ĀRYAVAIDYAN, Vol. 37, No. 4, May - July 2024, Pages 63 - 70

Safeguarding rights of nature: Possibilities under the biological diversity act of India

Parameswaran Prajeesh[1*], Nadesapanicker Anil Kumar[2]

Received: 16.05.2024 Revised: 24.06.2024 Accepted: 27.07.2024

ABSTRACT: This article discusses the possibilities of safeguarding the rights of nature under India's Biological Diversity Act (BDA, 2002), referring to the country's initiative in identifying and notifying Biodiversity Heritage Sites (BHS) and Heritage Trees. This could be noted as a first step to ensure/safeguard the rights of nature under the said act and in parallel to the efforts that went into the cases of rivers like Whanganui (New Zealand) and Ganges (India). India has many accolades for implementing the provisions of the Convention on Biological Diversity (CBD), including efforts to ensure its own Access and Benefit Sharing system (ABS) in matters related to Biological Diversity. India's very first Internationally Recognized Certificate of Compliance (IRCC), issued on 1st October 2015, has been considered a major step towards making the Nagoya Protocol on ABS operational. India has been at the top among the 134 parties of the Nagoya Protocol on ABS (2010), which has brought various legislative, administrative and policy measures to biodiversity. Within the country, Kerala is one among a few states that have brought unique actions in this regard, including the ABS case in the pre-BDA era.

Key Words: Biological Diversity Act, Rights of Nature, Biodiversity Heritage Sites

INTRODUCTION

Rights of Nature

Rights of nature recognizes nature (either as a whole, or a specific part) as a legal person which in law means that nature has a basic set of legal rights, duties, and responsibilities.[1] Katie Surma has observed that the legal movement for the rights of nature began with a seminal 1972 law review article, *Should Trees Have Standing*, by Christopher D. Stone, a Professor in Law at the University of Southern California.[2] He wrote that he was "quite seriously proposing" giving legal rights to nature. Since then, the concept has surfaced globally in legislation, judicial rulings and constitutional amendments in countries like Canada, Mexico, France, Colombia, Pakistan, Bangladesh, Bolivia, India, New Zealand, Ecuador and Uganda (Fig.1). The Harmony with nature program of the United Nations has also helped in advancing the movement, with non-governmental organizations playing a leading role.

Rights of Nature – The Indian Scenario

The High Court of Uttarakhand in Lalit Miglani vs State of Uttarakhand and Others. [3,4] gave that: "*polluting and damaging the rivers, forests, lakes, water bodies, air and glaciers will be legally equivalent to harming, hurting and causing injury to a person. Rivers, forests, lakes, water bodies, air, glaciers and springs have a right to exist, persist, maintain, sustain and regenerate their own vital ecology system. The rivers are not just water bodies and these are scientifically and biologically living. The rivers, forests, lakes, water bodies, air, glaciers, and human life are unified and are indivisible whole. Mother Earth is grasping for breath. We must recognize and bestow the Constitutional legal rights to the 'Mother Earth'. The rights of these legal entities shall be equivalent to the rights of human beings and the injury/harm caused to these bodies shall be treated as harm/injury caused to*

1. *Senior Scienctist, M.S. Swaminathan Research Foundation, Community Agrobiodiversity Centre, Puthuvayal, Kalpetta, Waynad; *Corresponding author; Email: prajeesh@mssrf.res.in*
2. *Chairman, Kerala State Biodiversity Board, Thiruvananthapuram*

human beings and shall proceed under the common law, penal laws, environmental laws and other statutory enactments governing the field."

