

Mobilizing Finance through Anticipating the Economic Impact of Urban Infrastructure

Case Studies Report

May 2021



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EXECUTIVE SUMMARY

Introduction | This ASA performed a case study evaluation of indirect impacts from urban infrastructure projects that mobilized private investment to inform World Bank program design and an approach to identifying partners for co-investment.

In April 2021, the World Bank engaged HR&A Advisors to support an Advisory Services Activity (ASA) under Terms of Reference (TOR) P173320 to produce two case study narrative assessments of completed urban infrastructure projects in identifying how those projects impacted private sector partners and/or economic sectors to inform opportunities for targeting and collaborating with private co-investment and enhancing Program Design for urban infrastructure projects.

HR&A's assessment of impacts includes all direct, indirect and induced impacts, with a focus primarily on indirect and induced impacts as a means of catalyzing private investment. Indirect or induced impacts are also referred to as positive externalities or "multiplier" impacts.

Recommendations in this report focus primarily on indirect or "multiplier" impacts associated with real estate values, development activity, business investment, jobs and quality of life. Real estate values and other development do not necessarily represent a benefit themselves but are a quantifiable measure of the capitalized impacts of a project.

Analysis within this ASA focused on three key steps:

- 1. Project Identification** | Work closely with the World Bank team to identify two completed World Bank projects for review under this case study assessment.
- 2. Review Impacts** | Complete an analysis of available project information focused on direct and indirect outputs and outcomes already evaluated as well as potential indirect impacts that mobilized private investment to inform strategies for project/program design in collaborating with new partners.
- 3. Case Study Narrative** | Produce case study narratives for each project based on those findings that also reference developed world examples

This report reflects HR&A's deliverable under this engagement.

Completed World Bank Projects Reviewed for this ASA

Lebanon Cultural Heritage and Urban Development Project (CHUD)

Cultural Heritage, 2003-2016

The World Bank initiated the CHUD project in Lebanon to (a) create the conditions for increased local economic development and enhanced quality of life in the historic centers of the cities of Baalbek, Byblos, Saida, Tripoli, and Tyre; and (b) improve the conservation and management of the country's cultural heritage. The Bank originally committed US\$31.5 million through an International Bank for Reconstruction and Development (IBRD) loan, in partnership with UNESCO and the governments of Lebanon, Italy, and France. The Bank committed an additional US\$27 million in 2012.

Karnataka, India Municipal Reform Project (KMRP)

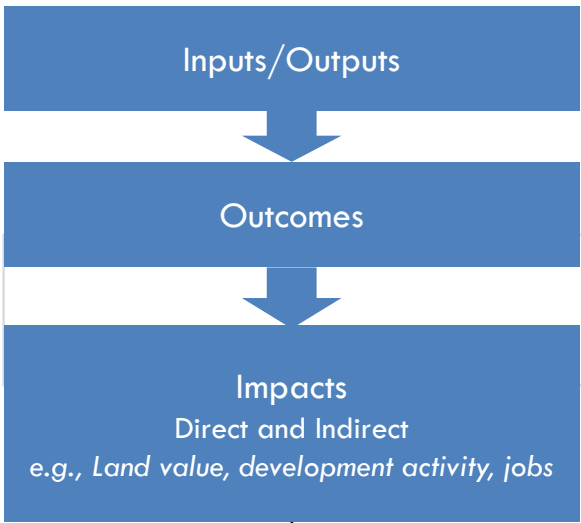
Urban Services, 2006-2015

The World Bank initiated the Karnataka Municipal Reform Project (KMRP) to improve the delivery of urban services through (a) enhancing the quality of urban infrastructure and (b) strengthening institutional and financial frameworks at the Urban Local Body (ULB) and state levels. The Bank originally committed US\$216 million through the International Bank for Reconstruction and Development (IBRD) loan, but the loan was disbursed at US\$204.6 million. The Government of Karnataka contributed about US\$73 million.

Approach | A three-step framework was applied to this case study review to frame findings in context of World Bank’s internal Project Cycle and two external sector-specific frameworks for designing and implementing projects.

Impact Identification
Infrastructure Investment Assessment

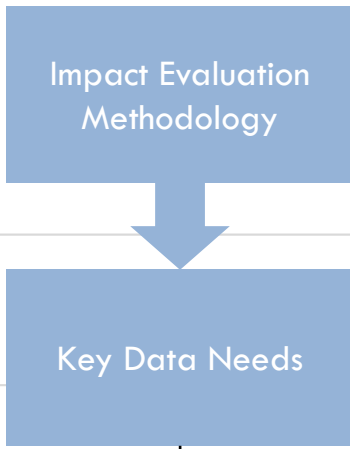
What critical indirect impacts are most relevant/aligned with project-specific goals and could translate to support project investment?
How does that inform key partner identification?



Key Partners

Measurement Approaches
Evaluation & Monitoring Approach

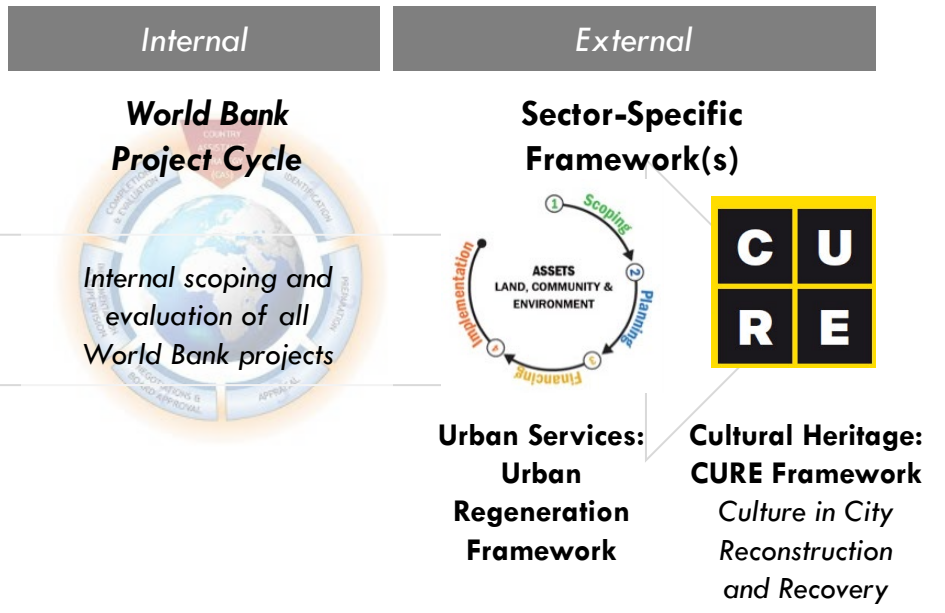
What impact methodologies are most relevant to assess those impacts and what specific data is required to do so?



Methodologies & Data

Program Design
World Bank Program Processes

How do the specific impacts, partners and evaluation/data needs inform the approach and tools utilized to design, finance and implement projects?



Tools & Strategies

Findings | As seen in the World Bank's projects, land value creation is a critical indirect impact from urban infrastructure investments which represents the capitalization of multiple direct and indirect benefits and the mobilization of private capital.

Impact Identification DIRECT & INDIRECT IMPACTS

Measurement Approaches

Lebanon Cultural Heritage and Urban Development Project (CHUD) Cultural Heritage



ADDITION OF NEW JOBS
Across the 5 cities, individuals working in the culture, tourism, and heritage sector increased from about 660 in 2002 to 1,575 in 2016 (World Bank)

INCREASED TOURISM & SPENDING
Estimated annual visitors increased from 200,000 in 2004 to 420,000 in 2016 (World Bank)

IMPROVED QUALITY OF LIFE & ACCESS TO PUBLIC SPACE
Across the 5 cities, rehabbed public space for pedestrians increased from approximately 10,000 m² to 274,000 m² (World Bank).

Karnataka, India Municipal Reform Project (KMRP) Urban Services



IMPROVED SANITATION
32 slums were declared open defecation free, with 100% of residents having access to toilets with underground drainage and disposal

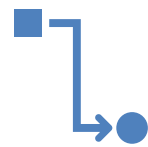
IMPROVED GOVERNMENT
At the time of project closing, the Bangalore Water Supply and Sewerage Board revenues from water and sanitation user fees were sufficient to meet the regular operating & maintenance expenditures

ENVIRONMENTAL BENEFITS
Eliminated unsanitary overflows from septic tanks and other sanitation facilities, which also led to cost savings and other public health benefits

LAND VALUE CREATION & CAPITAL MOBILIZATION

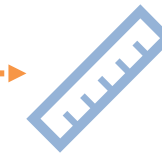
- Residential unit prices in and around areas of historic/cultural importance increased by 60% across the 5 cities from 2008 to 2016, and by 67% specifically in Byblos (World Bank). Business unit prices increased by 62% across the 5 cities and by 91% in Byblos from 2008 to 2016 (World Bank).
- For every \$1 invested in Byblos, the private sector mobilized \$7, largely through public squares, sidewalks, and rehabbed historic facades (World Bank).
- Across the 5 cities, percentage of businesses investing in their business or property development increased from 6% to 27% (World Bank).
- Properties in slum areas saw a 50-75% increase in property values from Rs.250-Rs. 500 per sq. ft. after households were connected to under-ground drainage.
- At the time of project closing, the Bangalore Water Supply and Sewerage Board revenues from water and sanitation user fees were sufficient to meet the regular operating & maintenance expenditures of the system. The State committed to provide funding assistance to complete the spill over works beyond the project period.
- The Japan Bank for International Cooperation (JBIC) committed financing to the Bangalore Water Supply and Sewerage Board for construction of sewerage treatment plants

Findings | Land value creation occurs over many years through both public and private investments. Effective measurement of land value creation and other impacts can be done multiple ways, relying on robust data collection and a clear counterfactual.



Impact Identification

Infrastructure investments by the World Bank and its public sector partners act as a catalyst early in the development process. Over many years private land developers/owners and private vertical construction developers/owners capture value increases as the benefits of the infrastructure investment and private sector improvements are capitalized in land values.



Measurement Approaches

The World Bank can employ a variety of measurement approaches to quantify land value impacts and other indirect impacts that are capitalized in those values, such as indirect jobs, gross domestic product (GDP) and quality of life.

Input-Output Modeling

Economic analysis calculating the flow of money in an economy among industries. Analyzes the direct, indirect, and induced effects on jobs, earnings, and economic output.

