How Can Value Capture Strategies Unlock Desperately Needed Funds?
Getting Serious about Sustainable Transport Finance

Submitted by
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Infrastructure provision has traditionally been the responsibility of the public sector, typically tasked with its delivery and maintenance. Increasingly, however, it has become more and more difficult for governments alone to meet the urgent and ever-increasing global need for social and physical infrastructure.  

Shrinking budgets, unreliable funding sources and inefficient revenue generation necessitate the need to explore other, less traditional models of infrastructure investment, finance and provision to meet humanity’s growing needs for new capacity and to even maintain the integrity of existing stock.

The magnitude of necessary investment is staggering. According to the Addis Ababa Action Agenda, the infrastructure funding gap for developing nations alone is between US$1 to 1.5 trillion. The issue is universal, where estimates of necessary investment even in the US reach US$3.6 trillion through 2020 just to bring the nation’s infrastructure to a minimum state-of-good-repair. To meet such steep demands, infrastructure investment cannot continue along the business-as-usual path and will need to be supported by all stakeholders and beneficiaries, public and private.

Value capture finance offers one practical solution to this monumental challenge. In theory, value capture promises self-sustaining, unrestricted, revenue streams, where investment leads to access, access leads to value, value can then be extracted and reinvested in a continuous iterative, sustainable cycle. This paper explores and compares value capture schemes related to urban mass transit provision in three global cities. By assessing value capture strategies put in place in Hong Kong, New York and London, it becomes apparent that although all investment has inherent risk, a multi-tiered structure can begin to insulate against shocks and generate positive cash flows. By applying best principles such as overlapping layers of potential revenue based on varying timeframes, beneficiaries and users, a reliable, more innovative finance mechanism can prove to be sustainable. Combined value capture mechanisms of betterment

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1 Physical, or hard infrastructure, refers to the physical networked systems needed to support economic activity including basic service provision such as water, energy, communications, sanitation and transport. Social, or soft infrastructure, refers to schools, health care facilities, and other cultural and social support systems.


3 In their Infrastructure Report Card, the American Society of Civil Engineers gives the nation’s infrastructure a grade of D+ in 2013, unacceptable even if up slightly from the previous report card grade in 2009 of a D.

4 Levinson and Istrate 2011.
taxes, joint-development and levies on new construction, worked to help finance capital costs of London’s Crossrail -- a new east-west transit line fully funded and currently under construction.

The SDGs and Transport

In September, the world’s nations will converge at the United Nations in New York City. There, member states are expected to commit to a sustainable future by formalizing the Post-2015 Development Agenda and adopting the globally-agreed-to Sustainable Development Goals (SDGs). The far-reaching 17 SDGs with their accompanying 169 targets and proposed 100 indicators for monitoring and review, provide the structure for balanced sustainable development across economic, social and environmental pillars, all underpinned by the reliability of good governance (See Table 1 – Sustainable Development Goals).

Efficient transport that is able to move throngs of people to and from jobs, school, health care, shopping and even recreation is a critical component to achieving such integrated sustainable development. Reliable, affordable, energy–efficient and resilient transport options for all provides a multitude of benefits. If properly implemented and supported by sustainable long-term funding, transport works to actualize the achievement of multiple SDGs through the universal access, mobility and inclusion mass transport supplies as well as the wider economic, social and environmental benefits it typically brings (See Table 2 -Transport Benefits). It is impossible to achieve holistic sustainable development without sustainable transport options and systems.

It will also be impossible to achieve the SDGs without significant mobilization of funds. The investment required to achieve the SDGs is estimated at US$2 to US$3 trillion per year. Traditional methods of financing, including Official Development Assistance (ODA) and domestic resource mobilization will fall far short of needs. In a joint report and statement released in April 2015 by the heads of the World Bank, International Monetary Fund, and other Multilateral Development Banks, they detail the need to quickly move from billions of dollars in needs to trillions of dollars in needs. They forewarn “…marshalling other types of financing at the levels needed will demand greater efforts to unlock, leverage, and catalyze more public and private flows”.

