

# RAPID CHANGE OF SOUTH KOLKATA AND SOUTH 24 PARGANAS AFTER METRO RAILWAY EXTENSION: A CASE STUDY OF TOLLYGUNGE TO NEW GARIA AND ITS SURROUNDINGS.

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## ABSTRACT:

Extension of Kolkata Metro Railway has been taken a model role to rapid change of social environment. This area was located nearby central Kolkata, but there was no presence better mode of transport in Kudghat to New Garia area. After Metro extension, area has been changed its character and has been decreased distance from central Kolkata by time and cost savings. Surrounding areas of extended Metro stations have been connected to Metro stations by different mode of transports. Migrated people have chosen this area for better communication and social development. Land and apartment price and room rent and demographic pattern have also been changed by Metro extension. State government has taken some steps to accelerate development in this area. Recently, fire station at Bansdronei, Police Station and Phari at Bansdronei, eco-park and floating market near Brij station have been set up by state government. Social and Economic status of Metro extended area have been rapidly changed from last ten years is the most effect of Kolkata Metro extension.

**Keywords: Metro Extension, Passenger Volume, Modes of Transport, Rapid Change, Social Impacts**

## I. INTRODUCTION:

The Kolkata Metro is a public sector understanding organisation and it is rapid transit system serving the city of Kolkata and the district of south and north 24 parganas. After extension of southern route of Metro Railway, it has been two phases; in firstly Mahanayak Uttam Kumar (Known as Tollygunge) to Kavi Nazrul (Known as Garia) was opened in 2009 and second phase, Kavi Nazrul to Kavi Subhash (Known as New Garia) in 2010. New Garia is the junction area of Metro Railway with Railway of Sealdah south section also. When Kolkata Metro Railways was up to Tollygunge, then the maximum effected area of Metro Railway was Garia area. After extension, these affected areas have been extended up to Baruipur area and other commuters who coming from Canning, Diamond Harbour, Lakshmikantapur and Namkhana areas boarded from New Garia.

## II. HISTORICAL BACKGROUND OF STUDY AREA:

After independence 1947, the transport problem of Kolkata drew the attention of city planners, the state government and also government of India. Kolkata city had grown up without proper planning. It was soon realize that something had to be done quickly in order to cope with the situation. Dr. Bidhan Chandra Roy, Chief Minister of West Bengal, first conceived in 1949 the idea of building an underground Railway for Kolkata to solve the problem. The highest priority was given to the busy north-south axis between Dum Dum to Tollygunge over a length of 16.45 km and the work of the project was sanctioned on 1<sup>st</sup> June, 1972. The foundation stone of the project was laid by Indira Gandhi, the Prime Minister of India on 29<sup>th</sup> December, 1972 and the construction work started in 1973-74. Kolkata Metro, India's first and Asia's fifth become a reality on 24<sup>th</sup> October, 1984 with commissioning of a partial

commercial service covering a distance of 3.40km (from Esplanade to Bhowanipur). Services on the entire stretch of Metro (Dum Dum to Tollygunge) were introduced from 27<sup>th</sup> September, 1995 (Metro Railway, Kolkata, 2004). First Part of Phase- II a length of 5.834 km from Tollygunge to Garia Bazar was opened from 22<sup>nd</sup> August, 2009. The last leg up to New Garia a length of 2.851 km has been opened from 8<sup>th</sup> October, 2010. (D.Kindu & T.K.Roy, 2012). Metro service further extended towards north from Dum Dum to Noapara covering a distance 2.091 km on 10<sup>th</sup> July, 2013. (Kolkata Metro Railway, 2006).