By invoking the parens patriae jurisdiction, the Court has *declared legal rights to glaciers including Gangotri and Yamunotri, rivers, streams, rivulets, lakes, air, meadows, dales, jungles, forests, wetlands, grasslands, springs and waterfalls and also* proposed a 'Nature's Rights Commission'. Since then, the 'Rights of Nature' in India is a growing movement and a 2020 petition is pending before the Supreme Court in New Delhi that asks the court to declare that all members of the animal kingdom, including birds and aquatic species, have legal rights, observes Karti Surma.[2]

Rights of Nature and the post-2020 Global Biodiversity Framework

The 2016's World Conservation Congress in Hawaii invited the Parties to the Convention on Biological Diversity - CBD to initiate a process towards the development of an ambitious post-2020 strategy that includes concrete targets to safeguard space for nature. This was recalling the Aichi Biodiversity Target 11 of the Convention on Biological Diversity - CBD, which aims to conserve by 2020 at least 17% of the global land area and 10% of the marine area. Later, a draft of the POST-2020 GLOBAL BIODIVERSITY FRAMEWORK has been prepared, which the IUCN members see as a global strategy for jointly safeguarding nature and securing our common future.[5] The very first draft of the POST-2020 GLOBAL BIODIVERSITY FRAMEWORK has set out an ambitious plan to implement broad-based action to bring about a transformation in society's relationship with biodiversity. It envisioned that, by 2050, the shared vision of living in harmony with nature will be fulfilled. The framework aims to galvanize urgent and transformative action by Governments and all of society, including indigenous peoples and local communities, civil society and businesses, to contribute to the objectives of the CBD.[6] Section C(b) of the Kunming-Montreal Global Biodiversity Framework, considering the diverse value systems and concepts, including, people, biodiversity, ecosystems, Mother Earth and systems of life, recognizes 'rights of nature and rights of Mother Earth', as being an integral part of the framework's successful implementation.[7]

BIODIVERSITY AND ENVIRONMENTAL GOVERNANCE IN INDIA; THE STATUS AND ARGUMENTS

Biodiversity Governance under CBD

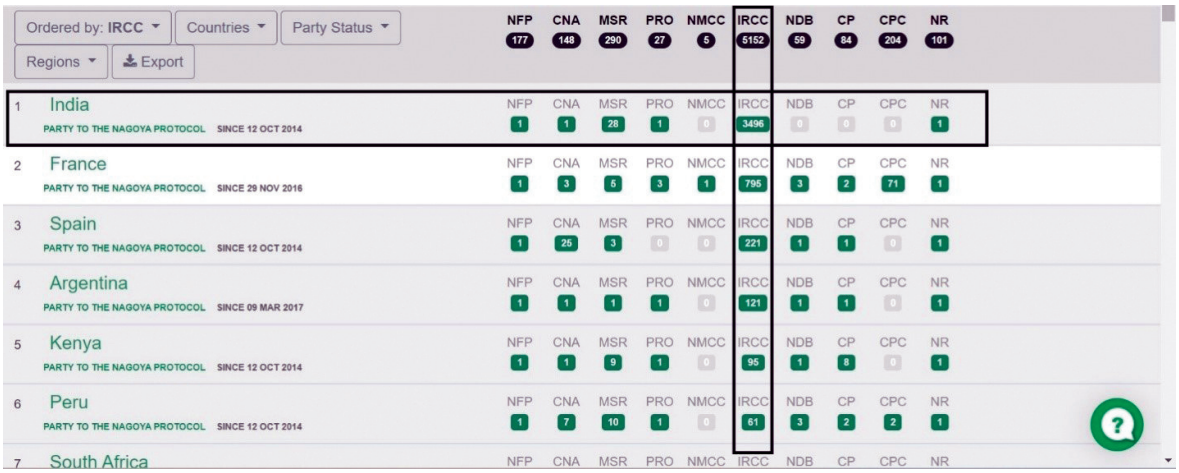
The Convention on Biological Diversity (CBD) was opened for signature on 5 June 1992 at the United Nations Conference on Environment and Development, the Rio Earth Summit, and entered into force on 29 December 1993. The Convention is the only international instrument comprehensively addressing the sustainable use of biological diversity and which directs the parties to ensure the ABS system. Its three major objectives are 1) conservation of biological diversity, 2) sustainable use of its components and 3) fair and equitable sharing of benefits arising from the utilization of genetic resources.[8]

India Biodiversity: The Biological Diversity Act, 2002 & The Biological Diversity Rules (2004)

