

PHYSICAL ENVIRONMENT AND NATURAL RESOURCES OF ANCIENT NĀLANDĀ

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Abstract

Ancient Nālandā in Magadha Kingdom during the time of pre-Buddhist society was been very famous as the seat of Mahavira, Jainism leader. Yet, its popularity and peak of existence was proclaimed by the world only in the time of Buddha and post Buddha era, after the founding of Nālandā Mahavihara as seat of higher learning. Based on its patronage systems and donations by popular rulers of Magadha Kingdom, Nālandā Tradition gave birth to many intellectual scholars [thinkers] across the world, especially on philosophical analysis [epistemology and metaphysics]. Many scholars over the globe, irrespective of the social norms, caste, religious practices and race have travelled to Nālandā in pursuit of learning. The philosophical explorations, logical arguments and deliberations [debates] were very essential part of the tradition in teaching-learning pedagogies. Monks or populace in the Mahavira was sustained by the economy structure of patronage system through donations and gifts. On other hand, physical environment and the natural resources of Nālandā has equal contribution in the rise of Mahavihara yet, it is one of the controversial discussion with the least record of it. This paper will present the account of environmental status of ancient Nālandā of Magadha Kingdom, nature's gifted resources upheld the growth of Ancient University.

Keywords: Nālandā, Natural Resources, Mahavihara, Ancient, Tradition

ANCIENT NĀLANDĀ

Nālandā is one of the oldest city in Rajgir of Magadha Kingdom [currently in Bihar], India and is famous for the ruins of ancient Nālandā University. It has ruins of its rich past scattered all around. Sculptures, Stone inscriptions, Buddhist statues are still to be seen amongst the ruins. Good network of roads connects Nālandā to the other cities of the state making it accessible from all the parts of India.

An ancient Nālandā is found of famous in its existence of Nālandā University, founded in the 5th century AD, is an ancient center and seat of Buddhist higher learning in Rajgir, northeastern India, not far from what is today the southern border of Nepal and survived until 1197. It was devoted to Buddhist studies, but also trained students in fine arts, medicine, mathematics, astronomy, politics and the art of war. For some 700 years, between the 5th and 12th Centuries, Nālandā was the center of scholarship and Buddhist studies in the ancient world.

Though the Buddha visited Nālandā several times during his lifetime, this famous center of Buddhist learning shot to fame much later, during 5th-12th centuries. Hieun Tsang [Xuanzang (602 – 664), born Chen Hui, was a Chinese Buddhist monk, scholar, traveler, and translator who traveled to India in the seventh century and described the interaction between Chinese



Fig.2 [Excavated ruins of ancient Nalanda University]

Buddhism and Indian Buddhism during the Harsha-Vardhan Empire], stayed here in the 7th century AD and left detailed description of the excellence of education system and purity of monastic life practiced here. He also gave a vivid account of both the ambiance and architecture of this unique university of ancient times. In this first residential international university of the world, 2,000 teachers and 10,000 monk students from all over the Buddhist world [Nālandā University attracted pupils and scholars from Korea, Japan, China, Tibet, Indonesia, Persia and Turkey] lived and studied here. The center had eight separate compounds, 10 temples, meditation halls, classrooms, lakes and parks. It had a nine-story library where monks meticulously copied books and documents so that individual scholars could have their own collections. It also has a link with the Buddha as he often came here and two of his chief disciples; Sariputra and Moggallana came from this area. The large stupa is known as Sariputra's Stupa, marking the spot not only where his relics are entombed, but where he was supposedly born. The site has a number of small monasteries where the monks lived and studied and many of them were rebuilt over the centuries. One of the cells belonged to Naropa [Samantabhadra, Naropa (1016-1100) was a contemporary of Atiśa. Naropa was born in a high status Brahmin family of Bengal. Naropa's instructions inform Vajrayana, particularly his six yogas of Naropa relevant to the completion stage of Anuttarayogatantra], who was instrumental in bringing Buddhism to Tibet, along with such Nālandā luminaries as Shantirakshita and Padmasambhava [**Guru Rimpoche-Slob-dpon-“Teacher”**, or **Padma 'Byung-gnas-“Lotus Born”**, flourished in 8th century, the legendary Indian Buddhist mystic who introduced Tantric Buddhism to Tibet and who is credited with establishing the first Buddhist monastery there]. Nālandā's main importance comes from its Buddhist roots as a center of learning.