Defining Value Capture

Value capture is one such public sector finance tool that can unlock new sources of funds. Value capture, in theory and practice, seeks to extract and redistribute a portion of the increases in land and property value caused by and attributed to public sector investments. Its basic premise is simple: “those who benefit from a particular infrastructure or service should also help pay for it”. Value capture finance (VCF) promises to provide direct, dedicated, sustainable funding by expanding the field of potential contributions beyond user fees and public subsidies. VCF casts a wider net, attempting to capture able financial supporters so that all, or at least most, beneficiaries of an improvement also contribute to its costs. Resources can then be distributed more equitably. Mechanisms can include betterment taxes, joint development, impact fees or transfers of development rights. Funds can be applied to capital, maintenance or operating costs of interventions.

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5 These include SDG 1, 5, 8, 9, 10, 11, 12 and 13.
6 Schmidt-Traub, Guido and Jeffrey D. Sachs 2015.
7 From Billions to Trillions, April 2015.
8 LA MTA 2012.
Value capture finance, though gaining attention more recently, is not a new technique. Baron Haussmann leveraged increases in land value along the grand boulevards of Paris to help finance their costs\(^9\). The US Congress instituted a special assessment starting in 1894 charging landowners 50% of road pavement costs in Washington, DC, acknowledging the increase in value of fronted properties which were free of dirt and mud and easier to access\(^10\). Early private transit owners and operators in cities such as New York and London developed and marketed residential real estate along their routes to augment revenues and guarantee a steady customer base. Metro-land in northwest London was marketed as such, successfully meeting its purpose particularly during the interwar period of the 1920s\(^11\). Furthermore, many Latin American nations, especially Brazil and Colombia, have had systems put in place for decades and contribución de valorización is embedded within the culture\(^12\).

Value capture aims at capturing the “uneared increment” – meaning that the incremental increase in land is not caused by the actions of private landowners or users\(^13\). Numerous cities have employed different land value capture techniques for a variety of interventions such as for road development, highway interchanges, transit lines or stations, sewers, parks, etc., all with varying degrees of success and structures. And, although the most notable financially-successful mass transit application of the method is administered by the Mass Transit Railway Corporation (MTR) in Hong Kong, it is not clear how the same success can be realized in other more industrialized or developing nations with different land use structures and cultures of land rights and land tenure.

**Case Studies**

**Hong Kong: Mass Transit Railway-Cash Rich**

The Mass Transit Railway Corporation (MTR) was established in 1975 and became a publically-traded company in 2000. Today, 23% of its shares are traded, while the remaining 77% are retained by the government, making the MTR accountable to shareholders adding and infusing a private sector efficiency motivated by investor obligations\(^14\). The MTR is one of the few transit agencies in the world that actually generate a profit which grew by about 20% in 2014 accompanied by a 3.7% rise in revenues\(^15\). The MTR not only carries 5.46 million passengers per average weekday in Hong Kong\(^16\), it also successfully builds and operates other transit systems including in Stockholm, Melbourne, London and mainland China\(^17\).

The MTR is heavily involved in the sale, lease, development and management of multiple property types including housing, retail and office space in, around and on top of its transit

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\(^9\) Peterson 2009, though this also led to his downfall.
\(^10\) Rybeck 2004.
\(^12\) In Bogotá, Colombia, for instance, value capture mechanisms, or contribución de valorización, generated “US$900 million from 1.5 million lots” in 2007 (Walters 2012, p.8).
\(^13\) Booth 2012.
\(^15\) MTR Annual Report 2014.
\(^16\) 2014.
\(^17\) Notably, the MTR was most recently shortlisted and eventually won the bid to operate London’s Crossrail line, having already won awards for reliability and customer satisfaction for its operation of the London Overground Rail which began in 2007.
stations. Through their lucrative investments, development activities and large portfolio of real estate assets with steady streams of revenue, especially from numerous large shopping malls, the MTR is able to invest US$5 billion per year on maintenance and upgrades. In contrast, the New York Metropolitan Transportation Authority chronically suffers from funding gaps of at least that much or more in its 5 year capital plan.\(^{18}\)

**VCF Structure:** The MTR adheres to the Rail + Property model, where the company capitalizes on its investment in new or upgraded rail stations by either developing, then leasing or selling the properties themselves, or, by leasing directly to private developers at a significant profit. The fundamental advantage that is difficult to replicate elsewhere is that the MTR receives land in-kind, at pre-development prices and then flips land and property at post-development market rates typically under a long-term lease arrangement with the government still retaining ownership. This is equivalent to a heavily, publically-subsidized operation, albeit indirectly.

