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# The Role of Natural Resources and Drainage System on Human Settlement in Brahmaputra Valley

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**Abstract:**
The most prominent physical feature in Assam is Brahmaputra valley. This is a great ramp-valley from Dhubri to Sadiya extends over 720 km with average breath 80km. The general slope of the valley is extremely gentle. The Brahmaputra valley is also known as Assam Valley. The Brahmaputra valley's natural resources and its drainage system plays a vital role on human settlement. The water-bodies like river and ox-bow-lake (locally known as 'Beel") and its various natural resources impact on human settlement. Specially in agriculture, transportation, hydropower, fishing, tourism etc. activities governed by environmental condition of river valley.

**Key words:** Brahmaputra Valley, Drainage System, Settlement.

**Introduction:**

The Brahmaputra valley is a well demarcated natural region of Assam. This natural region is dominated by two major river Brahmaputra and Barak. Between two plains there are high-land Karbi Anglong plateau and North- Cashar hills. The valley is long and narrow with about east-west direction stretching between the eastern Himalayas on the north, the Meghalaya plateau on the South and the Nang hills on the south east. The general slop of the valley is extremely gentle. The valley covers an area of 56194 km² i.e. 72 percent of total area of the state of Assam. The Brahmaputra valley consist of some valley region covering western.

Brahmaputra valley including Goalpura and Kamrup, Central Brahmaputra valley covering Darrang and Nagaon, North-eastern valley including Sonitpur, Lakhimpur, Dibrugarh and Sivasagar. The valley is Characterized by fertile soil which making the area as agricultural area. The area is very important because it traverses, serving as a lifeline for agriculture, transportation, resource based activities, numerous ecosystem. Specially the river Brahmaputra and its tributaries supports millions of people provide water for drinking agriculture, industry etc.

**Objectives of the study:**

1. The primary objective of the paper is to understand the role of drainage system and natural resources.
2. To examine the human Settlement of Brahmaputra valley.

**Methodology:**

The Study has been undertaken by means of collecting Primary along with Secondary data. Secondary data have been collected from books, economic survey and various Government records.

**Discussion:**

The river Brahmaputra is one of the mightiest rives in the world. It originates in the Chemayungdung glacier of the Kailash range. It enters Assam in west of Sadia town and it receives numerous tributaries in its 750 km. long Journey through Assam Valley. The main tributaries are Buri Dihing, Dhansiri, Subansiri, Disang, Dikhow, Bhugdoi, Kapili etc. On the other hand, the Brahmaputra Valley's natural resources and drainage system plays a vital role in human settlement. Various type of natural and mineral resources and the water bodies like river on-bow-lake (locally known as "beel") impact on human Specially. Soil condition, water bodies, forest minerals are the main element of the role on shaping human settlement in Brahmaputra valley.

Fertile soil the best gift of a river and a river is also a gift of nature which making the area as agricultural region. The river Brahmaputra and is tributaries provide a rich source of formatting soil. The rich soil of Assam is extremely fertile for any advanced technology in agriculture. The constant sedimentation and deposition of alluvial soil have helped to grow rice cultivation across the valley. In contrast the riverine areas are best suitable for Rabi crops in winter. The soil of the lower reaches of the foothills area also helps in horticulture.

Besides rice, the other principal food crops of the state are wheat, maize, pulses, green gam, etc. Jute has been extremely cultivated in the floodplain areas of middle and lower Brahmaputra valley. Tea plants used to grow naturally in the upper Brahmaputra Valley. The tea producing are found in Sivasagar, Dibrugarh, Jorhat, Golaghat, Nagaon, Sonitpur, Lakhimpur, Kamrup, Goalpara districts also. On the other hand, cotton, sugarcane, orange, lemon, cashewnut, Banana, Coconut are the horticultural production of Assam valley. Fishing is the another agricultural item of Assam. The Barak and Brahmaputra along with their tributaries, various beels, ponds, constitute sources of fishing in Assam.

Assam is undoubtedly rich in natural and mineral resources which impact on human settlement. Coal, petroleum, natural gas, limestone, sillimanite as mineral resources and as natural or forest and animal resources impact on human settlement. Also, the vegetarian of Assam includes evergreen, Semi-evergreen, deciduous grassland, riverside forest like various reserve forest, national park, wildlife sometuaries, world Heritage site, help to grow the human settlement of Assam.

The valley is important for various forest based, mineral based, agro based, industry. The four oil refining industry, plywood industry, paper and pulp industry, match industry, sericulture Khadi, Cane and bamboo industry, Cement industry, fertilizer, and tourism industry help to grow settlement pattern in Brahmaputra valley. Settlement represent the organized Colonies of human being. They are in fact, until of human occupancy. Where the member of community lives and pursue various activities. All such Settlement urban or rural, large or small are the part of a system where dependence and interaction exist.

In case of settlement pattern of Brahmaputra valley are governed by the river Brahmaputra and Barak and their numerous tributaries. All these river and tributaries influence on the settlement types of these region. Assam is mostly a state of village and such numerous villages are governed by the topography, climate condition, availability of natural resources, custom and tradition etc.

**Linear type:** This type of settlement is common form of settlement in the Brahmaputra valley, which are stand on the main roads and river bank. The indigenous Assamese people live in the linear type of village. The exact site of such linear village is decided on the basis of availability of perennial source of water. For example, a journey from Guwahati to Dibrugarh would enable one to notice such elongated village type.