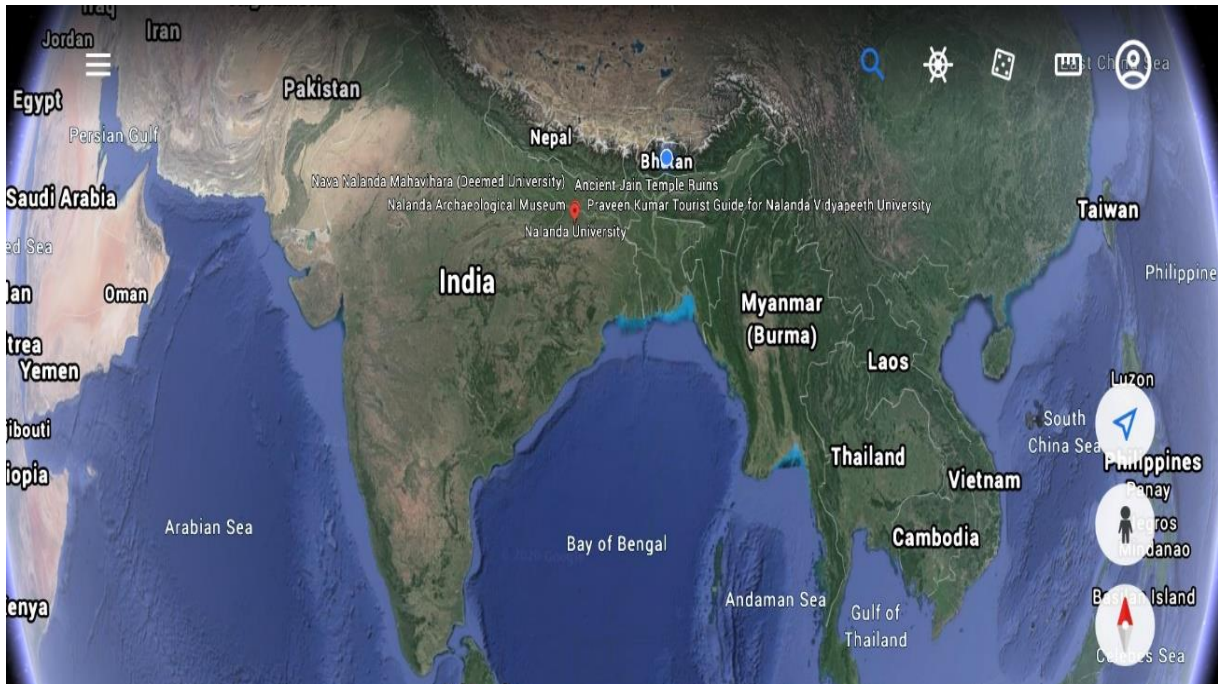


Fig. 1 [Map of the world locating the ancient Nalanda in India]

The Gupta kings patronized these monasteries, built in old Kushan architectural style, in a row of cells around a courtyard. Emperor Ashoka and Harshavardhana were some of its most celebrated patrons who built temples, monasteries and viharas in Nālandā. Yet, Great Mahavihara along with fire library of over 9 million manuscripts was brought down to the ground by great fire and at the beginning of the 12th Century, the Muslim invader Bakhtiyar Khalji sacked the university which marked the end of Nālandā Tradition in India. However, we can trace its gradual decline of Tradition back to 7th-9th century in connection with revival of Brahmanism, shifting of patronage system and emergence of ritualistic practices, (Singh, 2013). It was in the 1860's that the great archeologist Alexander Cunningham identified the site as the Nālandā University and in 1915-1916, the Archeological Survey of India began excavations of the site. What has been excavated to date is only a small part of the entire site but much of the ruins are beneath existing villages and are unlikely to be revealed. Recent excavations have unearthed elaborate structures here. An International Center for Buddhist Studies was established here in 1951. Nearby are the International Centre for Buddhist Studies and the Nava Nālandā Mahavihara, set up for the research of Buddhism. The ruins of the world's most ancient university lie here which is 62 km from Bodhgaya and 90 km south of Patna.

