




Effective Role of Indigenous People Towards Environmental Sustainability

Geetanjali Patra¹ 

¹ Lecturer, Department of Political Science, Kalinga Institute of Social Sciences (KISS)
Deemed to be University, Bhubaneswar, India
geetanjali.patra@kiss.ac.in

Abstract. The greatest example of cultural diversity in the globe is Indigenous people who are the primary contributors and caretakers to protect the environment. Their identity depends upon the environment in terms of land, forest, natural resources and all living things. The Agenda 2030 of Sustainable Development Goals are not achievable without fulfilling their rights to land, forest and natural resources. Climate change has an impact on their environment which affects a lot for their livelihood. Despite that, their role is very effective towards Sustainable Development. They are preserving various flora and fauna as sacred groves and endangered crops like rice, maize, grains, fruits, vegetables, Millet, etc. Otherwise, this flora and fauna might have disappeared from the natural ecosystem. They also conserve the soil, and water and reduce erosion and risk of the disasters, especially in mountain areas. They have a unique knowledge system and Practices for the sustainable management of natural resources. They believe that land and people were created by their ancestors, so they have to protect and care for the land. They are the leaders in climate action and environmental protection. This paper tries to find out the effective role of the Indigenous people in preserving and protecting the environment.

Keywords: Indigenous People, Environment, Sustainable Development.

1 Introduction

Indigenous people across the globe are the driving force for the maintenance of ecosystems. Indigenous People are crucial concerning environmental sustainability. Their role is to protect the environment by conserving the soil and water and reducing erosion and the risk of disaster in the mountain areas. The greatest example of cultural diversity in the globe is Indigenous people who are the primary contributors and caretakers to protect the environment. Their identity depends upon the environment in terms of land, forest, natural resources and all living things. The Agenda 2030 Sustainable Development Goals are not achievable without fulfilling their rights to land, forest and natural resources. Climate change has an impact on their environment which affects a lot for their livelihood. Despite that, their role is very effective

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towards Sustainable Development. They are preserving various flora and fauna as sacred groves and endangered crops like rice, maize, grains, fruits, vegetables, Millet, etc. Otherwise, this flora and fauna might have disappeared from the natural ecosystem. They also conserve the soil, and water and reduce erosion and risk of the disasters, especially in mountain areas. They have unique knowledge systems and Practices for the sustainable management of natural resources. They believe that land and people were created by their ancestors, so they have to protect and care for the land. They are the leaders in climate action and environmental protection. In India, the Forest Right Act of 2006 has provided the rights and occupation to the Forest Dwelling Scheduled Tribes (FDST) and the Other Traditional Forest Dwellers (OTFD). This act is only applicable to those FDST and OTFD who have been residing in the forest for at least three generations. The main aim of this right is to preserve protect, conserve and manage the forest areas' resources. This Forest Right Act has given the right to the Gram Sabha to adopt the local conventional practices of forest conservation and management within the community forest resource boundary. Odisha is the first state in India that has recognised the Community Forest Resources (CFR) within the Similipal National Park in 2016 and Chhattisgarh is the second state to have this recognition inside the Kanger Ghati National Park.

2 Objectives

- To find out the effective role of the Indigenous people in preserving and protecting the environment.
- To explore their unique knowledge systems and Practices for environmental sustainability.

3 Review of Literature

1. Laxmi R.B. (2022), "Three Lessons from Indian Tribes on Ecosystem Conservation," said that the world's Indigenous Day is commemorated every year on 9th August. Indigenous people across the globe are the driving force for the maintenance of ecosystems.
2. Siham Drishi (2023), "Indigenous peoples and the nature they protect", stated that the environments of the Indigenous people-occupied areas are less degrading in comparison to other areas. They worshipped all these natural resources as their deities that would help the other communities to learn how to attach with the natural resources and Mother Earth.
3. Sudipta Ghosh, Sukanta K. Sen, Subrata Mondal,(2022), "Ethnobotanical perspectives of Bakhar: an Indigenous starter culture used to prepare traditionally fermented rice beverage in rural West Bengal, India", pointed out that Indigenous people have an important influence of parts of the particular region for their affluent unique lifestyle, food habits and ethnic culture. Due to their distinct ethnic culture,

they are now recognised by the entire world. The ethnic drink of tribal people Haria as well as Bakhar has the ethno medicinal properties.