India has made its place in all the major international events related to environment and biodiversity conservation and has ratified all the major biodiversity and environment-related global conventions. After being a signatory to CBD in February 1994, and according to Article 6 of the Convention (which calls upon each party to develop national biodiversity strategies and action plans), India has developed a strategy for biodiversity conservation at the macro-level in 1999, submitted it to CBD and enacted the Biological Diversity Act in 2002 followed by the

Biological Diversity Rules in 2004. The Biological Diversity Act, 2002 mandates implementation of the act through a decentralized system focusing on the conservation of biodiversity, sustainable use of its components, and equitable sharing of benefits arising out of the utilization of biological resources and advising the State Government in the selection of areas of biodiversity importance. India has been at the top among the 134 parties of the Nagoya Protocol on ABS (2010) who have brought various Legislative, Administrative, and Policy measures in biodiversity (Fig. 1).

Fig 1.
The webpage of ABS Clearing House, CBD, as of May 2024[9]



India tops in Legislative, Administrative and Policy measures in biodiversity (MSR) & in Internationally Recognized Certificate of Compliance (IRCC) – CBD, 2024.

India: Environmental Governance

According to Shridevi and Suvarnakhandi, [10] the history of environmental governance in post-independent India started 25 years after Independence when the then Prime Minister, Indira Gandhi, returned from the United Nations (UN) Conference on Human, Environment, and Development in Stockholm in 1972. Since then, tremendous efforts have been put into developing the governance system with many policies, acts and rules related to the environment (in general), natural resources, biodiversity and agriculture. The Forest Rights Act (FRA, 2006) need to be specially mentioned here, which recognizes the rights of the forest-dwelling tribal communities and other traditional forest dwellers to forest resources, on which these communities were dependent for a variety of needs, including livelihood, habitation and other socio-cultural needs.[11] India is also one of the few countries that have provided Farmers' Rights over seeds under the Protection of Plant varieties and Farmers' Rights Act of 2001. A consolidated account of the relevant policies, acts, and rules in the country, especially in the state of Kerala, has been provided in Tables 1& 2.

Table 1
Number of Policies/Acts/Rules related to Environmental Governance in India - consolidated from MoEF & CC (2011). [12]

Category	Number of Policies	Number of Acts	Number of Rules
Biodiversity	-	1	1
Environment	3	6	13
Pollution Control	1	-	-
Forests &Wildlife	1	8	9
Agriculture	1	-	-
Water	1	1	-
Air	-	-	1
Wetland/Coastal Regulation	-	-	3
Waste Management	-	-	9
Disaster Management	1	-	-

Table 2
Number of State Policies/Acts/Rules related to Environmental Governance in Kerala, India, consolidated from MoEF& CC (2011) – [12]

Category	Number of Policies	Number of Acts	Number of Rules
Biodiversity	-	-	-
Environment	2	-	1
Pollution Control	-	-	-
Forests &Wildlife	1	5	10
Agriculture	2	1	-
Fisheries/Aquaculture	2	1	-
Water/Ground Water	1	1	1
Mining	-	-	3
Air	-	-	-
Wetland/Coastal Regulation/Paddy land	-	1	1
Waste Management	-		-
Disaster Management	1	1	-
Tourism	2	1	-
Panchayat Raj Act (with special responsibilities to Local Self Governments)	-	1	-

INDIA BIODIVERSITY: IDENTIFICATION, SELECTION AND MANAGEMENT OF THE BIODIVERSITY HERITAGE SITES

Under Section 37 of the Biological Diversity Act (2002), the State Governments in consultation with the local bodies may notify, areas of biodiversity importance as Biodiversity Heritage Sites (BHS). Undersubsection (2) of Section 37, the State Governments in consultation with the Central Government may frame rules for the management and conservation of BHS. Under subsection (3) of Section 37, the State Governments shall frame schemes for compensating or rehabilitating any person or section of people economically affected by such notification. According to these provisions, the National Biodiversity Authority (NBA) has also issued guidelines for the selection and management of the BHSs. It has been noted in the guideline that: Biodiversity is closely linked to ecological security and therefore, to human welfare too; some traditionally-managed areas often represent a positive interface between nature, culture, society, and technologies, such that positive links between wild and domesticated biodiversity are enhanced. To strengthen the biodiversity conservation efforts and to stem the rapid loss of biodiversity, such traditionally-managed areas need special attention. The creation of such BHS will ensure conservation ethics and values in the society, thereby ensuring sustainable management of natural resources. The creation of BHS may not put any restriction on the prevailing practices and usages of the local communities. In fact, the purpose is to enhance the quality of life of the local communities through this conservation measure (NBA, 2004).

