

Exploring Indigenous Knowledge to meet Sustainable Development through the case of indigenous methods of fishing of the Bodo community of Assam, India

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Abstract:-

The tradition, culture and socio-religious aspects of indigenous people of their day to day life have an intrinsic relationship and are inseparable to nature and environment. Every aspects of traditional life style are mostly related to the nature and natural resources available in their surroundings. In traditional life and practices, the local resource management including flora and fauna is an important aspect and challenges for the indigenous community for better productivity in space and time for food security or as a whole the indigenous development of their own. So, in a nutshell, it can be said that they are living as a part of that environment and surviving there, keeping alive their own culture and traditions. Today, the goal of sustainable development demands are much more related to the life and practices of indigenous people and their knowledge systems. Therefore, modern knowledge and indigenous knowledge if integrated has the possibility to meet the sustainable development goals.

Key Words:

Indigenous people, Traditional Knowledge, Sustainable development, Environment friendly, low cost technique.

Introduction

The indigenous peoples are the first or original settlers or the first inhabitants of a place and they are also known as owners of that particular soil. Since ages, they live in harmony with nature and are surrounded, nurtured and are guarded by nature. Moreover, they too protect the nature.

Today, the United Nation has put up many criteria to identify the indigenous people globally, due to various socio-political and economic reasons. Globally, the idea of identifying indigeneity might vary depending from country to country on the country's political situations and in recognizing the indigenous people of that particular country. The position of India is not different to other countries of the world.

Indigenous people of India

India is a vast country and one of the oldest civilization in the world, with more than a billion population of different race, language and religion. In India, still many people failed to articulate with the term indigenous and many people still demand and struggles to get indigeneity status. However, the term indigenous people and *Adivasi*, literary meaning the 'first' or 'original' settlers in India. For this reason, in public discourse in India, the term *Adivasi* has been increasingly equated to the socially accepted term to Indigenous people. In Indian Constitution, the indigenous people are termed as Scheduled Tribe (ST).

*"The scheduled Areas and Scheduled Tribes commission constituted by the Government of India in their report of 1960, also referred to the tribes as Indigenous"*¹.

After India got its Independence from the British Raj, the reorganisation of different States and Union Territories are done or different states were formed based on language and indigeneity of the people present in the region. So, in Indian context, the political discourse plays an important role in recognizing the indigeneity of community. So, in India the emergence of the term indigenous or ST and its constitutional privileges and the peoples within the international political discourse and legal standards, this is now applied to a variety of dealings. Therefore, the Scheduled Tribes have *de facto* been recognized as indigenous peoples of India and many people are still struggling to obtain the status of Scheduled Tribes in India.

Traditional Knowledge

Traditional knowledge as it is known, it is the systemic information that pass on from generation to generation through oral tradition and mostly remains in the informal sector, usually unwritten which are not available in the form of text. 'It is cultural specific, whereas formal knowledge is de-cultured'². The traditional knowledge is the knowledge of people and their local daily practices, whether explicit or implicit, used in all spare of life such as the management of socio-economic and the ecological facts of life. The knowledge is exclusively practical life based on their past and present experiences and mostly importantly observations. This kind of traditional knowledge are the collective practical property of the society which are known as practical hands on knowledge as a whole. Traditional knowledge are dynamic in nature as due to the passes of time, this knowledge undergoes different changes and modifications based on their experiences and as the succeeding members of the particular society contribute to it over the period of time. As per the United Nations Environmental Programme (UNEP), "this knowledge can be contrasted with cosmopolitan knowledge, which is drawn from global experience and combine 'Western' scientific discoveries, economic preferences and philosophies with those of other widespread cultures"³.

Definition of Traditional Knowledge

Aggie Brockman, "Traditional knowledge is local knowledge; it is knowledge that is built up by groups of people through generations of living in close contact with nature, it is cumulative and dynamic"⁴. The traditional knowledge is built upon the past practical experiences of a people living in the locality for many years and adjust and adapts to social- economic – political, environmental and spiritual change of the period.

Hansen and VanFleet, defines traditional knowledge that "it is used at the local level as the foundation or basis for making decisions, making about vital activities concerning environmental health, safety and regulation"⁵. Traditional knowledge includes numbers of locally available resources including some intellectual inventories of local places, routes, medicinal plant resources, various fauna breeds, local flora, vegetables crop and plant species. Traditional knowledge encompasses various systems of beliefs mainly on spirits and supernatural elements that plays a pivotal role in the community's habitat, keeping healthy health and maintaining, protecting and replenishing the environment surrounding their locality.

Descriptions of Indigenous Knowledge

The Indigenous Knowledge can be describe in various ways some of the descriptions given be some writers are as follows:

R Barnhardt & O Kawagley⁶, describes Traditional Knowledge as a practical common sense. It is a knowledge

that is gained from generation mostly through oral tradition based on their continuous teaching and learning experiences and which is passed on from one generation to the newer generation.

