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Agricultural Development through Rural Road Connectivity: A District Level Study

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ABSTRACT

According to the 2011 Census, about 70% population of the country is directly involved in agriculture sector. Thus, keeping in view of the nature of the country, it becomes the need of the hour to develop the agriculture sector. Rural road connectivity plays an important role to develop the agriculture sector as transportation of inputs as well as outputs becomes easier as well as less costly for the rural poor farmers. Further, the use of HYV seeds, chemical fertilizer, modern agricultural equipment's such as tractors, ploughing machines etc., become possible through rural road connectivity. Without road connectivity a considerable amount of agricultural produce is lost between the farm gate and consumer, which adversely influence the income level of the farmers. Improved roads increase not only the income of the farmers but also reduce poverty. This study attempts to analyse the impact of rural road connectivity on the agricultural output, income and the allied activities of the rural dwellers.

Key words: Agriculture, Development, Connectivity, Paddy crop

Though the development of agriculture sector depends on several components of infrastructure, roads are an important component among them. Rural road connectivity is the precondition for the development of the agriculture sector. There is a direct relationship between the increase in the acreage of crops and the standard of roads [1]. Rural road connectivity reduces farming costs and raises agricultural productivity. The construction of roads in the rural areas brings the new land into agricultural use, resulting into an increase in agricultural production and productivity and also intensifying the existing land use to get benefits of the increased market opportunities [2]. The importance of rural road connectivity for the development of agriculture has been generally recognized in mostly in the developing countries. Number of factors such as climatic conditions, technology, government policies, etc. which affect agricultural development. But road connectivity is also an important factor responsible for the modernization of agriculture. Among all infrastructures, it is the road infrastructure that improves the quality of life and accelerates the process of agricultural development by providing market as well as financial access to the farmers. The Agriculture sector not only contributes to the growth of our economy but also the major sector of

employment. Agriculture is the sector around which the entire economy revolves. The enhancement of technology in agriculture depends significantly on both physical and institutional infrastructure. Infrastructure plays a strategic role in producing large multiplier effects in the economy with agricultural growth [3]. Road infrastructure plays a critical role in agricultural development. It is not possible to use improved and highly mechanized tools without the availability of rural road infrastructure. Therefore, for the modernization of agriculture in developing countries rural road connectivity should be the foremost priority. It is estimated that 15 percent of crop production is lost between the farm gate and the consumer in the world because of poor roads and inappropriate storage facilities 46 alone, adversely influencing the income of farmers [4]. Improved rural road infrastructure can lead to lower cost of production which can further increase agricultural production and earnings of the rural farming community. Studies have found that adequate rural road infrastructure raises agricultural productivity and reduces farmers' costs [5] have conducted an analysis of South-East Asian countries and found that there is a strong linkage between agricultural growth, poverty reduction, and rural infrastructure development. Road infrastructure also leads to the expansion of product markets, labour market, and economies of scale as well. Rural road infrastructure also provides easier access to nearby markets as a result production of perishable goods expand. It can also lead to switching from hidden demand into effective commercial demand. All these kinds of effects of rural road infrastructure highlights the process of commercialization in agriculture [6]. In rural areas the majority of the population is poor. Therefore, any type of infrastructure especially road infrastructure helps to increase

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agricultural production, employment and also helps in the generation of income which in turn reduces poverty up to some extent. Good road transport facilities raise productivity especially in the agricultural sector of the economy and lower production costs [7]. With rural people getting access to basic services such as health, marketing, education, etc., it is often recognized fact that rural connectivity can make rural people versatile and provide them with the market accessibility thus, expanding the family wages and also raised the supply price of the agricultural goods [8]. The studies have identified that while rural road connectivity promotes specialization on one hand, on the other hand, it promotes division of labour which contributes to the specialization of agriculture [9]. Road infrastructure also helps in the development of various social services in rural areas. Since the majority of the population of our country lives in the rural area and agriculture sector is also the leading sector in providing employment. Thus, with the development of road infrastructure in agrarian as well as rural economy income opportunities for the farmers increased.

The government of India has started one such program for the development of the rural and agrarian economy was PMGSY. PMGSY is the most ambitious rural roads programme in India. The major objective of the PMGSY is to provide all-weather road connectivity to the rural areas of the country. Improved cropping patterns, lower inputs and transportation costs, higher agricultural production, and increased output prices could be possible due to the all-weather road connectivity to the markets. The relation between rural road connectivity and increased agricultural products is two-fold. Easy availability of better agricultural equipment, good seeds, manures, and pesticides are made possible in time due to 47 rural road connectivity. The availability of roads in rural areas enables rural inhabitants to have easier access to input and output markets. Rural roads promote better integration of rural and agriculture areas with growing urban markets which in turn are related to the international trading markets, creating poverty reduction opportunities in those areas, thereby stimulating economic growth. With the availability of rural road infrastructure lagging regions can catch up with more progressive areas, which leads to more balanced growth. The focus of the present chapter is to examine how the construction of roads under PMGSY impacted the agriculture development in Udhampur and Reasi district J&K. The chapter attempts to analyze how the availability of rural road infrastructure affects agriculture production, productivity, cropping pattern, etc. in the study area. Along with this, it has also been analyzed that how the

