SAFEGUARDING WILDLIFE BEYOND PROTECTED AREAS IN INDIA: A REVIEW OF LAWS, POLICIES AND OTHER CONSERVATION TOOLS

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ABSTRACT

India, a country with only 2.4% of the world's land area, accounts for 7-8% of all recorded species, including over 45,000 species of plants and 91,000 species of animals. The wildlife in India is protected through protections granted to species as well as declaring an area as Protected Area (PA) under the Wildlife (Protection) Act, 1972 such as Wildlife Sanctuaries and National Parks. PAs are important tools to withstand the impacts of climate change and ensure long term conservation of natural resources providing food, clean water, shelter and income. However, they have their own limitations on account of their relatively small size and that the majority of wildlife habitats are now found outside the PAs. This accounts for the imperative need of according protection and identification of wildlife corridors and habitats outside the PAs. The article discusses the different forms of wildlife habitats and conservation areas found outside the PAs and how the existing laws and government actions lack in vigor and pose hurdles in effectively protecting forests and wildlife.

I. INTRODUCTION

India, a megadiverse country with only 2.4% of the world's land area, accounts for 7-8% of all recorded species, including over 45,000 species of plants and 91,000 species of animals.[1] The wildlife in India is protected through protections granted to species as well as declaring their habitats as National Parks and Wildlife Sanctuaries under the Wildlife (Protection) Act, 1972 (**"WPA"**). As of December 2019, India could manage to declare 903 Protected Areas (**"PAs"**) covering 5.02% of the geographic area,

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[1] *India*, IUCN, available at https://www.iucn.org/asia/countries/india, last seen on 25/03/2021.

which includes 101 National Parks, 553 Wildlife Sanctuaries, 86 Conservation Reserves and 163 Community Reserves.[2] PAs are important tools to withstand the impacts of climate change and ensure long term conservation of natural resources which provide food, clean water, shelter and income.[3] A well-managed PA Network not only provides enhanced protection and management of wildlife habitats but also plays an important role in preventing the transmission of zoonotic diseases.[4] Studies indicate that 60% of the Emerging Infectious Diseases (Covid19, HIV, Ebola etc) that affect humans are zoonotic and approximately 72% of them originate in wildlife and are increasing significantly over time.[5] However, the role of PAs in conserving wildlife habitats has its own limitations and they presently exist as islands of wilderness areas in a mosaic of human settlements, infrastructures, industries, roads, agricultural lands and forests.

II. NEED OF CONSERVATION EFFORTS BEYOND PROTECTED AREAS

Wildlife experts have pointed out that administrative boundaries of several PAs do not necessarily overlap with ecological boundaries and many of the areas within the PA boundary may not have any direct conservation value.[6] [7] It is now a well-proven fact that a majority of the wildlife habitats are found outside of these PAs, especially the state-owned Reserve/Protected Forests declared under Indian Forest Act, 1927 (**"IFA"**).[8] With scientific advancements in wildlife survey techniques such as camera trapping and DNA analysis, such forests are now considered no less important wildlife

[2] *Protected Areas of India*, ENVIS Centre on Wildlife and Protected Areas, available at http://wiienvis.nic.in/Database/Protected_Area_854.aspx, last seen on 25/03/2021.
[3] J.A. McNeely, *The role of protected areas for conservation and sustainable use of plant genetic resources for food and agriculture*, Bioversity International, available at- https://www.bioversityinternational.org/fileadmin/bioversity/publications/Web_version/62/ch07.htm, last seen on 25/03/2021.
[4] J. Terraube & Á. F. Llamazares, *Strengthening protected areas to halt biodiversity loss and mitigate pandemic risks*, NCBI PMC, available at- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7525266/, last seen on 25/03/2021.
[5] K.E. Jones et. al., *Global trends in emerging infectious diseases*, NCBI PMC, available at- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5960580/, last seen on 25/03/2021.
[6] Ministry of Environment, Forest and Climate Change, Government of India,*India's National Wildlife Action Plan 2017-31*, available at https://wii.gov.in/images/images/documents/national_wildlife_action_plan/NWAP_Report_hi_Res_2017_31.pdf, last seen on 25/03/2021.
[7] P.K. Mathur & P.R. Sinha, *Looking beyond Protected Area Networks: a Paradigm Shift in Approach for Biodiversity Conservation*, 10 International Forestry Review 305 (2008), available at https://www.jstor.org/stable/43740344?seq=1, last seen on 25/03/2021.
[8] Supra 6.

habitat as compared to PAs. State owned forests outside PAs are known to support 36 endemic mammals of India.[9] For instance, a significant population of the big carnivores such as Royal Bengal Tiger, Striped Hyena, Dhole, Sloth Bear, Grey Wolf, Golden Jackal are known to be found in areas outside the PAs in forests, shrublands and grasslands and use the same for their breeding and foraging activities.[10] [11] Wildlife experts and managers across the world now stress more on the importance of protecting the wildlife corridors and forest patches outside PAs which act as 'stepping stone habitat'-a habitat patch that facilitates movement between at least two other patches.[12] [13] [14] [15]

Another reason for the inadequacy of PAs in effectively conserving wildlife can also be attributed to their smaller size. Law enforcement agencies cannot force a wild animal possessing a special habitat requirement and home range to be restricted within the administrative boundaries of PA. Higher protection and better management of habitats within PAs have also resulted in many of the PAs exceeding their carrying capacities to accommodate any more wildlife population, eventually forcing the wild animals to disperse to other PAs and forests in search of suitable less crowded habitat. For example, the latest tiger census report[16] indicates that

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[9] *Conservation Across Landscapes: India's Approaches to Biodiversity Governance*, Foundation for Ecological Security, available at https://fes.org.in/studies/conservation-across-landscapes-india-approaches-to-biodiversity-governance.pdf, last seen on 25/03/2021.

[10] Ministry of Environment and Forestry, Government of India, *Status of Tigers Copredators & Prey in India* 2018, available at moef.gov.in/wp-content/uploads/2020/07/Tiger-Status-Report-2018_For-Web_compressed_compressed.pdf, last seen on 25/03/2021.

[11] *Melurs usursinus Sloth Bear Vulnerable*, IUCN, available at-https://www.iucn.org/sites/dev/files/import/downloads/sloth_bear.pdf, last seen on 25/03/2021.

[12] S. Saura, Ö. Bodin & M.J. Fortin, *Stepping stones are crucial for species' long-distance dispersal and range expansion through habitat networks*, 51 Journal of Applied Ecology (2013), available at https://besjournals.onlinelibrary.wiley.com/doi/10.1111/1365-2664.12179, last seen on 25/03/2021.

[13] N.E. Heller & E.S. Zavaleta, *Biodiversity management in the face of climate change: A review of 22 years of recommendations*, 142 Biological Conversation (2009), available at-https://www.sciencedirect.com/science/article/abs/pii/S000632070800387X, last seen on 25/03/21; Meade Crosby, Joshua Tewksbury, Nick Haddad et al., *Ecological Connectivity for a Changing Climate*, 24 Conservation Biology (2010), available at https://www.researchgate.net/publication/47509070_Ecological_Connectivity_for_a_Changing_Climate, last seen on 25/03/2021.

[14] D. Boscolo et al., *Importance of Interhabitat Gaps and Stepping-Stones for Lesser Woodcreepers (Xiphorhynchusfuscus) in the Atlantic Forest*, Departmento de Ecologia, available at ecologia.ib.usp.br/lepac/conservacao/Artigos/boscolo_inpress.pdf, last seen on 25/03/2021.

[15] Supra 12.

[16] Supra 10.

the present tiger population stands at 2,967 tigers which is 70% of the world population. While this is a significant achievement, the report also warns that 17 out of 50 tiger reserves are nearing their carrying capacity. In fact, nearly one-third of the country's tigers live outside protected areas. As carnivores spill out of protected areas, they will come in contact with human settlements, leading to an increase in human-wildlife conflicts[17]. As per Dr. Rajesh Gopal, Secretary, Global Tiger Forum, *"India's tiger carrying capacity is packed, and the National Tiger Conservation Authority (NTCA) needs to focus on better landscape management."*[18]

The average mean size of PAs in India is approx. 270 sq.km. and approx. 31% of them are less than 10 sq.km. in size.[19] Some of the PAs are even less than 1 sq. km. such as Mangalavanam Bird Sanctuary in Kerala- 0.03 sq.km.[20] With 22% of land under forest cover and just 5% of the land under PA network, a large tract of such wildlife habitats in India still falls under Reserve/Protected Forests. However, the connectivity with such adjoining habitats is increasingly being obstructed due to various land use and land cover changes driven by human activities. This poses a serious problem for the conservation of Indian wildlife as animals that have evolved over a large, continuous landscape find it difficult to adapt to the increasing levels

[17] Express News Service, *Tamil Nadu's 17 reserves at or close to full tiger capacity*, The New Indian Express (29/07/2020), available at https://www.newindianexpress.com/states/tamil-nadu/2020/jul/29/tamil-nadus-17-reserves-at-or-close-to-full-tiger-capacity-2176127.html, last seen on 25/03/2021; *A Home for Tiger*, The New Indian Express (30/07/2020), available at https://indianexpress.com/article/opinion/editorials/tiger-population-india-reserves-capacity-6529840/, last seen on 25/03/2021.

[18] Express News Service, *Here's why experts are worried about the rising tiger population*, The New Indian Express (29/01/19), available at https://www.newindianexpress.com/nation/2019/jan/29/tiger-numbers-up-experts-worried-1931306.html, last seen on 25/03/2021.

