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A Case Study Of The Gurugram-Manesar Urban Complex For Sustainable Transportation

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Abstract

In our changing world, over half of the world's population now lives in urban areas than in rural areas. Only 30% of the world's population lived in cities in 1950 but by 2050, that percentage is expected to rise to 66%. Even though Indian cities are expanding quickly, one cyber town in the state of Haryana is progressing toward sustainable urban growth. The year 1972 saw the establishment of the world-famous Maruti Industry with the assistance of the Suzuki Company of Japan, which marked the beginning of Gurugram's major growth. Case study of the Gurugram-Manesar Urban Complex, which is also renowned as the only city in India with a quick metro network, modern commercial malls, towering cyber parks, and an excellent example of sustainable urban development. This complex's name was suggested in the district development plan. This city, which serves as the financial and industrial hub of Haryana, has seen India's third-largest increase in per capita income (after Chandigarh and Mumbai). Through excise tax, sales tax, stamp duty, and registration, Gurugram contributes between 45 and 48 percent of Haryana's total revenue. The state's current prolific and enormous real estate development centres around this area. The prominent location of this town on National Highway Number 48 and its proximity to the Indira Gandhi International Airport, which is only 4 kilometres away and has excellent air connectivity to all major capitals across the world, are the main causes of its extremely rapid expansion. In this paper, an attempt has been made to examine the transport system and its connections to nearby towns and the national capital of Delhi.

Keywords: Collaboration, Network, Transport, Real Estate, Sustainable Urbanisation

Introduction

The Gurugram-Manesar Urban Complex (GMUC) aims to develop an integrated land use and transportation plan while taking the goals of the National Urban Transport Policy into consideration (NUTP). To ensure that the overarching mobility vision is not lost, the IMP will try to steer all investments in the right direction. Public transportation and non-motorized modes will receive priority under the Mobility Plan because it will place an emphasis on the movement of people and products rather than only motor vehicles. The population of GMUC is projected to be 43 lakhs by 2031, which is almost three times greater than the current population. Large-scale employment in the area is anticipated to result from the proposed SEZs in and around GMUC. Various organizations/institutions in charge of organising and carrying out transportation initiatives for GMUC have plans in place and a number of projects under progress. This IMP would aid in the coordination and streamlining of efforts across several agencies as part of an integrated strategy to enhancing Gurugram's transportation infrastructure. In addition to creating a roadmap for future transportation improvements, this report offers a suitable transportation investment programme for GMUC that comprises short-, medium-, and long-term initiatives that fits in mobility plan.

Objectives of the study

The objective of this study is;

- To develop a transportation vision, set goals based on the defined vision for the Gurugram –Manesar Urban Complex.
- To study benefits of the master plan of GMUC.

