

**BOT- 401**

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**PROJECT WORK**

**ON**

**STUDY ON NATURAL RESOURCES OF NAGALAND**

**Submitted to:**

**Ma'am K.Hanako Jamir**

**Department of Botany**

**Submitted by:**

**Name: Temsutola**

**Roll no – 44**

# Contents

1. Acknowledgement
2. Objectives
3. Introduction
4. Forest resources
5. Water resources
6. Mineral resources
7. Conclusion
8. Photo gallery
9. Reference

# **INTRODUCTION**

The important natural resources of the state of Nagaland are in the form of forests, rivers and mineral resources.

Nagaland is endowed with rich forest resources including various types of flora and fauna. About 20% of the total geographical area is under the cover of tropical and sub-tropical evergreen forests including palms, bamboos and rattan as well as timber and mahogany forests. The forest cover in the state of Nagaland is around 12,966sq km, the forest in Nagaland has been classified on the basis of canopy density into pre-defined class i.e. Very Dense Forest (VDF), Moderately Dense Forest (MDF) and Open Forest (OF). The forests of Nagaland also gives shelter to a number of species of animals including elephants, bears, many species of monkeys, sambar, deer, oxen and buffaloes.

The predominant sources of water in Nagaland are surface water in rivers, streams, ponds natural springs and sub surface water occurring as ground water.

Some of the major rivers flowing through Nagaland are Doyang, Dhansiri, Dikhu, Tizu, Tsurong, Nanung, Tsurang, Chathe, Tsumok, Menung, Dzu, Langlong, Zunki, Likimro, Lanye, Dzuza, Tepuiki and Maglu. Out of this the 4 main rivers are Doyang, Dhansiri, Dikhu and Tizu.

Coal, limestones, nickel, cobalt, chromium, magnetite, copper, zinc, platinum, petroleum and natural gas are the major minerals available in Nagaland.

The state has huge caches of unutilized and unexploited limestone, marble, granite, petroleum, and natural gas. Coal is found in Nazira, Borjan, and Tiru valley of Mon district. Limestone of grey to whitish grey colour is found at Wazeho and Satuza in Phek district and at Nimibelt in Tuensang district. Haematite at Reguri and Chalcedony deposits at Akhen village has been recorded. Identification and preservation of geological monuments has been taken up. Shilloi Lake at Lacham, Dzuda pond in Phek district, Thizama pond at Kohima Tsumang pond at Wokha and Amoklushi pond at Mokokchung has also been delineated and assessed. Three geo-tourism potential sites at Yonthong, Yankhet and Tiphum with magnificent waterfalls and caves were identified.

# **Forest resources**

Every resource that we are using in our daily lives is from the forest. The forest is a living system composed of many species of flora, fauna and microorganisms interacting together and environment in which they occur. Forest account for 75% of the gross primary productivity of the earth's plant biomass. Human society and forests influence each other in both positive and negative ways. Forest provides ecosystem services to humans and serves as tourist attraction. Tress together with herbs and shrubs under the tress in the forests not only provide timber, but food, shelter and habitat for wildlife. Living organism in the forest ecosystem can be used for fuel, medicines herbages etc. The forest ecosystem service is of great benefit to the humanity particularly for improvement of our living environment, and providing recreational and aesthetic experience. For all those reasons, the forest should be managed as a system if all functions and products are expected.

Forest resources and its uses in the Mon village of Mon district is being studied and explained in the following. The forest areas in the Mon village covers about 4.5 km square approximately which is 60% of the whole village area. The forest is thick with varieties of trees and plants; rich in fuel woods, food, fruits, timber, medicinal plant etc