[19] *India's Forests*, 108 (Jagdish Kishwan et al., 2007).

[20] *Wildlife Sanctuaries*, ENVIS Centre on Wildlife and Protected Areas, available at http://www.wiienvis.nic.in/Database/wls_8230.aspx, last seen on 25/03/21.

of developmental pressure and human disturbances in areas outside the PAs.[21] [22] [23]

Habitat loss and fragmentation of landscapes into smaller isolated patches are a major reason for the extinction of species worldwide.[24] [25] [26] Such small and isolated patches of fragmented habitat endanger the faunal diversity as compared to larger and continuous fragments. Many of the species that originally inhabited large forested tracts will disappear from these isolated fragments.[27] Habitat loss and degradation is known to affect 89% of all threatened birds, 83% of mammals, and 91% of threatened plants globally.[28] There are also evidences that while some species can persist or thrive in fragmented landscapes, many species become more vulnerable because of their smaller populations,[29] more prone to over-exploitation (thereby increasing human-wildlife conflict)[30] [31] and their lower ability to adapt to rapid environmental change.[32] [33]

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[21] L. Tole, *Measurement and management of human-induced patterns of forest fragmentation: a case study*, 37 Environment Management (2007), available athttps://pubmed.ncbi.nlm.nih.gov/16583252/, last seen on 25/03/21.

[22] H. Olff & M.E. Ritchie, *Fragmented nature: consequences for biodiversity*, 25 Journal of Landscape and Urban Planning (2002), available at https://research.rug.nl/en/publications/fragmented-nature-consequences-for-biodiversity, last seen on 25/03/21.

[23] *Connectivity Conservation*, 29 (Kevin R. Cooks and M. Sanjayan, 14th ed., 2007).

[24] Michael R.W. Rands et al., *Biodiversity conservation: Challenges beyond 2010*, 329 (5997) Science 1298 (2010).

[25] Gary K. Meffe & Carl Ronald Carrol, *Principles of Conservation Biology* (2nd ed., 1997).

[26] Weidong, G. et al., *Estimating the consequences of habitat fragmentation on extinction risk in dynamic landscapes*, 17 Landscape Ecology 699 (2002); E.O. Wilson & R.H. MacArthur, *The Theory of Island Biogeography* (1967).

[27] L. Gibson et al., *Near-Complete Extinction of Native Small Mammal Fauna 25 Years After Forest Fragmentation*, 341 Science 1508-1510 (2013).

[28] *Species Extinction - The Facts*, IUCN Red List, available at https://www.iucn.org/sites/dev/files/import/downloads/species_extinction_05_2007.pdf, last seen on 25/03/2021.

[29] L. Cagnolo, M. Cabido & G. Valladeres, *Plant species richness in the Chaco Serrano Woodland from central Argentina: Ecological traits and habitat fragmentation effects*, 132(4) Biological Conservation 510–519 (2006), available at https://doi.org/10.1016/j.biocon.2006.05.012, last seen on 25/03/21.

[30] F Michalski. & C.A. Peres, *Anthropogenic determinants of primate and carnivore local extinctions in a fragmented forest landscape of southern Amazonia*, 124(3) Biological Conservation 383–396 (2005).

[31] A.F. Bennett & D.A. Saunders, *Habitat fragmentation and landscape change*, 358 in *Conservation biology for all* (N.S. Sodhi& P.R. Ehrlich, 1st ed., 2010).

[32] J.M.J. Travis, *Climate change and habitat destruction: A deadly anthropogenic cocktail*, 270(1514) Proceedings of the Royal Society B: Biological Sciences 467–473 (2003), available at https://doi.org/10.1098/rspb.2002.2246, last seen on 25/03/2021.

[33] Barry W. Brook, Navjot S. Sodhi & Corey J.A. Bradshaw., *Synergies among extinction drivers under global change*, 23(8) Trends in Ecology and Evolution 453–460 (2008), available at https://doi.org/10.1016/j.tree.2008.03.011, last seen on 25/03/2021.

Scientists are also worried about how wildlife would react to climate change induced events such as extreme weather events in the form of high temperatures, forest fires, exceptionally long drought and heavy rain falls.[34] There has been mass mortality of wildlife across the world owing to such extreme weather events such as the recent death of 23,000 Spectacled Flying Foxes in Australia in 2019 due to extreme heat waves wiping out one-third of its population.[35] The World Meteorological Organization has already declared the 2010-2020 as the warmest decade,[36] and another report indicates that 75% of Indian districts are under the influence of extreme weather events such as extreme droughts, floods, cyclones which are now becoming a regular phenomenon.[37] The capacity of wildlife to cope up with such impact of climate change induced weather events will depend greatly on their adaptability as well as their dispersal capacity for which ecosystems need to be healthy as well as sufficiently connected with neighboring habitats.

Thus, as stated by the World Bank's Staff Appraisal Report, "*PAs can be successful in realising their long-term conservation goals only when integrated into large-scale land-use planning activities and regulations at local and regional levels.*"[38] The National Wildlife Action Plan (**"NWAP"**) 2002-2016 and 2017-31 suggested including 'Conservation Reserves' and 'Community Reserves' in human-dominated landscapes under the PA network and aimed for securing more of such stepping stone habitats outside PAs. The NWAP also emphasizes the identification of wildlife corridors and wildlife habitats

[34] *Impacts of Climate Change on Wildlife*, (R.E. Green, M. Harley, M. Spalding, C. Zockler, 2001).
[35] Jason Bittel, *A Heat Wave in Australia Killed 23,000 Spectacled Flying Foxes*, NRDC OnEarth (10/04/2019), available at https://www.nrdc.org/onearth/heat-wave-australia-killed-23000-spectacled-flying-foxes, last seen on 25/03/2021.
[36] U.N. World Meteorlogical Organisation, Press Release, *2020 on track to be one of three warmest years on record*, Press Release Number 02122020 (02/12/2020), available at https://public.wmo.int/en/media/press-release/2020-track-be-one-of-three-warmest-years record#:~:text=Geneva%2C%202%20December%202020%20(WMO,to%20the%20World%20Meteorological%20Organization, last seen on 25/03/2021.
[37] 75*% districts and half of India's population vulnerable to extreme climate events*, CEEW, available at https://www.ceew.in/press-releases/75-districts-and-half-india%E2%80%99s-population-vulnerable-extreme-climate-events-ceew-study, last seen on 25/03/2021.
[38] Ruchi Badola*, Local People Amidst the Changing Conservation Ethos: Relationships between People and Protected Areas in India*, in *Decentralization and Devolution of Forest Management in Asia and the Pacific* (Enters, T., Durst, P.B., and M. Victor, 2000).

outside PAs for the long-term survival of wildlife.[39] However, the protection of wilderness areas is not that simple and it is affected not just by laws but how effectively we understand the species requirements, ecosystem functions and the capacity to address key conservation challenges on ground.

In the next section, we have discussed different legal provisions, policies and global recognitions which influence protection of areas rich in wildlife outside the PAs.

III. LEGISLATIONS FOR PROTECTION OF WILDERNESS AREAS

1. Indian Forest Act, 1927

The Indian Forest Act, 1927 provides for establishment of Reserved Forests and Protected Forests, where the former is the most restricted category of forests. Reserved Forest enjoys full degree of protection as all activities are prohibited unless permitted. On the other hand, Protected Forest enjoys a limited degree of protection where all activities are permitted unless prohibited. The Act empowers state Forest Departments to take over, manage and protect these categories of forests.[40]

The IFA was promulgated by the British Government for the primary purpose of timber and softwood production, and thereby revenue generation.[41] The primary focus areas of IFA are categorization of forests into Reserved and Protected Forests, the procedure to be followed for their declaration, definition of forest offence, acts prohibited within Reserved and Protected forests, penalties for violation, transit of timber and other forest produce, and duty that can be levied on timber and other forest

[39] Ministry of Environment and Forests, Government of India, *National Wildlife Action Plan 2002-2016*, (2007), available at http://wiienvis.nic.in/WriteReadData/UserFiles/file/NATIONAL%20WILDLIFE%20ACTION%20PLAN.PDF, last seen on 27/03/2021.

[40] Sharachchandra Lele, *Thematic Essay: Understanding Current Forest Policy Debates through Multiple Lenses: The Case of India*, 2 Ecology, Economy and Society – the INSEE Journal 23 (2019), available at https://www.researchgate.net/publication/337469190_THEMATIC_ESSAY_Understanding_Current_Forest_Policy_Debates_through_Multiple_Lenses_The_Case_of_India, last seen on 25/03/2021.

[41] Ibid.

produce.[42] Conservation and management of wildlife and their habitats does not feature within the various sections and chapters of IFA. The Working Plans of those Forest Divisions which are recognized as important for wildlife conservation and serve as animal corridors have considerations and prescriptions for protection of wildlife. However, the efforts for management of wildlife habitats in such state-owned forests do not match the resource and protection enjoyed by PAs notified under WPA.

2. Wildlife (Protection) Act, 1972

National Park & Wildlife Sanctuary

The WPA is the primary legislation for protection of wildlife and their habitats by declaring areas of significant ecological, floral and faunal value as National Parks and Wildlife Sanctuaries. The former enjoys the highest degree of legal protection where no form of human activity is allowed, whereas the latter allows for limited use.[43] For example, grazing of livestock is prohibited in the National Parks but the same can be allowed in a regulated manner within Sanctuaries.[44] The Chief Wildlife Warden within the State Forest Department is responsible for the management of the national parks and wildlife sanctuaries.[45]

Conservation & Community Reserves

Areas which are rich in flora and fauna but also have significant human presence are protected as 'Conservation Reserve' and 'Community

[42] Farida Tampal, *Introduction to Indian Forest Act, 1927 Indian Forest (Conservation) Act, 1980 & Wildlife (Protection) Act, 1972*, 12-13 (2013), available athttp://www.mcrhrdi.gov.in/88fc/week-8/Law-IndianForest%20Act.pdf, last seen on 25/03/2021.