**Rectangular type:** Most of the large size villages have been developed at the crossing of roads and the thickly populated areas of lower Brahmaputra valley and fertile areas of Barak plains. Some of the compact village are Square shaped which are crossing of roads. Square pattern is related to some geographic features like tank.

**Latifundium or estate settlement:** This is a special type of compact settlement which are found in tea garden area of upper Brahmaputra valley specially in Sivasagar, Dibrugarh Sonitpur, Jorhat,Golaghat. This type of plantation settlement is composed of building owned by the estate.
**Dispersed Settlement:** Dispersed settlement are developed in high topographical area, poor soil and abundance of available sources of water. This type has seen in foothills, hills, Slopes, like Karbi Anglong, North-Cachar hills etc.
**Marsh village:** Some linear villages have seen in the marshy fact of the plains of Assam. It is found in Sisi in Dhemaji, Barak plain. "Char" a special type of immigrant settlement type is found in lower Brahmaputra valley.
**Amorphous Settlement:** In the active floodplain region of Brahmaputra Valley, the immigrants from Bangladesh have settled in both linear and scattered settlement due to physiographic reasons.
**Char Settlements:** Unique to the shifting sandbanks (chars) in the lower Brahmaputra; mostly inhabited by immigrant communities with temporary or semi-permanent dwellings.
The Brahmaputra Valley, with its vast network of rivers and abundant natural resources, plays a fundamental role in shaping the patterns, types, and evolution of human settlements across Assam. Its dynamic drainage system and rich environmental features have influenced livelihood, agricultural practices, industrial development, and the socio-economic life of the people in this region.

**Impact of Drainage System on Human Settlements:**

The Brahmaputra River, along with its major tributaries like Subansiri, Dhansiri, Buri Dihing, and Kapili, creates a dense and well-integrated drainage network. This has directly impacted the distribution and location of settlements. Areas close to these water bodies have historically attracted human habitation due to the availability of fresh water for drinking, irrigation, and domestic use.
Settlements along the riverbanks often follow a linear pattern, as observed in many parts of Assam. This pattern arises from the community's dependence on riverine transport, fertile soil, and access to fishing and irrigation. Additionally, floodplains, despite their vulnerability, continue to support dense populations due to their agricultural potential.

**Role of Natural Resources in Shaping Settlements:**

The valley is endowed with fertile alluvial soil due to continuous sedimentation from the Brahmaputra and its tributaries. This has fostered the growth of agriculture-based settlements. Rice, the staple crop, along with jute, sugarcane, pulses, and horticultural products such as banana, orange, coconut, and areca nut, thrives in these fertile lands.
Moreover, natural vegetation and forests have led to the emergence of forest-based livelihoods and industries. Reserve forests, wildlife sanctuaries, and biodiversity hotspots not only contribute to ecological balance but also attract eco-tourism, influencing settlement patterns near such areas.

**Mineral and Energy Resources:**

Assam is rich in mineral resources such as coal, petroleum, natural gas, limestone, and sillimanite. The discovery and extraction of these resources have led to the development of industrial settlements, particularly in upper Assam regions like Digboi, Duliajan, and Moran, which are now major oil and gas hubs. The availability of these resources has also resulted in the establishment of oil refineries, cement factories, and fertilizer plants.
In addition, the potential for hydropower generation from fast-flowing tributaries and seasonal rivers has initiated developmental projects that not only produce energy but also reshape nearby human habitation through employment and infrastructure growth.

**Agricultural and Fishing-Based Settlements:**

The Brahmaputra Valley sustains a vast agricultural population. Areas with extensive paddy fields, jute cultivation zones, and tea estates have given rise to agrarian villages and plantation settlements. Tea gardens, especially in Dibrugarh, Sivasagar, and Sonitpur, are examples of latifundium-type settlements, where housing and infrastructure are built specifically for estate workers and management.
Fishing is another significant occupation supported by the drainage system. Numerous beels (oxbow lakes), rivers, and wetlands provide year-round fishing opportunities. Fishing-based settlements often emerge around water bodies, supporting local economies and dietary habits.

**Industrial and Infrastructure Development:**

Industrialization, especially in the resource-rich upper valley, has led to urbanization in towns like Tinsukia, Dibrugarh, and Guwahati. These urban centers serve as administrative, commercial, and transportation hubs. They feature more complex settlement structures and higher population densities. The presence of roadways, railways, and river ports further enhances connectivity, facilitating trade and migration.

**Environmental Challenges and Settlement Adaptation:**

While the Brahmaputra Valley provides immense opportunities for human settlement, it also poses certain challenges. Annual floods, erosion, and siltation displace thousands and impact agriculture and infrastructure. As a result, settlements have developed adaptive strategies such as elevated housing, embankments, and seasonal migration. Environmental constraints also necessitate careful planning and sustainable use of resources to ensure the long-term viability of settlements in this ecologically sensitive region.

**Conclusion:**

The Brahmaputra valley to rich surrounded by nature, specially flora and fauna, and it is also support a diverse ecosystem, including numerous tributaries, that provide water for agriculture transportation and hydropower. The valley's fertile soil supports a wide variety of crops, including rice, tea, jute which are crucial for regions socio-economic conditions. The valley also present opportunities for eco-tourism, sustainable agriculture, resource management etc.
From the above discussion, it is clear that generally settlements have grown up and evolved over a long period of time. By examining the site, pattern and arrangement of settlements, the human settlement always depend on drainage system and resources of a particular region.

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