Different types of resources are available in the forests that are important in our daily lives. The people of Mon village use the resources wisely (according to elderly people) they use the main water source from the Taphi river flowing in the middle of the forest between the Mon village and Aboi town boundary. The forest provides medicinal plants like Tulsi, Momordica charantia which is used for high fever diabetes etc are found. Tress are used for firewood, for building houses and also for making furniture which ultimately leads to deforestation but aforestation are also being done every year according to the villagers. This eventually led to the increase in economic field. About 20% of the forests are being used for agricultural purposes. They also get varieties from the forest like jack fruit, banana, orange etc. the bamboo are used for many purpose like handicraft making, utilizes for kitchen like spoons and storage tools purposes. The villagers had been practising the plantation of bamboo from the very long. The forest areas are also being used for park like the Mon view park which

is located at the south of the village for tourist attraction. The forest also yields crops in terms of agriculture aspects for the beneficial of the villagers. Due to maximum area of the village being covered by the forest with huge trees there is a prevention of natural calamities like landslides and shortage of water, some of the villagers practice rearing of bees in the forest. Due to thick forest there is heavy rainfall in the month of July to the end of October which is good for agriculture as well as for the forest in order to yield more fertile crops and trees that will provide more resources. According to the villagers life has been becoming easier and easier as they are getting many useful resources and a new resources with the idea to use it in many more ways.

As we all know that forest conservation must be conducted everywhere, it is to us who should take the initiative. Every individual is responsible for the protection of forest. Most of the people rely on the forest for the living, for instance, the forest provide foods, fuel, medicine etc which gives them daily needs. Nowadays forests are the tourist attraction centres which could help in the people economic activities.

However, overuse of the forest resources could bring adverse effects. We must search for the alternative sources to save forest resources and to keep a balance.

Therefore forest areas should be managed by the Village Council Board for the betterment of the villagers. Forest areas should be checked and monitored strictly every year. Seminar on the awareness programme should be organised for the villagers.

The forest also provides habitat for the flora and fauna. Some of these examples are. Nagaland Zoological Park, Rangapahar, Fakim Wildlife Sanctuary, Singphan Wildlife Sanctuary and Intanki National Park covering 222 sq km which constitutes 1.34% of the total state's geographical area.

# **Water resources**

The sources of water in Nagaland are in the form of rivers, streams, ponds and natural springs. The water in these is mainly sustained by the heavy rainfall received in the state which is of the order 2000-2500 mm, one of the highest amongst all states of India.

As we all know water is the elixir of life and it is required for the existence of living organisms and apart from this use and as a habitat for the aquatic organisms, water also plays a major role in the production of power i.e. electricity through hydro projects. Some examples of this are the Doyang hydro project in Wokha district, Dikhu electrical project covering many villages across Longleng, Mon and Mokokchung districts and other mini hydro projects set up at Chizami village in Phek district, another at Lang, Noklak sub division in Tuensang district.

Out of these hydro projects the Doyang hydro project is studied and explained below;

Doyang, the biggest and the largest and also the most important river in Wokha district in Nagaland first flows almost north with slight turns towards east when it receives an addition of Saju; an eastward parallel tributary. The river then enters Zunheboto district still flowing northwardly. At the west of Litami it makes westward bend and emerges to the western Lotha area in the Wokha district and proceeds towards westward direction forming a boundary line between Sema and Lotha areas.

Doyang is not only important for Wokha district alone. But it is equally important for the state of Nagaland as well. In the valleys along the Doyang river, modern system of cultivation like terracing and wet rice cultivation with irrigational system are being carried out successfully. In Wokha district such major three areas are near Pangti, Aree Changsu villages locally called Jentsu hayi Rantsu hayi and Jendong hayi. Besides terracing and wet rice cultivation vegetables and some kind of fruits are also abundantly and luxuriantly grown in these areas.

As plains are rarely found along the Doyang River and the district, these plains are areas of great significance not only for the people who own them but are equally important for the people of the whole district. Effort was thus made to encourage the villagers to adopt more than system of cultivation. As a result of which wet rice cultivation is successfully done

here. These areas in fact became the "Rice Basket" of the local people. Besides, paddy, vegetables and various kinds of fruits are being cultivated not only for self consumption but also for selling in the market. Doyang River provides not only fertile plains but it at the same time provides a large variety of fishes to the people of the district.