M. Battiste & Barman⁷, describes Traditional Knowledge as knowing one's own home country. The indigenous communities know its surrounding very well as they live with nature. They are the guardians of nature and the nature act as their protectors. They live in harmony with nature. Indigenous knowledge is full of environmental knowledge.

G Cajete⁸, describes Traditional Knowledge as holistic. It can't be separated and compartmentalised from the people. Traditional Knowledge is the lifestyle of the people.

A Emery & Associates⁹ describes Traditional Knowledge as Stable, dynamic and cumulative.

Odora-Hoppers¹⁰ describes Traditional Knowledge as lifestyle. This knowledge is surviving because it is always used in a good way and in truth. It exists as it comes from the spirit of a person.

Tuhiwai Smith¹¹, describes traditional Knowledge as Code of ethics of environment.

Among all the above mentioned description of indigenous knowledge, dynamism is one of the most essential character of traditional knowledge and it changes with the changing creativity of people over generations. It is difficult to depart traditional knowledge from the indigenous people. These are so ingrained in their blood and genes that it forms a part of their identity. It is evident that the traditional knowledge of people and associated practices contribute significantly to the conservation and enhancement of biodiversity. Traditional knowledge is indispensable for conservation of biodiversity i.e. sustainability of natural resources including forest, water and agro-ecosystems worldwide.

Sustainable development:

The policy makers of the world conservation strategy (1980's) introduce the term "Sustainable Development". However, the term was not familiarised till the Brundtland Commission Report "Our Common Future" 1987. As per the report of Brundtland Commission Report, "Sustainable development is development that meets the needs of the present without compromising the ability of the future generations to meet their own needs"¹². The core concept of sustainable development means a balanced development which satisfy the present needs with limited utilisation and conservation of natural resources without sacrificing the quality of environment and future of the next generations. Maintaining the balance between development and the environment lays the foundation of the concept of sustainable development. In this dynamic world, population explosion and the trend of shrinking of environmental resources, sustainable development is believed to lay the path way for the healthy future environment. The Earth Summit adopted the historic Agenda -21, plans for leading to sustainable development entrusted with the task of monitoring progress in implementing Agenda 21.

The commission has formulated the following guidelines for achieving sustainable development:

1. Sustainable reduction in population growth rates,
2. Housing, health care and education for the poor,
3. Education and empowerment of women, particularly in rural areas,
4. Afforestation in cities and rural areas,
5. Use of non-conventional energy resources by industries and proper treatment of urban wastes and industrial effluents,
6. Conservation of land, soil, water, forest, wild life, fish and non-renewable resources by application of modern tools of science and technology,
7. Efficient use of resources avoiding wasteful and excessive utilisation,
8. A global and national strategy to eradicate poverty and
9. People's participation in conservation and improvement of environment quality.

At present, we have around 370 million indigenous people distributed in and around more than 70 countries around the globe. From time immemorial they have often been disposed of their land, or for access to valuable resources. Today, it is bitter fact that indeed indigenous people are often amongst the most disadvantaged people in the world in all areas.

India is one of the oldest civilization of the world and therefore it is obviously the home to a good number of indigenous peoples and communities. In India, 461 ethnic groups are recognised as Scheduled Tribes, who are considered to be India's Indigenous peoples, they are also commonly known as Adivasi. With an estimated population of 84.3 million, they comprise 8.2% of the total population. The largest concentrations of indigenous peoples are found in the eight states of North East India and the so called "central tribal belt" stretching from Rajasthan to West Bengal.

North east India is home to over 100 groups of the indigenous peoples. Being one of the 34 major bio diversity hotspots of the world, extremely rich in flora and fauna it has been engaging the attention of various establishments. But they are in the process of losing their identity due to non-recognition of their existence. India has a long history of indigenous peoples' movement aimed at asserting their rights. People are suffering from tortures and discrimination in the country since ages. Even though it is apparent that the economy of the country depends much on the contributions of the indigenous farmers, still these people are deprived of their rightful claims and are often exploited by the mainstream people.

North east India and Assam in particular is a home to more than hundred communities of indigenous peoples each having their own and unique traditions and cultures. This region is known as one of the 34 major bio-diversity hotspot of the world being extremely rich in flora and fauna¹³. Since ages, this people are quite content with their domestic productions, their cultures and heritages. But somehow, due to the lack of education and knowledge about their rights over the ancestral properties, they are in the process of losing their cultural identity. Assam has a rich traditional knowledge systems, traditional plants, medicinal herbs, flora and fauna about which the indigenous and the local people have exclusive knowledge.

