International Journal of Social Science and Economic Research

ISSN: 2455-8834

Volume: 04, Issue: 05 "May 2019"

A HISTORY OF SURFACE WEATHER ROAD TRANSPORT DEVELOPMENT IN INDIA: A SPATIO-TEMPORAL VARIABILITY ANALYSIS

Dr.Tamal Basu Roy[1], Prof Ranjan Roy[2]

[1]Assistant Professor, Department of Geography,
Raiganj University, Raiganj, Uttar Dinajpur, West Bengal, India, 733134

[2]Professor, Department of Geography & Applied geography, North Bengal University,
Raja Rammohanpur, Darjeeling, West Bengal,734013

ABSTRACT

Today the economy of India in global context is really in commanding position. Without proper development of road transport network a country is hardly to go ahead with trajectory of economic growth. With the passage of time country's road transport network has been developed in a positive and progressive manner. Connectivity of road transport in every corner of the country has been increased in a considerable manner. It also praises for subsequent extension of economic catchment area within the country and inevitable parameter for regional economic development. In order to disburse the imported commodities and services from coastal port area towards its hinterland the change of cargo is usually performed through addition of road transport network in break of bulk position. So, inevitability of road transport for local and as well as regional development is better realized in this era. But the pace of road transport development varies with significantly in between & even within different states in spatial as well as temporal scale. All the countries have not received the glimpse of road transport development uniformly. The manuscript bears the inevitability of road transport development and its non uniform development characteristics.

Keywords: Road, spatial, temporal, variability, sector, development

INTRODUCTION

One of the chief architect of economic development lies within the context of road transport progress. Highways are the quintessential example of such investments, are often posited as being essential for higher economic growth (Dutta, 2011). An efficient transport system and linkages between nodes of several trade and market centres within and outside the country would

ISSN: 2455-8834

Volume: 04, Issue: 05 "May 2019"

enhance the economic prosperity of the region. In this regard to reach the different nooks and corner of the country the country should give emphasis on the development of trunk and feeder roads extension. Because, the surface road transport development in each sector would enhance the connectivity of local markets with larger market outlays. Hence, all transport sectors must need the special attention to maintain the balanced development of the region. An accelerated pace of road network development has expanded its trading activities to its hinterland in an unprecedented rate. The phenomenal expansion of transport connectivity has also increased the mobility of people & flow of commodities. The deficit area has been compensated by enriched area with transported surplus commodities and resources. However, since 1951 with the onset of installation of railway, the sector has been gained an unprecedented growth. Heterogeneous physiographic division and inaccessibility in certain areas of the country has made few areas as lagging region in terms of economic social and cultural development. The extension of road transport network prosperity has enhanced the economic activities and development in a desirable manner. Road transport and its extension have made the further useful enhancement of accessibility and able to usurp the great prospect to the remotest and inaccessible area. It is very much essential to extend the territorial interconnection in order to make the country and its achievement to reach at peak of the development. All the governments whether it is state or central is in effort to priorities the enhancement of road transport connectivity during their tenure. Meanwhile the external connectivity has been boosted up the trading prosperity and prospects with the neighbouring countries. An economic-theoretic framework has been developed to explain why and how a road or its improvement is expected to affect the well-being of people living around it. The model justifies using variables related to mobility and socio-economic well-being as relevant outcome variables, examining the relationship of each of these variables with the distance from the highway, and delineating the influence zone of the project (Sama.A.C, 2012). The major advancement of road transport with the passage of time lies within mode and medium of transport and vehicular up gradation. Few states have witnessed the phenomenal growth of highway transport, in different period of time. These implicated economic growth and glimpse of development to the entire region and made possible to recognize the region by global community. Owing to increasing population density the growth of transport sector is essential for enhancement of mobility of the people, commodities and services.

OBJECTIVES

The entire study has concentrated around the timely and spatial development of primary, secondary and tertiary sector of surface weather roads.

ISSN: 2455-8834

Volume: 04, Issue: 05 "May 2019"

1. The basic essence of this paper is to highlight the trend of temporal analysis of expansion of primary (National Highways, State highways) secondary (District Roads), tertiary (Urban and Rural Roads) weather road development.
2. To elaborate the state wise spatial variability of road transport development in different sectors.