The Doyang hydro electric project envisages the construction of a 87.50 m. High rock field Dam with an impervious core across river Doyang and create a reservoir having a life storage capacity of 370.0 m cum between FRI (Full Reservoir Level) 330.0 m and MDDL (Minimum Draw Down Level). The transmission line project for DHEP was approved by the Government of India in March 1985 at an estimates cost of Rs 4087 lacs. This transmission system which is being executed by NEEPCO envisaged evacuation of power from Doyang Hydro Project. There are three main transmission lines covered by the project mainly: 132 KV Double Circuit Doyang-Dimapur Line (98 km), 132 KV Single Circuit Dimapur-Imphal Line (188 km) and 220 KV Double Circuit Dimapur-Missa Kathia transmission line (112 km). Within the state i.e. Kohima-Doyang and Doyang-Mokokchung are also being constructed.

Power in the form of electric energy is the most important critical inputs in the growth of economic development of an area. The technological innovation is probably the most important factor responsible for modernization and agriculture, industry and cultural refinement. Dams are useful for flood control. Navigation, cheap energy and irrigation which help in giving high productivity. Their water is useful for both domestic and industrial purposes. They also have cooling effect on the local environment.

The Doyang Hydro Electric Project therefore has tremendous developmental scope if planned in a more concerted way and with sincerity. The overall belief of the people of Nagaland is that the Doyang Project will prove to be the Golden Goose of Nagaland someday when the project is fully commissioned.

# **Mineral Resources**

Nagaland is blessed with rich natural resources. Of these, coal is one such resource which can uplift the economy of the local people and Nagaland State in general if utilized properly.

Coal deposits are distributed in 8 districts of the State existence of coal was first known in 1842 though a detailed reports in the State is yet to be brought out, according to a booklet on 'study of coal mining areas in Nagaland and its impact on environment'.

The most practised coal mining method in Nagaland is rat hole mining. In districts like Mon and Longleng, open cast mining is actively practised too. As of now, the current picture of coal mining in the State is not a pleasant sight as it done without any proper planning leading to wastage of coal reserves and causing hazards such a landslide and subsidence in many areas.

This poses a threat to the flora fauna and local people living in the vicinity. The mining maybe for a short period of time but the impact is lasting in long term. Therefore it is the responsibility of the people to adopt better measures and find ways for a safer healthier and a productive mining.

Apart from coal the other natural resource found in Nagaland are described below-

Petroleum and natural gas (about 600 million tons) in the North-West along Nagaland-Assam border. Limestone and marble (with inferred reserve of 1000 million tons). Magnetite with Nickel, Cobalt and Chromium (5 million tons of proved reserved). Rich deposits of varieties of decorative and dimensional stones and other associated metals like Zinc, Molybdenum and other possible precious metals such as Gold, and Platinum groups of elements in Phek, Kiphire and Tuensang districts of South-East Nagaland.

Coal (with inferred reserve of 150 tons) in Tuensang, Mon and Mokokchung districts.

# **Conclusion**

Nagaland is endowed with rich natural resources such as large forest covers, a number of water bodies and important mineral resources. But the state does not seem too much concerned about their valuable holdings.

Unorganised and haphazard mining activities are causing environmental degradation while each quantity of coal is being exploited every year. Coal mining also causes other problem like the exposure of underground rocks and minerals releasing toxic gases on reaction with Oxygen, water and sunlight caused air pollution which contributes the global warming, climate change etc. it can also be harmful to the aquatic organisms specially fish. It is also reported that people living in the vicinity of mining sites have problems drinking water because of the presence of high Iron content and causes water borne diseases like typhoid, jaundice, cholera etc.

Excessive cutting of trees and clearing of forest resource for agriculture, firewood and to set up infrastructure has led to the degradation of our natural forest resource. In the same way setting up of Dams for electricity also has a negative impact as it clears the forest cover , improper management of water resource and polluting it by adding chemicals for fishing is also a common sight in our State.

Therefore every single person is responsible to protect and adopt wise management of our natural resource. We can educate one another the importance and the ways to preserve and protect our resources. Proper plans should be made before a project such as Hydro project and mining is done so that the positive impacts would be much greater than the negative impacts. Protection of the forest cover through the village councils is also a healthy step in protecting our resource. Setting up of seminars and creating awareness programmes should be a good way and must be actively practised by the citizens of Nagaland.