Data-Base & Methodology

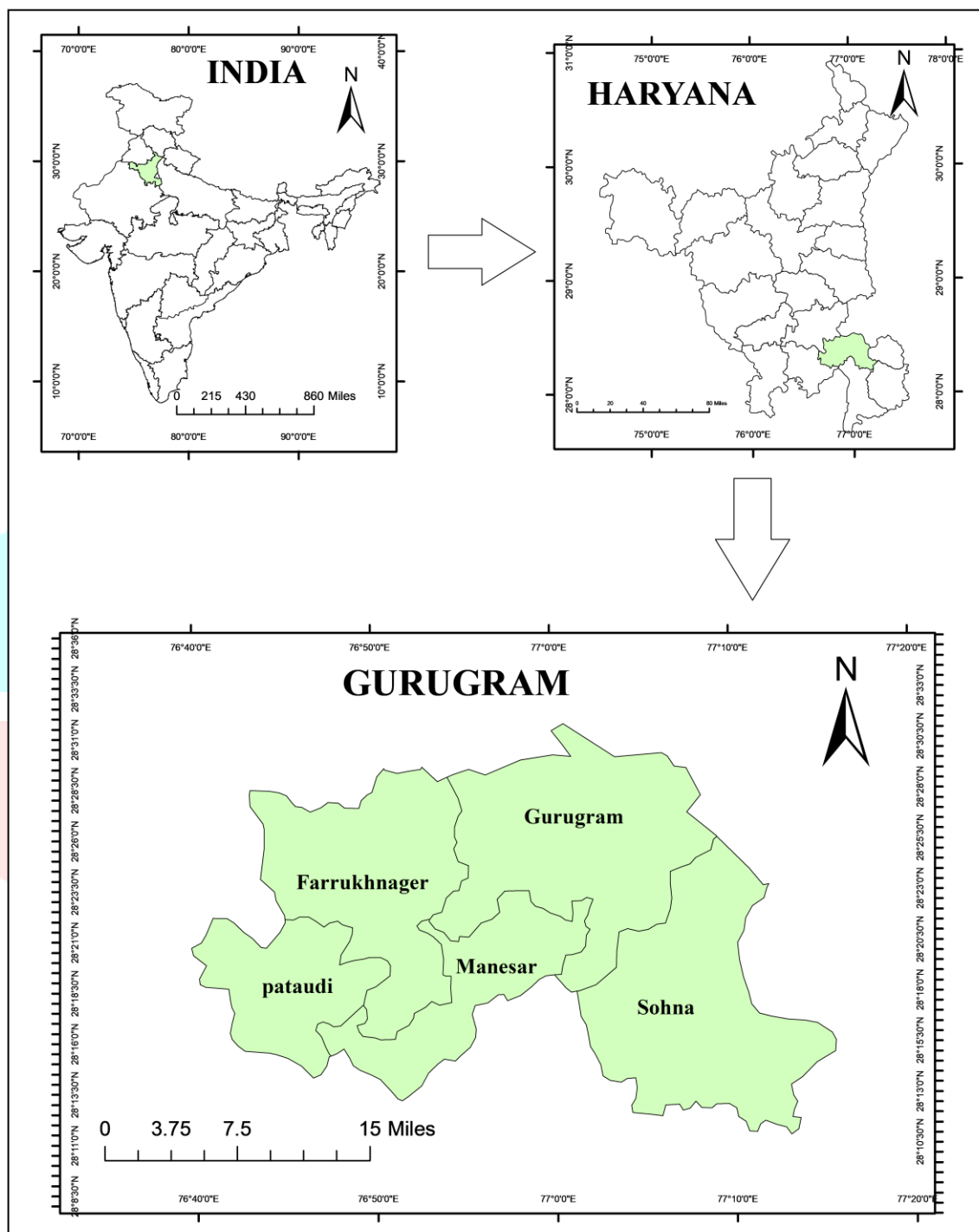
Secondary data have been collected from the published sources and internet search.

The methodology of the paper includes -

- 1.Documentation /Literature Review
2. Study area map has been prepared by using ARC GIS Software version 10.7.1.

Introduction to the study area

Fig. 1.1: Study area map of Gurugram District, Haryana.



Source: Prepared by researcher with the help of ARC GIS,10.7.1.