**New York City: 7 Line Extension-Innovative Finance**

Extension of the No. 7 New York City Flushing Subway Line\(^{19}\) to the far west side of Manhattan is touted as the lynchpin of a rezoning plan for mixed-use development crafted under the Bloomberg Administration. Underserved by traditional underground subway service, the 1.5 mile 7 line extension is considered a crucial catalyst to “unlock” commercial and residential development potential in and around the Hudson Yards District. The area, roughly bounded by 42\(^{nd}\) Street to 30\(^{th}\) Street and 11\(^{th}\) Avenue to 8\(^{th}\) Avenue, had previously been zoned for manufacturing. The 26-acre site can now accommodate 25 million sq. ft. of office space, 20,000 housing units (5,000 affordable), 2 million sq. ft. of retail, 3 million sq. ft. of hotel, plus open space, a new boulevard and subway station.\(^{20}\)

The Metropolitan Transportation Authority (MTA), the public agency responsible for construction and operation of transit in New York City and parts of New York State\(^{21}\), had not been able to prioritize the extension, due to lack of funds, tough competition for very limited resources and constant political posturing and budget woes. Hoping to infuse the project with quick capital and bypass the lengthy environmental review process required if using federal funding channeled through the MTA, the Bloomberg administration devised an innovative finance mechanism that was meant to raise the $2.4 billion needed for the 7 line extension and other area road improvements.

**VCF Structure:** The Hudson Yards Infrastructure Corporation (HYIC) was established in 2005 to issue bonds, make payments and collect revenues related to the area’s redevelopment.\(^{22}\) HYIC issued a total of $3 billion in bonds which were backed by revenue expected from the value capture mechanisms instituted within the Hudson Yards Finance District. There was huge appetite as US$2 billion in bonds sold in just one day in 2006\(^{23}\) (See Table 4 for Case Study

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\(^{18}\) As of June, the MTA faced a budget shortfall of US$14 billion, almost half of its 5 year capital needs of $32 billion (Fitzsimmons 2015).

\(^{19}\) The project extends the line west from Times Square at 42nd to 11th Avenue, then south to 34th Street.

\(^{20}\) The station will be at 11th avenue and 34th street. According to the MTA, it is expected to be one of the busiest stations in NYC and the line will connect 18 of the 24 NYC subway lines.

\(^{21}\) The MTA operates in the five counties of New York City plus the downstate NY counties of Westchester, Rockland, Orange, Dutchess and Long Island’s Nassau and Suffolk counties.


Credit Ratings). Another US$1 billion were sold in 2012. The plan was to use the surplus generated from value capture payments to cover debt service, buy back bonds and pay down the principal to meet bondholder obligations.

To do this, fees were levied on new construction or substantial renovation of commercial properties within the Hudson Yards Finance District. The main sources of revenue are: Payments in Lieu of Taxes (PILOT) for commercial office development, Property Tax Equivalent (PTE) payments for residential and hotel development, plus the sale and transfer of development rights available from the area’s actual rail yards. In addition, to further attract development, the payments in lieu of taxes were set at less than what the actual real estate taxes might have been otherwise. In addition, numerous other incentives and bonuses were written into the scheme. The Finance District includes sites ripe for redevelopment including Madison Square Garden and Penn Station, the Port Authority Bus Terminal and other sites that will benefit from the substantial economic activity associated with the recently expanded and renovated Jacob K. Javits Convention Center.\textsuperscript{24}

With total revenue forecasted at US$34 billion by 2050\textsuperscript{25}, returns from value capture schemes were greatly overestimated. The unforeseen 2008 recession significantly slowed construction and dampened demand for development, further exacerbating the situation and causing delay of any anticipated cash flows. Significant shortfalls started to accrue. But since the “City Council agreed to make support payments to HYIC should its revenues fall short of its annual debt service payments,”\textsuperscript{26} the city has already contributed $374 million to cover costs. In addition, the NYC Independent Budget Office now predicts that the total cost to taxpayers will reach $947 million to cover additional shortfalls expected through 2019. Liabilities from debt service will only continue to grow, scheduled to rise from $153 million annually in 2015 to $765 million beginning 2020.\textsuperscript{27,28}

