra Taal Wetland	08 Nov 2005	Himachal Pradesh
5	Chilika Lake	01 Oct 1981	Orissa
6	Deepor Beel	19 Aug 2002	Assam
7	East Calcutta Wetlands	19 Aug 2002	West Bengal
8	Harike Lake	23 March 1990	Punjab
9	Hokera Wetland	8 November 2005	Jammu and Kashmir
10	Kanjli Wetland	22 January 2002	Punjab
11	Keoladeo National Park	1 October 1981	Rajasthan
12	Kolleru Lake	19 August 2002	Andhra Pradesh
13	Loktak Lake	23 March 1990	Manipur
14	Nalsarovar Bird Sanctuary	24 September 2012	Gujarat
15	Point Calimere Wildlife and Bird Sanctuary	19 August 2002	Tamil Nadu
16	Pong Dam Lake	19 August 2002	Himachal Pradesh
17	Renuka Lake	8 November 2005	Himachal Pradesh
18	Ropar Wetland	22 January 2002	Punjab

193 *Id.*

194 (Dec. 09, 2017), https://www.ramsar.org/wetland/india.

195 (Dec. 09, 2017), https://rsis.ramsar.org/ris-search/?f[0]=regionCountry_en_ss%3AIndia&pagetab=1.

19	Rudrasagar Lake	8 November 2005	Tripura
20	Sambhar Lake	23 March 1990	Rajasthan
21	Sasthamkotta Lake	19 August 2002	Kerala
22	Surinsar-Mansar Lakes	8 November 2005	Jammu and Kashmir
23	Tsomoriri	19 August 2002	Jammu and Kashmir
24	Upper Ganga River (Brijghat to Narora Stretch)	8 November 2005	Uttar Pradesh
25	Vembanad-Kol Wetland	19 August 2002	Kerala
26	Wular Lake	23 March 1990	Jammu and Kashmir

Source: Ramsar Sites Information Service

4.1.2 United Nations Conference on Human Environment, 1972

The United Nations Conference on Human Environment also known as the Stockholm Conference was held in Stockholm, Sweden in June 1972. This conference was the 1st major conference on environmental matters by the United Nations. 114 Governments were represented by their delegates in this Conference and the resultant document was the Declaration of the United Nations Conference on the Human Environment which contained 26 principle regarding development and the environment such as safeguarding wildlife and natural resources, prevention of oceanic pollution and promotion of environmental education and human rights.

Did You Know?

The Soviet-bloc countries boycotted the Stockholm Conference due to the exclusion of East Germany, which did not hold a UN seat at that time.

Most importantly, emphasis was placed on viewing development and preservation of environment as parallel objectives, not in opposition to each other. One of the Principles of the Declaration even states that Development was needed to improve the environment.[196]It even stressed the need for assisting developing countries in this aspect.[197]

196 Principle 8, Declaration of the United Nations Conference on the Human Environment, 1972.
197 Principle 9, 10, Declaration of the United Nations Conference on the Human Environment, 1972.

Another document that came forward as a result of the Conference was the Framework for Environmental Action. This document was an Action Plan that consisted of a total of 109 recommendations related to the implementation of the Principles of the Declaration.

4.1.3 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was adopted with the objective of regulating the commercial trade in wild plants and animals that was happening worldwide. It was adopted in 1973 and entered into force in 1975 with the goal of ensuring that the existence and survival of any species was not threatened by international trade. From 1973 to present, the number of countries that are a party to the Convention has been steadily growing. The Convention was a result of a resolution adopted in a 1963 meeting of member countries of the International Union for Conservation of Nature. The parties to the Convention are obligated under this instrument to adopt their own domestic legislations to implement its objectives.

There are three classification made under CITES for threatened plants and species based on the level of threat they face.

Categories	Species Covered
Appendix I	• Species that are in danger of extinction. • Prohibits outright the commercial trade of these plants and animals. • Some may be transported internationally in extraordinary situations for scientific or educational reasons.
Appendix II	• Species that are not threatened with extinction but that might suffer a serious decline in number if trade is not restricted. • Their trade is regulated by permit.
Appendix III	• Species that are protected in at least one country that is a CITES member. • And the CITES member has petitioned others for help in controlling international trade in that species.

CITES has in the past many years held the distinction of being one of the largest international conservation agreements with about 183 Parties currently serving as members to the Convention. The Convention currently accords various degrees of protection to more than 35,000 species of animals and plants.[198]

198 (Dec. 09, 2017), convention on international trade in endangered species of flora and fauna, https:// www. cites.org/eng/disc/what.php.

4.1.4 Bonn Convention on Migratory Species (CMS)

The Convention on Migratory species (CMS) or the Convention on the Conservation of Migratory Species of Wild Animals or also popularly known as the Bonn Convention was signed in the year in 1979 in Bonn, Germany and entered into force in 1983 with the objective of garnering international cooperation in the conservation and sustainable use of migratory animals and their habitats.[199] The CMS is an environment treaty formed under the aegis of the United Nations Environment Programme that looks into conservation of migratory species, their habitats and migration routes and aims for cooperation and coordination with various stakeholders such as NGO's, media, international organizations etc. to achieve those objectives.

There are 2 classification made under CMS for Migratory species:

Categories	Species Covered
Appendix I	• Migratory species threatened with extinction • Parties to the CMS strive towards: i. strictly protecting these animals, ii. mitigating obstacles to migration iii. conserving or restoring the places where they live iv. controlling other factors that might endanger them
Appendix II	• List of Migratory species that need or would significantly benefit from international co-operation • Conclude Agreements covering the conservation and management of migratory species in Range States (any nation that exercises jurisdiction over any part of a range which a particular species inhabits, crosses or overflies at any time on its normal migration route.)

Source: http://www.cms.int/en/node/3916

As of 1 December 2017 the Convention on Migratory Species has 126 Parties and it provides an overarching framework for all efforts to conserve migratory species. CMS

199 (Dec. 09, 2017), http://www.cms.int/en/legalinstrument/cms.

and the agreements formed under it provide policy guidance on various issues regarding conservation measures through resolutions, action plans, decisions etc.[200]

4.1.5 Convention on Biological Diversity (CBD)

The international legal instrument that is probably the most crucial with regard to Biological Diversity is the Convention on Biological Diversity, which is a multilateral treaty that aims at achieving the three main goals[201]of:

- conservation of biological diversity
- sustainable use of biological diversity
- fair and equitable sharing of the benefits arising from the use of genetic resources

The CBD was opened for signature in Rio De Janeiro during the Earth Summit in 1992. It was in 1988, that the United Nations Environment Programme convened an Ad Hoc Working Group of Experts on Biological Diversity where the idea of an international convention on Biological Diversity was conceived and soon after that in 1989 an Ad Hoc Working Group of Technical and Legal Experts was convened to prepare an international legal instrument for the conservation and sustainable use of biological diversity.[202] It was for the first time with the coming into force of this convention, that conservation of Biological Diversity was recognized as a "common concern of humankind" in international law.[203]

The CBD's governing body is the Conference of the Parties (CoP), which includes all the countries that have ratified the treaty. The CoP which includes the representatives of all the Parties to the Convention meet every two years to review progress, set priorities and commit to work plans.[204] 196 parties till date have ratified the Convention. India signed the treaty in 1992 and ratified the Convention in 1994.[205]

CBD is considered to be the key international instrument on sustainable development and also reaffirms the sovereign rights of nations over their biological resources. With regard

200 (Dec. 09, 2017), http://www.cms.int/en/parties-range-states.
201 (Dec. 09, 2017), https://www.cbd.int/intro/default.shtml.
202 (Dec. 09, 2017), https://www.cbd.int/history/default.shtml.
203 *Id.*
204 (Dec. 09, 2017), http://www.un.org/en/events/Biological Diversityday/convention.shtml.
205 (Dec. 09, 2017), https://www.cbd.int/information/parties.shtml.

to the duties of the States parties to the convention, Article 6 of the CBD enjoins certain obligations on them which require each contracting party to:

(a) Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes which shall reflect, inter alia, the measures set out in this Convention relevant to the Contracting Party concerned; and

(b) Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.

The two relevant supplementary agreements to the Convention on Biological Diversity are:

4.1.5.1 The Cartagena Protocol on Biosafety

The CBD is the main international instrument for addressing Biological Diversity issues in a holistic and comprehensive way. Under the CBD, Biosafety is one of the issues that has been especially focused on. The concept of Biosafety refers to the need to protect human health and the environment from any possible adverse effects of the products of modern biotechnology.

Did You Know?

India hosted the 11th meeting of the Conference of the Parties to the Convention on Biological Diversity at Hyderabad in 2012.

At the same time, modern biotechnology is recognized as having a great potential for the promotion of human well-being, particularly in meeting critical needs for food, agriculture and health care.[206] The Convention recognizes these twin aspects of modern biotechnology. The Protocol on the one hand provides for the access to and transfer of technologies, including biotechnology, that are relevant to the conservation and sustainable use of biological diversity[207] and on the other hand also seeks to ensure the development of appropriate procedures to enhance the safety of biotechnology in the context of the

206 Secretariat of the Convention on Biological Diversity (2000). Cartagena Protocol on Biosafety to the Convention on Biological Diversity, Montreal: Secretariat of the Convention on Biological Diversity. (Dec. 16,2017), https://www.cbd.int/doc/legal/cartagena-protocol-en.pdf.

207 Article 16 and Article 19, Cartagena Protocol on Biosafety to the Convention on Biological Diversity, Secretariat of the Convention on Biological Diversity. (Dec. 16, 2017), https://www.cbd.int/doc/legal/cartagena-protocol-en.pdf.

Convention's overall goal of reducing all potential threats to biological diversity, taking also into account the risks to human health.[208]

It was in 1995 at the second meeting of the Conference of the Parties to the Convention, that an Open-ended Ad Hoc Working Group on Biosafety was established to develop a draft protocol on biosafety. This draft was to specifically focus on the transboundary movement of any living modified organism resulting from modern biotechnology that may have adverse effect on the conservation and sustainable use of biological diversity.[209]

In January 2000, after several years of negotiation, the Cartagena Protocol on Biosafety to the Convention on Biological Diversity was finalized and adopted in Montreal. The Cartagena Protocol is considered to be a major step forward in the matter of Biosafety and the enabling of an environment for environmentally sound application of biotechnology while minimizing the possible risks to human health and environment. Currently the Protocol has 171 countries as Parties with the latest ratification being that of Kuwait on June 1st 2017.[210]

4.1.5.2 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

The Nagoya Protocol was adopted at the tenth meeting of the CoP to the CBD held in Nagoya in October 2010. This Protocol was adopted with the aim to further advance the implementation of the third objective and relevant articles[211] of the CBD. The said third objective and relevant articles called for negotiation of an international regime, within the framework of the Convention, to promote and safeguard the fair and equitable sharing

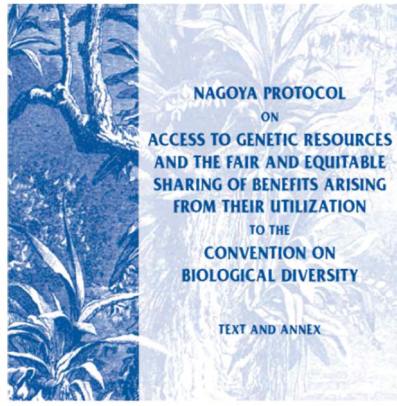
208 Article 8(g) and Article 19, Cartagena Protocol on Biosafety to the Convention on Biological Diversity, Secretariat of the Convention on Biological Diversity, (Dec. 16, 2017), https://www.cbd.int/doc/legal/cartagena-protocol-en.pdf.

209 *Supra at* 202.

210 (Dec. 16, 2017), https://bch.cbd.int/protocol.

211 Articles 15 (Access to Genetic Resources) and Article 8(j) (Traditional Knowledge), 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, Secretariat of the Convention on Biological Diversity (Dec. 13, 2017), https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf.

of benefits arising from the utilisation of genetic resources.[212]The CoP in its 10th meeting mandated its Ad Hoc Open-ended Working Group on Access and Benefit sharing to elaborate and negotiate an international regime on access to genetic resources and benefit-sharing.



