



Research Article

IMPACT OF URBANIZATION ON PERI-URBAN FARMLANDS OF FARMERS IN THE BENGALURU METROPOLITAN REGION, INDIA

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Abstract- Land is a key asset for farmers in the countries like India where more than half of the population engaged in agriculture for their livelihood. But, Land acquisition from governments; increase in real estate growth by various private business firms and the continued demand for infrastructure development in the periphery of the urban areas makes a greater impact on peri-urban farmland and their livelihoods. So, the present study was an effort to find the overview of farmland transactions by farmers in peri-urban area of Bengaluru, reasons and their future response on selling of land. Study revealed that out of total 160 respondents, about 58.1 per cent of respondents sold their farm land called sold category (n=93), in that 87 partially sold and 6 completely sold respondents were found and 41.9 per cent completely retained their farmland without any sale (unsold category). In sold category (n=93) nearly 71 per cent of the farmers had sold their land to real estate owners. The main reason to sell the land includes escalation in land prices (15.05%), lack of interest of farmers in agriculture (10.75%). Responses about future selling of land revealed that majority of respondents (55.6%) did not show intention to sell land. This shows that farming in the peri-urban areas in the coming days is likely to face many challenges, which require proper attention by government and need to set up a mechanism to regulate the sale of agricultural land around peri-urban areas to prevent further agriculture land loss.

Keywords- Bengaluru, Farmland loss, Peri-urban, Urbanization

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Introduction

The pressure on farm land for infrastructure development in peri-urban areas has been mounting up at an alarming rate. Population growth, urbanization and industrialization are major contributory factors to it. India occupies 2.4 per cent of the total land area of the world, but supports 16.7 per cent of the world population [1,2]. Further, the land available for cultivation was decreasing from year to year in India. In last decade alone, 2.76 million hectares of land was converted for non-agriculture use in India [2]. Land has always been a major source for generating agricultural based livelihoods in rural India. However, land is now increasingly required for industry, residential and commercial purposes which promotes real estate booming around the fringes of urban areas. Such non-agricultural demand for land has skyrocketed in the post-liberalization period especially after 2005 as the Indian economy surpassed 8% growth rate and a liberalized real estate sector experienced a spectacular boom [3,4]. This will not only put pressure on agriculture land for non agriculture use in the peri-urban areas but also lure the people to sell their land by the different real estate agencies. In this process, people lost their farmland, their source of food and fodder and all the improvements that had been built up through the generations [2]. But, the question is whether the lands purchased by private parties were utilised for the purpose for which they were purchased or they are keeping the land as not yet constructed plots in order to make huge profit after purchasing it from the farmers with low price. A study by the [4] on land transactions revealed that even before the special economic zones (SEZ) was officially announced, real estate companies flooded into area to buy up cheap land that would appreciate many times over

after the SEZ. A huge demand for rights to the not-yet-constructed compensation plots emerged quickly in peri-urban areas. Simultaneously, the situation is common in the fringes of metropolitan cities like Bengaluru. The city growth is touching the rural borders, which are considered as peri-urban areas, which have led to several distortions producing adverse impact on the agriculture in the peri-urban area of Bengaluru [5]. Also, it had twin effect on both farming and farmers in the adjoining peri-urban areas. First, splitting of precious farmland into sites leads to loss of agriculture production and; second, farmers who are lured to sell their land become landless/marginalized once the money obtained from the land sale is not effectively utilized. So, the ultimate effect is on livelihoods of farmers. Hence, this study is an attempt to understand the detailed farmland transactions made by the peri-urban farmers of Bengaluru metropolitan region. Possible efforts was made to know the extent of farm land loss, understand the reasons for the farm land sale, money utilisation by the farmers after the sale of farm land and their future response on selling their farmlands was discussed in detail. The findings from the present study would sensitise the policy makers to understand the extent of peri-urban farmland loss, reasons behind it and recommendations includes possible solutions and mechanism has to adopt to overcome farmland loss in peri-urban areas.

Materials and Methods

Description of study area

The study was conducted in peri-urban area of Bengaluru^a. Bengaluru is the capital city of the Karnataka state (India). Bangalore is one of the fastest growing

cities in India and it is also been recognised as 'Silicon Valley of India' for spearheading the growth of Information Technology (IT) based industries in the country. With the advent and growth of IT industry, as well as numerous industries in other sectors and the onset of economic liberalisation since the early 1990s, Bengaluru has taken lead in service-based industries fuelling substantial growth of the city both economically and spatially [6]. According to 2011 census, Bengaluru population was 9.6 million and considered as India's third most populous city and fifth-most populous urban agglomeration. But, Bengaluru has an estimated population of 10.1 million in its urban area in 2014 [7]. It is now the one among the most populous cities in the world and the fastest-growing Indian metropolis. Simultaneously, farmlands in and around the city, were seriously affected however with the enhanced demand for land encourage real estate firms to purchase distance peri-urban lands early with profit motives leads to great threat to the precious agriculture land in the periphery of the Bengaluru city.