Nevertheless, the 7 line extension is scheduled to open in the fall 2015\textsuperscript{29} and many buildings are under construction. The north and south tower, 10 and 30 Hudson Yards, are underway with 2.6 million sq. ft. and 92 stories, and 1.7 million sq. ft. and 52 stories, respectively, making the north tower one of the tallest buildings in Manhattan.\textsuperscript{30} Due to this increased activity, 2015 will be the first year that the city will not have to contribute to the HYIC, 10 years after initially anticipated.\textsuperscript{31}

\textsuperscript{24}The huge convention complex attracts 2.5 million visitors per year and generates $1.5 billion annually according to the Javits Center.
\textsuperscript{25} This figure is based on Cushman and Wakefield’s November 2006 revenue forecast (NYC IBO 2013).
\textsuperscript{26} NYC IBO 2013, emphasis added.
\textsuperscript{27} 2014 Annual Report. Hudson Yards Infrastructure Corporation.
\textsuperscript{28} In a recent interview, Dan Doctoroff the deputy mayor under Bloomberg at the time and contributor to this scheme states, “The city’s projections for development on the West Side did not anticipate a severe recession in 2008...Our whole philosophy was to create the conditions for the private market to invest...You can never predict when markets will be favorable or not.” (New York Times, June 19, 2015). While essentially true, real estate development notoriously operates along boom-bust cycles. This needs to be adequately addressed and contingencies incorporated to VCF schemes. NYC’s attempts to attract private investment are laudable. The risk exposed to the public is not. VCF schemes need to explicitly minimize risk and adequately protect the public’s interest.
\textsuperscript{29} Delayed from 2014 due to complications with elevators and escalators needed to move riders to and from deep underground platforms. In addition, numerous buildings are under construction.
\textsuperscript{30} According to Hudson Yards http://www.hudsonyardsnewyork.com/
\textsuperscript{31} Bagli June 2015.
London: Crossrail’s Multi-tiered Approach

On the books since 1943, the Crossrail Act was enacted by Parliament in July 2008, finally giving the go ahead and means of implementation for the biggest infrastructure project in Europe today at a cost of £14.8 billion. Construction began in 2009 at Canary Wharf and the line is scheduled to begin operations in 2018, fully commencing by 2019.

The new east-west line will link Shenfield to Maidenhead and west to Redding, directly connecting for the first time London’s business centers of Heathrow, the West End, the City of London and Canary Wharf. The line will add more than 100 kilometers of track and link 40 stations including 10 new. Crossrail will increase capacity of the entire network by 10% and east-west capacity by 40%, carrying 72,000 passengers per hour and 200 million per year.

This will allow an additional 1.5 million people to be within 45 minutes of an employment center greatly increasing access and “employment opportunities to thousands in some of London’s most deprived areas”.

Crossrail is expected to have a significant economic impact on London. The project will support 14,000 jobs during its peak construction period between 2013-2015 and will employ about 1,000 once opened. It is expected to cause additional economic activity of £1.24 billion annually. In terms of impact on property and land, Crossrail is predicted to create £5.5 billion of additional value to residential and commercial properties between 2012-2022. Crossrail may support and accelerate the delivery of 57,000 new homes and 3.25 million sq. meters of office floor space all within 1km of stations. Already, a recent development pipeline study showed that more than 40% of planning applications within 1 km of a station used Crossrail as “justification for the development”. The study also found applications growing in number every successive year of the study between 2008 and 2013, pointing to increased momentum as opening day nears.

VCF Structure: While 75% of the capital costs needed for Crossrail’s construction came from more traditional sources such as grants from the Department for Transport and Transport for London, about 25% was raised through value capture finance mechanisms. Different tiers of contributions were devised and instituted including the Business Rate Supplement, Direct Beneficiary Contributions, Joint Development Projects and the Community Infrastructure Levy.