The Nagoya Protocol was finally adopted in 2010 in Japan after 6 years of negotiations.[213] The Protocol aims to deliver greater legal certainty and transparency for both providers and users of genetic resources. The Protocol encapsulates specific obligations to support compliance with domestic legislation or regulatory requirements of the Party providing genetic resources and contractual obligations reflected in mutually agreed terms. These are done with the objective of ensuring the sharing of benefits when genetic resources leave a Party nation that is providing the resource.[214] The Protocol also looks into the access to traditional knowledge held by indigenous and local communities when it is associated with genetic resources and the strengthening of the ability of these communities to benefit from the use of their knowledge. India ratified the Protocol in 2012 and there are currently 101 Parties to the Agreement.[215]

4.1.6 International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)

In 1983, the Commission on Genetic Resources for Food and Agriculture was established, and the voluntary International Undertaking on Plant Genetic Resources was adopted. This was done taking into account the importance of the need to conserve and sustainably use

212 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, Secretariat of the Convention on Biological Diversity (Dec. 13, 2017), https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf.

213 Convention On Biological Diversities, Parties To Nagoya Protocol, (Dec. 13, 2017), https://www.cbd.int/abs/nagoya-protocol/signatories/.

214 *Supra at* 202.

215 Convention On Biological Diversities, Parties To Nagoya Protocol, (Dec. 13, 2017), https://www.cbd.int/abs/nagoya-protocol/signatories/.

plant genetic resources for food and agriculture, which the Treaty states is key to ensuring that the world will produce enough food to feed its growing population in the future.[216]

In 1996, another major step was taken at the Leipzig International Technical Conference on Plant Genetic Resources where a Global Plan of Action was adopted. All this work culminated in 2001 with the historic adoption of the legally binding International Treaty on Plant Genetic Resources for Food and Agriculture which entered into force in 2004.[217]

This Treaty was adopted by the Thirty-First Session of the Conference of the Food and Agriculture Organization of the United Nations on 3 November 2001 and as of 2017 has 144 contracting Parties.[218]

The Treaty aims at:[219]

- recognizing the enormous contribution of farmers to the diversity of crops that feed the world;
- establishing a global system to provide farmers, plant breeders and scientists with access to plant genetic materials;
- ensuring that recipients share benefits they derive from the use of these genetic materials with the countries where they have been originated.

The Treaty, popularly known as the Seeds Treaty is considered to be an International agreement in consonance with the CBD, aimed at the sustainable use of Plant genetic resources, conservation of such resources for food and agriculture, and fair and equitable benefits arising from its use. The Treaty in order to find a solution to the issues of access and benefit sharing of plant genetic resources employs a Multilateral System wherein 64 of the most important crops (these crops together account for 80 percent of the food we derive from plants) are put into an easily accessible global pool of genetic resources, which is freely available to potential users in the Treaty's ratifying nations for some uses.[220]

216 Food and Agricultural Organisation of the United Nations, (Dec. 15, 2017), http://www.fao. org/plant-treaty/overview/en/.

217 *Id.*

218 Food and Agricultural Organisation of the United Nations, (Dec. 15, 2017), http://www.fao. org/fileadmin/user_upload/legal/docs/033s-e.pdf.

219 *Id.*

220 *Id.*

Through this Treaty, access to the genetic materials of the said 64 crops is facilitated for training, food and agriculture, breeding and research. The persons accessing the above mentioned resources are required to be from the ratifying nations to the Treaty and share benefits according to the Benefit Sharing arrangements laid out in the Treaty. Another important aspect of the Treaty is that it prevents the recipients of genetic resources under the Treaty from claiming intellectual property rights over those resources in the form in which they were as well as the mandate of protection of Farmers Rights.[221]

Conventions and International Legal Instruments on Biological Diversity and ABS

Ramsar Convention on Wetlands	1971
United Nations Conference on Human Environment	1972
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	1973
Bonn Convention on Migratory Species (CMS)	1979
Convention on Biological Diversity (CBD)	1992
The Cartagena Protocol on Biosafety to the Convention on Biological Diversity	2000
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	2010
International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)	2001

221 Food and Agricultural Organisation of the United Nations, (Dec. 15, 2017), http://www.fao. org/3/a-i0510e.pdf.

4.2 Comparative Analysis

While Biological Diversity laws and Access and Benefit Sharing mechanisms have been covered in various international legal instruments, quite a few countries still do not have the necessary laws in place. The countries that have enacted relevant domestic legislations have tried to encapsulate the ideas of sustainable use of biological resources and the promotion of better ways of management of such resources. Below is a tabular representation of various aspects of domestic legislations on Biological Diversity across multiple countries.

Objectives

India[222]	• conservation of biological diversity and sustainable use • fair and equitable sharing of benefits arising from the use of biological resources and traditional knowledge
Norway[223]	• conservation and sustainable use aimed at providing socio-cultural well-being of current and future generations • Respectful of indigenous culture.
South Africa[224]	• sound management and sustainable use of biological diversity, ensuring fair and equitable sharing of benefits • providing a cooperative governance framework to give effect to international commitments on biological diversity
Costa Rica[225]	• Biological Diversity related aspects should be integrated properly into the nation's policies and legislative framework • Calls for better public awareness and participation and an equitable distribution of benefits.
EU[226]	• Balancing the rights of the local land owners, thereby reducing tensions and leading to better biological diversity protection. • maintenance, restoration and conservation of habitats of community interest

222 Preamble, Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).
223 Section 1, Norway Nature Diversity Act, July. 01, 2009.
224 Article 2, South Africa, NEMBA, No. 10, (June. 07, 2004).
225 Article 10, The Costa Rica Biological Diversity Law, No. 7788, (Apr. 30, 1998).
226 Preamble, EU Habitat Directive, (Sep. 2014).

Principles:

India[227]	• Refers to both in-situ and ex-situ conservation of bio diversity • Mandatory prior permission is required to access genetic resources and traditional knowledge.
Norway[228]	• Provides for sustainable use including management objectives to maintain habitat, ecosystem and species diversity, and a general duty of care • Importance attached to the precautionary principle, the ecosystem approach, the 'user pays' principle, environmentally sound methods of operation, quality norms for biological diversity • Collection and use of genetic resources and traditional knowledge requires a permit which includes equitable sharing of benefits and is aimed at protecting the interests of Indigenous and Local Communities
South Africa[229]	• Identifying critical biodiversity areas and importance being given to climate change principles • Access is given only based on a permit based on prior informed consent and benefits are to be equally shared
Costa Rica[230]	• identifies a respect for all living things • stresses on the strategic and intrinsic value of biological diversity • promotes practices and knowledge which aims at conservation of biological diversity
EU[231]	• Promoting establishment of Special Areas of Conservation • restricting projects and plans - approvals granted only if there is no significant negative effect

227 Articles 14, 15, 16, 7 and 37(1), Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).

228 Sections 4-6, 7-15, 22-24, 26-30, Norway Nature Diversity Act, July. 01, 2009.

229 Sections 80-83, South Africa NEMBA, No. 10, (June. 07, 2004).

230 Article 9, Costa Rica Biological Diversity Law, No. 7788, (Apr. 30, 1998).

231 Article 4-6, EU Habitat Directive, (Sep. 2014).

Institutional Arrangements:

India[232]	Three tier system- NBA at the central level, State Biodiversity Boards at the State level and Biodiversity Management Committees (BMCs) at the local level. BMCs collaborate with SBB's and NBA, and establish People's Biodiversity Registers (PBRs) with the aim of having comprehensive information as regards biological resources and its availability. It also contains knowledge relating to the traditional uses. Localities who have good knowledge about biological diversity are incorporated as members of BMCs via State rules
Norway[233]	The State, though the highest power, can delegate the decision making powers and implementation to the municipal authorities. The competent national authority is the Norwegian Ministry of Climate and Environment. However, there is a delegation of powers in favor of the Ministry of Fisheries as well.
South Africa[234]	There is a Department of Environmental Affairs, which has the power dealing with the overall design and review of the national Biological Diversity framework The South African National Biological Diversity Institute deals with ABS, ecosystem protection, administration of *ex-situ* collections, and governance of biological resources.
Costa Rica[235]	Under the Ministry of Environment and Energy, an administrative body is established. This body oversees the National System of Conservation Areas and National Biodiversity Administration Committee These bodies deal with the administration of protected areas. They also work to ensure environmental safety, promote conservation and sustainable use of eco- systems, regulate access to genetic resources, IP rights, education and public awareness, incentives and administrative procedures including environmental impact assessments The National Biodiversity Administration Committee looks over and comes up with policies on ABS and TK and comprises of representatives both from the government as well as the civil society

232 Sub-sections 8 – 25 and 41, Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).
233 Article 62, Norway Nature Diversity, July. 01, 2009.
234 Article 38, 10, 11, NEMBA, No. 10, (June. 07, 2004).
235 Article 13, 22-113, Costa Rica Biological Diversity Law, No. 7788, (Apr. 30, 1998).

Participative Element:

India	Representatives from the civil society are included in the BMC's. This in turn helps protect community interest[236]
Norway	Public Consultations are to be conducted in case of protected areas. It is done in such a manner that co-operation is necessary between all stakeholders. Regulations are to be circulated as well.[237]
South Africa	Public Consultations are to be held by providing notice of thirty days, during which comments can be sent in writing.
Costa Rica	A concerted effort of local communities, indigenous people, NGO's , private sector is mandated
EU	There should be a proper public consultation before implementation[238]

Environmental Impact Assessments (EIA):

India	Central Government can prescribe for an EIA to learn about the after effects[239].
Norway	Ministry can come up with steps to ameliorate as well as restore unforeseen damage[240]
South Africa	Assessment of risks and impacts on biological diversity is to be conducted[241].
Costa Rica	EIA to be done in one go, even if the project is to be conducted in stages. This will be reviewed by the Technical Officer under the Ministry of Environment and Energy. Guidelines for evaluation of after effects are to be prepared by the National Technical Secretary[242].
EU	Appropriate assessment is to be done as regards the plan. Monitoring systems are required to be set up[243].

236 Section 41(1), Biological Diversity Act,2002, No. 18 of 2003, Acts of Parliament, (India).; Rule 22, Biological Diversity Rules, 2004, No. G.S.R. 261(E), Acts of Parliament,2004, (India).

237 Section 42-43, Norway Nature Diversity, July, 01, 2009.

238 Article 22(a), EU Habitat Directive, (Sep. 2014).

239 Section 36(4), Biological Diversity Act, 2002, No. 18 of 2003, Acts of Parliament, (India).

240 Article 53, 70, Norway Nature Diversity, July. 01, 2009.

241 Section 65, 87, NEMBA, No. 10, (June. 07, 2004).

242 Article 92-96, Costa Rica Biological Diversity Law, No. 7788, (Apr. 30, 1998).

243 Article 12, Preamble, EU Habitat Directive, (Sep. 2014).

Biological Diversity Plans and Surveys:

India	The central government is required to come up with national strategies as well as plans and programmes[244]
Norway	The competent national authority is to formulate plans[245]
South Africa	The Ministry of Environment is supposed to develop and adopt a National Biodiversity Framework. This is to be reviewed every five years[246]
Costa Rica	A commission is set up under the Ministry of Environment and Energy to develop the National Strategy for Biodiversity.[247]
EU	For designated sites, appropriate plans are created. These are integrated with other plans as well[248].

****

244 Section 36(1), India BD Act, 2002, No. 18, Acts of Parliament, 2003, (India).
245 Article 13, 24, 33, 35, 36, 42, Norway Nature Diversity, July. 01, 2009.
246 Section 38-39, NEMBA, No. 10, (June. 07, 2004).
247 Article 14, Costa Rica Biological Diversity Law, No. 7788, (Apr. 30, 1998).
248 Article 16, EU Habitat Directive, (Sep. 2014).

BIOLOGICAL DIVERSITY AND WILDLIFE CRIMES*

5

India is considered to be one of the most biodiverse regions and is recognized as one of the 12 most mega-diverse countries in the World. Four of the 34 globally identified Biological Diversity hotspots: The Himalayas, the Western Ghats, the North-East, and the Nicobar Islands, can be found in India[249]and it is home to 7.6% of all mammalian species, 12.6% of birds, 6.2% of reptiles, and 6% of flowering plant species on the planet.[250]

But a recent trend of wildlife disappearing at an alarming pace has been observed, which has drawn the attention of Governments, conservationists and the general public to the vital issue of wildlife conservation. WWF's Living Planet Report 2016 indicates a 58 per cent overall decline in vertebrate population abundance from 1970 to 2012. The Population sizes of vertebrate species according to the Report have on average, dropped by more than half in little more than 40 years. The data also shows an average annual decline of 2 per cent in the population of these species and states that there is no sign yet that this rate would decrease in the future.[251]The Report also says that the global wildlife population could decline by an average of 67%, between 1970- 2020. This places the world on a trajectory of a potential two-thirds decline of wildlife population within the year 2020.[252]

---

* Rhea Roy Mammen, Assistant Professor of Law and Architha Narayanan, Research and Teaching Associate.

