Bihar : Land and People

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ABSTRACT

Bihar is endowed with rich cultural heritage. The State finds mention in the Vedas, Puranas, epics, etc. and was the main scene of activities of Buddha, the 24 Jain Tirthankars, Great rulers of the State before the Christian era were Bimbisar, Udayin, who founded the city of Pataliputra. Bihar shined during the reigns of Chandragupta Maurya and Emperor Ashoka and Maurya dynasty, the Sungs and the Kanvas. Then came the Kushan rulers followed by Chandragupta Vikramaditya of the Gupta dynasty. Muslim rulers made in-roads into the territory during medieval period. The first conqueror of Bihar was Mohammad-bin-BakhtiarKhialji. The Tughlugs and then the Mughals followed the Khaljis.¹

One of the major States of the Indian Union, Bihar is land locked and is bounded on the north by Nepal, on the east by West Bengal, on West by Uttar Prasesh and on the South by Jharkhand. The land is drained by a number ofrivers, the most important of which is the Ganga. The other significant rivers are Sone, Punpun, Phalgu, Karmanasa, Durgawati, Kosi, Gandak, Ghaghara etc.

The area of the State is 94,163 sq. kms. over which live 10,40,99,452 persons $2011.^2$

Land and People

Everything around us is in a state of change; everything is either growing or diminishing; nothing is really stable.... Geographical phenomena, both Physical and Human, are in a state of perpetual changes, and must be studied from that point of view.³

Man can no longer be scientifically studied apart from the ground he tills, or the land over which he travels, or the seas over which he trades, than the polar bear or desert cactus can be nderstood apart from the habitat. The function of Geography is to understand the total landscape, from place to place. It cannot pretend to solve the problems of a region but it provides an essential basis for any evaluation of present livelihood, any of economics, social and political potentials.⁴

The Earth and its inhabitants stand in closest reciprocal relations and cannot be truly presented in all its relationships without the other.

"Man is the product of the earth's surface. This means not merely that he is a child of the earth, dust, but that the earth has mothered him, fed him, set him tasks, directed his thoughts, confronted him with difficulties that have strengthened his body and sharpened his wits, given him his problems of irrigation and navigation and at the same time widespread hints for their solution. She has entered into his bones and tissues, into his mind and soul.⁵ "The maxim should be not conquest of nor submission to, but co-operation with Nature."⁶

Land :- Nearly 76% of India's population is rural and lives in 5,76,000 villages, and nearly

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89

Ideal Research Review

_____ Vol., 63, No. 1, SEPTEMBER 2019

40% people are below the poverty line. Further more, the root cause of poverty of India's teeming millions can be traced to land degradation, which assumes critical importance on account of the fact that agriculture, animal husbandry and other land-based rural vocations are unable to generate and support employment for subsistence and landless farmers in rural areas.

Moreover, in the villages they face social and economic inequalities, even though feudalism has since crumbled. This result in unemployment, and in sheer desperation; rural poor march to mega-cities in search of livelihood. Such rural poor are in fact 'ecological refugees. In the mega-cities, they face hunger and enter into another downward spiral of poverty with no shelter and basic amenities whatsoever. The conditions are appalling, oppressive and sub-huma. Associated social and economic problems follow. Among such refugees, there is good dealof child labour which is often bonded. With hardly any capital available, these "refugees" become small street sellers in order to take a living and /or supplement the family income. The rehabilitation of degraded land in rural areas thus offer some of the important strategies for alleviating rural poverty.⁷

Land in India /Bihar has been under cultivation for centuries and in the distant past has supported a very rich civilization. Land used to be venerated and there is much in the Vedic literature about the importance of land in human well-being. Catchment management and water harvesting have been practiced since time immemorial. However, the rapid land degradation in India / Bihar is indeed about 100 to 150 years old phenomenon. An understanding of the causes will go a longin helping in the rehabilitation of the degraded lands.⁸