4 Effective role of indigenous people towards environmental sustainability

The world's Indigenous Day is commemorated every year on 9th August. This Day is celebrated to bring awareness of how the tribal people are crucial for environmental sustainability and to protect their rights. Making a better world and conserving of environment; their contribution should be acknowledged by observing this day. Their unique knowledge system, traditions, rituals, their simple lifestyle or simple living, everything is attached to the nature in form of forest, land, water, etc. They worshipped all these natural resources as their deities that would help the other community to learn how to attach with the natural resources and the mother earth. In the name of development, we are forgetting to live with nature. In this respect, this day is very important for all of us. As per the 2011 census data, the Indigenous population comprises 8.61 per cent of the Indian Population. The majority of tribal populations are living in North-East States. 94.44 per cent of Tribal populations are living in Mizoram, in Nagaland their population are 86.46 per cent, in Meghalaya is 86.15 percentages, Arunachal Pradesh 68.79 per cent, Manipur 35 percentages, in Sikkim 33.72 per cent, and in Tripura, its percentage is 31.76. In Central India, Madhya Pradesh consists of 21.09 per cent and Chhattisgarh 30.62 per cent. In the Eastern part of India, Odisha has 22.85 per cent and Jharkhand 26 per cent.

The definition of Indigenous people has been given by Martinez that "Indigenous are those who have historical continuity with pre-invasion and pre-colonial societies that developed on their territories; consider themselves distinct from other sectors of the societies now prevailing on those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, by their cultural patterns, social institutions, and legal system". In India, Indigenous people are called Tribal. There are so many names like Aborigines, Adivasis, the First Nation's people, forest peoples, Scheduled Tribes and Janajatis. They are also known as Nomads, peasants, and hunter-gatherers due to their occupation. From time immemorial, Indigenous people have been associated with the environment and nature. Generally, their relations are sustainable with the environment. Indigenous people have covered approximately a quarter of the world's land area and it is maintained by them. But, they are suffering a lot due to environmental degradation and disproportionately biodiversity loss.

The values of the Indigenous knowledge system of Indigenous people are meeting the sustainability of the environment. The environment of the Indigenous people-occupied areas is less degrading in comparison to other areas. It is because of their unique knowledge systems and their practices for environmental sustainability. They

are conserving the biodiversity. The Indigenous knowledge is collective and unwritten in form. It means their knowledge system passes from one generation to another generation within their community, not to other communities. It is not shared by everyone in every community. Their knowledge system incorporates all aspects of life and the holistic development of the people. Their ecological understanding and their relations with living and non-living beings are highly useful for saving our mother earth and environment. Their unique knowledge system is a problem-solving mechanism for themselves and it also facilitates sustainable development. The greatest example of African cultures has been recognised in the world due to the Indigenous knowledge system. The Indigenous people have idolized natural resources as their deities. The main connection with this is to sustain the cleanness of the environment and they are more important for sustainable development goals. Indigenous People and conservation of Natural Resources towards environmental sustainability

Indigenous people are the main preserver and protector of natural resources like Renewable Resources and some Non-Renewable resources such as land, forest, water, air and also fisheries, agriculture, coastal environment and also improving and conserving biodiversity. They believed that they were the protector and preserver of natural resources because they worshipped their god or goddess as well as observed rituals and this ideology or thought came from their ancestors. Their belief systems and value systems depend on conserving the ecosystem, environment, and sustainability.

