MODULE 3: THE BUILDING BLOCKS FOR TOD

A Corridor Level Transit-Oriented Development Course
Module 3 of this course takes a systematic approach to present the critical building blocks used to design and implement TOD corridor projects. Our intent is to break down the complexity of TOD projects into discrete elements, which we will call building blocks; these are the blocks used to build a TOD Corridor project.

Planning and implementing a TOD project requires the coordination of numerous agencies, sectors, and levels of government, plus the private sector and civil society. The module will provide a menu of options and tools which can help decision makers think about the ingredients necessary for TOD project implementation. These tools will be illustrated with examples based on case studies, with a focus on cities located in developing countries.

We have organized information into the following building blocks: Political Leadership and Vision; Institutional Structure; Regulatory Environment; Stakeholder Engagement; Design; Infrastructure; Financing; Land; and Affordable Housing. These building blocks are not presented in sequential order; rather, our approach is thematic, and the elements presented here will appear in different degrees throughout project implementation. The options and tools presented under each of the building blocks are possibilities and ideas, but are not prescriptive. Their usefulness depends largely on local context. Finally, it is important to note that specific building blocks included in this module are discussed in greater detail in later modules; the concept of design is examined in depth in Module 4,
financing in Module 5, and affordable housing in Module 7.

The **objective** of this Module is to present the elements, concepts, and vocabulary that are required to look at TOD corridor projects as interdisciplinary strategies. At the end of this module, professionals from different sectoral spheres will understand the perspective and language of colleagues from other sectors, and will be able to communicate with colleagues more effectively. The final goal of this module is to create opportunities for multi-actor dialogue and cross-fertilization of ideas to drive more effective project implementation.

Image Source: WRI.
Let’s begin with our first building block: Political Leadership and Vision.

Political leadership is a key factor throughout TOD project implementation. Because TOD implementation is a long-term, transformative process that generates disruption and risk, political leadership is needed to manage the change process so that all stakeholders feel engaged, understand a project’s importance to the future of the city, and have genuine outlets to participate. Political leadership helps to sustain a vision through changes in political and economic cycles and helps to create community cohesion around the project. The success of the TOD program should not be dependent on any one political leader or party. Rather, it should become accepted as a fundamental driver of the city’s future, irrespective of political change.

Political leadership can manifest itself in different ways, and specific strategies are more important for some cities than others. Political leadership involves the following:

- Developing a strong vision for the project as key for the city's future
- Managing the tension between short- and long-term horizons
- Creating democratic, transparent, open, and fair processes
- Promoting the vision to a multitude of stakeholders and political constituencies
- Setting priorities and allocating scarce resources
• Galvanizing coalitions and public-private partnerships
• Leveraging capital
• Managing succession and legacy for intertemporal consistency
Let’s look at an example of successful political leadership in Singapore.

In order to control urban growth, the city-state of Singapore has used a development strategy developed in 1971 known as the ‘Constellation Plan,’ a concept plan in which radial railway corridors connect master-planned towns on the outskirts of the city to the urban core. This created clear expectations as to where development with good connectivity would take place and led to concentration of office and housing development along the mass transit network. In addition to this TOD-based planning, Singapore has encouraged travel by transit through transportation demand management (TDM) techniques, which include steep fees for car usage.

Singapore's urban and transit planning is controlled by municipal agencies: urban planning is managed by the Urban Redevelopment Authority, while transit services are controlled by the Land Transport Authority (LTA). Though urban planning and transit services are handled by two different agencies, Singapore's strong central government ensures that the two authorities work together closely. Singapore represents a great example of policy consistency across time, vision, and leadership, with the 40 to 50 year concept plan reviewed every ten years and converted in a masterplan.

Sources:

https://www.kaia.re.kr/portal/reports/view.do?searchCnd=&searchWrd=&menuNo=200329&sdate=&edate=&sTyp=&pageUnit=9&viewType=&searchStyle=&cate1=&cate2=&cate3=&sClass=&country=&countryEu=&euMore=&gubn=&rgubnCheck=all&ygubnCheck=all&cgubnCheck=all&pageIndex=101&seqno=269

The second building block we will review is Institutional Structure, or the possible architecture and responsibilities of the agency in charge of TOD project implementation.

