

Advisory on

Transit Oriented Development (TOD)

Ministry of Housing and Urban Affairs

Govt. of India

2 Page Advisory on Transit oriented Development-MoHUA

Content

1.0 TOD Definition	4
2.0 TOD Vision	4
3.0 TOD Objective	4
4.0 TOD Elements	5
5.0 TOD Principles	5
6.0 Steps to achieve TOD	6
7.0 Components of TOD	6
7.1 Multimodal Integration	6
7.2 Street Design	7
7.3 Buildings	7
7.4 Open Spaces	7
7.5 Safety and Security	7
7.6 Parking	7
7.7 Financing for TOD	7
7.8 Statutory Framework	7
7.9 Coordination and Implementation	8
8.0 TOD Implementation	8
8.1 Influence Zone	8
8.2 High Density Compact Development	8
8.3 Mixed Use Development	8
8.4 Inclusive Housing	9
9.0 International Success Stories of TOD	9
9.1 Japan	9
9.1.1 Tokyo Metropolitan Area	9
9.1.2 Japan Railway (JR) East Tokyo FSI TDR Sale	10
9.1.3 Tokyu Railway	10
9.1.4 OSAKA Station	11
9.1.5 Himeji:- Model of TOD	11
9.1.6 Shinonome (Tokyo)	12
9.2 Bangladesh- TOD Conceptual Master Plan-Case Study	Dhaka 13
9.3 United Kingdom- London Metropolitan Area	14
9.3.1 Station Area Development	14
9.4 BRT and TOD (Bogota, Colombia and Ahmedabad, In	dia) 14
9.4.1 Bogota	14
9.4.2 Ahmedabad	
9.4.3 Common Issues	14
9.5 France-Paris Metropolitan Area	15
10.0 References	16

Advisory on Transit Oriented Development (TOD)

1.0 TOD Definition

"Development that integrates land use and transportation around transportation hubs and a variety of medium to high-density land uses, including residential areas promotes a walkable built environment and strengthens the linkage between mass transit and other transportation modes, which can result in urban revitalization and suburban area regeneration, reduced reliance on automobiles, and improved overall quality of life."

TOD integrates land use and transport planning and aims to develop planned sustainable urban growth centers, having walkable and livable communes with high density mixed landuse. Citizens have access to open green and public spaces and at the same time transit facilities are efficiently utilized.

2.0 TOD Vision

- **Enable Transformation:** To assist in transformation of cities from private vehicle dependent city to public transport oriented development.
- Accessible Public Transport: To promote the usage of public transport by making it accessible, encourage green mobility by encouraging people to walk and cycle and at the same time curb pollution and other negative impacts of motorization.
- **Compact Walkable Communities:** To create livable and affordable communities, which are compact and walkable

3.0 TOD Objective

- To promote the use of public transport by developing high density zones in the influence area.
- To provide all the basic needs of work/ job, shopping, public amenities, entertainment in the influence zone with mixed land-use development which would reduce the need for travel.
- To establish a dense road network within the development area for safe and easy movement and connectivity of NMT and pedestrians between various uses as well as to transit stations.
- To achieve reduction in the private vehicle ownership, traffic and associated parking demand.
- To develop inclusive habitat in the influence area.
- To integrate the Economically Weaker Sections (EWS) and affordable housing in the influence zone.
- To provide all kinds of recreational/entertainment/ open spaces.
- To ensure development of safe society women, children, senior citizen and differently abled by making necessary amendments to the building bye laws.

4.0 TOD Elements

The important elements of TOD can be summarized as the followings. -

- Development that is a combination of land-use and transportation policy.
- Transit hub as the center, followed by commercial, business/office facilities surrounding it and medium- to high-density residential area within walking distance. In exchange of residential area, commercial / business facilities, industrial / logistic facilities, amusement facilities, and other type of land uses can also be implemented.
- Between the transit hub and residential area are comfortable and convenient pedestrian networks. Urban space that is comfortable for both resident and visitor are created along the development.
- Cooperation between government, transit operator, developer and resident to achieve sustainable urban development. Realized development profit are also distributed to the related parties.
- Strong linkage between mass transit and other transportation modes that increase convenience of residents can promote urban revitalization and suburban area regeneration, reduced reliance on automobiles, and improved overall Quality-of-Life (QoL).