Cost-Benefit Analysis

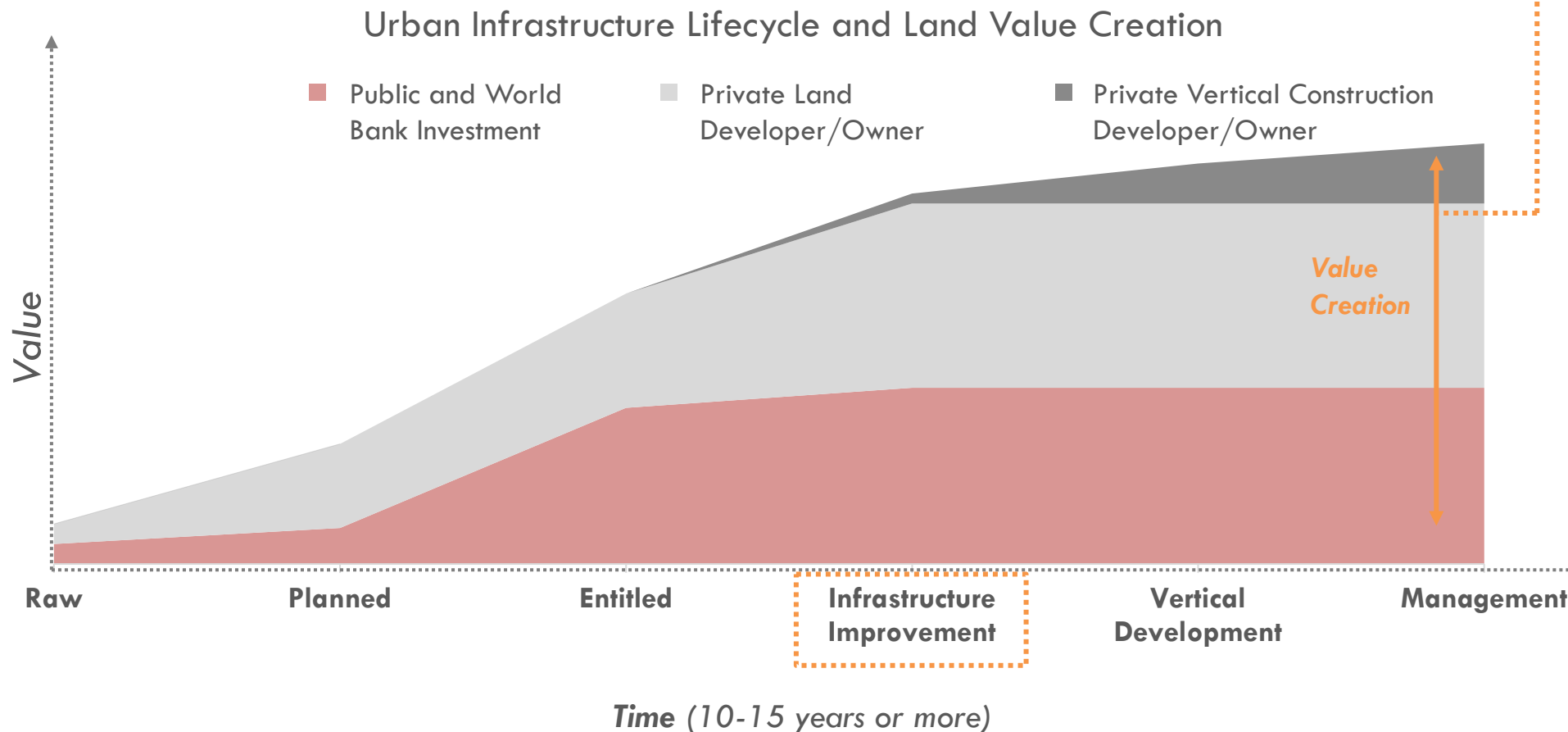
Comparison of the costs of a cultural heritage project investment to a variety of benefits, which could include increases in real estate values, tourism spending, and additional household spending from economic growth.

Hedonic Price Modeling

Estimates economic benefits from increased land values associated with proximity to cultural heritage sites that have undergone rehabilitation

Qualitative Assessment

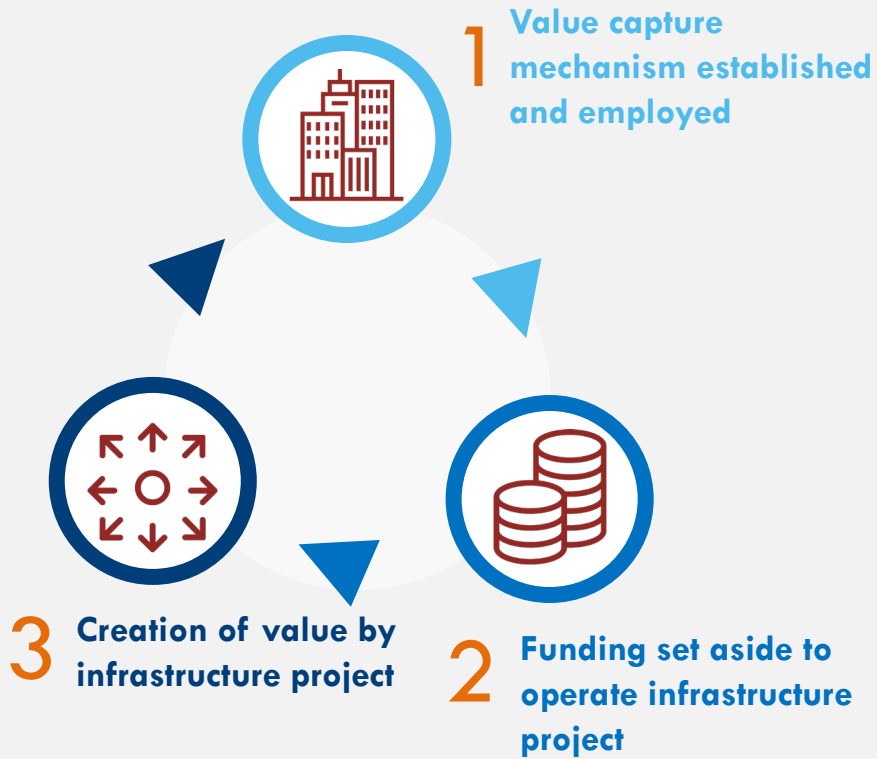
Assesses the impacts of a cultural heritage investment on socioeconomic factors, such as quality of life, education, health, and disparate impacts on specific populations



Findings | Land value capture mechanisms can be designed early in World Bank program design for cultural heritage and urban service projects to leverage real estate value appreciation in support of co-funding infrastructure investments.

Program Design

Land Value Capture Premise & Process



Land Value Capture Mechanisms

Approach	Tools	Description	Potential Partners
Tax-Based Financing	<ul style="list-style-type: none"> ▪ Betterment levies/Special Assessment District ▪ Value-added developer tax payments ▪ General tax revenue, property tax ▪ Tax Increment Financing (TIF) 	Existing or additional taxing districts to capture value appreciation associated with infrastructure investments. In places where a property tax system is in place, tools like TIF can be used	<ul style="list-style-type: none"> ▪ Municipality ▪ Developers/investors ▪ Business owners ▪ Residents
Public Assets	<ul style="list-style-type: none"> ▪ Land disposition and banking ▪ Long-term lease 	Successful publicly-funded infrastructure must creatively use existing public assets, such as land leasing to provide capital funding	<ul style="list-style-type: none"> ▪ Municipality ▪ Developers/investors
Regulatory Tools	<ul style="list-style-type: none"> ▪ Zoning tools ▪ Land readjustment ▪ Development/air rights 	Rezoning, expedited entitlement processes, additional development rights, and other regulatory tools can provide value to the private sector to spur contribution to infrastructure	<ul style="list-style-type: none"> ▪ Municipality ▪ Developers/investors
Bond Financing	<ul style="list-style-type: none"> ▪ Tax-increment financing (TIF) bonds ▪ Payment in Lieu of Taxes (PILOT) bonds 	Value-capture mechanisms can transfer value added to fund initial infrastructure	<ul style="list-style-type: none"> ▪ Municipality ▪ Developers/investors ▪ Business owners ▪ Residents
Developer-Based Financing	<ul style="list-style-type: none"> ▪ Proceeds from private land sales ▪ Contributions from developers (building permit charges) ▪ In-kind developer contributions 	Developer-led financing of development, through direct financing or through land value	<ul style="list-style-type: none"> ▪ Municipality ▪ Developers/investors

Findings | An ex-post review of the World Bank's completed projects in Lebanon and India demonstrate a range of indirect impacts from cultural heritage and urban service investments, including land value creation.

Impact Identification

Measurement Approach

Findings

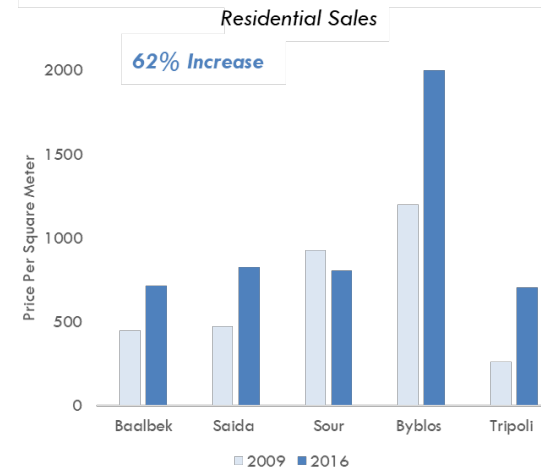
Lebanon Cultural Heritage and Urban Development Project (CHUD) Cultural Heritage



Indirect real estate, business improvement and tourism job impacts were measured as meaningful.

Data collection was relatively limited but both in the subject city as well as the counterfactual. However, an increase in land values over the span of the project was quantified. In future applications, implement cost-benefit analysis and hedonic price modeling (ex ante + ex post) measurement approaches to narrow in on the impacts associated with real estate and tourism-related spending to both inform Program Design and the methods to collect necessary data.

Lebanon Real Estate Impacts Across CHUD Cities



Ex post analysis of the Lebanon Cultural Heritage and Urban Development Project found that for every \$1 invested in Byblos, the private sector mobilized \$7. A small sample of Byblos properties saw an increase in value from 2008 to 2016: 67% for residences and 91% for businesses.

Karnataka, India Municipal Reform Project (KMRP) Urban Services

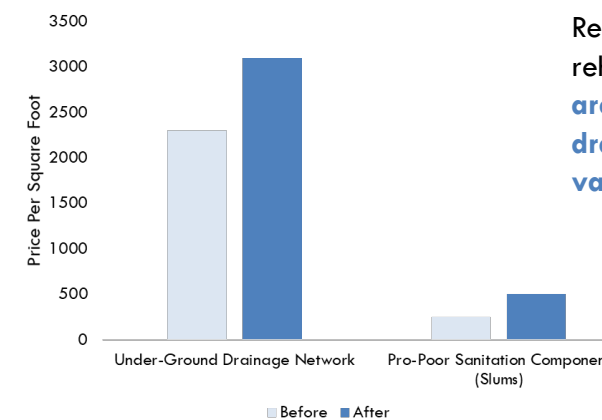


Indirect real estate, household time savings, and health impacts were measured as meaningful.