**III. LOCATION OF STUDY AREA:**

Tollygunge is located in ward no. 93 of KMC and New Garia is located in Sonarpur Rajpur Municipality Area. The Metro Railway runs over the Adi Ganga (Tolly Nullah) from Kudghat, to Brijji area, after passing Brijji area, the elevated Metro Railway has connected to Sealdah south division Railways at New Garia. Metro Railway runs over the Tolly Nullha through ward no. 97, 98, 100, 110,111,112,113,114, and 115 of KMC (S.Das, K.Dhali and M.Biswas, 2015). The study area is covered from Tollygunge (22°29 40' N, 88°20 42' E) to New Garia (22°27 40' N, 88°22 49' E)

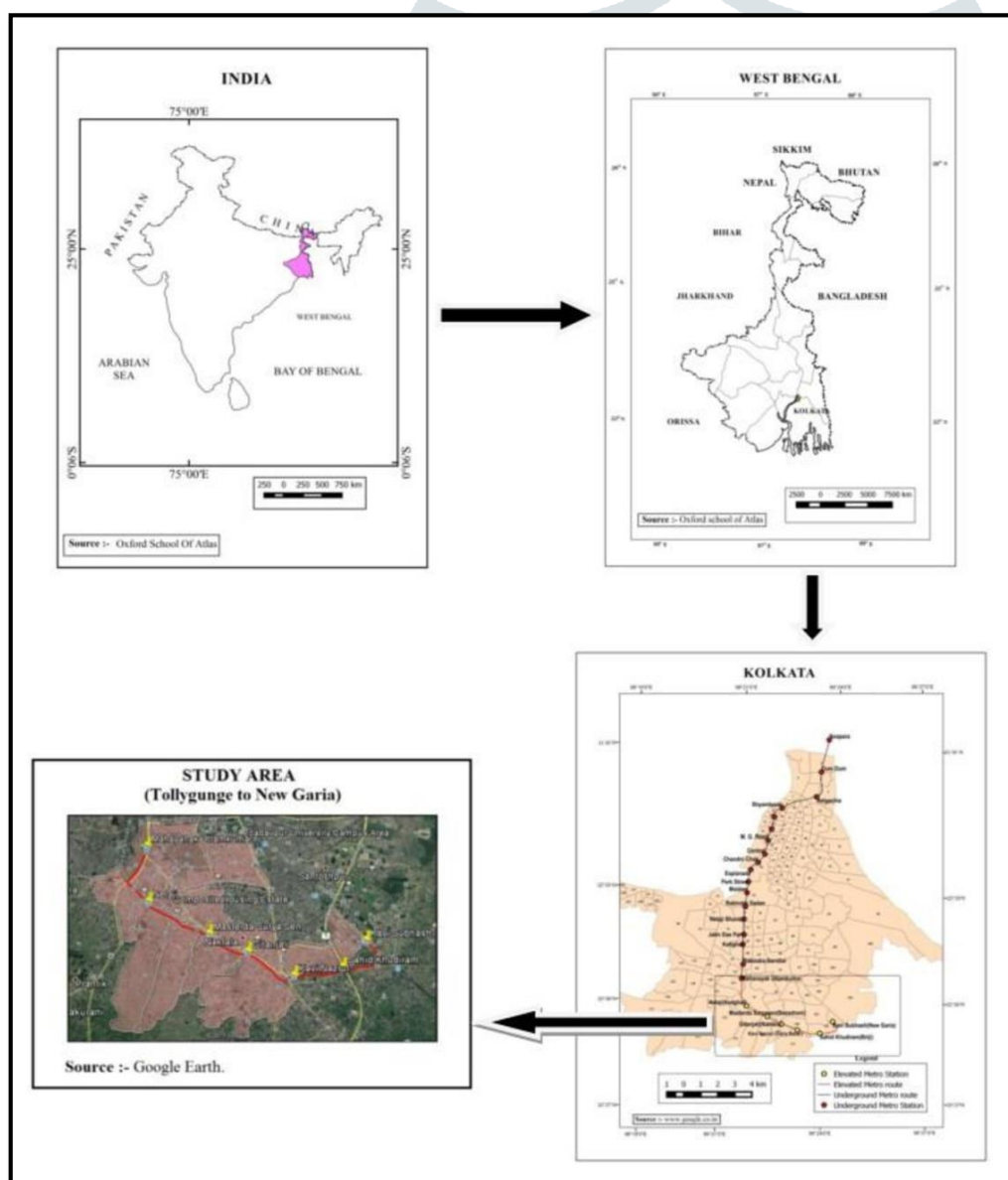


Fig -1: Location Map.

Source: Oxford School Atlas and Google Earth.

