International Journal of Arts, Humanities and Social Studies
Website: https://www.ijahss.in/
ISSN(*Online*): 2582-3647
Volume 3; Issue 6; Nov-Dec 2021; Page No. 327-333

Open Access | Original Paper

Traditional Knowledge Systems for Sustainable Living

Dr. Vikramendra Kumar
Assistant Professor, Department of Sociology, Delhi School of Economics, University of Delhi, New Delhi

ABSTRACT
The long-term health of natural resources such as forests, water, and agroeco systems is dependent on traditional knowledge passed down through generations. The importance of traditional knowledge for conserving biodiversity is explored here, especially in light of recent studies on traditional and formal knowledge systems. In order to preserve the usefulness of old knowledge systems, I also look at them for the first time. I have discussed recent breakthroughs in local knowledge research and how they relate to the challenges that modern India faces, as well as how local knowledge might be leveraged to address biodiversity conservation issues in the country.

Keywords: *Traditional knowledge, sustainable, biodiversity, forest, natural resource.*

Citation: Vikramendra Kumar (2021). Traditional Knowledge Systems for Sustainable Living. *International Journal of Arts, Humanities and Social Studies*, 3(6), 327-333.

INTRODUCTION

Humanity faces an incredible problem of dwindling natural resources and declining ecosystem functions in the face of unprecedented development and consumption. Under human-controlled ecosystems, biodiversity and the long-term viability of ecological processes and life support systems are also in jeopardy. For the world's poorest population, environmental issues and unequal access to resources constitute a threat to their well-being and security [1]. By gathering and applying information on ecosystem conservation and restoration, as well as enhancing sustainable development policy and practise, the natural and social sciences have contributed to alleviate the hazards. Sustainability science is a new branch of study that examines how humans interact with the natural world [2]. According to the argument behind the concept, the well-being of natural ecosystems is inextricably related to the well-being of human society. Taking into account the expertise of local people is critical to the intellectual resources of sustainability research. In order to be effective, sustainability research should depend on both formal scientific knowledge and local knowledge systems (often referred to as ethno science) [3]. Many people have suggested that a Nobel Prize for Sustainability be established.

According to Henry Bauer, science is a "mosaic of the viewpoints of many small scientific organisations, "with" a range of opinions held by individual scientists and the information provided by the researched objects.'' This will help to show that science is more than one thing. Local knowledge, on the other hand, has been accused of being subjective and value-laden. Contrary to popular belief, this is not the case. Local knowledge and science, in general, aren't always worthless.

In many cases, science has only recently found what local knowledge systems have long known. The only true distinction between the two sorts of knowledge is how it is generated and, to a degree, communicated. In this work, we won't go into great depth on local and formal methods; sufficient to state that once data and information are generated and converted into knowledge, it remains knowledge regardless of the methodology employed to develop it. As a result, the notion that local knowledge is unscientific is absurd. However, this does not imply that local knowledge or science have sole authority to announce the truth. When local people or inquiring scholars try to prevent information from being scrutinised or re-examined, it should not be seen as an attempt to destroy a particular system of knowing.

When it comes to managing natural resources, Western science cannot be the sole source of data; it must consider a variety of knowledge systems. The goal of knowledge system integration is more profound. The integration of scientific research with local knowledge benefits both the equity, opportunity, security, and empowerment of local communities as well as the long-term sustainability of natural resources. Policy implementation, scenario analysis, data collecting, management planning, adaptive strategy formulation, and institutional support all require local expertise. Scientific advancement, on the other hand, leads to the creation of new or improved technologies. Networking and data storage, as well as displaying and analysing data, can assist solve complex problems more effectively.

Biodiversity protection and ecosystem service preservation, tropical ecological and biocultural restoration, and sustainable water management are just a few examples of how local knowledge systems can contribute to sustainability.

Ecosystem restoration can also benefit from local knowledge, which frequently includes elements of adaptive management.