Data collection was limited and no counterfactual was identified at project outset.

In future applications, establish a clear counterfactual and means by which data collection can occur. Implement input-output modeling and hedonic price modeling (ex ante + ex post) measurement approaches to narrow in on the impacts associated with real estate and household time savings.

Bangalore UGD Real Estate Impacts



In Bangalore, India, the Karnataka Municipal Reform Project included sewerage and road rehabilitation investments. Properties in slum areas that were connected to underground drainage saw a 50-75% increase in property values.

Findings | Examples from U.S. and international cultural heritage and urban service infrastructure projects demonstrate how cultural heritage and urban service projects have leveraged real estate value appreciation for funding needs.

The examples below show that cultural heritage projects - in the form of urban park infrastructure – are assets that produce indirect real estate impacts that can be harnessed to co-fund investments. Investment in large-scale infrastructure tied to transit, a form of urban service, can similarly accelerate the pace of real estate development and increase real estate premiums on surrounding properties. This real estate value can be captured to fund future infrastructure investments.

Real Estate Value Capture Examples

Cultural Heritage (Community Parks)

Klyde Warren Park Bond Financing

Dallas, TX



76% office rent growth 2x faster than city, 2013-2020

Waller Creek Park Tax-Based Financing

Austin, TX



3x faster property value growth than city, 2019-2021

Yards Park & Capitol Riverfront Bond Financing

Washington, DC



Over \$8 billion in economic investment catalyzed

NoMa Transit Station Tax-Based Financing

Washington, DC



21% residential rent increase since 2010, faster than city

Urban Services (Transit)

Union Station Bond and Tax-Based Financing

Denver, CO



6% rent premium over surrounding downtown multifamily

Claremont Bypass Road Tax-Based Financing

Cape Town, South Africa



\$310M real estate value increase from 2008-2018

Note: HR&A uses residential and commercial rents as a proxy for value increases, depending on data availability.

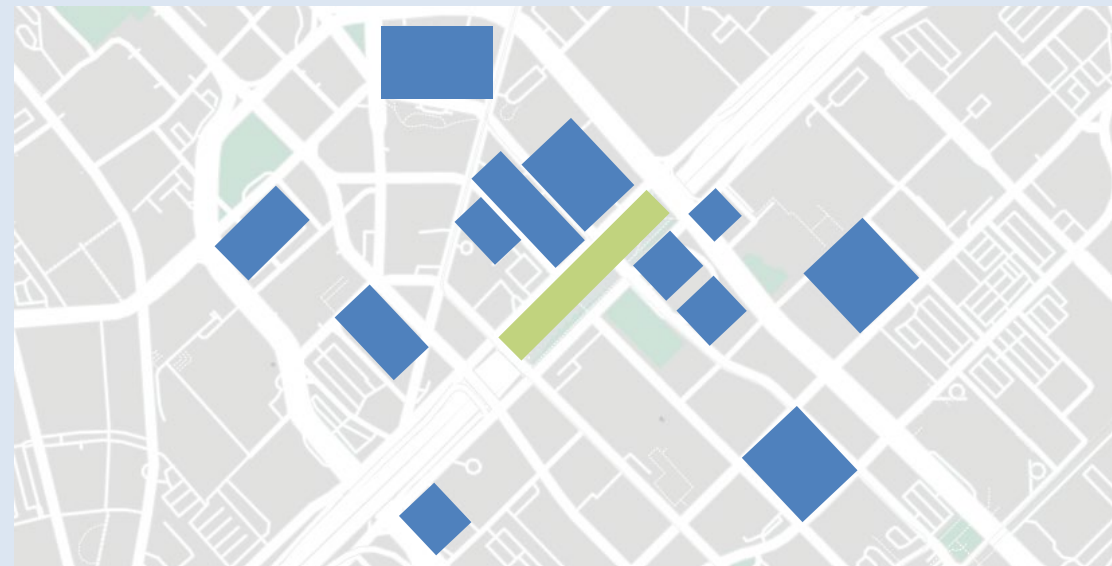
Klyde Warren Park, Dallas, TX | Ex post analysis has demonstrated the dramatic increases in commercial rental rates and new development since the construction of Klyde Warren Park, confirming ex ante analysis.

Klyde Warren Park was originally constructed between 2009 and 2012, funded by \$20 million in City of Dallas bond funds, \$20 million from Texas DOT, \$50 million in private donations, and \$16 million in stimulus funds for transportation enhancement construction. In 2016, the Woodall Rodgers Park Foundation in Dallas, TX advanced analysis to demonstrate the economic rationale for proposed park infrastructure improvements, including a 3-12% value premium. **The City created two Planned Development Districts in the surrounding area to ensure all projects would be reviewed by the City Department of Environmental Services.**

Ex Post Impact

Klyde Warren Park has had a significant impact on the surrounding commercial district. From 2013 to 2020, assessed values in the Klyde Warren Park and Dallas Arts District Public Improvement District (PID) more than doubled from \$2.5 billion to \$6.2 billion. **Commercial rental rates across five major developments have increased by up to 76% from 2013 to 2020, in comparison to gross rents increasing by 23% in the larger 1.5-mile radius of Klyde Warren Park and by 32% citywide in Dallas during that time period.** In addition to real estate impacts, the PID has resulted in year-round security, custodial services, cultural enhancements and programming, and wayfinding that contribute to a vibrant urban core around the park.

New Development and Re-Development in Klyde Warren Park PID, 2013-2020



Change in Commercial Rental Rates, Klyde Warren Park PID, 2013-2020



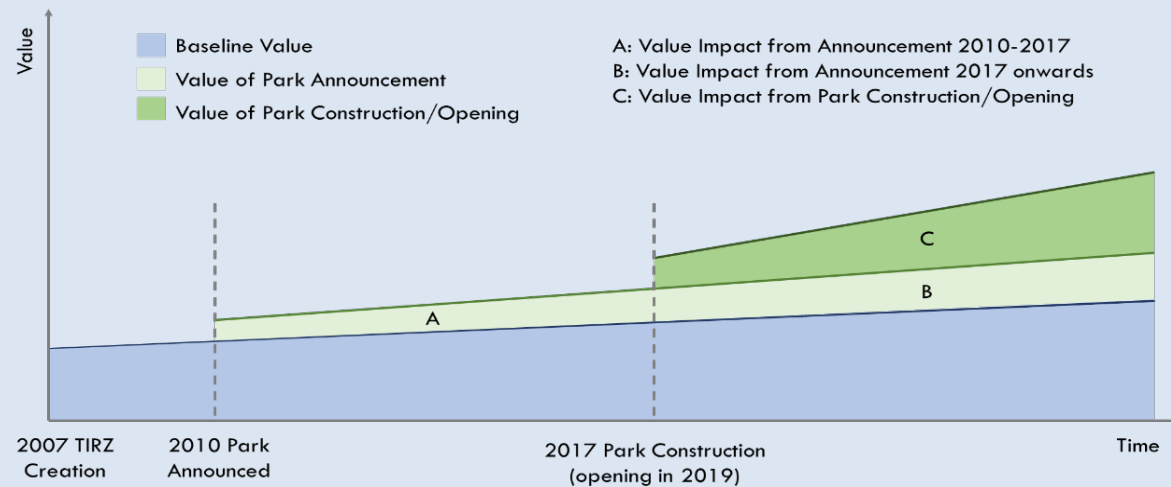
Waller Creek, Austin, TX | Ex ante analysis informed the extension of an existing Tax-increment Zone (TIRZ) to fund development of Waller Creek park and infrastructure. Ex post analysis of increased property tax revenues surpassed expectations.

In 2017, the Waller Creek Conservancy in Austin, TX performed an ex ante analysis demonstrating the economic rationale for a proposed 20-year extension of an 88-acre tax increment reinvestment zone (TIRZ) to build a chain of park and park infrastructure investments. In May 2018, City Council approved the TIRZ extension, providing \$110 million in funding for the parks. The ex ante analysis to secure the \$110 million calculated how one-time real estate premiums, ongoing park-oriented development, visitor spending, and local spending multipliers would accrue a total \$2.3 - \$9.2 billion in citywide economic impact as a result of the park improvements. **Much of the zoning in the Waller Creek District was already zoned Central Business District, allowing for unlimited height, but the District Master Plan proposed rezoning for select properties to shift from auto-oriented to a full range of mixed-use development.**

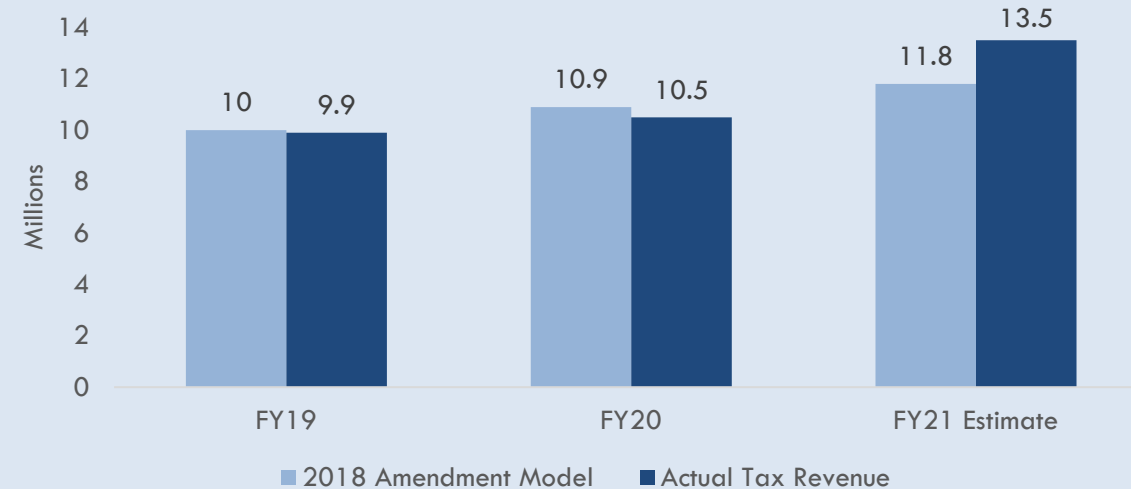
Ex Post Impact

Taxable value in the TIRZ has increased from \$1.29 billion in FY19 to \$1.87 billion in FY21, a 45% increase compared to a 15% increase in total citywide taxable value in the same time period. While property tax revenue in FY19 and FY20 was slightly lower than the projections estimated, FY21 values surpass expectations. Property tax revenues increased from \$9.9 million in FY19 to \$13.5 million for FY21.