People :- Humanity is increasing its

90

numbers at an ever faster rate. In recent years the problem of world hunger has come prominently to our attention. Hunger, as we will find, is largely a matter of geography; of distance of the sources of food, of isolation and migration, of climatic changes and searing drought. So, the population spiral must be bought under control. The human migration stream to the city continues the world over, the discomforts of urban slums not withstanding. The phenomenon of movement is a dominant one in human geography.9 Greater crop yields, expanded farm lands, land reforms, stimulate local production, search of alternative food sources are some of the few points to minimise food scarcity.10

Man is at the center of all developments. Man acts like a thread through almost the whole fabric of geographic thought. Geography relates to the study of man and his habitat.¹¹

Mahatma Gandhi has a multi-dimensional and magnificent personality. He is not just an economist, he is a revolutionary with a vision to establish a human society. His economics is not, therefore, confined to economic development which aims at material abundance, material affluence and material prosperity. Gandhiji never considered economic growth in isolation from other dimensions, notably the moral and spiritual dimension of development and human progress.¹²

While analysing the Gandhian strategy of development we will confine ourselves only to three aspects. These three aspects are : (a) Individual response of development, (b) Societal relation between different groups, and (c) the pattern of economic development.

Man-Land-Symbiosis : Land-mansymbiosis refers to mutual association between land and man. Land resources as the most vital one in trimming up the wants of man. Resources does not refer to a thing or a substance but to the function which a thing or substance may perform in order to obtain a given endsuch as satisfying a want.²⁰Zelinsky considers resource as a regency of human aspiration, memory, talent and labour applied to relatively inner physical entities.¹³

In view of the problems of acute pressure of population on agricultural land in mind, the land man symbiosis of Bihar State has been taken up not to draw aclear picture of population growth and various densities characteristics etc., but also to assess the magnitude of the problems and to suggest ways and meansfor their proper solution. Purpose of this study is to investigate the man-land-ratio, per capita cultivated land, various types of density, physiological density, nutritional density and caloric density together with the studies of natural, economic and social environment to the betterment of agriculture for nutritional requirements.¹⁴

Planning consists largely in guiding the tiller of the soil to adjust to environmental conditions to explore available agricultural resources efficiently to discover trends in land use within define units of area and to facilitate and direct these trends father than to impose some preconceived Land-Man-Symbiosis.¹⁵

Agriculture is the kingpin of the economy of the State. Agricultural land-use is the most dominant form of resource utilization in the State, particularly the divided Bihar. Being a part and parcel of the South Gangetic Plain, the State is predominantly an agricultural tract and will remain so for years to come as nearly as 75% of the working population is engaged in agricultural pursuits.¹⁶

The population of the State in 2001 was 8,29,98,5.9 (about 8.30 crores). It is growing at the rate of more than 2% per annum or everyday it is increased by more than 4,600 heads to the total population. This high growth rate posses tremendous problems for the limited land resources. It enhances the burden of carrying capacity of land, degenerates per head calorie intake. If the quality of life is to be preserved and the environment is to be saved from pollution, population growth and low rate of industrialization shall have to be brought to a halt and attempt be made to maintain an agreeable symbiosis with the land, by gearing upits productivity. Man is not only the beneficiary of the entire process of economic development and resource utilization but also the most potent an dynamic production agent of the entire process.¹⁷ According to G.C. Whipple the real wealth of an area lies not in its lands, in its flocks and herds, not in dollars, but in its healthy and happy man, women and children. This fact is also applicable in the area under study.

Gross Cultivated Land : Land-manratio refers to the mutual association between total land and total population. The study of agronomy remains incomplete of per captia land is nat taken in preview. Per captia cultivated land is the leat in area of high pressure of population, Following table no.1 depicts per capital grosscultivated land in the districts of Bihar.

91

Orders	Per Capita Gross cultivated (Area in hects.)	No. of districts in each orders	Rankwise Districts (1991)		
Ist	More than 0.20	01	Rohtas (0.21)		
2nd	0.12 to 0.20	15	 Aurangabad (0.18) Kishanganj (0.17) Bhagalpur (0.16) Purnia (0.18) Katihar (0.14) Jehanabad (0.13) Slwan (0.13) Muzaffarpur (0.12) 	 Madhepura (0.18) Gopalganj (0.17) W. Champaran (0.16) Saharsa (0.15) Nalanda (0.13) Nawada (0.13) E. Champaran(0.13) 	
3rd	Less than 0.12	13	 Gaya (0.11) Madhubani (0.11) Begusarai (0.11) Begusarai (0.11) Munger (0.11) Darbhanga (0.10) Bhagalpur (0.10) Patna (0.08) 	 Sitamarhi (0.11) Samastipur (0.11) Khagaria (0.11) Saran (0.10) Araria (0.10) Vaishali (0.09) 	

92

Table no. 1

Note :- Five districts viz. Buxar, Bhabua, Supaul, Banka and Jamui have no separate data.