[43] M.G. Harihar et al., *Protected Areas and Biodiversity Conservation in India*, 237 Biological Conservation 114-124 (2019), available at https://doi.org/10.1016/j.biocon.2019.06.024, last seen on 25/03/2021.

[44] S. Edake, *The protected area network of India*, The Energy and Resources Institute (TERI), available at https://www.teriin.org/opinion/protected-area-network-india, last seen on 25/03/2021; Ss. 33 (d) & 35 (7), The Wildlife (Protection) Act, 1972.

[45] Ss. 33 & 35(8), The Wildlife (Protection) Act, 1972; Shekar Dattatri, *The Institutional Framework for Wildlife Conservation in India*, Conservation India, available at https://www.conservationindia.org/resources/the-institutional-framework-for-wildlife-conservation-in-india#:~:text=The%20Ministry%20of%20Environment%20%26%20Forests,and%20forestry%20policies%20and%20programmes., last seen on 25/03/2021.

Reserve'- new PA categories inserted by amendment in the WPA in 2002.[46] Conservation Reserves are established on public land[47] and are managed by Conservation Reserve Management Committee which consists of representatives from State Forest Department, Agriculture and Animal Husbandry Department, Village Panchayat and Conservation NGOs.[48] Community Reserves, on the other hand are established on private land[49] and are managed by Community Reserves Management Committee which consists of representative from Village Panchayat and State Forest Department.[50] Land use change within Conservation and Community Reserve is regulated by the management plan approved by their respective management committee.

Tiger Reserves

The Government of India in 1973 launched a Centrally Sponsored Scheme, the 'Project Tiger' with the objective to maintain a viable tiger population in the country. The scheme called for creation of reserves with an average of 1500 sq.km. for conserving tiger habitat, its prey base and other flora and fauna.[51] Initially, nine reserves were created under Project Tiger, however, none of these areas enjoyed any protection under the WPA. It was only after the 2006 Amendment in the Act that Tiger Reserves got a legal conservation status.[52] Under the wildlife law, every tiger reserve includes a core or critical tiger habitat (**"CTH"**) and a buffer or peripheral area. CTH are areas of National Parks and Wildlife Sanctuaries which on the basis of scientific criteria are kept inviolate for tiger conservation. The buffer area consists of the area peripheral to the CTH with a lesser degree of habitat protection.[53] Tiger Reserves are managed by the State Forest Department on the basis of a Tiger Conservation Plan approved by the

[46] S. 3(j), The Wildlife (Protection) Amendment Act, 2002.
[47] S. 36 A (1), The Wildlife (Protection) Act, 1972.
[48] S. 36 B, The Wildlife (Protection) Act, 1972.
[49] S. 36 C (1), The Wildlife (Protection) Act, 1972.
[50] S. 36 D, The Wildlife (Protection) Act, 1972.
[51] Ministry of Environment & Forests (Project Tiger), Government of India, *The Report of the Tiger Task Force: Joining the Dots*, available at https://ntca.gov.in/assets/uploads/Reports/Joining_the_dot.pdf, last seen on 25/03/2021.
[52] S. 2, The Wildlife (Protection) Amendment Act, 2006.
[53] S. 38 V (4), The Wildlife (Protection) Act, 1972.

National Tiger Conservation Authority (**"NTCA"**).[54] Constituted under the WPA, NTCA is the nodal authority for tiger conservation in India. Headed by the Minister in-charge of the Ministry of Environment, Forest and Climate Change (**"MoEFCC"**),[55] the NTCA has the power to disallow any ecologically unsustainable land use such as mining, industry within tiger reserves.[56] Recommendation of NTCA and prior approval of National Board for Wildlife is required for diverting tiger reserves and areas linking tiger reserves and protected areas for ecologically unsustainable activities.[57] Presently, there are 50 tiger reserves in the country spread over an area of 71,027.10 sq.km.[58]

3. Biological Diversity Act, 2002

India's Biological Diversity Act, 2002 grants state government the power to notify (in consultation with local bodies) areas of biodiversity importance as Biodiversity Heritage Sites (**"BHS"**).[59] These sites are well-defined areas that are unique, ecologically fragile and can be terrestrial, coastal or spread over inland/marine waters.[60] BHSs are endowed with rich wildlife as well as domesticated species and are characterized by high endemism, presence of rare and threatened species, keystone species and species of evolutionary significance.[61] The basic purpose behind the BHS provision is to cover, as far as possible, those sites that are not covered under the PA Network of the WPA.[62]

Unlike National Parks and Wildlife Sanctuaries where resource use practices of local communities are either prohibited or strictly regulated, the BHS provision does not necessarily put such restrictions, other than

[54] Ss. 38 V (3) & 38 O (a), The Wildlife (Protection) Act, 1972.
[55] S. 38 L (2) (a), The Wildlife (Protection) Act, 1972.
[56] S. 38 O (b), The Wildlife (Protection) Act, 1972.
[57] S. 38 O (g), The Wildlife (Protection) Act, 1972. (exception is given in case of public interest)
[58] *Tiger Reserves*, ENVIS Centre on Wildlife and Protected Areas, available at http://wiienvis.nic.in/Database/trd_8222.aspx, last seen on 25/03/2021.
[59] S. 37 (1), The Biological Diversity Act, 2002.
[60] S. 3.1., Guidelines for Identification, Notification and Management of Biodiversity Heritage Sites.
[61] Ibid.
[62] S. 4.6., Guidelines for Identification, Notification and Management of Biodiversity Heritage Sites.

those voluntarily decided by them.[63] The State Government (in consultation with Central Government) has the power to frame rules for the management and conservation of heritage sites.[64]

4. Environment (Protection) Act, 1986

The Environment (Protection) Act, 1986 (**"EPA"**) grants MoEFCC the power to take measures which it feels necessary to improve environmental quality and control environment pollution.[65] The Rules framed under the EPA grants Ministry the power to restrict location of industries and their operations for considerations such as biological diversity of the area, maximum allowable limits of concentration of pollutants for an area and need for environmentally compatible land use.[66] Using these provisions, the Central Government has identified and notified Eco-Sensitive Zones (**"ESZs"**) and Ecologically Sensitive Areas (**"ESAs"**). The powers granted under the EPA were also used to conserve and protect the unique environment of coastal stretches and marine areas. Using the same provisions, the Government notified the Coastal Regulation Zone Notification to conserve the coastal and marine area of the country. Lastly, the Wetland (Conservation and Management) Rules, 2019 were propagated under the EPA to extend legal protection to wetland ecosystems across the country.

Eco-sensitive Zones

Eco-sensitive zones are areas, extending up to 10 km, notified around national parks and Wildlife Sanctuaries.[67] The idea behind declaring ESZs was to create shock absorbers around PAs where development and industrial activities are regulated before it spills into an industrial urban area with severe anthropogenic pressures.[68] ESZs also act as transition zones

[63] S. 2.7, Guidelines for Identification, Notification and Management of Biodiversity Heritage Sites.
[64] S. 37(2), The Biological Diversity Act, 2002.
[65] S. 3, The Environment (Protection) Act, 1986.
[66] Rule 5(1), The Environment (Protection) Rules, 1986.
[67] Prerna Singh Bindra, *The Vanishing: India's Wildlife Crisis*, 279 (1st ed., 2017).
[68] Ibid.

from areas of high protection to areas with lesser protection.[69] The concept of ESZs took shape during the 21st meeting of the Indian Board for Wildlife where the Wildlife Conservation Strategy-2002 was adopted. The strategy called for notifying areas within 10 km radius around sanctuaries and national parks as ecologically fragile zones.[70]

It is important to remember that the purpose of an ESZ goes beyond being a buffer around the protected areas. These zones must also include migratory routes and corridors used by wildlife to move from one protected area to another. The NWAP (2002-2016) identified areas outside protected areas as *vital ecological corridor links* which must be protected to prevent isolation of fragments of biodiversity. The Plan called for notifying area around protected areas and wildlife corridors as ecologically fragile zones under Environment (Protection) Act, 1986.[71] To date, ESZs of 303 protected areas have been notified by the Central Government.[72]

The Supreme Court in the matter of *Goa Foundation* v. *Union of India*[73] passed important orders in the context of identification and notification of ESZs,[74] with most important being the projects which have been given environmental clearance within the 10 km zone of national parks or wildlife sanctuaries before the declaration of ESZs would have to be referred to the standing committee of the National Board for Wildlife for further permission.[75]

Ecologically Sensitive Areas

ESAs are declared under similar provisions as ESZs. Unlike ESZs which are site-specific and restricted to one individual PAs, ESAs are larger areas,