Ex Ante: Conceptual Assessed Value in the TIRZ



Ex Post: TIRZ Property Tax Revenue FY19-FY21



Source: HR&A Advisors completed project, City of Austin Approved Budget FY19-FY21. All values are not adjusted for inflation.

Capitol Riverfront, Washington, DC | A PILOT agreement and TIF district were both used to secure financing for the mixed-use neighborhood, which has since catalyzed over \$8 billion in economic development investment.

Formerly an industrial Navy yard, the Capitol Riverfront has transformed into a new mixed-use neighborhood along the Anacostia River with 5,000 residents, 34,000 workers, and a host of open space, retail, and signature entertainment. A payment in lieu of taxes (PILOT) agreement was negotiated between the private developer for the US DOT building and the District. Bonds were issued against these future PILOT payments and the proceeds were used to fund development of Yards Park and Canal Park, signature parks anchoring the Capitol Riverfront neighborhood. A Tax Increment Finance (TIF) district was also created around the planned Washington Nationals ballpark site; TIF funding provided the last tranche of financing for the completion of the ballpark.

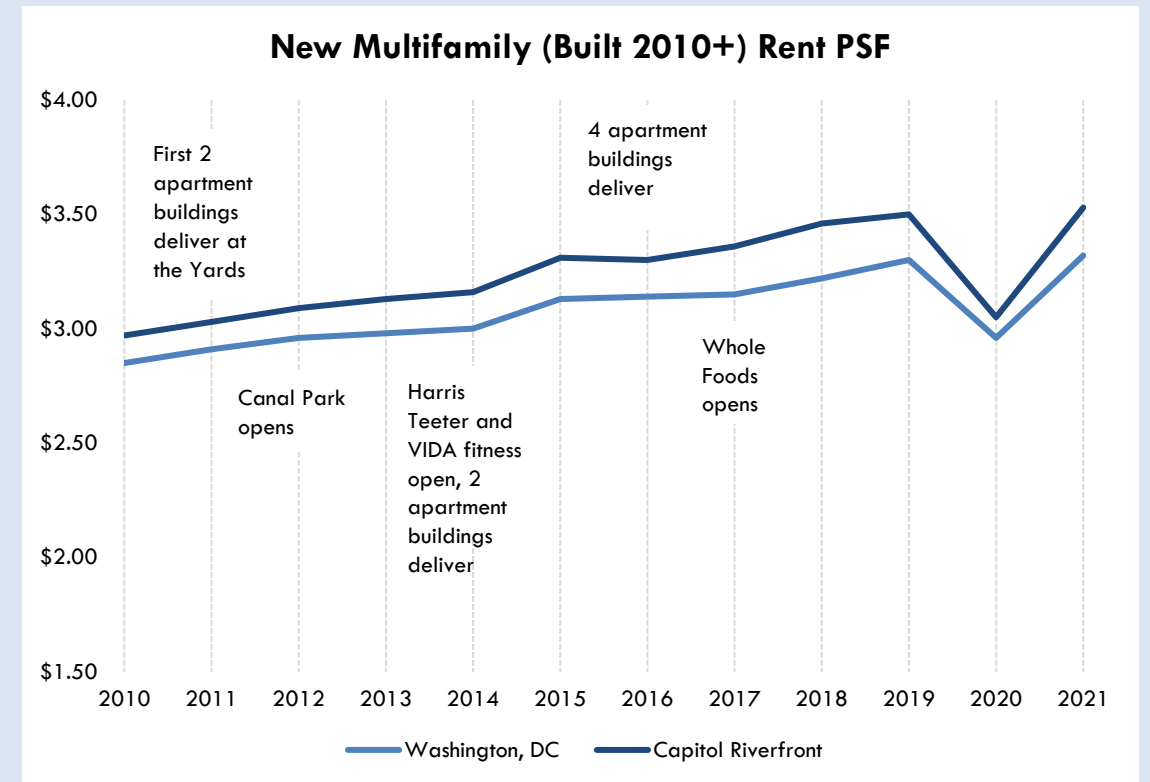
The master planning process for Capitol Riverfront involved rezoning from an industrial/manufacturing area to a high density, mixed-use TOD community. The Anacostia Waterfront Initiative Framework Plan and the DC Office of Planning supported these rezoning efforts for the neighborhood.

Ex Post Impact

The first phase apartments opened in 2011 with rents intentionally low to attract residents to what was then a non-existent neighborhood. **As retail was added and the neighborhood gained traction, rents climbed to \$3.36 PSF on average in 2017, compared to \$3.15 for similar new buildings elsewhere in DC.** By 2017, residential buildings were 95% occupied at stabilization and 90% leased after two years. Today, new multifamily rents for over \$3.50 PSF on average.

The project attracted more than 12 million SF of mixed-use development and more than \$3.3 billion in public and private development that is completed or currently under construction. According to the Washington, D.C. Mayor's Office, the Anacostia Waterfront Initiative has catalyzed over \$8 billion in economic development investment to date.

Capitol Riverfront Rents, 2011-2021



Source: HR&A Advisors completed project, CoStar. All values are not adjusted for inflation.

NoMa Metro, Washington, DC | Following transit investment, over \$3 billion of follow-on investment occurred and rents have continued to increase faster than the rest of the city.

A special assessment against landowners was used to fund investment in a new transit station to connect adjacent communities and spur development. Landowners adjacent to the planned station funded construction through a special assessment over 30 years, with any cost overruns above initial budgets, absorbed by the City.

Project Background

Given the large amount of underutilized land in the area as well as its proximity to downtown, Washington DC planners identified NoMa as a prime area of redevelopment. The building of a Metrorail station was crucial for the redevelopment of NoMa to occur, as the existing street network was already congested. A feasibility study concluded that a station was possible with project costs expected to be around \$75 million.

Public Private Partnership

The new Metro station was built with funds from private landowners, the District of Columbia, and the federal government. In 1998, each party originally agreed to pay \$25 million. The landowners funded their portion through a special assessment over the period of 30 years, as an additional charge on top of usual property taxes, with the understanding that the new station would increase the value of their land over time. The District of Columbia issued bonds to bring in the capital for the station and repays the bond using the funds collected through the special assessment. The station opened in 2004.

In 2006, the DC Office of Planning produced the *NoMa Vision Plan and Development Strategy* to guide the land use mix, open space, building design, and other development considerations. The *Small Area Plan* recognizes the large development opportunity around the station and recommends implementing a Mixed-Use Creative Industries District, increasing use of floor-area bonuses, developing Retail Overlay Zoning, and encouraging a diversity of housing products.

Ex Post Impact Estimate:

Since construction of the station began, the economic development of the area has been robust. Many media and communications companies chose to locate around the station. From the beginning of station construction at the end of 2000 through early 2006, 2.1 million feet of office space were built in NoMa. The area continues to see real estate growth. **New multifamily rents have increased by 21.2% in NoMa since 2010, compared to a 16.5% increase citywide.**

Following development of the new station over \$3 billion of follow-on investment occurred. From station opening in 2004 through 2021, the area has added over 5,000 residential units and 6.5 million square feet of office development.

Source: HR&A Advisors completed project, CoStar. All values are not adjusted for inflation.

Denver Union Station, Denver, CO | Completed and future development includes 3,000 residential units, 4.6 million square feet of office, 550 hotel rooms, and 15 acres of parks and plazas.

A combination of federal grants, loans, and value capture strategies paid for the Union Station and surrounding area infrastructure projects. In 2004, Denver metropolitan area voters approved a .4 percent sales tax increase for the FasTracks transit expansion. The FasTracks sales tax, TIF revenue, RTD contributions, and a lodger's tax covered the debt service for two major federal loan programs. The total project cost \$488 million and was completed in 2014.

Project Background

Union Station is the gateway to downtown Denver. Redevelopment of the Station was a large-scale transit investment for Denver that has anchored larger redevelopment efforts. The 127-acre Union Station district consists of three areas that are a mix of public and private ownership: Union Station Redevelopment (43-acre transit district that includes Union Station); the Commons (58-acre planned unit development); and Commons Park (26-acre open space amenity).

Public Private Partnership

Denver Union Station is a public-private partnership with a jointly funded Intergovernmental Agreement among the Regional Transportation District (RTD), the City and County of Denver, the Colorado Department of Transportation and the Denver Regional Council of Governments. RTD acquired the station facility and adjoining 20 acres and rezoned it for mixed-use development. RTD then joined with several other entities from local, regional, and state levels to form the Denver Union Station Project Authority (DUSPA) to oversee project execution. DUSPA selected Union Station Neighborhood Company (USNC), a joint venture, as the master developer. USNC in turn assembled a design-build team to facilitate decision-making and ensure project delivery. In 2008, Denver City Council approved a 3-year TIF district comprised of the entire Union Station and surrounding 20 acres.

The City of Denver also approved a rezoning of the site to Transit Mixed-Use 30 zoning to encourage denser, mixed-use development around the planned transit station.

Ex Post Impact Estimate:

The construction of Denver Union Station has had a significant impact on surrounding real estate. Completed and future development includes 3,000 residential units, 4.6 million square feet of office, 550 hotel rooms, and 15 acres of parks and plazas.

Multifamily rents in the half mile around the station have grown by 15% since completion in 2014 and hold a 6% premium over rents in the surrounding downtown submarkets.

Source: HR&A Advisors completed project, CoStar. All values are not adjusted for inflation.

Claremont SRA, Cape Town, South Africa | Since the public investment, the total value (in ZAR2018) of property within the SRA rose from R2.3 billion (\$160 million USD) in 2008 to over R7 billion (\$470 million USD) in 2018.

The Claremont Improvement District Company (CIDC) in Cape Town arranged to finance the construction of a bypass road to ease traffic around an office node's main artery in (total cost \$46 million). The CIDC used a Special Rating Area (SRA) public-private partnership to take out a loan with the municipal lender and collect levies from residents and businesses over the 15-year span of the loan. "Special Rating Areas" (SRAs, used interchangeably with "City Improvement District" or CID) are a legal mechanism designed to levy additional property rates within a defined area, to finance additional municipal services that enhance the physical and social environment.

