Opportunities and Challenges for Integrating Public Transport and Urban Development in Montevideo, Uruguay

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Introduction

Montevideo presents both unique opportunities and significant challenges for successfully integrating the investment and operation of high-capacity public transport investments, particularly Bus Rapid Transit (BRT), and urban development. This technical memorandum discusses this topic based on a five-day visit to Montevideo in early August 2012, part of an IDB mission tied to a loan package for a BRT expansion project, focused on Avenida Italia to the east of Montevideo's core. The discussions are largely informed by meetings and interviews held with local officials, including Montevideo's mayor, Ana Oliveria, as well field visits and background materials assembled during the mission. The discussions that follow are structured as a SWOT (strengths, weaknesses, opportunities, and threats) analysis as related to transport and land-use integration.

A core theme of this memo is that a fairly fundamental change in thinking about the role of large-scale infrastructure investments like BRT is needed in Montevideo and indeed much of Latin America, particularly among public officials and city leaders. Notably, BRT should be conceived as more than a *mobility investment*. It also presents an unprecedented opportunity to restructure urban and regional growth in ways that promote numerous sustainability objectives embraced by local officials. That is, BRT can also be a *city-shaping investment*, providing a backbone for guiding growth in a more compact, mixed-use urban form – one that not only promotes transit riding and less driving, but also reinforces other objectives expressed by Montevideo officials, like curbing costly suburban sprawl and preserving precious farmland and open space.

If BRT and similar transport investments are to help reshape urban growth and development into a more sustainable format, a long-term master plan for spatial development is also needed for the region – Montevideo and close-by portions of the Canelones and San Jose departments (what might be considered the labor-shed, or commute-shed, of Montevideo Centro). A vision of desired growth patterns – e.g., where different land uses will be developed, appropriate density levels, urban structures like 'centers and corridors' or 'hierarchical subcenters' – should ideally be articulated, 20 to 30 years into the future (and adjusted over time, as appropriate). The long-term mobility element, which in Montevideo's case includes BRT, represents a means or a tool to help achieve the hoped-for vision of the future metropolis, not unlike zoning controls and other urban services such as sewage and water extensions. Putting the land-use/urban-form vision and plan before the mobility element reflects the core notion that travel is a "derived demand" – people are using buses, cars, bicycles, and the like to get to places for specific purposes, whether to have lunch with a friend, purchase goods, or get to work. What matters most is the quality of activities at the destination, such as levels of safety, opportunities for social interaction, and in the case of workplaces, achieving high labor productivity. Thus it is what takes place at the destinations of trips (i.e., urban activities) that reflect what people and institutions value most, not the journey of getting there. Transport should therefore be cast more fundamentally as a "means" to an "end". Accordingly, a cogent vision of what the Montevideo region will ideally look like is an important first-step in designing and deploying a transport investment, to make sure this investment is an effective means to serve the land-

use/urban-form objectives and long-term visions. International best-case examples, such as in Curitiba, Brazil, Ottawa, Canada, and Stockholm, Sweden, underscore the importance of articulating a long-term land-use vision in successfully integrating transport and urban development.[1]

Strengths

A number of factors are working in favor of successful integration of transport and urban development in metropolitan Montevideo.

- *Dynamic Change*. Urban planning is centrally about managing urban growth and change. In greater Montevideo, this is less in the form of population and employment growth and more in terms of sharply rising incomes and consumption. The region's and indeed the nation's population and employment growth is quite modest, less than 1 percent annually (although household formations are growing more rapidly). However, the region has and continues to experience rapid growth in GDP per capita, which roughly doubled in a fairly compressed period of time, from 2002 to 2011. Rising household incomes mean increased personal consumption – i.e., more motorized trips are made to buy things, including more cars and bigger housing units. By one account, motorization rates (including cars, motorcycle, and trucks) exceed 5 percent per annum in the metropolitan area.