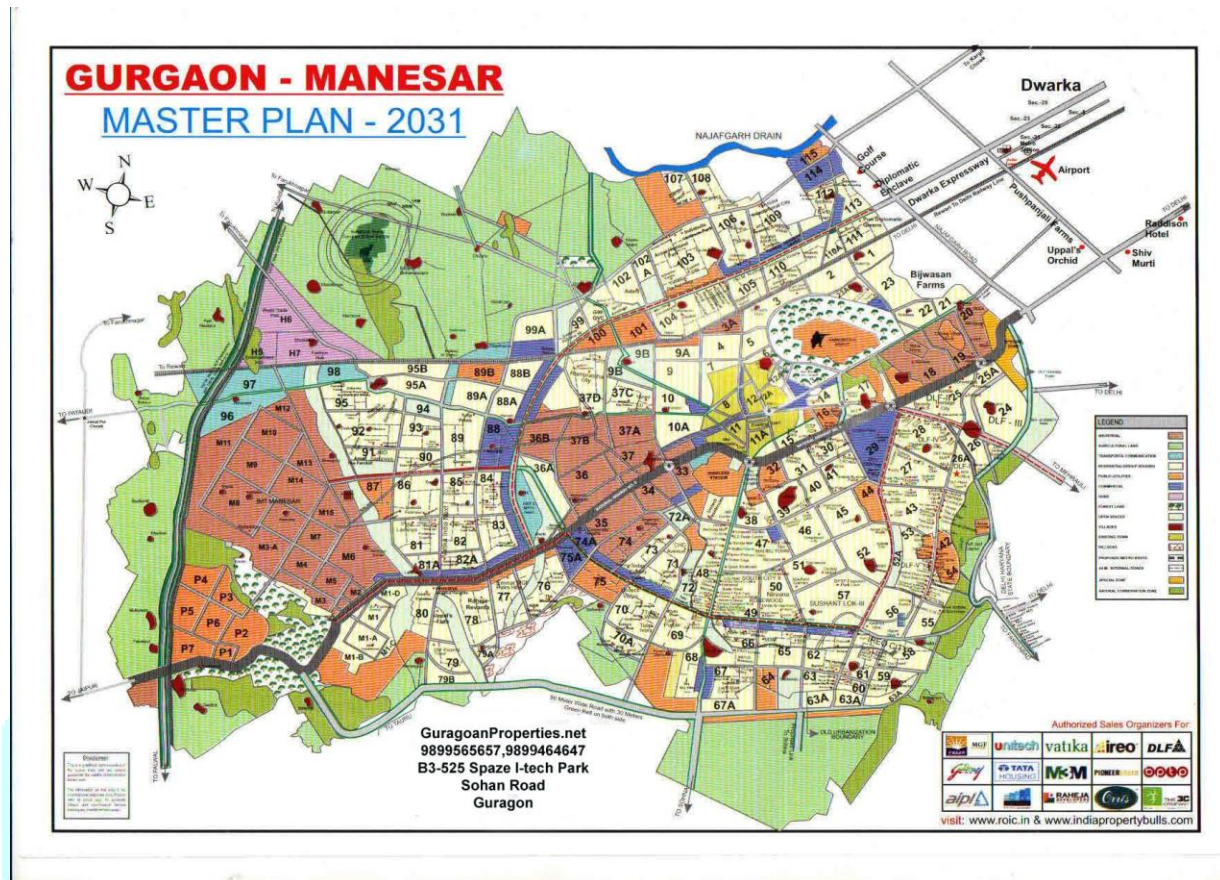
The Gurugram district of the state of Haryana occupies an area of 124039 hectares in the southern part of the state. The district's climate can be categorised as hot, semi-arid, tropical steppe, and is mostly distinguished by an excessive dryness of the air, with the exception of the monsoon season. Alluvial plains dominate the study region, which is divided by long ridges of Delhi quartzite. It is divided into five administrative blocks: Gurugram, Sohna, Farukh Nagar, Manesar and Pataudi. From 2.13 metres below ground level (mbgl) in the

village of Dharampur to 79 mbgl in the village of Dundahera, the depth of the water varies. The study area's ground water table is declining at a rate of 73 cm per year during the pre-monsoon season and 70 cm per year during the post-monsoon season, according to an examination of the last ten years' worth of ground water level data (2000–2010).

Result and Discussions

Gurugram has developed as an industrial, IT, BPO and commercial hub. Large corporate organisations, multinational corporations, foreign investors, and Non-Resident Indians (NRI) continue to invest in Gurugram. The region is experiencing rapid urbanisation, population growth, economic growth, and the emergence of new employment prospects, which has created a huge demand for high-quality transportation infrastructure. Even with vehicles with superior technology, this will rise to 18 tonnes by 2031 if the current trend continues. Real estate investors have hinted to the Gurugram real estate market's imminent growth. The price of land and plots will increase to unimaginable heights as a result of the construction of the New Gurugram and the Dwarka Expressway. These experts claim that the prices being demanded at the moment are extremely low. They believe that these places would become the heart of Gurugram once the construction is finished. The acquisition of property is the result of the brand-new Gurugram Master Plan 2031. In accordance with the new plan, 58 new sectors will be introduced together with an allocation of land for residential developments of around 14900 hectares. In view of the global Master Plan 2031 includes some of the most innovative ideology themes ever created because to its multinational and inventive concept. Manesar is developing into a mega-city as it now serves as the home to numerous international industrial facilities and is a fully integrated part of the Millennium City. In the National Capital Region, the entire district is anticipated to outperform Noida thanks to Gurugram's commercial and residential hub and Manesar's industrial foundation.