GEOGRAPHY OF ANCIENT NĀLANDĀ

The city of Nālandā located at a distance of about 90 kms from Patna and is spread over an area of 2367 sq. km². Nālandā is located at 25.1368° North latitude and 85.4438° East longitude. With its sightseeing locations it has emerged as one of the major tourist destination that attracts visitors from all over the world. Located at an elevation of 67 metres above the sea level and occupying an area of about 2367 sq. kms, Nālandā shares its border with Gaya district and Jehanabad district to

the West, Nawada district to the South, Patna district to the North, Sheikhpura district to the East. Nālandā has a rugged topography that sometimes proves unfavorable for agriculture, yet agriculture is the main occupation here.

With the gradual diminishing of Indus Valley, the focus of civilization shifted eastwards to the Gangetic plains marked by conducive climate and accessible abundant natural resources critical for human development. The region of Magadha bordering the eastern edges of the Gangetic plains not only enjoyed the aforementioned but also was sheltered from invasions or power struggle for an appreciable length of time (12th century CE). The advantage enjoyed by Magadha manifested in it becoming the seat of power, trade, and culture for dynasties who ruled an appreciable part of the Indian subcontinent from Rajagriha (or Rajgir) and later Pataliputra (or Patna, capital of Bihar today) till the close of 12th century CE, (India, 2009). Presently, Nālandā is located in Rajgir of Bihar state of India.

Nālandā Mahavihara was structured in the middle of a mango grove in an environment with

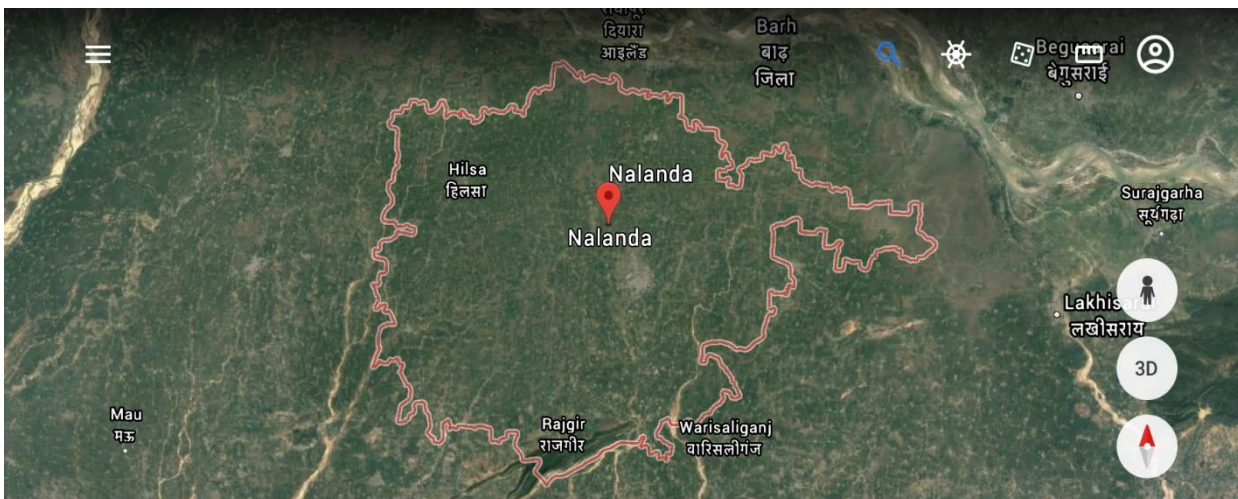


Fig. 3 [Boundary of Ancient Nālandā in Magadha Kingdom, India]

numerous trees and water bodies. This geography was recognized for its sanctity of the epicenter of Buddhism since its inception. Its significance was further enhanced in the 3rd century BCE when Emperor Ashoka consecrated the corporal remains of Sariputta, one of the foremost disciples of the Buddha. The construction of a stupa later became the nuclei of Nālandā Mahavihara, (Loizzo, 2014). Gradually, with an aid of invariant royal patronage, the Nālandā Mahavihara became an expansive prestigious educational facility by the turn of the millennia. The conversion of an excavated remains uncovers the source in the activities of the protective evidenced by blackening of stucco and brick surface.