As a first of its kind, this Public Private Partnership strategy required a number of financial and institutional innovations. The CIDC approached South Africa's largest municipal lender, the DBSA, for a loan to fund the project. The DBSA had never before lent to a private entity. To overcome legal and risk challenges:

- The Claremont Road Bypass Company ('Roadco') was established as a Special Purpose Vehicle sharing a board and staff with the CIDC to collect levies in addition to municipal rates and the SRA levy.
- Whereas SRAs are only guaranteed for 5 years, the City agreed to allow Roadco's lifespan to be equal to the tenor of the loan (i.e., 15 years).
- Cape Town undertook to pay the CIDC the rates collected from ratepayers, who in turn paid Roadco the portion allocated to repayment of the \$22 million DBSA loan.
- The DBSA required a cessation agreement in terms of which the CIDC relinquishes all rights and title to the infrastructure levy, and Cape Town required bank guarantees from Roadco to ensure it bears all construction risks.

Cape Town also played an important role in conducting two planning studies around urban upgrade projects in the Claremont CBD. Changing citywide land use regulations helped stimulate further development in the SRA.

Ex Post Impact Estimate:

Since the construction of the bypass, the total value (in ZAR2018) of property within the SRA rose from R2.3 billion (\$160 million USD) in 2008 to over R7 billion (\$470 million USD) in 2018, with 6 new developments scheduled for completion as of 2018.

Property value increases are attributed to higher office and residential rentals, lower neighborhood risk, and new private sector developments.

Source: HR&A Advisors. All values are not adjusted for inflation.

REPORT

THE ASSIGNMENT

Introduction | HR&A was engaged to produce a case study evaluation of impacts from urban infrastructure projects that mobilized private investment, to inform program design and potential partners for co-investment.

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HR&A's work focused on a three-step process:

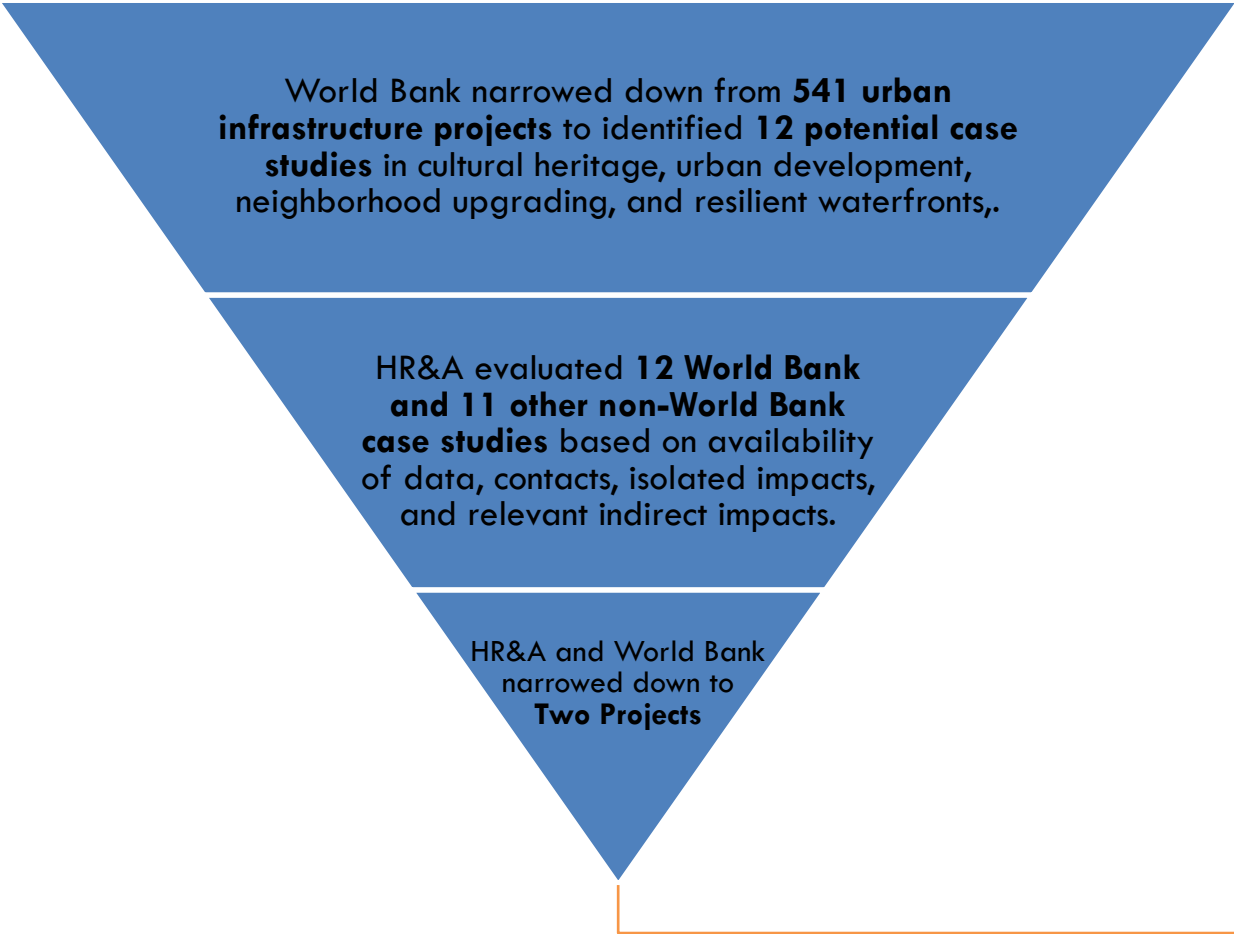
1. Work closely with the World Bank team to identify two completed projects (World Bank or non-World Bank) for review under this case study assessment,
2. Complete an analysis of available project information focused on direct and indirect outputs and outcomes already evaluated as well as potential indirect impacts that mobilized private investment to inform strategies for project/program design in collaborating with new partners.
3. Produce case study narratives for each project based on those findings.

This report reflects HR&A's deliverable under this engagement.



Approach | HR&A collaborated with the World Bank to identify two completed World Bank urban infrastructure projects, one focused on cultural heritage in Lebanon and the other on provisioning of urban services in India.

Working in close collaboration with the World Bank team, HR&A evaluated a range of completed projects to identify two case studies in the realm of cultural heritage and urban services (water & sewerage infrastructure). Additional detail on this project review process can be found in the appendix of this report.