TOD is, by definition, an interdisciplinary task. At the very least, it requires the coordination of transportation and land use planning efforts. TOD projects require vertical coordination between different levels of government, from national agencies in charge of transportation, urban development programs, and funding, to metropolitan and neighborhood-level agencies. It also requires the coordinated work of the public sector, private developers, funders, and the community.

The implementing agency in charge of managing a TOD project should allow for the confluence of common interests of all actors involved in the process (public sector, developers, investors and the community). Whether it is an existing agency, or one specially created for a project, an TOD implementing agency should:

- Achieve a convergence of the objectives of stakeholders, resolving conflicts of interest that arise and providing an agreement on compensation for those affected by recovery measures
- Maintain and update the effective vision agreed by the parties throughout implementation
• Address problems that will arise given the long-term implementation schedule and typical economic and political uncertainties that this type of project will face
• Provide a structure to properly share risks and investment returns between the different parties involved
The slide shows a simplified organigram of a typical municipal government, in this case the city of Toronto. It shows how decision-making power is divided between different committees and departments, such as planning department, public works, economic development, affordable housing and budget). To add to the complexity, the diagram also shows the relationship between city council and community councils.

Implementing a TOD project in a city like Toronto, would require the coordination of diverse departments, policy makers (mayor and councils) and other stakeholders outside city hall (i.e. citizens and higher governments, financiers). We will take a look at these issues more by analyzing different kinds of institutional structures for TOD implementation.
Determining the optimal institutional structures for TOD implementation is key to success of a project. Institutional arrangements can vary in degrees of authority, accountability, and responsibility for coordination, handover, and delivery. Depending on specific project requirements, there are a number of options for the types of vehicles that might be created to guide, monitor, and maintain a project to ensure coordination and results. These include:

- **Public-Private Partnerships (PPPs):** In the typical public-private TOD arrangement, the private sector leads the actual physical design, construction, and management of commercial and residential spaces, while the public sector provides transit service, regulations, policy, and project financing.

- **Public development corporations:** A formal type of organization created to manage project development and handover. It can have a full range of powers, depending on project requirements and political will, which can include master planning, land use planning, eminent domain, design review, development and construction, financing, marketing, and facilitation.

- **Transport corporation with real estate capacity:** Well known examples are MTR (Mass Transit Railway, Hong Kong SAR, China—a corporation with a majority stake by the government) and Tokyu Corporation (Tokyo, Japan-private). Particularly important to
their success was the formation of a proactive real estate development department within the organization, staffed by individuals with real-estate development experience to create a more entrepreneurial approach to land development.

- **Steering committee or advisory board**: The least formal arrangement of all TOD implementation agencies, the steering committee, or advisory board structure, is a forum that brings together the diverse interests engaged in a project to monitor implementation, resolve problems, and provide advice on project-related issues. It is best used to supplement other arrangements that have a more formal structure, or when the project is private-sector-led and delivery is largely within its purview. Steering committees can be useful in galvanizing outside resources and promoting the profile of the project; they can be used to resolve any major tensions that might surface during project implementation.

- **Single public transit authority with real estate capacity**: One well known example is WMATA (Washington Metropolitan Area Transit Authority). Particularly important to their success was the formation of a proactive real estate development department within the organization, staffed by individuals with real-estate development experience to create a more entrepreneurial approach to land development.

- **Town planning and urban design department**: Some cities have increased quality of TOD planning by adding a design department to their existing planning committees. One noteworthy example is Hong Kong, where joint development projects with MTR are of high-quality thanks to its urban design department.
The institutional structure used to implement a TOD project must also take into account ownership of the land on which the project is constructed. For example, the functions and responsibilities of the public and private sector actors involved in a PPP will be different depending on who owns the land on which a TOD project is being constructed.

The typical responsibility for the public sector can span from total responsibility over the project, including financing, infrastructure construction, and maintenance in a model with 100% public land ownership, to a regulatory role in a model with 100% private land ownership.
Copenhagen, Denmark is an excellent example of a city in which institutional structures have collaborated to implement a long-term master plan. Copenhagen has successfully implemented TOD Corridors with the use of their long-term urban growth and transit initiative known as the ‘Finger Plan.’ The Finger Plan utilizes axial corridors, ‘fingers’ that stem from the city center outwards, along with rail infrastructure and urban growth.