Biodiversity Heritage Sites (BHS) - The Definitions (NBA, 2022)

BHSs are well-defined areas that are unique, ecologically fragile ecosystems- terrestrial, coastal, and inland waters and, marine having rich biodiversity comprising of any one or more of the following components:

i. Richness of wild as well as domesticated species or intra-specific categories,
ii. High endemism,
iii. Presence of rare and threatened species, keystone species, species of evolutionary significance, wild ancestors of domestic/ cultivated species or their varieties,

iv. Past pre-eminence of biological components represented by fossil beds and having significant cultural, ethical, or aesthetic values and are important for the maintenance of cultural diversity, with or without a long history of human association with them.

Identification and detailing of the BHS (NBA, 2022)

State Biodiversity Boards (SBBs) may invite suggestions (or consider those already coming from communities) for the declaration of BHSs, through Biodiversity Management Committees (BMCs) and other relevant community institutions including grama sabhas, panchayats, urban wards, forest protection committees, and tribal councils. A detailed account of the BHS has to be conducted by a team constituted in this regard and should include the particulars like the history and status of land/water bodies, Common Property Resources and their ownership/rights, administrative control, land and resource use pattern, socio-economic and demographic profile, socio-economic and gender-differentiated dependence on the resources, rules and regulations governing natural resources, and access to decision making by marginalized sections including women, the ecological profile of the area, critical wildlife, and agricultural biodiversity values, and threats and pressures to the biological diversity, cultural practices followed by the communities and the scope of livelihood generation in the area. As of date, 47 BHS have been notified in the country and several are in consideration (Table 3).[13]

Management and Monitoring of the BHS (NBA, 2022)[14]

Once notified, the BMCs are responsible for managing and monitoring the BHS. A management plan is supposed to consider the comprehensive characteristics of the area, such as the current land-use pattern, conservation-related practices and beliefs, major biodiversity in the area, and their status (endemic, threatened, endangered, or vulnerable), the type and quantum of resources being used by the local community and their role/importance in the domestic economy pattern of resource utilization during the past 10 years, details of ongoing projects and schemes by key players, suggestions, from the local communities for the improved conservation of biodiversity and the betterment of their livelihoods, major (potential) threats, etc.

Table 3
BHSs of India, as of 1st May 2024 (National Biodiversity Authority, 2022)[15]

Sl. No.	Name of the BHS	Characteristics	Spread (in ha)	District & State	Year of Notification
1	Nallur Tamarind Grove	A picturesque relic of the Chola Dynasty	21.85	Bengaluru, Karnataka	2007
2	Hogrekan	Shola vegetation and grassland	1,015	Chikmagalur, Karnataka	2010
3	UAS, GKVK	Greenest University campus	65.7	Bengaluru, Karnataka	2010
4	Ambaraguda	Shola vegetation and grassland	1518.5	Shimoga, Karnataka	2011
5	Glory of Allapalli	Reserved forest	6	Gadchiroli, Maharashtra	2014
6	Tonglu BHS under the Darjeeling Forest Division	Medicinal Plant Conservation Area	230	Darjeeling, West Bengal	2015
7	Dhotrey BHS under the Darjeeling Forest Division	Medicinal Plant Conservation Area	180	Darjeeling, West Bengal	2015
8	Dialong Village	Village	1135	Tamenglong, Manipur	2017
9	Ameenpur lake	Lake	-	Sangareddy, Telengana	2016
10	**Majuli**	Riven Island	87500	Majuli, Assam	2017
11	Ghariyal Rehabilitation Centre	Garden of Endangered species	10	Lucknow, UP	2016
12	Chilkigarh Kanak Durga	Sacred Grove	22.6	Jhargram, West Bangal	2018
13	KhlawKur SyiemKmieIng	Sacred Grove	16.05	Ri-Bhoi, Meghalaya	2018