249 Article 16, EU Habitat Directive, (Sep. 2014).

250 (Dec. 09, 2017), http://www.livemint.com/Politics/DSRW24PwlElXXUHjr978PM/Its-time-to-lookbeyond-the-tiger.html.

251 (Dec. 10, 2017), http://www.wwf.se/source.php/1674009/LPR_2016_summary%20single%20pages%20low%20res.pdf.

252 *Id.*

The Report indicates that the primary reason for this loss can be attributed to threats such as:[253]

1. Habitat Loss and Degradation caused by unsustainable agriculture, logging, transportation, residential or commercial development, energy production and mining etc.
2. Species overexploitation caused due to unsustainable hunting and poaching or harvesting, whether for subsistence or for trade and when non-target species are killed unintentionally, for example as bycatch in fisheries.
3. Pollution
4. Invasive species and disease and
5. Climate change

There are around 132 species of plants and animals from India that are tagged as critically endangered in the Red List of threatened species of the International Union for Conservation of Nature (IUCN).[254] Critically endangered is the most threatened category of species in the List. The List has various categories such as extinct, extinct in the wild, critically endangered, endangered, vulnerable, near threatened etc. that indicates the various levels of risk faced by different species.[255]

One of the primary and very serious threats that is impacting the diversity of such species, as mentioned by the WWF's Living Planet Report is overexploitation caused due to unsustainable hunting and poaching or harvesting, whether for subsistence or for trade.[256] Over the past few decades instances of illegal trade in wildlife, hunting and poaching have been steadily increasing causing a serious threat to conservation efforts by the Government and various other groups. The State of Environment Report of 2017: In Figures, published by the Centre for Science and Environment, highlights an unsettling 52 percent spike in poaching and wildlife crimes between the years 2014 and 2016. It is stated in the Report that over 30,382 wildlife crimes were recorded through December 31, 2016 and that the

253 *Id.*

254 (Dec. 10, 2017), http://www.thehindu.com/sci-tech/energy-and-environment/red-list-has-132-speciesof-plants-animals-from-india/article3551664.ece.

255 (Dec. 10, 2017), http://cmsdocs.s3.amazonaws.com/keydocuments/Categories_and_Criteria_en_web%2Bcover%2Bbckcover.pdf.

256 *Supra at* 254.

number of species poached or illegally traded in the country rose from 400 in 2014 to 465 in 2016.[257]

According to the Report, nearly 50 tigers were poached in the year 2016, which is the highest in the past decade. Meanwhile, 340 peacocks were killed because of poaching between 2015 and 2016, which is 193 per cent higher than that of 2014. Blackbuck, blue bull, chinkara, elephant, leopard, rhinoceros, spotted deer, and the wild boar are also highly threatened, as per the annual report.[258]

5.1 National and International Legal Framework on Wildlife Crimes

The legal framework with regard to wildlife crimes in India is quite extensive, with the Constitution, the principal legal document of India, affirming in its chapter on the Directive Principles of State Policy (Chapter IV) that the "State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country."[259] Article 51-A also states that "it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers, and wildlife and to have compassion for living creatures." There are also various international legal instruments regarding wildlife conservation and protection that India is a party to.

The 10 Species That Were Worst Hit During Poaching In 2015-16

BLACK BUCK
Poached | 48
Articles seized | 3 skins, 2 horns, 15 kg meat, 1 head, 1 skin piece and legs

BLUE BULL
Poached | 53
Articles seized | 1 skin and 95 kg meat

257 (Dec. 11, 2017), https://thediplomat.com/2017/10/indias-wildlife-trafficking-epidemic/.

258 (Dec. 11, 2017), http://www.downtoearth.org.in/news/30-382-wildlife-crimes-recorded-in-india-58343.

259 INDIA CONST. art. 48.

CHINKARA

Poached | 33
articles seized | 3 skins, 2 skeletons and meat

ELEPHANT

Poached | 63
Articles seized | 152.08 kg ivory, 28 tusks, 20 ivory pieces, 12 ivory idols, bones and 4 recovered alive

LEOPARD

Poached | 97
Articles seized | 171 skins, 3 skeletons, 1 skull, 1 skin piece, 14 paws, 31 claws, 19 canines, 104 kg and 124 pieces of bones

PEACOCK

Poached | 340
Articles seized | 6 recovered alive, 2 carcasses, 65 kg feather, 24 feather made fans, body parts.

RHINOCEROS

Poached | 45
Articles seized | 3 horns and 12 suspected horns

SPOTTED DEER

Poached | 63
Articles seized | 13 skins, 59 kg meat, 2 pieces of meat, 2 heads, 46 antlers and body parts

TIGER

Poached | 29
Articles seized | 31 skins, 3 skin pieces, 1 skull, 8 paws, 25 kg meat, 2 pieces of meat, 1 jaw with canine, 30 claws, 11 canines, 309 kg bones, 394 pieces of bones, 6 tooth and 30 whiskers

WILD BOAR

Poached | 57
Articles seized | 2 recovered alive, 157 kg meat, 27 tusks, 1 head, 1 carcass and 1 head

Wildlife Protection Society of India, 2017

Source: http://www.downtoearth.org.in/news/30-382-wildlife-crimes-recorded-in-india-58343

5.1.1 International Legal Framework

India is a party to four major international conventions related to Wild Life conservation, which are:[260]

- The Convention on International Trade in Endangered Species of wild fauna and flora (CITES)
- International Convention for the Regulation of Whaling and the International Whaling Commission (IWC)
- United Nations Educational, Scientific and Cultural Organization-World Heritage Convention (UNESCO-WHC)
- Convention on Migratory Species (CMS)

India is also a member of the International Union for Conservation of Nature and Natural Resources (IUCN), which is a membership Union uniquely composed of both government and civil society organisations. IUCN was founded in October 1948 and has developed into the world's largest and most diverse environmental network and now is the global authority on the status of the natural world and the measures needed to safeguard it.[261]India became a State Member of IUCN in 1969, through the Ministry of Environment, Forest and Climate Change (MoEFCC) and IUCN India works with Members and Commissions to reduce ecosystem and species loss by providing tools and knowledge to enhance conservation policies and efforts.[262]

Did You Know?

Currently, seven natural World Heritage Sites have been recognized by UNESCO in India, viz., Nanda Devi National Park, Kaziranga National Park, Manas National Park, Keoladeo National Park Sundarbans National Park, Western Ghats and the Great Himalayan National Park Conservation Area

260 Ministry of Environment, Forest and Climate Change, Convention on Biological Diversity, Biological Diversity Act and Related Issues, the ministry of environment and forests, GOI, (Dec. 11, 2017), https://www.moef.nic.in/division/international-conventions.

261 (Dec. 12, 2017), https://www.iucn.org/.

262 (Dec. 12, 2017), https://www.iucn.org/regions/asia/countries/India.

International Conventions Related to Wild Life Conservation

Convention	Year	About the Convention	The Year India Ratified the Convention
The Convention on International Trade in Endangered Species of wild fauna and flora (CITES)	1973 (signed) 1975 (entry into force)	• CITES is an international agreement between governments to ensure that the international trade in specimens of wild animals and plants does not threaten their survival[263] • The Ministry of Environment and Forests of India had constituted a CITES Cell on 10th September 2010 to assist the Government of India in CITES implementation. • India has taken several initiatives in recent years at the national level to build capacity for better CITES implementation in the country.	1976
International Convention for the Regulation of Whaling and the International Whaling Commission (IWC)	1946	• The Convention is the founding document of the International Whaling Commission (IWC) which provides its legal framework. • The IWC is an Inter-governmental Organisation whose purpose is the conservation of whales and the management of whaling. • The main duty of the International Whaling Commission is to keep under review and revise when necessary, the measures laid down in the schedule to the Convention, which governs the conduct of whaling throughout the world. • India has played a proactive role in bringing a moratorium on commercial whaling and has included all the Cetacean species (whales, dolphins, etc.) in Schedule I of the Wild Life (Protection) Act, 1972, thereby giving them the highest degree of protection	India joined IWC in 1981

263 (Dec. 12, 2017), CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF FLORA AND FAUNA, https://www.cites.org/.

World Heritage Convention (WHC) or the Convention Concerning the Protection of the World Cultural and Natural Heritage	1972	• The Convention sets out the duties of States Parties in identifying potential sites and their role in protecting and preserving them. • By signing the Convention, each country pledges to conserve not only the World Heritage sites situated in its territory, but also to protect its national heritage. • Article 2 of the Convention encapsulates "*geological and physiographical formations and precisely delineated areas which constitute* ***the habitat of threatened species of animals and plants*** *of outstanding universal value from the point of view of science or conservation*" as natural heritage • The Wild Life wing of the Ministry of Environment and Forests of India is associated with the conservation of the Natural World Heritage sites.	1977
Convention on Migratory Species (CMS).	1979 (signed) 1983 (entry into force)	• It is an environmental treaty under the aegis of the United Nations Environment Programme. • CMS provides a global platform for the conservation and sustainable use of migratory animals and their habitats. • It brings together States and lays the legal foundation for internationally coordinated conservation measures throughout a migratory range.	1983

5.1.2 National Legal Framework

Apart from the Constitution of India espousing the protection and improvement of forests and wildlife of the country[264], there are multiple domestic legislations dealing with the conservation of wildlife in India. The primary domestic legislation dealing with wildlife protection and wildlife crimes is the Wildlife Protection Act, 1972. Amendments were made to this legislation in the years 1976, 1982, 1986, 1991, 1993, 2002 and 2006 to further strengthen the Act.

264 INDIA CONST. art. 48, art. 51 cl. A.

This Act was enacted with the objective of effectively protecting the wild life of this country and control poaching, smuggling and illegal trade in wildlife and its derivatives.[265]Apart from the Wildlife Protection Act, 1972, various aspects of conservation of wildlife is supplemented by other laws such as Indian Penal Code, (1860), Code of Criminal Procedure (Cr.P.C), (1973), Customs Act,(1962), Indian Forest Act,(1927), Forest Conservation Act, (1981), Prevention of Cruelty to Animals Act, (1960), Indian Forest Act, (1927), Forest Conservation Act, (1980) and Biological Diversity Act, (2002).

The Wildlife Protection Act provides a legal framework covering aspects such as Protection and management of wildlife habitats, Prohibition of hunting (Section 9), Establishment of protected areas (Chapter IV), Regulation and control of trade in parts and products derived from wildlife (Chapter VA), Management of zoos (Chapter IV A) etc. The Protected Areas established under the Act include several categories such as Wildlife Sanctuaries, National Parks, Tiger Reserves, Conservation Reserves and Community Reserves.

National parks[266] and Tiger Reserves[267] are by law, more strictly protected and no human activity except that which is in the interest of wildlife conservation is allowed in these areas. The Act does not allow for any commercial exploitation of forest produce, both in wildlife sanctuaries and national parks. The local communities are allowed to collect forest produce for their bona fide needs only[268] There are four schedules listed in the Wildlife Protection Act and no birds, amphibian, reptile, fish, wild mammal, crustacean, coelenterates or insects that are listed in these schedules are allowed to be hunted, either within or outside the protected areas. The penalty for hunting which is given in the proviso to Section 51 (1) of the Act is imprisonment for a period

265 Ministry of Environment, Forest and Climate Change, Convention on Biological Diversity, Biological Diversity Act and Related Issues, the Ministry of Environment and Forests, GoI, (month date, year, time), http://www.moef.nic.in/division/wildlife.

266 Section 35, The Wildlife Protection Act, 1972, No. 53, Acts of Parliament, 1972, (India).

267 Section 38, Chapter IV B, The Wildlife Protection Act, 1972, No. 53, Acts of Parliament, 1972, (India).

268 Section 35(6), The Wildlife Protection Act, 1972, No. 53, Acts of Parliament, 1972, (India).

ranging from a minimum of three to a maximum of seven years, with fines not less than 10,000 rupees. The Penalties for other offence covered under the Act are provided in Section 51 as well.