**IV. OBJECTIVE:**

- To observe the role of extended metro railway as mass transportation system in southern part of Kolkata and northern part of south 24 Parganas.
- To know the development of transport network after the extension of Metro Railways.
- To find out the land valuation and increasing rate after Metro Railway extension.
- To compare the condition of before and after extension of Metro Railway.

**V. DATA BASE AND METHODOLOGY:**

This paper is made on secondary data as well as primary data. Secondary data has been collected from Metro Bhavan, Park Street and some informations have been collected from Toto and Auto rickshaw unions and Station Master of extended Metro railway stations i.e, Kudghat, Bansdronei, Naktala, Garia Bazar, Brizi and New Garia. Primary data has collected through questionnaire survey from local people and daily commuters of Metro railways. The analysis considers the view points and opinion of local people, stakeholders, auto drivers and daily commuters of Metro railways. The respondents have been selected by random sampling method of different extended Metro Railway stations at different time of a day. Total study uses descriptive and analytical methods. This analysed paper has been made by using different cartographic and statistical techniques which have been done by MapInfo professional 7.0, and different applications such as Microsoft Excel 2007, Microsoft Word 2007.

**VI. RESULT AND DISCUSSION:***Year wise passenger volume*

After extended Metro Railway service, commuters have decided to travel metro for better service, least transport cost and time savings etc. than other mode of transport. The passengers mainly belong in service man, students, businessman and irregular passenger who travel metro for their necessary work. Passengers have been increased by every year. Year wise passengers who have been increasing at Garia Bazar, Bansdronei, Kudghat Stations, these three stations have got a leading position than other. New Garia also has taken a better position than Naktala and Brij area.

Stations	Year wise Number of Passengers (in Lakh)								
	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	Total
Kudghat (Netaji)	19.07	46.38	50.40	53.48	56.02	58.40	61.05	62.94	407.77
Bansdronei (M.S.Sen)	21.84	52.22	58.60	61.98	62.82	63.74	65.22	67.64	453.73
Naktala(Gitanjali)	10.89	21.22	23.23	20.81	22.69	22.24	23.66	24.12	168.86
Garia Bazar(Kavi Nazrul)	43.09	78.39	75.27	73.61	76.56	70.64	73.78	76.34	567.68
Brij (Sahid Khudiram)	-----	13.67	35.66	32.43	27.71	26.92	26.96	27.31	190.66
New Garia (Kavi Subhash)	-----	4.88	15.62	26.71	54.33	47.91	54.17	58.55	262.18

Table-1: Year wise total passengers of extended Metro stations

Source: General Manager's Annual Report, Metro Railway, Kolkata

Stations	3 Years moving average of passengers					
	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Kudghat (Netaji)	38.62	50.09	53.30	55.97	58.49	60.81
Bansdronei (M.S.Sen)	44.22	57.60	61.13	62.82	63.93	65.53
Naktala(Gitanjali)	18.45	21.75	22.24	21.91	22.86	23.34
Garia Bazar(Kavi Nazrul)	65.58	75.27	75.15	73.60	73.66	73.58
Brij (Sahid Khudiram)	-----	36.66	31.93	29.02	27.20	27.06
New Garia (Kavi Subhash)	-----	15.74	32.22	42.98	52.14	53.55

Table-2: Calculation of 3 Years moving average from secondary data, computed by the Author

Source: General Manager's Annual Report, Metro Railway, Kolkata

Regarding Metro Bhaban, passengers have been increased at stations from last 8 years. Passenger increasing rate is maximum volume at New Garia station where is 12 times increasing rate in last year (2016-17) than beginning year (2010-11). Maximum passengers have changed their route after metro extension. Passenger increasing rates are 3.3 times at Kudghat, 3.1 times at Bansdroni, 2.21 times at Naktala, 2 times at Briji, and 1.77 times at Garia Bazar stations. But the highest volume of Metro passengers boarded at Garia Bazar area from beginning period of metro extension.