In modern Nālandā, the main source of environmental pollution in the area is associated with the movement of motorized vehicle along the village level road which connect the state highways 82 to 110. This road is the only metal-topped carriage-way for growing settlements in a 5 km stretch. Traffic regulation of the same will be addressed through the Master Plan and regional transportation plan to be prepared by the Nalanda Dist. Administration, State Govt. of Bihar. The remains of Nālandā Mahavihara demonstrate the attributes of planning and layout. Architectural

development and iconographic development is unique to Nālandā. The ensemble consisting of temples and stupas were the seats where fundamentals of Yogachara School and Madhyamika developed. The Zone which lies at a distance of 5 to 400 meters from the main assets consists basically of agricultural land and water bodies. The re-imaging the original structure to Nālandā Mahavihara, it guards the site against the effect of surging pollution and unplanned development. It also has structures like site museum and an interpretation centre. The other institutional buildings and Property are protected by AMASR [The Ancient Monuments and Archaeological Sites and Remains Act of India], 1958 (Amendment and Validation, 2010), a national-level law. This signifies that all the values of the excavated area and its surrounding remain safe from improper development. The area is also handled by the National Monument Authority and office of the District Commissioner, State Government of Bihar, (Archaeological Survey of India, 2009).

SPIRITUAL AND NATURAL RESOURCES

Hills Land of Rajgir and Giriya, the hills consist of two parallel ridges extending around 65 km. Between these two ridges lie a number of places of historical importance and are sacred in both Buddhism and Jainism. Except the hilly regions such as Barabar, Nagarjuni hills, etc., most of Nālandā land is of alluvial soil enriched by the Ganga River. It is the good condition for the development of agriculture and indeed agriculture is the economic base of the region. Moreover, with the warm and humid climate which allows the cultivation of rice, in which rice became the main harvest from the beginning of human population here. The prosperous agricultural economy of the place has attracted many religious practitioners who came to spread their teachings. They practiced meditation in caves in Barabar or Nagarjuni hills and went to the nearby villages for alms. Some of the Buddhist councils were also said to be take place in Nālandā [Saptaparni Cave- it is a Buddhist cave site about 2 kilometres (1.2 mi) southwest from Rajgir, Bihar, India. It is embedded in a hill of Rajgriha. The Saptaparni Cave is important in the Buddhist tradition, because many believe it to be the site in which Buddha spent some time before his death, and where the first Buddhist council [around 483 BC under the patronage of King Ajatshatru. It was presided by Mahakasyapa, a monk] was held after Buddha died (paranirvana)]. The fact can be proved by the inscriptions left on the caves and by literary evidence of rice donation. Buddhist monks were among those wandering ascetics in Nālandā. It is believed that Nagarjuni hills was named after the eminent scholar- Nagarjuna when he remained there for the practice of meditation. Based on this event, we can theorize that he was also spreading the teaching of Emptiness (sunyavada) in Nālandā and thus essentially started the scholastic formation of the later Nālandā Mahavira. The question of 'why did Nagarjuna travel far from the South to establish his theory?' can be raised up. To answer this question, we can trace back to the rich religious background of the place. Not far from Nālandā is Bodhagaya, where Gautama Buddha attained his enlightenment (Nirvana). Then, the Buddha himself chose Magadha [The second turning is said to have taken place at Vulture Peak Mountain in Rajgriha, in Bihar, India. The audience comprised bodhisattvas; in some telling there were also shravaka arhats there as well] to establish and develop the teaching of the truth he discovered. Besides Buddhism, it is also the home town of other religions such as Jainism. Mahavira, the founder of Jainism also attained enlightenment and started his teaching in the region. Hence, Nālandā was the center of various spiritual traditions. Consequently, it is reasonable for Nagarjuna to choose the place for propagating his thesis. Nagarjuna is considered as the founder who placed the first cornerstone for the development of Mahayana Buddhism, profoundly based on middle way

approach. With his important position to the evolution of Buddhism, there is no reason to deny the possibility of his presence here related to the emergence of Nālandā Mahavira in its embryonic stage, (Singh, n.d.).

The local essential factor contributing to the formation of Nālandā Mahavira give glimpse of natural resources of the region. The water source ranging from gigantic Ganga river to small streams and the natural engraved pounds were abundance in the region which gave raise to adoption of farming system, later it supported the Nālandā Mahavihara. The rivers of Phalgu, Mohana, Kumbhar and Jirayan are the main providers of water on land in Nālandā district. In addition, every year, the region receives plenty of rainfall during monsoons from the Southwest, mostly in Sumer and Autumn. With such rich sources of water, it permits the possibility to preserve the water for usage in dry seasons, both artificial and natural reserves like pounds. It is vital element for the sustainment of Nālandā Mahavira which was later home of thousands of monks and scholars. All of those environmental factors conditioned the basis for the emergence of Nālandā Mahavira in approximately beginning of Common Era to its decline in 12th century together with the disappearance of Buddhism it is motherland Indian.