- *Strong institutional capacity and urban planning legacy.* Good planning institutions exist at the municipal department level. Past plans have been informed by thorough analyses of land-use and transport data available at fine geographic scales. Montevideo's 1998 municipal land- use plan is fully committed to constraining auto-oriented sprawl and creating a "consolidated city". Core principles that guide urban planning in the city are: (a) land-use management to curb urban sprawl and protect farmland and open space; (b) social inclusion to help needy populations (which includes provisions of affordable housing and public transport); (c) sustainable mobility that promotes efficiency, environmental preservation, and social equity (3 Es); and (d) multi-sectoral integration of urban services and investments. The 1998 plan and recent reports of the city's planning office are fairly pro-active, seeking to put in place land-use controls, tax policies, and infrastructure investment programs (e.g., roads, sewage, water services) that are pro-active. There has been a strong focus on re-generating the urban core while at the same time protecting natural habitats (e.g., wetlands, coastal zones, watersheds). The city's current zoning ordinance calls for increasing residential densities in the inner-ring areas well above the current level of 70 inhabitants per hectare. There is a pressing need to refine and update the 1998 plan in light of current and planned BRT investments in the city.

- *Strong planning instruments and tools*. The city of Montevideo has a number of fiscal and policy instruments that work in favor of implementing some of the planning goals

that have been set. These include a Land Value tax that assesses property-tax rates proportionally more according to the value of land rather than improvements on the land. This discourages empty lots and encourages redevelopment of centrally located properties. Additionally, inclusive zoning enables developers to add 2 stories to buildings in return for providing social housing units that are below market rates. Targeting such instruments to transit corridors can contribute to transit-oriented development (TOD) not only by increasing densities and infilling vacant parcels but also ensuring more transit-dependent populations reside along BRT-served corridors.

- *Well-patronized, multi-modal public transport services in the region*. Public transport already has a strong presence in the region which can be built upon as BRT services are introduced and extended. Currently, 56 percent of all regional motorized trips are by public transport (mainly on conventional buses with a small share also coming from commuter rail). For radial trips to Montevideo's core, transit serves 61 percent of trips. While conventional buses are the dominant carriers in the city, commuter rail plays a significant role for long-haul radial trips to the core that originate north of the city. Currently, five commuter train services operate in the morning peak and five in the evening peak. Bicycles are allowed on board trains, which helps with the "last-kilometer problem", enabling commuters to reach destinations beyond an easy walk of train stations. As discussed below, rail provides unique opportunities for multi-modal transit integration and several locations along the Garzon BRT corridor.

Weaknesses

Among factors that are currently undermining the ability to successfully integrate transport and urban development in the region are the following:

- *Minimal regional, inter-departmental planning and growth management.* Many of the local planners who were interviewed, particularly from the city of Montevideo, lamented that there is often more competition for urban development than cooperation to manage growth among municipalities. Examples were cited of surrounding communities allowing land development across the border from Montevideo as a means to expand property tax income without ensuring sufficient urban services are in place, resulting in spillover problems (e.g., traffic and pollutants that cross political boundaries and thus burden surrounding jurisdictions). Such "fiscal zoning" thwart efforts to form a united front on planning for and managing urban growth at the metropolitan scale. While the mobility planning team for the city of Montevideo is professionally quite knowledgeable and committed, as related to BRT investments and their relationship to urban development, specific interventions are not well-defined or coordinated amongst agencies.

- *Market-driven growth on the periphery*. Outside of the city of Montevideo, there is no clear commitment to urban growth management. Planning institutions seem to embrace what are largely market-driven patterns of development, which in the suburbs translate into low-density sprawl and long-haul motorized travel, factors that not only endanger natural environments but also impose potentially high costs on extending and expanding urban services and infrastructure. Much of the Canelones department east of Montevideo and the Avenida Italia BRT corridor has been designed as low-density, auto-oriented bedroom communities, with semi-rural-like housing. It is unlikely that TOD would take form any time soon in this part of the region.