DATABASE & METHODOLOGIES

The study is based on the data which is procured from the report of Ministry of Roads and Transport highways. In order to fulfill the above objectives the study has obtained few consistent methodologies. The data is organized accordingly in tabular form. Mathematical calculation has been carried out to reach at the right consensus. Computation of proportion & descriptive statistics has been applied in order to brief the entire temporal and spatial development of road transport network within the country. As the study is concerned with the variability assessment of development of road transport network in different states and in different sectors relative measure of dispersion has been selected as a suitable measure for comparative analysis about more than one unit. After finding out the value of coefficient of variation the result is incorporated in GIS environment. The state wise intensity of variability in different sectors of road transport has been highlighted by cartographic technique.

Temporal Development of Road Transport in India in Different Dimension:

In terms of road network development the country has witnessed the unprecedented growth. The economic infrastructure of the country has also got impetus from such phenomenal development. It is the country's achievement that has made the proximity and availability of resources from area of surplus to the area of deficit. Since independence road transport network has been extended through numerous public and private agencies. Any kind of expansion of particular road transport category has been comprehensively carried out by different authorities. The responsibility of extension work of weather roads are carried out by the main agencies PWDs, National Highway authority of India, National Highway Infrastructure Development Corporation, Border Road Organization, National rural development agency of ministry of rural development, State forest departments, railway port trust; Municipal Corporation etc. are likely to carrying out their work for the pace of transport network development. The timely development of road transport network has kept its momentum with the passage of time. Different categorical development of road transport network narrates different stories of oscillation in terms of expansion. Every trunk road ought to be connected with the feeder road. Junction of feeder road and trunk road would enhance the connectivity between nodes and vertices. New establishment might be developed in newly developed nodes and vertices. Indifference look at any part of the development would disrupt the better connectivity and make

ISSN: 2455-8834

Volume: 04, Issue: 05 "May 2019"

the places isolate in nature. The trend of growth proportion of length of national highway has already reached its saturation as national highway which is the main artery of development, reached almost of its completion stage. State and district roads have been almost reached its maturity. The focus has laid on the rural surface road development. The expansion of built surface road transport network in rural areas would enhance the progress and prosperity of the region. Growth centres in rural areas would be better connected that it would create better services to its adjacent region and a larger complementary area over the region. However during the first tenure since 1950-51 to 1960-61 emphasis were given to expand the more district road rather than rural road expansion but later the emphasis has taken a dig towards the rural weather road transport extension.

Table 1: Timely Development of Different Categorical Surface Road Transport in India

Years	Timely and Categorical Extension of Surface Road Transport Networks In %						
	National Highways	State Highways	District Roads	Rural roads	Urban Roads	Project Roads	Total
1950-51	4.95	-	43.44	51.61	0	0	100
1960-61	4.54	-	49.02	37.6	8.84	0	100
1970-71	2.61	6.2	30.26	38.75	7.88	14.3	100
1980-81	2.13	6.35	28.4	42.34	8.29	12.49	100
1990-91	1.45	5.47	21.89	54.16	8.03	9	100
2000-01	1.71	3.92	21.82	58.46	7.47	6.62	100
2010-11	1.52	3.5	21.36	58.8	8.8	6.02	100
2013-14	1.69	3.16	20.03	61.16	8.48	5.48	100
2014-15	1.79	3.05	20.12	60.99	8.54	5.51	100
2015-16	1.8	3.14	10.03	70.23	9.1	5.7	100

Source: Computed by author based on Report by Ministry of Road and Transport Highways, 2015-16

