



TRADITIONAL KNOWLEDGE FOR SUSTAINABLE PRACTICES; INDEGENOUS TRIBAL PEOPLE COGNIGENCE ON CLIMATE

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Abstract: The terrors of the nature are widely known all-round, the drought, floods, desertification and latest of all there are reports of land being submerged into the sea due to 'global warming'. Hence the idea to protect biodiversity arose and the necessary routes were taken into consideration using modern science. While these were being taken place, people seemed to forget that there were traditionally abided practices that are deeply rooted in the customs and traditions and hence, through this paper, it is pointed out for the importance to bring forward a new angle to this by integrating those old, well-laid and already followed practices together with the modern, scientific ones to make the sustainability of the environment into a better outcome.

Introduction

While the world is getting short of its oxygen to breath and water to drink, this paper is of utmost importance, as it brings before the critical need of sustainable development and more importantly, the need of the traditional methods and practices which have been practiced over time and its need to be continued in various arenas.

Research Problem

As it happens to be, modern practices of sustainable development are being thought over to implement, while completely overlooking the already present, well used and well-thought sustainable practices. This paper tries to address this situation by bridging the gap between the age-old practices and the modern practices and tries to bring before the importance and relevance of those practices, which can be implemented even today, if done so properly.

Research Objectives and Goals

Primary Objectives

- To recognise the need of the age-old, traditional practices to the dice and its integration in the current era.
- To understand the need of these traditional practices, specifically, in this modern age.
- To understand the different awe-inspiring tribal practices and its implementation by them.

Broader Objectives

- To promote sustainable development.
- To help preserve our culture, heritage and practices.
- To understand the indigenous practices of the tribals and their integration in the current era.

Scope of the Study

This paper focuses on the different tribal communities and their practices as well as the different utilisation of the use of nature for the sustainable development across India. These practices are related to the growing of agriculture, management of the water resources and conservation of different environmental resources like forests, water, and land.

Methodology

Although, this paper focuses on the secondary research, it also has other dimensions of literature review, case analysis of different cultural contexts, legal analysis, data collection of the different uses and practices.

Literature Review

In the book, '*Traditional Ecological knowledge: Concepts and Cases*' by Julian T. Inglis¹, provides an insight into the 'Traditional Ecological Knowledge' or the (TEK), this refers to the traditional or the indigenous practices that have been observed from many generations. It is embedded with a deeper understanding of the relationship between the nature and people. The core value of this is the intricate timing of each and every event to be done. The majority of this 'art' depends upon the wisdom which has been passed down from centuries.

In the book, '*Traditional Ecological Knowledge and Natural Resource Management*' by Charles R. Menzie², explores the vital role of Traditional Ecological Knowledge into modern conservative strategies for improving sustainability in the environment. It dwells into the panoramic management of the ecology and according to the book, adopting this in the modern practices is

¹ United Nations Declaration on the Rights of Indigenous Peoples, G.A. Res. 61/295, U.N. Doc. A/RES/61/295 (Sept. 13, 2007).

² Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), "The Methodological Assessment Report on the Diverse Values and Valuation of Nature," IPBES (2022).

important for balance and harmony in the environment. These practices include the controlled burn, cross-rotational farming, sustainable harvesting and other indigenous practices.

Understanding Traditional Knowledge

Traditional knowledge or more commonly known as ‘Traditional Ecological Knowledge’ or ‘the Indigenous Knowledge’ encompasses the knowledge, skill, practices and beliefs which would help in the ecological well-being or the sustainable development of the environment. It includes the four crucial principles;

a. *Panoramic Ecological Understanding:*

The traditional knowledge involves the comprehensive knowledge of natural world, such as, the ecological, cultural, social, spiritual, local customs and beliefs regarding the ecology and they strongly stance the interconnectedness among these. The relationship between the ecology and the species is its core value.

b. *Conventional Wisdom:*

This wisdom has been passed down from generation after generation in oral form. This may include the stories, songs, rituals and local practice. This is the best way to keep these traditions alive over the period of times.