Opportunities

Opportunities for promoting TOD and integrating BRT and urban development stem from a mix of governmental, historical, and locational factors, including the following:

- *Supportive Central Government Law that embraced regional planning and growth management.* Uruguay's 2008 National Law 18.308 makes metropolitan-level land-use planning compulsory. The law promulgates guidelines for managing land development across local jurisdictional boundaries however how enforceable this law is remains unclear. Based on interviews with local planners, the law seems to focus more on promoting a "process" of coordinated regional planning rather than "end results" – i.e., a detailed regional plan. Regardless, the law has set in motion a 3-tiered process of coordinated planning focused on *structure*s, *strategies*, and *projects* – i.e., defining a regional structure, identifying strategies to achieve the structure, and promoting projects, like BRT, that further promote desirable urban futures. Whereas projects deal with physical investments such as roads and BRT, strategies pertain more to policies and processes (e.g., tax rates; public-private partnerships). Still, at this point in time, cooperation between Montevideo, Canelones, and San Jose planners and officials appears to be entirely voluntary. In principle, Law 18.308 calls for the designation of urban and rural land throughout the region. It stresses the protection of rural areas from urban encroachment and agriculture land conversions however does not appear to have the "teeth" needed to ensure local enforcement or accountability. Regardless, it provides an important first step forward in building an institutional culture that promotes and advances principles of regional planning and growth management.

- *BRT development opportunities.* There are plentiful opportunities along the Garzon BRT corridor currently under construction as well as the planned Avenida Italia corridor and beyond to the east. These include:

    - *Colon township*. The Colon township has a number of assets that could work in favor of a successful, rejuvenated transit-oriented district in Montevideo. Among these are a pedestrian-scale design that imparts old-world charm and a historical urban fabric complete with a main street, small-block grid street

pattern, varied building facades and store fronts along the main street, and an attractive civic square (Figure 1). Colon's town square was recently upgraded and from a transportation point-of-view is strategically located, nestled between a current commuter rail station and a BRT stop along the Garzon corridor that is currently under construction. The combination of these "livability" factors positions a redeveloped and rejuvenated Colon town center to play a significant place-making and community-building role. Having two high-quality transit services – BRT and commuter rail – near each other could also give rise to an active multi-modal environment in the town center area. The marked improvements in regional access via public transit enjoyed by the area could create market pressures to invest and redevelop the area. Such market forces could be leveraged and facilitated by pro-active planning and investments on the public sector part, such as: preparation of a Colon Town Center TOD plan that orchestrates transit-oriented redevelopment; upgrading the current railway station, including possible improvements like bike parking and bike-sharing (given the popularity bicycles for station access and egress among rail commuters); and various redevelopment incentives, such as small business loans to merchants and upgrading the local sidewalk network. It is noted that Colon business interests had actively lobbied to site the Colon terminus in the historical town center. If this had been done, it would have seriously jeopardized the capacity of BRT to help leverage redevelopment and urban renewal in the town center. This is because the terminus functions mainly as a logistical node, not a people-oriented place. Terminuses are functionally quite "messy", the loci of interchanging feeder buses, taxis, delivery trucks, and the like. High traffic volumes combined with noise and engine fumes, experiences show, detract from the place-making potential of a BRT stop in a historical center like central Colon. For this reason, it will likely end up being to old-town Colon's advantage that the terminus was located a kilometer to the north, thus buffering the town center from vehicle-interchange activities and allowing people- versus vehicle-oriented urban re-generation to occur. Over the long run, central Colon could reap significant regional accessibility advantages from linking commuter rail and BRT services through the town square axis without sacrificing quality of the walking environment.

- *Colon Terminus*. As the northern terminus of a regional high-capacity public transport network (Figure 2), Colon Terminus is poised to become not only a significant interchange point but also a regional activity center. However as noted above, its function as a logistical versus a place-making node suggests its urban development potential lies more with potential large-scale commercial development, like office space or a sub-regional shopping center. As interchange points for intersecting and criss-crossing feeder buses (Figure 3), Colon Terminus is less desirable as a residentially oriented node, particularly for middle-income households. Nonetheless, various opportunity sites adjacent to the terminus present joint development possibilities. Leasing land holdings near-site as well

as kiosk spaces on-site can allow the public sector to recapture some of the accessibility benefits created in the form of higher lease revenues. The presence of a historical building near the terminus also presents opportunities for creating a people-oriented activity center like a museum or learning center that itself can serve as a nodal hub as well as trip generator (Figure 3). The installment of bicycle racks and an adjoining pedestrian spine that connects the nearby main artery could allow the terminus to function not only as a feeder connection point but also as a potential trip destination in and of itself.