Traditional Knowledge on Biodiversity Conservation

Collaborative and collective action; intergenerational knowledge transmission; concern for future generations' well-being; reliance on local resources; resource exploitation restraint; and an attitude of gratitude and respect for nature are all examples of local knowledge and institutional mechanisms that can be applied to biodiversity conservation efforts. ensuring the long-term conservation, preservation, and wise use of natural resources. When it comes to using local knowledge systems, these are only a few examples. There are 2753 indigenous communities in India, each with a unique set of farming methods, eating preferences, subsistence techniques, and cultural traditions.

Local Vegetation Management: In tropical Asia, South America, Africa, and other parts of the world, various vegetation management systems have evolved over thousands of years. People also follow ethics, which frequently aid in the control of their interactions with the natural world. Traditional rainwater harvesting is frequently integrated with these systems, which improves landscape heterogeneity by encouraging the growth of trees and other vegetation, which in turn feeds a varied range of fauna.

In India these systems can be classified in several ways:

- Religious traditions: temple forests, monastery forests, sanctified and deified trees
- Traditional tribal traditions: sacred forests, sacred groves and sacred trees
- Royal traditions: royal hunting preserves, elephant forests, royal gardens etc.
- Livelihood traditions: forests and groves serving as cultural and social space and source of livelihood products and services

Traditions are also expressed in a number of activities related to tree, forest, and water use and management. These include the following:

- Wood and non-wood forest products collection and management
- Traditional ethics, norms, and practises for using forests, water, and other natural resources with constraint
- Forest protection, production, and regeneration practises that have been passed down through the generations.
- Creation and maintenance of traditional water collection systems such as tanks, as well as the planting of tree groves in the vicinity
- Cultivation of beneficial trees in cultural landscapes and agroforestry systems

Despite the fact that these systems support less biodiversity than natural ecosystems, they aid in the reduction of harvest pressure. Rajasthan's arid ecosystems, for example, have 15 different resource management practises that contribute to biodiversity conservation and landscape diversity. Observance of the community's environmental ethics suggests consideration for wildlife and prohibits cutting down any of the region's Prosopis cineraria trees. You should realise that the price of protecting a tree is cheap if you lose your head (life) for it, according to Bisnoi teachings.

‘‘Ecosystem-like notions in traditional cultures” in India could be a source of local vegetation management practises among India's indigenous peoples [4]. Abiotic elements, plants, animals, and humans are all considered linked in these systems, which are defined by a geographic boundary. Local knowledge systems, in many ways, reflect the growing scientific consensus that ecosystems are unpredictable and unmanageable, and that ecosystem processes are nonlinear, multi equilibrium, and unpredictable [4].

In addition, the Juang and Munda tribes in eastern India's Keonjhar district use 215 herbs from 150 genera and 82 families [5]. This demonstrates that eastern Indian tribes have a wealth of traditional biodiversity and herbal medicine expertise. Mushrooms, wild berries, tubers, and flowers, as well as cooking oil, all come from the region's woodlands. Learning more about the biodiversity of the region will help us prepare for sustainable forest management.

Traditional Ethos: Traditional eco-ethics, like traditional eco-ethics in many other local societies, have survived industrialisation, albeit in reduced forms. Local biodiversity is conserved regardless of its use value, according to a study of traditional resource use norms and cultural institutions in rural Bengal civilizations. Some of these may have no recorded conservation impact, but they may symbolise a community's understanding of life's fundamental or existential value, as well as love and respect for nature. Many of the country's threatened species can still be saved if local communities have even a little stake in managing the country's natural resources, according to traditional conservation ethics.

Rituals such as sacred forests and sacred landscapes are one of the most visible manifestations of traditional ethos. This is a good description of what they're like.

In particular, a case from northeast India is worth noting. In Meghalaya, the Khasi, Garo, and Jaintia communities have a longstanding heritage of environmental protection that is based on a variety of religions. Sacred groves are protected under customary law in India, and the community is not allowed to take any products from them. In these forests, you'll find a wide variety of rare and therapeutic plants, as well as an abundance of biological diversity. There are at least 514 species in the 79 sacred groves is identified, which includes 340 genera and 131 families. Sacred groves' status was determined by estimating how much of their canopy was covered. Untouched woodland covered 42.1%, with sparse canopy covering 26.3 percent, and open forest made up 30.3 percent, of the overall sacred grove area. The sacred grove has a better species diversity index than the degraded forest.