Elements of Sustainable Practices in Indigenous Cultures

Management of Resources

The crop rotation is the practice of planting different crops on the same land to improve the soil condition and increase the nitrogen content of the soil and to replenish it. Whereas, polyculture farming is the practice of planting several plants at the same time in order to simultaneously both grow agriculture and nurture the soil. Indigenous communities have come up with a captivating technique of shifting agriculture, agroforestry and polyculture which is to rejuvenate the soil.

Even though there are many animals which can be hunted throughout the year, there are some which have a specific season, which is similar to the fishing as well. Hence this is called the ‘seasonal hunting and fishing’ and are representation to avoid depletion of the animal species and to enhance sustainability. Other managements include the ‘forest and the water management’ which is related to the protection of the water and forest resources which may include the use of the ‘traditional irrigation system’.

Conversation of Biodiversity, Culture and Spiritual Beliefs

Sanctified places or some of the areas are generally classified as ‘sacred’ to protect and prevent them from exploitation. This also leads to the habitat or the natural territory to improve ecology. Practicing the cultural belief is one way of giving ‘cosmology’ or the ‘ontology’ a way out. In simpler terms, it the way to make human beings appreciate the environment. Passing down this culture and spiritual beliefs in the form of honouring the nature and its elements would ensure the passing down further along the way.

International Accords

- According to the Article 8(j) of the Convention of the Biodiversity (CBD) (1992)³, directs the parties to respect, preserve and maintain knowledge, practices and the innovations of the local communities relevant to the sustainable development of the biodiversity. It promotes the use and practice for its wider application all round.
- According to the Nagoya Protocol of 2010, which was originally the supplementary agreement to the Convention of the Biodiversity (CBD)⁴. This address the equitable distribution of the resources which have been genetically generated. The resource which has been addressed in this also include the traditional knowledge as well.
- The World Intellectual Property Organisation (WIPO)⁵, has a committee called the ‘Inter-governmental Committee on the Intellectual Property and Genetic Resources, Traditional Knowledge and the Folklore (IGC) which works effortlessly to protect ‘traditional knowledge’ and ‘Traditional Cultural Expressions’ (TCEs).

National Laws

- Under the ‘Biological Diversity Act’ of 2002, established the ‘National Biodiversity Authority’, ‘State Biodiversity Boards’ and the ‘Biodiversity Management Committees’ at the regional and local levels. These aim to protect and preserve the genetic use of the traditional knowledge and to provide fair and equitable sharing of benefits.
- According to the ‘Protection of Plant Varieties and Farmer Rights Act’ formed in 2001⁶, it provides for an effective system to preserve the rights of the farmers, different genetic varieties of plants and the plant breeders. It also strongly advocates for the rights of the farmers, who actually grow, conserve, improve and make available these plants for the general citizens.
- According to the ‘Geographical Indications of Goods (Registration and Protection) Act, formed in 1999, provides for the enrolment and the preservation of ‘Geographical Indications’ (GI), which can include the traditional knowledge and its products. Some of these products include the ‘Mysore Silk’, ‘Basmati Rice’, ‘Darjeeling Tea’, ‘Madhubani Paintings’ and even more.

Regional Law and Inventiveness

³ Paris Agreement, opened for signature Apr. 22, 2016, T.I.A.S. No. 16-1104 (entered into force Nov. 4, 2016).

⁴ Jane Hinchliffe, “Traditional Knowledge and Conservation: The Role of Indigenous Knowledge in Sustainable Resource Management,” 12 Env’t & Soc’y 45 (2019).

⁵ Carlos A. Nobre et al., “The Amazonian Rainforest and Indigenous Peoples: A Successful Model of Collaboration,” 16 Forest Ecology & Mgmt 1234 (2021).

⁶ Ifugao Rice Terraces Preservation Association, “Sustainable Agriculture and Cultural Heritage: The Ifugao Rice Terraces,” 14 Agric. Hist. 567 (2018).

In addition to the national initiatives, there have been several regional initiatives of the state government, regional government as well as the regional communities.