Fig. 1.2: Gurugram Manesar Master Plan, 2031



Source: Town and Country Planning Department, Gurugram, Haryana Government.

The 5,000-acre industrial area is run by the Haryana State Industrial and Infrastructural Development Corporation (HSIIDC). Manesar is particularly well connected to both Delhi and Gurugram because it is situated at the crossroads of NH-48 and the planned Kundli-Manesar-Palwal Expressway. To enable the personnel to dwell close to the industrial units and be able to access them, Manesar's residential sectors have risen from one to four under the integrated development plan. Manesar has developed into a popular site for developers as well. The Haryana Government has launched a number of efforts to support the economic development of the area, including the Integrated Mobility Plan for Gurugram-Manesar Urban Complex.

Development Plan Transport Proposals

The Government's Development Plan-2021 for the Gurugram-Manesar Urban Complex includes a variety of transportation ideas to address the rising demand for transportation. The suggestions comprise: Vasant Kunj in Delhi and Mehrauli Road in Gurugram are connected by a 90 m wide road. Through Mandi and Gual Paheri, a 90 m wide road connects Delhi's Andheria Mor to Gurugram's Faridabad Road. Density Graph Integrated Mobility Plan for the Gurugram-Manesar Urban Complex for 2021 17 Road connecting Dwaraka and Palam Vihar in Gurugram is 150 metres wide.

- Extension of DMRC metro lines:
 - (1) Sushant Lok Phase I and
 - (2) Dwarka line to Manesar and up to the KMP corridor.
- 150m wide northern peripheral road and
- 90m wide southern peripheral road

Traffic Management Traffic Engineering and Management must be given high priority in Gurugram-Manesar Urban Complex. The strategies are intended to improve the traffic situation without extensive investments. Key measures include:

- **Intersection redesign**
- **Traffic control devices**
- **Traffic signs and markings**

Intersection redesign

Intersection re-design present not only safety problems as accident rates are usually higher at intersections than at other sections of the road. However, intersections control the network's capacity and effectiveness. Redesigning the intersections with suitable channelization, turning limits, and phasing might significantly increase capacity. It is essential to optimise and maintain optimal throughput levels at all intersections. After the Gurugram-Manesar Urban Complex Integrated Mobility Plan.

Traffic control devices

Installation of Traffic Control Devices The following benefits of traffic signals: Ensure the efficient flow of traffic. Increase the intersection's capacity to handle traffic. Reduce the number and severity of specific accident types, particularly right-angle collisions. are employed to periodically stop heavy traffic to allow pedestrians to cross the road. Every significant intersection in GMUC needs to have traffic signals installed as a plan.

Traffic signs and markings

Traffic Markings and Signs must be put up in the right locations. According to the recommendations made in IRC document 67-2001, "Code of Practice for Road Signs," all traffic signs should be installed. The lack of road markers is one of the main issues with GMUC roads. Road markings are an essential safety feature as well as an aesthetic addition to the road. There are also benches, bollards, phone boxes, post boxes, streetlights, traffic signals, stop signs, bus stops, trash cans, taxi stands, public restrooms, fountains, and memorials.

Facilitating Mobility for Transport Management

Walking and cycling

Develop and implement a network design for footpaths on all roads in accordance with the Indian Road Congress's amended code (IRC). Targeted network and kilometres of footpaths will be built out gradually and will surround the entire city. Determine which roads should have wide, dedicated sidewalks and cycle lanes in accordance with the principles of people-friendly street design. Implement plan for more secondary street networks and un-gated streets to provide direct, shortest paths for pedestrians and bikes. Adopt traffic calming measures for all roadways.