Under the Wildlife Protection Act, two new categories of protected areas, i.e. Conservation reserves[269]and Community reserves[270]have been included. This addition is for providing a greater role to local communities, civil society and other relevant stakeholders in conservation efforts in the many areas that are adjacent to National Parks and sanctuaries and those areas which link one protected area with another (Conservation reserve). Private or community land not comprised within a National Park, sanctuary or a conservation reserve can be declared as a Community reserve by the State Government, where a community or an individual has volunteered to conserve its wild life and habitat.[271]

The Act prohibits the destruction or diversion of wildlife and its habitat by any method unless it is for improvement or better management and this is decided by the state government in consultation with the National and State Boards for Wildlife. Apart from the establishment of protected areas, other important aspects of the Wildlife Protection Act includes procedures for the appointment of State Wildlife Authorities and Wildlife Boards, the regulation of trade in wildlife products and the prevention, detection and punishment of violations of the provisions of the Act. The 2006 amendment introduced a new chapter (IV B) for establishment of the National Tiger Conservation Authority and notification of Tiger Reserves (before this amendment, Tiger Reserves were not defined under the law, but were merely administrative designations to enable funding under Project Tiger).

The Wildlife Crime Control Bureau (WCCB) was constituted vide the 2006 amendment to monitor and control the illegal trade in wildlife products. The WLPA provides for investigation and prosecution of offence in a court of law by authorized officers of the forest department and police officers. When we talk about the intersection of Wildlife Protection and Biological Diversity laws in India, one can looked at cases such as that of the Czech scientists and the Japanese Nationals case that was discussed in the Chapter on Case Studies.

269 Section 36 A, The Wildlife Protection Act, 1972, No. 53, Acts of Parliament, 1972, (India).
270 Section 36 C, The Wildlife Protection Act, 1972, No. 53, Acts of Parliament, 1972, (India).
271 *Id.*

In the first case, the scientists were charged under Sections 27[272]and 29[273] of the Wildlife Protection Act, 1972 by the West Bengal Forest Department, which dealt with illegal entry into a Protected Area that was punishable under Section 51of the Act. In addition to those charges, subsequent charges of the violation of Section 3 of the Biological Diversity Act, 2002 (no non-Indian entity with foreign participation can access any of India's Biological Diversity without express permission of the National Biodiversity Authority) were also made.

Similarly in the second case, two Japanese scientists were taken into custody by Wildlife Officials from the Athirapilly Forest[274], Kerala. They were accused of illegally smuggling exotic species of snakes, spiders, scorpions, turtles etc. for research purposes. The Forest Department charged them under various sections of the Wildlife Protection Act, 1972 and the BD Act, 2002 for the offence of smuggling. Section 3(1) of the Biological Diversity Act, 2002 states that access to bio resources in India cannot be undertaken by non-Indian individuals or entities (body corporates/associations/organizations) having non-Indian participation (in its share capital/management) without prior approval of the NBA.

Any violation of the provision, which is a cognizable and non-bailable offence, is punishable with imprisonment up to five years, or with a fine up to Rs.10 lakh. In cases where the damage caused exceeds Rs.10 lakh, the fine may be commensurate with the damage caused, or with both, according to the Act.[275]

In this case, various sections of the Wildlife Protection Act, 1972 were also applied such as illegal trespass into protected areas of the forest without permission from the Chief Wildlife Warden[276], removal of any wildlife from a sanctuary[277], and their transport into another country without permission.[278]

****

272 Section 27, The Wildlife Protection Act, 1972, No. 53, Acts of Parliament, 1972, (India).

273 Section 29, The Wildlife Protection Act, 1972, No. 53, Acts of Parliament, 1972, (India). -Destruction, Etc., In a Sanctuary Prohibited Without a Permit.

274 K S Sudhi, Japan Nationals to be booked under Biological Diversity Act, The Hindu, 24 June 2015; http:// www. thehindu.com/news/cities/Kochi/japan-nationals-to-be-booked-under-Biological Diversity-act/ article7348752.ece.

275 Section 55(1), Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).

276 Section 27, The Wildlife Protection Act, 1972, No. 53, Acts of Parliament, 1972, (India).

277 Section 29, The Wildlife Protection Act, 1972, No. 53, Acts of Parliament, 1972, (India).

278 Section 48 A, The Wildlife Protection Act, 1972, No. 53, Acts of Parliament, 1972, (India).

BIOLOGICAL DIVERSITY, MARINE RESOURCES AND ABS IN RELATION TO MARINE GENETIC RESOURCES*

6

The term Biological Diversity was coined by Walter G. Rosen in 1986. Biological Diversity refers to all living organisms spread over different ecosystems. It is the combined form, which is derived from the term "biological diversity".[279] In common parlance, biological diversity can be defined as a given species richness (plants, animals, microorganisms) be it on land, water or sea.[280] It is significant as it ensures the very stability and health of the biosphere and contributes to the renewability of air, water and soil with oxygen, carbon and nitrogen cycles.[281]

One of the important ecosystems that include genetic resources [282]is the Ocean. There are many marine species which are endangered due to various reasons like pollution, degradation of water and climate change.[283] The current legal framework for the protection of marine biodiversity in international borders to a large extent revolves around United Nations Convention on Laws of Sea (UNCLOS), Nagoya Protocol and the Convention on Biological Diversity (CBD).

---

* Vidya Ann Jacob, Assistant Professor of Law.

279 Biological Diversity, E.O Wilson ed. (National Academy Press, Washington D.C, 1988).

280 At the UN Conference on Environment and Development in Rio in 1992 the Convention on Biological Diversity was concluded. In the Convention, biological diversity is defined as, "The variability among living organisms from all sources, including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species and of ecosystems."

281 T.N. Khoshoo, 'India needs a National Biological Diversity Conservation Board', Vol. 71 No 7, Current Science Association 506-513, (1996).

282 They are those resources that have some value and the potential to be used in production of other goods.

283 Climate Change, Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, R. Pachauri and L. Meyer edt., Geneva, Switzerland, 201 Carlos M. Correra, Access to and benefit sharing of marine genetic resources beyond national jurisdiction : Developing a new legally binding instrument, South Centre (2017), (Nov. 28, 2017), https:// www.southcentre.int/wp-content/uploads/2017/09/RP79_Access-to-and-Benefi t-Sharing-of-MarineGenetic-Resources-Beyond-National-Jurisdiction_EN.pdf 4; pg. 40-41.

6.1 Access and Benefit Sharing: Marine Species:

The UNCLOS talks about 'freedom of high seas' with respect to fishing rights. The term 'freedom' still remains vague with regard to bio-prospecting (exploration of biodiversity for new resources of social and commercial value[284]). With respect to marine genetic resources, the provisions of the Convention state that they are "common heritage of mankind" (Article 136 of UNCLOS) and that benefits from marine Biological Diversity should be shared by all the states. Article 140 of UNCLOS states that all activities including bio-prospecting should be carried out with the sole aim of the benefit of the whole mankind.[285] The United Nations Convention on Laws of Seas creates a line of demarcation between extraction of resources for 'commercial purposes' and 'scientific purposes'. Article 87 of the UNCLOS gives freedom to States to use resources for scientific purposes. However at the same time, the Convention stays silent on the question of use of resources for commercial purposes. Also, the freedom with respect to article 87 is subjected to the fact that any information or advancement generated through access to the benefits of such resources should be made public.

While the UNCLOS gives 'freedom to access resources' for 'scientific research', the Nagoya protocol under Article 5 mandates sharing of benefits with the party who is providing the resources. Clause 1 of Article 5 states that the benefits arising from the use of resources shall be shared in a "fair and equitable" manner with the country providing these resources. At the same time it also recognizes the rights of indigenous and local communities in clause 2 of Article 5. The parties to the convention are bound to make laws to recognize the right of local communities with respect to sharing benefits arising from the use of marine resources.[286]

284 Andrew J. Beattie et al., Ecology and bioprospecting, 36 Austral Ecology 341–356 (2010).

285 *Id.*

286 Nagoya Protocol, Convention on Biological Diversity (Dec. 2, 2017), https://www.cbd.int/abs/text/articles/.

While the CBD considers the resources found in ABNJ (Areas beyond National Jurisdiction) as natural heritage of the mankind, the question of compliance and transparency is answered by the Article 17 of the Nagoya Protocol, owing to the fact that CBD is silent upon the question of monitoring of resources.[287] Article 17 of the protocol creates designation of specific checkpoints with the sole objective of receiving information regarding the prior consent from the party. Article 17 [1] (a) (iv) also states that such points "should be relevant to the utilization of genetic resources"[288]. As discussed earlier, the main objective of Nagoya protocol is to create equal access to benefits from marine genetic resources. For this purpose, Article 14 of the protocol brings into account the creation of 'clearance houses' for sharing information by various parties to the protocol. A clearance house is a mechanism where the information related to access and benefit through scientific research on marine genetics is shared by all the parties.

6.2 National Regime

In India certain regulations were adopted in order to protect the marine life and also the related trade. One of the first regulations that was imposed was the Indian Fisheries Act 1897. Post-independence, various regulations and acts such as: The Territorial Waters, Continental Shelf, Exclusive Economic Zone (EEZ) and other Maritime Zones Act 1976 and the Maritime Zones of India (Regulation of fishing by foreign vessels) Act 1981 altered the way fisheries were regulated in India.[289] Other important regulations and legislations passed in this aspect are: the Indian Wildlife (Protection) Act, 1972; the Forest (Conservation) Act, 1980; the Environment (Protection) Act, 1986; the Coastal Regulation Zone (CRZ) notification, 1991; New Deep Sea Fishing Policy, 1991; Biological Diversity Act, 2002; Comprehensive Marine Fisheries Policy, 2004; the most recent legislation is the National Policy on Marine Fisheries which was notified on 28th April, 2017. Under the Territorial Waters, Continental Shelf, Exclusive Economic Zone (EEZ) and other Maritime Zones Act, 200 nautical miles from the territorial waters baseline is regarded as EEZ, where India has rights to exploit, explore, conserve and manage natural resources.

287 *Id.*

288 Nagoya Protocol, Convention on Biological Diversity (Dec. 2, 2017), https://www.cbd.int/abs/text/articles/.

289 Shinoj Parappurattu; C Ramachandran, Taming the Fishing Blues, Economic and Political Weekly, Vol. 52, Issue No. 45 (Nov. 11, 2017), http://www.epw.in/journal/2017/45/special-articles/taming-fishingblues.html.

An area of 12 nautical miles from the baseline is considered as territorial waters where respective states have the jurisdiction to conduct maritime trade. Most states have their own Marine Fisheries Regulatory Acts which regulates the fishing activities of that area.[290]

India's Ninth Five-Year Plan emphasizes the need for sustainable development and the strategy for natural resources management (including wild-life conservation and protection), in particular marine resource conservation, with an emphasis on people's participation.

India's Ninth Five-Year Plan emphasizes the need for sustainable development and the strategy for natural resources management (including wild-life conservation and protection), in particular marine resource conservation, with an emphasis on people's participation.

6.3 Marine Resources and ABS

The Biological Diversity Act was enacted by the Government of India in the year 2002 to secure sovereign rights over natural resources and to prevent the advent of bio-piracy. The BD Act, 2002 had already introduced the regulatory statutes relating to marine genetic resources in India with reference to the Nagoya Protocol. Currently, these regulations highlight the obligations of those accessing genetic resources and associated traditional knowledge for research and commercialization.[291]

As per section 3 of The Biological Diversity Act, 2002 non-Indian entities with foreign participation need prior approval of National Biodiversity Authority before undertaking any activity relating to bio-prospecting or transferring results of research. Section 6 states that applicants who wish to register or grant any intellectual property rights need to also seek permission from the authority. Further section 21 enshrines a clear framework to ensure equitable benefit sharing is evolving with respect to resources. The State Biodiversity Boards are empowered under section 7 to give permission for collection of biological resources.[292]

290 *Id.*

291 Neeti Wilson, Guidelines for Access and Benefit Sharing for Utilization of Biological Resources based on Nagoya Protocol Effective, 20 JIPR 68 (2015), (Nov. 20, 2017), http://nopr.niscair.res.in/bitstream/123456789/30587/1/JIPR%2020%281%29%2067-70.pdf.

292 The Biological Diversity Act, 2002, No. 18, Acts of Parliament, 2003, (India).

The existing legal regime in India on Biological Diversity does not have a specific provision for regulating marine bio-prospecting activities.[293]

6.4 Marine resources and High Sea

International law lays down that a country's sovereignty with respect to exclusive economic zone where it exercises its jurisdictions is about 200 nautical miles from its coastal baseline.[294] This means that the natural resource (including ocean) in such jurisdiction would be governed by a country the way it governs its landmass.