Sampling techniques

Four talukas (blocks) around the city periphery were selected purposively. Two taluks, Bengaluru north and Bengaluru east from Bengaluru urban district and another two taluks, Devanahalli and Hoskote from Bengaluru rural district. All four blocks come under the jurisdiction of Bengaluru metropolitan region. Two villages were selected randomly in each block viz., Nagenahalli (A), Mandur (B), Jyothipura (C), Hosahalli (D), Balepura (E), Doddagattiganabbe (F), Bhatramarenahalli (G) and Kallahalli (H) as shown in [Fig-1]. From each village, 20 respondents were selected randomly. Hence, a total of 160 respondents constituted the sample size for the study then data were analysed using descriptive statistics.

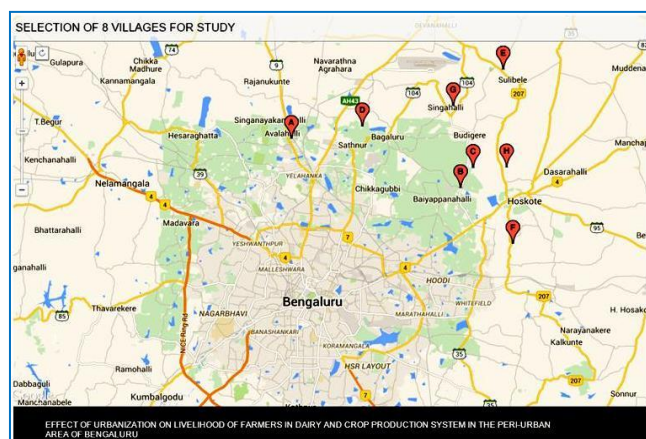


Fig-1 Map of Bengaluru Metropolitan region showing the exact location of peri-urban villages selected for the study (Source: Created by Author with Google maps)

Results and Discussion

Farmland selling pattern of respondents

It is apparent from the [Table-1] that out of 160 respondents, 93 respondents (58.1%) sold their farm land partially or completely (the respondents who sold their land completely was only 6 [Table-2] out of 93 sold respondents but all had purchased land again in areas where land was costlier and got involved in agriculture). [8-11] reported findings on peri-urban farm land sold in their studies.

Table-1 Distribution of respondents based on farmland sold since from 2000

Category	Respondents (N=160)	
	Frequency	Percentage
Sold	93	58.1
Unsold	67	41.9

Quantum of farmland sold pattern by the sold category farmers

[Table-2] shows that, out of 93 respondents in sold category, more than three-fourth of the respondents (93.6%) partially sold their land and about 6.4 per cent of the respondents sold their land completely. In case of sold category, those six

respondents who sold their land completely again purchased land and continued in agriculture therefore those respondents were considered for the study as a sold category with partially sold group. During the interview farmers expressed that majority of people who sold their land completely some were had migrated to city along with family and involved in non-agriculture activities and few migrated to the nearby rural area (Because especially in rural areas where land cost was very low the people who sold their land in peri-urban areas moved towards rural areas again for starting farming by purchasing cheaper lands with money obtained from land sold).

Table-2 Distribution of sold category respondents based on quantum of farmland sold

Farmland sold pattern	Total sold category respondents (n=93)	
	Frequency	Percentage
Partially sold	87	93.6
Completely sold	6	6.4

Category of farm land buyers to whom the farmland was sold

It is apparent from the [Table-3] that out 93 respondents of sold category nearly three-fifth (71.00%) of the farmers had sold their land (50.5 ha) to real estate owners, while nearly one-fifth (21.50%) of them sold to Government (Government acquisitions) and 7.50 per cent of them sold to neighbours. It was further evident from the table that 93 respondents in the sold category sold 69.7 hectare of land to the different buyers in which 50.5 hectare of land was sold to real estate buyers and about 16.6 hectare of land was acquired by government (sold to government) and about 2.6 hectare land sold to neighbours. It could be found that in peri-urban areas real estate activities are booming at very high rate and they converted farm land into sites for making higher profit.