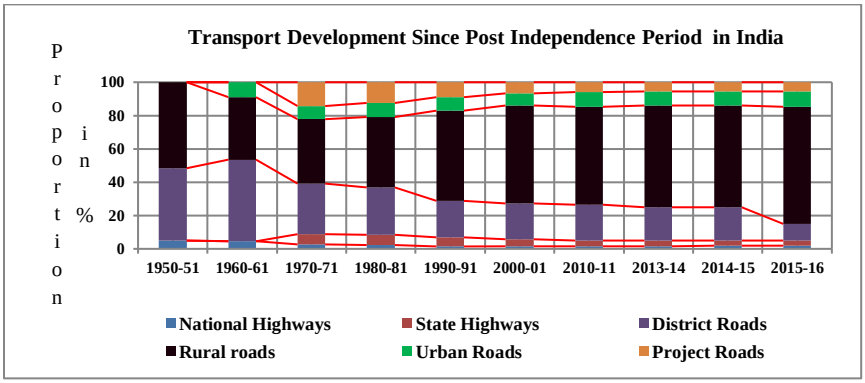


Fig-1

ISSN: 2455-8834

Volume: 04, Issue: 05 "May 2019"

Almost the National Highway Authority of India has been enabled to enhance the interconnectivity in between the region and further extension of other highways and urban and rural road make the region cohesive. The data regarding the national highway and its extension work highlight the trend of reduction since 1951 to 2016 from 4.95% to 1.8%. State highway has also given the imprint of same decreasing trend as the proportion of extension work reduced to 6.2% to 3.14% during 1951-2016. It does not mean that the extension work has been stalled. Priority of extension has been given in increasing connectivity of rural road transport network rather than the district road transport extension. The rural road transport has been extended by 70.23% during 2015-16.It was extended by 51.61% during post independence. As the transport connectivity might be enhanced through the assemblage of extension of National highway, State highway, District highway and rural road connectivity the priority has been recently given on the expansion of rural connectivity. The increasing degree of connectedness would ultimately enhance the accessibility and reduce the remoteness of the spatial entity. It is the impact of extension of rural road transport network and its increasing connectivity with the National, State as well as District highways. As a result the degree of open market and impact of globalization and promotion of urbanity and socio-cultural enrichment operates over the region and the country uninterruptedly. In recent period urbanization and industrialization extension of urban road transport is necessary owing to reduce the urban congestion level. The urbanization in India is at accelerated rate owing to congregation of rural people to the urban bodies. Since independence the focus on the extension of urban transport network has been increased by gradually from 8.84% to 9.1%. Initiation and enhancement of intra and inter-urban connectivity has resulted in increase on urban mobility. The commuters reached their destination by desired time. Unprecedented growth in not only the mode of transport but also the medium of urban transport has happened to the urban bodies. Distinguished urban bodies either class I town or Class VI towns have their individual trend in urban road transport network extension. However different issues related to the road transport network in urban bodies is endowed with passage of development. The increasing trend of urban population and density has compelled the policy maker and planner to maintain the sustainable urban road transport development. However urban emission from road transport and its impact on the heat island and its inhabitants has made worried to the urban planners. The common trend of urban process i.e. million cities, metropolitan cities and mega cities has raised the issue of extension of transport network within the urban area. But alarming growth of transport sector has generated negative feedback on the livelihood of urban inhabitants. Environmental and pollution impact and consequent rising of urban temperature is a matter of concern in present day context. In addition the urban road transport extension has encroached on the rural land bodies, the concern of elimination of flora and fauna species, fragmentation of habitat and continuous sprawling effect create an adverse impact on the habitat and inhabitants simulteneously.

ISSN: 2455-8834

Volume: 04, Issue: 05 "May 2019"

