

Impact Analysis of Road Access on Household Incomes

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Abstract

Many integrated conservation and development projects use road construction to induce a shift in income activities, since road access can reduce both poverty and environmental degradation. There is, however, little empirical evidence on the effects of road access on income patterns. Road access led to a rise in total household income by 38% due to higher household participation in self-employment and wage labor. We neither found an effect on income from crop farming nor on participation in hunting activities. The effects of road access can be diverse and unforeseeable. Road construction in protected areas should thus be carefully considered and planned and only be implemented when other options are not feasible.

Keywords: *Rural Road, Income, Hunting, Impact Evaluation, Poverty*

Introduction

Human civilizations flourish with transport network or connectivity, such as road, highway, waterway etc. In the early world waterways were common and possible means of communication. Following, in medieval Europe, road development has strong socio-economic influence through which the people's lifestyle changes dramatically within a short period of time. After WWII the world experienced exponential growth of land based transport route, besides water ways. Road development helps USA to renovate its urban areas. In consequences new investment opportunities create an increase in economic growth. New entrepreneurs prefer to establish their business next to newly connected area. Thus those new roads influenced economic development and changed their life. Connectivity, cohesion and easement in transportation are the most important aspects of road development. African regions are trying to establish Tran's boundary transport network for economic growth. Without cohesion and integration of regions balanced development remains impossible. In the age of globalization both economic activity and traffic demands help each other to grow. Road or transport network helps those actions to take place. Likewise, redevelopment and expansion of road also increase economic activity through which a place urbanized more. Road development in an area has some negative impacts too. Such as, loss of habitat, displacement of living area, demolishment of exiting infrastructures, shift in land use pattern and more significantly negative environmental impacts. Road accident cause many deaths every year. The study aims at understand the socio-economic condition, transport system and the impact of new highways on the livelihood of the dweller in the study area.

Reviews of literature

Majumdar (2002) on the basis of regression analysis of the State level cross-section data for each of the years from 1971 to 1995 indicated that among various physical infrastructures, it was the transport infrastructure that significantly affected the agricultural output level and the agricultural development index. However, besides physical infrastructure, social infrastructure also had significant positive impact on the dependent variables. At the district level, from the regression analysis at three points of time, viz., 1971,

1981 and 1991, the study observed that agricultural and transport infrastructure are important determinants of agricultural output and agricultural development index.

Singh (1983) "found positive correlation between infrastructure and agricultural development. Among the various infrastructural facilities, agricultural development was strongly correlated with agricultural infrastructure index, followed by index of transport and communication.

Thorat and Sirohi (2002) attempted to analyse the impact of infrastructure on agricultural development using larger data set, both in terms of time period (pooling the data for four time periods, viz., 1961, 1971, 1981 and 1991) and coverage of infrastructural variables to include ten explanatory variables, viz., transport, power, irrigation, tractorization, research, extension, access to primary agricultural credit societies, regulated and wholesale marketing infrastructure, access to fertilizer sale points and commercial banks, covering physical, financial and research infrastructure. The results indicated that transport, power, irrigation and research infrastructure are four critical components, which affect the agricultural productivity in a significant manner. However, between transport and power, the former emerged as a more dominant variable. There was complementarity between the transport and power in the sense that the accessibility to roads is normally followed by accessibility to power. With improvement in access to power, the irrigation infrastructure also improved particularly through energization of pumpsets. In turn, improved irrigation facilities coupled with research input enhanced agricultural productivity. The other infrastructural facilities like access to fertilizer sale points, markets, credit infrastructure, extension services, etc. also developed with development of transport infrastructure.

Ahmed and Hossain (1990) have provided the evidence linking poverty alleviation with infrastructure development. Infrastructure leads to increase in crop income among small farmers. Bonney (1964) observed that there was a direct relationship between increase in acreage of export crop cultivation and the standard of road and distance from main commercial centers. There is enhanced entrepreneurial activity; sharp decline in freight and passenger charges and improved service as a result of investments on rural roads. While analyzing the socio-economic impact of a new road on a small and isolated village community in Mexico.

World Bank study (1997) estimated that 15% of the agricultural produce is lost between the farm gate and the consumer because of poor roads and inappropriate storage facilities alone, adversely influencing the income of farmers. Poor rural road infrastructure limits the ability of the traders to travel to and communicate with remote farming areas, limiting market access from these areas and eliminating competition for their produce. Easier access to market allows expansion of perishable and transport-cost intensive products.

Fan et al. (2000) examined the factors which contributed to the exceptional growth and to the reduction of poverty in China over the past decades. Government spending on rural infrastructure (roads, electricity, and telecommunications) helped reduce poverty and inequality substantially, mainly due to improved opportunities for non-farm employment and increased rural wages. Among the three infrastructure variables considered, roads had the largest impact. They concluded that that with every 10,000 Yuan (about \$1200) spent on rural roads eleven persons are lifted above the poverty line. In terms of impact on growth, for every yuan invested in roads, 8.83 yuan in rural GDP is produced. Roads yielded the largest return to rural non-farm GDP, at 6.71 yuan for every yuan invested, 35 per cent higher than the return to education investment.