Table-3 Distribution of sold respondents based on farmland sold to different categories of buyers

To whom farmland was sold	Respondents (n=93)			
	Real estate	Government	Neighbours	Total
Frequency	66	20	7	93
Percentage	71.0	21.5	7.5	100
Total hectare sold	50.5	16.6	2.6	69.7

Money utilizing pattern of sold category farmers

Farmers after receiving the money obtained by selling the land, majority (86.00%) of the them utilised the money for house construction because possessing a good house in peri-urban villages was considered to be the matter of status whether farmers belonged to marginal farmer or a agriculture labour. Nearly 60.20 per cent of them used money for miscellaneous purpose including investment in children's education, tube well erection, establishing poultry farm, purchase of heavy vehicles etc. About 31.20 per cent of them for purchasing bikes, 29 per cent of them used for marriage functions, while each 28 per cent of them used for depositing in bank and for personal use which includes family expenditure, personal expenditure etc. About 26.90 per cent of them used for purchasing cars, 23.70 per cent of them utilised to purchase land and each 14.00 per cent of them used for purchasing agriculture implements and for business purposes. Farmers invested their money as per the prevailing status consciousness and socio-economic compulsions.

Reasons for farmland sold

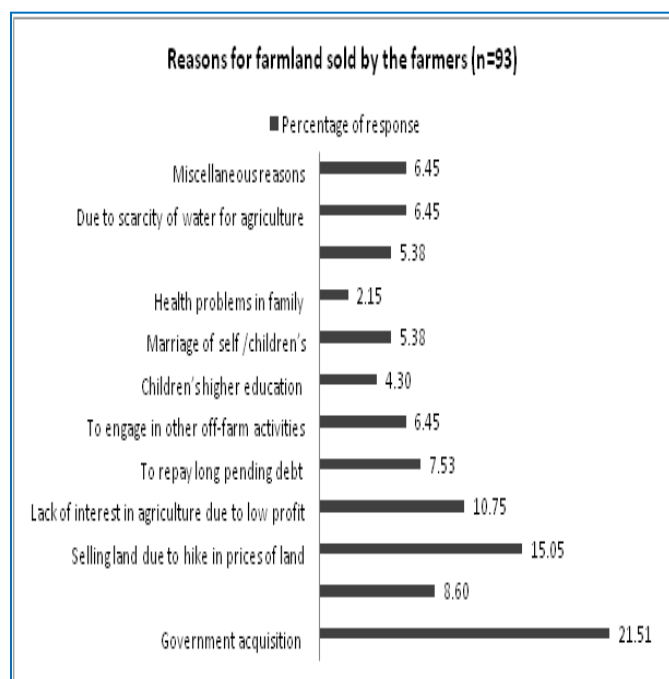
There are multiple reasons as revealed by the farmers for selling the land. The responses elucidated from the farmers are indicated in the [Fig-2] which shows that about 21.51 per cent of farmers indicated that their land was acquired by the government followed by selling land due to hike in prices of land (15.05%), lack of interest in agriculture due to low profit (10.75%), purchasing more land at other sites at cheaper rate (8.60%), repayment of long pending debt (loan from both local money lenders and from banks included) (7.53%), engaging in other off-farm activities (6.45%), scarcity of irrigation water for agriculture and miscellaneous reasons (like tube well digging, purchase of vehicles, invest in poultry farm etc.) 6.5 per cent each.

Table-4 Distribution of money utilization pattern of sold category farmers after selling their land

Money utilization pattern	Respondents (n=93)	
	Frequency*	Percentage
Marriage	27	29.0
Bike	29	31.2
Car	25	26.9
House	80	86.0
Land	22	23.7
Deposited in bank	26	28.0
Business	13	14.0
Agriculture implements	13	14.0
personal use	26	28.0
Miscellaneous	56	60.2

*Multiple responses counted

Apart from this, due to family related problems like Children's higher education (4.30%), Marriage of self /children's (5.38%), Health problems in family (2.15%) farmers sold their land part of their total land and it is also noted that about 5.38 per cent of farmers revealed that they sold their farmland due to fear of land acquisition that leads to prior land sold in intention to get more profit [12].

**Fig-2** Distribution of respondents based on reason for farmland sold (n=93)

Farmers' response on future selling of farmland

With respect to the selling land in the near future [Table-5] most of the respondents (55.6%) expressed that they decided not to sell the land in the future reasoning that land was most valuable asset and owning the land in the near city could reveal their richness and also they become urban conscious and hoping that in near future their land cost is likely to escalate. But, 26.3 per cent of respondents showed willingness to sell land in future which indicated that, there is a trend of selling land among peri-urban farmers and also 18.1 per cent respondents were uncertain about to sell their land which showed that these farmers lacked certain crucial information for making better decisions.