Surface Road Variability Development in Different States in India

The road transport network development in India narrates about the state wise unevenness of national highways, state highways, district highways, rural roads, urban roads as well as projected roads expansion scale. The table, 2 highlights the trend of varied emphasis laid on extension of road transport development in different states. However the expansion in every state bears the significant imprint of variability. But few states witness the maximum variability in spatial expansion of transport development. Chhatrisgarh & Gujrat popularly known as an industrially richer state lies in the central & western counterpart of the country has laid the emphasis evenly on the national highway, state highway, district highway, rural roads as well as urban road and projected road development. The value of coefficient of variability 0.77 & 0.974 marks the story of evenness on the development of primary, secondary and tertiary surface based road transport development. In contrast, Himachal Pradesh, Bihar and Assam show the higher variability in expansion of surface road development as the values of coefficient of variability marks 1.87, 2.00 and 2.11 as follows. However the variability in road network extension comes from more emphasis on the rural road expansion than the other's sectors. Assam, Bihar & Himachal Pradesh has laid the more focus on 291933 km, 175373km & 44755 km of rural road extension during the fiscal year 2015-16. Variability arises since the greater laid emphasis has been given for the expansion of rural roads which would remove the isolation of rural counterpart. Since the Orissa bears the value of coefficient of variability i.e.1.74 the state has been able to extent its rural load network about 21919km.The above study highlights the story that the rural road's extension work not up to the mark until certain time for certain states. But few states have laid the emphasis evenly on every sector since earlier time. Since post independence the need of hour of certain road transport sect oral development happened in different states. Location, physiographic, agricultural development, promotion of marketing in rural areas, mining, and disbursal of raw materials & labours as well as political motive have played as a major role in the varied development of road transport network extension in different states.

ISSN: 2455-8834

Volume: 04, Issue: 05 "May 2019"

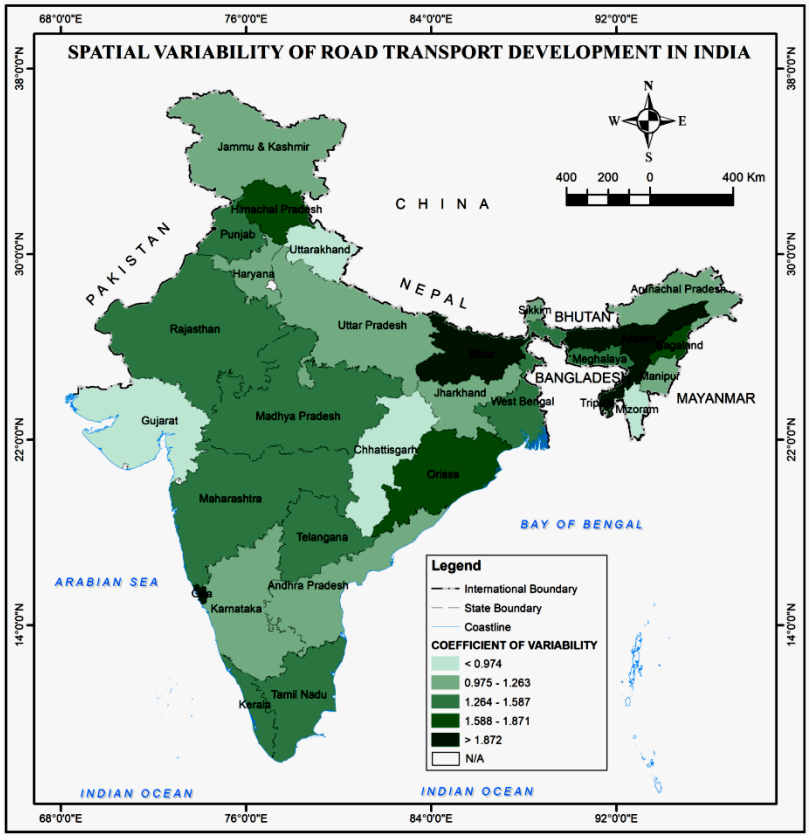
Table 2: State Wise Extension of Surface Weather Road in India (Total length of the Road in Kms)