Copenhagen’s urban planning, as well as the regional planning of its surrounding municipalities, has been the responsibility of different authorities since the creation of the original Finger Plan. The Finger Plan was itself first envisioned in 1947 by the Regional Planning Office, an office that served as a collaboration between counties, municipalities, and organizations in the Copenhagen area. After the Finger Plan became the guiding long-term vision for urban planning in Copenhagen, different state and municipality-created regional planning agencies, such as the Regional Planning Secretariat and the Capital’s Development Council, were created to ensure the Finger Plan’s implementation.

Key to the success of the implementation of the Finger Plan throughout its 60-year history has been the willingness of the city of Copenhagen and its surrounding municipalities to collaborate, and the ability of planning agencies to plan at regional levels.

Sources:

We will now turn to our third building block: the regulatory environment, which includes planning and zoning. This section discusses the various regulatory elements that have profound effects on TOD implementation, including:

Planning processes and integrated planning: Master planning crystalizes the vision for the city and its different stakeholders by setting clear directions for where development is encouraged and where it is not over different time frames. For example, based on its 40-50 year concept plan for land use and transport, Singapore prepares a master plan for the next 10-15 years defining the statutory land use, and a medium term plan reviewed every five years. It adopts performance metric on accessibility that can only be met through close integration of transport and land use planning. Masterplanning plays a major role by encouraging denser development in areas well connected by transit and lower development in areas that are less accessible and by discouraging development in areas that are disconnected.

Regulatory Instruments: Zoning and building codes have an enormous impact on the shape of a city. Zoning is a planning tool for regulating the built environment and creating functional real estate markets. Local governments can use many policies and regulatory tools to determine and control the use of land and the physical shape of the urban
environment, while also encouraging the private sector to invest in the city.

TOD corridors are only possible when codes allow for mixed-used, high-density development near mass transit corridors. On large TOD development a level of flexibility is required to ensure that the mix of uses is allowed to evolve with time considering the implementation time frame for TOD development. Many zoning codes are outdated, or have not been created in conjunction with transportation plans. Zoning and building codes can, however, play a vital role in encouraging and enabling TOD. For example, instead of requiring a minimum number of parking spots per apartment unit, codes can require a maximum number of parking spots; in this way, the right incentives are given to use public transportation instead of cars.

The first aspect of the regulatory environment that we will review is the integration of land use and transportation planning.

Land use planning and transportation integration does not come naturally to many cities. At the city level, departments and agencies have varying missions, objectives, budgets, management styles, governance structures, and staff profiles. These differences often hinder the types of cross-sector and interagency coordination needed for transit and land-use integration. Staff members from transportation and urban planning departments frequently work under different management and budgetary constraints, and they often have little incentive for uncertain cross-sector coordination.

Some of the barriers for effective cross-sectoral integration include:
• Lack of regional coordination
• Sector silo behavior and practices
• Inadequate policies and regulations for strategically creating adequate densities for TOD
• Restrictive national regulations and administrative constraints
• Inconsistencies in planning
• Inadequate policies, regulations, and supporting mechanisms for redeveloping built-up areas, particularly brownfields or distressed and blighted districts

Land Use and Transport Integration: Barriers

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- Sector silo behavior and practices
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- Inconsistencies in planning
- Inadequate policies, regulations, and supporting mechanisms for redeveloping built-up areas, particularly brownfields or distressed and blighted districts
- Neglected urban design at the neighborhood and street level
- Financial constraints

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Though integration of land use and transportation planning is difficult, it is not impossible.

At the base of a functioning institutional structure for TOD implementation lies the integration between land use planning and transportation planning. The first steps in moving transit and land-use integration from theory to reality include formulating a vision and transforming it into a conceptual image of the future metropolis. Prime examples of such a process include Copenhagen’s “Finger Plan” and Singapore’s “Constellation Plan.”

Planning visions of transit and land-use integration are important, but adequate funding is needed for successful execution. An important lesson from international experience is that transit and land-use integration can yield the income needed to expedite and support the process.