Gross cultivated land available to support one man (per capita) in rohtas district is 0.21 of a hectare. This much of land of average good fertility status is supposed to be sufficient to support one man provided that the land is intensively cultivated. Thus, in the fertile tract of Rohtas 0.21 hectare of gross cultivated land has been taken to be agreeable in respect of man-land-symbiosis. This district comparatively manifests better symbiosis due to differences in soil fertility and availability of better irrigational facilities. Other districts lag behind man-land-symbiosis.

Per Capita Net Sown Area : It denotes the geographical extent of cultivated or sown land during a particular year. But the net sown area does not refers to the total average under different crops in a particular area. To arrive at this figure, area sown more than once (i. e. double or triple cropped land) should be added to the net area sown. This presents the figure for the total cropped area.¹⁸

Order		No. of		Rankwise districts		
1st	More	06	1.	Lakhisarai (0.16)	2.	Munger (0.12)
	than0.10		3.	Rohtas (0.11)	4.	Kaimur (0.11)
			5.	Sheohar (0.10)	6.	Kishanganj (0.10)
2nd	0.07 to 0.10	18	1.	Buxar (0.09)	2.	Aurangabad (0.09)
			3.	Sharsa (0.90)	4.	Banka (0.09)
			5.	Jamui (0.09)	6.	Nalanda (0.08)
			7.	Bhojpur (0.08)	8.	W. Champaran (0.08)
			9.	Madhepura (0.08)	10.	Supaul (0.08)
			11.	Purnia (0.08	12.	Araria (0.08)
			13.	Jehanabad (0.07)	14.	Nawada (0.07)
			15.	Gopalganj (0.07)	16.	Katihar(0.07)
			17.	Khagaria (0.07)	18.	Sheikpura (0.07)
3rd	Less than	13	1.	Gaya (0.06)	2.	Saran (0.06)
	0.07		3.	Siwan (0.06)	4.	Muzaffarpur (0.06)
			5.	Sitamarhi (0.06)	6.	Madhubani (0.06)
			7.	Begusarai (0.06)	8.	Bhagalpur (0.06)
			9.	E. Champaran (0.05)	10.	Vaishali (0.05)
			11.	Samastipur (0.05)	12.	Patna (0.04)
			13.	Darbhanga (0.04)		

 Table no. 2 : Net Sown Area (Per Capita) : 2011 : ha²

Density of Population

(i) Arithmetic density

Simple arithmetic density is a ratio between total population and the total area and is expressed in terms of persons per square mile or km. of area. Thistype of ratio is frequently used by gegraphers and social scientists perhaps because of the fact that the data for such a calculation are readily available formost parts of the world. It is extremely useful in representing simple man-land-relationship. It is deduced with the help of the following simple formula :-

> Gd = -Where, Gd is the General density, T_a is the Total population, T^a_a is the total area, Or Gd of Patna district = =1473.64 or 1474 persons /km.²

Highest arithmetic density ofpopulation is in the district of the Patna (1474/Km?) followed by Darbhanga (1446/ Km²) and Vaishali III rank (1336/Km²). Lowest density is observed in the district of Kaimur(383 persons/Km²).

Average density of Bihar State is 881 persons /Km.² 17 districts have higher density of population than the average of the State. This density varies according to the favourable human habitats.

(ii) Rural density of population

To avoid the inclusion of urban population in general (arithmetic density, the rural density includes only the rural areas to analyse the density of rural population, which has been measured by the following formula :-

Rd =

93

Where, RD is the Rural density of population,

Ideal Research Review

- Vol., 63, No. 1, SEPTEMBER 2019

 R_{p} is the Rural population, R_a is the Rural area, K[°] is 100. Or =

But the data of rural area of the districts is not available.