States	Hational highway	State Highway	District Highway	Rural roads	Urban roads	Projected roads	Mean	Standard Deviation	CV
Andhra Pradesh	5465	6485	35471	97666	24124	5156	29061.16667	35805.03906	1.232058
Arunachal Pradesh	2513	8123	0	14509	266	5282	5115.5	5545.622012	1.084082
Assam	3821	2530	5788	291933	6306	19142	54920	116265.4908	2.116997
Bihar	4839	4253	10634	175373	8826	2559	34414	69121.31566	2.008523
Chhattishgarh	3078	4462	25308	35048	12247	15666	15968.16667	12359.28138	0.773995
Goa	262	279	1173	13303	865	181	2677.166667	5220.534088	1.950022
Gujrat	4971	17201	30809	85989	27360	12814	29857.33333	29078.83738	0.973926
Haryana	2622	1801	21817	6974	14680	589	8080.5	8471.352779	1.04837
Himachal Pradesh	2642	1466	2438	44755	1127	3331	9293.166667	17391.21157	1.871398
Jammu & Kashmir	2601	130	3917	22698	1668	18702	8286	9776.752487	1.179912
Jharkhand	2654	1296	9310	36076	6003	11447	11131	12810.55861	1.15089
Karnataka	6502	19578	49909	200389	51357	17779	57585.66667	72289.99094	1.255347
Kerala	1812	4342	27470	127985	30788	8411	33468	47864.18526	1.430148
Madhya Pradesh	5194	10934	19429	203542	15741	35100	48323.33333	76710.21263	1.587436
Maharastra	7435	39000	109531	413146	23870	20436	102236.3333	156548.2267	1.531239
Manipur	1746	715	9466	11121	151	1577	4129.333333	4838.241526	1.171676
Meghalaya	1204	772	5062	13534	171	985	3621.333333	5160.498723	1.425027
Mizoram	1381	170	1580	3487	395	1095	1351.333333	1182.376364	0.87497
Nagaland	1150	722	6458	26631	99	1054	6019	10358.67038	1.720995
Orrisa	4338	4187	14694	217919	20842	25603	47930.5	83721.99114	1.746737
Punjab	2769	1133	6930	70362	17534	9651	18063.16667	26270.52345	1.45437
Rajasthan	7906	15188	22571	171259	27544	9811	42379.83333	63578.14297	1.500198
Sikkim	463	701	1415	4796	48	820	1373.833333	1735.500322	1.263254
TamilNadu	4946	11752	45538	165292	24496	9011	43505.83333	61453.12695	1.412526
Telengana	2696	2731	22160	81640	10256	4089	20595.33333	30814.86947	1.496206
Tripura	805	329	1189	35041	602	1400	6561	13957.67707	2.12737
Uttarakhand	2714	4521	4791	24755	5573	18664	10169.66667	9191.729406	0.903838
Uttar Pradesh	8483	7147	53373	245396	62565	45448	70402	88805.59121	1.261407
West Bengal	2956	3612	10444	191354	95267	13096	52788.16667	76517.94325	1.449528

Source: Computed and Organized by Author from the data Ministry of Roads and Transport Highways of India, 2015-16

ISSN: 2455-8834

Volume: 04, Issue: 05 "May 2019"



CONCLUSION

Development, the term is comprised with the combination of social, economic, cultural promotion of an area and society at desired level. Diverse physiographic, climatic, ethnic, multilingual and multi dialectic characterizes the individual identity of the region. Despite diversified character the country's effort is to bring the entire region within a single frame. And it will be possible if the connectivity of the entire country would reach at desired level. In order to make the more connected networks the stress of development should be laid on every counterpart of surface weather road network. The relation between national highway, state highway, district road and rural and urban roads is symbiotic to each other. Emphasis must be laid on equally on urban and rural road expansion as it will increase the rural urban connectivity within the region. National Highway or State highways and district roads usually feeds on rural and urban road expansion as these would likely to promote the flows of commodities and services.

ISSN: 2455-8834

Volume: 04, Issue: 05 "May 2019"

REFERENCES

Dutta, S. (2011). The Impact of improved Highways on Indian Firms. *Journal of develoment Economics* , 20-25.

K K, S. (2017). Trends,Growth & Problems of Road Transport in india. *Handbook on Research on Economics its Finanacial and Industrial Impact on Economic Development* , 201-203.

Mishra & Choudhury. (2011). *Transport sector in India.* New Delhi: Kalyani Publishers.

Sama.A.C. (2012). *Socio-Economic Impact of Rural Roads and Parameter for Evaluation.* New Delhi: Central Road Research Institute.

Tripathi, S. (2013). Road transport infrastructure and Economic Growth in India. *Journal of Infrastructural Development* .