14	Mandasaru	Natural habitat	528	Kandhamal, Odisha	2019
15	Purvatali Rai	Sacred Grove	0.73	North Goa, Goa	2019
16	Naro Hills	Hill tract	200	Satna, MP	2019
17	Patalkot	Deep valley	8367.49	Chhindwara, MP	2019
18	Asramam	Mangrove forest	57.53	Kollam, Kerala	2019
19	Bambarde Myristica Swamps	Myristica Swamps	2.59	Dodamarg, Maharashtra	2021
20	Ganeshkhind Garden	Garden	33.01	Pune, Maharashtra	2020
21	Landorkhori	-	48.08	Jalgaon, Maharashtra	2020
22	Schistura Hiranyakeshi	Forest Ecosystem	2.11	Sindhudurg, Maharashtra	2021
23	Baneswar Shiva Dighi	Natural habitat	1.65	Coochbehar, West Bangal	2020
24	Sacred Grove at Sural Bhatori Monastery	Scred Grove	0.60	Chamba, Himachal Pradesh	2022
25	High Altitude Meadow @ HUDAN BHATORI	Meadow	8.74	Chamba, Himachal Pradesh	2022
26	Birch-pine Forest Patch @ Nain Gahar	Forest patch	12.22	Lahaul &Spiti, Himachal Pradesh	2022
27	Baramura waterfall	Waterfalls	150	Khowai, Tripura	2022
28	Unakoti	Forest	40	Unakoti, Tripura	2022
29	Silachari Caves	Natural Caves	100	Gomati, Tripura	2022
30	Debbari or Chabimura	River Forest	215	Gomati, Tripura	2022
31	Betlingshib & its surroundings	Peak	350	North District, Tripura	2022
32	Amarkantak	Mountain Range	7681.50	Anuppur, Madhya Pradesh	2022
33	Hajong Tortoise Lake	Lake	526.78	Dima Hasao, Assam	2022
34	Borjuli Wild Rice Site	Wetland	0.41	Sonitpur, Assam	2022
35	Arittapatti	-	193.215	Madurai, Tamil Nadu	2022
36	Mahendragiri hill	Hill	4250	Gajapati, Odisha	2022
37	State Horticulture Research and Development Station	-	39.61	Nadia, West Bengal	2023
38	NamthingPokhari	-	4.819	Darjeeling, West Bengal	2023
39	Char Balidanga	-	46.862	Nadia, West Bengal	2023
40	Amkhoi Wood Fossil Park	Fossil Park	10	Birbhum, West Bengal	2023
41	Haldir Char Island	Mangrove Swamp	4.73	Purba Medinipur, West Bengal	2023
42	Birampur-BaguranJalpai	Coastal Stretch	95.91	Purba Medinipur, West Bengal	2023
43	TungkyongDho	Natural Lake	0.0650	North Sikkim, Sikkim	2023
44	Gandhamardan Hill	Hill	18,963.898	Bolangir and Bargarh, Odisha	2023
45	Gupteswar Forest	Forest	350	Koraput, Odisha	2024
46	Lyago	Sacred Grove	1.24	Hong Nitii , Lower Subansiri, Arunachal Pradesh	2024
47	Thungeey Gonpu (KamchoYaam)	Buddhist Temple surrounded by forest	6.27	Shergaon , West Kameng, Arunachal Pradesh	2024

KERALA'S EXPERIENCE IN IMPLEMENTING THE BIOLOGICAL DIVERSITY ACT, 2002

Kerala is one of a few states that has a handful of regional rules and regulations for the conservation of environment/biodiversity and has brought unique actions in this regard. The celebrated ABS 'experimental model' in the 'pre-Biological Diversity Act era' was also from Kerala. This was the case with the plant *Trichopus zeylanicus* used by the *Kani* tribal community of Western Ghats .[16]

Implementing BDA, key milestones in Kerala (Consolidated from Kerala State Biodiversity Board, 2022)[17]

2005: Constitution of Kerala State Biodiversity Board

2008: Release of Kerala State Biological Diversity Rules

2009: Release of Kerala Biodiversity Strategy and Action Plan

2012: Became the first state in India to complete the formation of Biodiversity Management Committees (BMC) in all local self-government institutions.