[69] S. 3, Guidelines for Declaration of Eco-Sensitive Zones Around National Parks and Wildlife Sanctuaries, 2011.
[70] S. 1.1, Guidelines for Declaration of Eco-Sensitive Zones Around National Parks and Wildlife Sanctuaries, 2011.
[71] S. 1.2., Guidelines for Declaration of Eco-Sensitive Zones Around National Parks and Wildlife Sanctuaries, 2011.
[72] *Status of ESZ Notifications*, Ministry of Environment, Forest & Climate Change, available at http://moef.gov.in/en/rules-and-regulations/esz-notifications-2/, last seen on 25/03/2021.
[73] Goa Foundation v. Union of India, (2011) 15 SCC 791.
[74] S. Kuriakose, *Supreme Court on Wildlife Conservation Kaziranga-KarbiAnglong Landscape*, Vidhi Centre for Legal Policy, available at https://vidhilegalpolicy.in/wp-content/uploads/2020/12/Case_Brief_Wildlife_Corridors_Kaziranga_VCLP_Dec_2020.pdf, last seen on 26/03/2021.
[75] Supra 73.

aimed at landscape level conservation. ESAs aims to safeguard ecologically fragile areas through land use planning against ecologically destructive activities such as mining and quarrying, thermal power plants, industry, building and construction etc.[76] Till now, the MoEFCC has notified Western Ghats, Dahanu Taluka, Doon Valley, Bhagirathi river stretch, Mahabaleshwar-Panchgani, Matheran and Mount Abu as ESAs.[77]

Coastal Regulation Zones

The Coastal Regulation Zone (**"CRZ"**) Notification issued under the EPA seeks to regulate industrial development and operations in CRZ areas. The definition of CRZ includes the land area from High Tide Line (**"HTL"**) to 500 meters on the landward side; the land between HTL to 50 meters or width of the creek; the land area between HTL and Low Tide Line (**"LTL"**) known as the intertidal zone and the water and the bed area between the LTL to the territorial water limit (12 nautical miles) in case of the sea, and water and the bed area between the LTL at the bank to the LTL on the opposite side of the bank, of tidal influenced water bodies.[78] The CRZ is classified into four zones-CRZ-I, CRZ-II, CRZ-III, and CRZ-IV where each zone has its own set of restrictions on industrial processes and operations. The Notification prohibits a certain set of activities across all zones such as setting up of new industries, manufacture, and handling of hazardous substances, dumping of solid waste, discharge of untreated waste, and land reclamation (except for permissible activities executed with prior approval).[79] Besides the four zones, the CRZ Notification also identifies certain coastal areas for special consideration for protection. These include the Critically Vulnerable Coastal Areas, Inland Backwaters and islands along the mainland coast, and CRZ falling within municipal limits of Greater Mumbai.

The primary responsibility for the implementation and enforcement of CRZ Notification lies with the State Government and State Coastal Zone

[76] Supra 67.
[77] *ESA Notifications*, Ministry of Environment, Forest, and Climate Change, available at http://moef.gov.in/en/rules-and-regulations/esa-notifications/, last seen on 25/03/2021.
[78] *The Coastal Regulation Zone Notification* 2019.
[79] S. 4, *The Coastal Regulation Zone Notification* 2019.

Management Authority (**"SCZMA"**). SCZMA has been constituted by the Central Government in every coastal state and enjoys powers such as taking measures for protection and improvement of environment, issuing directions for closure of industrial units, prohibiting and regulating activities and prosecution of offenders of CRZ Notification.[80]

Legal Protection to Wetlands

The MoEFCC notified the Wetland (Conservation and Management) Rules, 2017 with the objective to provide a legal framework for the conservation and sustainable use of wetland ecosystems.[81] In order to qualify for the protection, a wetland needs to be a Ramsar Site or a wetland notified by a state or union territory government, or the Central government in the case of transboundary wetlands.[82] Rule 4 prohibits ecologically destructive activities such as conversion of wetland to support encroachment, construction, industrial siting or expansion, manufacture and handling of hazardous waste, solid waste dumping, effluent disposal and poaching.

For its implementation, the Wetland Rules provide for constitution of the National Wetlands Committee (at the Central Government level) which is headed by the Secretary, MoEFCC.[83] The Committee advises the Central Government on policies and programs for the conservation of wetlands and is responsible for monitoring the implementation of Rules.[84] At the state level, the Rules provide for constitution of State Wetland Authority which is headed by the Minister in charge of the State Department of Environment and Forests.[85] The Authority is responsible for preparation

[80] M. Gopal, *Sea of Regulations – Protecting The Coastal Commons in India (Analysis) – Part II*, NLUO Blog For Animal and Environmental Jurisprudence and Rights, available at https://saaewnluo.in/2020/09/14/sea-of-regulations-protecting-the-coastal-commons-in-india-analysis-part-ii/, last seen on 25/03/2021.

[81] The Wetland Rules define wetland under Section 2(g) as an area of marsh, fen, peatland or water; whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters.
River Channels, paddy fields, human-made water bodies tanks constructed for drinking water and structures constructed for aquaculture, salt production, recreation and irrigation are not included in the above definition.

[82] Rules 3, 7(3) & 7(4), Wetland (Conservation and Management) Rules, 2017.

[83] Rule 6(1), Wetland (Conservation and Management) Rules, 2017.

[84] Rule 6(3), Wetland (Conservation and Management) Rules, 2017.

[85] Rule 5(1), Wetland (Conservation and Management) Rules, 2017.

of list of wetlands to be notified and based on their recommendation, the State Government notifies the wetland in the Official Gazette.[86] The Authority is also required to develop a list of regulated and permitted activities within the notified wetlands[87] and has the power to modify the list of prohibited activities.[88] Lastly, the State Wetland Authorities are also responsible for reviewing the integrated management plan for each notified wetland,[89] and its implementation can only begin after receiving the Authority's endorsement.[90]

IV. GOVERNMENT RECOGNITIONS TO IMPORTANT WILDERNESS AREAS

1. Elephant Reserves

The Government of India in 1991-92 launched a 100% Centrally Sponsored Scheme the 'Project Elephant' with the objective to conserve a viable population of wild elephants in their natural habitats. The scheme also aimed towards restoration and conservation of corridors and movement paths used by elephants and to address the issue of man-elephant conflict.[91] The need for Project Elephant was considered keeping in mind the elephant's non-territorial behavior and large home range requirements. The Scheme recognizes that elephant conservation cannot be restricted to management of small section of forests and that migratory routes and corridors used by elephants are an ecological necessity for their survival.[92]

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[86] Rule 5(4) (b), Rule 7(2) & Rule 7(3), Wetland (Conservation and Management) Rules, 2017.
[87] Rule 5(4) (e), Wetland (Conservation and Management) Rules, 2017.
[88] Rule 5(4) (f), Wetland (Conservation and Management) Rules, 2017.
[89] Rule 5(4) (h), Wetland (Conservation and Management) Rules, 2017.
[90] Ministry of Environment, Forest & Climate Change, Government of India, *Guidelines for implementing Wetlands (Conservation and Management) Rules,* 2017, available at moef.gov.in/wp-content/uploads/2020/01/final-version-and-printed-wetland-guidelines-rules-2017-03.01.20.pdf, last seen on 25/03/2021.
[91] *Introduction to Project Elephant*, Ministry of Environment, Forest & Climate Change, available at http://moef.gov.in/en/division/forest-divisions-2/project-elephant-pe/introduction/, last seen on 25/03/2021.
[92] S. 2, Revised Guidelines for Implementation of Works under Centrally Sponsored Scheme- Project Elephant During XII Plan, 2013.

In order to strengthen elephant conservation, various elephant range states in the country have notified Elephant Reserves. These reserves encompass wildlife sanctuaries, national parks, other protected areas, forests under various legal categories and even private lands. Presently, there are 32 Elephant Reserves in the country spread over an area of 65,000 km^2.[93]

The MoEFCC Report titled *Gajah: Securing the Future for Elephants in India* considers Elephant Reserves as the basic management unit for focused elephant conservation in the country.[94] However, despite their importance, these reserves do not enjoy any legal protection under the WPA. National Parks and Wildlife Sanctuaries cover less than 30% of the total Elephant Reserve area[95] and the remaining area does not enjoy the legal conservation status under the Wildlife Law.

2. Biosphere Reserves

Biosphere Reserves are area of terrestrial, marine and coastal ecosystems that are internationally recognized under UNESCO's Man and Biosphere (**"MAB"**) Programme.[96] The underlying thrust of the Biosphere Reserve scheme is to reconcile conservation of biodiversity and economic and social development through alternate livelihood provisions and maintenance of cultural values. Special focus has been laid on the co-existence of people and nature.[97] Every Biosphere Reserve is demarcated into three zones viz. core, buffer and transition. Core one is strictly protected for the conservation of biodiversity and is kept free from all human presence external to the system. The buffer adjoins or surrounds

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[93] N. Thomas*, Chapter 1: Elephant Conservation in India*, 1 Trumpet Quarterly Journal 1, 10 (July-September 2020), available at http://moef.gov.in/wp-content/themes/moef-green/ebook/Trumpet/index.html, last seen on 25/03/2021.

[94] Ministry of Environment & Forests, Government of India, *The Report of the Elephant Task Force 2010*, available at http://moef.gov.in/wp-content/uploads/2019/08/04-Gajah-final.pdf, last seen on 25/03/2021.

[95] Ibid.

[96] Ministry of Environment & Forests, Government of India, *Conservation of Natural Resources including Forestry and Wildlife*, available at http://moef.gov.in/wp-content/uploads/report/0203/chap-03.pdf, last seen on 25/03/2021.