Land is an asset as they live in nature and has a historical relationship. The majority of indigenous people living in forest areas depend on the natural resources of their lands to fulfil their subsistence needs. Hunting, fishing, gathering of forest products and small garden plots still form the basis of their household economy. The security and permanence of their control and use of the natural resource base is actually more important to most indigenous group than direct ownership of the land itself.

Fish resources

Fresh and marine waters provide fish, an important renewable resource. It is well-known food item with rich protein content. Fish oil is useful tonic and fish residues are used as fertilizers. People in developing countries cannot afford meat in their diet. In the earlier days, fish was used on a small scale but now with population explosion, it has been transformed into a large scale industry. There are abundant fish resources in the country with about 30,000 species of fish. But in the recent years, fish resources as a whole have been hit by increasing water pollution. This has caused fish scarcity in general.

Over consumption and over fishing also have turned fish like *halibut* and *salmon* into endangered species. World- wide annual catch of fish is about 8.5 crore metric tons. The major fishing grounds are the North cost of USA and North Sea – these conduct major trade in fish products. Japan and Norway are the principal fishing nations in the world. Japan is in the forefront accounting for 26.5 percent of the total catch. In India, fishing is done in inland waters- rivers, lakes, ponds, etc. to satisfy the requirement for local consumption. Marine fishing is practised in coastal areas but is handicapped due to shortage of modern equipment like trawlers and large ships and also lack of training and facilities.

In North East part of India, fishing are mostly done in lakes, rivers, ponds and in paddy fields. Most of the fish catching methods of the Bodo community of Assam is mainly traditional in nature. In recent days, number of new modern techniques are used to catch fish but the traditional methods of catching fishes still exist in most of the places in the state.

It has been known to all that fish are attracted to light in search of their food. Most fish seek light to catch their food at night. Fisherman take this opportunity to catch fish, under the darkness of the night and some of the Bodo people come out of their home to catch fish by lighting fire. Traditionally, the Bodo people come out at night to hunt fish in the paddy field, near the rivers with long knife in one hand and by holding light (Which is indigenously produced at low-cost with environmental friendly material) on the other.

The Bodo people situated in different parts of Assam, mostly take fishing as their hobby and food habits. The Bodo people of Assam is mostly poor economically and they resides mostly near the rivers and lakes, where they take fish as their stable food. Bodo community from very ancient days adopts different methods of fishing. Traditionally, the methods that they follow are low cost, environment friendly and very simple techniques. Among the traditional methods of fishing, hunting fish by lighting a fire is one of the most ancient method adopted by the Bodo Community which they still follow in most of the places.

Fish hunting at night ('*Joradannai*')

The Bodo people has a habit for hunting fish, frog, crabs, etc at night. This method is one of the oldest method of catching fish by the Bodo community. The fish get attracted by fire and it is easy to catch fish. On the other hand, the fish go around to gather their food at night which make easy for the hunters to catch them. The method of catching fish at night by fire is known as "*Na Joradannai*".

Different ways or methods are used to light fire for the purpose of fish hunting. Some of the method are described as follows-

1. '*Bonjar*' - fire lighted in the bamboo and which is carried as a torch. '*Bonjar*' is made of *Bambusa nutans* or *Bambusa tulda* (both species are mostly available in Assam). In one terminal node, a hole is made for putting the Kerosene oil into the bamboo stem. In the hole, a wick made of jute plant fiber or old cottony cloth is inserted. During night it is used for light by flaming the wick. When fishes become visible under water in the light of '*Bonjar*' the fisherman impels the fishes with the help of knife or sickle.

Here, the main material is bamboo. Bamboo is mostly available in the North east part of India and in Assam it is easily available. Since, the bamboo is easily available, it is used to light a fire with a simple techniques involving raw bamboo stem, dried jute plant fiber and kerosene oil.

2. "*Jigabbuntha Saonai*" – Fire lighted with the rice straw. One hand full of rice straw is tightly made as rope and is kept in the sun for drying. Once it is fully dried, some three or four rope are tightly twisted together and make a single rope which is called "*jigabbuntha*". It is lighted and carried in one hand and knife in the other hand. Once the fish is seen under the surface of water it is then hunted.

In this method, the most important material used is rice straw. As Bodo community is mostly cultivator, they mostly cultivate the paddy for their livelihood. After harvesting the paddy, the rice straw is collected and preserved, which is used for various purpose in future. The preserved rice straw is used to make "*jigabbuntha*" to light a fire for catching fish in the paddy field during the rainy season.

3. "*Boga Na Dannai*" - here fire is lighted in an aluminium bucket, mostly old buckets are used. Bucket is kept in a sliding position where mud is pasted to make a place for the *sakhi* (Kerosene lantern). The bucket is carried upon in one hand and on the other, knife is carried to catch fish.