4.1 Protection and preservation of Land

Twenty-eight per cent of the global land area is held and controlled by indigenous people. They are protecting their land through cultivation. They don't want human intervention in these areas. Indian Supreme Court has given the landmark decision that a non-Dalit and also corporation cannot buy land from the tribal peoples. The main aim of this decision that to protect the tribal land and it should be managed only by the tribal people. In India, in the year 2013, the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act (RFCTLARR) endowed with transparency regarding land acquisition and fair compensation to the affected families of tribal communities whose land has been acquired or proposed to be acquired. Indigenous people are preserving their land and environmental protection through their rituals beliefs and sustainable practices in farming, fishing and also cohabitating spaces with wildlife.

4.2 Protection and preservation of Forest

There is the full form of forest which is defined as F for Food, O for Oxygen, R for Rain, E for Eco-progress, S stands for Soil Conservation and T stands for Timber. For the survival of tribal people, they depend on forests such as medicinal plants, foods, timber, fruits, vegetables; fodder for cattle, etc. Indigenous people are the main preserver and protector of the forest. Some tribal people are taking shelter in the forest

areas also. The Indigenous community believed that they were the protector of the forest because they worshipped the tree as their god or goddess. This ideology or thought came from their ancestors as they observed rituals. They patch the sacred groves in the forest for their folk deities. In the Central Himalayas, the tribal people called “Bhotia” have the sustainable practice of collecting medicinal plants by examining the maturity of the leaves to avoid overharvesting. In India, the Forest Right Act of 2006 has provided the rights and occupation to the Forest Dwelling Scheduled Tribes (FDST) and the Other Traditional Forest Dwellers (OTFD). This act is only applicable to those FDST and OTFD who have been residing in the forest for at least three generations. The main aim of this right is to preserve protect, conserve and manage the forest areas' resources. This Forest Right Act has given the right to the Gram Sabha to adopt the local conventional practices of forest conservation and management within the community forest resource boundary. Odisha is the first state in India that has recognised the Community Forest Resources (CFR) within the Similipal National Park in 2016 and Chhattisgarh is the second state to have this recognition inside the Kanger Ghati National Park.

4.3 Protection and preservation of Air Quality

Air Pollution is a major issue for the environment. It is a most important concern for health issues globally. In the name of Industrialisation and Development, both developed and developing countries are responsible for air pollution. In comparison to developing countries developed countries like the USA and Some European countries the air pollution is more severe. Poor air quality is the main cause of many respiratory diseases such as Asthma, Emphysema or Chronic Obstructive Pulmonary Disease (COPD), lung cancer, etc. There are other common airborne diseases like cold, whooping cough, mumps, chickenpox, measles, ischemia and heart diseases. It also affects the nervous system, digestive system, urinary system, etc. India has taken an important programme to mitigate poor air quality like the National Clean Air Programme (NCAP) at the central level. There is an app named SAMEER developed for registration the complaints against air polluting activities. Therefore, Climate change not only impacts the general people but also impacts the lifestyle of Indigenous people though they are the protectors and preservers of air quality. Their contribution is very much crucial for sustainable ecosystem development. Their traditional knowledge, beliefs and heritage conserve natural resources like land, forests, water etc. Plantation and care for trees can improve the air quality of the Indigenous people are doing.

4.4 Protection and preservation of Water

Water is life for all of us and it is linked with the social aspects of life as well. There the customs and beliefs to consume the water in the temple as sacred water after worship of Deities. There are so many Hindu rituals which have the value of water as sacred. In Indigenous culture, water has relational values. They depend on water for their livelihood and spiritual practices. They have built up relations and are deeply interconnected with water, land and other living things. There are various methods for

the preservation and protection of Water in Indigenous communities and their precious knowledge of management of water resources has cultural and ecological importance. In India water saving method is found in Rajasthan, Maharashtra, Madhyapradesh & Uttarpradesh. In Rajasthan the name of this method is Khadins, Paar, Nadis and tanks, in Maharastra, it is called Bandharas and Tales and in Madhyapradesh and Uttarpradesh it is called Buddhism. In Betul Madhyapradesh there are just about 280 water conservation structures that were made by Indigenous People. Many of the countries like Ethiopia also have certain types of methods to conserve the water. World Water Day has been celebrated every year on 22 March since 1993. The main aim of this day is to preserve fresh water, awareness among the people; and recognise the role of Indigenous people to protect the water resources.