A good relationship between land use planning and transit planning does not necessarily mean that these sectors must belong to the same agency; rather, to achieve integration, fruitful dialogue which continually adapts plans to the changing environment and responds to inputs from the other agency is necessary. The type of collaboration needed to achieve integration can be seen in the conversation displayed on this slide.

The next aspect of the regulatory environment that we will discuss are land use and zoning tools. Three different land use and zoning tools that can be used to promote TOD are density bonuses, upzoning, and transferable development rights.

**Parcel Sizes** and the street grid are the most structuring elements in a city. They bring a semi permanence to development in the city. New development frequently require a minimum size to be attractive to developers. Over the longer term, cities evolve continuously and ensuring a diversity of land parcel size becomes essential to create a vibrant land market.

**Density Bonuses** are tools that can be used to increase density in specific areas. Density bonuses, or rights to construct high-density development, are given in exchange for funds or in-kind support for policy goals like workforce housing, public amenities, or LEED standards. Density bonuses have been used in places like the White Flint Metro development in the US (Washington, DC Metro Area) and the Shinagawa Station project in Japan.

**Upzoning** is a tool for rezoning that allows for higher value development. For example, if permitted for upzoning, a developer might construct residential units on land previously zoned for industrial use, or might construct housing units with increased floor-area-ratios in
a low-density neighborhood.

**Transferable Development Rights** are the sale of excess density rights by a public authority as a financing tool and as a method to conserve land. Though TDRs have no negative fiscal impact, they do require a robust regulatory framework, as well as a robust market with demand for density rights.

Another use of air rights involves public authorities allowing private developers to increase building density (e.g. taller buildings, additional floor space) in exchange for their direct or indirect contribution to the development.
Let’s look at some of the most common land and construction regulations that affect TOD include:

- **Plot sizes.** Small plot sizes affect TOD projects by requiring developers to amalgamate various parcels of land to build bigger structures. The local governments need to adopt plot size regulations, taking into consideration of the economic and market value of the specific areas and also have regulatory framework facilitating developers to assembling small land parcels in outdated small plot size regulations.

- **Types of land-use:** The types of land uses allowed, prohibited, or permitted differ based on the character of the area in which the TOD is located. TOD corridors encourage pedestrian-oriented uses and discourage auto-dependent or auto-oriented uses, and encourage uses that can be easily served by transit, that have high levels of visitor activity, and that have high employment to floor area ratios. Thus, office, retail and entertainment establishments are encouraged, while industrial and warehouse uses (which generally have fewer visitors and two or fewer employees per square feet) are not recommended.

- **In the case of vertical mixed-use:** The intent is to encourage a substantial
presence of retail, restaurants, walk-in offices, and other public-attracting uses at street level, in residential or general office buildings that would otherwise not have lively street fronts.

• Parking requirements. Increasingly, the inclusion of parking maximums is the emerging best practice in TOD zoning. Another important parking strategy for TOD areas is shared parking, which is utilized by two or more different uses that generate different peak period parking demand and takes advantage of TOD’s mixed-use character.

• Density: While density is a fundamental premise of transit-oriented development, it must respond appropriately to its community context and the transit function served by the particular station. The objective is to create densities that clearly exceed those of the surrounding areas. In general, densities should be greatest in the core area immediately surrounding the station, stepping down near the edges of the station catchment area to meet the lower scale of nearby neighborhoods. The table in this slide suggests floor-area-ratios (FAR) for different types of TOD areas, with the highest densities in urban core areas.

• Construction standards: LEED certification has become the industry standard for energy efficient “green buildings”. Sometimes LEED standards are used as a criteria to increase FARs.
This case study presents an example of the use of regulatory tools to promote TOD in the Washington, D.C. area around its metro system first constructed in the 1970s. Prior to its construction, planners in Arlington County, Virginia, an area located to D.C.’s south, recognized the immense impact the construction of a transit corridor would have on their county. Arlington County government planners created strategies to encourage TOD which included changes to zoning classifications to increase development density around metro stations. These strategies have been largely successful, as mixed-use, high-density TOD development has grown in the area.