CLIMATIC CONDITION OF NALANDA

The climatic conditions in Rajgir had influenced revolution and evolution of Second urbanization in Nālandā. The main evidence is that the religious beliefs and practices influenced the natural environment, sacred complex and spatial characteristics of a natural and cultural phenomenon. The geography of Buddhism in Nālandā is primarily concerned with how religious form affects landscape. It has internal and external dimensions which relate to its ethics and ceremonies. The effect of myth on development of landscape and its implications in the perception of space is also important. Nālandā is mostly covered by alluvial soil except the hilly region of Rājagriha. The whole region is marked by four types of soil formation; clay loam, fine loam, loams, and coarse loam mainly take from alluvium deposits of the southern Ganga plain. Topography of Nālandā is arising from the contacts of the plains with small, flat topped, and heavily eroded hillocks supported by embayment of alluvium soil. The wide stretch of flood plain of north Bihar provides vast land for it. The banks of Jheels and Chauras gave a marshy land outlook to landscape. Buddhist texts informs about paddy cultivation and the varieties of rice. However, the modern climatic condition of Nālandā has a hot climate during summers and is cool in the winters. It experiences moderate to heavy rainfall. The average annual rainfall is about 120 cm. Summer falls between months from May to mid-July when temperatures soars to about 44°C. Hot winds locally known as loo blows in the region and is extremely harmful as may cause sunstroke. Minimum temperature in summer may be around 17°C. Winter falls between November to February with minimum temperature as low as 4°C at times. However, the climate otherwise is very pleasant and is ideal for tourism. Monsoons arrives in the month of July and continue till September. Heavy rains at times can disrupt travel hence this season is not suitable for sight-seeing. The month of March ideal as spring settles in Nālandā during this month. The climate is favorable for sighting various attractions of the place. This month offers a lot of blue skies and plenty of sunshine. Thus a suitable time to visit Nālandā would be the period from October to March.

WATER RESOURCES AND FARMING STRUCTURE

The water resources and river pattern of this region also impact the sacred landscape of Nālandā. Panchana is important river channel. The annual rainfall of the district is 1002.2 mm and about 92.55 percent of rainfall is received during June to October by Southwest monsoon. The climate of the district is sub-tropical to sub humid. Besides it in alluvium zone a number of aquifers are found and both shallow and deep well can be dug for the purpose of potable water and irrigation. Nālandā is full of ponds/lakes both seasonal and permanent. Dighi Pokhar was supposed to be the most important one. Evidence of Palaeo-channel connecting Dighi Pokhar with river Panchana has been discovered. The water management known as Ahara-paine system is quite prevalent. This system works to sustain water and sharing for use of agriculture.

In Jain Buddhism it is mentioned that Nālandā was initially a prosperous village by a major trade route that ran through the nearby city of Rajagriha which was then the capital of Magadha. The Jain thirthankara, Mahavira, spent 14 rainy seasons at Nālandā, which shows the plenty of water resources beside rivers mentioned above. Gautama Buddha too is said to have delivered lectures in a nearby mango grove named Pavarika and one of his two chief disciples, Shariputra, was born in the area and later attained nirvana there. This traditional

