

An Analytical Review of ORANS: The Traditional Knowledge of Conservation And Management of Natural Environment

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Abstract—

Conservation and management of the natural environment are not new to humankind. Since the dawn of civilization, people have understood the importance of protecting biodiversity. Sacred Groves (SGs) are real-world examples of a system for conserving the environment that is present almost everywhere in the world. These SCs go by many names in India, including Koli Kadu in Tamil Nadu, Orans in Rajasthan and Gujarat, Pavithranams in Andhra Pradesh, Dev-van in Himachal Pradesh, and many others. Every region of the country has unique and indigenous methods to protect and conserve these SCs. This traditional Land Use Practice of Western Rajasthan Orans is a unique example of Gene Pool Conservation based on a sociocultural and economic value system. The goal of this study is to review the participatory methods and management approaches used for the conservation of orans. Varied parts of the country have different conservation and management strategies for SCs, but this study focuses on the hot, desert region of Western Rajasthan. The study finds out how the pastoral community manages the natural resource and conserves biodiversity in the harshest climatic condition of the region by facing various threats to the existence of Orans. Many NGOs, environmentalists, and foresters conducted research to safeguard, restore, and conserve Orans, but this study is attempting to determine the planner's role in preserving this ancient treasure of our civilization. The coordinated effort from everyone will aid in preserving this systemic knowledge from India.

Key Words – Biodiversity Conservation, Community Participation, Orans, Sacred Groves, Traditional Knowledge

I. INTRODUCTION

Conservation and management of the natural environment are not new to humankind. Since the dawn of civilization, people have understood the importance of protecting biodiversity. A community based repositories of biological diversity sacred groves are segments of landscape with typical geographical features. It is virtually a patch of forest or a clump of trees associated with other forms of life, and affords protection on the basis of religious practice or faith (Colding & Folke, 2001). Traditional knowledge has been used for centuries by indigenous local communities to manage natural resources under local laws, customs, and traditions (Correa, 2001). The groves are dedicated to a deity God, Goddess and it's a taboo even to cause a simple damage to life in the grove area. The groves are considered to be the fragments of original ecosystem and constitute unique examples of *in situ* conservation of genetic resources and serve as refuge for many threatened and endemic species (Ormsby & Bhagwat, 2010). Sacred Groves (SGs) are real-world examples of a system for conserving the environment that is present almost everywhere in the world (Hughes & Chandran, 1998) have overruled the distribution of sacred groves around the world. Chanfran and Hughes indicated that the SGs are found in continent like Africa, Asia, Europe, America and in many oceanic island also.

Sacred groves have existed in India since time immemorial and India has the highest concentration of sacred forests in the world. India is also rich both in the historical existence of sacred groves and in their modern survival as compared to other regions (Hughes & Chandran, 1998). It has been estimate that the numbers of sacred groves lies between 100,000 and 150,000 covering about more than 100, 000 ha area (Malhotra, et.al., 1999; Kala, 2010). These sacred groves are located in a variety of habitats ranging from resource rich forested landscape of Western Ghats and North-East to the extremely resource poor desert conditions in north-western and central India (Singh, 2013). In written history scraed sites, sacraed places have been mentioned in Vedas and Upanisadas but in mordern history of India SGs have firstly mentioned by D.Brandis, the first Inspector General of Forests in India. He found these groves in nearly all provinces. He visited Devara Kadus or sacred groves of Coorg in 1868, Garo and Khasia hills in 1879 and the hill ranges of the Salem district in the Madras Presidency in 1882. Brandis also wrote about the groves found in Rajputana provinces explaining that in Mewar, as a rule, SCs never touched by the axe, except when wood is wanted for the repair of the religious buildings (Brandis, 1897). These SCs go by many names in India, including Koli Kadu in Tamil Nadu, Orans in Rajasthan and Gujarat,

Pavithranams in Andhra Pradesh, Dev-van in Himachal Pradesh, and many others (Jaryan & Uniyal, 2010)(Agarwal, 2016).