The Business Rate Supplement (BRS) is a betterment tax levied on all non-domestic properties with annual rateables (or rent) valued at more than £55,000. This equates to nearly 43,500 impacted properties with 68% of properties within London’s Inner Boroughs and 32% in the Outer Boroughs. The BRS supplements the annual Business Rate Bill already being paid by businesses. The fee of only 2 pence per pound of rateable value went into effect in April 2010.

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32 Equivalent to about US$22.2 billion in August 2015.
33 http://www.crossrail.co.uk/benefits/crossrail-in-numbers
34 Crossrail 2013
35 Such high capacity engineering, design and equipment is necessary to ease severe crowding of London’s transit system, particularly at peak travel times. It is also necessary to meet increasing demand from population growth and increased tourism which could increase public transport trips by as much as 50-60% through 2050 according to TfL (March 2014).
37 Crossrail Ltd. 2013
38 Roukouni and Medda, 2012
39 GVA 2012.
40 GVA 2014.
and is targeted to cover annual debt service of £210 million. The BRS will continue for 24 to 31 years, until “the debt has been paid”. Charges and ratables will be reviewed every five years and adjusted if necessary. After the first full year, collections actually exceeded estimates, raising £226.6 million, demonstrating financial success and implementation of the BRS as a land value capture mechanism (Roukouni and Medda 2012).

Steps Towards Implementation

“Although the idea of capturing land value in order to finance public investment is uncontroversial, there are problems with its implementation.” Even though the concept of value capture is simple, devising, implementing and administering schemes are quite complex. Enactment of any value capture finance mechanism is dependent upon the existence of certain conditions. These include:

1. Land is a scarce resource.
2. Land and property have value.
3. Transport and infrastructure improvements enhance land value.
4. Institutions have the capacity and authority to regulate land.
5. Institutions have the capacity to accurately appraise land and market value.
6. Institutions can measure the unearned incremental increase in value, keeping all other factors constant.
7. Institutions have the capacity to extract a portion of that value and devise financial instruments and institutions to administer the scheme and collect and redirect/redistribute funds.
8. Landowners/tenants/businesses/users have the standing and capacity to pay.
9. There is a healthy or nascent real estate market with some market potential to “unlock” and/or capitalize.

As was illustrated in the case studies above, it is extremely difficult to meet all of these conditions simultaneously and even more difficult to achieve them skillfully. In New York, revenues were greatly overestimated. Without the safety net of the City’s general budget, the Hudson Yards Infrastructure Corporation would have went into default, exposing the public and project to undue risk. In Hong Kong, although the Mass Transit Railway is lucrative, it is primarily so because of impediments to human and democratic rights buoyed by is other lines of

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41 HM Treasury 2007.
42 Ingram and Hong 2012, p.4.
43 Author’s compilation and findings.
44 There is a large body of literature documenting transport’s positive impact on value. For instance, after synthesizing the findings of a number of empirical studies, Salon and Shewmake found that, in general, property values decrease by 1% for every 10% decrease in distance away from a transit stop. In other words, the closer a property is to a metro transit stop, the higher its value.
45 The difficulty here is isolating the value caused by the intervention. Factors such as tenant mix, amenities, age, location, etc., could alone enhance value as attractiveness increases to potential buyers, renters, and users. Hedonic price models can potentially measure transport’s impact on price, holding all other variables constant.
46 There are a number of variables that need to be taken into account when assessing office market health, quality and potential. These variables include: total inventory, construction starts, vacancy rates, absorption, asking rents, office employment, avg. sq. ft. per office worker, recent transactions, appraisals, and sale price per sq. ft. (Author’s own experience).
business. London did the best to diversify and structured multiple tiers of value capture mechanisms that work to complement each other into the overall scheme. If one mechanism becomes compromised by a slowdown in new construction, the other tiers won’t necessarily be impacted in the same way as the Community Infrastructure Levy – an impact fee – might be. The Business Rate Supplement works because it is simple and is only a small addition to a fee businesses were already accustomed to paying, greatly reducing the cost to administer the program and collect fees as well.