- To relieve congestion, traffic can be redirected from busy intersections via a number of different routes. As far as possible, signal-free corridors should be avoided since they obstruct the movement of people and public transportation. All traffic crossroads should include safe pedestrian crossings.
- A safe pedestrian crossing facility shall be present at every traffic intersection, with priority given to at-grade crossings equipped with pedestrian signals and signage. This ought to be grade level. To shorten walking and bicycle distances, minimise block sizes.
- Micro-mapping of business hubs and locations with heavy pedestrian traffic for pedestrianisation as well as locally suitable safe access solutions.
- Priority should be given to synchronising signals with an integrated IT-based traffic management system so that can cross signals quickly.
- The introduction of the expansion of bicycle sharing programmes to include the entire city. Plans for bike sharing will be encouraged and supported in collaboration with the private sector.
- Make walking and cycling infrastructure audits for safety and walkability mandatory. The current law should be amended to make encroachment, particularly parking encroachment on walking and bicycle lanes, a punishable offence.

Bus services

Augment the bus fleet: There are currently 31 buses per lakh people in service in Gurugram. In order to achieve a ratio of 100 buses per lakh people, the fleet size would be raised. There will be a good variety of air-conditioned buses in the fleet.

Rationalize bus routes: The bus route design will be adjusted such that every home in Gurugram is 200 metres or less from a bus stop.

- Implement IT-based systems for monitoring, electronic ticketing, and passenger information services. The buses will include hand-held ticket vending machines and GPS tracking and monitoring equipment. Implement IT technologies in buses, bus stops, control centres, and passenger information systems to

improve bus service reliability, and make Gurugram a model for sustainable growth. envelopes bus depots for parking buses and other types of developments: Build enough parking spaces and depots to stop buses from parking on the street. Bus terminals that have multi-level parking can make better use of their available space. Bus depots that are multimodal and multipurpose offer customers first-rate bus services and terminal experiences. Integrated passenger terminals will be built, combining regional and local public transportation systems, with mixed-use and multi-modal amenities for passenger convenience.

- Common ticketing and fare integration Install ETVMs in all neighbourhood buses. Common mobility cards will serve as the required bus access card. An inexpensive and competitive bus pricing policy is required compared to the operating costs of two-wheelers.
- Arrange for the effective use of auto-rickshaws and e-rickshaws as a feeder system to connect all doorsteps.

Parking

Implement parking regulations as a way to manage transport demand. Through approaches like parking district management, the introduction of evidence of parking, etc., this strategy will attempt to address concerns with parking supply and enforcement, pricing of parking places, and administration of parking at the neighbourhood level.

- Strict penalties for parking violations and encroachment on walkways. According to the Delhi Municipal Corporation Act of 1957 and the Police Act of 1978, parking on footways should be declared a punishable offence. Stop and fine those who park their cars in non-designated places. Parking-related penalties should be 10 times the parking price, and after a certain number of violations, automobiles should be impounded.
- Implement and improve variable time-based pricing in accordance with market demand. Off-street and on-street pricing that is coordinated in both business and residential areas, as well as parking permits in residential areas Parking fees should be determined by the time spent there, the area of the city, and the size of the car.
- Change parking lease terms to enhance parking income for neighbourhood improvement and public transportation. Assessment and control of the effects of parking and traffic on buildings will be integrated as a mandatory part of the procedure for granting building permits.

Road safety

A systematic auditing system for all important highways and intersections will be established, and audits will be performed at regular intervals. Solutions must be put into practise in a timely manner. To guarantee that roadways are safe for women, children, and the elderly, specific audits for vulnerable groups in society will be done alongside road safety inspections.

- Road designs will be altered in response to audit findings. While letting traffic to flow safely at grade, traffic calming techniques should be used to lower vehicle speeds.
- In order to improve road safety, a spatial database of traffic collisions will be kept up to date. strict adherence to the law when it comes to driving in lanes, etc.

Conclusion

At the conclusion of this paper, I can state that the Gurugram and Manesar Urban Complex is a south-eastern Haryana region that is still in development. also develop into a smart city in this regard in the future. Many policies were made for this aim by the Haryana government, and now it is our turn to contribute to the effort. The government has decided on a number of projects for sustainable development up until 2021 and 2031 for this region. The government's Development Plan-2021 for the Gurugram-Manesar Urban Complex includes a variety of transportation ideas to address the rising demand for transportation. The acquisition of property is the result of the brand-new Gurugram Master Plan 2031. In accordance with the new plan, 58 new sectors will be introduced together with an allocation of land for residential developments of around 14900 hectares. The Master Plan 2031 contains some of the most inventive themes ever with its worldwide and innovation ideology.

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