Transit in the Washington, D.C. area is controlled by the Washington Metropolitan Area Transit Authority (WMATA), D.C.’s mass transit authority. First founded in 1967 by an interstate compact between Virginia, Maryland, and the District of Columbia, WMATA is funded by traditional sources, such as rider fares and advertising, and funding from the cities and counties it serves. As an added source of revenue, WMATA also operates a real estate development department. In addition to air-rights leasing and joint development programs, this department purchases land parcels situated near planned Metrorail stations on the open market as part of a land value capture scheme. As of 2013, WMATA had completed more than 30 development projects valued at 2 billion dollars on land purchased through this program.
We will now turn to stakeholder engagement as the fourth building block for TOD.

Participatory Planning: Participatory planning mechanisms offer opportunities open to citizens (such as voting, public hearings, etc.) to have a role in the governing and decision making processes in their neighborhood, their city and beyond.

Inclusive TOD has, as a core value, the improvement of the quality of life of current and future residents—however, much of TOD planning and implementation relies on public and private institutions with little public participation, beyond the election of public officials. There is a need for public participation and stakeholder engagement to increase the inclusiveness of TOD and ensure that the beneficiaries’ thoughts and inputs are being considered.

The manner in which citizens and civil society engage with this political will and the political cycle will determine the extent to which they can hold the government accountable for poor TOD decisions. In the cases where there is deep private sector engagement in the implementation of TOD projects there is a need to further link public participation, accountability, and transparency, as a way to ensure equity concerns are addressed in the TOD project.
Two common techniques utilized for stakeholder engagement are charrettes and social media.

**Charrettes**: Participatory planning process that assembles interdisciplinary team to create design and implementation plans for a project. Design-focused brainstorming facilitate local government’s solicitation of broad-based public input into the planning and design of its transit project.

**Technology and social media**: Social accountability tools (blogs, online forums, etc.) are platforms for citizen review and input. Offer barrier-free, real-time participation opportunities. The caveat is that it does help to reach out to groups with little access to technology or who do not embrace these forms of outreach.
The capital city of Vietnam, Ho Chi Minh City has experienced significant growth in both its population and economic activity, resulting in urban sprawl. In response, the city has proposed the creation of a 25 km long Bus Rapid Transit (BRT) system, around which housing, commercial space, and greenway corridors will be constructed.

The process for the design of the BRT system utilized an important participatory tool, the charrette. In July of 2011, Ho Chi Minh’s Department of Planning and Architecture and the Department of Transport held a charrette with the goal of creating design concepts for this TOD initiative. Through this charrette, an intensive planning workshop, important design features of the BRT system and accompanying urban development were decided.

Sources:

The fifth building block for TOD Corridors is Design. All of the design components can and should be applied at different scales across a city. The image here demonstrates the application of some of the components at four scales of a city. While this set of modules focuses on corridor level TOD projects, many of the other scales must also be addressed in order to ensure that the corridor functions as a holistic, compact, connected and coordinated unit within the broader city or region. For example, a corridor that lacks connection to other forms of high-quality transit and non-motorized transport (NMT) infrastructure and fails to produce economically and socially vibrant, mixed use neighborhoods and streetscapes around station areas, will likely not achieve goals to attract and grow transit riders and businesses.

We dedicate Module 4 to describe the design features of TOD corridor projects.

As a teaser, the matrix shows how different design elements are applied at various scales of TOD implementation. We will describe those in Module 4.
Design Elements of TOD at Various Scales

<table>
<thead>
<tr>
<th>Scales</th>
<th>City</th>
<th>Inter-neighborhood</th>
<th>Neighborhood</th>
<th>Street</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components</td>
<td>Neighborhoood Centers and mixed-use building</td>
<td>Local economy</td>
<td>Neighborhood center</td>
<td>Movie theater</td>
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<td></td>
<td>Public Open and Natural Resources</td>
<td>Parks</td>
<td>Street open space</td>
<td>Public transportation</td>
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<td></td>
<td>Community Involvement and identity</td>
<td>Includes a multitude engagement</td>
<td>Place identity</td>
<td>Community management</td>
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<td>Sharing the street</td>
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</tbody>
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Infrastructure is the sixth building block for TOD projects.

TOD corridors need supporting infrastructure, starting with mass transit. TOD can be structured around BRTs, LRTs, or Metro systems. They also require non-motorized transportation infrastructure to encourage the use of active transportation: biking and walking.