5.0 TOD Principles

TOD focuses on compact mixed use development around transit corridor such as metro rail, BRTS etc. International examples have demonstrated that though transit system facilitates transit oriented development, improving accessibility and creating walkable communities is equally important. Based on the objectives of National Urban Transport Policy, this TOD policy defines 12 Guiding Principles and 9 Supportive tools, as shown below



6.0 Steps to achieve TOD



7. 0 Components of TOD

7.1 Multimodal Integration

The influence area should have high quality integrated multimodal transport system for the optimum use of the facilities by the residents/users. The system should have seamless physical connectivity, information integration and fare integration across modes so that the first and last mile connectivity does not become a bottleneck in the use of public transit systems by the citizens. The following may stress upon:-

First and Last mile connectivity

Informal sector

integration

Interconnected stree

network

Traffic

Calmin

Optimised

densities

Mixed land use

TOD

Components

Mana

Parking

• Stations should be designed to provide high quality services.

Multimodal

integration

Complete streets

Housing diversities

- Barrier free access to all the required amenities.
- Hierarchy of the facilities at the transit system should prioritize pedestrians followed by bicycle, feeder buses, drop-off facilities and park and ride facility in the given order.
- Ample bicycle parking spaces.
- Intermediate Public Transport (IPT).
- Non-Motorized Transport (NMT).
- Feeder buses.
- Area around the transit station remain
 - congestion free and to facilitate easy transfers.
- Park and ride facilities and
- On-street parking should be prohibited.

7.2 Street Design

The streets should be designed for users of all age groups and for all types of commuters including pedestrians, bicyclists, motorists and transit riders. They should be safe and accessible by all. Continuous and unobstructed footpaths of suitable width should be provided on either side of the streets. Barrier free environment may be promoted. The street vendors are the eyes of the streets; hence the designated spaces should be created for them while designing the streets.

7.3 Buildings

Retail and other 'active uses' should be supported on the ground floor along the main streets, key intersections, stations and parking garages to ensure high quality pedestrian environments. All boundary walls and setbacks should be removed and buildings should be permitted up to the edge of the street. Ground floor should support commercial activity,

7.4 Open Spaces

All open areas such as amenity spaces, green spaces, playgrounds, parks and natural areas should be preserved as part of TOD.

7.5 Safety and Security

To ensure a safe and secure environment for pedestrian and NMT users, especially women and children, the influence zone should be designed to maximize natural surveillance. For this purpose, street lighting should be provided, active frontage and vendors zone etc. should be created. Further, facilities such a CCTV cameras and panic buttons etc. should also be installed for round the clock surveillance.

7.6 Parking

To discourage the use of private vehicles and to manage parking in TOD, it is essential that the supply of the parking is reduced and made expensive within the influence zone. On-street parking should be prohibited.

7.7 Financing for TOD

The investment in transit system as well as increase in FAR and provision for mixed use development would result in increase in value of land. Land Value Capture can be used as a mechanism to finance the required upgradation of infrastructure and amenities within the influence zone and expansion of the public transport system.

In TOD influence zones, land value capture can be done through following:-

- enhanced or additional land value tax
- one time betterment levy
- development charges or impact fee
- transfer of development rights (TDRs)

7.8 Statutory Framework

TOD policy should be notified as part of the Master Plan/Development plan of the city. The policy document should clearly outline the importance of the high capacity transit networks in the city's development.

7.9 Coordination and Implementation

Implementation of TOD would entail the involvement of various agencies for preparation of master plans or sector plans, reviewing the infrastructure building regulations, provision of public transport and traffic control, etc. Therefore, to ensure the success of TOD, it is important that there is coordination between these agencies for efficient planning and implementation.

8.0 TOD Implementation

8.1 Influence Zone

The area in the immediate vicinity of the transit station, i.e. within a walking distance, having high density compact development with mixed land use to support all basic needs of the residents is called the influence zone of a transit station/ corridor.

Influence zone is either established at a transit stations or along the transit corridors. It is generally up to a radius of nearly 500-800m of the transit station.



The area of influence, where the TOD is planned for implementation, should be demarcated and notified through master plan and local area plans before implementation. If in any case the TOD is to be implemented in a phased manner, the influence area of the TOD can also be notified in phases.

8.2 High Density Compact Development

TOD promotes densification in the influence area by providing higher Floor Area Ratio (FAR)/ Floor Space Index (FSI) and higher population & job density as compared to the area around and beyond the influence areas. To ensure sustainable development, the minimum FAR should be 300 - 500%, and can be higher, depending on the city size. It is not necessary to keep the density and FAR norms consistent for the influence areas across the city. It can vary depending on the infrastructure available, land use zoning, transit capacity etc.

8.3 Mixed Use Development

Mixed land use should be stipulated for development/ redevelopment in the TOD zone as it would reduce the need for travel by providing most of the activities such as shopping, entertainment and public amenities such as schools, parks, playgrounds, hospitals etc. within the walking distance of the residents.