Another notable example is Peninsular India. The sacred groves of Oorani and Olagapuram in Pondicherry's north-western region were researched and found to have 169 angiosperms between them. Woody vegetation, lianas, and parasitic plants made up the flora of the Oorani Grove (3.2 hectares), which included 74 plant species. Olagapuram Grove (2.8 hectares) had a higher number of species, with 136 in 121 genera and 58 families of woody plants, while woody species were down to 21 and lianas and parasites were nine and three, respectively. Locals are able to sustain such a diverse range of customs as a result of their cultural and religious practises.

Another mural painting practise worth mentioning is the use of plants. Ajantan mural art, for example, contains examples of this kind of art. From the 2nd century B.C. to the 8th century A.D., the practise was widespread. The tradition was supported by many rulers in India until the end of the nineteenth century, but then faded away. There are still a few muralists in Kerala who use the same approaches and techniques that the Ajantan mural painters did. Materials for the mural painting came from a variety of plant types. Such information is extremely useful in securing the livelihoods of practitioners.

A range of species can be found in traditional water collection systems. More than 60 percent of the 1.5 million tanks in India have a pond size of less than an acre, which may nevertheless be viable habitat for many species in rural ecosystems, according to Pandey. Indeed, the island biogeography idea, which is valid in many circumstances, does not hold up in the case of 80 Swiss ponds.

Predictions based on theoretical assumptions and empirical evidence show that, despite the fact that intentional4 conservation may be rare among small-scale societies, practises that actually result in what we today call ‘‘sustainable use” of resources and habitats by local people are widespread around the world, which contributes to biodiversity conservation and enhancement by creating mosaics of habitat.

Managing landscapes sustainably requires a greater knowledge of the cultural factors that shape them, in light of the accelerating degradation of both biological and cultural landscapes. For the sake of humanity's relationship with the natural world, we need an environmental and cultural revolution.

Traditional Knowledge, Water, and Biodiversity

In India, 1.5 million traditional village tanks, ponds, and earthen embankments catch substantial rainwater in 660,000 villages and foster the establishment of flora in commons and agroecosystems thanks to simple native technology and an ethic that exhorts ‘‘capture rain where it rains.’‘ At least US $ 125 billion would be needed for India to build these tanks now.

There is hardly no fresh water left. 26 percent of the Earth's evapotranspiration and 54 percent of its runoff are now being used by humans. A 10% increase in accessible runoff might be achieved over the next 30 years through new dam construction, but the population is expected to grow by more than 45 percent.

In places like South Asia, Africa, and other regions throughout the world, people have created a variety of indigenous water harvesting and management systems over thousands of years. Agroforestry and ethnoforestry activities are typically combined in such systems. Market-based approaches to sustainable water management, such as charging polluters for effluent treatment and compensating users to cover supply and distribution costs and the costs of integrated watershed management, have lately been advocated as solutions to the problem. These measures are necessary but insufficient, and a greater understanding of rainwater collection in various cultural contexts is required.

In contrast to other regions of the world, rainwater harvesting in South Asia has been practised continuously for at least 5000 years. Similarly, as complex adaptive systems, Bali's water temple networks are highly beneficial. Hydraulic earthworks have been documented in ancient landscapes all across the world, however they aren't used by the common

public as regularly as they were in South Asia. In the Mayan lowlands of South America, for example, the ruins of earthworks and water storage adaptations can be found. Fish farming in the Bolivian Amazon and prehistoric agriculture in the Mayan lowlands have both employed similar technologies.

It has been established that rainwater harvesting is scientifically and practically effective in rainfed locations. For example, the Negev serves as a source of confirmation. Hillside parts of the Negev desert contain a number of ancient stone structures and water channels. Extensive research conducted on ancient farmers' water collection methods has found them to be highly effective. Archaeological evidence suggests that farmers in ancient times used their axes to only remove surface stones from mounds, while leaving embedded stones in place. When compared to untreated natural soil surfaces, simulations of brief rainfall events showed that this selective removal increased runoff volumes by almost 250 percent.