[97] *Presentation by Dr. R. Dalwani at the 4th World Congress on Biosphere Reserves (SACAM side event)*, 4th World Congress on Biosphere Reserves Lima, Peru, March 14- March 18, 2006, UNESCO available at http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/images/04_4WCBR_Presentation.pdf, last seen on 26/03/2021.

the core where ecological compatible activities such as environmental education, recreation, ecotourism, and applied basic research are permitted. The Transition Zone is the outermost zone of the Biosphere Reserve which contains a variety of agricultural activities, settlements and other uses.[98] Data maintained by Wildlife Institute of India indicates that there are 18 Biosphere Reserves in India.[99]

The MoEFCC provides financial assistance to the State Governments for the conservation and management of Biosphere Reserves. For its governance, the MAB Programme consists of the Indian National MAB Committee, State Level Steering Committees and Local Level Committee. The National Committee advises the MoEFCC on the policy and program formation for Biosphere Reserves and lays down guidelines for preparation of management actions plans for the reserves. The State Level Committee examines the management plans and makes recommendations for financial assistance. Lastly, the Local Level Committee coordinates activities of various government line departments and recommends interventions in the management plan. However, the Biosphere Reserves as a whole are not backed by any legislation.

3. Important Coastal and Marine Biodiversity Areas

The Aichi Biodiversity Targets signed under the Convention on Biological Diversity (**"CBD"**) had called for conserving at least 10% of coastal and marine areas in networks of protected areas.[100] The Targets also required restoration and safeguarding ecosystems that provide water, heath, livelihoods and well-being. For India to achieve these targets, the Wildlife Institute of India had identified 107 coastal and marine sites and prioritized them as Important Coastal and Marine Biodiversity Areas (ICMBAs).[101]

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[98] *Zoning Schemes*, Ecological Sciences for Sustainable Development, available at http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/main-characteristics/zoning-schemes/, last seen on 25/03/2021.

[99] *Biosphere Reserves*, ENVIS Centre of Wildlife and Protected Areas, available at http://www.wiienvis.nic.in/Database/br_8225.aspx, last seen on 25/03/2021.

[100] *Aichi Biodiversity Targets*, Convention on Biological Diversity, available at https://www.cbd.int/sp/targets/, last seen on 25/03/2021.

[101] *Important Coastal and Marine Biodiversity Areas*, ENVIS Centre of Wildlife and Protected Areas, available at http://www.wiienvis.nic.in/Database/ICMBAs_8247.aspx, last seen on 11/05/2021.

These sites are proposed to be legally protected as Conservation Reserves or Community Reserves (under WPA).[102]

4. Project Snow Leopard

The Project Snow Leopard (**"PSL"**) was launched in July 2006 by the government of India an initiative similar to Project Tiger and Project Elephant with the purpose of landscape conservation to protect the ecosystems of wild animals found in high altitude ecosystems using Snow Leopards as a flagship species through participatory policies and actions.[103] [104] The Project is designed for all biologically important habitats within the Snow Leopard's range, irrespective of the ownership. Consequently, the project area will extend to protected areas as well as areas outside the protected area network. Three landscapes namely, Hemis-Spiti across Ladakh and Himachal Pradesh; Nanda Devi – Gangotri in Uttarakhand; and Khangchendzonga – Tawang across Sikkim and Arunachal Pradesh are identified to be conserved under the PSL program.[105]

V. GLOBAL RECOGNITIONS TO IMPORTANT WILDERNESS AREAS

A database of global biodiversity hotspots is maintained by several reputed conservation organizations. Such areas are recognized following a robust process backed by highly credible scientific research. While these recognitions may or may not be backed by a legal mandate or intergovernmental treaty, inclusion of any area under some of these databases have significant influence on the conservation policies, monitoring efforts and greater financial support to manage such areas.

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[102] K. Sivakumar, V.B. Mathur & A. Pande, *Chapter 2: Coastal and Marine Protected Areas in India: Challenges and Way* Forward, in *ENVIS Bulletin on Coastal and Marine Protected Areas in India: Challenges and Way Forward* 50-63 (K. Sivakumar, 15th ed., 2014).

[103] *The Launch of India's Project Snow Leopard*, Snow Leopard Network, available at https://snowleopardnetwork.org/2006/07/01/the-launch-of-indias-project-snow-leopard/, last seen on 26/03/2021.

[104] Ministry of Environment & Forests, Government of India, *The Project Snow Leopard 2008*, available at http://moef.gov.in/wp-content/uploads/2018/03/Project-Snow-Leopard-2008.pdf, last seen on 26/03/2021.

[105] *Government committed to landscape restoration for snow leopard habitat conservation. States together with the Centre should resolve to bring up the population of snow leopards in the next five years*, Press India Bureau Delhi, available athttps://pib.gov.in/PressReleasePage.aspx?PRID=1667118, last seen on 26/03/2021.

Such recognitions also facilitate documentation of biodiversity and declaration of new protected areas by the governments.

1. Wetlands of International Importance: The Ramsar Convention

The Convention on Wetlands of International Importance especially as Waterfowl Habitat (also known as Ramsar Convention) is an intergovernmental treaty for national and international action on conservation and wise use of wetlands and its resources.[106] The convention was adopted in 1971 at Ramsar, Iran and came into force in India on February 01, 1982.[107] The convention recognizes the ecological importance of wetlands as regulators of water regime and providers of habitat for various flora and fauna, especially waterfowl and strives to reduce the encroachment and consequent loss of wetlands.[108] The Parties to the Convention are required to designate suitable wetlands within their territorial jurisdiction for inclusion in the *List of Wetlands of International Importance*. These wetlands are also known as Ramsar Sites and are selected based on their international ecological, botanical, zoological or hydrological significance, with priority given to those which are of international importance to waterfowl at any season.[109] To qualify as a Ramsar site, the identified site must meet nine criteria defined under two broad categories viz. presence of representative, rare or unique wetland type and international significance for biodiversity conservation.[110] As of date, India has designated 42 Ramsar sites spread over an area of 10, 814.38 km^2.[111] Inclusion of wetlands in the Ramsar site confers upon it the prestige of international recognition and embodies the government's commitment to maintenance of the ecological character of the site.[112] Ecological

[106] *About the Ramsar Convention*, Ramsar, available at https://www.ramsar.org/, last seen on 26/03/2021.
[107] *Country Profile: India*, Ramsar, available at https://www.ramsar.org/wetland/india, last seen on 26/03/2021.
[108] Preamble, Convention on Wetlands of International Importance especially as Waterfowl Habitat, Preamble, 1971.
[109] Art. 2, Convention on Wetlands of International Importance especially as Waterfowl Habitat, 1971.
[110] *An Introduction to the Ramsar Convention on Wetlands*, 41 (5th ed., 2016).
[111] Supra 107.
[112] Supra 110.

character refers to processes and components which make the wetland a particular, and sometimes unique, ecosystem.[113] After its designation in the Ramsar List, any change in the ecological character of the wetland due to human interference, pollution or technological development must be reported without delay to the Ramsar Secretariat.[114]

2. Important Bird and Biodiversity Areas

BirdLife International's Important Bird and Biodiversity Areas (**"IBAs"**) are sites of international significance for the conservation of the world's birds and other biodiversity. The sites also provide essential benefits to people such as food, materials, water, climate regulation and flood protection.[115] Originally, IBAs were called Important Bird Areas, but in June 2014, it was changed to Important Bird and Biodiversity Areas to reflect the biodiversity significance of these sites.[116] The sites are identified using four internationally agreed criteria based upon globally threatened species, groups of species with a restricted range, species assemblages confined to a single biome, and congregations of one or more species.[117] In India, Bombay Natural History Society (BNHS) along with Bird Life International has identified 554 IBAs covering an area of 194,157.98 km^2.[118] These conservation sites support 1,212 species of birds[119] and are spread across a range of habitats such as wetlands, mudflats, grasslands and scrublands making them excellent indicators of biodiversity richness.[120] IBAs are monitored using regular assessments wherein each IBA is scored

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[113] Neha Sinha, *Reconsider the Rules: on 2017 Wetland Rules*, The Hindu (21/12/2017), available at https://www.thehindu.com/opinion/op-ed/reconsider-the-rules/article22085813.ece, last seen on 26/03/2021.

[114] Arts. 3 & 8, Convention on Wetlands of International Importance especially as Waterfowl Habitat, 1971.

[115] BirdLife International*, Important Bird and Biodiversity Areas: A global network for conserving nature and benefiting people* (2014), available at http://datazone.birdlife.org/userfiles/file/IBAs/pubs/SOWIBAs2014.pdf, last seen on 26/03/2021.

[116] Zoltan Waliczky et al., *Important Bird and Biodiversity Areas (IBAs): their impact on conservation policy, advocacy and action*, 29 Bird Conservation International 199-215 (2019), available at https://doi.org/10.1017/S0959270918000175, last seen on 26/03/2021.

[117] Supra 115.

[118] *India*, Bird Life International Data Zone, available at http://datazone.birdlife.org/country/india/resources, last seen on 26/03/2021.

[119] Ibid.