Figure 1. Colon Town Center Area. Upper Left image: Colon Square, featuring refurbished sidewalk Upper Right iImage: Main Street; Botton Left image: Colon train station; Bottom Right image: BRT stop under construction in Colon District.

- *Garzon BRT corridor*. Given the fairly low-density, largely single-family detached-housing nature of the surrounding cityscape, the urban development opportunities elsewhere along the Garzon BRT corridor are more limited. Based on real-estate market assessments, there could be some "surgically sited" redevelopment opportunities around several BRT stops that have some degree of a commercial orientation.

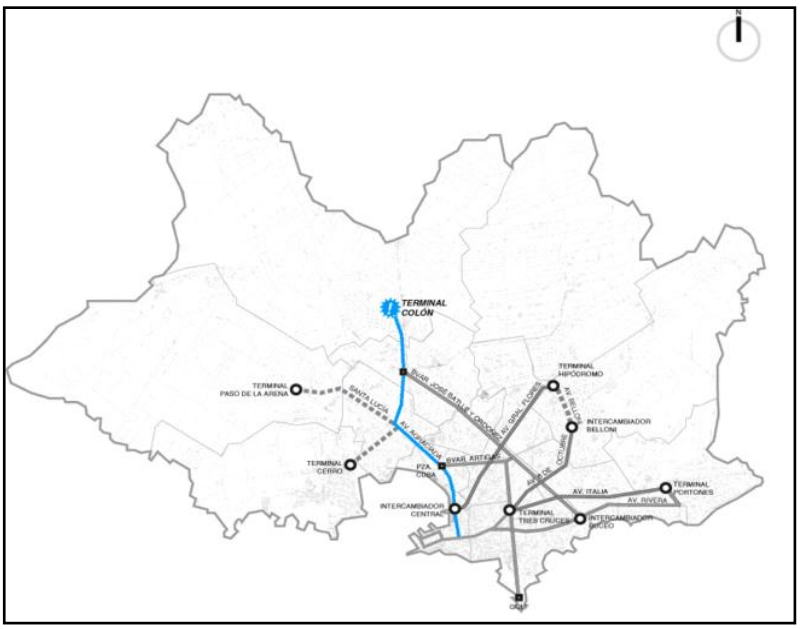

Figure 2. Terminal Colon with reference to regional transit network

Figure 3. Terminal Colon. Left image: Feeder bus bays and interchange stops, along with retail kiosks, currently under construction; Right image: Historical building near terminus, with installed bike racks and bricked walkway in the foreground.

- *Avenida Italia*. This corridor's ample right-of-way could, on first appearance, allow some degree of urban infill and perhaps higher density TOD. However, the higher-income and well-established residential character of much of this corridor suggests that redevelopment opportunities will likely need to be modest and more limited in scale. Global experiences show that fairly affluent and stable neighborhoods such as along the Avenida Italia corridor generally resist efforts to transform built environments – a classic Not-In-My-Backyard (NIMBY) response to higher densities. Rather, attention might be given more to inter-mixing land-uses so that trip distances are shortened and travel flows are more balanced during peak periods (thus making more cost-effective use of BRT investments). This might be done by encouraging some degree of small-lot condominium infill and neighborhood/community-scale commercial development near several key BRT stops. In terms of urban design, the current BRT design concepts, as portrayed in Figure 4, suggest more attention might be needed to improving the quality and safety of pedestrian access to BRT stops. Having pedestrians cross two lanes of a major arterial to access center-lane far-side BRT stops creates a number of potential conflict points and thus pedestrian hazards. Options that might be considered as forms of traffic calming include a multi-way boulevard design with frontage and through traffic lanes as well as pedestrian refuge islands[2]; street tables that slow traffic near BRT stops; and prolonged pedestrian-only signal phases. Consideration might also be given to designing "green connectors", such as a secondary cycle-track/bikeway network that perpendicularly and strategically feeds into BRT stops, akin to what is found in cities like Bogotá, Colombia and Guangzhou, China.[3] Bikeway feeders help solve the "last kilometer" problem of patrons accessing BRT stops while also providing a form of "extended TOD" by expanding the reach of new development beyond a typical one-kilometer walkshed. Recent practices along the Avenida Italia corridor, it should