In Rajasthan SGs are found in almost all regions known under various names in different regions as in northern parts of Aravallis SGs are known as kankar bani, rakhat bani, dev ouranya, vall and dev bani and in desertified western Rajasthan are called Orans and in other regions these SGs are named as deora, malvan, deorai (PANDEY, 1999). As per some studies it is estimated that around 25,000 SGs are present in Rajasthan covering more than 6 lakh hectares of , varying in size between 0.1 and 500 ha, but in western part of Rajasthan with hot and dry climate some groves are more than 500ha for example, the Bhadriya *Oran* in Lathi Jaisalmer is about 15,000 ha, Baankal Devi ka *Oran* covers about 4600 ha area and Kundla's *Oran* in Barmer spread over 7500 ha, Kolu Pabuji ka Oran in Nosar, Jodhpur is of approx. 2900 ha.(Gokhale, Velankar, Chandran, & Gadgil, 1998)(Singh & Bahl, 2006) (Rawat & Dookia, 2017).

II. MATERIAL AND METHODOLOGY

SCs are found in every village of Rajasthan. Most of the sacred groves of Rajasthan are found in the Aravalli Mountain range. (Prasad & Rathore, 2021). Only few studies of groves of western Rajasthan have been done. The goal of this study is to review the parameters related to Oran and management approaches used for the conservation of Orans of Western Rajasthan. Varied parts of the country have different conservation and management strategies for SCs, but this study focuses on the hot, desert region of Western Rajasthan. This study is basically a review of available studies of Orans.

III. ORIGIN OF ORANS

Scientifically there is no proof of the origin of SCs, but on the basis of analysis of various studies done by historians, botanist, geologist, environmentalist and social scientists it is often believe that during the evolution of civilization a part of forest was left undisturbed where hunting and cultivation were prohibited and with the passage of time these undisturbed area were evolved as SGs (Prasad & Rathore, 2021 and M Gadgil, 1975). These groves protect watersheds and water sources in the name of deity and people believes that deity will always yield water for them (Agarwal, 2016). These groves have been protected by tribes, nomadic groups, and local residents living near it since centuries (Prasad & Rathore, 2021). And these people were aware that their forests are ecologically fragile and so the harness the nature and utilize them within limits (Agarwal, 2016). Existence of SCs or Orans in deserts of Thar has much importance as this dry land already struggles with the harsh climate. In the arid districts of the Thar Desert the economy is largely based on livestock and the reason why almost every village in western Rajasthan since centuries reserved a substantial portion of the land specifically as grazing land commonly known as gauchars (gau = cattle and char = grazing). These gauchars also serve as catchment areas for village ponds. To protect these gauchars from being exploit some gauchars or part of it have been pledged to local deities or legendary heroes (who protects the villagers and their animals) and are known as *Orans*. The word *Oran* derives from the Sanskrit word *aranya*, which means forest or wilderness but it is also believe that it derives from *aan*, which means 'pledged' (Bohra & Chaudhry, 2019). *Orans* and *gauchars* serves as CPRs in rural parts of western Rajasthan, with the account of 8–9% of *orans* in the arid parts of Rajasthan (Bohra & Chaudhry, 2019) (Dheeraj Singh, 2016) (Mitra & Pal, 1994)(Mitra and Paul 1994).

IV. BIODIVERSITY CONSERVATION

This traditional Land Use Practice of Western Rajasthan “Oran” is a distinctive example of Gene Pool in situ Conservation based on a sociocultural and economic value system (Singh & Bahl, 2006). They act as repository of indigenous biodiversity with prevalence of endemic and rare threatened species (Chandran & Hughes, 1997) (Rathore & Shekhawat, 2011). Sacred groves are reservoirs of biodiversity allows complex and diverse array of ecological processes uninterruptedly because human impact is minimal due to cultural restriction (Yelvattimath & Kotresha, 2011). In the management of Orans, ecologically valuable species perform key functions in the ecosystem thereby contributing to the support and enhancement of biodiversity. Generally, the species are selected and valued by the local communities for cultural or religious reasons (CPREEC-EIACP Programme Centre, 2017).

Case 1: Pushpangadan(1998) observed 722 species of angiosperm in a sacred grove in Kerala with only 1.4 sq. km as compared to 960 species occurred in 90 sq. km of the Silent Valley forest.

Case 2: (Rawat & Dookia, 2017) did biodiversity profiling of Kolu Pabuji Oran of Rajasthan in Jodhpur district. The area of Oran is 29 Sq.Km. supported by some water bodies. Their study finds 48 species of trees, shrubs, herbs and grasses, 31 species of amphibian and reptiles, 91 species of birds from 42 families and 32 species of mammals.

Case 3: (Singh G. , 2014) prepared a report on the assessment of biological diversity of sacred groves of Rajasthan submitted to AFRI. Documentation of 123 groves were done, the study found 131 species of floral diversity under 48 botanical families.