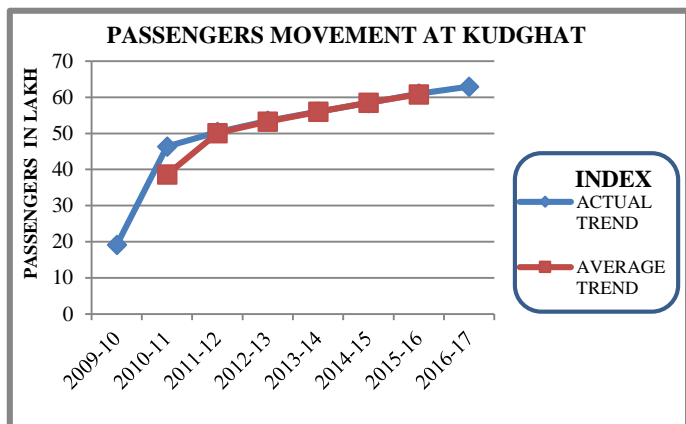


Fig.-2: Year wise passenger status at Kudghat  
Source: Table No.1& Table No.2

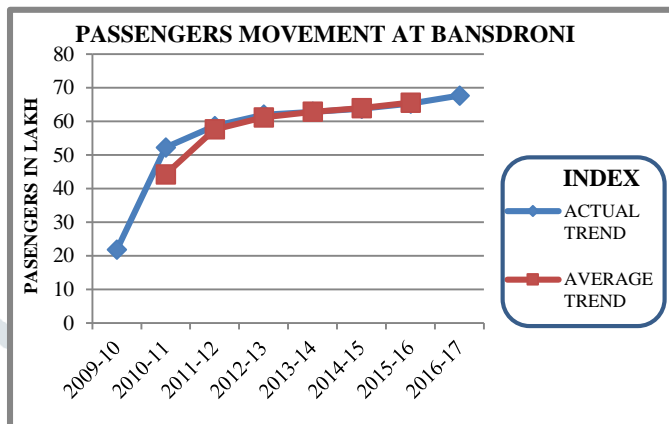


Fig.-3: Year wise passenger status at Bansdroni  
Source: Table No.1& Table No.2

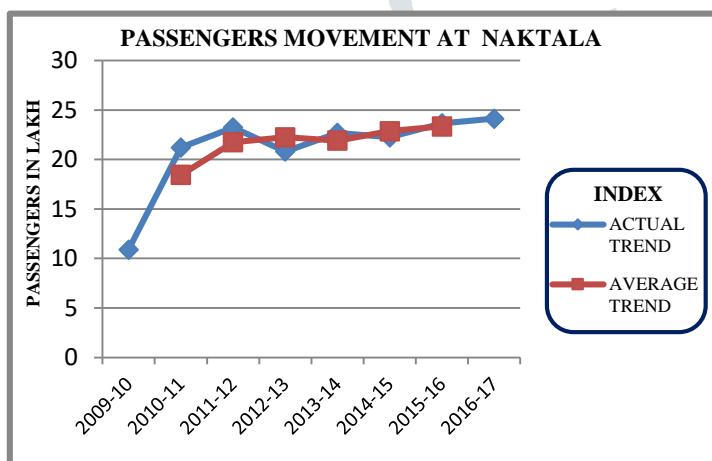


Fig.-4: Year wise passenger status at Naktala  
Source: Table No.1& Table No.2

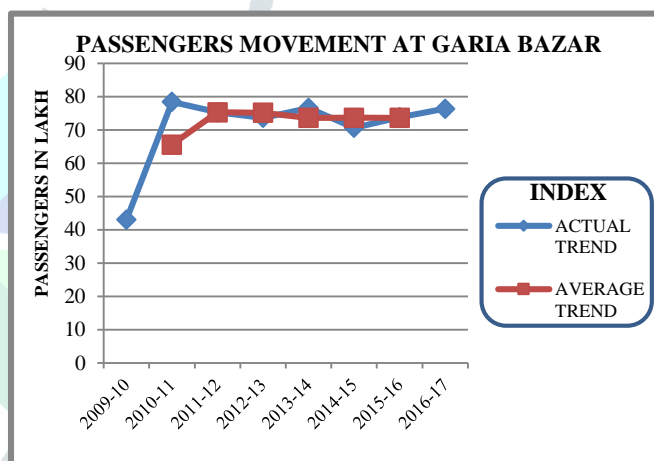


Fig.-5: Year wise passenger status at Garia Bazar  
Source: Table No.1& Table No.2