8.4 Inclusive Housing

The cities should fix a minimum percentage of allowed FAR for affordable housing in all development/redevelopment in the influence zones. Housing in the influence zone should have a mix of all economic groups/ sections. The development control regulation should stipulate housing for Economically Weaker Sections (EWS) as well as LIG/MIG, or other types based on Census definition, in the influence area to give an opportunity to the people who depend on public transport for daily commuting to live in walkable neighbourhoods.



9.0 International Success Stories of TOD

9.1 Japan:-

9.1.1Tokyo Metropolitan Area: In the Tokyo Metropolitan Area, the First National Capital Region Development Plan was formulated in 1958 to address the increasing concentration of population and industry in Tokyo that accompanied the postwar economic recovery. The situation and issues are summarized below :

	Metropolitan Level	Corridor Level	Station Area Level	Site Level
Policy Objective	Realize the multi-polar and decentralized land use by fixing the concentration of population and urban functions in Tokyo.	Strengthen access between Tokyo and suburban core cities and between suburban core cities by road, rail, and others.	Upgrade urban functions, improve living environment, and develop internationally competitive hubs to deal with a declining birthrate and aging population.	
Policy Plan	The Fourth National Capital Region Development Plan (1986): Develop suburban cities, strengthen cooperation, and promote the relocation of population and urban functions from Tokyo to the suburban areas.		Establish the Advisory Council for the Promotion of Urban Renewal (2000).	
Organization	Establish the National Land Agency (1974)		Establish or expand relevant national departments (as needed).	
Framework	Multi-Polar Patterns National Land Formation Promotion Act (1988), Act on Special Measures concerning Comprehensive Advancement of Housing Development and Railway Construction in Metropolitan Areas (1989), and others. Flexible application of Factory Location Law and University Establishment Guidelines, etc.		Amendment of City I (Addition of Special Plan Proposal Syste Measures concernin (2002), and others.	Planning Act, etc. Floor-Area-Ratio, City m, etc.), Act on Special g Urban Reconstruction
Policy Development	Promote the relocation of government research institutes (86 institutions), universities, and others to the Saitama New Urban Center, Makuhari New Urban Center, Minato Mirai 21, Chiba New Town, Tsukuba Science City, Tachikawa, Hachioji, and others.	Railway: Develop Tsukuba Express, Hokuso Line, Keiyo Line, Yokohama Municipal Subway, etc. Promote through service of different lines, etc. Roads: Develop Tokyo Outer Ring Road and Ken-O Expressway.	Designate Chiba, Tokyo, Yurakucho, Akihabara, Kanda, Shinjuku, Shinagawa, Osaki, Shibuya, Ikebukuro, Yokohama, and Kawasaki Station Area as Special District for Urban Regeneration that promote TOD. Develop new station and urban redevelopment of former rail yard between Shinagawa and Tamachi Station.	

In the meantime, the Tokyo Metropolitan Area (Tokyo, Kanagawa, Saitama, Chiba, and Southern Ibaraki prefectures) promoted the construction of railways and highways to cope with increasing automobile use in Tokyo.

9.1.2 Japan Railway (JR) East Tokyo FSI TDR Sale: One of the popular stories on this JR Tokyo Renewal, JR East, the owning company did not need given FSI space above JR East implemented FSI TDR (Transfer of Development Rights) sales to the Real Estate Developer



Tokyo Station, Japan- TDR of Station Building sold to Real Estate Developer P

Tokyo Station :- Example of Multimodal Integration and Sale of TDR (\overrightarrow{P} TDR of Station Building sold to Real Estate Developer)



Note: Multimodal Integration:-1. Bus 2. Taxi 3. Metro Train 4. Express Train 5. Bullet Train (HSR)

9.1.3 Tokyu Railway: Railway business dependence is only 17% of the total Tokyu Railway and Group revenue. Retail shops, office spaces, a hotel, a Long-haul bus and urban bus terminal, and parking facilities with two Wings. Taking advantage of FSI allocated to full extent. Lower floors for commercial, public facilities or educational purposes while higher floors for business offices, hotels or restaurants, even for residential purposes. If no need to be developed, FSI could be for Sale through Transferrable Development Rights (TDR).

9.1.4 OSAKA Station- Underground branch of Tokaido line in UMEKITA Area in Osaka



9.1.5 Himeji:- Model of TOD











The plaza overlooking the World Cultural Heritage and National Treasure Himeji Castle has been developed as the gateway to Harima, which is open not only to Japan but also to the world, as a relaxing and lively place for many citizens and tourists visiting from all over the world.