4.5 Protection and preservation of coastal environment and Fisheries

There are Marine Protected Areas (MPA) where Indigenous people and the local community of this area can participate and be involved in protecting the coastal environment and the fisheries. The Great Barrier Reef Marine Park in Australia, in the Philippines the San Salvador Marine Reserve and in American Samoa the Fagatele Bay Marine Sanctuary are examples of the Indigenous community involvement to protect and preserve the fisheries. In Canada and the Philippines, there are policies to access the fisheries resources by the Indigenous people. Indigenous people have the right to access these resources. The Indigenous knowledge systems are an indispensable factor for fisheries management in Sri Lanka's beach seine fisheries. Indigenous knowledge for prediction of situations is in the Sea sound and physical situations like height, direction and waves of the water, changes in the sea surface water, etc. Their wisdom and skills to know when the fish folk are coming when the season date will start for fishing and which is the off season for fishing. There is also another method called Madel Padu that emphasizes identifying the arrival of fish schools. To use the Indigenous Knowledge government officials like fisheries' inspectors and district fisheries' and also other fisher communities' could predict the species composition and quantify the fishing process for the next harvesting season. Their wisdom and knowledge system in this regard comes from their ancestor verbally which is not in written form. All governments would give importance to their traditional knowledge system to get maximum benefit from fisheries. Rathe Dameema is an example of the traditional knowledge system as an indicator for fisheries. Throughout the fishing season, they used the method of Walkela from Diyarkela which is very crucial for beach seine fisheries in Sri Lanka.

4.6 Sustainable Agricultural Practices

In agriculture, Indigenous people use medicinal plants in powder and liquid form from various plants and herb roots, tubers, rhizomes, seeds, fruits, etc. to protect them from various insects, and diseases of the plants. They used it for the improvement of productivity in agriculture and also for horticulture. This powder and liquid also help to resistance against pests and diseases. Wet rice cultivation is the best practice by the Apatani indigenous people in the area of Ziro Valley. This is the best example of

sustainable agriculture practices by this community. From the hilltops, the nutrients flow to the down which is bestowed with the nutrients and it helps to the growth of crops. Through the canal, streams come from hills for Land irrigation. Organic wastes are used for soil fertility and the recycling of crop deposits.

4.7 Conserving and improving the biodiversity

Indigenous people are the protector of 22 per cent of the earth's surface and 80 per cent of the planet's biodiversity though their population is only 5 per cent of the world population. There are seventeen mega-diverse countries identified by the World Conservation Monitoring Centre (WCMC) of the United Nations Environment Programme. They are India, Australia, Indonesia, Brazil, Colombia, China, Ecuador, United States, Madagascar, Malaysia, Mexico, Papua New Guinea, Peru, Philippines, Democratic Republic of Congo, Venezuela and South Africa to promote interest in conservation and sustainable use of biodiversity and traditional resources. In India, the Indigenous people believed that cutting down banyan trees may lead to famine and death; and their belief systems indirectly conserved and preserved the species. In comparison with other lands of the world, the decline of the biodiversity in the Indigenous Land is very less. Therefore, the Indigenous Community can fulfil the conservation goals.

4.8 Protection and preservation of Wildlife

There are thousands of wildlife extinctions and endangered that depend on the Indigenous land for their survival. This is because the Indigenous area is free from industrial and human impact. At the International level through the Global conservation programme, more than fifty countries are trying to save wildlife and wild places. The best example can be cited here that- The 'Dapo' is a tool through which the head of the indigenous community in Himalayan squirrel protected the wildlife by making the rules on hunting and making penalties for those who violate the rules. Another example can be cited that; the Adi tribes of Arunachal Pradesh religious believe that Tigers, Sparrows and Pangolins are the well-wishers of the human race. Therefore, they should not hunt.

