

## THE CONCEPT OF SACRED IN NATURAL FOREST MANAGEMENT IN INDIA

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**Abstract:** In recent years, environmentalists and scholars of religion have shown an enormous interest in the pan-Indian phenomenon of "sacred groves," small forests or stands of trees whose produce is set aside for the exclusive use of a deity. This article seeks to contribute to scholarship on the concept of sacredness and its use in management of natural areas that were called sacred groves. First, we describe the concept of sacredness in Hindu philosophy. Second, we contextualize the discourse about attributing sacredness to area/vegetation in the history of the region to uncover old paradigms that inform present-day beliefs and practices. The creation of sacred groves for deities [not always the forest one] provided opportunities to conserve the essential resources and provided the required environmental services to the society that is doing such practices. We conclude that the current situation of missing conservation-oriented protection may lead to environmental degradation and thus reviving the traditional knowledge systems is vital to achieve the sustainable conservation in sacred groves.

**Key Words:** Sacred groves, environmental conservation, traditional knowledge systems

### INTRODUCTION

The word "sacred" etymologically means "holy" or "saint" but essentially it means "truth" which is the Cosmos, both material and immaterial, itself (Trask, 1959). The root of the word 'sacred' is different from that of 'truth' and 'tree' having a common root<sup>1</sup>. The "Supreme Power" described as 'Parabrahm'<sup>2</sup> and Shiva-Shakti<sup>3</sup> believed to regulate the cosmos are the references for both absolute "truth" and the "sacred" in Hindu mythology. Krishna, the most recent incarnation of Parabrahm, pronounces that "He is sacred fig (*Ficus religiosa* (peepal tree)) among trees" and description of *Ficus bengalensis* (banyan tree) embodying the trinity<sup>4</sup> and deities<sup>5</sup>. These pronouncements leave only thin lines of differences in the substantial meanings of the "truth", "sacred" and "Supreme Power". Polytheism and dialectical transcendence of knowledge resulted in multiple manifestations of fundamentally the similar thoughts unlike monotheism with radical transcendence. The unveiling of truth, in Vedic terms, leads to wisdom which determines rational use and management of all things, living or non-living, on Earth. With these descriptions and explanations, all organisms, entities and structures, real or virtual are sacred, or, nothing is non-sacred, i.e., if specific sacred value(s) of an object or process, is (are) not available, it does not mean that it is (are) non-sacred (Vannucci, 1998). Nonetheless, specificities of sacredness vary. Some individuals endowed with specified capabilities are sacred but not at par with the deities, the

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deities are sacred more for their deeds than parentage, and humans irrespective of their status or deeds when alive, are equally sacred after death. Thus, sacredness is attached to both objects and processes, which are uncontrollable, unknowable and unacknowledgeable or controllable, e.g., consecration and sacrilege of human actions. Some humans considered sacred can themselves decide the time of their death by equalizing within- and outside-intellect (achieving the state of equanimity, the 'Samadhi') or predict death, e.g., one feeling getting closer to the intellect and consciousness beyond human capacity and thereby close to death. The common language meaning of sacred is "pious or holy" and "noble" when used in the context of objects and actions, respectively. According to Hindu cosmology (Sivananda, 1999), all gods, goddesses, deities, and spirits are absolutely sacred, unlike the human body itself. The soul (*ātman*), being an intrinsic part of the Almighty (*brahman*) in humans or any other living creature, is sacred. This holiness demands restricted access to divinities within sacred plants, groves, and forests. Such restrictions do not apply to the animal carriers of the Gods/Goddesses, e.g., the mouse (conveyor of the elephant God Ganesha), the peacock (of Kartikeya), the lion (of Durga), the Garuda (of Vishnu), the ox (of Shiva) or the ornaments of the Gods like King Cobra (of Shiva). It is possible that this articulation emerged from humans being too weak in terms of both intelligence and physical strength to overcome these creatures (Pandey, 1971). Taking a bath, preferably in a sacred river, lake, pond, or in the ocean, is the simplest way of making bodily organs pious and to visit sacred terrestrial regions. Nonetheless, in the Hindu mythology, the humans through their noble deeds can acquire the potentialities of the gods/goddesses, can challenge them, and can even conquer their territories, the heaven. However, only Vishnu can pass human life on the earth and none other than the liberated souls can reside in the '*Moksha Dham*', the house of the Almighty. Furthermore, human deeds can make the earth unproductive and can restore its productivity as well. The legend says that King Prithu restored the productivity of the earth through his noble deeds after it became unproductive as a result of wrongful deeds of his father Vena. The sages churned the heir, Prithu from the corpse of Vena. Prithu chased the Earth who fled as cow but came back when he assured to protect her like his wife/daughter. This assurance led to restoration of earth's productivity (Anonymous, 2008). Such faith, values, and legends in Hindu scriptures point to the prospect of saving mankind from the present global challenges of climate change, biodiversity loss, and unsustainable socio-economic development.

### **Visualization of Nature in Hindu Mythology**

Protection of natural ecosystems for cultural and religious reasons is an ancient practice around the world which has been altered, transformed, or abandoned during the course of sedentarization, industrialization, urbanization, colonization, acculturation and religious conversions achieved directly through enforcements

or indirectly through incentives and intellectual influences. In South Asia, the mainstream ancient civilization which originated and developed in North India through the Aryans and in South India through the Dravidians was Hindu<sup>6</sup> culture and religion. Hindu culture, philosophy and 'religion'<sup>7</sup> could be distinguished by lack of any conscious forceful efforts for its adoption by others on one hand or resist conversion to other faiths and religion on the other. This led to its coexistence with Christianity, Islam and Judaism and evolution of distinct sects and faiths within it, including animism in north-eastern India, Buddhism largely in high elevations, Jainism and Sikhism across the country, among others. Nonetheless, Hindu culture and religion did spread out over time, outside the Indian subcontinent<sup>8</sup> and to Southeast Asia<sup>9</sup>.