The most important material used here is aluminium bucket. Most of the Bodo community in Assam use aluminium bucket to collect water from the well and different water bodies to use for their daily needs. Aluminium bucket last long and comfortable to collect water and is also most convenient to light a fire for catching fish at night.

4. "*Cycle tyre Saonnai*" - Bodo people have a tradition of carrying home the spoiled cycle tyre after replacing with the new one for future use in various purposes. And one of the purpose is to light a fire while catching fish at night. The old cycle tyre is cut into two pieces and burned which give enough light for the fish to get attracted and also a person to catch a fish.

The most important material here is unused cycle tyre. Bodo community use bicycle frequently for almost every purpose. Bicycle was used by farmers to carry rice bag, others to go to market, for transportation etc. in one point of time bicycle was use as a companion for the common community.

In traditional methods, it is seen that most of the advanced techniques of present day sustainable development are used knowing or unknowingly such as:

1. Recycling method - In most of the traditional methods of fish hunting as mentioned above almost all are used as a recycling methods. One of the goals of Sustainable development is recycling without wasting.

2. Natural Resources- In traditional methods available natural resources are mostly use to earn their livelihood. In traditional methods of fish hunting, extensive use of natural resources are seen. So, whatever available resources are found around are used by applying low cost, environmental friendly and simple traditional technique.

3. Limited use- hunting in one place by large group of people are cautions for safety measures. One reason is that they think they will not get their proper share, if more people are there in a group. Another reason is too

many hunting in one place is considered dangerous as they fear of extinction of species. Hunters tries to avoid young ones and catching fish during breeding seasons are not advised.

Traditional and modern science on traditional practices

From the present study, it can be inferred that the time tested age old tradition in relation to the utilization and management of resources in traditional practices are the matter of much concern for the ethnic groups. This is mainly for three broad reasons – economic, ecological and social/ethical. The management techniques observed was sufficient sustainable as their tradition but the need of the hour is that the mass people are required to provide awareness on environmental sustainability. There is a possibility that the traditional knowledge and modern science collaborates can find out solution and its integration can work in reality because the problems are totally location specific and only can be managed at local only.

We know that the traditional knowledge in local resource management is important for ethnic people due to their socio-ethical value in their particular area or locality. To bridge the knowledge divide the continuum between indigenous knowledge and the present global processes of knowledge sharing through timely and efficient mobilisation, coordination, and collaboration by all stake holders is the most urgent need. Inter and intra communities' communication technologies to enhance existing inter-community communication and ensuring their appropriate use by all is needed.

At present there is an increasing realisation among the development actors about the value of that participatory approaches in deciding the activities for the sustainable development. In this area, the Indigenous knowledge has the capacity to provide the foundation for grassroots level decision making. "It is recently that the indigenous knowledge of ecological zones, natural resources, agriculture, aquaculture, forest and game management is far more sophisticated than previously assumed"¹⁴. It should be acknowledged, that the traditional knowledge can offers new models or new alternate approached for development which are both socially and economically beneficial and can enhance the sustainable development approached. Therefore, it is well known fact that development activities that work with and through indigenous knowledge have several important advantages over sustainable development model of development. It is very clear that there is much more to learn and adopt from the indigenous knowledge systems of the local people. All the academics, policy makers, planers should pay greater attention to this invaluable treasures of knowledge that is threatened by extinction. If we are to move towards interactive technology development from the conventional transfer of technology approach we all have to learn many things from our village level experts, the gurus of indigenous knowledge.

Conclusion

Indigenous people and their communities lived with nature and has historical relationship with the environment. They learn with an experience and transfer their knowledge to the younger generation about their surroundings as they are descendants of such land. The holistic traditional scientific knowledge has been developed by the indigenous people of their surroundings, "in view of the interrelationships between the natural environment and its sustainable development and the cultural, social, economic and physical wellbeing of the indigenous people, national and international efforts to implement environmentally sound and sustainable development should realize, accommodate, promote and strengthen the role of indigenous people and their communities"¹⁵. Integrating traditional knowledge and science is the relationship between the microcosm and the macrocosm. In Indian philosophy, this relationship is called *lokpurush* sidhant¹⁶. Integration of both can be very fruitful. Science uncovers certain details and the new perceptions, insights and non-sensory dimensions that are revealed only in a holistic view of Traditional Knowledge. The combination of the two knowledge systems has the promise of a mutually beneficial learning relationship.

The Traditional Knowledge can be seen to be very modern and contemporary because it is relevant to the present day social needs and modern perspective and understanding of the physical, biological and spiritual dimensions of nature. So, science can be diversified in collaboration with indigenous knowledge systems derived from different cultures. Indigenous Knowledge and community based knowledge can be invaluable part of the solution to address the present day crisis.

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