One of the most prominent tree genus in India is Ficus, which is often regarded as culturally significant. There are many additional species that depend on this genus for their survival. An estimated 30 percent of the known 260 Ficus species have frugivory records, which show that 1274 bird and animal taxa and groups in 523 different nations have been found to eat the fruit.

Forest restoration and protected area management in Rajasthan, one of India's driest regions, has been aided by local knowledge and expertise. Scientific and local knowledge are combined to produce cultural landscapes, which support a wide range of trees, birds, and other wildlife, and allow nature and society to coexist harmoniously.

Ancient literature include specific references to the treatment of forests and other natural resources. Since ancient times, sustainability has been a topic of discussion in various ways. Robust principles, for example, were developed to determine whether or not the complicated web of nature can sustain itself. These principles generally correspond to current conservation, usage, and regeneration concepts.

Varahamihira is the first scholar to comment on the relationship between tanks and trees, having detailed comprehensive technical instructions for tank construction in his classic work Brahatsamhita (550 AD):

Integration of Traditional and Formal Science

Is it possible to combine scientific and ethnological research? The results of empirical research point to the positive. Traditional knowledge's practical experience of living within ecosystems and responding to ecosystem change may be a valuable contribution to scientific knowledge. However, as noted by [4], traditional ecology's ‘‘language’‘ differs from scientific jargon and frequently incorporates ‘‘metaphorical imagery and spiritual expression, suggesting distinctions in context, motive, and conceptual underpinnings.’‘.

Traditions and local knowledge in India have paved the path for countless scientific breakthroughs. Science, including metallurgy, mathematics, medicine, surgery, and environmental management, in India has been based on ancient Indian knowledge and wisdom. In order to establish a strong sustainability science in India's rural areas, we must take into consideration proven local knowledge as well as science, because ‘‘knowledge cannot be fragmented”. It's possible that formal and informal knowledge systems, as well as the boundaries between natural and social sciences, are all made up. Because of the scarcity of cross-disciplinary studies, perceived borders may be an uncharted domain. Disciplines, on the other hand, are becoming more ‘‘consilient,”. ‘‘There is a continuum between artificially dichotomized components of science: objective versus subjective, values free rather than value-laden, neutral rather than advocating,’ ‘more and more people in the scientific community have realised. This disciplinary patchwork will have a significant impact on science and policy.

Knowledge systems that have been passed down through generations in India have the potential to help address issues such as forest preservation and water conservation, as well as global climate change. It's imperative that we draw on all available resources to develop effective mitigation methods for the ecological effects of climate change.

Low intensity-agriculture

Since biodiverse farms are fostered by low-intensity agriculture, these systems must be maintained and promoted. Farm biodiversity has been observed to suffer as a result of agricultural intensification. Asia has one of the most diverse crop-animal systems in the world, with 95% of the world's ruminants living in mixed farming systems. Growth and dominance of crop-animal systems in Asia are expected to continue. Biodiversity is essential for the production of food in these mixed farming systems. The backbone of Asian agriculture is the crop-animal system, in which animals perform a variety of tasks. To meet expanding demand for animal products, eradicate poverty, and enhance the livelihoods of resource-poor farmers, livestock production must increase in these systems. In the face of land deterioration, natural farm vegetation will be critical to maintaining farming viable.

Incorporating Traditional Knowledge in Practice

There should be no attempt to separate traditional knowledge from its cultural and institutional context while attempting to incorporate it for conservation of biodiversity and resource sustainability. This is the guiding concept for any attempt. The following ideas may be helpful in terms of cultural and institutional aspects:

1) Every effort to promote traditional knowledge should begin with the assumption that local communities' rights to their natural resources and tenurial security are necessary for traditional knowledge to be respected.
2) It is necessary to strengthen the protection of traditional people's intellectual property rights.
3) It may be required to design new projects targeted at improving local populations' ability to use, express, and enhance traditional knowledge based on cultural and institutional norms.