In Hindu mythology and philosophy, the earth system (including humans) itself is not immortal; it passes through a cycle of four phases, *Satyug*, *Treta*, *Dwaparyug* and *Kalyug* distinguished by the means of achieving the Bliss, the ultimate goal of human life achievable only after passing through 8.4 million kinds of animal life<sup>10</sup>. The 'Bliss' was achieved by the 'Tap'<sup>11</sup> in *Satyug*, by 'Yagna'<sup>12</sup> in *Tretayug* and by 'Dana' (donation) in *Dwaparyug*. In *Kalyug*, the present phase, it could be achieved just by chanting the name of the Almighty. The four yuga constitute one Mahayuga spanning over 4.32 million years and 1,000 Mahayugas constitute just one day of the creator Brahma (Sashi, 2019). The scientific evidences of origin of life in water and subsequent evolution to terrestrial organisms is reflected also in incarnation of the nurturer Vishnu for the first time as Fish and subsequently as Tortoise, Boar, The Lion Man a unique living creature, The Dwarf man, The Lumberjack, Rama and Krishna, the most recent incarnation.

The Almighty, the GOD, is articulated in three supreme individuals, the trinity: *Brahma*, the 'G'enerator, *Vishnu*, the 'O'perator/nurturer and *Shiva*, the 'D'estroyer. There are uncountable Gods and Goddesses embodying different functions in the cosmos and the deities on a local scale. Next to this hierarchy of supra-human entities are the sages and seers (*Rishis* and *Munis*) possessing technical as well as spiritual knowledge including abilities to foresee the future and to connect with and even curse the supra-human powers. Of the three Supreme Gods, *Vishnu*, who nurses all organisms, is believed to rest or meditate in Ocean, *Shiva*, who brings living beings to their end in death, in snow clad peaks of the Himalaya, while such a specific place is not mentioned for *Brahma*, the creator. The Ganges River, the only Goddess that came to earth permanently, originated from the toe of *Vishnu*, passing through the hand pot (*Kamandal*) of *Brahma*, the hairs of the *Shiva*, and the bodies of some seers. The Cosmic Tree (also called the Tree of Life; the Poles of Sacrifice) symbolises life itself (Saraswati, 1998). Thus, nature or the wilderness, ranging from simple and small forms, such as a single tree, to large-complex forms, such as forests, alpine regions, and the Ganges Basin, are manifestations of the superhuman subjects who are the very originators of Hindu philosophy and religion

(Knapp, 2012). The epics recognize immense importance of afforestation (Prime, 1992; 2002): the Goddess Parvati says that digging a well for public service entitles one to spend number of years in heaven equal to number of water drops, while the merit of digging a pond is 10-times greater than a well, nurturing a noble son 10-times of digging/maintaining a pond and planting/nurturing a sapling 10-time greater than nurturing a noble son (Kinsley, 1988; Dharmic Scriptures Team, 2002).

An appreciation of use and non-use values, direct and indirect benefits, and the multifunctionality of forests has traditionally been grounded in the social, cultural, economic, and political fabric of prehistoric Hindu societies (Chandran and Hughes, 1997; Haigh, 1988; Saxena et al., 1998; Ramakrishnan, 2003; Verschuuren et al., 2010; Ormsby and Bhagwat, 2010; Singh et al., 2017). The rulers of the land set aside forests to sages and seers for their own intellectual exercises, spiritual guidance and for education and training. Some forests were designated as no war land "*Abhayaranya*" (Fergusson, 1971), where deforestation or forest degradation due to war was ruled out and which provided opportunities for rejuvenation of friendship between enemies through discussions. Some forests were recognized for their immense potential for securing extraordinary wealth, while some were recognized as the dwelling places of supra-human powers (Table 1). These values of forests are no longer visible in the present classification of forests based on ownership of land (private, common and public forests) and resources (timber and non-timber forest products). All people adopting a normal family life, irrespective of their status, were required to shift to forests in old age (*Vaanprastha*) unlike classification of urban, rural or forest dwellers in the modern society (Sarkar, 1917). The UNESCO Biosphere Reserve concept (UNESCO, nd) could be viewed as a sort of rejuvenation, regeneration, and dissemination of traditional knowledge of cultural dimensions of forests and other natural ecosystems. However, it remains more at planning than at implementation level as formal education system still lays more emphasis on teaching in artificial classroom than in field/nature. The potential of nature in giving role models and drawing happiness is acknowledged by the God Dattatreya (merger of the trinity) telling that he draws happiness by learning lessons from 24 elements of forests where he lived: treating 24 natural objects as his teacher and role models: 1. Earth, 2. Water, 3. Air, 4. Fire, 5. Sky, 6. Moon, 7. Sun, 8. Pigeon, 9. Python, 10. Ocean, 11. Moth, 12. Bee, 13. Honey-gatherer, 14. Elephant, 15. Deer, 16. Fish, 17. Dancing-girl Pingala, 18. Raven, 19. Child, 20. Maiden, 21. Serpent, 22. An arrow-maker, 23. Spider, and 24. Beetle (Anonymous, nd; Rigopoulos, 1998; Haig, 2007).

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TABLE 1. FORESTS DESCRIBED IN HINDU EPICS AND MYTHOLOGY (BASED ON SARASWATI, 1998)

Name as in epics and mythology	Description/functions	Ecological features
<i>Aranya</i>	Forests where war was forbidden; this was a world of wisdom and peace for the sages, students for higher learning including the princes and renouncers	Not penetrable/so dense
<i>Tapovan</i>	Forests of penance where the hermits, monks and recluses performed spiritual fervor or ardour	Not penetrable/so dense
<i>Mahavana</i>	Large forests where Shiva, the God of fearlessness resides	Impenetrable/highly dense/pristine
<i>Srivana</i>	Forests surrounding a settlement resulting in its prosperity	The present tribal settlements surrounded by forests in different stages of succession/disturbances
<i>Devavana</i>	Forests where gods/Mother Goddess/deities reside and not related to profits or loss to people	Sacred groves of Santhal tribes in Madhya Pradesh, Kerala, Karnataka and other parts of India; undisturbed to different types of small scale disturbances
<i>Vrindavan</i>	A forest where Lord Krishna used to dwell	Riverine and flood plain forests with high pastoral values
<i>Badri Van</i>	Forest of berries in Himalaya, the abode of Vishnu	Alpine forests and temperate forests
<i>Nimisaranya</i>	A forest freed from demons by God Vishnu in a twinkling of eye, when the creator of the Vedas explained them to the sages and a place where the Wheel of Righteousness released by Vishnu was shattered and rejuvenated by the sages by continued penance over thousands of years	Alluvial flood plain forests

## Current articulation of the sacred

A number of rivers (e.g., the Ganga, Yamuna, Narmada, Godavari, Kaveri), lakes (e.g., Chandratil, Naini, Renuka), mountain peaks (e.g., Nanda Devi, Hariyali Devi, Trishul, Kailash, Kinnar, Mansa Devi, Tirumala) and coastal areas (Dwarka, Puri, Rameshwaram, Ganga Sagar) are still considered sacred sites and pilgrimage areas for Hindus. They are located in diverse bioclimatic and biogeographic zones. However, modernization has resulted in the domination of recreation and relaxation as primary values, rather than the religious and spiritual values associated

with pilgrimage. This has led to deforestation, forest degradation, pollution and acculturation. Only within the last 10-20 years has a consciousness emerged to support capitalizing on the income from tourism in order to enhance environmental conservation and restoration (Maikhuri et al., 2011).