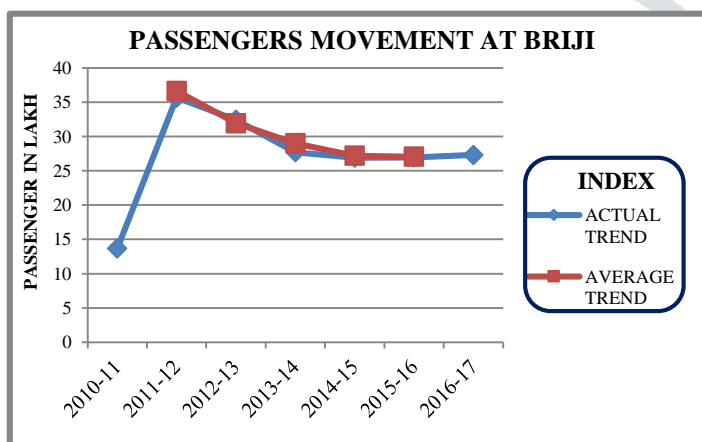


Fig.-6: Year wise passenger status at Briji  
Source: Table No.1& Table No.2

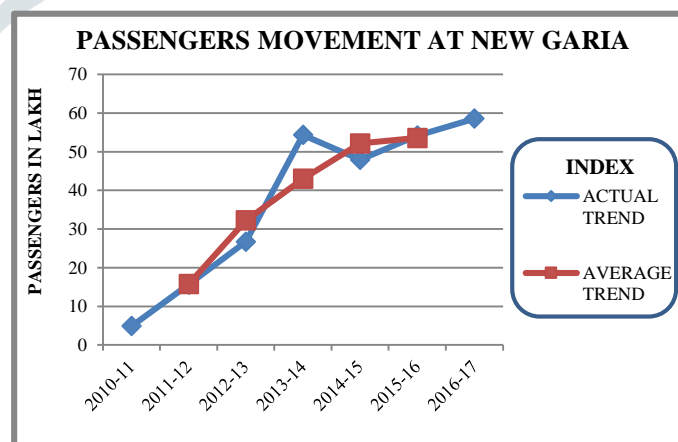


Fig.-7: Year wise passenger status at New Garia  
Source: Table No.1& Table No.2

Metro services are provided in whole year. Every Sunday Metro service is exceptional than remaining days. This service is available from 6:30 am to 9:45 pm on weekdays and from 10:00 am to 9:45 pm only for Sunday. Any festival like Durgapuja, Metro service is changed on public demand.

Stations	Daily wise Maximum of Passengers (in Lakh)		
	2011	2016	Passenger increasing rate per year
Kudghat (Netaji)	0.15	1.82	0.27
Bansdroni (M.S.Sen)	0.17	2.17	.033
Naktala(Gitanjali)	0.06	0.94	0.15
Garia Bazar(Kavi Nazrul)	0.20	1.64	0.24
Briji (Sahid Khudiram)	0.90	1.15	0.04
New Garia (Kavi Subhash)	0.07	2.07	0.33