Traditional and formal sciences must be integrated as soon as possible. In this regard, the following thoughts may be relevant:

1. Methods for reciprocal learning between local people and formal scientists should be developed first and foremost.
2. Ethno-forestry and local institutional frameworks for incorporating traditional knowledge into forest management and development programmes must be completely integrated into state forest policies and sustainable forest management processes.
3. Village microplans for eco-development, shared forest management, and rural development can benefit from traditional knowledge and practises.Rather than relying solely on administrative boundaries, the plans should contain both geographic and traditional limits.
4. Traditional water management practises, which have been in operation for hundreds of years, are under threat from climate change.
5. As part of adaptive natural resource management, there is a clear necessity for the integration of traditional and formal sciences.

Despite the relevance of traditional knowledge for biodiversity conservation and natural resource management, there is still much more work to be done. In this regard, the following point to consider could be beneficial:

1. Promoting the collection and application of indigenous knowledge in resource management. The communities that hold the information should be involved in the process of documenting it. Emic opinions on IK should be documented, rather than merely those of professional outsiders, in order to better understand IK. In addition to describing the systems and how they are used, the documentation should include information about dangers to the systems' long-term existence. There is a good example of this in people's biodiversity registries. Using the People's Biodiversity Registers programme, folk ecological knowledge and wisdom can be maintained in a formal way, as well as in a new context. Local educational institutions, students, and non-profit organisations collaborate with local institutions to chronicle traditional ecological knowledge and practises related to natural resource usage in PBRs. When it comes to ‘‘promoting improved flow of benefits from economic use of living resources to the local community,’‘ this procedure and the documents it produces could play an important role.
2. Indic traditions, such as old books on medicinal plants, are translated and disseminated in local languages, as are Indic traditions in local languages, such as ancient writings on medicinal plants. Because many modern Indians do not speak Sanskrit, a Sanskrit-to-English translation is required. Translating people's knowledge systems into scientific terms can allow researchers and practitioners from other countries to better understand the people's knowledge systems and assist their projects, on the other hand.
3. Assisting practitioners of local knowledge in exchanging information
4. Create clear and concise educational resources on traditional knowledge systems for use in public awareness campaigns to inform policymakers and the general public about the benefits and risks of indigenous knowledge systems.

Scientific organisations, such as universities, play an important role in supporting knowledge systems. As previously stated, there is no true conflict between local and formal systems of knowledge, because all knowledge is founded on a set of core values, beliefs, and paradigms. As a result, a more comprehensive understanding of the nature and scope of conventional knowledge is urgently required. The activities listed below may be helpful in this regard:

1. For agencies, scholars, and practitioners who work with communities, developing curriculum and methodologies for formal training and teaching in traditional knowledge systems is crucial. The G.B. Pant Institute of Himalayan Environment and Development's innovative efforts in the Indian Himalayan Region, a biogeographic entity, have generated significant results.

2. Researching the advantages and disadvantages of applying classical knowledge in specific settings. First-generation research projects, which focused on showing the value and utility of local knowledge systems through successful case studies, should be replaced with second-generation research initiatives". The second wave of research will focus on initiatives that utilise knowledge systems across disciplines and in a variety of contexts.
3. Through action research, new means of incorporating local knowledge systems into natural resource management regimes are being developed.

CONCLUSION

Biodiversity conservation and sustainability necessitate a combination of scientific research and indigenous knowledge systems such as ethno-forestry. It may still be the greatest approach to find novel herbal medicines that may be used to cure ailments in the period of global climate change. Continually dwelling tiny civilizations, such as villages, generate, disseminate, and use extensive knowledge about the territory's resources. Every time an agricultural or forestry project involves the participation of women, local knowledge that may be implemented, tested, and developed over time is built up in these communities.