[120] Ministry of Environment & Forests, Government of India, *India's Fifth National Report to the Convention on Biological Diversity 2014*, available athttps://www.cbd.int/doc/world/in/in-nr-05-en.pdf, last seen on 26/03/2021.

on their state (condition of birds and their habitats), pressures (threats that impact them) and conservation responses (action plans and management activities).[121]

3. Key Biodiversity Areas

The International Union for Conservation of Nature (IUCN) defines Key Biodiversity Areas (**"KBAs**") as "*sites that contribute significantly to the global persistence of biodiversity, in terrestrial, marine and freshwater ecosystems*".[122] KBAs support critical populations of the world's threatened species and mapping and subsequent protection of KBAs can ensure the conservation of largest and important populations of these species, giving them a real chance of survival. In addition to species population, the KBA criteria also consider their ecosystems or habitats and identify them by the unique collection of species they sustain. Their conservation would therefore ensure simultaneous survival of many species.[123] The KBA Standard developed by IUCN identifies KBAs based on 11 criteria defined under five broad categories viz. "*threatened biodiversity*, *geographically restricted biodiversity*, *ecological integrity*, *biological processes* and *very high irreplaceability*".[124] The IUCN has identified 531 KBA sites in India.[125]

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[121] BirdLife International*, Important Bird and Biodiversity Areas: A global network for conserving nature and benefiting people* (2014), available at http://datazone.birdlife.org/userfiles/file/IBAs/pubs/SOWIBAs2014.pdf, last seen on 26/03/2021; *India*, Bird Life International Data Zone, available at http://datazone.birdlife.org/country/india/resources, last seen on 26/03/2021.

[122] *Key Biodiversity Areas*, IUCN, available at https://www.iucn.org/regions/mediterranean/our-work/biodiversity-knowledge-and-action/biodiversity-standards-and-indicators/key-biodiversity-areas, last seen on 26/03/2021.

[123] *Saving Nature,* Key Biodiversity Areas, available at http://www.keybiodiversityareas.org/about-kbas/saving-nature, last seen on 26/03/2021.

[124] KBA Standards and Appeals Committee, *Guidelines for using A Global Standard for the Identification of Key Biodiversity Areas* (2020), available at https://portals.iucn.org/library/sites/library/files/documents/2020-033-En.pdf, last seen on 26/03/2021.

[125] *Key Biodiversity Areas*, ENVIS Centre on Wildlife and Protected Areas, available at http://wiienvis.nic.in/Database/Key_Biodiversity_Areas_8647.aspx, last seen on 26/03/2021.

4. Alliance for Zero Extinction Sites

The Alliance for Zero Extinction (**"AZE"**) is a worldwide consortium of global biodiversity conservation organisations with the aim to prevent species extinction. To achieve the same, the Alliance identifies and safeguards sites which are the last remaining refuges of one or more Endangered or Critically Endangered Species.[126] In order to qualify as an AZE Site, all three criteria viz. *endangerment*, *irreplaceability* and *discreteness* need to be satisfied.[127] Conservation of AZE sites has been considered as essential to achieve the CBD target of preventing extinctions of known species. Their protection has been included as a critical piece of the CBD.[128]

VI. SACRED GROVES

Sacred Groves (**"SGs"**) are the relic forest segments preserved in the name of religion and culture.[129] SGs can range from few trees to forests of several acres. They include a wide range of ecosystems such as evergreen forests, hill forests, swamp forests, mangroves, deserts and acts as habitat of several unique wildlife.[130] Such forests enjoy social protection from local communities and are often associated with worshipping places of local folk deities or tree spirits. These spaces are protected by local communities because of their religious beliefs and traditional rituals that run through several generations. Thus, these SGs enjoy natural protection from human exploitation and have evolved as areas of high flora and fauna diversity.

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[126] *Partner List*, Alliance for Zero Extinction, available at https://zeroextinction.org/the-alliance/partner-list/, last seen on 26/03/2021.

[127] *AZE Site Criteria*, Alliance for Zero Extinction, available at https://zeroextinction.org/site-identification/aze-site-criteria/, last seen on 26/03/2021.

[128] Stephan M. Funk et al., *Meeting the Aichi targets: Pushing for zero extinction conservation*, 46 Ambio 443-455 (2017), available at https://link.springer.com/content/pdf/10.1007/s13280-016-0892-4.pdf, last seen on 26/03/2021.

[129] Sushma Singh et al., *Sacred Groves: Myths, Beliefs, and Biodiversity Conservation—A Case Study from Western Himalaya, India*, 2017 International Journal of Ecology (2017), available at https://www.hindawi.com/journals/ijecol/2017/3828609/, last seen on 26/03/2021.

[130] R. Ray, M.D.S Chandran & T.V. Ramachandra, *Biodiversity and ecological assessments of Indian sacred groves*, 25 Journal of Forestry Research 21-28 (2014), available at http://wgbis.ces.iisc.ernet.in/energy/water/paper/jfr_sacred_groves/sacred-groves.pdf, last seen on 26/03/2021.

Some reports claim that there are around 1,00,000 to 1,50,000 SGs in India mostly located in the Himalayan region, Western and Eastern Ghats, Coastal Region, Central Indian Plateau, and Western Desert.[131] In India, Himachal Pradesh has the highest number of SGs (5000) followed by Kerala and Chhattisgarh.[132] SGs in India have received protection through social fencing and local community traditions, instead of a protection under a single law. The ownership and management of SGs varies between different states, culture and traditions. Therefore, policies and schemes to manage SGs vary from state to state.

Most of the SGs in India are under management by community, with very limited control of the government. For e.g., in Meghalaya, SGs are covered under the local government law (District Council Forest Act 1958) where the management of SGs is entrusted to the persons to whom the religious ceremonies for the particular village(s) are entrusted in accordance with the customary practice in vogue.[133] No timber or forest produce is allowed to be removed from the SGs except for the purposes in connection with religious functions or ceremonies recognized by the religious head of the local community.[134]

There are also examples where SGs are managed by the government in the form of Reserve/Protected Forests notified under the IFA. As seen in the case of district Kodagu (Karnataka), where the SGs (*devarakadus*) were once demarcated and notified as protected forest in 1873 which led to stopping of coffee-cultivation in such areas. In the year 1905, the SGs were transferred to the revenue department, and eventually 62% of these groves were lost till 1985.[135] The SGs were then transferred back to the forest

[131] Supra 129.
[132] L.S. Kandari et al., *Conservation and management of sacred groves, myths and beliefs of tribal communities: a case study from north-India***,** 3 Environmental Systems Research (2014), available at https://link.springer.com/article/10.1186/s40068-014-0016-8, last seen on 26/03/2021.
[133] B.K. Tiwari, S.K. Barik & R.S. Tripathi*, Biodiversity Value, Status, and Strategies for Conservation of Sacred Groves of Meghalaya, India*, 4 Ecosystem Health 20 (1998), available at https://onlinelibrary.wiley.com/doi/abs/10.1046/j.1526-0992.1998.00068.x, last seen on 11/05/2021.
[134] Ibid.
[135] A.A. Ormsby, *The Impacts of Global and National Policy on the Management and Conservation of Sacred Groves of India*, 39 Human Ecology: An Interdisciplinary Journal 783 (2011), available at https://link.springer.com/article/10.1007/s10745-011-9441-8?shared-article-renderer, last seen on 26/03/2021.

department and notified as 'Reserve Forests'. However, these SGs though owned by the Forest Department are managed by village temple committees.[136]

State governments have also initiated various schemes and policies for conservation of SGs. One such example is the Aravali Dev Van Sanrakshan Abhiyan launched by Udaipur South Forest Division in the year 1992 to help communities conserve the SGs.[137] However, the conservation of SGs is mainly done by community and local institutional arrangement. There is an effort to notify some of the SGs rich in floral and faunal diversity as 'Community Reserve' under the WPA which is expected to provide legal sanctity to such traditionally conserved areas on privately owned land. [138] [139] The Supreme Court of India has also upheld the value of such SGs in the Odisha mining case where the apex court ruled in the favour of Dongria Kondhs and Kutia Kondh with the observation that if the proposed project affects their right to worship their deity known as Niyam Rajah, that right has to be protected under articles 25 and 26 of Constitution of India.[140]

VII. CHALLENGES IN EFFECTIVE IMPLEMENTATION OF CONSERVATION LAWS

The subject matter of forests and wildlife being in the concurrent list of the Constitution of India, the implementation mandate is mainly with the State Governments to identify, protect and manage such areas with the assistance and guidance from the Central government. While there are various legislations and policies which acknowledge and advocate for

[136] Ibid.
[137] *Dev-Forest Conservation at Aravali*, Department of Information and Public Relations, Rajasthan, available at http://dipr.rajasthan.gov.in/content/dipr/en/news-detail.19079.html#, last seen on 26/03/2021.
[138] S. 36C, The Wildlife Protection Act, 1972.
[139] P.V. Karunakran, M.Balasubramanian & B.R. Ramesh, *Conservation and Management of Sacred Groves in Kerala as Community Reserves* in *Strategy for Conservation of Sacred Groves*, in *Institute of Forests Genetics and Tree Breeding, Coimbatore* (C. KunhiKannan & B.R. Ramesh, 2004).
[140] Orissa Mining Corporation v. Ministry of Forest & Environment & Ors., (2013) 6 SCC 476.

protecting wildlife spaces outside PAs, their implementation on ground has a chequered history. For instance, the ESZs being notified around PAs have many problems. Initially, the States were reluctant to declare ESZs, however with the Supreme Court's intervention in the matter of *Goa Foundation* v. *Union of India*, declaring 10 km uniform ESZ across all PAs until States complete the process,[141] there was a sudden hurry in the manner in which ESZs are declared. One major criticism of the process has been the deliberate attempt to limit the extent of respective ESZs to the minimum. For example, in some cases it is either zero or up to a hundred meters with no consideration of the wildlife corridors which mars the entire purpose of declaring ESZs.[142] The process also suffers from other administrative and political limitations, especially in the case of PAs situated near state borders, where the concerned state does not bother to consider the wildlife corridors and wild spaces beyond the respective state boundary. One such example is the draft notification for ESZ of Kaimur Wildlife Sanctuary in Bihar, which excluded any ESZ on its western, south-eastern and southern boundary of the Sanctuary which shares a boundary with the State of Uttar Pradesh.[143] While hearing a matter on infrastructure development on elephant corridors, the National Green Tribunal directed the Central Government to give legal recognition to the elephant corridors under the powers granted under Section 5 of the EPA and WPA.[144] [145] There are also instances where the political parties and local residents oppose the declaration of wildlife corridors and ESZs alleging that the same deprives them of the development as observed in the case of

[141] Supra 73.
[142] Mayank Aggarwal, *States propose minimal eco-sensitive zones around protected areas*, Mongabay (06/08/2021), available at https://india.mongabay.com/2020/08/states-propose-minimal-eco-sensitive-zones-around-protected-areas/, last seen on 11/05/2021..
[143] *Draft Notification*, MoEFCC Notification S.O. 274(E) (28/01/15), available at http://moef.gov.in/wp-content/uploads/2017/06/S.O.%20No%20274%20%5B28.01.2015%5D%20Draft%20ESZ%20Notification%20on%20Kaimur%20Wildlife%20Sanctuary%2C%20Bihar.pdf, last seen on 26/03/21.
[144] Kashmira Kakati v. Union of India & Ors., 2017 SCC OnLine NGT 388.
[145] Pradip Kumar Bhuyan v. Union of India & Ors, 2018 SCC OnLine NGT 1831.