In the Indo-Gangetic plains, the oldest centre of civilization and the most thickly populated industrialized, urbanized, and agrarian region of the subcontinent, it is more common to observe the ascription of sacredness to individual plants and other species (Table 2). On the other hand, in entire mountain regions are considered sacred in the cases of the Western Ghats, the Himalaya, Satpuras, Aravalis and Vindhya. Similarly, in desert region it is more common to observe this articulation in forests, rivers, and lakes, or in coastal areas where the ocean and coastline are considered sacred. Sacredness sometimes has specific biological and ecological contexts. *Ficus religiosa* (sacred fig) and *Ocimum sanctum* (basil) are sacred species but excessive natural regeneration of the latter and any natural establishment of the former are considered bad omens as well indicators of poor upkeep of peoples' dwellings (Krishna and Amirthalingam, 2014). *Ficus religiosa* entwined around *Azadirachta indica* (Neem tree, Indian lilac) is considered more sacred than independent individuals of the two species. Some species are considered sacred at one place but not in others. Bamboo thickets, considered sacred in some north-eastern regions, are believed to house "bad spirits" by several communities in the Indo-Gangetic plains. Sometimes, it is the way a product is obtained that determines its values. Thus, in high elevation Bhotiya settlements in Kumaun, oak trees are lopped and the deadwood used for meeting domestic fuelwood, fodder, and small timber needs, but an over-mature dead, or diseased tree is cut to prepare a funeral pyre and for performing last rituals. Some individual trees of banyan tree (*Ficus benghalensis*), sacred fig (*Ficus religiosa*), and neem (*Azadirachta indica*) are also revered as they often cover large areas and host as many species as small sacred groves (Ramakrishnan et al., 1998; Bhattacharya, 2014).

TABLE 2. PLANT SPECIES CONSIDERED SACRED IN INDIAN SUBCONTINENT  
(BASED ON RAMAKRISHNAN ET AL., 1998)

Species	Cultural/religious values	Ecological features
<i>Wild species</i>		
<i>Ficus religiosa</i> (sacred fig; Peepul)	The God himself	A tropical and subtropical tree
<i>Ficus benghalensis</i> (Banyan; Bargad)	Root is considered as the creator of the earth system, while gods/goddesses reside on each branch and leaf	A tropical and subtropical tree
<i>Ocimum spp</i> (Basil; Tulasi)	Worshipped for embodying a lady dedicated to the well-being of her husband	A widely distributed, from tropical to alpine region, herb

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<i>Elaeocarpus</i> spp. (Rudraksha)	Fruits are used to make garland and considered to be the tears of the Lord Shiva	A temperate forest tree species
<i>Azadirachta indica</i> (Indian lilac; Neemtree; Neem)	Considered sacred and the idol of the Lord of Jagannath Puri, one of the five most revered pilgrim places, is made of its wood	A tropical-subtropical forest tree species
<i>Tamarindus indica</i> (Tamarind, Imali)	Considered sacred in southern India	A tropical-subtropical forest tree species
<i>Anthocephalus kadamba</i> (Kadamb)	Preferred tree of Lord Krishna where he plays his flute	Tropical-subtropical forest tree species
<i>Saracca ashoka</i> (Ashok)	Provided protection to human incarnation of the supreme Goddess	Tropical-subtropical forest tree species
<i>Emblica officinalis</i> (Indian goose berry, amla)	Worshipped in northern India; fruits considered as tears of Lord Vishnu	Tropical-subtropical forest tree species
<i>Cedrus deodara</i> (Cedar; Deodar)	Dieties like its vicinity	Temperate forest tree species
<i>Betula utilis</i> (Birch; Bhoj patra)	Deities use its bark for writing	Alpine/timberline tree species
<b>Semi-domesticated</b>		
<i>Agel marmelos</i> (Stone apple; Bel)	Leaves offered to Lord Shiva	Tropical-subtropical forest tree species
<i>Nyctanthes arbour-tristis</i> (Sacred baobab; Parijat)	The tree could satisfy all wishes in heaven and was brought to earth by Lord Krishna	Tropical-subtropical forest tree species
<i>Cannabis sativa</i> (Hemp, Merijuana; Bhang)	Offered to Lord Shiva	Tropical-temperate herb
<i>Datura strumanium</i> (Devil's trumpets; Dhatura)	Offered to Lord Shiva	Tropical-temperate herb
<i>Calotropis procera</i> (Rubber bush; Madar)	Flowers offered to Lord Shiva	Tropical shrubby plant
<i>Saussurea</i> spp. (Brahmkamal)	Offered to Lord Shiva and Lord Vishnu	Alpine herb
<i>Nilambo nucifera</i> (Lotus; Kamal)	Offered to all gods/goddesses	Widespread aquatic species
<i>Cynodon dactylon</i> (Durva, doob)	Used in performing rituals	Widespread grass
<i>Prosopis cineraria</i> (Khejari)	Dwelling place of local deities in desert region	Arid-semiarid tree species