Along with the conservation of biodiversity, SCs act as the life support system for the rural community. They provides plants and their products like gums, resins, edible fruits, leaves, fibers etc. having ethnomedicinal importance (Bhakat & Pandit, 2003).

V. SUSTAINABLE LIVELIHOOD

SCs are rich resource centers. Major role in providing ecological services. The important thing is that through which sanctity these scared forest are being preserved on different places of country depends on location of SGs. In central India Gonds community protect SGs, they used fallen fruits, branches but will not cut the branches of trees. In north eastern(Meghaleya) India Garo and Khashi tribal community protect SGs by completely prohibiting any kind of human interference.

Collection/harvest of plants for domestic purpose from SGs is not allowed (M Gadgil, 1975). But some studies indicate that extraction and deriving of biomass for livelihood benefits in a restricted/sustainable way without affecting the local resources (Bhakat & Sen, 2012). In arid zone of western Rajasthan, groves are the major source of livelihood support for pastoral community as these groves have source of water and fodder (Pandey, 1999). As per study Rajasthan has 54.5 million livestock and 7.5 million pastoralists, who directly or indirectly dependent on Orans (Agarwal, 2016). Singh has mentioned in his study that in Barmer district alone around 41% of livestock depends upon Orans (Singh A. , 2017) (Dheeraj Singh, 2016) (Singh & Sisodia, 2003). Orans acts as natural pastures- Because of the abundance of livestock in the desert ecosystem, particularly in western Rajasthan, the Orans, which are better protected than Gochars, are crucial to the economy and the security of rural residents' livelihoods. They also play a significant role In fostering a thriving livestock-based economy and the expansion of livestock-rearing communities.

Orans maintain a high quantity of ground cover covered by natural grasses like *Dactyloctenium scindicum*, *D. aegyptium*, *Desmostachya bipinnata*, and many more. Orans make an important contribution to browsing resources for nearly all village households (Robbins 1998). (The management of the Oran is therefore essential for their own sustainable development. Access to orans hence forms the basis for livelihoods and the conservation of indigenous breeds. In return, the animals aid in the preservation of the biodiversity of the local ecosystems in which they graze by dispersing seeds and aid the local communities by bringing an end to dormancy and creating favourable conditions for seed germination. As a result, Orans are a common component of community forest management that benefit and are used by local pastoralists (Dheeraj Singh, 2016). Women of pastoral community use common resources of Orans. They collect and process the fallen timber for fuel and other minor forest products which has medicinal values. Majorly these products used within the community and some are sale out to support their livelihood. Some forest produce are also used as food and fodder (Dheeraj Singh, 2016).

VI. MANAGEMENT AND SOCIO RELIGIOUS BELIEFS

The epitomize of an age old tradition of nature conservation are community managed SCs (Faisal & Tamal, 2013). Community does not harm Orans because of socio religious beliefs and fear of the unknown as they believe that if any person cut or use an axe in an Oran presiding deity would punish them (Dheeraj Singh, 2016). Orans also have meeting places to worshipping their deity and the place to resolve socio-religious and economic issues at community level and even personal grievances are also resolve their (PANDEY, 1999). Orans are being governed by egalitarian system. They are utilized and maintained with traditional and community-defined rules. Oran has a unique mechanism for conflict resolution and clear rules for all with the significant commitment from all common resource users (Veena, Singh, & Bathla, 2021). From the words of an elderly person of local community from Bakhatpura village of Alwar district who protect Churisiddhi Oran named Nanak Ram Gujjar (72) explains that “a seven member elected committee, traditionally known as **Thain**, that makes rules and regulations to regulate the management and use of natural resources from the Oran. It is mandatory for all villagers to follow collective decisions” (Veena, Singh, & Bathla, 2021). A unique aspect of management is appointing a Mahatma or Baba (holy man) with the duty to guard and preserve the Oran by enforcing the rules laid down by the Thain in exchange of basic provisions. He also takes care of the holy place of the deity inside the Oran (Agarwal, 2016)(Veena, Singh, & Bathla, 2021). Example of Oran management –

Seven different community of Sonai Majhi village jointly elected committee called Thain having representative from all seven castes so that interest of every section could be consider in framing of rules for management and conservation of Orans. The management committee has its general body that that manages the Orans and issues related to Orans like framing rules, resolving conflicts, taking action against offenders and distributing benefits. The general body conduct meetings on monthly basis even at the time of an emergency like a forest offense or amendment of existing rules (Dheeraj Singh, 2016). Over the years, the committee has changed its rules in response to changing conditions. Committee has made rule related to the entry of the people for collection of forest product and for animal grazing taking the consideration of

climate, seasons, land condition, water availability etc. They also declared some areas as no-grazing zones for some years on alteration basis.