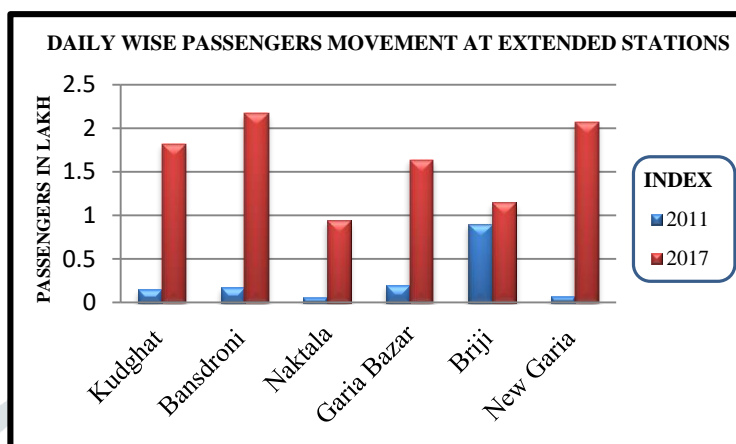


Table-3: Daily wise passengers at extended stations

Fig.-8: Features of daily wise passengers at extended stations

Source: General Manager’s Annual Report,Metro Railway, Kolkata

Source: Table No.3

According to Metro Bhaban from last 10years daily passengers have been rapidly increased. Maximum daily based passengers’ volume has been recorded at Bansdroni in 2016. Average increasing rate has been taken a leading position at Bansdroni and New Garia Metro stations. At both of stations dailypassengers’ flows have been increased.33 lakh as per day in a year.

**Other Mode of Transport from Extended Metro Stations:**

After extending Metro Station different auto routes, Toto Routes and Rickshaw services have been connected from every extended Metro station. Total 3706 auto rickshaws are running on 12 routes at Garia Bazar area. Some Auto rickshaws are available in 24 hours of some important routes i.e. Garia-Baruipur, Garia-Rajpur and Garia-Sonarapur. Garia Bazar area is most nodal point of Northern part of South 24 parganas. After extending Metro service routes and auto rickshaws have been increased and as result the affected area of Garia Bazar has been increased. Government and private bus services are also available at Garia Bazar area and a govt. bus depot is located here.

Metro Stations	Routes	No. of Auto rickshaw	Availability	Total Service Period
New Garia	Nayabad- Jadavpur	250	6am-10:30 pm	16:30 hours
Briji Area	Garia – Garia Station	270	3:00 am – 12:30am	21:30 hours
Garia Bazar	Garia-Baruipur	950	6:00 am – 6:00 am	24 hours
	Garia- Rajpur	750	6:00 am – 6:00 am	24 hours
	Garia-Sonarapur	300		
	Garia (6 no Bus Stand) - Boral (Joyenpur)	35	3:00 am – 12:00 am	21 hours
	Garia (Shitala Mandir) - Boral (Joyenpur)	40	3:00 am – 12:00 am	21 Hours
	Garia – Milan Sangha	20	6:00 am – 12:00 am	18 Hours
	Garia – Elachi	16	6:00 am – 10:30 pm	16:30Hours
	Garia – Nepalganj/ Natunhat	120	3:00 am – 12:00 am	21 Hours
	Garia - Golpark	600	3:00 am – 12:00 am	21 Hours
	Garia -Jadavpur	150	3:00 am – 12:00 am	21 Hours
	Garia - Patuli	25	3:00 am – 12:00 am	21 Hours
	Garia - Tollygunge	750	3:00 am – 12:00 am	21 hours
Bansdroni	Garia - Tollygunge	750	3:00 am – 12:00 am	21 hours
	Bansdroni - Palpara	69	4:00 am – 11 pm	17 Hours

	Bansdrone – Sonali Park/ Shitala Park	16	6:00 am – 9:30 pm	15:30 Hours
	Bansdrone - Rania	57	5:30 am – 10:30 pm	17 Hours
	Bansdrone – Jubili Housing Complex	7	5:30 am – 10:30 pm	17 Hours
	Bansdrone – Balak Sangha	59	5:00 am – 10:30 pm	17:30 Hours
Kudghat	Kudghat – Tollygunge/ Anwarshah	40	5:30 am to 1 am	19:30 Hours
	Kudghat – Aanada Pally	38	6:00 am – 10:00 pm	16 Hours
	Kudghat – Purba Aananda Pally	38	6:00 am – 10:00 pm	16 Hours
	Kudghat - Badampara	18	6:00 am – 10:30 pm	16:30 Hours
	Kudghat – Dhalai Bridge	20	6:00 am – 10:30 pm	16:30 Hours
Naktala	Garia - Tollygunge	750	3:00 am – 12 pm	21 hours

Table-4: Auto Rickshaw Routes

Source: Primary survey from Auto Rickshaw Unions and Auto Rickshaw driver in August, 2018.