- According to the 'Kerala State Biodiversity Rules' of 2008⁷, constitutes the rules which outline the functions of the 'Biodiversity Management Committees' (BMCs) at the local level to manage and supervise the 'traditional knowledge' regarding biodiversity.
- According to the 'Sikkim State Policy on Organic Farming' in 2004, whose main aim is to promote organic farming using organic manure and organic pesticides to increase its production in well and healthy mannerism. The policy's core values lie in making 'Sikkim' fully organic state.
- There are other initiatives such as, the 'Community Conserved Areas' (CCAs) which have been recognised by the states where the local people practice the art of conservation and manage biodiversity through different cultural and traditional practices, sometimes which also include the rituals closely held in heart by the people. The states of Bihar, Haryana and other states including Arunachal Pradesh which has the 'Apatani Community' in the 'Zico valley' which has its own unique historical, cultural and traditional practices to protect the biodiversity.

Challenges to protect 'Traditional Knowledge' with the 'Intellectual Property Rights'

- Oral Transmission of the knowledge is arduous to apply for the 'Intellectual Property Rights' as it is generally not properly 'documented', and the proof of its origin and ownership is essential to apply for it. Even though, many have applied for the collective ownership of the knowledge but such is not possible in this case as only individual rights are given ownership.
- Further, the protection provided by the 'traditional knowledge' is temporary, but the knowledge maybe perpetual from many years. 'Biopiracy' is the criminal misappropriation of the knowledge, technique and genetic resources of the indigenous farming. This is an ethical and moral violation of the natural resources and its sustainable development practices for 'money-oriented' purposes. Many of the times, the lack of awareness of the 'Intellectual Property Rights' may even be the cause of the lack of availing the rights.

Some mechanisms which can be adopted to protect 'Traditional Knowledge' can be:

- A custom-made or sui-generis legal system can be adopted to protect 'traditional knowledge' which can also mean that the acts can be drafted and consented by the legislature to implement it, an example is the 'India Biodiversity Act'.
- The 'traditional knowledge' should also have a 'Geographical Indications' (GI)⁸ which is a tag attached in order to know the origin of the knowledge. Although, not all 'traditional knowledge' has the origin known, for those which are, the 'Patents' should be applied for and their right of the 'Intellectual Property' to be utilised.

Case Study of the Indigenous Practices

- The 'Chakhesang Tribe' of the Nagaland practices the 'Zabo System' also called the 'Ruza system' which involves many sub-practices relating to 'rain-water harvesting', 'terracing', 'integrated

farming’ and even ‘agro-farming’.

- ‘Agro-Farming’ is the practice that integrates forest and agriculture together. Trees and shrubs are integrated together with the pasturelands and the crops. There are different types of agro-forestry such as ‘Alley-cropping’, ‘Forest-farming’, etcetera. This would lead to the increase in the biodiversity, soil health, water-management and climate flexible.

Benefits of Integrating Traditional Methods

Sustainable Environment

Sustainability is a concept which is indicated to the co-existence of plants, animals and humans together in a balanced environment. The main goal of sustainability is to be able to provide for the current generation while keeping in mind the need to be able to provide for the future generation as well. The needs of the ‘following generation’ should be kept into consideration so that they are also provided for amply.

The ‘mixed-cropping’ and ‘agro-forestry’ help in supporting the biodiversity by also growing different crops which are needed together to promote healthy ecosystem. The natural pest-control helps in increasing the production of the crops while also keeping it pollution-free. The organic- fertilisers help in increasing the soil fertility and help in controlling the soil erosion and hence the ‘terrace-farming’ and ‘contour-farming’ are practiced. The water-management techniques like ‘rain-water harvesting’ and ‘reduced-water costs’ are generally used to increase the level of under- ground or the ground water level. Hence, it is significantly helping in increasing sustainable development of environment.

Economic Benefit

As only locally made manure, natural pesticides and bio-fertilisers are used, it helps in the cost- cutting and leading to lower economic input. Due to efficient water management systems and without the exquisite requirement of the irrigation system, the budget for that purpose can also rest alone. As many crops are grown together for nourishing the land, it also leads to increase in the output of agriculture, which in turn leads to increase in the income output of the farmer, by long shot. Many people, now, prefer the organic and naturally produced fruits and vegetables and are willing to pay even high expenses for it. In case of the market fluctuations as well, the mixed crop production is useful as no-one crop is damaged in this and the fear of crop failure is reduced to greater extent.