9.1.6 Shinonome (Tokyo)





9.2 Bangladesh- TOD Conceptual Master Plan-Case Study Dhaka

Design principle and its image of TOD in the model planning area



13 | Page Advisory on Transit oriented Development-MoHUA

"London Transport Strategy" was formulated in 2000 to address the urgent issues of reducing road congestion and increasing the capacity, reliability, and connectivity of rail, bus, and other public transportation systems. On the other hand, a "congestion tax" was introduced. This measure has improved traffic congestion in the city, and the tax revenue will be used to expand the city's transportation infrastructure. The City of London develops a spatial development strategy, the London Plan, every few years, considering the National Land Planning Policy Framework. The main items are

- Main measures related to urban planning
- Main measures related to railways and stations •
- Major measures related to bicycling and walking



Crossrail (Elizabeth Line Route Map

9.3.1 Station Area Development The stations in Central London and other areas will be underground stations, with the real estate income from the construction of office, commercial, and residential buildings in the above-ground areas used to fund the construction of the railway system. Ten commercial buildings were planned to be developed at five stations in the central area and one commercial building at one station in the redevelopment area.

9.4 BRT and TOD (Bogota, Colombia and Ahmedabad, India)

9.4.1 Bogota's BRT carries 45,000 passengers per hour in one direction, indicating a capacity comparable to rail-based transportation. Municipalities along the BRT lines focus only on the volume of traffic and pay little attention to the development along the lines (TOD). In fact, the revised FAR between 2004 and 2010 shows that the BRT line (within a 1km radius) and other areas are 5-7%



compared to 10% in the other areas. The main reason is that the Bogota BRT stations (stops)

are mainly located in the middle of the road and connected to both sides by pedestrian bridges, making them inaccessible for pedestrians and problematic in terms of accessibility.

9.4.2 In Ahmedabad, the Town Planning Scheme (TPS) and the Local Area Plan (LAP) have been used for urban development, but there are no examples of their application (master planning) around BRT stations (stops). Land prices around BRT stations (stops) doubled between 2006 and 2011. This resulted from individual real estate developers' efforts to develop real estate individually; since there were no TOD projects planned around the BRT stations (stops), there was no collective effect on the surrounding area.



9.4.3 Common Issues: The most common issues, in order of importance, addressed by local governments and other organizations in the vicinity of BRT stations (stops) were

- improvement of infrastructure such as sewers and sidewalks
- land use, and
- financial resources.

The most common issues in promoting development along BRT lines, in order of importance, were

- financial resources (return of development profits and use of official development assistance, or ODA,
- absence of neighborhood planning including access improvements, and
- lack of coordination among related agencies.

9.5 France-Paris Metropolitan Area

The Paris Metropolitan Area is currently undergoing a major transformation called the Grand Paris project, which involves the construction of a new subway network in the suburbs of Paris and the redevelopment of the area around its stations.

Grand Paris Plan and Grand Paris Express Route Map



The Paris Metropolitan Area had two different administrative entities in parallel:

- the City of Paris and
- the rest of the surrounding area in the Ile-de-France.

The city planning and policymakers that supported urban administration as a practical matter also worked separately for the City of Paris and the Paris region, adapting to the direction of the administration at the time, maintaining continuity in data and urban planning, and conducting the work necessary to implement policies at a very high level under a rational and substantive system. However, the government made a political judgment that it was necessary to take a scalpel to the urban administration for the Paris Metropolitan Area as a whole.

The Société du Grand Paris (SGP), a public facility corporation, was established as the project entity authorized to implement public projects to ensure smooth implementation. The core project of the Grand Paris Plan, the Grand Paris Express, is to complete a 200 km, ring-shaped urban rail network with 68 stations by 2030. The total impact of the development is expected to cover 140,000 km2 and serve 2 million passengers daily. In addition, dozens of station-area redevelopment projects were started at the same time as the subway construction, creating a chain of TOD that is unprecedented in the history of the world. Most of the planned lines will be constructed below 30 meters underground, so it will not be required to pay compensation to the landowners. The hotel tax and business establishment tax were increased to secure the expenses. Specifically, an additional 15% hotel tax and a 10% increase in taxes on business establishments in Paris will be provided to the Grand Paris Authority, which is the primary operator of the project. The project connecting the Paris Metropolitan Area suburban hubs, three airports, eight TGV (French bullet train) stations, five RER (existing suburban high-speed rail) stations, etc., was initially included but was separated from the project.

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