Getting Serious about Sustainable Transport Finance

This paper offers regulatory and administrative actions which can work to unlock desperately needed funds to implement the SDGs and to finance a future of sustainable development. It assessed the land value capture method and its potential to sustainably fund transport improvements and operations. The analysis identified the best principles and components of value capture finance as discussed in theory and as implemented in practice. The case studies highlighted the complexities and nuances of value capture finance through the application of the technique in the three global cities. By thoughtfully crafting evidence-based value capture finance structures, affordable, reliable, energy-efficient and inclusive transport systems can be built and maintained. Sustainable development cannot be achieved without sustainable transport systems. Value capture finance can assure that these systems continue to support the acute demands of rapidly growing populations. Getting serious about sustainable transport finance means to develop and institute strategies that allow transport improvements to capture and reinvest at least some of the increases in value to which they contribute.

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47 UN DESA predicts that the world population will grow from 7.3 billion today to 9.7 billion by 2050. By that time, more than 2/3rds of the population will reside in urban areas, making the needs of cities and human settlements especially severe.
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UN DESA. 2014 Revision of World Urbanization Prospects.


Table 1
The Sustainable Development Goals

Goal 1*. End poverty in all its forms everywhere.

Goal 2. End hunger, achieve food security and improved nutrition, and promote sustainable agriculture.

Goal 3. Ensure healthy lives and promote well-being for all at all ages.

Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.

Goal 5*. Achieve gender equality and empower all women and girls.

Goal 6. Ensure availability and sustainable management of water and sanitation for all.

Goal 7. Ensure access to affordable, reliable, sustainable, and modern energy for all.

Goal 8*. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.

Goal 9*. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Goal 10*. Reduce inequality within and among countries.

Goal 11*. Make cities and human settlements inclusive, safe, resilient and sustainable.

Goal 12*. Ensure sustainable consumption and production patterns.

Goal 13*. Take urgent action to combat climate change and its impacts.

Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development.

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.

Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.

Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development.

*Efficient, multi-modal, sustainably-funded transport options and systems, if implemented, will support the achievement of these SDGs and their respective targets.
### Table 2
Economic, Social and Environmental Benefits of Transport Improvements

<table>
<thead>
<tr>
<th>Traditional</th>
<th>Wider Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Time Savings</td>
<td>Increased Productivity</td>
</tr>
<tr>
<td>Reduced Congestion*</td>
<td>Decreased Transport/Production Costs</td>
</tr>
<tr>
<td>Increased Frequency</td>
<td>Increased Competitiveness</td>
</tr>
<tr>
<td>Better Level of Service</td>
<td>Agglomeration Benefits</td>
</tr>
<tr>
<td>Increased Geographic Coverage</td>
<td>Environmental Sustainability</td>
</tr>
<tr>
<td>Improved Speed*</td>
<td>Reduced GHG Emissions</td>
</tr>
<tr>
<td>Greater Mobility</td>
<td>Increased Labor Force Participation/Employment</td>
</tr>
<tr>
<td>Improved Quality</td>
<td>Improved Air Quality</td>
</tr>
<tr>
<td>Greater Reliability</td>
<td>Better Connectivity/Networks</td>
</tr>
<tr>
<td></td>
<td>Social Inclusion</td>
</tr>
<tr>
<td></td>
<td>Intergenerational Equity</td>
</tr>
<tr>
<td></td>
<td>Increased Access</td>
</tr>
<tr>
<td></td>
<td>Improved Quality</td>
</tr>
<tr>
<td></td>
<td>Improved Health</td>
</tr>
<tr>
<td></td>
<td>Better Connectivity/Networks</td>
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<tr>
<td></td>
<td>Increased Mobility</td>
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<tr>
<td></td>
<td>Increased Access</td>
</tr>
<tr>
<td></td>
<td>Better Health</td>
</tr>
</tbody>
</table>

*Assumes unrestricted automobile flow is desired.
Source: Author's Compilation.