Lebanon Cultural Heritage and Urban Development Project (CHUD)
Cultural Heritage

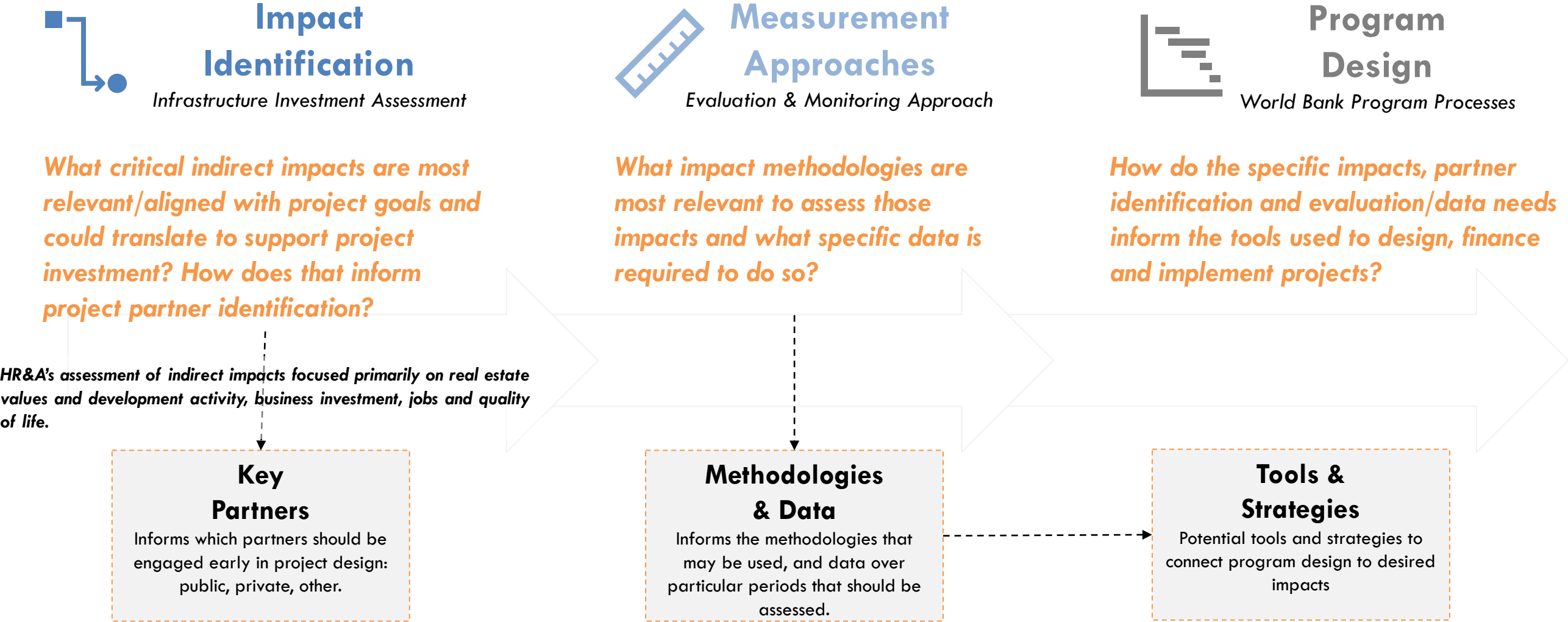


Karnataka, India Municipal Reform Project (KMRP)
Urban Services



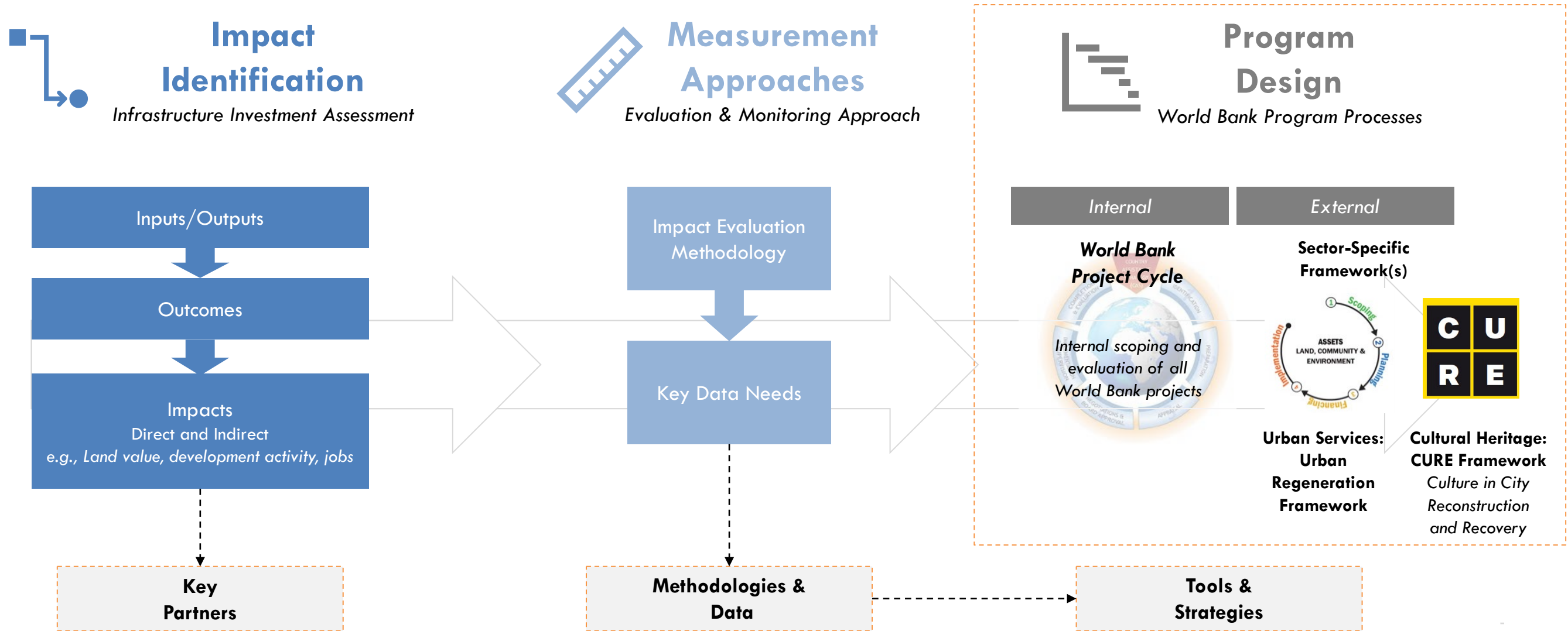
Source: World Bank

Approach | For each case study HR&A applied a three-step framework to identify 1) key indirect impacts from each project, and 2) approaches to measuring those impacts, to 3) inform strategies to enhance project/program design.



Approach | Program Design recommendations were applied in context of the World Bank’s internal Project Cycle as well as two sector-specific World Bank frameworks for designing and implementing Urban Services and Cultural Heritage projects.

Sub-steps in this process provide a more granular assessment of the elements that inform impacts, measurement approaches, and program design.



CASE STUDY 1: LEBANON

Lebanon Cultural Heritage and Urban Development Program (CHUD)

Introduction | The World Bank's Cultural Heritage and Urban Development (CHUD) Project in Lebanon sought to support cultural heritage as a tool for economic and post-conflict recovery, urban regeneration and advancing social cohesion.

Project Origins.

Following the end of the Lebanon civil war in 1995, the Lebanon Ministry of Tourism developed a comprehensive plan for cultural heritage conservation and cultural tourism development. The Government of Lebanon requested the World Bank's assistance in elevating its urban heritage rehabilitation efforts to a national level to support fiscal and economic recovery, as well as to improve quality of life in Lebanon.

Project Overview.

In 2003 the World Bank initiated the Cultural Heritage and Urban Development project in Lebanon to (a) create the conditions for increased local economic development and enhanced quality of life in the historic centers of the cities of Baalbek, Byblos, Saida, Tripoli, and Tyre; and (b) improve the conservation and management of the country's cultural heritage. The Bank originally committed US\$31.5 million through an International Bank for Reconstruction and Development (IBRD) loan, in partnership with the Government of Lebanon, Government of Italy, the Government of France, and UNESCO. The Bank committed an additional US\$27 million in 2012.

Project Context.

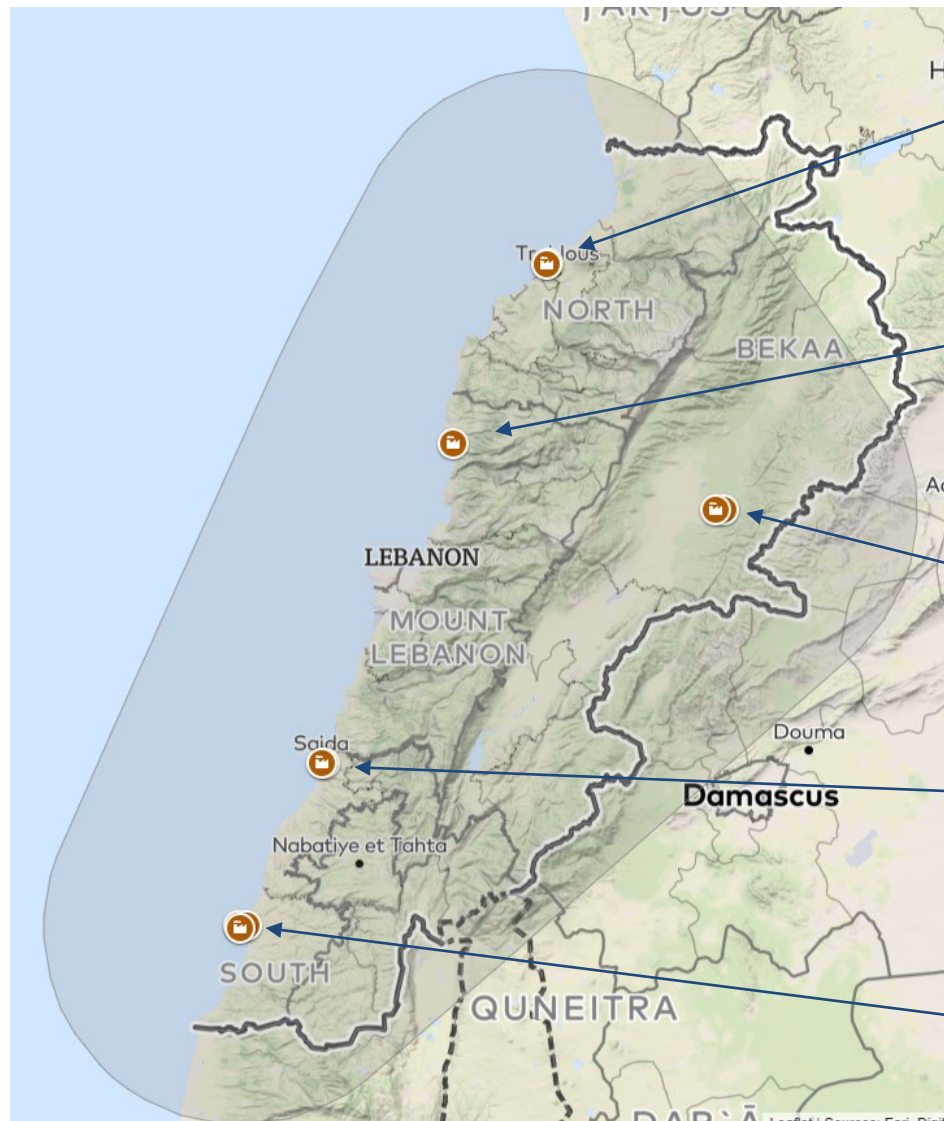
At the time of the World Bank project appraisal in the early 2000s, Lebanon's cultural heritage was making limited contributions to local and national socio-economic and civic development. Cultural assets were facing physical and environmental degradation, backed by under-funded sector institutions. Although many of Lebanon's renowned cultural heritage assets are in urban areas, they had low tourist visitation due to safety hazards, traffic congestion, poor wastewater management, and scarce accommodations. Further, many residents of these urban areas were negatively impacted by a lack of green areas and open public space. The project experienced various delays in implementation and outcome measurement due to past and active conflict, as well as political and economic instability. Cultural heritage was promoted as an inclusive urban development approach to promote social cohesion and inclusive economic growth in this context.

Source: World Bank, UNESCO

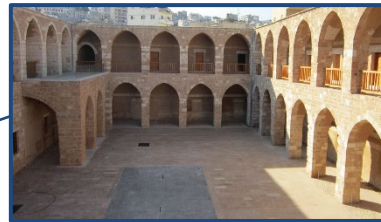
Byblos World Heritage Site



Project Overview | The World Bank advanced small scale cultural heritage infrastructure investments and local capacity building in five cities across Lebanon.



Source: World Bank



Tripoli

The second-largest city in Lebanon features the historic Tripoli marketplace and Khan al-Askar.



Byblos

The coastal town north of Beirut contains the ruins of many ancient civilizations.



Baalbek

The town features the Temple of Bacchus, at the site of the ancient Roman city of Heliopolis.



Saida

The ancient city is home to several archeological sites, including the Crusader Castle and Old City.



Tyre

The coastal town has thousands of years of history and cultural heritage centered around an ancient harbor.

Priority World Bank Investments

Improve water supply, sanitation, and utilities in historic city, rehab Khan al-Askar and markets, establish public space

Rehab of old city entrance, improve appearance of public spaces and sidewalks, renovate entrance to historic site

Integrate historic sites with city, rehab cultural sites, revive market areas, reorganize traffic and city entrances

Enhance Old City appearance, enhance appearance of sea façade, promote interaction with community

Waterfront improvements, upgrade public spaces, create cultural promenade, coastal zone protection, housing rehabilitation

Project Overview | The project cost a total of US\$119 million, with three major components and objectives spanning from 2003 to 2016.

The World Bank focused its investments across the following three components:

1 Rehabilitation of Historic City Centers and Urban Infrastructure Improvements

Total Cost: \$90.1 million

Focused activities in the old towns of each of the cities:

- Improvements of public spaces
- Conservation of monuments and historic buildings
- Support to commercial activities related to cultural heritage
- Rehabilitation of the heritage housing stock
- Enforcement of city center zoning regulations
- Improvements to traffic and parking at historic centers
- Protection of coastal and green areas
- Studies of urban redevelopment potential near historic cores

2 Archeological Sites Conservation and Management Improvements

Total Cost: \$20.8 million

Focused activities primarily at UNESCO World Heritage sites in Baalbek and Tyre, as well as in Tripoli:

- Research and documentation
- Conservation of structures
- Presentation of site to visitors
- Management of sites
- Conducting further archeological studies

3 Institutional Strengthening Improvements

Total Cost: \$7.7 million

Focused activities at the municipal and national level:

- Management of historic centers by municipalities and DGU
- Strengthening municipal support to local economic development
- Reform of the cultural heritage institutional and regulatory framework
- Restructuring and strengthening of the Directorate General of Antiquities
- Project management by the Council for Development and Reconstruction

Source: World Bank IEG

Project Overview | The project achieved particular success in Byblos where investments were concentrated in the first component of the CHUD project and included improvements to public space, streetscapes, and pedestrian access to cultural heritage.