<i>Madhuca indica</i> (Mahua)	Dwelling place of local deities in central India	Tropical tree
<i>Shorea robusta</i> (Sal)	Dwelling place of local deities in central India	Tropical-subtropical tree species
<i>Butea monosperma</i> (Flame of the forest; Dhak, Tesu)	Dwelling place of local deities in central India	Tropical tree species
<b>Domesticated plants</b>		
Banana(Kela), Mango (Am) and Stone apple (Ber)	Offered to the gods and the Almighty	Tropical fruits
Rice (Chawal; Akshat)	Offered to the Almighty	Tropical crop
Sesame (Til)	Food of the gods	Tropical-temperate crop
Barley (Jau)	Food of the gods	Tropical-temperate crop
Coconut (Nariyal/ Shriphal)	Offered to the God/Goddess	Tropical crop
Sugarcane (Ganna)	Offered to the the gods	Tropical crop
Millets	Taken while fasting to please the God/ penance	Tropical-temperate crops
Ornamental flowers	Offered to Gods/goddesses/dieties; ornaments of gods	
<i>Hibiscus rosa- Sinensis</i> (China rose)	Offered to specifically to the Goddess	
<b>Virtual organisms</b>		
Kalpavriksha	Tree of plenty	
Kamdhenu	Cow of plenty	

Though guided by beliefs, taboos, and myths, the precise motive behind protection of sacred objects varies enormously. Traditional Hindu communities in Himachal Pradesh and Uttarakhand believe that worshipping the deity residing in sacred forests protects them from natural calamities like drought, flash flood, and earthquakes and ensures a sustainable supply of fundamental resources needed for subsistence in isolated settlements. For the Bishnoi community of Rajasthan, it's a way of following the twenty-nine tenets of the sect that forbids the felling of green trees and hunting, both of which reduce risks to livelihood entailed by shortages of water, fodder, and fuelwood supply, resources especially crucial for sustainability in arid climates (Table 3). As could be seen from Table 3 the responses from people varied greatly from a high species rich Himalayan region to species scarce arid Aravali region. While the species richness is high in Himalaya, the economic exploitation is considered a less preferred option as they are depending on the

ecosystem services (drinking water availability) from such sacred groves. However, in a species scarce Aravali region, the respondents considered the material benefits coming from the sacred groves is important. The Khasis, the animists of Meghalaya who inhabit a tropical humid zone in the north-eastern Himalaya, value sacred groves and forests for performing rites and rituals in undisturbed conditions, while the Buddhists around Khangchendzonga, in Sikkim, believe that sacred treasures, which are revealed only to enlightened Lamas, remain hidden in some forests, and it is their duty to protect these treasures from polluting influences. In a variety of ways, these diverse belief systems reflect the kind and strength of the community associations with the natural world. In general, worshipping individual deities is a family activity, while worshipping forests is a community ritual (Chaudhury, 1978; Mackenzie, 1979; Ramakrishnan et al., 1998; Ramakrishnan, 2003).

**TABLE 3. VALUES/BENEFITS ATTACHED WITH SACRED FORESTS IN A HIMALAYAN MOUNTAIN VILLAGE CLUSTER AND AN ARID ARAVALI VILLAGE CLUSTER (BASED ON RAMAKRISHNAN ET AL., 1998)**

Perceived values	Responses (% of all respondents)	
	Village cluster in temperate Himalaya, Himachal Pradesh	Village cluster in arid Aravali, Rajasthan
High species richness	92	-
Monetary/material benefits from forest products	5	80
Sustainable yields from other village forests and farming	70	80
Sustainable supply of potable and irrigation water	70	94
Stability of private land	20	-
Availability of quality drinking water	85	-
Avoidance and protection of catastrophic events	92	95
Source of water preventing/curing diseases	92	10

Sacred groves and forests not only vary in terms of their ecological distribution, but also in terms of property regimes, management practices, and socio-ecological relevance. Garg (2013) have characterized the typology of sacred groves and differentiated them from the sacred sites. While most sites belong to and are revered by an isolated hamlet, clan or village community, some like the Hariyali sacred forest of Garhwal, and Mawsami sacred forest in the Khasi Hills, are valued by a village cluster. Then there are those with a wider regional appeal. This list includes Jageshwar Dham in Kumaon, Badri Van in Garhwal, Poongavanam<sup>13</sup> in

the Western Ghats, Amarkantak in Madhya Pradesh, and Demojong in Sikkim. Land ownership rights and management responsibilities of sacred groves may also vary. At some places individual families are responsible for the management of sacred groves, while at others the onus is on communities or trusts, as well as religious and charitable endowments. In the Himalayas, people did not have any legal rights over sacred forests after 1880s when the Forest/Revenue Department took over all uncultivated lands but local cultural values were respected and these forests were excluded from any silvicultural management and were left free for people to perform social functions and utilize resources. One also observes unique property regimes distinct from the established public, private, common, and open access property regimes. Almost all sacred lands were traditionally owned by the King<sup>14</sup> but the authority of management and appropriation of resources vested in the priests<sup>15</sup>. It is common to observe the religious heads notionally owning the land in high elevation Buddhist settlements and animist tribal societies. The most-revered pilgrim places in the Himalaya, the Badrinath, Kedarnath, Gangotri and Yamunotri were accessible by foot tracks until 1950 and the feudal lords donated forest/agricultural lands around the track to meet the essential needs of the devotees coming from different corners of the country. These cultural practices favoured equity, social bonding, and bridging across cultures and faiths together with protection of natural ecosystems (Nautiyal et al., 2001; Chandrashekhara et al., 2002; Vipat and Bharucha, 2014).

Water bodies are an integral part of sacred forests, but they serve different purpose at different places. In arid-warm Rajasthan, sacred groves and forests known as *orans*, occupy locations crucial for enhancing watershed functions. In the humid-cool Himalayas and Western Ghats, locations of sacred groves referred to as *dev bhumi* and *kavus*, respectively, are such that they protect settlements from peak-run-off and flash floods, while ensuring sustainable flows in springs and streams, and supplying drinking and irrigation water.

### **The present state of sacred groves/forests**

Disturbance regimes in sacred forests differ with local cultures, faiths, resource needs and availability. Though some communities used deadwood and other non-timber products, protection from fire, livestock and felling are universal features of sacred forests across cultures and geographical locations in the Indian subcontinent.

Several reports show widespread loss and degradation of sacred forests in recent decades. In fact, it can be said that sacred groves or forests are non-existent in much of the Indo-Gangetic plains distinguished by an old civilisation with high population density coupled with extreme agricultural extensification and intensification, urbanisation and industrialisation; there are no places reminiscent of the tree clad areas around Vrindavan (Mathura) described in the epics as a dwelling place of Lord Krishna. Land grabbing is also said to be a major reason for the degradation of sacred groves, more because of commercialization of agriculture, industrialization

and urbanization than for meeting subsistence needs.