Socio-Cultural Preservation

By keeping up the traditions, which involves the whole community participation which helps in strengthening community ties and collective responsibility and would also help cross-generation transmission of the knowledge. By growing many crops, helps in maintaining nutritional variety which is well adapted to local customs and conditions.

Understanding Climate Change in Indigenous Perspective

The ‘Bishnoi community’ of Rajasthan believe in the spiritual and traditional laws and practices, they depend on the animal behaviour like Indian Antelope and Indian gazelle which are considered dear to them. The change in their reproductive pattern and their migrations may indicate to a change in the climate.

They maintain a specific type of trees called the 'Khejri trees' which is vital for the fertility of the soil and preventing soil erosion. But the reduction of vitality in these plants is a sign for the change in the climate as well. The 'johad' used in these areas indicate the level of ground-water and the fluctuations in it due to climate change.

The 'Apatani tribe' of the Arunachal Pradesh uses certain techniques like the 'agricultural', 'ecological' indicators such as the health of rice crops and fishes in the water, signify the climate change. They also observe the 'bamboo' and 'pine forest', their growth pattern and 'health' is taken into consideration while understanding the ecology.

Integrating Indigenous practices with Modern Practices

Taking the example of 'Community-based Forest Management' practiced in Odisha, where the 'Joint Management Committees' including the forest officials and community members incorporate grove protection with modern scientific techniques which also helps in monitoring the biodiversity as well. This leads to an increased forest health and biodiversity while upholding the community participation in it. Upholding the eco-tourism as well as in its preservation and conservation.

The 'Agro-forestry projects' of Karnataka integrates the 'traditional mixed-cropping system' with the modern commercial crops which helps in upholding the soil strength. The traditional soil and water conservation system can be upheld by not constructing cement roads to improve the water seeping into the underwater and increase it.

International Framework for Traditional Knowledge

1. United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP)⁹: UNDRIP acknowledges the rights of indigenous peoples to preserve and enhance their unique cultural practices, including their traditional knowledge and sustainable practices. It emphasizes the need to incorporate indigenous knowledge into environmental and climate policies.
2. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES): IPBES actively integrates indigenous and local knowledge (ILK) into its assessments and reports. The platform aims to bridge the gap between science and traditional knowledge, ensuring that indigenous perspectives are considered in global biodiversity and ecosystem service policies.
3. Convention on Biological Diversity (CBD): The CBD promotes the utilization of traditional knowledge in the conservation and sustainable use of biodiversity. It encourages the sharing of benefits derived from the application of traditional knowledge and practices.

Success Stories of Collaboration between Indigenous Communities and Scientific Researchers

1. Fire Management in Australia: In Northern Australia, indigenous communities and scientists have joined forces to successfully implement traditional fire management practices. By conducting controlled burns, they have reduced the risk of large wildfires, promoted biodiversity, and enhanced carbon sequestration. This collaborative approach is now recognized as a model for integrating traditional knowledge into modern land management.
2. Agroforestry in the Amazon: In Brazil, the Kayapo people have partnered with researchers to document and promote their traditional agroforestry systems. These systems not only enhance biodiversity

and improve soil health but also sequester carbon. Through this collaboration, sustainable land-use practices have been developed, benefiting both the environment and local livelihoods.

Conclusion

In this essay, we have explored the important contributions of traditional knowledge and sustainable practices to wildlife conservation and global sustainability. We discussed how indigenous communities use their ecological knowledge and cultural practices to protect wildlife and ecosystems. These methods are specifically designed for local environments and have been proven effective over many years. It provides proven methods that enhance ecosystem resilience, promote biodiversity, and ensure sustainable resource use. Recognizing the value of this knowledge and supporting indigenous communities in preserving and applying their practices is crucial for global sustainability.

⁹ Susan Charnley, "Collaboration between Indigenous Peoples and Scientists: Success Stories in Biodiversity Conservation," 29 J. Envtl. Mgmt. 145 (2021).