The World Bank focused its Byblos investments across the following projects:

1 Rehabilitation of Historic City Centers and Urban Infrastructure Improvements

Total Cost: \$90.1 million

Focused activities in the old towns of each of the cities:

- Improvements of public spaces
- Conservation of monuments and historic buildings
- Support to commercial activities related to cultural heritage
- Rehabilitation of the heritage housing stock
- Enforcement of city center zoning regulations
- Improvements to traffic and parking at historic centers
- Protection of coastal and green areas
- Studies of urban redevelopment potential near historic cores

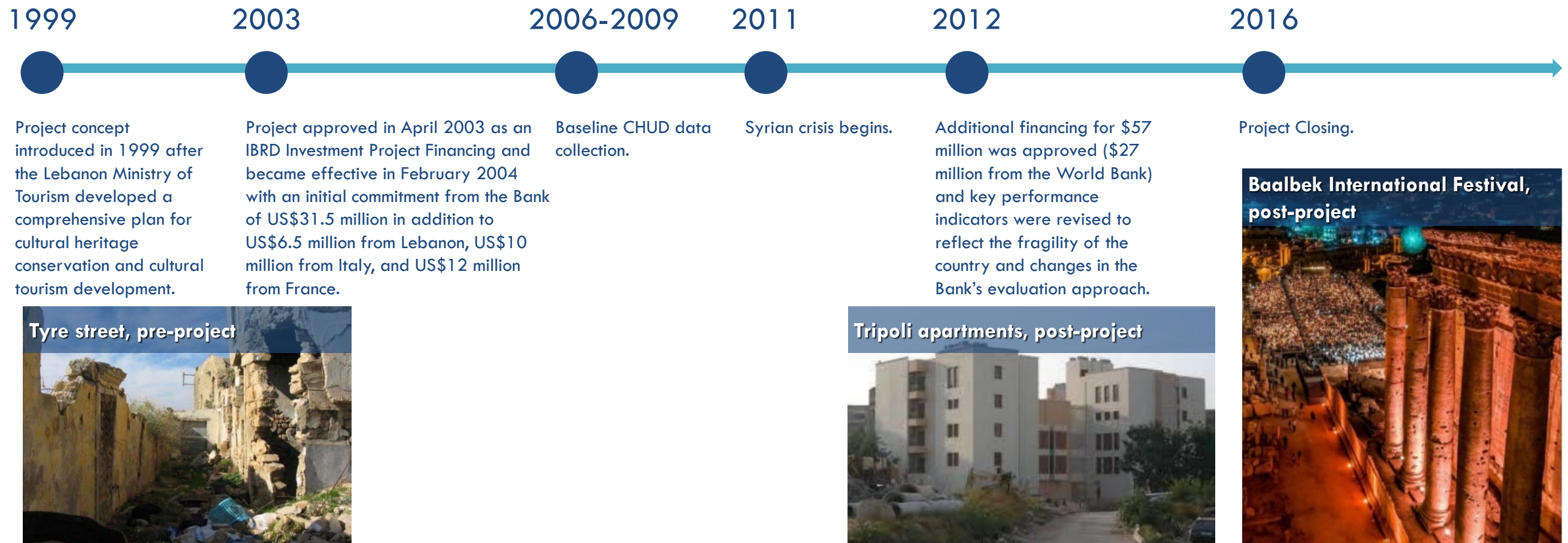
Byblos Investments

- **City Entrances and Interfaces:** Visitor and bus parking, pedestrian access, pedestrian crossings, removal of gas station, access to Old City and Ottoman Souq, reopening Tripoli gate, reorganized Municipal Parking, access to harbor
- **Rehabilitation of Public Spaces and Infrastructure in the Historic Center:** Main square rehabilitation including separate parking, Gardent Fossil Museum, sewerage networks and pump stations
- **Improvements to the Harbors Areas and Coastal Zone:** Access bollards, restriction of vehicles, upgrading of pier with lighting and wooden promenade
- **Support to Local Economic Development, Cultural Tourism, Private Sector Participation, and Communication:** Equipment for municipal services, pedestrian bridge over the highway, parking in the northern part of the city, DGA House, Aqua Lina Street rehab and infrastructure, playground at Beirut Park Horsch, Souq rehabilitation, public garden, shuttle services

Source: World Bank IEG

Project Overview | The project was originally introduced in the 1990s as part of post-war reconstruction and the long implementation timeline represents the project's adaptability amidst a volatile and evolving national context.

The project end date was extended five times, from December 2009 to December 2016. Additional financing was necessary due to original cost estimates being below market cost at the point of implementation, high national inflation from 2003-2010, soaring construction material prices in the international market, and difficulty in originally assessing the full extent of repairs needed for historical buildings and structures.



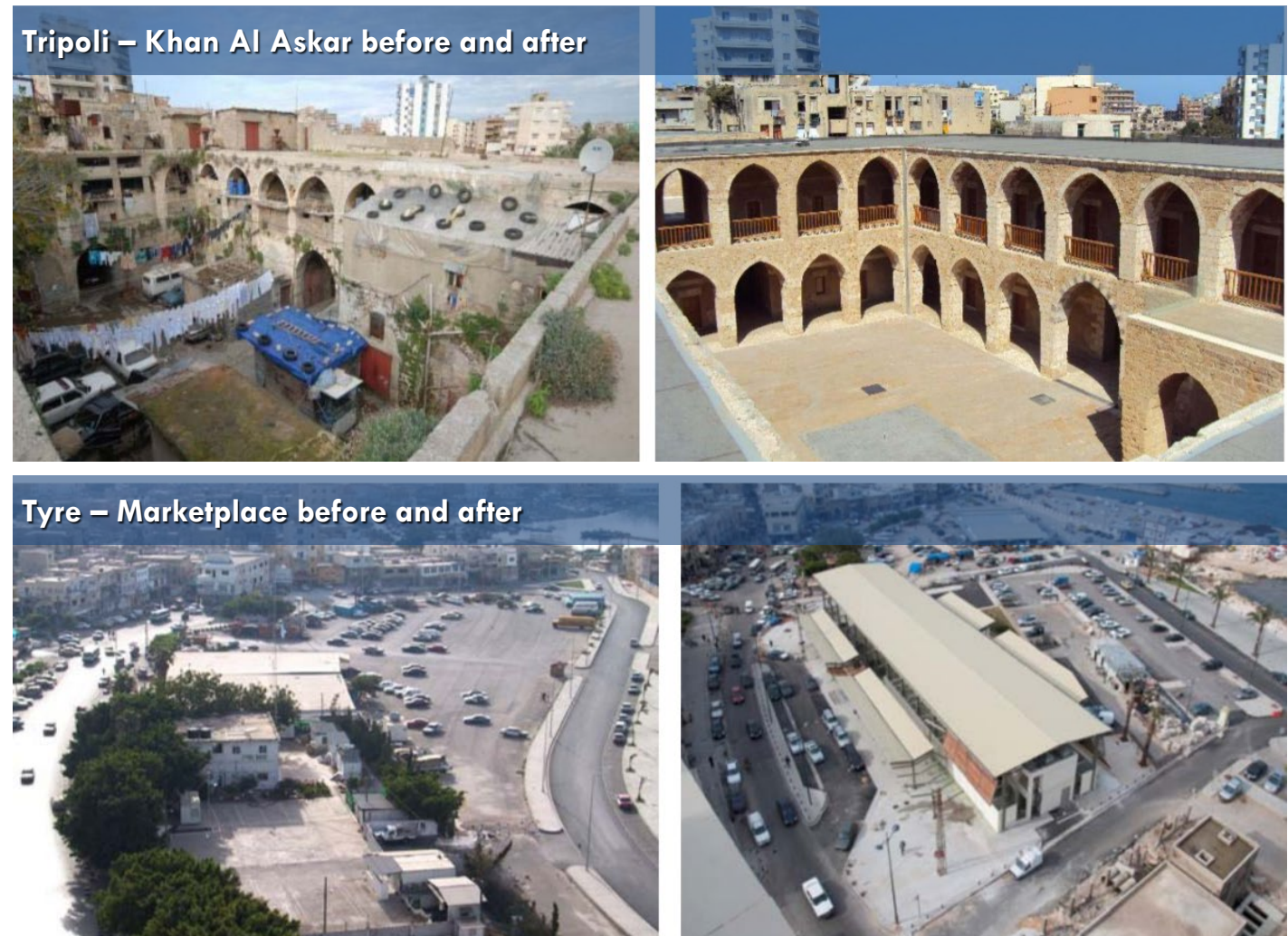
Source: World Bank Project Performance Assessment Report

Project Overview | The World Bank collaborated with national and local government entities to implement the project.

An interministerial Committee for the Conservation of Historic Cities oversaw project management and implementation in Lebanon, with local coordination committees established as well. The main institutions involved included:

- **Council for Development and Reconstruction (CDR)** – government authority for planning and implementing economic development projects and rehab and reconstruction of public infrastructure
- **Municipalities** - municipal implementation units in each city
- **Directorate General of Antiquities (DGA)** - very limited resources, relies on support from UNESCO
- **Director General of Urban Planning (DGU)** of the Ministry of Public Works

Private associations that also contributed to the project include the National Association for the Preservation of Patrimony and Historic Residences (APSAD), Hariri Foundation, Audi Foundation, and Rene Mouawad Foundation.



Source: World Bank Project Appraisal Document

Project Results | The project saw great success - businesses investment in property development adjacent to the investments increased from 6% to 27% across all five cities. In the City of Byblos, for every \$1 invested, the private sector mobilized \$7, largely through public squares, sidewalks, and rehabbed historic façades.