TOD encourages densification, which (unless the project area has excess capacity) in turn requires expanding/creating supporting horizontal infrastructure such as water, drainage and sanitation, and social infrastructure to accommodate the additional population living in the area.

We will not expand on each of these items in this course, but the team in charge of project preparation needs to analyze the capacity of existing infrastructure to determine the need for investment to support the TOD project. In the next slides we briefly discuss some supporting infrastructure that is key to TOD corridor implementation: walking facilities, public realm and parking.
In the case of pedestrians, a key component of a successful TOD corridor and station area is the provision of safe, convenient and secure access for pedestrians. If it’s not convenient or easy to walk to a station, customers will be discouraged from using the system. Providing a safe route for transit is a basic step to achieving a vibrant TOD Corridor. Sidewalks for pedestrians need to be accessible, attractive, comfortable, safe and secure.
The public realm is a network of collective spaces—sidewalks, parks, plazas, streets, and even the outdoor and storefront areas of private businesses—that are enjoyed by transit riders, visitors, shoppers, residents, and workers. These elements physically frame the community and generate the vibrancy, visual interest, and ease of access that make TOD work.

Transit-oriented development require a pedestrian-oriented environment, especially within the 800 meter radius that most people walk as part of a daily commute. In a TOD environment, a grid of small, navigable blocks has sidewalks throughout, with attractive amenities, lighting, and way-finding. The streets, sidewalks, plazas, and stations are safe, active, and accessible. There are no blank walls, and at street level there are shops, restaurants, and other active uses that bring the public realm indoors.

The public realm connects the transit station to the surrounding land uses, and by connecting those uses to each other, it helps achieve the unique synergy of mixed-use TOD—some people choose to live near transit because they can walk from home to work or to school or to the store without using their car or transit. The public realm can be a powerful place-making tool for local government, as up-front investments in streets, sidewalks, and plazas set the stage for private investment in TOD.

TOD does not mean “no cars”. Even with high transit utilization, some people will come and go by automobile in suburban areas and may need a place to park. The situation differs quite substantially between developing and developed countries in that respect since suburban population in developing countries are less likely to have a car. But a defining characteristic of TOD is that it requires less parking than similar development in non-transit locations — a boost not only for the environment, but for the developer, whose cost of parking construction is reduced. Parking can also be shared, taking advantage of dovetailing uses and multi-purpose trips to further reduce the actual number of spaces provided. And parking that is required is designed and located so as not to dominate the visual or pedestrian environment.

Source: MARTA transit-oriented development guidelines.
http://www.reconnectingamerica.org/assets/Uploads/MARTATODGuidelines11-2010-Final.pdf
Let’s look at an example where high-quality mass transport infrastructure has managed to transform a city.

The city of Curitiba, Brazil is internationally known for its TOD planning policies and its world-class Bus Rapid Transit (BRT) infrastructure. Since the 1960s, Curitiba has had continuous policies that have put ‘transit first’. One such TOD policy enacted by Curitiba includes its trinary development pattern, in which housing of increasing density is required to be built along BRT corridors.

Urban development in Curitiba is managed by the Institute for Research and Urban Planning (IPPUC), a municipal agency founded in 1965. Transit systems are managed by another municipal agency, the Urban Development Authority of Curitiba (URBS); this includes the BRT system itself. In a PPP scheme, URBS manages the different private bus companies that operate various sections of BRT services.

The political insulation of the agency in charge of BRT and the long-term urban planning vision for the city helped Curitiba’s success in implementing TOD along its BRT corridors.

Sources:
http://www.ippuc.org.br/.
The seventh building block needed to implement TOD Corridor projects is Financing. TODs are complex inter-sectoral projects that require financing for a variety of pieces to work and be successful.

There is a wide variety of funding and financial instruments that can be used to develop TOD projects. In most cases, teams in charge of developing TOD projects need to be creative and put together a package that includes multiple sources of financing, and both public and private resources. The package will take into account the available funding and financing tools that cities have (for example, if they have the capacity to take on debt or not, or if they have access to federal lines of financing or grants for TOD), the economic situation of the city (the market for a city that is growing will be different from one that is shrinking), the availability of public land in the TOD corridor area, and interest and expertise in the private sector to develop TOD projects.