4.9 Protection and preservation of Medicinal Plants

Plants are preserved by the Indigenous People from the beginning of civilization. Some plants have medicinal properties that serve as a source of wild edible foods and beverages in the form of roots, tubers, rhizomes, seeds, fruits, etc. In agriculture, they used these medicinal plants as a powder to protect from various insects, and diseases of the plants. Indigenous people like Garasia, Bhil, Damor, Kalbelia, Kathodia and Meena are living in the southern part of Rajasthan. The areas include Chittorgarh, Udaipur, Banswara, and Dungarpur districts. In these areas the Tribal people have used their unique traditional knowledge for documenting the medicinal plants which they have used from time immemorial and the Garasia ethnic groups are more recognized for their widespread knowledge about ethno medicinal plants. Bakhar

plants are found in Odisha, Assam West Bengal and other parts of Tribal areas in India. The roots of the Bakhar, Chaoli, rhizome of Bach and Kedar plants, bark of Lodh plants and some other ingredients are used for the preparation of Haria in West Bengal, Handia in Odisha and Bakhar in Assam as an ethnic drink of tribal people. Haria or Bakhar have ethno-medicinal properties. It is a unique indigenous beverage which is rich in antioxidants. It helps the oxidative damage and inflammation and also reduces the risk of chronic diseases and heart disease and it impacts cardiovascular health. The ethnobotanical survey discloses that there are ten plant species and one lichen species are used for the preparation of Haria (Handia) or Bakhar by the Santal, Munda, Bhumij, Lodha, Mahali, Oraon, Sabar, etc communities in West Bengal and Odisha. It is used mostly during celebrations like marriages, birth anniversaries and festivals. It is also used during summer because Indigenous people believe that it cools the stomach, gives high energy and protects people from extreme heat. It is also offered to the deities as a sacred drink some of the indigenous rituals.

Table-1

LISTS OF SOME PLANTS CONSERVED BY INDIGENOUS PEOPLE OWING TO RELIGIOUS BELIEFS

Sl. No	Local Name	Vernacular Name	The name of God/Goddess live in plants
1.	Baka	Agasti	Lord Narayan
2.	Karavira	Krabi	Lord Ganesh
3.	Nilapadma	Kamal	Goddess Ambika
4.	Sweta Padma	Madar	Lord Shiva
5.	Arjun	Arjun	Lord Brahma
6.	Bijapura	Nibu	Lord Brihaspati

Source- Tropical Forest Research Institute, Jabalpur, Indian Council of Forestry Research and Education, Madhya Pradesh, India

This data shows that the indigenous people are spiritually connected to nature. Their religious beliefs conserve and protect the plants. In the Indian context, those who are Hindu believe that God or Goddess is reciting in the plants. There are some examples given in the form of a table. Therefore, they protect and conserve the plants as well as the forest.

Table-2

Lists of Medicinal Plants Preserved by Indigenous People

Sl. No	Local/ Vernacular Name	Scientific Name	Medicinal use for some diseases and Benefits
1.	Multi-Vitamin green	Sauropus androgynous	Cough, Fever, Urinary Disorder
2.	Bacha	Acorus Calamus	Metabolic, Respiratory Disorder
3.	Rakta khai	Ventilago	Dyspepsia Leprosy,