Kaziranga National Park, Wayanad Wildlife Sanctuary and Corbett National Park.[146] [147] [148]

While there are concerns regarding diversion of area for industrial activities in important PAs such as Dehing Patkai Elephant Reserve (Assam), Rajaji National Park (Uttarakhand), Bhagwan Mahavir Wildlife Sanctuary and Mollem National Park (Goa)- there are also instances where entire PAs are being denotified by States such as the Turtle Wildlife Sanctuary (Uttar Pradesh) and Renuka Wildlife Sanctuary (Himachal Pradesh).[149] [150] [151]

Failure to acknowledge the wildlife spaces in and around PAs has significant conservation impacts, especially for animals which are known to disperse over long distances for their survival. In the absence of legal protection to elephant reserves, the fate of such conservation efforts lies greatly on the discretion of the states. As seen recently in the case of Shivalik Elephant Reserve where the Uttarakhand High Court had to intervene staying the State government's approval denotifying the 4,500 sq km of the Elephant Reserve for expansion of Dehradun airport.[152]

There are several other examples of environmental disputes related to protection of wildlife outside PAs which demanded judicial intervention.

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[146] Vineet Upadhyay, *Bookings in Uttarakhand's Corbett Tiger Reserve shut down over protests against eco-sensitive zone*, The New Indian Express (26/11/2019), available at https://www.newindianexpress.com/nation/2019/nov/26/bookings-in-uttarakhands-corbett-tiger-reserve-shut-down-over-protests-against-eco-sensitive-zone-2067467.html, last seen 26/03/2021.

[147] Anup Sharma, *Locals miffed with draft eco sensitive zone of Kaziranga*, NorthEast Now (30/12/2019), available at https://nenow.in/north-east-news/assam/locals-miffed-with-draft-eco-sensitive-zone-of-kaziranga.html, last seen on 26/03/2021.

[148] Neethu Joseph, *Explainer: The controversy over proposed ESZ around Wayanad wildlife sanctuary* , The News Minute (11/02/2021), available at https://www.thenewsminute.com/article/explainer-controversy-over-proposed-esz-around-wayanad-wildlife-sanctuary-143222, last seen on 26/03/2021.

[149] Mayank Aggarwal & Sahana Ghosh, *Environment ministry unlocked many protected areas during the lockdown*, Mongabay (12/06/2020), available at https://india.mongabay.com/2020/06/environment-ministry-unlocked-many-protected-areas-during-the-lockdown/, last seen on 26/03/2021.

[150] Ambika Sharma, *Renuka wildlife sanctuary area to be denotified* soon,The Tribune India (20/02/2021), available at https://www.tribuneindia.com/news/himachal/renuka-wildlife-sanctuary-area-to-be-denotified-soon-214792, last seen on 26/03/2021.

[151] Neha Shukla, *Varanasi to bid adieu to turtle sanctuary*, The Times of India (13/11/2019), available at https://timesofindia.indiatimes.com/india/varanasi-to-bid-adieu-to-turtle-sanctuary/articleshow/72031659.cms, last seen on 26/03/2021.

[152] PTI, *Uttarakhand High Court stays denotification of Shivalik Elephant Reserve,* The Indian Express (09/01/2021), available at https://indianexpress.com/article/india/uttarakhand-high-court-stays-denotification-of-shivalik-elephant-reserve-7139531/, last seen on 26/03/2021.

One of the major cases related to conservation of wildlife corridors and stepping stone forests can be seen in the Kaziranga case where the failure to declare ESZ around Kaziranga National Park had a significant impact on the wildlife dispersing towards the Karbi Anglong hills during seasonal floods inside Kaziranga National park, which lies on active floodplain. The wildlife of Kaziranga evolved in such a way that every year during floods, the animals would disperse towards the rich forests of Karbi Anglong which is situated on higher elevation. However, the increase in traffic on NH-37, construction of restaurants and commercial hotels on the corridor, and rampant mining in Karbi Anglong hills itself was proving detrimental to wildlife.[153] [154] [155] The case drew a lot of attention towards the importance of maintaining wildlife corridors when the Supreme Court of India had to intervene and ban the mining in Karbi Anglong hills and any new construction on the wildlife corridors.[156] There was also a boundary wall constructed by Numaligarh Refinery Limited in No-Development Zone inside Deopahar Reserve Forest which obstructed elephant movements and even caused fatality of an elephant.[157] The National Green Tribunal directed demolition of the wall and regulated traffic on NH-37 to facilitate the free movement of wildlife between Kaziranga National Park and surrounding forests.[158]

While the Kaziranga case received much attention because of its recognition as a UNESCO World Heritage site and a notified Tiger Reserve, a majority of the wildlife spaces do not enjoy such attention and their conservation is greatly challenged due to ignorance, poor

[153] National Tiger Conservation Authority, *Report regarding Rampant Mining in Karbi Anglong Hills adjoining Kaziranga Tiger Reserve, Assam*, available at http://docplayer.net/190484661-Report-regarding-rampant-mining-in-karbi-anglong-hills-adjoining-kaziranga-tiger-reserve-assam.html, last seen on 25/03/2021.

[154] Central Empowered Committee, Report No. 6 of 2019 in W.P.(C) No. 202/1995, available at http://cecindia.nic.in/wp-content/uploads/2019/03/Report-No.-6-of-2019-in-App-No.1431-of-2018-filed-by-Rohit-Chaudhary.pdf, last seen on 11/05/2021.

[155] Controller and Auditor General of India, *Report 3 of 2014-Performance Audit of Kaziranga National Park - Issues and Challenges*, available at https://cag.gov.in/en/audit-report/details/4371, last seen on 26/03/2021.

[156] T.N. Godavarman v. Union of India, W.P. (Civil) 202 of 1995 (Supreme Court, 12/04/2019).

[157] Shreya Dasgupta, *Refinery township golf course and boundary wall puts elephants at ris*k, Mongabay (06/11/2015), available at https://news.mongabay.com/2015/11/refinery-township-golf-course-and-boundary-wall-puts-elephants-at-risk/, last seen on 26/03/2021.

[158] Supra 75.

documentation of biodiversity and lower resource allocation for monitoring and management by the government. These areas face multiple challenges ranging from encroachment of land, poaching, human-wildlife conflict as well as establishment of big infrastructure and development projects. A case in point is the recent proposal for establishing a 41,500-megawatts solar and wind renewable energy park spread across 60,000 hectares in the Kutch region of Gujarat. The unique desert ecosystem has been classified as a 'wasteland' even though it is home to hundreds of bird species. The project proponents also seem to have ignored the fact that the proposed area is a part of the Central Asian Flyway, an international bird migration route.[159] In one case, the environmental clearance of a 1320 MW coal-based thermal power plant was cancelled by the National Green Tribunal due to failure of the project proponent to acknowledge impact of the project on wildlife in the Reserve Forest areas adjoining the project site.[160] In another case, while hearing a matter related to de-notification of Turtle Wildlife Sanctuary situated in Varanasi, the Allahabad High Court relied on a report by Wildlife Institute of India where it observed that a portion of the PA was found to be "*least suitable habitat for turtles because of high anthropogenic disturbances such as cemented ghats, intense ferry boat activity, pollution and human presence along the river*".[161]

Another important issue affecting wildlife conservation is dilution of the legal safeguards that were promulgated in the first place to protect the wild habitats. For example, wetlands have long been regarded as 'wastelands' and it was only in 2010 that the Environment Ministry promulgated the Wetland (Conservation and Management) Rules, 2010 to give these unique ecosystems legal protection. However, in 2017 with the passing of Wetland (Conservation and Management) Rules, 2017 various safeguards were diluted. To illustrate, the new Rules exclude man-made water bodies constructed for various purposes such as drinking water, aquaculture, salt production, recreation, and irrigation purposes. This removes a large

[159] Mayank Aggarwal, *The mega renewable energy park may not be as green as expected*, Mongabay (22/09/2020), available at https://india.mongabay.com/2020/09/mega-renewable-energy-park-in-kutch-could-have-potentially-adverse-environmental-impact/, last seen on 26/03/2021.
[160] Debadityo Sinha v. Union of India, 2014 SCC OnLine NGT 6090.
[161] Bharat Jhunjhunwala v. Union of India, 2019 SCC OnLine All 4.

number of active wetlands from the definition of wetland and opens them for ecologically destructive uses. The National Wetland Atlas developed by the Indian Space Research Organization (ISRO) and released in 2011 estimated 2,01,503 wetlands in the country spread over an area of 14.7 million hectares. Out of these, 1,45,641 wetlands or 72% of the total number spread over 4.4 million hectares are man-made wetlands.[162] Therefore, the 2017 Rules fail to cover 72% of the total wetlands in the country. In states such as Tamil Nadu, agriculture, drinking water security, and drought and flood mitigation are almost entirely dependent on traditional engineered water harvesting structures such as *eris* and *kanmais* (irrigation tanks). In such areas, the Rules will not be of much use.[163] Further, the 2010 rules extended protection to Ramsar wetlands; government notified wetlands; high-altitude wetlands larger than 5 hectares; wetlands at elevations less than 2,500 metres and spread over 500 hectares; wetlands located in ecologically sensitive areas and those lying within UNESCO World Heritage Sites.[164] However, legal protection was restricted to Ramsar wetlands and the government notified wetlands under the 2017 Rules[165] which superseded the 2010 Rules.