In the absence of any systematic monitoring, it is difficult to say conclusively whether there has been any loss or expansion in the number and extent of sacred groves (Osuri et al., 2014; Daye and Healey, 2015; Singh et al., 2018). The national forest cover monitoring by the Forest Survey of India based on interpretation of satellite data with a spatial resolution of 23.5 m and minimum mappable unit of 1 ha, is technically not designed to discern spatio-temporal dynamics of sacred forests. These forests are also not treated as a separate land use category in village-level census, surveys and in more detailed management maps generated by the forest department. Thus, we cannot decipher the contribution of sacred forests to the recent increase of 3,775 km<sup>2</sup> of forest area in the country or the loss of 628 km<sup>2</sup> area in the Northeast (Anonymous, 2015). Though there are reports about restoration of degraded and creation of new sacred forests over the past couple of decades, the details on the characteristics of the initial degraded state, restoration methods and costs and the magnitude of recovery in forest density, biodiversity and ecosystem services are lacking. Simple aggregation of data collected independently by individual researchers and freelancers at different points of time and following different methods (mostly visually estimated or reported area values) warrants caution in drawing conclusions. Higher number of sacred forests in the states of Himachal Pradesh, Kerala, Maharashtra and Karnataka seem more because of concentration of research/survey efforts in these areas with fairly high level of accessibility rather than unique cultural/natural heritage or low population density/impacts of modernization (Table 4, Figure 1). Conflicting reports from different agencies show that policymakers paid little attention to sacred groves despite their socio-cultural and ecological values. We would hypothesize that (i) sacred groves/forests could be maintained as long as traditional institutions managing them were not undermined by the modern ones and communities lacked access to external relief or alternative livelihood means following catastrophes and (ii) the degraded ones would be restored by integrating the traditional and modern institutions, nesting sacred forest management in an integrated participatory village development plan built on integration of indigenous/local and scientific knowledge, making people aware of new opportunities of payments for ecosystem services and providing people only the inputs they cannot afford and drawing policies rewarding successful restoration/conservation.

**TABLE 4. STATE WISE NUMBER OF SACRED FORESTS IN DATA SETS  
COMPILED BY DIFFERENT AGENCIES**

State	CPR Environmental Education Center*	Ministry of Environment, Forests and Climate Change**
Andhra Pradesh	677	750
Arunachal Pradesh	159	58
Assam	29	40
Bihar	43	-
Chhattisgarh	63	600
Goa	93	-
Gujarat	42	29
Haryana	57	248
Himachal Pradesh	329	5,000
Jammu & Kashmir	92	-
Jharkhand	29	21
Karnataka	1,476	1,424
Kerala	1,096	2,000
Madhya Pradesh	170	-
Maharashtra	2,820	1,600
Manipur	166	365
Meghalaya	105	79
Odisha	188	322
Puducherry	108	-
Rajasthan	560	9
Sikkim	16	56
Tamil Nadu	1,275	448
Telangana	57	-
Uttarakhand	133	1
Uttar Pradesh	32	-
West Bengal	562	670

-, data not given

\*[http://www.cprecevis.nic.in/Database/Groves\\_811.aspx](http://www.cprecevis.nic.in/Database/Groves_811.aspx)

\*\*<http://www.moef.nic.in/divisions/ic/wssd/doc3/chapter10/css/Chapter10.htm>

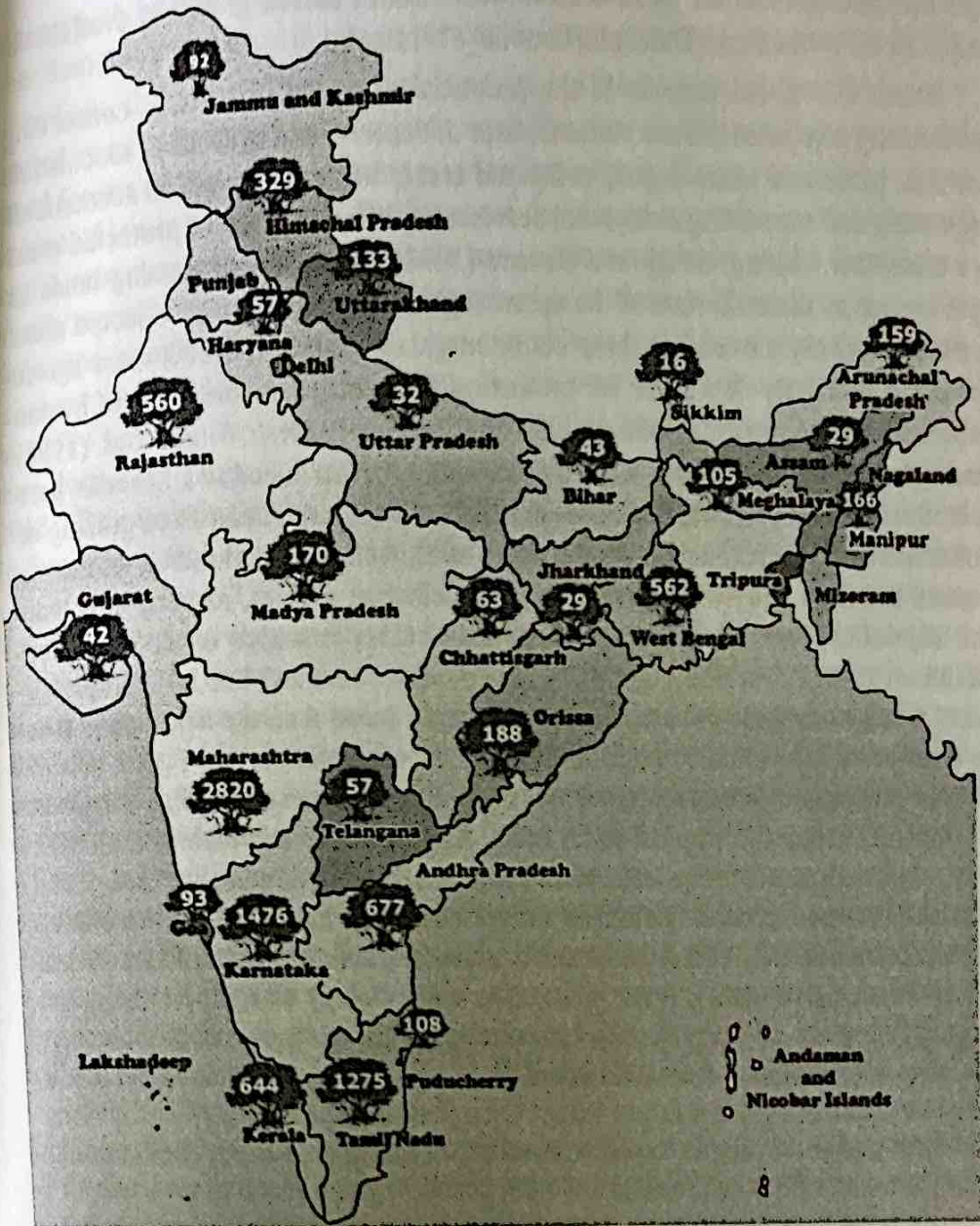


Figure 1. Distribution of sacred groves in India (after Kent, 2009).