Table-5 Distribution of respondents as per their intention to sell their farm land in future

Response of farmer	Respondents (N=160)	
	Frequency	Percentage
Intending to sell the land	42	26.3
Not to sell the land	89	55.6
Can't say now	29	18.1

Conclusion and Recommendations

The study revealed that more than half of the respondents sold their land (partially) in the study area of Bengaluru, which shows the negative effects of urbanization on peri-urban farmland and about more than 2/3rd of respondents sold their land to real estate firms revealing booming of this business. This requires further exploration of purpose and magnitude of purchased land in order to elicit the information for proposed land acquisition/rehabilitation and settlement bill in Indian parliament. Therefore, there is an urgent need to set up a mechanism to regulate the sale of agricultural land, based on quantum of land nature of proposed use and category of buyer as highlighted in the recommendations of [13] especially in peri-urban regions of major cities to avoid the purchase of farm land to maintain not-yet-constructed plots by different category of buyers for profit in future that had detrimental effect on both farmers and farmlands in peri-urban regions. There is a lack of coping mechanism to face problems/ during distress situations by farmers and selling of land was the alternative method of choice among the farmers to overcome the problems are noticed which is to be addressed properly with development programmes and proper sensitization. The wide variation in money utilization pattern after sale of land demands increasing financial literacy for prudent investment and return. Indians usually consider gold and land as permanent worthy investments and about 55.6 per cent of respondents did not intend to sell land in near future. This category of respondents should be imbibed with scientific farming practices to exploit the potential of peri-urban farming prospects.

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Competing Interests

Authors have declared that no competing interests exist.

Authors' Contributions

This work was carried out in collaboration between all authors. Author K. N. Ravi designed the study, prepared the interview schedule, carried out field survey, interaction with stakeholders, performed the statistical analysis and wrote the first draft of the manuscript. Author K Ponnusamy supervised and designed the work. Author R B Kale managed the analyses of the study and edited the manuscript. Author P K Mandal managed the literature searches. All authors read and approved the final manuscript.

Conflict of Interest: None declared

References

- [1] Kumar S.S. (2012) Land Accounting in India: Issues and concerns. *Central Statistics Office, Ministry of Statistics & Programme Implementation, New Delhi, India.*
- [2] Ravi K. N. (2015) Effect of urbanization on livelihood of farmers in dairy and crop production system in the peri-urban area of Bengaluru. M.Sc, Thesis. ICAR- National Dairy Research Institute. Karnal (India)
- [3] Searle R. (2010) Making Space for Capital: The Production of Global Landscapes in Contemporary India. "Making space for capital: The production of global landscapes in contemporary India" (January 1, 2010). Dissertations available from ProQuest. Paper AAI3431173. <http://repository.upenn.edu/dissertations/AAI3431173>: University of Pennsylvania.
- [4] Leven M. (2012) *Journal of Peasant Studies*, 39(3-4), 933-969.
- [5] Kasturirangan Committee Report (2009) Report of the Expert Committee on Governance in the Bangalore Metropolitan Region and Bruhat Bangalore MahanagaraPalike, Bangalore.
- [6] Sudhira H.S., Ramachandra T.V. and Subrahmanya M.B. (2007)

Bangalore Cities, 24(5), 379-390.

- [7] <http://worldpopulationreview.com/world-cities/bangalore-population/>
- [8] Tokuda H. (1993) Urbanization and changes in agriculture in Tokyo metropolitan area [Japan]. Bulletin of the National Agriculture Research Center (Japan).
- [9] Fazal S. (2000) *Environment and Urbanization*, 12(2), 133-149.
- [10] Nguyen S.V. (2009) Industrialization and Urbanization in Vietnam: How Appropriation of Agricultural Land Use Rights Transformed Farmers' Livelihoods in a Per-Urban Hanoi Village. Hanoi: (EADN working paper No.38). Retrieved from [http : //www.eadn.org /leadnwp_38.pdf](http://www.eadn.org/leadnwp_38.pdf)
- [11] Quasem M. (2011) *Bangladesh Development Studies*, 34(1), 4-8
- [12] Ravi K. N and Ponnusamy K. (2016) *Indian Journal of Dairy Science*, 69 (5), (sep-oct).
- [13] National Commission on Farmers (2006) *Fifth and Final Report*, I, 6-8.

- a. Peri-urban area of Bengaluru is defined as the region around the Bengaluru city periphery which includes Bengaluru urban and rural districts which falls under Bengaluru metropolitan region