Ramsar sites which represent wetlands of international importance and upon their designation, the governments commit to their wise use. Wise use of wetlands implies maintaining their ecological integrity. However, Ramsar wetlands in India have been affected by unregulated activities, such as large-scale water abstraction, reclamation, establishment of industries, discharge of pollutants, etc. In fact, Keoladeo National Park and Loktak Lake are included in the Montreux Record.[166] The Montreux Record is a register of Wetlands of International Importance where changes in the ecological character have occurred, are occurring, or are likely to occur due

[162] N. Jayaraman, *India's new wetland rules threaten to destroy 65% of its water bodies rather than protect them*, Scroll.in (12/10/2017), available at https://scroll.in/article/853515/indias-new-wetland-rules-threaten-to-destroy-rather-than-protect-65-of-its-water-bodies, last seen on 26/03/2021.
[163] Ibid.
[164] Wetland (Conservation and Management) Rules, 2010.
[165] Wetland (Conservation and Management) Rules, 2017, available at http://www.indiaenvironmentportal.org.in/files/file/Wetlands%20(Conservation%20and%20Management)%20Rules,%202017.pdf, last seen on 26/03/2021.
[166] *ATREE Report on Policy Consultation on Ramsar Wetlands in India*, Conference held on 15/05/2002 (Unpublished).

to human interference.[167] Some of these wetlands are also threatened on account of large dams and other development projects that have altered the flow patterns of rivers feeding the wetlands.[168]

The CRZ Notifications are another case in point. The 2019 CRZ Notification which superseded the 2011 CRZ Notification allowed for future possibility of intensifying construction activity in urban coastal areas and development of airports in non-arable lands in rural coastal areas. Urbanisation and development increases the threat of flood for an already vulnerable coastal population of 36 million people.[169]

Conservation sites such as IBAs represent areas of internal importance for birds and other biodiversity. Close to 40% of IBAs fall outside protected areas and thus form an important tool for 'landscape-level conservation planning'.[170] However, as mentioned in the Draft Visionary Perspective Plan (2020-2030) for the Conservation of Avian Diversity, their Ecosystems, Habitats and Landscapes in the Country, though a small proportion of these non-protected area IBAs enjoy community protection, most of them do not have any conservation action plan or management prescription for their sustenance. IBAs which are outside the protected area network are under severe anthropogenic pressure which leads to destruction of habitats and decline in avian diversity. Therefore, it is important to strengthen conservation and management of key bird habitats outside the protected areas.[171]

With the ever-increasing push for industrialization, transportation corridors, urbanization and constant endeavour to improve India's rank in

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[167] *The Montreux Record and the Ramsar Advisory Missions*, Ramsar, available at https://www.ramsar.org/sites/default/files/documents/library/info2007-06-e.pdf, last seen on 11/05/2021.

[168] Supra 166.

[169] Meenakshi Kapoor, *India diluted the law that protects its coastal areas once the public could no longer give inputs*, Scroll.in (11/08/2020), available at https://scroll.in/article/969922/india-diluted-the-law-that-protects-its-coastal-areas-once-the-public-could-no-longer-give-inputs, last seen on 26/03/2021.

[170] Ministry of Environment & Forests, Government of India, *India's Fifth National Report to the Convention on Biological Diversity 2014*, available athttps://www.cbd.int/doc/world/in/in-nr-05-en.pdf, last seen on 26/03/2021.

[171] Ministry of Environment, Forest & Climate Change, Government of India*, Draft Visionary Perspective Plan (2020-2030) for the Conservation of Avian Diversity, their Ecosystems, Habitats and Landscapes in the Country*, available at https://ourgovdotin.files.wordpress.com/2020/03/0-1.pdf, last seen on 26/03/2021.

the ease of doing business' index- wildlife conservation does not appear to be given higher priority.[172] [173] Dilutions of key environmental regulations such as Environment Impact Assessment Notification, 2006 especially the clauses which relates to protection of wildlife are some concerns raised by environmentalists.[174] [175] [176] [177] [178] Reduced government funding to premiere public institutes and agencies involved in research and conservation of forest and wildlife such as Wildlife Institute of India, Indian Institute of Forest Management, Wildlife Crime Control Bureau and National Tiger Conservation Authority will further weaken the existing foundations for wildlife protection.[179] [180] [181]

[172]Ministry of Environment, Forest and Climate Change**,** *Our focus is promoting ease of doing responsible business: Union Environment Minister*, Press Information Bureau (19/08/2019), available at https://pib.gov.in/PressReleseDetailm.aspx?PRID=1582341, last seen on 11/05/2021.

[173] IndiaSpend, *How Government's Push For Ease Of Doing Business Is Compromising Environment Regulation*, Bloomberg Quint, available at https://www.bloombergquint.com/law-and-policy/how-governments-push-for-ease-of-doing-business-is-compromising-environment-regulation, last seen on 26/03/2021.

[174] Vindhya Bachao Desk, *Comments & Objections on Draft EIA Notification 2020*, Vindhyan Ecology and Natural History Foundation, available at https://vindhyabachao.org/publications/reviews/798-review-draft-eia-2020, last seen on 26/03/2021.

[175] S. Janyala , A. Aryan & S. Verma, *NITI Aayog orders study on 'economic impact' of judicial decisions*, The Indian Express (08/02/2021), available at https://indianexpress.com/article/business/niti-aayog-orders-study-on-economic-impact-of-judicial-decisions-7178976/, last seen on 26/03/2021.

[176] D. Sinha & D. Mehta, *Environmental Clearances and Monitoring in India*, Vidhi Centre for Legal Policy, available at https://vidhilegalpolicy.in/research/environmental-clearances-and-monitoring-in-india-report-card-for-the-ministry-of-environment-forest-and-climate-change/, last seen on 26/03/2021.

[177] A. Samuel et al., *Review of the EIA Notification 2020*, 55 Economic and Political Weekly (2020), available at https://www.epw.in/journal/2020/25/letters/review-eia-notification-2020.html, last seen on 26/03/2021.

[178] C. Chauhan, *Prakash Javadekar clears 240 projects in 3 months*, Hindustan Times (11/09/2014), available at https://www.hindustantimes.com/india/prakash-javadekar-clears-240-projects-in-3-months/story-WCrxd2rhSxQ3ozpOBZ7YiN.html, last seen on 26/03/2021.

[179] C. Chauhan, *Govt. plans to cut funds to 5 autonomous bodies*, Hindustan Times (11/09/2014), available at https://www.hindustantimes.com/india/prakash-javadekar-clears-240-projects-in-3-months/story-WCrxd2rhSxQ3ozpOBZ7YiN.html, last seen on 26/03/2021.

[180] A. Bhaduri & R. Gupta, *Budget 2021: Environmental conservation or business as usual*, India Water Portal (13/02/2021), available at https://www.indiawaterportal.org/article/budget-2021-environmental-conservation-or-business-usual, last seen on 26/03/2021.

[181] J. Mazoomdaar, *Environment panel against entertaining 'anti-development' representations*, The Indian Express (14/01/2017), available at https://indianexpress.com/article/india/environment-panel-against-entertaining-anti-development-representations-4473317/, last seen on 26/03/2021.

VIII. CONCLUSION

The wildlife conservation regime in India is still founded on the WPA. There have been amendments to existing laws to accommodate more areas under the ambit of protection for wildlife, under different legislations such as EPA and Biological Diversity Act, 2002. However, the manner and the pace with which they are done are not sufficient and shows a lack of political will. This is further challenged by the fact that the state governments often see it as political propaganda to jeopardize their economic progress by restricting developmental activities. Many of the ESZs which were supposed to be acting as shock absorbers and wildlife corridors around existing PAs could not see the light of the day, and those which were notified have been kept to the minimum. While the lack of political will is evident from denotification of notified PAs, dilutions of key environmental legislations and lesser financial support to public institutions involved in wildlife conservation-the State will be failing in the constitutional[182] mandate to take all measures necessary to protect the forests and wildlife of the country under public trust doctrine. At the same time, it is the fundamental duty of all the citizens to protect and conserve the areas of wilderness and having compassion for wild animals. In the era, where climate change is a reality and pandemics of zoonotic origins are becoming more common- we must recognize the importance of natural ecosystems as the first line of defense and take immediate policy measures for their long-term conservation.[183]

[182] Art. 48 A, the Constitution of India.
[183] Art. 51 A (g), the Constitution of India.