# Photo gallery



Forest resources in the form of firewood, timber and bamboo products.



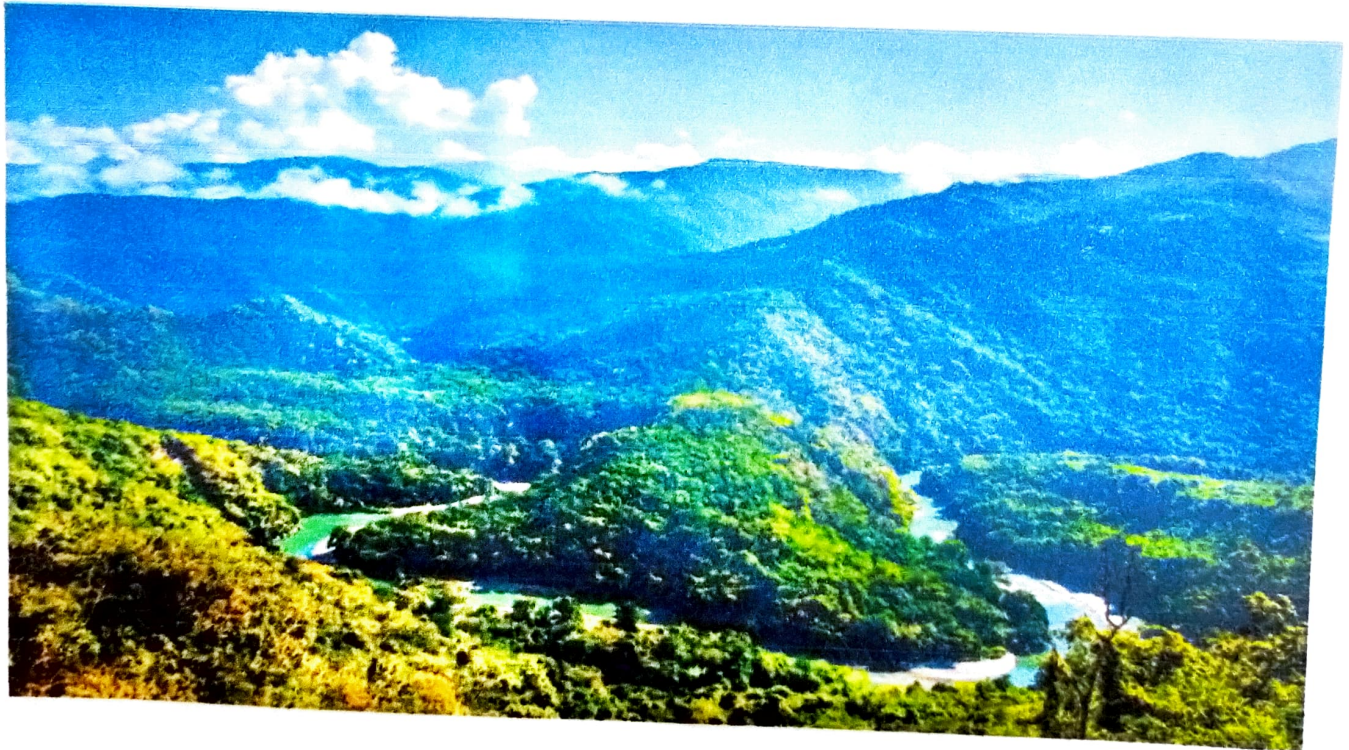
**Doyang Hydro Project, Wokha**



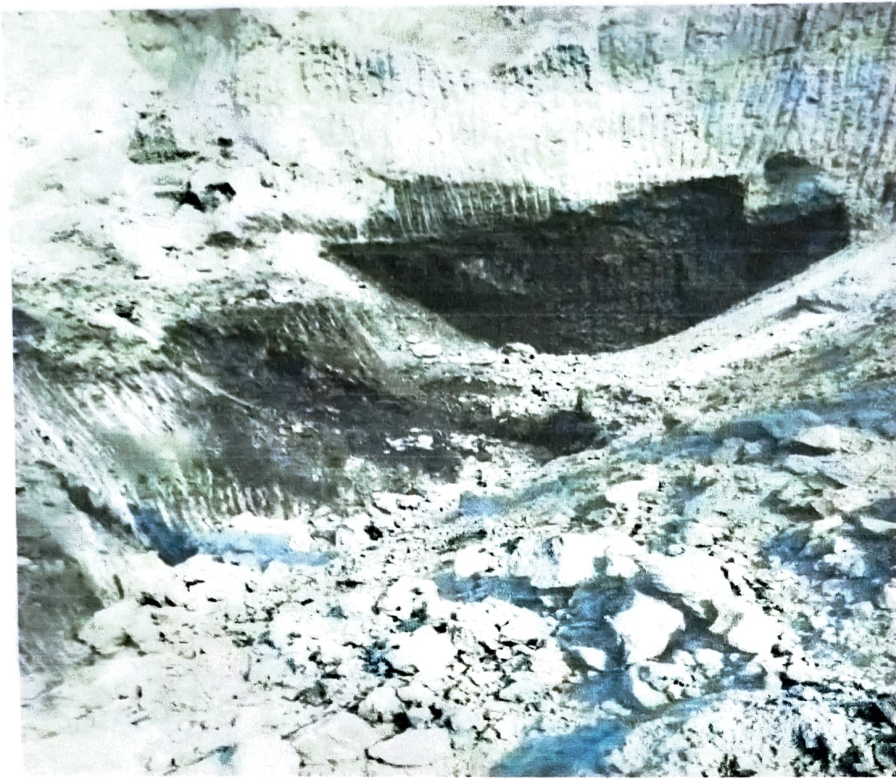