After performing specific vedic rituals, Ganga water mixed with saffron milk is then spilled over the virtually marked boundary to define an Oran, which is thereafter referred to as a Dev bani. Doodh Jal or Kesar Chaanta is the name of this ritual, according to Agarwal (2016). A shrine, temple, or sacred stone may serve as the focal point of local religious activity on all Orans. The local people reaffirm their dedication to the forest and the divinity at the annual mela (festival) of the Orans.

VII. LEGAL AND POLICY ISSUES

Since centuries the ingenious communities of Rajasthan are serving and protecting the Oran land and gouchar bhumi with social cultural and religious beliefs. Few examples like King Vikramdev of Jaiselmer had donated 15,180 hectares of land around the Degray Mata Mandir for *Oran* in 1419 (Bathla, 2021). The area close to Pabuji temple in Kolu village of Block Lohawat has been treated as sacred land by locals since the 14th Century, the time when Warrior Pabuji started preaching the locals and treated many ailments on the livestock from his divine powers (Rawat & Dookia, 2017). According to the Alwar Extraordinary Gusset Notification 1934, existing 'banis/ orans' and 'roondhs' were declared as protected forest area (Singh & Bahl, 2006). But in 1950 State has followed a new policy and according to that groves and gaucher or pastureland all were included in the same category of 'cultivable waste land'. Thus without the consent of the local users the *Oran* land was hence divided into 'revenue' and 'forest' land. Since then the government on many occasions distributed this land in the name of public development for setting up industry, for mining and latest to the green energy companies, giving it away to the landless (Singh & Bahl, 2006). The government also regularized the forced conversion of such areas into 'revenue' allotment and the encroachment on revenue land have been regularized without following the provisions of the Forest (Conservation) Act, 1980 (Dheeraj Singh, 2016).

Although many *Orans* has some characteristic of forests, even though in most revenue records their legal status are not covered by the provisions of the forest act thus not recorded as forestland in revenue records. The communities feel a deep sense of being robbed of a traditional entitlement when *Orans* are diverted for other purposes. Faced with severely depleted grazing lands and water sources, people have now taken to plundering the sacred groves in many places in the state. For example, Karoli Kund *Oran* in Alwar district (Singh and Bahl 2006) and those near Jodhpur city are threatened by mining and stone quarrying (Dheeraj Singh, 2016).

Efforts: According to a Supreme Court judgement of 2018, *orans* in the state are to be classified as deemed forests and cannot be used for any other purposes (Bathla, 2021).

The Rajasthan Forest Policy, 2010 for the first time included a section on Orans. It recognizes Orans as community managed systems which would be provided necessary legal and financial support. It also envisages the preparation of a district-wise database and inventory of Orans. So effectively, communities have now acquired a bargaining power and a voice to prevent any future diversion of these sacred groves in arbitrary manner. However, the ownership complexities have not been addressed and the land continues to be government owned. Further, the policy allows formation of a committee consisting of local members or temple trustees for managing the Orans. This would institutionalize the committee as a body parallel to Panchayati Raj Institutions or PRIs which can give rise to conflicts. At the moment, Panchayat agrees to decisions of the committee in matters of Oran. This is also because of the fact that Thain also have representatives from Panchayats (Faisal & Tamal, 2013).

VIII. SHRINKING HERITAGE

The size of holy forests in India has shrunk or they are no longer protected due to a number of major concerns (Chandrakanth et al. 2004; Khan et al. 2008; Wild & McLeod 2008). The primary reason for this is a lack of documentation, which makes it challenging to preserve and manage these sacred forests. Sacred groves were once protected by taboos and religious beliefs, but as time goes on, they are being destroyed for a variety of reasons, and their current state is in danger of disintegrating. These sacred groves were destroyed because people were not aware of the long-term advantages. The recent onset of modernization, urbanisation, and people's shifting expectations appear to be slowly erasing the ancient values, albeit inaudibly. As a result, breaking cultural taboos and norms no longer has serious repercussions, and sacred groves are deteriorating (Singh, 2014). The 'Sanskritisation', or the conversion of informal temple or mosque worship into formal temple or mosque worship, is harming many woods. The sacred groves' shape has also changed as a result of this. Increased livestock and human population have intensified grazing, lopping, and biomass removal, which has also contributed to the decline of the groves. Human activities include moving vehicles, mining, cutting down trees, dumping trash. One of the main risks to the survival of sacred groves in India, and specifically Rajasthan, is the encroachment by local communities or other government agencies for variety of uses. The ecology and general diversity of