There are a number of theoretical and empirical studies on the topic of sacred, forest and environment relationships which reflect much of the socio-cultural dimensions (Vidyarthi, 1961; Vannucci, 1994; Baviskar, 1994; Gadgil and Guha, 1995; Durkheim, 2001; Bhattacharya, 2014; Amirthalingam, 2016). Documenting the number of sacred groves in India has been a major problem as there are no clear guidelines on the subject. The nodal agency, Ministry of Environment, Forests and Climate Change, Government of India has been preparing a list through various sources and based on the reports from State Forest Department, Non-governmental

agencies and researchers. The current data base of sacred groves is available at [http://cpreecenvi.nic.in/Database/Groves\\_811.aspx](http://cpreecenvi.nic.in/Database/Groves_811.aspx).

There are mixed reports of the potential of sacred forests in conserving biodiversity compared to the common means of conservation by wildlife sanctuaries, national parks and other legally protected areas, while comparative accounts of regulating and supporting ecosystem services of different types of protected areas are altogether lacking. Singh and Saxena (1998) found private grazing lands as species rich as sacred forests in the desert region of Rajasthan where sacred areas were presumably carved out from common grazing lands 100-200 years ago in the name of a deity or warrior for protection from unsustainable ways of human exploitation. In temperate-alpine region of Himachal Pradesh, Singh et al. (1998) found sacred alpine meadows as species rich as other meadows because here sacredness meant performance of some rituals and not protection from grazing or collection of medicinal herbs. On the other hand, well protected sacred temperate forests had 20% and 40% higher total and medicinal species, respectively, than the adjoining forests subject to regular subsistence resource uses. Sinha and Maikhuri (1998) observed marginally lower species richness but 1.7-fold higher basal area (a surrogate of carbon stock) in sacred forest than the adjoining ones in a temperate bioclimatic region in Uttarakhand state. Garcia and Pascal (2006) did not find sacred forests always richer in species than the surrounding forests in a wildlife sanctuary in tropical south India, Ramakrishnan and Khiewtam (1989, 1993) had the same findings in tropical humid north-eastern India, but Gadgil and Vartak (1976) concluded the sacred forests as islands of remnant relict climax forests extraordinarily rich in biodiversity and ecosystem functions. These mixed observations partly derive from variation in methodology of characterizing and quantifying plant diversity. Comparative accounts of belowground biodiversity, diversity of animals and ecosystem functions of keystone/sensitive taxa are rare but do show potential of sacred forests in harbouring beneficial species like earthworms and birds and in serving as keystone entities in cultural landscapes (Sinha et al., 2003; Brandt et al., 2013; Saxena and Rao, 2016).

While sacred groves/forests happen to be quite common both in India and China, China has dramatically and India marginally increased their aggregate forest area over the last 10 years unlike the neighbouring Afghanistan, Nepal, Bangladesh and Myanmar where such forests are uncommon and deforestation has continued. However, this increase in national forest cover in Indian and China is more because of massive plantations, strict legal protection of intact forests, mandatory compensatory afforestation for diversion of forest area inevitable for infrastructure, increasing use of petroleum products/electricity in place of fuelwood and societal development supported by national/international funds than by expansion of sacred forests or other voluntary community initiatives. Bhutan has also marginally increased its aggregate forest cover by adopting a radically

different path of development where the country focuses on raising 'happiness' rather than economic growth rate or per capita income *per se* (Anonymous, 2017).

In India, the political and economic power structures are such that the densely forested areas or the sparsely populated areas like deserts with a high frequency of sacred forests do not have as strong a voice in policy making as the other regions because of lower population<sup>16</sup>. Unlike some developed countries, conservation of natural resources and cultural heritage has so far never been on the frontline or priority agenda of any government irrespective of their political lineage. At the same time, people are, most of the time, not able to desist from attraction to cash economy and modern facilities and to switch over from subsistence to market economy on their own, and succumbing to policy interventions favouring short term-economic gains at long term-social-environmental costs (Maikhuri et al., 2015). Despite being in the minority, people in forested landscapes have succeeded in forcing national governments to reverse, moderate and to delay implementation of many decisions (Table 5) but not in enhancement of their traditional practices, e.g., marketing and conversion of subsistence products into commercial products or payments for the ecosystem services flowing from their traditional production and conservation systems (Semwal et al., 2013). In India, a new category of protected area, the community conserved area, was created by the turn of the twenty-first century to augment existing legally protected areas, coupled with opportunities to local communities to convert their cultural landscapes in the form of mini-wildlife sanctuaries/national parks and meet their socio-economic development aspirations by developing ecotourism, small scale forest resource based industries and participating in conservation research programmes (Kothari, 2006; Bhupaty and Azeez, 2011). Likewise, since the early years of the present century, it is mandatory for corporate bodies to spend 2% of their profits for environmental conservation and societal development under the Corporate Social Responsibility Law<sup>17</sup>, while each village community is fully empowered to manage and use all resources including forests in its territory<sup>18</sup>. A provision of Green Bonus, i.e., consideration of forest cover in determining distribution of federal funds to the states is another policy to promote both vernacular and modern ways of forest conservation. However, positive responses in this respect are still awaited. Many culturally valued species and traditional management systems have been found to be more efficient than the ones introduced based on scientific knowledge in conserving biodiversity, mitigating climate change and hydrological imbalance (Ramarishnan et al., 1998; Bhadauria et al., 2013; Bhagwat et al., 2014; Rao et al., 2016). Potential of cultural dimensions in addressing the global challenges of poverty reduction, biodiversity conservation and climate change prediction, mitigation and adaptation has been only in recent years in international forum (Potts et al., 2016) and have yet to be grounded in national policies and programmes (Ormsby, 2011).