2019: Completion of the preparation of Peoples Biodiversity Registers in all 1034 local bodies (941 Gramapanchayats, 87 Municipalities, and 6 Corporations; Identification of a total of 82 academic institutions/research organizations for regular updation of PBR and capacity building of BMC.

2019: Notification of Biodiversity Heritage Site

2020: Entrusting BMCs to Declare Local Biodiversity Heritage Sites

Identifying and notifying BHS, Key milestones in Kerala

The Government of Kerala has empowered BMCs to declare locally specific biodiversity-rich areas or trees as local biodiversity heritage sites/ trees through a resolution [G.O.(MS) No.05/2020/ Envt. dated 03.03.2020]. Six (6) BHSs have been notified by BMCs in the state of Kerala so far, and many are being considered. Five instances are also there where the BMCs have identified heritage trees to conserve and protect (Tables 4 & 5).

Table 4
BHSs of Kerala (Balakrishnan et al, 2023)

Sl. No.	Name of the BHS	Characteristics	Spread (in ha)	Local Self Government	District	Year of Notification
1	Asramam	Mangrove forest	57.53	Kollam Corporation	Kollam	2019
2	Pannivelichira	Wetland	24.28	Mullappuzhassery Gramapanchayath	Pathanamthitta	2019
3	Kadalkkandam	Wetland	0.04	Mudaakkal Gramapanchayath	Thiruvananthapuram	2019
4	Eeyyabharanithuruth	Forested island	6.00	Alakkod Thiruvananthapuram	Kannur	2019
5	Arattuchira	Wetland	2.83	Pallikkal Thiruvananthapuram	Pathanamthitta	2020
6	Neyyamkayam Pool	Wetland	-	Mooliyar Thiruvananthapuram	Kasaragode	2020

Table 5
Heritage Trees of Kerala (Balakrishnan et al, 2023)[17]

Sl. No.	Description	Characteristics	Local Self Government	District	Year of No Notification
1	Heritage Tree	A 200-year-old cashew nut tree	Pandalam Thekkekara Gramapanchayath	Pathanamthitta	2019
2	Heritage Trees	16 number of trees as a Heronry	Pandalam Municipality	Pathanamthitta	2019
3	Heritage Tree(s)	Two Chempaka trees (about 250 year old)	Anchuthengu Gramapanchayath	Thiruvananthapuram	2019
4	Heritage Tree	A 150-year-old Mango Tree	Chirayinkeezhu Gramapanchayat,	Thiruvananthapuram	2019
5	Heritage Tree	A 200-year-old Mango tree, along the bank of the Meenachil River	Ayarkunnam Gramapanchayat, Kottayam	Kottayam	2019

CONCLUSION

The conservation of the environment/biodiversity needs to be primarily through activities at the grass roots level through local self-governments, coordinated at the state and monitored at the national level. Though there are some contrasting views on the implementation of the BD Act (Bhutani and Kohli, 2012)[18], Prajeesh (2017)[19] and the UNEP (2020)[20] observe that India is a leading country in having established a comprehensive legal and institutional system in realizing the objectives of the CBD and the country's actions have been recognized globally. The Indian experience of identification and notification of the Biodiversity Heritage Sites under the BDA could be noted as a first step to ensure the Rights of Nature in parallel to the efforts that went into the cases of rivers like Whanganui (New Zealand) and Ganges (India).