Figure 4. Avenida Italia. Rendering of BRT corridor and station designs.

noted, appear to be giving short shrift to the needs of pedestrians. Along one stretch of the corridor, curbside parking was removed to allow the insertion of a third traffic lane. However local business merchants expressed concern that this would reduce drive-by shopping and subsequently negotiated with local authorities to allow parking to encroach on what once was a sidewalk paralleling retail shops. This effectively meant giving priority to motorists over the rights of pedestrians in what is soon to be a BRT station setting. This is the opposite of the kinds of pedestrian enhancements introduced in Bogotá, Colombia at the time the initial phase of the TransMilenio BRT system was built (Figure 5).

Figure 5. Removing parking to enhance the pedestrian environment near a TransMilineo BRT stop in Bogotá, Colombia

- *Terminal Avenida Italia.* The planned terminus at the eastern end of the Avendia Italia corridor will, as with Terminal Colon, function as a logistical node, however the close proximity of an existing shopping mall means there could be opportunities for similar types of regional, commercially oriented activity centers nearby. Joint development opportunities might be considered by local authorities by commissioning a local real-estate market assessment. Given the healthy pace of nearby land development near the Montevideo-Canelones eastern border, joint development opportunities could be appreciable.

- *Costa Urbana City Center*. Beyond Terminal Avenida Italia, buses will operate in mixed-traffic conditions. The absence of dedicated lanes, combined with the predominantly low-density, car-oriented nature of the surrounding settlement pattern, suggests there will likely be limited redevelopment or urban infill opportunities. From a financial standpoint, however, this area does offer a potential best-case practice that might be emulated elsewhere along the BRT network. The Costa Urbana complex (Figure 6), a large-scale shopping mall and government complex, is an excellent example of a negotiated public-private jointly developed project that embodies elements of value capture. In return for access to the current thoroughfare, the private developer of Costa Urbana

was given a 30-year lease on the site. The agreement required the developer to build a 1000 m^2 government complex adjacent to the shopping mall at no cost to the Canelones department. After the current 30-year lease ends, the entire complex reverts to government ownership. Thus in return for granting the developer building-permit rights for a strategically located land parcel with exceptionally good road access, the public sector received, *pro bono* and as a *quid pro quo*, significant amounts of office space that functions as the government center of the Canelones department's coastal region. Opportunities for similarly applying such joint development strategies at strategically important land parcels elsewhere along Avenida Italia and the region's unfolding BRT network should similarly be explored.

Figure 6. Costa Urbana privately developed and financed Government Complex/Shopping Mall. Air-rights development above the throughfare was entirely privately financed.

Airport development. While not directly related to the Avenida Italia BRT investment, one substantial regional activity center that could reap mobility benefits from BRT's nearby presence while at the same time generating patronage is the emerging Montevideo International Airport complex. The Montevideo airport and its immediate surroundings are taking on the features of what John Kasarda has called an "Aerotropolis", functioning as Uruguay's transportation gateway to the 21st century global economy.[4] According to this model, international airports represent more than air-travel access points but also agglomerations of logistical plants, time-sensitive JIT (just-in-time) manufacturers, warehouse/distribution centers, freight-forwarding operations, consulting firms with international clients, long-term lodging and convention hotels, business-oriented retail outlets, and the like. However, because of their land-consuming, horizontally scaled logistical requirements, airport environs are largely designed for motorized circulation. Thus rather than accommodating TOD, airports and their surroundings are best suited for DOT – "development oriented transit". What is meant by DOT is the design of transit services best

suited to serve existing development patterns, which in the case of airports means spread-out activity centers and functions. This could take the form of special transit circulator services that interconnect "aerotropolis" activities, transit feeders that link to nearby BRT stops, and should the Avenida Italia corridor allow an "open system" operations, the seamless connection of feeder and circulation buses into the mainline BRT corridor.[5]

Threats

To complete the SWOT analysis, potential threats to the coordination and integration of public transport and urban development in metropolitan Montevideo should be identified. Among these are the following:

- *BRT as a sprawl inducer*. Absent pro-active regional planning and government interventions to shape market-driven development patterns, experiences show that BRT investments can induce auto-oriented sprawl. By reducing travel times and thus lowering costs along BRT-served corridors, high-quality transit can end up pushing future growth further onto the suburban fringes, effectively flattening density and bid-rent gradients (in the words of urban economists).[6] This accordingly places all the more of a premium on advancing some form of TOD to act as a counter-weight to the tendency of any major transportation improvement to promote centrifugal growth.