We may further the notion of knowledge justice by recognising and utilising the contributions of others. Empowerment, security, and opportunity for local people can be achieved when local and formal scientific knowledge is equal. People's engagement in resource management decisions is enhanced when the state and formal institutions include people's knowledge into the decision-making process. Knowledge of the surrounding area has been passed down from generation to generation in traditional communities. They know how to use and manage water, trees, and other natural resources in a way that ensures their long-term viability. Security in its broadest sense can also be enhanced by a more equitable distribution of information. By merging the skills of formal and traditional sciences, we can assist people in addressing global warming and managing the dangers they confront due to the depletion of local resources. Planning and implementing effective agro forest management programmes can benefit from collective understanding. Ecological, economic and social security are all a by-product of this.

As a result of more equal knowledge diffusion, local people can participate in the management of local affairs that have global significance. Self-determination is also possible with this choice. Combining indigenous tree-growing abilities with formal science has the potential to improve natural resource management productivity and efficiency in the long run. Sustainable natural resource management necessitates the development of a human ecological viewpoint.

Concerns have been expressed about the difficulty of distinguishing real knowledge from myth. That the useful knowledge is not lost may also be a benefit to this. It is more productive to identify the science behind traditions rather than engage in the ‘‘indigenous vs. scientific’‘ or ‘‘traditional vs. western’‘ debates. Traditional knowledge systems should not be approached uncritically by scientists, just as traditional knowledge systems should not be approached uncritically by local people. Local knowledge systems and formal science proponents have done more harm than good by maintaining their disciplines' claims to be the only ones who know the truth. On either side of the scientific and local knowledge divide, ‘‘exclusive truth claims - assertions of epistemic privilege – are now no longer tenable".

The validation process, often known as ‘‘verification,’‘ has been misunderstood by many scientists and researchers working on traditional knowledge systems. To comprehend the phrase ‘‘validation,’‘ it is not necessary to examine it through the prism of fixed disciplinary boundaries. Complimentarity and ‘‘consilience" between local and formal systems can be drawn upon, and in fact should be used. Formal and informal approaches will both be used to understand the data, information, and knowledge, as will persons from the community and those with a formal education in science. Everyone engaging in such cooperative initiatives may stand to gain. Scientific advancements should be made available to both local and outside professionals to determine if they can improve current conservation strategies and knowledge. Access to the knowledge and an understanding of its application are essential for policymakers.

In a variety of scenarios, local knowledge obtained from long-term nature-society interactions has proven immensely beneficial in verifying scientific hypotheses and bringing up new study avenues. By identifying the chemical active components in ethno medicine plants, formal scientific methods have been useful in validating traditional ethno pharmacological knowledge. A significant step in proving the ancient-modern concordance was the finding of the hypertensive alkaloid in the sarpagandha plant (Rouwolfiaserpentina), which is used in Ayurveda to treat hypertension, sleeplessness, and insanity. Many additional isolated active components with similar characteristics have been discovered since then. For example, endangered ethno medicinal species in India must be maintained due to extensive global trade. The application of formal and local sciences to monitor, learn, and design strategies for context appropriate adaptive management requires ‘‘a good degree of scientific rigour’‘ as does assessing the threat status of species that should be barred from commerce. In this circumstance, the most important thing to remember is that the benefits should be returned

to the community. The key to preserving our progress toward sustainability is the collective wisdom of humanity for biodiversity protection, which may be found in both formal science and local systems of knowledge.

REFERENCES

1. Apte, T (2006). *A Simple Guide to Intellectual Property Rights, Biodiversity and Traditional Knowledge.* Kalpavriksh, GRAIN, and IIED, Pune/Delhi.
2. GRAIN (1995). Towards a Biodiversity Community Rights Regime. *Seedling*, October 1995 (www.grain.org/seedling/?id=5).
3. Posey, D (1999). *Cultural and Spiritual Values of Biodiversity.* United Nations Environment Programme, Nairobi, and Intermediate Technology Publications, London.
4. Berkes, F. and D. Jolly (2001). Adapting to climate change: social-ecological resilience in a Canadian western Arctic community. Conservation Ecology **5**(2): 18. [online] URL: http://www.consecol.org/vol5/iss2/art18/
5. Twarog, S. And Kapoor, P(2004). *Protecting and Promoting Traditional Knowledge: Systems, National Experiences and International Dimensions.* United Nations Conference on Trade and Development. Document No, United Nations, Geneva.