Passengers of Bansdrone Metro station travel by 958 auto rickshaws through six routes. Left side of Metro station is the connector of N.S.Bose road and all passengers depend on bus, auto rickshaw and rickshaws. Opposite side of N.S.C Bose road, all passengers mainly depend on auto rickshaw, e-rickshaw and manual rickshaw. After extending Metro service auto rickshaw stands have been shifted to near Metro station i.e. Bansdrone-Balak Sangha, Bansdrone-Palpara, Bansdrone-Sonali Park/ Shitala Park and Bansdrone-Jubili Housing Complex; 205 and 205A Bus stand have been set up near Metro Station.

Auto rickshaw and rickshaw service are available at Naktala Metro Station area. Mainly a auto route on N.S.C Bose road is connected to Metro station by 750 auto rickshaws. Other side of Metro station is connected to surrounding areas by e-rickshaw and manual rickshaws.

Auto rickshaw, rickshaw and bus services are available from Kudghat Metro station, but only five private busses (route-208) are provide service and some govt. buses are available at day time from here. Total 154 auto rickshaws are providing services through five different routes. Right side of station towards New Garia, people manly depends auto rickshaw, e-rickshaw and manual rickshaw.

Auto rickshaw, rickshaw, private bus and Toto services are available from New Garia Metro stations. Per day 250 auto rickshaws run between Nayabad to Jadavpur via New Garia Station and 70 Totos run from New Garia Metro station to Nayabad Daspara, Netaji engineering college and Netaji Subhas Bose cancer hospital. Mainly eastern side of New Garia Metro station is well connected by different mode of transport. South section of Sealdah is connected at New Garia where is the junction point of both railways.

Briji Metro station is the E.M Bypass connector Metro station. Some bus routes are providing services form here i.e. Garia station-Sector-V, Garia station- Bagbazar, Garia station- B.B.D Bag, Kamalgazi- Howrah station, Baruipur-Howrah station and 270 auto rickshaw and rickshaw are provided service to surrounding areas.

#### **Change in Land Price, Apartment price and Room rent:**

N.S.C Bose road is the parallel road of Tollygunge to Garia Bazar Metro station and other main roads i.e. Garia-Baruipur, Garia station, Raja S.C.Mallick road and E.M.Bypass are main connector road of extended Metro Railway. After extension of Metro railway land characteristics have been changed basis on its location and better communication. Residential lands are almost unavailable near Metro station (within 1km). Apartment price and houses rent also have been increased from last 10 years.

Stations	Distance: 1 km radius from Metro station								
	Land Price Rs in Lakh/katha			Apartment Price Rs/sq.ft.			Rent per Room Rs/Month		
	2006-07	2010-11	2017-18	2006-07	2010-11	2017-18	2006-07	2010-11	2017-18
Kudghat (Netaji)	2-3.5	8-15	15-25	900-1200	2200-3000	4500-5500	400-600	2500-3500	5000-5500
Bansdrone (M.S.Sen)	2-3	7-13	15-30	700-1000	2000-2700	4000-5000	400-500	1700-3000	4500-5500
Naktala(Gitanjali)	1.5-2.75	7-10	15-25	700-900	2000-2500	4000-4500	400-500	1700-3000	4000-5000

Garia Bazar(Kavi Nazrul)	2-2.5	6-10	20-30	700-800	2000-2700	5000-5500	400-450	1500-2800	4000-4500
Briji (Sahid Khudiram)	2-2.5	8-11	15-25	700-1000	1800-2600	4000-4500	300-500	1500-2500	3500-4000
New Garia (Kavi Subhash)	1.5-2.5	7-10	12-20	700-1000	1700-2500	4000-6000	350-500	1500-2500	3500-4000

Table-5: Land and Apartment price and Room rent at Metro Station area.

Source: Primary survey in August, 2018 & 99 acer.com and magicbrick.com

Land price has been increased 10-15 times within 10years (from 2006-07 to 2017-18) near extended metro station area. Basis on collected primary and secondary data, maximum land price has been increased Bansdroni and Garia Bazar areas 12-15 times and rest of extended metro stations i.e. Kudghat, Naktala, Briji area and New Garia have been increased land price almost 10-12 times than last 10 years.