As with any investment, TOD projects need to analyze risk structures, assign risks and responsibilities to the public and private sector, and determine returns for investments. The general political and economic environment of the TOD region also establishes conditioning factors for project implementation and success.

Because there are many concepts in the financing building block, there is an additional

Financing TOD [More in Module 5]

- TOD projects require financing for a variety of pieces to work and be successful.
- There is a wide variety of financial instruments, mechanisms, and products that can be used to develop TOD projects.
- Financing packages usually include multiple sources of financing and funding mechanisms or products, with both public and private resources.
- TOD projects need to analyze risk structures, assign risks and responsibilities to the public and private sector, and determine returns for investments.
- The general political and economic environment of the region also establishes conditioning factors for project implementation and success.
module on this topic, Module 5: Investing in TOD, later in the course.
The eighth building block for TOD implementation is land. Cities use land to build the transportation corridor itself, and they can influence land use in catchment areas around the corridor to create TOD neighborhoods, with all their benefits.

Cities can manipulate land by using different regulatory, planning and taxing tools, to achieve the objectives of TOD. It is worth noticing that not every TOD project will occur on undeveloped land or greenfields. TOD corridors can be created within already established cities and neighborhoods that are looking to become more sustainable and connected, or may occur organically as markets react to newly developed transit links. Land becomes an essential building block, especially in established cities.

Land is often the most valuable asset a city possesses to leverage TOD. It can be used strategically, and as a tool to place the different players on the same table. Many funding and financing tools covered in this course can be used to harness land assets. Finally, given the variety of land-ownership regimes, diverse tools and cooperation between different entities are key to assemble land for TOD Corridor projects.

There are several ways to manage this asset, which we will review in the following slides.
Let’s review some of the tools that cities have at their disposal to assemble land around TOD corridor projects and manage the process of land acquisition and consolidation appropriately. These methodologies and systems go beyond TOD and constitute some of the basic functions that cities should have in place for a well-functioning land market. But as land is such an important building block for TOD delivery, we briefly discuss these concepts in the following slides.

We have divided the land planning tools between tools for land assembly (voluntary and involuntary), and tools for public asset management.
Let's start with the voluntary tools for land assembly. The voluntary tools presented in this slide are all different types of land pooling techniques in which a group of individual land parcels are assembled for unified planning, servicing and subdivision as a single estate, with the sale of some of the new building plots to recover the costs and the redistribution of the other plots back to the landowners. This can take different forms, such as land readjustment, urban redevelopment and land sharing.

After many years of negative experiences with land expropriation for public use, most countries are fine-tuning their policies and laws to favor assembling land through voluntary or negotiated purchase as the most efficient way to implement infrastructure projects without creating severe disagreements with the community. These policies have proven to be cheaper, faster, and more popular than eminent domain. The purchases are mostly done through negotiations and are based on market value, which should be determined by independent appraisal.
The graphic depiction of the concept of land pooling, under the land readjustment scheme, makes it easier to grasp. Pooling the land allows for parcels to become organized around grids and public transportation and also to create public spaces such as parks and reserved land. All these changes and infrastructure improvements increase the value of the land.

Urban Redevelopment Scheme is an effective tool to assemble small land parcels into a big developable lot, in built up areas for their redevelopment. The above graphic explain the concept of the urban redevelopment scheme, using a hypothetical project.

Before the urban redevelopment project, the site consisted of several small parcels owned by individual landowners and occupied with different tenants. Most houses are one- or two-story structures because each parcel is too small to replace the old building with a taller building, and the landowners do not have the capital or expertise to do so. This urban redevelopment project consists of construction of a taller, higher-quality building on land prepared by assembling small parcels; construction of an underground metro station; and provision of public infrastructure (such as wider roads, a station plaza, and amenities). The national government finances a third of site survey, land assembly, and open space foundation costs, using the national general budget, and half the public infrastructure costs using the roadway special fund. Through this process, the original landholders and building owners are entitled to keep the property rights of floor spaces in the new building that are valued as equal to their original property (though sometimes one developer will purchase all the property rights from the original owners to accelerate the redevelopment). The “surplus” floor area permitted by the municipal government is sold to new property owners to substantially cover the costs of land assembly, new building(s), and public facilities within the district.
When implementing transportation and other types of urban development projects, governments can resort to involuntary methods to acquire land, such as eminent domain or expropriation.