		Madraspatana	Puruitis
4.	Bramhajasthi	Clerodendrum Serratum	Inflammation, Fever
5.	Olata Kamala	Abroma Augusta	Regularise Menstrual Period, Sleeping Disorder
6.	Basanga	Adhatoda Vasica	Headache, Cold, Fever, Asthma
7.	Rukuna Hatapocha	Coleus Barbatus	Malaria Fever, Cough
8.	Ghoda Bacha	Alpinia Galangal	Fever, Muscle spasms, intestinal gas, swelling
9.	Anantamula	Hemidesmus Indica	Skin Infection, Rheumatism, Leprosy
10.	Kala Haladi	Curcuma Montana	Cough, Hepatic and Biliary Disorder
11.	Sadabihari	Vinca Rosea	High Blood Pressure, Diabetes
12.	Ayapana	Eupatorium Triplinervis	Bleeding Piles, Diarrhoea
13.	Bhrungaraja	Wedelia Chinensis	Fever, Child Birth

Source- Kalinga Institute of Social Science's Medicinal Plants Garden

This table shows how some medicinal plants are recognised by the Indigenous people and they are protecting these medicinal plants. They know how to use these plants for some diseases. There are some examples given in this table.

11. Protection of Mountain

There is a requirement to engross the Indigenous people for sustainable mountain development because the Mountain is considered sacred to them. The centre of the belief system of Indigenous people is to preserve the ecosystem. They are providing their traditional knowledge and value system on how to adapt the climate change. One of the examples that can be cited here is that the Akas Tribals of Arunachal Pradesh believed that Mountain Vojo Phu is the sacred mountain and for that, they have restricted to access it. The purpose is to protect the local flora and fauna. They are protecting and reducing the soil erosion and the risk of disaster in the mountain areas and also conserving the water resources. But, the mountain dwellers are dwelling on the mountain and mountain area. They should be aware that the future of the next generations depends on stewardship of the environment. There is a need to understand the sustainable relationship between humanity and the environment.

5 Conclusion

Indigenous Communities are connected with nature predominantly in the areas of forest, mountain and hill areas and they are the most important preserver and protector of natural resources such as land, forest, water, air and also fisheries agriculture, coastal environment and improving and conserving the biodiversity.

Through their decent work, they can be the change agent of climate change, protection of the environment and sustainable development. They believed that they were the protector and preserver of natural resources because they worshipped the trees, water land, etc as their deities as well as observed rituals and this ideology or thought came from their forefathers. There is a need to promote the unique knowledge systems of the Indigenous Community. There is the possibility for a solution to the sustainable development of India. Their knowledge system teaches us to love the environment and protect the environment. It encourages a sense of belongingness for the environment and we have the responsibility towards environmental sustainability. In the name of development, we people are responsible for destroying the environment. The main theme of sustainable development is "Live and let them live". Indigenous people are the greatest example of admiring this theme. The roles of the Indigenous people are more important for sustainable development goals. Indigenous people's future becomes everyone's future nowadays. Not only India but also the whole world is concerned about sustainability, protection of environment and climate change. However, Indigenous people always preserving and protecting the environment and their simple living is not hampering climate change and their unique knowledge systems and Practices are exploring environmental sustainability. United Nations conducted the Millennium Ecosystem Assessment (MEA) that considered the impact of environmental change on human beings. So, there is a need to take major action to protect and preserve the environment as well as for sustainable development.

The Report of the MEA emphasised the "Ecosystem Services" which are life-supporting services for human beings. Therefore, in India, both state government and Central government are giving focus and doing various research on Indigenous People. Nowadays, not only India but the entire world is recognising and adopting their unique knowledge system to protect and preserve the environment. There is a need to promote their unique knowledge and wisdom. We should take as lessons from Indigenous communities for ecosystem conservation, environmental preservation and protection; and sustainable development. In the name of development, we are forgetting to live with nature. So, like Indigenous people, we should Love the environment and protect the environment. We should value them in terms of respect, build up relationships with them, and reciprocity their knowledge system to protect the environment and we have a responsibility to assimilate into the mainstream. The Indigenous population is only 5 per cent of the world's population but they are considered the curators of 80 per cent of the world's biodiversity. Therefore, the roles of Indigenous People are very effective for sustainable development.

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