the sacred groves have also been harmed by the inappropriate selection of species during the strengthening plantation of sacred groves. One illustration of this is a sacred woodland where *Eucalyptus camaldulensis* predominates. In some sacred groves, especially in western Rajasthan, further *Acacia tortilis* plantation does not seem fit (Singh, 2014). The spread of numerous invasive weeds has put the native plants present in the sacred groves in danger. The floss flower (*Eupatorium odoratum*), shrub verbenas (*Verbena officinalis*), lantana (*Lantana camara*), *hyptis suaveolens*, *parthenium* (*Parthenium hysterophorus*), *prospis juliflora*, and others are examples of prevalent exotic weeds. The invasion of *L. camara* and *P. juliflora* in Rajasthan's sacred forests has significantly impacted their ecology. Several sacred groves' boundaries and legal status are unclear. Lack of effective legislation to punish offenders is the result of this. The regularisation of government intrusions makes matters worse. The most recent threat to SGs is witnessed from the development projects—mostly solar and wind energy projects. The orans are threatened with extinction because their land has been designated for renewable energy infrastructure. Additionally, the land was used for agriculture and other administrative projects. If the oran land is recognised as protected land under the gair mumkin category, the allocation for the construction of solar plants may not proceed.

IX. CONCLUSION

The study reveals how the pastoral community, while facing with many challenges to the existence of Orans, manages the natural resource and preserves biodiversity under the worst climatic conditions of the area. Many NGOs, environmentalists, and foresters conducted research to safeguard, restore, and conserve Orans, but this study is attempting to determine the planner's role in preserving this ancient treasure of our civilization. The coordinated effort from everyone will aid in preserving this systemic knowledge from India.

By recognising and securing their right to natural resources for subsistence and livelihood purposes, Orans management also serves as a social mechanism to protect the livelihoods of pastoralists who are economically vulnerable, i.e. rural communities that depend on livestock. Ancient India saw the emergence of community-managed orans as a direct response to the necessity for procedures to provide the basic requirements of some groups in a stratified society because of their vulnerability. Therefore, it is crucial to survey these sacred forests and accurately evaluate their role in nature conservation in order for these forests to be preserved even if the religious beliefs associated with them wane and possibly vanish.

X. REFERENCES

1. Agarwal, Mala. "Conserving Water & Biodiversity: Traditions of Sacred Groves in India." *European Journal of Sustainable Development* (2016): 129-140.
2. Bentley, Ian. *Urban Transformations Power, people and urban design*. London, USA, Canada: Routledge, 2002.
3. Bhakat, R. K. and P. K. Pandit. "Role of a Sacred Grove in Conservation of Medicinal Plants." *The Indian Forester* (2003).
4. Bhakat, R. K. and U. K. Sen. "SACRED GROVE AS AN INSTITUTION OF CULTURE AND CONSERVATION." *Indian Journal of Biological Sciences* (2012): 38-40.
5. Bohra, Naveen and Pradeep Chaudhry. "India's arid zone forest biodiversity at risk." *ITTO Tropical Forest Update* (2019).
6. CHANDRAN, M. D. Subash and J. Donald HUGHES. "The Sacred Groves of South India: Ecology, Traditional Communities and Religious Change." *Social Compass* (1997).
7. CHANDRAN, Subash M. D. and J. Donald HUGHES. "Sacred groves around the earth: an overview." P.S. Ramakrishnan, K.G. Saxena, U.M. Chandrashekara. P.S. Ramakrishnan, K.G. Saxena, U.M. Chandrashekara. New Delhi: Oxford & IBH Publishing co., 1998.
8. Colding, Johan and Carl Folke. "SOCIAL TABOOS: "INVISIBLE" SYSTEMS OF LOCAL RESOURCE MANAGEMENT AND BIOLOGICAL CONSERVATION." *ecological society of america* (2001).
9. Correa, C. M. "Traditional Knowledge and Intellectual Property." *Quaker United Nations Office* (2001).
10. CPREEC - EIACP Programme Centre, Resource Partner on Ecological Heritage and Sacred Sites of India. 12 01 2017. <http://www.cpreecenvs.nic.in/Database/OranSustainableLivelihoodandBiodiversityConservationSysteminRajasthan_3706.aspx>.
11. Dheeraj Singh, M. K. Choudhary, M. L. Meena, and M. M. Roy. "Oran Dynamics: A Community-Based Biodiversity Management System in India's Arid Zone." Purabi Bose, Han van Dijk. *Dryland Forests Management and Social Diversity in Switzerland*: Springer International Publishing, 2016. 506-513.
12. Faisal, Adnan and Showvik Das Tamal. "Oran Puran Community-managed sacred groves, vital biodiversity reserves, face extinction." *No Man's Land* January 2013: 18-19.