International experience has shown the high costs of using involuntary tools for the purpose of land assembly. The most constructive and efficient way of assembling land is to engage with property owners to ensure a clear and open process while facilitating the TOD implementation process. Many countries have used such tools successfully. The voluntary tools can also be used in combination with involuntary tools. For example, if the majority of landowners in a neighborhood agree to sell their land for redevelopment or urban expansion, the government can use expropriation to oblige the rest of the landowners to sell their land.

Finally, it is important to notice that these tools require robust land administration frameworks as well as legal oversight to ensure fair prices and prevent potential abuse.
The last building block of our model is affordable housing, as the physical incarnation of how to achieve more socially inclusive cities.

Traditionally, TODs have not been designed specifically for inclusiveness or equity, but as technical responses to suburban development. TOD does not automatically equate to better livability and quality of life for citizens as new development near transit can and has often led to displacement of low-income households and mixed-income neighborhoods, typically due to increases in property values and rising cost burdens. The concept of Inclusive Transit-Oriented Development (TOD) can be defined as a TOD with an explicit intention to provide equitable access to housing and opportunities through offering affordable housing and mixed-use. Inclusive TOD is concerned with not only the implemented outcome of an inclusive physical development but also an inclusive process of design and development of the TOD.

As TOD may increase property values, raising housing costs and rental prices, and potentially displacing existing residents, local governments must consider mitigation measures for the resultant shortage of affordable housing while promoting TOD investment. TOD should strive to be inclusive. We have devoted Module 7 to present strategies for affordable housing and local economic development in TOD corridors.
The developing city of Bogotá, Colombia is internationally recognized for its high-quality BRT system and progressive housing and sustainability initiatives. Through its BRT system, known as TransMilenio, citizens have access to rapid transit corridors. Development of this BRT system has been accompanied by the creation of extensive integrated pedestrian corridors and bicycle paths. In addition, the progressive Metrovivienda program provides social housing situated near BRT corridors for citizens.

The city of Bogotá’s TransMilenio system and Metrovivienda programs are themselves operated using public-private partnership (PPP) schemes. The TransMilenio BRT system is managed by the TransMilenio S.A., which is itself part of Bogotá’s Mobility Office. While TransMilenio S.A. monitors the system’s operations, private bus companies provide day-to-day service. Metrovivienda, Bogotá’s social housing program, is also run under a PPP scheme: the city government works with local landowners and developers to create affordable housing near BRT corridors.

Sources:
How can you implement TOD Corridors in your City?

The TOD Corridor Supplementary exercise:
Set of guiding questions to start, listing entry points, actors involved, main regulations and financing sources (among others) for TOD Corridor planning & implementation.
Module Quiz

1. Which of the following choices is NOT one the building blocks of TOD delivery presented in this course?
   a. Political leadership and vision
   b. Stakeholder engagement
   c. Institutional structure
   d. Efficiency
   e. Financing

2. Which of the following statements on institutional structure of TOD implementation is true?
   a. Because TOD projects are public goods, they should be delivered solely by the public sector.
   b. The Public-Private board is an institution that includes various public-private arrangements, and it can participate in decision making, project oversight, and assurance.
   c. Steering committees are the most formal institutional arrangement to monitor implementation, resolve problems, and provide advice on project-related issues.
   d. There is no real estate development department installed in the Washington Metropolitan Area Transit Authority (WMATA).

3. Which one of the following choices is a voluntary land assembly tool?
   a. Land readjustment
   b. Valuation of public land
   c. Expropriation
   d. The right of preemption

Answers

1. d
2. b
3. a
Module Quiz

4. What are regulatory instruments?
   a. Zoning and land use planning, administrative restrictions, and legislation
   b. Design standards, building codes, and legislation
   c. Design standards, administrative restrictions, and building codes
   d. Zoning and land use planning, building codes, and design standards

5. Which of the following instrument is NOT designed to promote TOD?
   a. Density bonus
   b. Upzoning
   c. Mono land-use
   d. Transferrable development rights

Answers
1. d
2. c.