TABLE 5. IMPORTANT FOREST MOVEMENTS IN INDIA

Time of movement	Salient features	Outcome of the movements
1730 AD	Sacrifice of life of 363 people who hugged the <i>Prosopis cineraria</i> (Khejari) trees against the felling ordered by the King around Khejadli village in Rajasthan (Rajasthan)	Ultimately the King withdrew the felling command
1910-30s	Mass movement in Kumaon Himalaya against termination of traditional land/forest rights/resource use systems by the colonial regime (Uttarakhand)	Creation of Panchayat Forests
1970s	Mass movement supported by independent scientists for termination of dam based hydroelectric project in the Silent Valley region of Western Ghats (Kerala)	Termination of the project after start-off
1970s	Mass movements/hugging the tree, the popular 'Chipko movement' against felling by contractors authorised by State for revenue earning (Uttarakhand)	Ban on felling in natural forests by any agency including the Government Forest Department/ Forest Conservation Act 1980-prohibiting conversion of forest land for non forest purposes- only central government has the powers to such conversion in land use under certain conditions
1980s and 1990s	Mass movements against big-dam based multipurpose Tehri (Uttarakhand) and Narmada hydroelectric projects (Gujarat)	Delay in initiation/completion of projects; increase in total production costs; increase in compensation to the displaced families
2003	Mass movements against restriction on tourism in the core zone of the Nanda Devi Biosphere Reserve (Uttarakhand)	Termination of the ban and permission for adventurous/ecotourism with local people as guides

### The unrealized potential benefits from sacred forests

Recognizing the limitations of the existing monitoring and inventorying system, we can safely conclude that sacred forests occupy not more than one per cent of the country's total forest area, but they generate a larger proportion of ecosystem services as they are present in almost all biogeographic, climatic, agroecological

regions and ethnic and cultural groups (Rao et al., 2011; Ray et al., 2014; Singh et al., 2018). Sacred forests are remnants of primary vegetation or old secondary vegetation, and have high species richness though not necessarily higher than legally protected areas (Rao et al., 2011). They harbour many rare and threatened species even if their areas are small (Khan et al., 2008; Avtzis et al., 2019). They also serve as "keystone structures" - distinct isolated patches in the matrix of degraded ecosystems. This means that they contain exceptionally large trees, and wet/moist microsites and edges/ecotones with enormous ecological heterogeneity and associated taxonomic and functional diversity over small land areas. In certain places, they may serve as corridors between legally protected areas, sources of seed rain to the surrounding degraded ecosystems, and refugia of both local and regional species in extreme events like droughts and floods. Sacred forests are also significant for climate change mitigation and adaptation because of the high carbon density within them and their potential to contribute to the recovery of vegetation in surrounding degraded ecosystems. They can serve as sources of propagules for expansion of the range of rare and threatened species. The locally revered forests promote community solidarity and the regionally revered ones help enhance social capital through inter-community exchanges of knowledge and experience. Recognition of local knowledge and management practices associated with sacred forests could be a cost-effective way of resolving conflicts between communities and conservators, and thereby enhancing forest cover, ecosystem services and social bonding and bridging (Saxena et al., 1998; Acharya and Ormsby, 2017). The conservation ethos of local communities is reflected in high levels of biodiversity and ecosystem services in the present legally protected areas, which were owned and managed by local communities until the late-19<sup>th</sup> century. Nonetheless, even the largest sacred forests encompassing an area of 25,000 ha or so, independently, cannot sustain high profile and charismatic carnivores like tigers, lions and flagship herbivores like elephants, and Rhinoceros. Ironically, a large number of them spanning smaller than 0.5 ha area will not qualify as "forest" if one follows the definition of "forest" used by the UN Food and Agriculture organization (FAO): tree-clad patches spanning larger than 0.5 ha. The aggregate functions and values of numerous small sacred forests and groves nonetheless have immense potential to augment the ecological and socio-economic functions of legally protected areas and state forests.

#### **Factors driving decline in sacred forests**

The cases of decline of sacred forests outnumber their expansion or enhancement for several reasons (Table 6).

**TABLE 6. REASONS IDENTIFIED BY PEOPLE FOR DECLINE IN ATTENTION TO/STATE OF SACRED FORESTS IN A VILLAGE CLUSTER IN HIMALAYAN AND DESERT (BASED ON RAMAKRISHNAN ET AL., 1998)**

	Responses (% of total)	
	Village cluster in temperate Himalaya, Himachal Pradesh	Village cluster in arid Aravali, Rajasthan
Population growth	4	5
Livestock population growth	8	35
Increasing attraction to cash economy	94	90
De-recognition of traditional land/forest rights/management system	96	90
Enforcement of top down resource management systems	-	87
Fragmentation of the society		92
Electrification and road construction	64	-
Increasing attraction to income among priest families	36	-
Immigration of non-natives	8	-
- Not available		

- First, sacred forests were not treated as a distinct class of land when all uncultivated lands were taken over and classified as forest and wasteland by the colonial regime during the late 19th century. This resulted in their inclusion in the Reserved and Protected forests administered by the Forest Department or in the Civil Forests by the Revenue Department. Since most sacred forests were locally valued and the government departments hired or contracted people mostly with different cultural and religious values to assess the silvicultural value of forest areas based on felling parameters and the timber trade, sacred forests contiguous with more commercially valuable stands suffered over exploitation, more so when they were rich in timber species. Local communities, deprived of political power, remained mute spectators of this onslaught in patches until the 1970s, when the government banned many of the activities of its own agencies, including the conversion of natural forests and the felling of live trees in the hills. This was due partly to the pressure of the global community to promote the conservation, restoration, and management of forests to serve the interests of the communities and to provide global benefits. It was also due in part to the mounting opposition from the local communities to the exploitation of resources that had been conserved for the benefit of industries and national development rather than their well-being.