13. Gokhale, Yogesh, et al. "Sacred woods, grasslands and water bodies as self-organized systems of conservation." Ramakrishnan, P.S., K.G. Saxena and U.M. Chandrashekara. *Conserving the Sacred for Biodiversity Management*. New Delhi: Oxford & IBH Publishing Co., 1998.
14. Jaryan, Vikrant and Sanjay Kr Uniyal. "Role of traditional conservation practice: Highlighting the importance of Shivbari sacred grove in biodiversity conservation." *The Environmentalist* (2010): 101–110.
15. Johan Colding, Carl Folke. "SOCIAL TABOOS: "INVISIBLE" SYSTEMS OF LOCAL RESOURCE MANAGEMENT AND BIOLOGICAL CONSERVATION." *Ecological Society of America* (2001).
16. M Gadgil, VD Vartak. "Sacred groves of India-a plea for continued conservation." *Journal of the Bombay Natural History* (1975).
17. Malhotra, K.C. "Anthropological Dimensions of Sacred Groves in India: An Overview." *Open Access Library Journal* (1998).
18. Mitra, A and S Pal. "The spirit of the sanctuary." *DOWN TO EARTH* 31 January 1994.
19. Ormsby, Alison and Shonil A Bhagwat. "Sacred Forests of India: A Strong Tradition Of Community-Based Natural Resource Management." *Environmental Conservation* (2010): 320–326.
20. PANDEY, DEEP N. "Sacred Forestry: The Case of Rajasthan, India." *SUSTAINABLE DEVELOPMENTS INTERNATIONAL* (1999).
21. Prasad, Rajendra and Dilip Kumar Rathore. "Sacred Groves of Hadoti Region: A Case Study of Tehsil Hindoli, District Bundi, Rajasthan." *International Journal of Innovative Research in Science, Engineering and Technology* (2021).
22. Rathore, M. S. and N. S. Shekhawat. "Ethnobotanical Importance of Orans - As a Means Of Conserving Biodiversity." *International Journal of Agricultural Science, Research and Technology in Extension and Education Systems* (2011).
23. Rawat, Mamta and Sumit Dookia. "Sacred groves of thar desert: A case study of Kolu Pabuji Oran of western Rajasthan and its biodiversity profiling." *International Journal of Zoology Studies* (2017): 201-207.
24. Singh, A and P Sisodia. "Oran—A traditional biodiversity management system in Rajasthan." *LEISA India* (2003).
25. Singh, Aman and Ruchika Bahl. "Oran Land Issues: A Livelihood Concern for Pastoralists in Rajasthan." *SSRN Electronic Journal* (2006).
26. Singh, Aman. "FROM STEWARDS TO TRESPASSERS: PASTORALIST MANAGEMENT OF FOREST RESOURCES." Ahearn, A, Sternberg, T with Hahn, A. *Pastoralist Livelihoods in Asian Drylands: Environment, Governance and Risk*. Winwick: Cambridgeshire: The White Horse Press, 2017. 177-199.
27. Singh, G. *Documentation of Sacred Groves of Rajasthan and Assessment of Biological Diversity in Some of them for Improved Management and People Livelihoods*. Jodhpur: Arid Forest Research Institute, 2014.
28. Veena, Aditi, Aman Singh and Nitin Bathla. "Adawal ki Devbani An Oran sacred grove in Rajasthan, India." 2021.
29. YELVATTIMATH, G. P. and K. KOTRESHA. "PHYTODIVERSITY STUDIES IN SRI RAMATHIRTH SACRED GROVE, HALASI, KHANAPUR TALUK, BELGAVI DISTRICT, KARNATAKA BY BY G. P. YELVATTIMATH AND K. KOTRESHA1." *Life sciences Leaflets* (2011).