- *Beltway impacts.* At the same time that BRT network is being built in metropolitan Montevideo, a beltway is also taking shape north of the city. Beltways can play the important role of moving through-traffic movement out of the urban core however experiences also show they can be a powerful force toward auto-oriented decentralization.[7] Stereotypically, regional activity centers (e.g., shopping malls and industrial parks) often take form around interchange points of beltways and radial thoroughfares. The potential of beltways to draw urban growth outward calls for the introduction of land-use controls (e.g., zoning; ecological preserves; open space provisions) that prevent AOD (auto-oriented development).

- *Parking policies and standards*. Vehicle parking policies and standards in Montevideo and elsewhere in the region appear to have little correspondence to proximity to planned BRT stops, despite a growing body of evidence showing that those living and working near high-capacity transit stops tend to own fewer cars or use private automobiles less for daily travel.[8] Consideration should be given to reducing the "density" of off-street and on-street parking in relation to proximity to BRT stations, akin to the image shown in Figure 7. Given rapid increases in motorization throughout the region, such actions should be informed by specific studies of parking demand in relation to transit corridors.

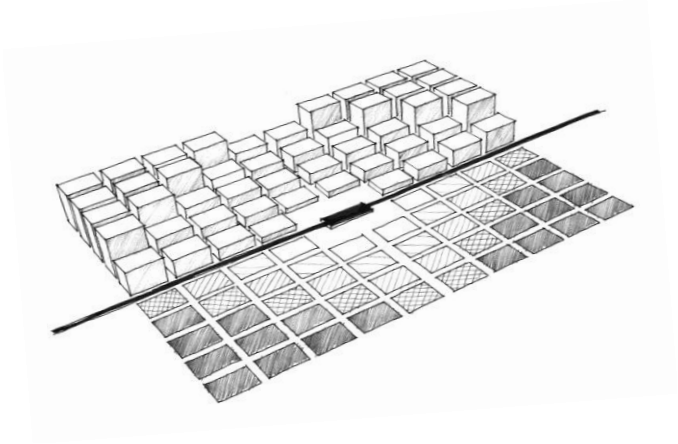

Figure 7. Conceptual mapping of the inverse association between parking densities and proximity to high-capacity transit stops.

- *Need for specificity.* Conversations with urban planners suggest that past plans have embraced many of the goals and objectives that are appropriate for successful transit and land-use integration as well as for charting a successful pathway for a sustainable urban future. However beyond platitudinous statements about sustainable development, few spatial details were provided, regardless of geographic scale – i.e., whether at the regional, municipal, community, or station-area levels. One portrayal of areas to target up-zoning and higher densities (so as to exploit existing infrastructure capacity) were essentially large blobs on a map. While forging agreement on regional development is always an uphill struggle, it is essential that more detailed station-area plans be prepared where TOD is being sought.

Needs and Recommendations

This closing section identifies several areas where both near-term and longer-term actions are needed to encourage closer coordination and integration of public transport and urban development in the Montevideo metropolitan area.