The area beyond the threshold of 200 nautical miles is called Areas Beyond National Jurisdiction (ABNJ), where exclusive rights cannot be exercised by any individual country. In 2015, the United Nation adopted a resolution for the conservation of marine life beyond national territorial waters called International Legally Binding Instrument (ILBI). The main aim of this negotiation is to detail 'proposals of the elements that could comprise the treaty, such as conservation measures, environmental impact assessments and its components, marine genetic resources, capacity-building and the transfer of marine technology.'[295] With respect to ILBI negotiations, India has the following stance:

1. The ILBI should consider the principles of international law, such as common heritage and high-seas freedoms;
2. Marine protected areas should not restrict existing rights; and
3. IPR issues need to be addressed in relation to access and benefit sharing from marine genetic resources'.[296]

293 Pooja Bhatia and Archana Chugh, Role of marine bioprospecting contracts in developing access and benefit sharing mechanism for marine traditional knowledge holders in the pharmaceutical industry, Global Ecology and Conservation, Vol 3 (January 2015), (Nov. 30, 2017), https://www.sciencedirect.com/science/article/pii/S2351989414000857.

294 United Nations Convention on the Law of the Sea, 10 December 1982, Art. 3, (Nov. 29, 2017), http://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf.

295 Development of an international legally binding instrument under the United Nations Conservation on the Law of the Sea on the conservation and sustainable use of marine biological diversity, (Nov. 30, 20117), https://sustainabledevelopment.un.org/index.php?page=view&type=13&nr=2167&menu=2993.

296 Ipshita Chaturvedi, If India won't work to conserve our oceanic Resources, Peace can't be in our long term agenda, (Nov. 20, 2017), https://thewire.in/158459/high-seas-unclos-seabed-mining/.

According to Section 55 of the Biological Diversity Act, 2002, obtaining any biological species for commercial utilization or other purposes mentioned in Section 3 without the NBA's approval is a punishable offense. Thus any marine resources accessed from within 200 nautical miles beyond territorial waters of the Indian coastline require permission and intimation from the National Biodiversity Authority or the State Biodiversity Boards.

6.5 International regime on Marine species

The marine environment and the life it supports, forms a delicately balanced web of interrelated food chains, all of which depend on the chemical composition of the water. While even 'natural' sea water contains some substances we would regard as pollutants, such as mercury, lead, hydrocarbons and radioactive nuclides, over the years humans have introduced these and other substances in amounts which are having a dramatic effect on the ecology of the marine environment.[297]

Majority of the mass of water bodies is deemed to be international waters, or water outside national jurisdictions. The main question that arises is regarding the exploration and exploitation of the marine genetic resources available in these bodies. Article 136 of the United Nation Convention on the Law of the Sea (UNCLOS) states that the Area (the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction) and its resources are the common heritage of mankind[298]. However, like other major resources, marine genetic resources are not evenly distributed, and some of them fall under the jurisdiction of various sovereign states.

'Integrated Marine and Coastal Area Management (IMCAM)' initiatives focus on sustainable management of marine resources by integrating all the components into a well-designed framework.[299] To ensure fair and equitable sharing of these resources and facilitate physical access to them to further research, the concept of Access and Benefit Sharing Agreements was devised. In case of marine resources, access benefit sharing can be of a tremendous use to the countries.

297 O.Schachter and D. Serwer, 'Marine Pollution Problems and Remedies', American Journal of International Law 87(1971) p.71.

298 United Nations Convention on the Law of the Sea, 10 December 1982, Section 2, Art. 136, (Nov. 29, 2017), http://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf.

299 Jakarta Mandate, Convention on Biological Diversity, November 1995; pg. 8-9.

Cases:

In Icelandic Fisheries Jurisdiction case, the International court of Justice addressed the issue with respect to the extension of coastal state jurisdiction for the exploitation of living resources with regard to the 1958 Geneva Convention on Fisheries Conservation and Management.[300] The UNCLOS provides for harmonization between treaties under Art. 237. These provisions indicate a mutually supportive role between UNCLOS and treaties as well as rules of custom that are applicable for the conservation of high seas living marine resources.[301]

In the case of Southern Bluefin Tuna[302], the relationship between the various treaties governing high seas and the UNCLOS was also raised. The International adjudicating body established that the object of the parties and the use and purpose of the various treaties would be analysed before a consensus on the agreement was finalised.[303]

6.6 Marine Genetic resources

Genetic Resources can be defined as "Genetic material of actual or potential value"[304]. Further Marine Genetic Resources can be interpreted as Genetic Resources present in the oceans. The definitions might seem simple but when it comes to ascertainment of ownership and appropriation of such resources, the task is indeed complicated and challenging. This is mainly because there is no set legal international framework governing such resources beyond the national jurisdiction of countries.[305]

300 The Icelandic Fisheries Cases, ICJ Reports, (1974).

301 Bowman, et al., Research Handbook on Biological Diversity and Law, Edward Elgar Publishing Ltd. (2012).

302 Southern Bluefin Tuna (Jurisdiction and Admissibility) case, (Australia and New Zealand v Japan), Award of 4 August 2000, UNRIAA vol XXII (2004).

303 *Supra at* 301.

304 Genetic Resources, (Nov. 28, 2017), http://www.Biological Diversitya-z.org/content/genetic-resources.

305 Eve Heafey, Access and Benefit Sharing of Marine Genetic Resources from Areas beyond National Jurisdiction: Intellectual Property - Friend, Not Foe, Chi. J. Int'l L. p.,14,493.

The international laws that mainly deal with the ocean resources are the "United Nations Convention on the Law of the Sea"[306] and "Convention on Biological Diversity". The former enacted in 1982 has elaborate provisions on the marine jurisdiction limits of countries, exploitation of marine resources, protection of marine environment and marine scientific research. Prior to the provisions of this treaty, according to the previous treaties on this subject matter, marine genetic resources were considered as "common heritage of mankind".

The concept that common property must be utilized in a manner that would ensure a balance between conservation and profit had earlier not got much attention. It was through the adoption of "United Nations Convention on the Law of the Sea" that such a notion became prevalent.[307] The latter enactment enhanced the concept of balance between conservation and profit by devising strategies for sustainable usage of marine resources which include access and benefit-sharing mechanism.[308] The Nagoya protocol that was brought in furtherance to the Convention on Biological Diversity focuses primarily on "Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization."[309] The existence of these International Conventions however has not ensured the implementation of the strategies proposed, since countries constantly face technical, social, political issues regarding the enactment of laws on the subject due to ambiguity in the process of implementation.[310]

Marine Genetic Resources (MGR) found in the deep-sea is a growing area of research in the modern times. Considerable area of the deep-sea lies beyond national jurisdiction. Access and benefit sharing of MGR is a key issue under the UNCLOS for the conservation and sustainable use of marine biological diversity under area beyond national jurisdiction (ABNJ). There is a need for an enhanced mechanism to support access and benefit sharing

306 Petra Drankier; Alex G. Oude Elferink; Bert Visser; Tamara Takacs, Marine Genetic Resources in Areas beyond National Jurisdiction: Access and Benefit-Sharing, Int'l J. Marine & Coastal L. p. 27, 376.

307 The United Nations Convention on the Law of the Sea, (Nov. 30, 2017), http://www.un.org/depts/los/convention_agreements/convention_historical_perspective.html.

308 Article 15 Access to genetic resources, (Nov. 30, 2017), https://www.cbd.int/convention/articles/default.shtml?a=cbd-15.

309 The Nagoya Protocol,(Nov. 30, 2017), https://www.cbd.int/abs/.

310 Accessing Biological Diversity and Sharing the Benefits: Lessons from Implementing the Convention on Biological Diversity, IUCN Environmental Policy and Law, 54, 5, (Nov. 30, 2017), https://portals.iucn.org/library/sites/library/fi les/documents/EPLP-054.pdf.

of marine genetic resources and areas beyond national jurisdiction. Scientific research in deep-sea can be used for informing practical governance solutions for access ad benefit sharing of MGR and ABNJ. This will promote and enhance opportunities in open-access to data and samples, standardisation and international marine science cooperation.[311]

Did You Know?

In 2017, the Counsellor and Legal Adviser in the Indian Mission to the UN, Koteswara Rao stated that India supports the process to develop an international legally binding instrument under UNCLOS on the conservation and sustainable use of marine Biological Diversity in areas beyond national jurisdiction.

There is no doubt that marine ecosystems encompass one of the richest and diverse set of flora and fauna. This arises from the fact that they inhabit oceans which form about 71% of the earth's surface[312] and are responsible for the regulatory conditions on land. At the same time, they also moderate the terrestrial climate. The marine ecosystem also serves as an important means of livelihood to millions of people across the globe. Access to and benefit from sharing of marine species can help in the development of the user as well as the provider country. The user country will be able to utilise the marine resources for research purposes and can also use these resources for commercial purposes. For example, the prawns found in the Indian Ocean have a large market in countries like Canada and USA. However, access and benefit sharing of such resources has its demerits too. Over utilisation of these naturally gifted resources can lead to depletion.

Marine species not only balance the ecosystem but also balance human life. Global warming, which is on the rise is adversely affecting the ecosystems and biological diversity. The rise in sea levels due to global warming is largely affecting the marine life. According to a Report by the Ad Hoc Technical Expert Group on Biological Diversity and Climate Change, many

311 Harriet Harden – Davies, Deep – sea genetic resources: New frontiers for science and stewardship in area beyond national jurisdiction, Deep Sea Research Part II: Tropical Studies in Oceanography, Vol. 137 (2017).

312 Oceans, National Geographic, "Oceans" <www.nationalgeographic.com/environment/habitats/oceans/> last accessed on November 28, 2017.

indigenous communities and groups depending on coastal and maritime trade will suffer economically because of the phenomenon of climate change due to loss of marine life.[313]

In the 21st century, Marine Genetic Resources are one of the largest untapped resources with huge potential. Essentially valued in the medical and pharmaceutical field, marine species offer a diverse variety of solutions, the aforementioned value mainly stemming from their genetic material, or rather the genetic variability of the material[314]. However, the importance of Marine Genetic Resources is now being acknowledged with important discoveries like the green fluorescent protein (GFP) that was first isolated from the jellyfish "Aequorea victoria", azidothymidine (an antiretroviral drug used in the treatment of the HIV retrovirus), and bryostatins (anti-cancer agents).[315]

****

313 Secretariat of the Convention on Biological Diversity (2009). Connecting Biological Diversity and Climate Change Mitigation and Adaptation: Report of the Second Ad Hoc Technical Expert Group on Biological Diversity and Climate Change. Montreal, Technical Series No. 41, 126 pages.

314 Heafey, Eve, 'Access and Benefit Sharing of Marine Genetic Resources from Areas beyond National Jurisdiction: Intellectual Property--Friend, Not Foe,' Chicago Journal of International Law (2014) Vol. 14: No. 2.

315 Malve, Harshad, 'Exploring the Ocean for New Drug Developments: Marine Pharmacology', Journal of Pharmacy & Bio Allied Sciences (2016) p.83–91.

INVASIVE SPECIES*

Invasive Alien Species, as defined by the Convention on Biological Diversity[316], refers to those species whose introduction and spread outside their natural habitat disrupts Biological Diversity. These species can be foreign, non-indigenous and/or non-native and are introduced from one region to another either accidentally or by anthropocentric activities. A plant that is not naturally found in a particular area, but which eludes from its habitat and starts reproducing in another area, is referred to as a naturalized species. When the prominence of such species is marked by quick and vast dispersion to other areas and their ruinous streak starts hampering the native biological diversity, is when these species become invasive in nature.

Charlesjsharp/CC-BY-SA-4.0

Terrestrial and/or aquatic flora, fauna, animals, fungi, bacteria can exist as invasive species.[317]Rapid growth, quick dispersion and the ability to adapt to new habitat conditions are some distinctive characteristics of invasive species. Naturally, every ecosystem presupposes the existence of natural predators and competitors who prevent the population explosion of non- native species. However, human exploitation, in its various forms, has imposed immense pressure, thus weakening the present condition of ecosystems. Therefore, the fact that natural predators are themselves threatened increases the chances of successful invasion.