Recently apartment price has more increased due to high demand at nearest areas of metro station. Maximum commuters decide to buy a apartment within 1km from any extended metro station. Apartment price has increase 5-6 times and house rent has also been increased 10-12 times than last 10 years.

**Commuter Perspectives and their characteristics:**

According to the primary survey, there are also several consequences occur due to the extension of metro. 84% residents stated that land values apartment price and house rent is drastically increased after the extension. 8% residents told that moderately increased and 5% resident told that less increased.

For transport facility, 87% residents told that the transport facilities are highly developed than before the metro extension. 13% residents told that it moderately developed.

For urbanization of the extended part, 77% residents stated that the area of this extended part is highly urbanizes in last few years. And 17% stated that the area are moderately urbanized and rest of the residents stated that less urbanized.

For migration, 53% residents told that rate of migration is highly increased in last few years due to the metro facility. In these areas, 31% stated the migration rate is moderate and 16% told that it is less.

There are another major problem occur due to the huge population pressure. According to the survey, 87% residents stated that they faced the depletion of ground water level.

80% residents stated that several environmental problems such as pollution, in Adi Ganga, water logging, breeding ground of mosquitoes, bad smell etc. are highly increased.

Occupation	No. of passengers	In %
Service	90	60
Business	15	10
Self Employed	26	17
Others	21	14

Table-6: Passengers’ occupational structure

Source: Primary data, surveyed in December, 2017

Occupation	Passengers	In %
Service	90	60
Business	15	10
Self Employed	26	17
Others	21	14

Table-7: Passengers’ occupational structure

Source: primary data, surveyed in December, 2017

Parameters	No. of respondents	In %
Lowest Cost	125	83
Time Saving	136	91
Comfortable	117	78
Pollution Free	139	93

Parameters	No. of respondents	In %
High	63	84
Moderate	8	11
Low	4	5

Table-8: Passengers’ perception for choosing Metro travelling. Table-9: Respondent’s perception on increasing of land price

Source: Primary data, surveyed in December, 2017

Source: Primary data, surveyed in December, 2017

STATIONS	NO. OF PASSENGERS					
	Permanent	In %	Migrated	In %	Daily travellers	basis In %
Kudghat (Netaji)	6	4	4	3	-----	-----
Bansdroni (M.S.Sen)	14	9	16	11	-----	-----
Naktala(Gitanjali)	11	7	9	6	-----	-----
Garia Bazar(Kavi Nazrul)	13	9	12	8	-----	-----
Briji (Sahid Khudiram)	18	11	7	5	-----	-----
New Garia (Kavi Subhash)	16	11	3	2	21	14

Table-10: Types of passengers.

Source: Primary data, surveyed in December, 2017

**VII. MAIN FINDINGS:**

1. Extension of metro railway has changed the transport system in these areas.
2. Different new auto rickshaw routes and rickshaw, e-rickshaw, manual rickshaw have been increased after metro extension.
3. Passengers of metro railways are increased day by day and people are migrated here from other places.
4. Metro station connecting routes are very congested at office time and passengers faced this situation regularly.
5. Since the metro station route extended over Adi Ganga, popularly known as Tolly Nullah has been blocked by constructed pillars of metro track. Sewage system becomes a poor condition and drainage water is increasing day by day due to huge population pressure.

**VIII. SUGGESTIONS:**

1. Metro service should be better through decreasing time duration and increasing frequency of metro.
2. Connecting roads of metro stations should be wide and traffic police should be appointed in congested areas.
3. The availability of auto rickshaw, e-rickshaw, manual rickshaw and Totos are poor after 9 pm. Passengers have to paid extra money and spend more time on line. So these modes of transport should maintain the democracy rule for passenger.
4. K.M.C should take different steps to clean Tolly Nullah and after all people should be aware.

**IX. CONCLUSION:**

Metro Railway undoubtedly the best mode of transport system and it serves comfortable journey, time and cost savings and safety than other transport. Metro has taken a leading role to rapid improvement and change at extended area and its surroundings. Many of people have selected at extended metro areas for getting better communication and services. The extended metro areas (Tollygunge-New Garia) have rapidly changed through land use, land valuation, urban characteristics and other transport facilities.

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