- *TOD planning*. If more compact, mixed-use development is to be encouraged around some (not all) BRT stations, it is essential that stations that are prime targets for TOD be identified, plans to orchestrate land development be prepared, and implementation tools be introduced to leverage hoped-for outcomes. There is a wide spectrum of TOD possibilities for a setting like greater Montevideo, spanning small-scale, residentially oriented developments on one end to mega-scale commercial projects on the other. Accordingly, a typology of TOD possibilities should be created for the region, informed by a combination of real-estate market assessments and best-case practices from elsewhere, particularly in Latin America (e.g., Curitiba and Bogotá). One fundamental distinction, as discussed earlier, is the degree to which a station is to take on more of a logistical/nodal versus a place-making function. Some TODs ascribe to a combination of

both however most lean in one direction or the other.[9] Aligning specific TOD prototypes to specific station settings should be guided by market *pro formas* as well as participatory inputs from local stakeholders. TOD pilot demonstrations might be introduced to 'test the waters' of the TOD concept in the Montevideo region. To move TOD planning and implementation forward, TOD design charettes could be introduced in neighborhoods where there appears to be initial support and receptivity to the concept. TOD design charettes, as practiced in many other parts of the world, benefit from having urban planners and designers interact with local citizens and business interests to sketch out and eventually evolve specific TOD plans for station areas. Drawing in architects, urban designers, and urban planners from local universities, such as through design studios for government clients, has been successfully used elsewhere to initiate TOD planning and eventual implementation, at a fairly low cost. Engaging local universities also helps build human capital and local expertise in the area of TOD design and implementation.

- *TOD implementation and urban regeneration*. Conversations with local planners reveal there is a widely held belief that high-quality BRT services could be important catalysts to redevelopment and urban regeneration in the city of Montevideo and potentially in pockets of suburbia as well. Because brownfield redevelopment nearly always carries greater risks and costs than highway-oriented development on greenfields, specific implementation tools that overcome these costs and risks likely need to be crafted. In the United States, redevelopment laws have been passed by higher levels of government that create "privileged districts" that receive tax breaks and provide financial incentives to private developers as a way to leverage TOD. Instruments such as Tax Increment Financing (TIF) – which freezes local tax bases and redirect incremental property tax proceeds to the TIF district as a means to fund public infrastructure and services as well as underwrite private development costs – have been widely applied in many transit-oriented districts throughout the U.S.[10] An assessment of available implementation tools and needed legislative reforms is likely needed to move TOD redevelopment theories to real-world execution.

- *Development-Oriented Transit*. As noted earlier, higher-income, low-density areas, particularly in the coastal reaches of the Canelones department, are unlikely candidates for major urban transformations, like TOD. They do, however, provide opportunities for creating more flexible forms of transit that operate as door-to-door feeders between outlying areas and BRT stops, what has been called development-oriented transit, or DOT. Paratransit services such as minibuses and microbuses along with bikeways and ped-ways that feed into BRT stops create 'economies of scope', to match the 'economics of scale' of BRT.[11] Economies of scope mean enriching the transit service and price points available to consumers to respond to the increasingly plural and diversified nature of modern-day travel demands. By marginalizing what is the most laborious aspect of a transit trip to car-owning middle-class consumers – the dreaded transfer – improved door-to-door transit connections can materially enrich the quality

of service, increasing BRT ridership in the process.

- *Green connectors.* Borrowing a chapter from bike-friendly cities like Copenhagen or BRT-served places like Bogotá, serious consideration should be given to developing a network of green connectors that perpendicularly feed into BRT stations. This is particularly important in higher income areas, such as along Avenida Italia, where higher densities will likely be resisted by higher income (and politically more influential) households. Active transport options, like protected cycle-tracks, however, could appeal to this market niche. In 2009, bicycles made up just 2% of daily journeys in the city of Montevideo, thus considerable improvements are needed of cycling is to draw in a larger mobility market share. Step-one is the preparation if a bicycle network and pedestrian-way plan that provides secondary access to BRT corridors. In Bogotá, Dutch planners with extensive experience in designing bikeways for transit-station access were hired to prepare this plan. Montevideo's experiments with ciclovia programs that close off city streets on selected weekend days for leisurely cycling and strolling could provide broad-based public support for this kind of initiative.