References

1. NaffineN. Who are law's persons? From Cheshire Cats to responsible subjects, MODERN LAW REVIEW 66(3):346-367 (2003), http://dx.doi.org/10.1111/1468-2230.6603002, last accessed on 1st May, 2024.
2. Katie Surma, Does Nature Have Rights? A Burgeoning Legal Movement Says Rivers, Forests and Wildlife Have Standing, Too, INSIDECLIMATENEWS (Sep.19, 2021), https://insideclimatenews.org/news/19092021/rights-of-nature-legal-movement/, last accessed on 1st May, 2024.
3. Lalit Miglani vs State of Uttarakhand and Others (2015), Uttaranchal High Court (India).
4. Lalit Miglani vs State of Uttarakhand and Others (2017), Uttaranchal High Court (India).
5. IUCN, SAFEGUARDING SPACE FOR NATURE AND SECURING OUR FUTURE: DEVELOPING A POST- 2020 STRATEGY WCC-2016-Res-096-EN (2016), https://portals.iucn.org/library/sites/library/files/resrecfiles/WCC_2016_RES_096_EN.pdf, last accessed on 1st May, 2024.
6. CBD, FIRST DRAFT OF THE POST-2020 GLOBAL BIODIVERSITY FRAMEWORK (2021), https://www.cbd.int/doc/c/abb5/591f/2e46096d3f0330b08ce87a45/wg2020-03-03-en.pdf, last accessed on 1st May, 2024
7. UNEP Kunming-Montreal Global Biodiversity Framework (2022), https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf, last accessed on 1st May, 2024.
8. CBD, The Convention on Biological Diversity (1993), https://www.cbd.int/intro/default.shtml, last accessed on 1st May, 2024.
9. CBD, ABS Clearing House (2022), https://absch.cbd.int/en/countries, last accessed on 1st May, 2024
10. Shridevi S. and Suvarnakhandi, Environmental Governance in India: Issues and Challenges, INTERNATIONAL JOURNAL OF POLITICAL SCIENCE, vol 7, no.2, 13-32 (2021), doi: https://doi.org/10.20431/2454-9452.0702004, last accessed on 1st May, 2024.
11. GOI, Ministry of Tribal Affairs (2006), The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, https://forestrights.nic.in/doc/Act.pdf Last accessed on 1st May, 2024.
12. MoEF& CC, Govt of India, LEGISLATION, ENVIS HUB: KERALA, STATE OF ENVIRONMENT AND RELATED ISSUES (2011), http://www.kerenvis.nic.in/Content/Legislation_123.aspx, last accessed on 1st May, 2024.
13. Kerala State Biodiversity Board (2022a), https://www.keralabiodiversity.org/, last accessed on 1st May, 2024.
14. National Biodiversity Authority, Govt of India (2022), Biodiversity Heritage Site, http://nbaindia.org/content/106/29/1/bhs.html, last accessed on 1st May, 2024.
15. NBA, National Biodiversity Action Plan (2008), Government of India, Ministry of Environment and Forests, p.78
16. Anuradha RV, SHARING WITH THE KANIS A CASE STUDY FROM KERALA (1998), https://www.cbd.int/financial/bensharing/india-kanis.pdf, last accessed on 1st May, 2024.
17. Balakrishnan, V., Sudheesh, N.P., Nilayangode, P., Microbial Diversity and Conservation of Local Biodiversity Heritage Sites in Western Ghats with Community Participation-a Novel Conservation Effort of Kerala. In: Aguilar, C.N., Abdulhameed, S., Rodriguez-Herrera, R., Sugathan, S. (eds) Microbial Biodiversity, Biotechnology and Ecosystem Sustainability (2023). Springer, Singapore. https://doi.org/10.1007/978-981-19-4336-2_4
18. Bhutani S and Kohli K Ten Years of the Biological Diversity Act, ECONOMIC & POLITICAL WEEKLY (2012), 47(39), 15-18.
19. Parameswaran Prajeesh, India Lays Cornerstone of Biodiversity Access and Benefit Sharing System. CURRENT SCIENCE (2017), 112 (1), 24-28.
20) UNEP, SHIFTING THE NEEDLE ON BIODIVERSITY CONSERVATION IN INDIA (Feb. 05, 2020), https://www.unep.org/news-and-stories/story/shifting-needle-biodiversity-conservation-india, last accessed on 1st May, 2024.