**Likimro Hydro Project**



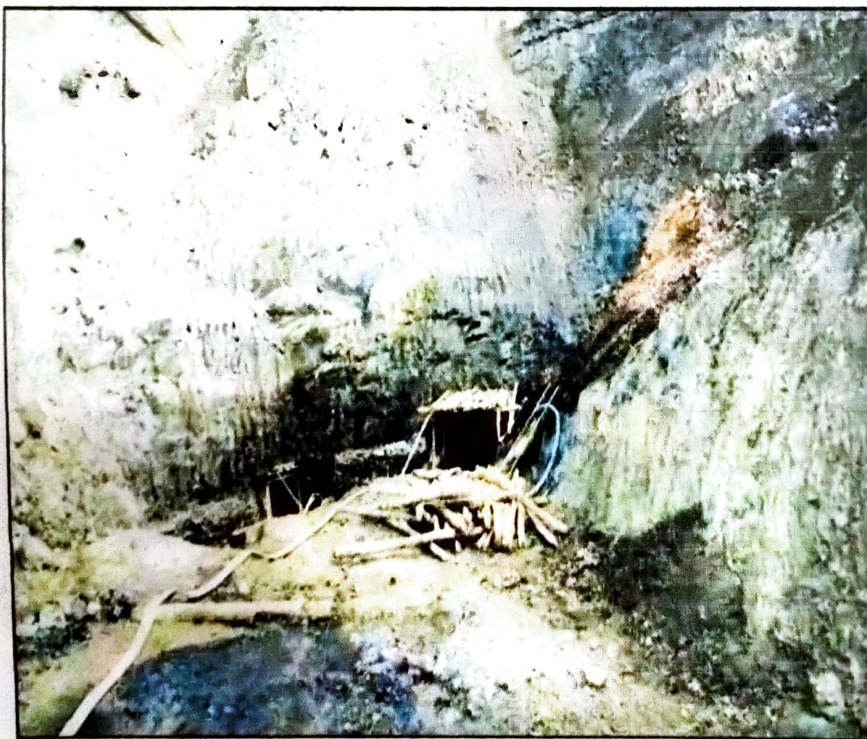
**Dikhu River Mokokchung**



**Tapi River and its forest, Mon district**



**Open cast coal mine at Lakhuni village, Mokokchung**



**Coal mine in Naginimora, Mon district**