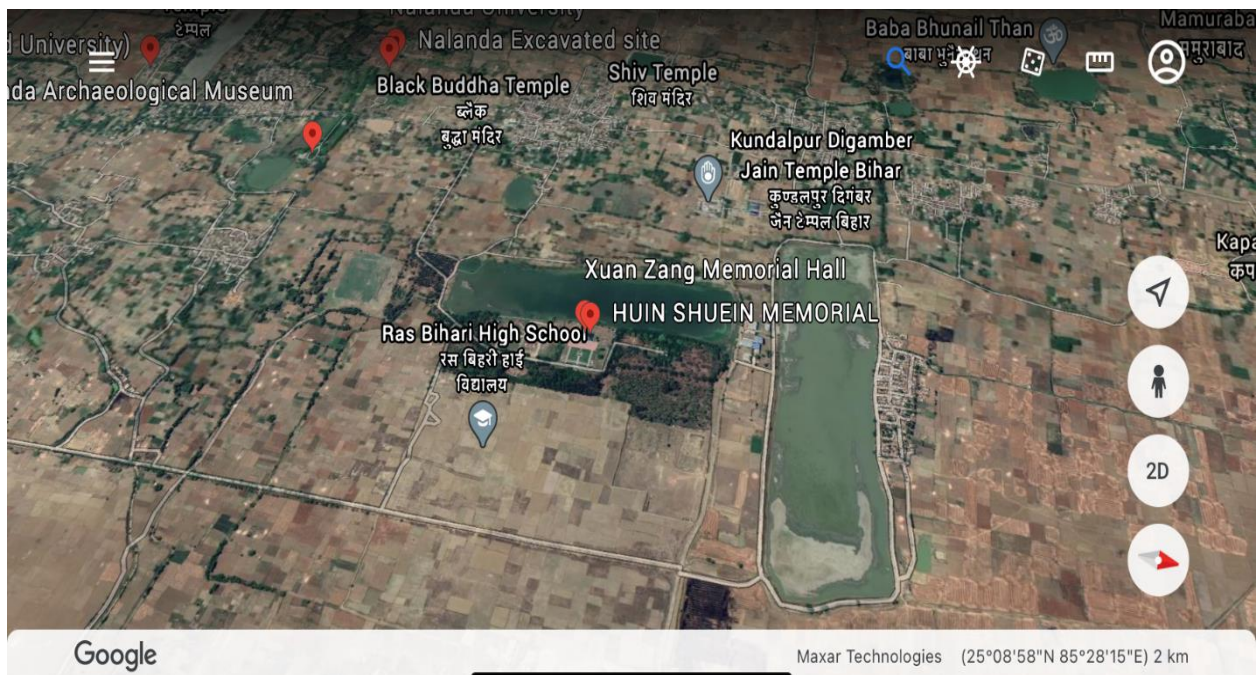


Fig. 4 [some of the ponds in and around Nalanda Ruins, both natural and artificial]

association with Mahavira and Buddha tenuously dates the existence of the village to at least the 5th–6th century BCE. Examining the natural habitat and abandon of mango tree also give us hint on water resources of Nālandā. Nālandā is also known for its water ponds and the water reserve. Looking into the abandon cultivation of paddy in and around and most importantly, two rounds of paddy cultivation around Nālandā Mahavihara also depicts that there were enough water resources available. An etymology of Nālandā by Hiranand Sastri, an archaeologist who headed the excavation of the ruins, attributes the name to the abundance of nālas (lotus-stalks) in the area and believes that Nālandā would then represent the giver of lotus-stalks. Which significantly

contributes to conclude that ancient Nālandā was covered by water pound stalking lotus. The Phalgu River flowing through Nālandā is considered sacred for the Hindus. The other rivers in Nālandā include Mohane, Jirayan and Kumbhari.

Agriculture was and is the main source of occupation of people in Nālandā, the economy of Nālandā is mainly agrarian in nature. The farmers mainly grow abundances of paddy, wheat and sometimes mustard. Apart from it they grow Potato, and Onion some other commercial crops recently. Few people of the district are also involved in handloom weaving. Since the district is a famous tourist destination, tourism plays a vital role in the economy of Nālandā. Uneconomic holdings, fragmentation of land are some of the problems faced.

CONCLUSION

On the account of controversy, the climatic condition and the natural resources of ancient Nālandā had played vital role in serving the need of people, thereby, lifting the height of Nālandā across the world. Besides, the major contribution from rulers in and around Magadha region to ancient Nālandā Mahavihara during the time of Buddha and post-Buddha era, the fertile alluvial soil and the annual rainfall had so much of impact in development of the settlement and civilization. The natural formation of pound and retention of water resources in reservoirs have paved the road to gradual development of livelihood and later outshined Nālandā. The taxation per capita in the sense of grain also depicts that the major occupation of the settlement was farming, depends on natural resources. Currently, the ancient Nālandā ruins has become the religious hotspot of tourism in Bihar.

SUMMARY

Nālandā at a Glance

Country: India

State: Bihar

District: Nalanda

Altitude: 67 metres

Area: 2367 sq. km²

Latitude: 25.1368° North

Longitude: 85.4438° East

Winter temperature: about 4°C (min) to 27°C (max)

Summer temperature: about 17°C (min) to 44°C (max)

Average Annual Rainfall: 120 cm

Best time to visit: October to March

Languages spoken: Hindi, Bhojpuri, Urdu, English

Main Occupation: Agriculture

Crops grown: Paddy, potatoes, onions etc.

Major Rivers: Phalgu, Mohane, Jirayan, Kumbhari

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