Invasive Alien Species, according to IUCN Red List, are considered as the second largest threat to biodiversity, specifically with regard to species that have gone completely

* Raagya Zadu, Research and Teaching Associate, NLSIU and Aishwarya Ravindranath, Researcher.

316 Convention on Biological Diversity, What are Invasive Alien Species?, CBD.INT (Dec. 12, 2017), https://www.cbd.int/invasive/WhatareIAS.shtml.

317 United States Department of Agriculture, What is an Invasive Species? INVASIVESPECIESINFO. GOV (Dec. 12, 2017), https://www.invasivespeciesinfo.gov/whatis.shtml.

extinct. This is most commonly true with reptiles, mammals and amphibians.[318] And Invasive Species have, since the 17th Century, contributed to nearly 40% of all animal extinctions.[319] Plants, animals, birds or even fungi and bacterial species that turn invasive, portray tendencies of threatening and /or destroying the native biota. The introduction of European Starlings[320](Sturnus Vulgaris) into the United States of America in 1890 is a famous example in this regard. The droppings of the said birds carried vectors of fatally infectious diseases and caused the destruction of crops in that particular case.

In India, a chief example of an Invasive species would be that of Lantana Camara, which is widely known to have caused a menace in the Western Ghats. This plant, which was initially introduced for aesthetic purposes in 1809, has ended up being the root cause for major disruption of biodiversity in India. It has caused the population of wild animals that depend on shrubbery and foliage to decrease while on the other hand has also led to the nuisance of wild boars (provides effective camouflage to them).[321]

Efficient regulatory mechanisms play an important role in controlling the plight of invasive species. Five mammal species (since 1996), 11 bird species (since 1988) and 1 amphibian (since 1980) have had the substantial risk of their extinction reduced as a result of successful control and/or eradication of Invasive Species.[322] Although there are a number of international and domestic instruments that have formulated measures for the regulation of Invasive Species, the Indian Legal System has failed to develop a uniform and specific legal regime for the regulation of the same.

318 International Union for Conservation of Nature, Invasive Species, IUCN.ORG (Dec. 07, 2017), https://www.iucn.org/theme/species/our-work/invasive-species.

319 Convention on Biological Diversity, Living in Harmony with Nature, CBD.INT (Dec. 13, 2017), https://www.cbd.int/undb/media/factsheets/undb-factsheet-ias-en.pdf.

320 Kayla Webley, They're Taking over Starlings, CONTENT.TIME.COM (Jan. 02, 2018), http://content.time.com/time/specials/packages/article/0,28804,1958657_1958656_1958664,00.html.

321 Ankila J. Hiremath & Siddhartha Krishnan, India knows its Invasive Species Problem but this is why Nobody can with it Properly, THEWIRE.IN (Dec. 06, 2017) https://thewire.in/86078/invasive-speciesprosopis-lantana/.

322 Convention on Biological Diversity, Global Biological Diversity Outlook 3, CBD.INT (Dec. 06, 2017), https://www.cbd.int/gbo3/?pub=6667&section=6711.

International Instruments Related to Invasive Species[323]

Treaty	Application
International Plant Protection Convention, 1951[IPPC] (adopted) **Came into force in 1952** **Revised in 1997** **Came into force in 2005** [324]	Applies primarily to quarantine pests in international trade. Creates an international regime to prevent spread and introduction of plant and plant product pests premised on exchange of Phytosanitary certificates between importing and exporting countries' national plant protection offices. Parties have national plant protection organizations established according to the Convention with authority in relation to quarantine control, risk analysis and other measures required to prevent the establishment and spread of all invasive alien species that, directly or indirectly, are pests of plants. Parties agree to co-operate on information exchange and on the development of International Standards for Phytosanitary Measures.
Convention on International Trade in Endangered Species (CITES), 1973[325]	Represents alternate model for regulating invasive species not already covered by the IPPC or other agreements. Convention intended to prevent harm in exporting country; however, can be applied when species is endangered in exporting country and considered an invasive in importing country. Regulates only intentional movement.
Convention on Migratory Species of Wild Animals, 1979[326]	**Article III (4)(c) of the Convention states that** "Range State Parties of Endangered Migratory Species (Annex1) to the extent feasible and appropriate should endeavor to prevent, reduce or control factors that are endangering or likely to further endanger the species, including strictly controlling the introduction of or, controlling or eliminating already introduced exotic species."
United Nations Conventions on Laws of Sea, 1982[327]	**Article 196**: States to take all measures necessary to prevent, reduce and control the intentional or accidental introduction of species, alien or new, to a particular part of the marine environment, which may cause significant and harmful changes thereto.

323 United Nations Department of Agriculture, Laws and Regulations, INVASIVESPECIESINFO.GOV https://www.invasivespeciesinfo.gov/laws/intlglobalconv.shtml.

324 *Id.*

325 *Supra* at 323.

326 *Id.*

327 *Supra* at 323.

Convention on Biological Diversity (CBD) 1992[328]	**Article 8 (h):** Contracting Party, as far as possible and as appropriate to prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats or species. **Article 8 (g):** Parties to establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology which are likely to have adverse environmental impacts that could affect the conservation and sustainable use of biological diversity, taking also into account the risks to human health.
Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement), 1994[329].	A supplementary agreement to the World Trade Organization Agreement. Provides a uniform interpretation of the measures governing safety and plant and animal health regulations. Applicable to all sanitary and Phytosanitary measures directly or indirectly affecting international trade. Sanitary and Phytosanitary measures are defined as any measure applied a) to protect animal or plant life or health within (a Members' Territory) from entry, establishment or spread of pests, diseases, disease carrying organisms; e) to prevent or limit other damage within the (Members Territory) from the entry, establishment or spread of pests (annex A)
Cartagena Protocol on Biosafety (Protocol to the CBD), 2000[330]	**Article 4:** "This Protocol shall apply to the transboundary movement, transit, handling and use of all living modified organisms that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health." **Article 17.1:** "Each Party shall take appropriate measures to notify affected or potentially affected States, the Biosafety Clearing-House and, where appropriate, relevant international organizations, when it knows of an occurrence under its jurisdiction resulting in a release that leads, or may lead, to an unintentional transboundary movement of a living modified organism that is likely to have significant adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health in such States. The notification shall be provided as soon as the Party knows of the above situation." **Article 18.1:** "In order to avoid adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health, each Party shall take necessary measures to require that living modified organisms that are subject to intentional transboundary movement within the scope of this Protocol are handled, packaged and transported under conditions of safety, taking into consideration relevant international rules and standards."

328 *Supra* at 323.

329 *Supra* at 323.

330 *Id.*

7.1 Laws and Policies Regarding Invasive Species in India

The International Union for Conservation of Nature and Natural Resources (IUCN) defines Alien Invasive Species as "a species which is established in natural or semi natural ecosystems or habitat, is an agent of change, and threatens native biological diversity."[331]

There are a number of enactments which have been amended to include invasive species like the Plant Quarantine (Regulation of Import into India) Order 2003; The Destructive Insects and Pests Act, 1914 (and amendments); Livestock Importation Act 1898 and the Livestock Importation (Amendment) Ordinance, 2001; Environment Protection Act 1986; and The Biological Diversity Act 2002.

Different agencies have also been vested with the authority to prevent the introduction of Invasive Species and for their effective management and regulation. The Ministry of Environment Forests and Climate Change, the National Bureau of Fish Genetic Resources, the Plant Quarantine Organization of India, and departments of the Ministry of Agriculture are the said authorities.

7.1.1 Policies and Measures to Control Invasive Species

7.1.1.1 National Biodiversity Action Plan (NBAP)[332]

Article 6 of CBD enjoins upon all Parties to prepare national strategies, plans or programmes for conservation and sustainable use of biological diversity. In pursuance to CBD, India enacted the Biological Diversity Act in 2002 and Section 36 of the Act empowers the Central Government to develop national strategies, plans or programmes for conservation and sustainable use of biological diversity, and to integrate biodiversity concerns into relevant sectors. The National Biodiversity Action Plan is one such plan developed in pursuance to the provision of the BD Act and CBD.

331 International Union for Conservation of Nature, Invasive Alien Species, IUCN.ORG (Dec. 18, 2017), https://www.iucn.org/regions/europe/our-work/invasive-alien-species.

332 National Biological Diversity Action Plan, CBD.INT (Dec. 12, 2017), https://www.cbd.int/doc/world/in/in-nbsap-v3-en.pdf.

Regulation of Introduction of Invasive Alien Species and their management under NBAP:

- Institution of a unified legal system for regulation of all species introduced by carrying out rigorous quarantine checks.
- Strengthening domestic quarantine checks to contain the spread of invasive species to neighbouring areas.
- Promoting inter-sectoral linkage to check unintended introductions and contain and manage the spread of Invasive Alien Species.
- Develop early warning awareness system in response to new sighting of Invasive Alien Species.
- Funding and managing for Invasive Species.
- Support capacity building for managing Invasive Alien Species at different levels with priority on local area activity.
- Providing restorative measures of degraded ecosystems using preferably locally adapted native species for this purpose.

7.1.1.2 Indian Council for Forestry Research and Education - Forest Invasive Species Cell (Autonomous Body)[333]

The Forest Invasive Species Cell was set up to develop capacities for invasive species management and to create a database on invasive species. It has the chief task of maintaining an exhaustive database of the invasive species in the Forests and their regulation, if any undertaken.

7.1.1.3 Plant Quarantine (Regulation of Import into India) - Policy for Control of National Invasive Alien Species[334]:

- The National Integrated Pest Management (IPM) program included a mechanism to prevent and control the threat posed by Invasive Alien Species within the Country.

333 (Dec. 12, 2017) http://www.moef.nic.in/report/0203/chap-08.html.

334 The Gazette of India, Plant Quarantine Order, (Dec. 20, 2017) http://dbtbiosafety.nic.in/act/Plant%20Quarantine%20_order_2003.pdf.

- System of domestic quarantine was to be used wherever necessary. There was involvement of State Governments, NGOs, Private Sector, Research institutions and Farmer Self-help groups in the surveillance and detection of pests/ diseases and for taking eco-friendly corrective action within the IPM scheme.
- Research was to be conducted to study the impact of Climate Change on threat of Invasive Alien Species.
- The task of research, future prevention and control measures was to be handled by the Ministry of Agriculture in coordination with other Central Govt. Departments, concerned State Governments, Indian Council of Agricultural Research, other research institutions and Agriculture Universities and the Private Sector.

7.1.2 Controlling the Threat of Invasive Species: Domestic Law

Plant Quarantine (Regulation of Import into India), 2003[335]	a. Phytosanitory certificates for export, and permits for import of germplasm required. b. Plant & Plant material are allowed into India after the Import (Pest) Risk Analysis is conducted and thereafter categorized under **Schedule-IV, V, VI, VII and VIII under the Plant Quarantine Order.** c. The pest risk analysis has been made mandatory for all the plants/plant material prior to its import into India as per Clause 3(7) of the Plant Quarantine Order, 2003. The risk of exotic pests and diseases is minimized by identifying the potential pests which can get into the country with the specified commodity and seeking certification of their freedom/pest free area status, etc. from the exporting country. d. **Schedule-IX of the Plant Quarantine Order**, 2003 issued for inspection & sampling. The samples are subject to detailed laboratory testing such as X-ray, washing test, incubation and grow-out tests and other special diagnostic tests to ascertain freedom from exotic pests.

335 Plant Quarantine (Regulation of Import into India) Order,2003 (Updated and Consolidated Version), PLANTQUARANTINEINDIA.NIC.IN (Dec. 20, 2017), http://plantquarantineindia.nic.in/pqispub/pdffiles/pqorder2015.pdf.

Destructive Insects and Pests (DIP) Act, 1914[336]	a. Phytosanitary certificates for export, and permits for import of germplasm required.
Livestock Importation Act, 1898	a. Health certificates for livestock to be exported required b. Licenses required for export of living organism by Director General of Foreign Trade (DGFT)
Wildlife (Protection) Act, 1972[337]	a. Quarantine certificates required for export of wild animals/ articles b. New Scheme on integrated forest protection to cover IAS
National Cell, as part of CBD	a. Forest Invasive Species Cell set up

7.2 Some Case Studies

Out of the 100 of the world's worst invasive alien species341, India is host to 11 such plant species which include Lantana Camara (lantana), Leucaena latisiliqua (false koa), Mikania micrantha (mile-a-minute weed), Ulex europaeus (gorse), Sphagneticola trilobata (Singapore daisy), Clidemia hirta (Koster's curse), Arundo donax (giant cane), Opuntia stricta (prickly pear), Chromolaena odorata (Siam weed).[338] Invasive Alien Species have far reaching biological, economical, ecological implications on the environment it establishes itself in.