- *Enhanced pedestrian connections.* Particular attention needs to be given to enhancing the quality of pedestrian environments, especially along the Avenida Italia BRT corridor. Current plans for the Avenida Italia BRT call for three lanes of automotive traffic in each direction, with BRT stops nestled in between. Anything beyond two lanes will be perceived as a significant barrier to station access among most pedestrians, particularly the elderly and those with physical disabilities. Having to cross three lanes of traffic on a major east-west artery is not only dangerous but also unpleasant. As demonstrated in Bogotá and other BRT cities, it will be exceedingly difficult to nurture TOD where stations are sited in the medians of busy thoroughfares.[12] If any station areas along Avenida Italia are thought to be desirable locations for concentrating future urban growth, consideration might be given to off-lining stations – incurring higher costs to site stations on parcels which are easily accessible by pedestrians and are better positioned to leverage TOD.

- *Coordination of urban growth at a regional level.* While Montevideo and Canelones departments have the institutional capacities to successfully plan for transport and land-use integration, so far specific interventions have not been well coordinated across jurisdictional boundaries. Most planners who were interviewed felt there is more competition for rather than coordination of urban development in the region. This speaks to the need for significant institutional reforms that allow for some semblance of regional planning and growth management. Experiences show this usually occurs only when higher levels of government mandate such actions. The 2008 Law 18.308 is an important first step however most observers agree that the legislation lacks the "teeth" needed to substantially change how urban growth is managed and planned at the regional level. Central government legislation would ideally set rules and standards for coordinating urban development and infrastructure across jurisdictional boundaries. Portland, Oregon offers one possible model. There, land-use regulation and oversight

lies in the hands of local governments, guided by a publicly endorsed and approve regional plan. The Metro Council that approves the regional plan is made up of public officials from local municipalities plus officials from higher levels of government, representing state interests (or in the case of Uruguay, national interests). If local decisions are found to conflict with regional plans, the Metro Council has the ability to legally override or veto local decisions. This effectively holds local decision-makers accountable for the regional land-use and environmental impacts of their decisions. Accordingly, negative spillovers – such as low-density development saturating the streets of neighboring jurisdictions with excessive traffic – are minimized. The combination of stronger regional planning and growth management controls and a fully developed BRT networks could allow the Montevideo region to achieve its hoped-for long-term vision of a vibrant and consolidated urban core and the containment of sprawl on the suburban edges.

Notes

[1] R. Cervero. 1998. *The Transit Metropolis: A Global Inquiry*, Island Press, Washington, DC

[2] A. Jacobs, E. Macdonald, E. and Y. Rofé. 2002. *The Boulevard Book: History, Evolution, Design of Multi-Way Boulevards,* MIT Press, Cambridge

[3] R. Cervero. 2003. 'Green connectors: off-shore examples' *Planning* 68(5): 25-29

[4] J. Kasarda, J. 2001. 'From Airport City to Aerotropolis', *Airport World* 6(4): 42–44.

[5] An "open system" BRT operation allows feeder buses that provide low-density collection-distribution services to enter the mainline BRT corridor, effectively morphing into line-haul carriers and in so doing providing seamless interconnections and thus eliminating the need for inter-vehicle transfers.

[6] Cervero, 1998, *The Transit Metropolis: A Global Inquiry*; H. Suzuki, R. Cervero, and I. Kiuchi, 2012, *Transforming Cities with Transit*, Washington, D.C.: World Bank Publication (forthcoming).

[7] G. Giuliano,2004. 'Land Use Impacts of Transportation Investments: Highway and Transit', in *The Geography of Urban Transportation*, Hanson and Giuliano, eds. New York: Guilford Press, 3rd edition

[8] R. Cervero, A. Adkins, C. Sullivan. 2010. 'Are Suburban TODs Over-parked?' *Journal of Public Transportation* 13(2): 47-70.

[9] C. Curtis, J. Renne, L. Bertolini. 2009. *Transit Oriented Development: Making It Happen*, eds., Surrey: Ashgate.

[10] R. Cervero et al. 2004. *Transit Oriented Development in America: Experiences, Challenges, and Prospects*. Washington, D.C.: Transit Cooperative Research Program, Report, 102.

[11] R. Cervero and A. Golub. 2011. Informal Public Transport: A Global Perspective. In: *Urban Transport in the Developing World: A Handbook of Policy and Practice*, H. Dimitriou and R. Gakenheimer, eds. Cheltenham UK: Edward Elgar.

[12] Susuki et al., 2012, *Transforming Cities with Transit.*