### Table 3
Strengths and Weaknesses of Revenue Sources

<table>
<thead>
<tr>
<th>Revenue Source</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Pays</td>
<td>✓ Progressive as to Use</td>
<td>✓ Regressive as to Income because of flat fees/fares/tolls</td>
</tr>
<tr>
<td></td>
<td>✓ Directly Links Users to Amount of Service Consumed</td>
<td>✓ Not enough to cover costs</td>
</tr>
<tr>
<td></td>
<td>✓ Usually Dedicated</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Fees can cross-subsidize other modes – toll to transit (Dyble 09)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>✓ Politically Feasible</td>
<td></td>
</tr>
<tr>
<td>Beneficiary Pays</td>
<td>✓ Pay share of benefit provided by public investment and from unearned increment/givings/windfalls</td>
<td>✓ Hard to measure appropriate share</td>
</tr>
<tr>
<td></td>
<td>✓ Can potentially generate large sums of funds</td>
<td>✓ Could add to the cost of doing business and therefore reduce competitiveness or contribute to unemployment (Sclar 13)</td>
</tr>
<tr>
<td></td>
<td>✓ Can redistribute gains/resources</td>
<td></td>
</tr>
<tr>
<td>Everyone Pays</td>
<td>✓ Eliminates free-riders</td>
<td>✓ Some can’t/shouldn’t pay</td>
</tr>
</tbody>
</table>

Source: Author’s Compilation
Table 4
Credit Ratings

Mass Transit Railway Corporation
Hong Kong

<table>
<thead>
<tr>
<th></th>
<th>Short-term ratings(^\text{^})</th>
<th>Long-term ratings(^\text{^})</th>
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<tbody>
<tr>
<td>Standard &amp; Poor's</td>
<td>A-1+ / A-1+</td>
<td>AAA / AAA</td>
</tr>
<tr>
<td>Moody's</td>
<td>- / P-1</td>
<td>Aa1 / Aa1</td>
</tr>
<tr>
<td>Rating and Investment Information, Inc. (R&amp;I)</td>
<td>a-1+</td>
<td>AA+</td>
</tr>
</tbody>
</table>

\(^\text{^}\) Ratings for Hong Kong dollar / foreign currency denominated debts respectively

Source: MTR Financials

Hudson Yards Infrastructure Corporation
New York

<table>
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<tr>
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<th>Bond Ratings</th>
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<tbody>
<tr>
<td></td>
<td>2006</td>
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<tr>
<td>Standard &amp; Poor's</td>
<td>A</td>
</tr>
<tr>
<td>Moody's</td>
<td>A3</td>
</tr>
<tr>
<td>Fitch</td>
<td>A-</td>
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</table>

Source: Hudson Yards Infrastructure Corporation -2014 Annual Report

Transport for London
London

<table>
<thead>
<tr>
<th></th>
<th>Short-term rating</th>
<th>Long-term rating</th>
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<tbody>
<tr>
<td>Standard &amp; Poor's</td>
<td>A-1+</td>
<td>AA+</td>
</tr>
<tr>
<td>Moody's</td>
<td>P-1</td>
<td>Aa2</td>
</tr>
<tr>
<td>Fitch</td>
<td>F-1+</td>
<td>AA</td>
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as of May 2014

Source: Transport for London Investor Ratings
<table>
<thead>
<tr>
<th>User Pays</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fares</td>
</tr>
<tr>
<td>Gas tax</td>
</tr>
<tr>
<td>Vehicle Registration</td>
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<tr>
<td>Tolls/HOT (High Occupancy Toll Lanes)</td>
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<tr>
<td>Cordon Fees/ Congestion charges</td>
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<tr>
<td>Vehicle mile tax</td>
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<tr>
<td>Parking Fees</td>
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<tr>
<td>Transport Utility Fees</td>
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<td>Carbon Fees</td>
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<thead>
<tr>
<th>Beneficiaries Pay</th>
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<tbody>
<tr>
<td>Tax Increment Finance</td>
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<tr>
<td>Impact Fees</td>
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<tr>
<td>Betterment Fees</td>
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<tr>
<td>Sales tax</td>
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<tr>
<td>Payroll Mobility Tax</td>
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<tr>
<td>Business Rate Supplement</td>
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<tr>
<td>Property Tax</td>
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<tr>
<td>Land Tax</td>
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<tr>
<td>Sale of Air Rights</td>
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<tr>
<td>Joint Development</td>
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<tr>
<td>Special Assessment Districts</td>
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<tr>
<td>Local Option Transportation Taxes (LOTT)</td>
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<tr>
<th>Everyone Pays</th>
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<tbody>
<tr>
<td>Income Tax</td>
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<td>Mixed General Funds</td>
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<th>Rich Pay</th>
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<tr>
<td>Global Tax</td>
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