In the same way the Rural density of other districts may be calculated. This is calculated by dividing total rural population by total rural area. In this way the influence of urban population of cities/towns is nullified.

(iii) Agricultural density of population

It is a more rational tool to measure the pressure of population on cultivated land, which is often expressed in terms of comparative density. It is expressed in terms of total agricultural population (i.e. Cultivators +Agricultural labourers) per unit of cultivated area. The cultivated area is the sum total of net sown area and fallows land. Infact, it is the cultivated area which ultimately bears the burnt of entire human mouths. The agricultural density of population has been workedout with the help of the following formula :-

Ad =

Where,

Ad is the Agricultural density,

 A_{p} is the Agricultural population, C_{a}^{p} is the Cultivated area and

K is 100.orAd of Patna district = 314

It is obvious that the average agricultural density for the State is 309/ha.² It ranges in the districts from the lowest of 109/ha (Munger district) to the highest of 472/ha (Darbhanga district). In other words pressure on the agricultural land is highest in Darbhanga district. Districts having smooth relief have higher ratio of agricultural land.

(iv) Physiological density of population.

A more rational tool to measure the pressure of population on land is physiological density in terms of the total rural population per unit of cultivable land, which according to Trewartha includes all such potential farmlands that are left fallow from one to five years (Current fallow plus fallow since two five years) depending upon the status of soil and the nature of crops.¹⁹In this way since the area under cultivable land is largest than that of net sown areas, the former reflects a lower figure of 1087/ha2 than the latter (nutritional density of the Bihar State 1248/ha² density is used to be calculated as such :-

Pd =

Where,

Pd is the 'Physiological density, Trp is the total rural population, Tcl is the total cultivable land in ha, and K is 1000.

Or pd of Patna district = 1178

The highest density is observed in the district of Vaishali (1919 persons /ha²) and Darbhanga (1857/ha). Both the district are in North Bihar which is the area of level land and most suitable for cultivation. High fertility of soil giving ties to intensive farming with the aid of canal and other irrigation methods, which have led to the compact type of rural settlements. Areas of high urbanization causing greater pressure on cultivated land lack of irrigation facilities explains the low physiological density. In fine, variation of terrain leads to differential Pd in the districts of Bihar State.

(v) Nutritional density of population.

Nutritional density is the relationship of total population by gross cropped area i.e. total cultivated areas plus areas sown more than once. It, therefore, exhibits the burden of total rural population on total cropped area, This type of density moreor less is the retimed from of rural density of population. It has been measured with help of following formula :-

Nd =

94

Where,

Nd is the Nutritional density, Trp is the

Ideal Research Review

Total rural population, Nas is the Net area sown in hectares and N is 100.

Or Nd of Patna district = 1446

Highest Nutritional density per ha? is seen in the district of Darbhanga (2275) followed by Vaishali (2068) and Samastipur (1860). Lowest Nd is in the district of Lakhisarai (543), II higher from beneath is Munger (593) and that of III is Rohtas(813). (vi) Caloric density (CD).

A comparative view of caloric density and carrying of land is essential to assess the pressure of population on land, where the former exceeds the latter over-pressure of population is referred. In case of carrying capacity is greater than, the caloric density, the pressure of population is negative indicating better man-land-symbiotic position.

Conclusion

Some districts have negative carrying capacity. Owing to traditional agricultural practice resulting in low output fromcrop-land has failed to support people depending upon it. Besides, per capita cultivated land in the districts is very low, which aggravates the shortages further. This is evidently very low per head in an agronomic area that it hardly meets the bare necessities of life of common man.

Agriculture is not merely an occupation of the masses, rather it has become a tradition, a way of Life which for generations has shaped their thought and culture. The strategy will be to improve the socio-economic life of the people in the rural areas by bringing out the necessary institutional and attitudinal changes for the development of agriculture and rural industries and also for the establishment of the required spatial infrastructure and service in the areas of health and nutrition, education and literacy, basic amenities and quality of life and family welfare planning.

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95

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