Cook et al. (2005) looked at the impact of transport and energy investments in projects conducted by the ADB and the World Bank in China, Thailand and India. They concluded that most of the poor do appear to benefit proportionally from rural infrastructure investments and reduction in travel times in the medium term, although some could be marginalised. In China, they observed a better performance in poverty reduction in villages with road access. Smoother and faster motorized road transport also facilitated a shift to higher-value perishable products. Households, both poor and non-poor, substantially increased the share of their income coming from off-farm employment over this period.

Khandker et. (2006) researched rural road investments in Bangladesh, which "reduce poverty significantly through higher agricultural production, higher wages, lower input and transportation costs, and higher output prices. We find a poverty reduction (moderate and extreme) due to road improvements of about 5-7 per cent. Thus, had the duration of road pavement taken about 5 years, we could argue that each year poverty fell by about 1 per cent, solely due to rural road improvements." Road investments are pro-poor, meaning the gains are proportionately higher for the poor than for the non-poor. The results suggest

that the savings of household transport expenses are quite substantial, averaging about 36-38 per cent in the project villages.

Methods and Materials

The study is explorative and to some extent descriptive in nature that enforces to adopt mixed with qualitative and quantitative data as well as secondary and primary data. The primary data were collected from a structured questionnaires, interviews, focus group discussion and observation. The secondary data were collected from different sources. The questionnaire survey was conducted based on purposive sampling which includes 50 respondents. The primary data were analyzed using various statistical software. Such as SPSS, MS Excel.

Data analysis and interpretation

Table – 1: Socio-Demographic Profile

Variables	No.of Respondents	Percentage
Age		
Below 30yrs	06	06
31 to 40yrs	12	24
41 to 50yrs	21	42
51yrs & above	11	22
Gender		
Male	23	46
Female	27	54
Affected area		
Land	16	32
Building	34	68
Family monthly Income		
Below Rs.10000	12	24
Above Rs.10000	38	76

Source: Primary data

The above percentage analysis indicates that one third (33 per cent) of the respondents age group between 21 to 30yrs, 26 per cent were 31 to 40yrs, 24 per cent were 41yrs & above and remaining 17 per cent were below 20yrs. More than half (54 per cent) of the respondents were female and remaining 46 per cent were male. More than half (57 per cent) of the respondents were unmarried and remaining 43 per cent were married. More than half (55 per cent) of the respondents family monthly income below Rs.3000 and remaining 45 per cent were above Rs.3000.

This Highway has a great importance to develop the region economically. It is easy to communicate to the capital of the country with very less transportation cost, because of the road. There is been a revolutionary progress in marketing raw goods countrywide. Non-durable goods like milk, vegetables, and different types of fruits can be quickly marketed. As a result farmers are paved road and some are in unpaved condition. These vehicles are used as a means of transportation for human and different kinds of goods. Locally people used van, rickshaw, Bi-cycle, auto-rickshaw, and motor cycle for their daily transport.

Table – 2: Association between affected area of the respondents and their increased household income

Affected area	Household income		Statistical inference
	Low (n=16)	High (n=34)	
Land (n=16)	04	12	X ² =9.274 Df=1 0.001<0.05 Significant
Building (n=34)	12	22	

Research Hypothesis: There is significant association between affected area of the respondents and their increased household income

These buildings are used for market center, office and department store. Some buildings are used in residential purpose. Tin shaded buildings are used for trade and commerce as a store house. Poor peoples are lived in straw made house. At this time infrastructures are changing day by day by the impact of this highway.

68% of infrastructure is made by tin shaded infrastructures which are used for commercial and residential purpose. Mostly middle class and lower middle class family are living tin shaded building. Only 10% building is made by bricks is used for official purpose and some are in market center. Some rich people are living in this types of buildings too. About 22% house made by straw. The poor people are living in these types of houses. Here we saw that tin shade infrastructure is popular in the study area. Chi-square test indicates that there is significant association between affected area of the respondents and their increased household income. Hence, the calculated value is less than table value. The research hypothesis is accepted.

Conclusion

This new road changed everything in this area. Every local sector has improved day by day especially, in socio economic sectors. It has played vital role to improve trade, industrialization and urbanization. This high way has occurred a revolution for transport. For easy transport system it has good accessibility to communicate others part of Tamil Nadu this network generates new income source of this area. Now Dindukal is well known to a business center of Tamil Nadu so Dindukal municipal authority or Tamil Nadu Government need a master plan for its proper management. Road connectivity lead to a significant increase in total income of 'above median income' households by 33% but had no significant impact on the income of 'below median income' households.

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