- Second, the integration of isolated communities into the mainstream, and the transition from subsistence to a market economy impacted the value systems of communities. Use values and tangible benefits of forests started getting more attention than non-use values and intangible benefits, in many cases replacing the original concept of the sacredness of the natural forests themselves with a higher value of the idols and icons placed in the forests. This cultural transformation resulted in the community at large becoming attracted to early and high income from forest resource overexploitation and conversion.
- Third, sacred groves owned by individual families suffered fragmentation due to increasing preferences for nuclear families over traditional joint families and consequently division of property according to Hindu Inheritance laws.
- Fourth, some policies also undermined the importance of traditional forest conservation. These included policies promoting the supply of substitutes of forest based goods and services at subsidised price, for instance cooking gas or kerosene replacing fuelwood, chemical fertilisers serving the functions of manure generated from forest leaf litter and excreta of livestock feeding on forest fodder, modern health facilities replacing forest resource-based local healthcare, and the supply of drinking and irrigation water from sources other than the traditional ones recharged by forests. The government did promote organic farming and non-timber forest product based enterprises, which necessitated conservation and sustainable use of forest resources, but not to the extent of the interventions which did not depend on forest resources (Maikhuri et al., 2015; Rao et al., 2016).
- Fifth, the government did launch some programmes to promote community forestry, including restoration of degraded and conservation of intact forests, but the quantum of support has been too low to mobilise whole-hearted people's participation. For instance, a family in Kerala received a one-time payment of around rupees three thousand (US \$ 1 = INR 67) for maintaining sacred groves in a private dwelling while rupees thirty thousand/ha is available for restoration of community forest lands. In addition, traditional forest knowledge and institutional structures are quite efficient for the conservation of intact forests meeting subsistence needs but not in restoring degraded forests and sustainable income generation from forest products. There are no effective rewards for voluntary restoration or penalties for deforestation or forest degradation. Community participation in forest management is getting more and more recognition in national forest policies, but the actions remain concentrated more on shifting the rights and responsibilities of management from government agencies to

local communities rather than the scientific enhancement of indigenous knowledge and the local capacity for the storage, value addition, and marketing of forest products.

- Sixth, people are not fully aware of the new opportunities to earn income from conserving and enhancing forest carbon stocks provided in the UN Programme on Reducing Emissions from Deforestation and Forest Degradation (UN-REDD) set out in this decade. At the same time, the national governments have not yet clarified and informed local people as to how funds received under such programs would be shared between different stakeholders.

### **The way forward**

There has not been much advancement in the knowledge and management of sacred forests on the Indian subcontinent as synthesized in Ramakrishnan et al. (1998):

The UN Convention on Biological Diversity and Framework Convention on Climate Change (1992) and Sustainable Development Goals (2015-30) have opened up new opportunities for socio-economic development through forest conservation and restoration. Harnessing these opportunities requires radical changes in the policies guiding research and institutional arrangements. There is a need to replace the current short-term (usually one to three years) project mode approach by the long-term plans in view of the long life of forest trees and the slow, expensive, and uncertain process of restoration and management of sacred forests as a component of cultural landscapes. The longer plans should be designed along the lines of the Forest Working Plans drawn for 10 years and Sustainable Development Goals for 15 years.

Ecosystem services of sacred forests such as pollination of economic crops, control of pest and pathogens, slope stability, recharge of water sources, provision of seed rain in the surrounding ecosystems, and climate change mitigation and adaptation have been expressed only in qualitative terms and poorly understood by both local people and policy makers. The role of forests in mitigating climate change is an altogether new to and bioprospecting is poorly understood by local communities. Local communities are attracted to the cash and market economy, but they are not fully aware of its risks. There is a need for research quantifying the ecological services provided by sacred forests in order to value them in economic terms in both the short- and long-term. Such research must be designed to support local people as well as policy planners in order to make forest conservation and restoration economically as efficient as other land uses and occupations.

Sacred forests should be included in national conservation plans and their management should be made an integral component of participatory sustainable cultural landscape management and livelihood development programmes rather

than an independent land use.

A set of pilot studies involving people, researchers, corporate bodies, and government agencies are needed to demonstrate the potential of sacred forests and associated traditional cultural and religious values in meeting the multiple global challenges of climate change mitigation and adaptation, biodiversity conservation, and sustainable socio-economic development. The goal of such efforts should be to enhance local knowledge, supplement or complement local resources, and involve people as accountable and responsible stakeholders rather than just recipients of donors' aid.

Religion is a sensitive issue and should be addressed cautiously. Indeed, the conservation ethos are not as vividly ingrained in monotheistic Christianity, Islam and Judaism as in polytheistic Hindu religion and culture, while prosperity and technological advancements abound in the former and all are equally concerned for sustainable development.

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### Notes

- 1 [www.etymonline.com](http://www.etymonline.com)
- 2 Super god addressed with male gender in common language
- 3 Inseparable male 'Shiva' and female 'Shakti' addressed with female gender
- 4 creator 'Brahma', the nurturer 'Vishnu' and the destroyer 'Shankara' in the form of roots, bark and branches, respectively
- 5 in the form of leaves
- 6 derived from the name of Indus river; Chinese, even now, refer to India and Indians as "Indu" and not "Hindu"
- 7 religion is a common English translation of Sanskrit/Devnagari word "Dharma" which, in real sense, means of "rule of the law" and not a set of preaching and practices isolating one community from others
- 8 in a geographical sense the area including the present Afghanistan, Pakistan, Nepal, Bhutan, Bangladesh, Sri Lanka
- 9 Myanmar, Cambodia and Bali, the latter considered to be a territory of a monkey king Bali in Hindu epic Ramayana)
- 10 this number happens to be quite close to the scientific estimates of the total number of species in the world: 5 to 50 million, with a higher level of confidence between 5-10 million
- 11 practicing penance, e.g., worshipping without food among mountain peaks and in open

- sky
- 12 chanting *mantras* in Sanskrit (the words and sayings whose original composers or writers are not known and hence believed to have originated from the Almighty) in front of a sacred pyre maintained by a mixture including grains (barley, sesame), livestock (products from cow milk), and forest products (e.g., camphor, aromatic products, sandal and deadwood). The fire was believed to be the mouth of the Almighty
  - 13 garden of Sabarimala's Lord Ayyappan
  - 14 usually belonging to the Kshatriya caste
  - 15 the Brahmin caste
  - 16 representation in Parliamentary democracy guided by the population density rather than the cultural or natural capital
  - 17 <http://finance.bih.nic.in/documents/csr-policy.pdf>
  - 18 <http://indiacode.nic.in/coiweb/amend/amend73.htm>

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