availability of rural road infrastructure affects the other drivers of agricultural development like HYV seeds, agricultural equipment, fertilizer, etc. have also been analyzed in this chapter. During the field surveys following crops were identified as the major crops of the study area and those crops include Maize, Wheat, Barley, Mustard, and also Paddy in block Ghordi of Udhampur district. The crops are grown in the study area given the climatic and topographic conditions prevailing in the study area. Most of the crops except paddy are rain-fed. The share of paddy in the total cropped area is very low due to the lack of proper irrigation facilities in the study area. The productivity of other crops is also low due to the lack of assured irrigation facilities and the complete lack of extension services by the agriculture department. Despite these limitations, the PMGSY has benefitted the farmers in the study area in terms of access to marketing facilities.

MATERIALS AND METHODS

The present study aims to find out how the rural road connectivity has increased the agricultural output in the study area. The study also attempts to analyse the impact of rural roads on allied activities of the rural dwellers. The study is based on primary data which has been collected through well-structured interview schedule. In the initial stage, two blocks of the Udhampur district have been selected namely Chenani and Ghordi. In the next stage, two villages from each block have been selected purposively where the roads under PMGSY have been constructed. In the final stage, randomly 30 households were selected and hence the total sample size for the study is 120.

RESULTS AND DISCUSSION

During the field surveys following crops were identified as the major crops of the study area and those crops include Maize, Wheat, Barley, Mustard, and also Paddy in block Ghordi of Udhampur district. The crops are grown in the study area given the climatic and topographic conditions prevailing in the study area. Most of the crops except paddy are rain-fed. The share of paddy in the total cropped area is very low due to the lack of proper irrigation facilities in the study area. The productivity of other crops is also low due to the lack of assured irrigation facilities and the complete lack of extension services by the agriculture department. Despite these limitations, the PMGSY has benefitted the farmers in the study area in terms of access to marketing facilities.

Table 1 Average output per Kanal (in kgs) in block Chenani and Ghordi

Average output of major crops in Chenani block (kg/kanal)				Average output of major crops in Ghordi block (kg/kanal)			
Crops	Before Road	After Road	(%) Increase	Crops	Before Road	After Road	(%) Increase
Wheat	55	67	21.81	Wheat	59	70	19.29
Maize	116	158	27.58	Maize	121	152	25.61
Barley	50	58	16	Barley	54	61	12.96
Mustard	27	29	7.40	Mustard	32	37	15.62
Paddy	--	--	--	Paddy	61	66	8.16

From the above (Table 1) it is clear that in block Chenani Wheat, Maize, Barley, and Mustard are the four major crops while in block Ghordi Paddy is also among the major crops. From the (Table 1), it becomes clear that after the construction of PMGSY road output per Kanal has been increased in all the major crops. In block Chenani there

21.81% increase in the production of Wheat, 27.58% in maize, 16% in barley, and 7.40% in the case of mustard. None of the selected villages in Chenani block grows paddy. While in Ghordi block output per Kanal of wheat increased from 59/kg to 70/kg after the construction of the road that is the production of wheat has increased by 19.29%. In the case of

maize production has increased from 121 kg/Kanal to 152kg/Kanal with a growth rate of 25.61%. The output of barley has also increased from 54kg/Kanal to 61kg/Kanal after the construction of the road. Production of mustard has also shown an increasing trend with a growth rate of 15.62%. Lastly, the production of paddy has not shown a major change after the construction of the road. The output of paddy has increased by just 8.16% which is smaller while comparing with the other crops.

Reasons for not growing paddy crop in Chenani block

During the field survey while interacting with the respondents of the Chenani, Reasi, and Pouni blocks it has been found that there are only four major crops in their area. The majority of the respondents responded that they do not grow paddy crops due to the lack of irrigation facility and also untimely rainfall does not provide them with the incentive to raise paddy crops. In fact, the area under paddy crop has decreased over the period in the study area resulting in the extinction of the indigenous variety of brown paddy in the study area. Many respondents during the field survey narrated that in the past they would cultivate paddy which they had discontinued due to lack of proper irrigation facilities. Some respondent households grow only two crops in a year. They opined that if they grow more crops, cultivable land would remain less productive as a result production of main crops i.e., maize and wheat will decrease. The number of households growing barley and mustard was more in block Chenani and Ghordi than the block Reasi and Pouni of Reasi district. The reason for this is that during the field survey some of the respondents responded that growing more than two crops in year decrease the productivity of main crops Maize and wheat. They believed that if they grow more crops, cultivable land becomes less productive. Paddy is a water-intensive crop and the limited irrigation facilities in the form of traditional khools are not properly managed at the local levels to get the maximum benefit out of them. There is a strong need to manage these sources for the common benefit of the farmers.