7.2.1 Lantana Camara:

Lantana Camara also commonly known as Lantana or Wild Sage is a native West Indies species[339] that has invaded numerous countries around the world. Lantana is a medium sized perennial, highly variable, aromatic shrub with small, multi-coloured flowers and was predominantly cultivated for over 300 years for its practical and medical utility.[340]

336 Govt. of India, *The Destructive Insects and Pests Act, 1914,* NBAINDIA.ORG, (Dec. 21, 2017), http://nbaindia.org/uploaded/Biological Diversityindia/2.%20destructive%20insects%20and%20pest.pdf.

337 The Wildlife (Protection) Act, 1972, nbaindia.org (Dec . 20, 2017), http://nbaindia.org/uploaded/Biological Diversityindia/Legal/15.%20Wildlife%20(Protection)%20Act,%201972.pdf.

338 Ankila J. Hiremath & Bharath Sundaram, Invasive Plant Species in Indian Protected Areas : Conserving Biological Diversity in Cultural Landscapes, ATREE.ORG (Dec. 20, 2017), http://www.atree.org/sites/default/fi les/book-chapters/Hiremath&Sundaram_IAPsInPAs_2013.pdf.

339 University of Florida, Institute of Food and Agricultural Sciences, Lantana Camara, UFL.EDU, (Jan, 02, 2018), https://plants.ifas.ufl .edu/plant-directory/lantana-camara/.

340 *Id.*

The advent of Lantana to India can be traced back to the Calcutta Botanical Garden where in 1809 it was introduced as an ornamental plant. Other accounts of its introduction are that of it spreading via Sri Lanka to the Peninsular India. The plant has wide ecological tolerance, perhaps the reason why it has now spread to a variety of habitats in India, from the tropical forests in the South to the Himalayas in the North.

Lantana is highly invasive in nature due its ability to cross-pollinate with other varieties of weeds to reproduce newer and relatively more resilient forms. The ability of a mature lantana plant to produce up to 12,000 seeds a year doubles with high pollination rates owing to its multi-coloured flowers which ultimately results in it spreading out to vast areas. Further, the plant can release certain chemicals into the soil preventing germination, hence, excluding competition from surrounding native plants.

The Lantana plants harbour disease carrying pests like malarial mosquitoes in bushes and can pose as a serious risk affecting the health of the people living in its vicinity. Lantana also poses agricultural problems in major parts of India as it grows dense and thick and has a negative effect on flora and fauna as well. There have been recorded instances wherein sub lethal doses of the species have not only caused death in livestock but have also resulted in abortion and lowered production potential of milk by dairy cows.[341]

7.2.2 Prosopis Juliflora

Prosopis Juliflora quite commonly known as the Mesquite was first introduced into India during the latter half of the nineteenth Century. The mesquite's advent can be traced back to two main accounts in year of 1857 and then 1878. The former was to halt the spread

341 Neena Priyanka & P.K. Joshi, A Review of Lantana Camara Studies in India, IJSRP.ORG (Dec. 23, 2017), http://www.ijsrp.org/research-paper-1013/ijsrp-p2207.pdf.

of the Thar Desert in Northwest India and the latter was to utilize it as fuel wood in the peninsular India.[342]

It is a shrub or a small tree of 3 to 12 meters which is thorny with wide flat-topped crown and is native to mainly America.[343]Although certain studies suggest that the characteristics of the seeds enable it to establish and grow quicker compared to native plants, the extreme levels of invasiveness are proposed to be caused due to its inbuilt mechanism to thrive in extreme and adverse conditions.[344]

This particular plant which had worked well in the arid regions of Thar has been causing quite a lot of trouble in the southern district of Tamil Nadu. This invasive species has commanded around 52,000 hectares of land in Ramananthpuram district alone.[345]

Initially, the mesquite was planted in large scale with the intention of overcoming the impending disaster caused by deforestation, desertification and shortage of fuel wood. Although, it is still a great source of fuel wood to the locals and villagers, environmentalists express their concern that its invasiveness has negatively impacted the marine- ecosystems in particular. Its invasiveness has reached canals, grasslands, croplands and protected areas. The Centre for Environmental Management of Degraded Ecosystems at Delhi University have also claimed that there is a persistent fall in the levels of ground water and drying up of soil surface in the areas where this species spreads (one of the major characteristics of the Mesquite).[346]

342 Llewellyn C. Foxcroft et al, Plant Invasions in Protected Areas: Patterns, Problems and Challenges (Dec. 24, 2017).

343 Prosopis Juliflora, WORLDAGROFORESTRY.ORG (Dec. 24, 2017), http://www.worldagroforestry.org/treedb/AFTPDFS/Prosopis_juliflora.PDF.

344 C. Jaishankar, Tree Species Turning into Environmental Threat, THEHINDU.COM (Dec. 24, 2017), http://www.thehindu.com/todays-paper/tp-national/tp-tamilnadu/Tree-species-turning-intoenvironmental-threat/article16603887.ece.

345 Id.

346 Surojit Mahalanobis, Silent Botanical Disaster Engulfing India, TIMESOFINDIA (Dec. 24, 2017), https://timesofindia.indiatimes.com/home/science/Silent-botanical-disaster-engulfing-India/articleshow/1121786.cms.

7.2.3 The Red-Bellied Piranha

Pygocentrus nattereri also known as the red piranha is native to South America and is omnivorous. In India, it is commonly known as the 'Roop Chand' and is used for consumption by locals. Although, not man eaters per se, they do have the ability to bite off the flesh of human beings on the event of food deprivation in water systems. This species is highly risky as it portrays aggressive behaviour. It outcompetes with other aquatic organisms for natural resources and even feeds on them. It also has the potential of wiping off native species from their natural habitats. This species lately has made its reappearance in the river Godavari and Krishna.[347]

7.2.4 Coffee Berry Borer

Hypothenemus hampei, or the coffee berry borer is native of Northeast Africa. It is the most serious pest affecting coffee trees in many of the major coffee-producing countries in the world.[348] The existence of this invasive beetle was first recorded in 1990 in India and since then has gradually spread across quite a few states. It is now prevalent Karnataka, Tamil Nadu, and Kerala. It is known to attack Arabica and Robusta coffee trees.

In 1992, the Pest Act was invoked by the Government to restrict the movement of coffee from infested area to no infested areas. To tackle the situation, the Project Directorate of Biological Control, Bangalore ordered for the release of parasitoids on infested estates. In December 1995, the Government of India even sanctioned the National Mission on Control and Prevention of Coffee Berry Borer. In 1998 the Project on Integrated Management of Coffee Berry Borer was launched. Although the spread of the species was rapid in

347 V. Nilesh, Deadly Species: Dreaded Fish Found in Godavari River, DECCANCHRONICLE.COM (Dec. 25, 2017), https://www.deccanchronicle.com/150525/nation-current-affairs/article/dreadedfish-found-godavari-river.

348 https://www.cabi.org/isc/datasheet/51521.

the first few years, due to appropriate and timely measures taken with action plans and implementations, the spread has declined at a steady rate over the past years.[349]

India is a host to various pest regulation acts. But these laws unfortunately fall short in implementation, which is reflected in the number of alien invasive species present in the country. Since most invasive species once established are extremely difficult to eradicate, it is important to take preventive measures to tackle them. India should strive to harmonize the phytosanitary standards that are in place along with coordinated action between international parties which will help ensure the prevention of such invasions. Moreover, local bodies in India should work in tandem with the objectives of the Centre and set up stronger mechanisms for the successful implementation of Central laws.

Building research capacity also goes a long way in helping eradicating invasive species. Research capacity would include aspects such as better risk assessments and risk management. Extensive research can help in assessing the extent and intensity of the invasion and also aid in developing efficient control measures.

****

349 P.K Vinod Kumar, Two Decades of Managing the Coff ee Berry Borer- India's Experience, ICO.ORG (Dec. 26, 2017), http://www.ico.org/event_pdfs/cbb/presentations/Kumar%20Two%20decades.pdf.

BIO RESOURCES, TRADITIONAL KNOWLEDGE AND INTELLECTUAL PROPERTY RIGHTS*

8

The CBD, 1992 defines Biological Diversity as "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems." It also defines biological resources as "genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity."[350]

India is one of the 12 megadiverse countries with different ecosystems. The loss of biodiversity and commercialization of bio resources and associated knowledge have been causing great concern especially when Intellectual Property Rights are applied to such knowledge and resources to claim monopoly over them.[351]

Traditional knowledge refers to the knowledge, innovations and practices of indigenous and local communities around the world. Developed from experience gained over the centuries and adapted to the local culture and environment, traditional knowledge is transmitted orally from generation to generation.[352]

---

* Pratyusha M, PG Diploma in Intellectual Property Rights, Deputy Manager (Design) at Hindustan Aeronautics Limited, Bengaluru.

350 Article 2, Convention on Biological Diversity, 1993.

351 A. Saravanan, IPR in Traditional Knowledge and Bio-Diversity: Protection, Issues and Possible Ways Ahead (June 5, 2012), https://ssrn.com/abstract=2272656 or http://dx.doi.org/10.2139/ssrn.2272656.

352 Convention on Biological Diversity, 1993, https://www.cbd.int/traditional/intro.shtml.

Section 8(j) of the Convention on Biological Diversity talks about the protection of such traditional knowledge. It 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."[353]

The Supplementary agreement to CBD, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization was adopted by the Conference of the Parties at its tenth meeting on 29 October 2010 in Nagoya, Japan.[354] The protocol aims at setting obligations on the member countries as to develop robust Access and Benefit Sharing mechanisms so that local communities get benefited from such access. It states that Prior Informed Consent (PIC) is to be obtained for research purposes from the indigenous peoples of the locality for their genetic resources, on mutually agreed terms. The inclusion of mutually agreed terms though leaves the effective implementation of the protocol, open to interpretation.[355]

The international community has also recognized the close and traditional dependence of many indigenous and local communities on biological resources, notably in the preamble to the Convention on Biological Diversity. There is also a broad recognition of the contribution that traditional knowledge can make to both the conservation and the sustainable use of biological diversity, two fundamental objectives of the Convention.[356]

Indigenous peoples and local communities have an important role in the management of Biological Diversity. The value of Indigenous Knowledge (IK) is being recognized by scientists, managers, and policy-makers, and is an evolving subject of national and

353 Article 8 (j), Convention on Biological Diversity, 1993.

354 Secretariat of the Convention on Biological Diversity, "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" (2011), (Dec. 21, 2017), https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf.

355 Endod: A case study of the use of African Indigenous knowledge to address global health and environmental problems.

356 *Supra at* 351.

international law.[357] Indigenous people themselves have repeatedly claimed that they have fundamental rights to IK because it is necessary to their cultural survival, and this principle is increasingly being recognized in international law as well. These rights include many non material and material values bundled into "traditional resource rights".[358] When benefits are gained outside indigenous communities, they are entitled to have control over the process and to benefit from the use of their knowledge and traditions.

8.1 Some International Legal Instruments and bodies relevant to the issue of Biological Diversity, Indigenous Communities and Traditional Knowledge

Convention on Biological Diversity , 1992 • Article 8 (j) states that contracting Member Parties shall "respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use	• Article 8 (j) of the Convention states that contracting Member Parties shall *"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."*
United Nations Convention to Combat Desertification, 1994	• The Convention requires parties to "*protect, integrate, enhance and validate traditional and local knowledge, know-how and practices*" • Article 17 (c) states that "*owners of that knowledge will directly benefit on an equitable basis and on mutually agreed terms*" • Article 18 (a) also talks about the protection, promotion and use of that traditional knowledge in particular, relevant tradition and local technology.
United Nations Permanent Forum on Indigenous Issues (UNPFII), 2002	• It is the UN's central coordinating body for matters relating to the concerns and rights of the world's indigenous peoples.

357 Anaya, J., Indigenous peoples in international law, Oxford University Press, New York, USA, (1996).

358 Posey, D. A., Traditional resource rights: International Instruments for Protection and Compensation for Indigenous Peoples and Local Communities, International Union for the Conservation of Nature and Natural Resources, The World Conservation Union, Gland, Switzerland, (1996).