Linkage between road connectivity and agricultural output

With better market availability, farmers switched to cash crops from subsistence 54 farming with better trade opportunities in urban areas [10]. Among the several agricultural infrastructures, transport infrastructure serves as an important channel in improving agricultural productivity as well as improving the quality of life of the people through economic access to the market [11]. The government can play a very crucial role in inducing agricultural development. While certain government policies are designed to enhance productivity through the identification of market failures, the corrective price mechanism, etc., several other policies of the government target the special groups [12]. Tractors have traditionally been used on farms to mechanize several agricultural tasks. Tractors are used for ploughing, tilling, and planting fields in addition to routine lawn care, landscape maintenance, moving or spreading fertilizer, and clearing bushes. Tractors offer advantages on small farms as well as in regular lawn and garden work [13].

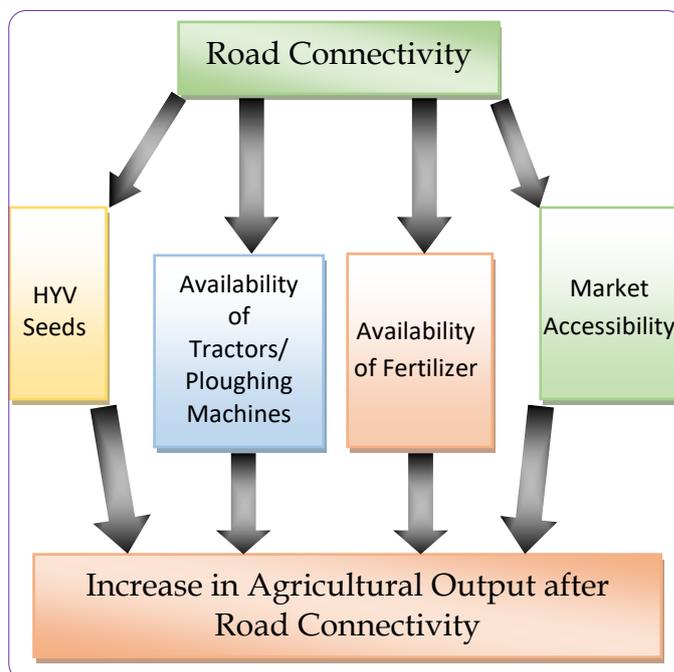


Table 2 Number of respondents associated with allied activities in the study area

Study area	Allied activities	No. of HHs (Before PMGSY)	No. of HHs (After PMGSY)	Percentage change
Chenani Block (120)	Dairy farming	12 (10)	15 (12.5)	(+) 2.5
	Poultry	04 (03)	08 (07)	(+) 04
	Shop	03 (2.5)	12 (10)	(+) 7.5
	Transport	06 (05)	14 (12)	(+) 07
	Sale of fruits	19 (16)	31 (26)	(+) 10
Ghordi Block (120)	Dairy farming	08 (07)	17 (14)	(+) 07
	Poultry	03 (2.5)	09 (7.5)	(+) 05
	Shop	04 (03)	14 (12)	(+) 09
	Transport	05 (04)	16 (13)	(+) 09
	Sale of fruits	13 (11)	24 (20)	(+) 09

It is clear from the (Table 2) that the construction of roads has impacted dairy farming in the study area. Rural roads have also impacted the Poultry business as the percentage of the respondents has increased after road connectivity. The number of households associated with different allied activities has increased. Thus, keeping in view the responses of the sample households it can be concluded

that road connectivity has also impacted the allied activities of the rural dwellers of the study area.

From the (Table 3), it becomes clear that after the construction of Pradhan Mantri Gram Sadak Yojana (PMGSY) road in the study area on an average net annual income of the sampled households has increased. In block, Chenani net annual income of the respondent households from

agriculture and allied activities was 46000 before the construction of the road which has increased to 62000 after the road i.e., there is a 34.78% increase in the income after the road construction. In block Ghordi net annual income

increased from 52,000 to 65,000 after the road i.e., it has increased by 25% which is comparatively less than the block Chenani as after road number of allied activities have been seen more in block Chenani than in Ghordi block.

Table 3 Average net annual incomes (Rupees) of the respondent households from agriculture and allied activities

Blocks	Before road	After road	Increase after road
Chenani	46000	62000	(+) 16000
Ghordi	52000	65000	(+) 13000

Impact of roads on marketable surplus

It has been observed by the researcher that the number of the households selling agricultural produce have increased after road connectivity. Availability of the transport facilities have not only increased market accessibility but also decreased the transportation cost for the farmers of the connected villages.

Impact of roads on awareness among the farmers

More awareness among the Farmers after road connectivity has been observed. This awareness have been analysed through the number of awareness programs attended by the rural dwellers organised by the agriculture and associated department. Respondents said that they attend more awareness programs after road connectivity and became more aware about price, quantity, and quality of the inputs and

output. Further, they became aware about the various government policies which directly benefit the farmers.

CONCLUSION

Based on the above information it has been found that the construction of roads in the has played an important role in the development of the agriculture sector in the study area. After road connectivity, the per Kanal output of major crops have been increased. Also, the income level of the farmers has increased, transportation cost has decreased. The use of HYV seeds and modern agricultural equipment has increased. Further, it has also been observed that rural farmers had become more aware of the quality and price of the inputs and outputs. Road connectivity has also impacted the allied activities of the rural dwellers.

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