Convention for the Safeguarding of Intangible Cultural Heritage, 2003, UNESCO	• Article 2 of the Convention defines *"intangible cultural heritage"* to include knowledge and practices concerning nature and the universe • Article 1 of the Convention states that the purpose of the Convention is to "*a) safeguard the intangible cultural heritage; b) to ensure respect for the intangible cultural heritage of the communities, groups and individuals concerned; c) to raise awareness at the local, national and international levels of the importance of the intangible cultural heritage, and of ensuring mutual appreciation thereof and d) to provide for international cooperation and assistance"*
Convention on the Protection and Promotion of the Diversity of Cultural Expressions, 2005, UNESCO	• The Preamble to the Convention recognizes the importance of traditional knowledge as a source of intangible and material wealth, and in particular the knowledge systems of indigenous peoples, and its positive contribution to sustainable development, as well as the need for its adequate protection and promotion
The Declaration on the Rights of Indigenous Peoples and Traditional Knowledge, 2007	• Article 31 of the Declaration states that " *Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions, including human and genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs, sports and traditional games and visual and performing arts. They also have the right to maintain, control, protect and develop their intellectual property over such cultural heritage, traditional knowledge, and traditional cultural expressions."* • In conjunction with indigenous peoples, the Declaration also encapsulates that *"States shall take effective measures to recognize and protect the exercise of these rights."*

There has been a growing trend of many Western companies patenting traditional medicines without granting due recognition to the indigenous communities whose knowledge systems went into identifying the active ingredients as useful for particular ailments.[359]

359 Statement made at the 19th Special Session of the United Nations General Assembly 1997 on Earth Summit, 5. Reproduced in Posey (2000).

A number of widely used consumer products, cosmetics, handicrafts and pharmaceutical drugs are derived from traditional knowledge and indigenous cultural experiences. There are also high hopes for further advances based on traditional knowledge in the fields of biotechnology, medicine and agriculture.[360] Researchers state that of the more than 130 clinically useful major prescription drugs that are derived from plants, over 70 per cent of them came to the attention of pharmaceutical companies because of their use in traditional systems of medicine. They further noted that most of the plants from which these drugs are derived are found in tropical forests. Although tropical forests constitute only 7 per cent of the earth's surface, they contain an estimated two-thirds of its plant species.[361]

The Intellectual Property Rights regime is widely recognized as the primary mechanism for determining ownership and property rights over knowledge, processes, innovations, inventions, and even naturally occurring phenomena such as plants, animals and genetic material. This form of ownership is protected by states and promoted by the World Trade Organization (WTO) and the World Intellectual Property Organization (WIPO).[362]

Intellectual property protection is of limited time duration and does not apply to "old" creations already in the public domain (i.e., the indigenous community); moreover, it is normally impossible to identify individual creators behind traditional knowledge.[363] The IPR regime therefore leaves most indigenous traditional knowledge and folklore vulnerable to appropriation, privatization, monopolization and even bio piracy by outsiders.

360 State of the World's Indigenous Peoples, United Nations publication, ISBN 92-1-130283-7.

361 Rossi, I., People in Culture: A Survey of Cultural Anthropology. Human Development Report (2004), New York, (1980).

362 *Supra at* 351.

363 Åhrén, Mattias, "An introduction to the WIPO Intergovernmental Committee on Intellectual Property, Genetic Resources, Traditional Knowledge and Expressions of Folklore". Indigenous Affairs, International Processes: Perspectives And Challenges, 1/02:64-70. Copenhagen: IWGIA, http://www.iwgia.org, (2002).

Bio-piracy refers to the unethical or unlawful appropriation or commercial exploitation of biological materials (such as medicinal plant extracts) that are native to a particular country or territory without providing fair financial compensation to the people or government of that country or territory.[364] Turmeric is a poster child for one of the most noted intellectual-property cases on bio-piracy, which pitted an Indian government supported research organization against a 1995 patent issued to the University of Mississippi for the use of the spice for wound healing.[365] The cases of neem, basmati rice are also some other instances of bio-piracy that have been covered under the Chapter on Case Studies.

One of the reasons for such instances occurring, as discussed in the chapter on case studies is that of the problem of documentation. The documentation of such heritage in a country like India seems highly problematic, due to the vast extent of every biological product and methods and uses associated with them.[366] Capturing information in every detail in order to prevent the exploitation of resources is a humongous task, also because most of this knowledge has been passed down from one generation to the next orally.

8.2 National Laws on IPR and Biological Diversity

Most of the IP rights obtained for biological resources have been in the form of patents. Section 2(j) of the Indian Patent Act, after its amendment in 2005 provides the patentability criteria for a product or a process as a - "new product or process with an inventive step which has industrial applicability". Section 2(l) of the 2005 amendment defines "new invention" as "any invention or technology which has not been anticipated by publication in any document or used in the country or elsewhere in the world before the date of filing of patent application with complete specification, i. e. the subject matter has not fallen in public domain or that it does not form part of the state of the art". It does not distinguish the invention based on the origin of the resource as to whether it is native or abroad.[367]

364 Gary Stix, Spice Healer, An ingredient in curry shows promise for treating Alzheimer's, cancer and other diseases, Scientific American, Volume 296, Number 2, Feb 2007.

365 *Id.*

366 Dr. Vandana Shiva, "Seed Freedom and Food Democracy." navdanya, http://navdanya.org/campaigns/478seed-freedom-and-food-democracy.

367 Indian Patent Act, 1970, Acts of Parliament, (India).

On the other hand, Section 102 of the US Patent Act does not consider anything outside its country as prior art for the patentability criteria, which can and has in many instances led to bio-piracy in the form of US patents obtained with traditional knowledge from other nations as a base. The Agreement on Trade-Related Aspects of Intellectual Property Rights (to which US is a member) is also silent on the novelty aspect of the patentability criteria.[368]

In 2001, India enacted the Plant Varieties and Farmer's Rights Act, granting exclusive rights to the breeder while stipulating benefit sharing mechanisms under Section 26 (5)(a) between breeders and local communities. These communities were instrumental in bringing about the genetic diversity relied upon by the breeder. Further the Biological Diversity Act was passed in 2002 to prevent bio-piracy. The BDA created a three-tier implementation structure to regulate access to TK through a National Biodiversity Authority with heavy restrictions on non-Indian entities with foreign participation and an enhanced role for local communities through the Biodiversity Management Committees.

Section 6 of BDA, 2002 stipulates that no patent application can be filed, in or outside India, without the prior approval of the Authority, if, the underlying research or information comes from Indian biological resources. The BDA, 2002 envisages benefit sharing with local communities through shared IP rights, technology transfer or monetary payment with the mechanism being decided on a case-by-case basis, through an agreement between the relevant authorities, local communities and applicant. Further, Section 10.4(d) (ii)(D) of the Indian Patents Act, 1970 incorporates "mandatory disclosure", which requires the patent applicant to disclose the source and geographical origin of the biological resource.

India submitted a proposal to the TRIPS (The Agreement on Trade-Related Aspects of Intellectual Property Rights) Council in 2000, advocating mandatory disclosure of the source of biological material and proof of Prior Informed Consent along with mutually agreed benefit sharing agreements before the grant of patents. The proposals came about due to the fact that India's municipal legislation was helpless with regard to petitions in different jurisdictions for revocation of patents, along with the significant matter of costs.

The possibility of a convergence between the TRIPS council and the 1992 Convention on Biological Diversity (CBD) seems narrow. In fact, WTO refuses to have a briefing for the

368 Gillian N. Rattray, The Enola Bean Patent Controversy: Biopiracy, Novelty and Fish-And-Chips.

TRIPS council by the CBD on Nagoya protocol. The Nagoya Protocol is a supplementary agreement signed in 2010 for the fair and equitable sharing of benefits arising out of the utilization of genetic resources even though, it does not mandate disclosures and restricts itself to principles of Prior Informed Consent and Benefit Sharing.

While the Indian Patent Act strictly adheres to the novelty and inventive step, additionally taking into consideration the oral knowledge of biological resources while granting patents, it also makes it difficult for Indian scientists to obtain patents.[369] This aspect is being highly exploited by other national legislations thus leading to bio-piracy. Bio-piracy impacts the economic status of a nation in various ways. A private corporation gaining IP rights would exercise the same rights in the country.[370] A farmer who had been using the same product or process naturally free of cost would now have to pay and buy whatever he needs for cultivation like seeds and plants. A monopoly comes into existence because of such kind of exploitation.

Bio-piracy would turn into Bio-prospecting in its true sense when development happens, and intellectual property rights are obtained more for the benefit of the society and the access to and benefit from resources is taken care of. Hence it becomes more important to formulate a mechanism that enables ABS efficiently.

Bio-prospecting contracts are also a current method that enables provider countries and its communities to enter into contracts that are inclusive of ABS. In order for communities to make informed decisions to enter into bio-prospecting contracts, awareness about the same needs to be created. This is necessary so that such communities recognize their right to their own genetic resources and traditional knowledge.

****

369 Dr. Vishwas Kumar Chouhan, "Protection of Traditional Knowledge in India by Patent: Legal Aspect." Journal Of Humanities And Social Science (JHSS), Volume 3, Issue 1, (Sep-Oct. 2012), http://www.iosrjournals.org/iosr-jhss/papers/Vol3-issue1/F0313542.pdf?id=5696.

370 Governments agree on the contribution of traditional knowledge to global Biological Diversity Policy, press release, (Dec. 16, 2017), https://www.cbd.int/doc/press/2017/pr-2017-12-16-8j-en.pdf.

ANNEXURE

List of Cases on Biological Diversity and ABS

Supreme Court and High Court Cases

- Pradeep Krishen Vs. Union of India and Others.
- S. Jagannath Vs. Union of India and Others.
- Vellore Citizens Welfare Forum Vs. Union of India and Others.
- Central India AYUSH Drugs Manufacturers Association and Ors. Vs. State of Maharashtra and Ors.
- ESG & Another Vs.NBA and Others
- M/s Vishwanath Paper & Boards Ltd & Another Vs. State of Uttarakhand and Others.
- M/s Century Pulp & Paper & Another Vs. State of Uttarakhand and Others.
- The University of Agricultural Sciences, Dharwad & others Vs. State of Karnataka and Others.
- M/s Chembra Peak Estates Limited vs State of Kerala & Others

NGT Cases

- Som Distilleries Pvt. Ltd. Vs. M.P. State Biodiversity Board & Ors.
- Associated Alcohols & Breweries Ltd. Vs. M.P. State Biodiversity Board and Others.
- Regent Breweries & Wines Ltd. Vs. M.P. State Biodiversity Board & Ors.
- Mount Everest Breweries Ltd. Vs. M.P. State Biodiversity Board & Ors.
- M.P. Beer Products Ltd. Vs. M.P. State Biodiversity Board & Ors.
- Agro Solvent Products Pvt. Ltd. Vs. MP State Biodiversity Board & Ors.
- Lilasons Breweries Ltd. Bhopal Vs. MP State Biodiversity Board & Ors.
- Ruchi Soya Industries Vs. MP State Biodiversity & Ors.
- Great Galleon Limited Vs. M.P. State Biodiversity Board & Three Ors.(CZ)
- Dabur India Ltd. Vs. M.P. State Biodiversity Board and Others

- Gwalior Alcobrew Pvt. Ltd. Vs. M.P. State Biodiversity Board & 2 Ors.
- Sanwaria Agro Oils Ltd. Vs. M.P. State Biodiversity Board & 3 Ors.
- M/s Som Distilleries & Breweries Pvt. Ltd. Vs. M.P.S.B.B. & Ors.
- Biodiversity Management Committee, Village Eklahara Vs. Western Coalfields Lt. & Ors.
- Biodiversity Management Committee, Keonti Janpad Panchayat, MP Vs. UoI & Ors.
- Subhas Dutta Vs. State of West Bengal & Ors.

Others

Monsanto Wheat Patent Case at the European Patent Office, EP 445929 B1 20030521

National Law School of India University, Bengaluru

National Law School of India University, Bengaluru
P.O. Bag 7201, Nagarbhavi,
Bengaluru-560 072
Karnataka, India
Tel: +91 80 2321 3160
Fax: +91 80 23160534
Website: www.nls.ac.in

United Nations Development Programme

United Nations Development Programme
55, Lodi Estate
New Delhi-110 003, India
Tel: +91 (11) 46532-250
Fax: +91 (11) 24627612
Website: www.in.undp.org