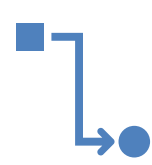
<p>INCREASE IN PROPERTY VALUES</p>	<ul style="list-style-type: none"> Residential unit prices in and around areas of historic/cultural importance increased by 60% across the 5 cities from 2008 to 2016, and by 67% specifically in Byblos (<i>World Bank</i>) Business unit prices increased by 62% across the 5 cities and by 91% in Byblos from 2008 to 2016 (<i>World Bank</i>)
<p>ADDITION OF NEW JOBS</p>	<ul style="list-style-type: none"> Across the 5 cities, individuals working in the culture, tourism, and heritage sector increased from about 660 in 2002 to 1,575 in 2016 (<i>World Bank</i>) In Byblos, 150 new jobs from increased tourist expenditure, business investment, and residential investment are fully or partially attributable to the CHUD project (<i>Macquarie</i>)
<p>INCREASE IN TOURISM VISITS & SPENDING</p>	<ul style="list-style-type: none"> Across the 5 cities, estimated annual visitors increased from 200,000 in 2004 to 420,000 in 2016 and the number of seats in restaurants and cafes nearly quadrupled (<i>World Bank</i>). Tourist expenditure increased by approximately \$3 million in Byblos, and by a total of \$6 million across the 5 cities (<i>Macquarie</i>).
<p>IMPROVED QUALITY OF LIFE & ACCESS TO PUBLIC SPACE</p>	<ul style="list-style-type: none"> Across the 5 cities, rehabbed public space for pedestrians increased from approximately 10,000 m² to 274,000 m² (<i>World Bank</i>). 96% of businesses in Byblos agreed that the restoration of the old city has improved as a place to visit and live in (<i>World Bank</i>)
<p>MOBILIZATION OF PRIVATE INVESTMENT</p>	<ul style="list-style-type: none"> For every \$1 invested in Byblos, the private sector mobilized \$7, largely through public squares, sidewalks, and rehabbed historic facades (<i>World Bank</i>) Across the 5 cities, percentage of businesses investing in their business or property development increased from 6% to 27% (<i>World Bank</i>)

Source: World Bank

Assessing Indirect Impacts to Inform Program Design

Evaluating Impacts | Working with the World Bank, HR&A applied the framework assessment to the Lebanon CHUD project.

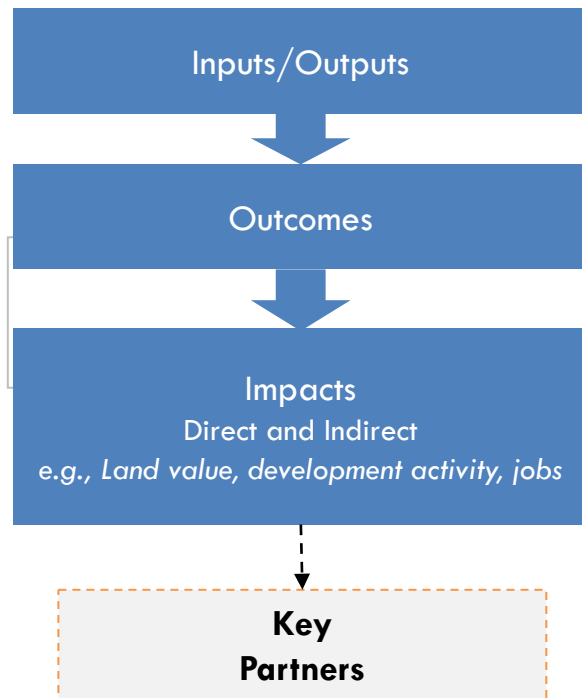
HR&A applied the project evaluation framework to the Lebanon CHUD program to inform a bottom-up approach to program design through the World Bank’s internal Project Cycle, as well as within the Culture in City Reconstruction and Recovery (CURE) Framework used in World Bank cultural heritage projects.



Impact Identification

Infrastructure Investment Assessment

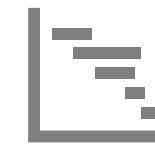
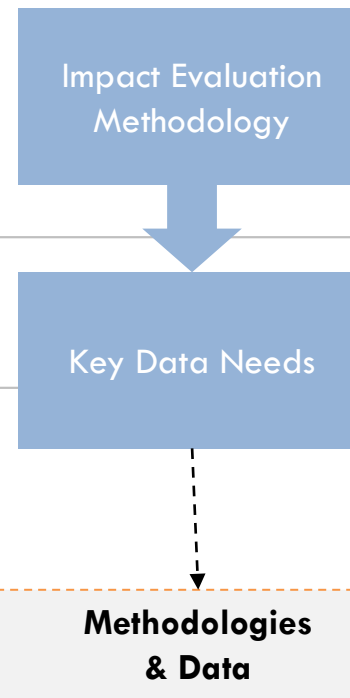
What critical indirect impacts are most relevant/ aligned with project goals and could translate to support project investment?
How does that inform project partner identification?



Measurement Approaches

Evaluation & Monitoring Approach

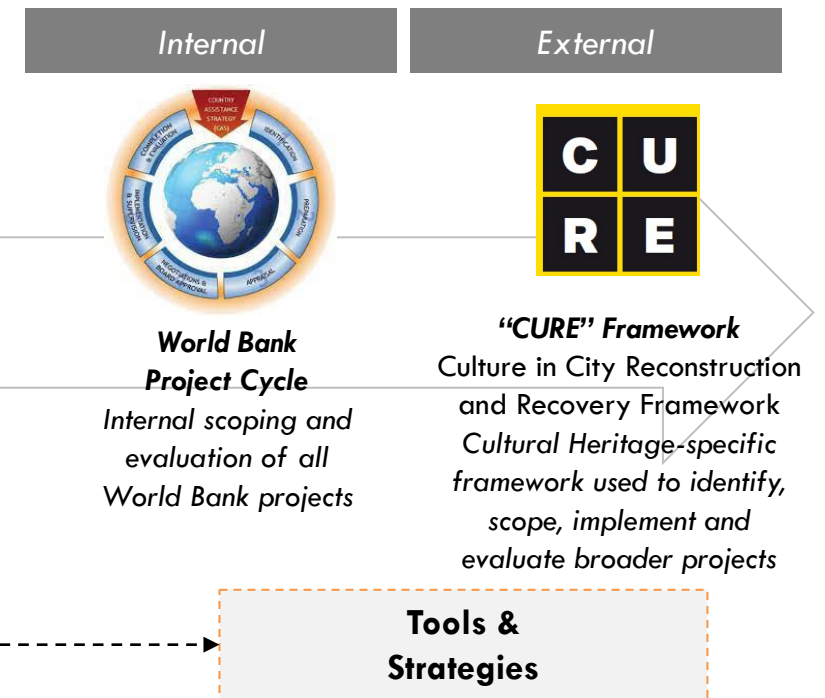
What impact methodologies are most relevant to assess those impacts and what specific data is required?



Program Design

World Bank Program Processes

How do the specific impacts, partner identification and evaluation/data needs inform the tools used to design, finance and implement projects?



Evaluating Impacts | The Lebanon “CHUD” Project comprised a range of Cultural Heritage investments.

Cultural heritage investments are typically implemented at relatively smaller scale and area-wide across a broader geography.

CULTURAL HERITAGE INVESTMENTS

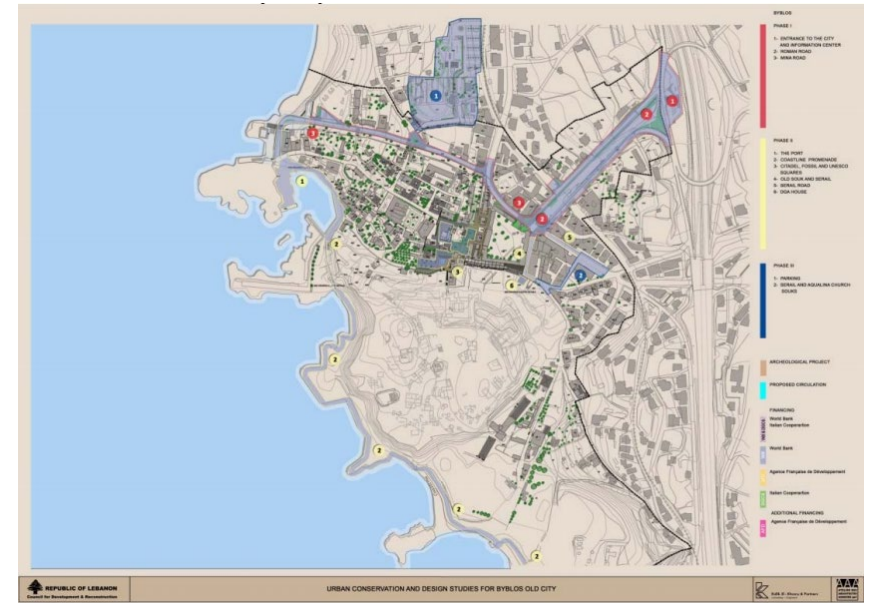


Lebanon CHUD Project Interventions

All facets of cultural heritage investment were implemented across cities in the Lebanon Cultural Heritage and Urban Development Program.

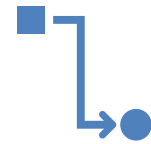
Priority rehabilitation efforts:

- 1) City entrances and interfaces, new public spaces and parking
- 2) Rehabilitation of public spaces and infrastructure in the historic center
- 3) Improvements to the harbor areas and to the coastal zone
- 4) Support to local economic development, cultural tourism, private sector participating, and communication



Source: World Bank Project Appraisal Document

Evaluating Impacts | The Lebanon CHUD project saw robust outcomes in tourism jobs, tourism visitation, business investment and increases to real estate values.



Impact Identification

The World Bank Implementation Completion and Results Report (ICRR) details the project inputs, outputs, and outcomes of the Lebanon Cultural Heritage and Urban Development Project. These indicators were assessed primarily through support by a local consultant, the Consultation and Research Institute (CRI), which used four measurement tools.

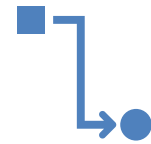
Lebanon CHUD Outcomes

Inputs	Outputs	Outcomes
<ol style="list-style-type: none"> 1) City entrances and interfaces, new public spaces and parking 2) Rehabilitation of public spaces and infrastructure in the historic center 3) Improvements to the harbor areas and to the coastal zone 4) Support to local economic development, cultural tourism, private sector participating, and communication 	<ul style="list-style-type: none"> • Rehabbed public space increased from 9,840 m² to 274,000m² • Rehabbed facades of historic buildings increased from 43,000 m² to 300,000. • # of seats in restaurants and cafes increased from 5,846 in 2002 to 20,550 in 2016 • # of rehab permits increased from 36 in 2002 to 863 in 2016 	<ul style="list-style-type: none"> • # of individuals working in the culture, tourism and heritage sectors increased from 662 in 2002 to 1,575 in 2016 • Visitation doubled from 203,000 in 2004 to 420,000 in 2016 • % of businesses investing in their businesses or property development increased from 6% to 27% • 60% Increase in residential unit prices • 62% Increase in business unit prices

Measurement Approaches Taken in Lebanon to Determine Outcomes			
Tool	Type	Sample	# Waves
Opinion Survey	Field survey of residents, businesses and visitors, quantitative	498 in 2006, 501 in 2016	4 waves
Business Census	Field survey, quantitative	338 in 2009, 313 in 2016	4 waves
Real Estate Monitoring	In-depth interviews with real estate agents, semi-quantitative	7 residential units, 8 businesses in 2009 & 2016	4 waves
Interviews with Stakeholders	In-depth interviews, qualitative		2 waves

Source: World Bank, Consultation and Research Institute

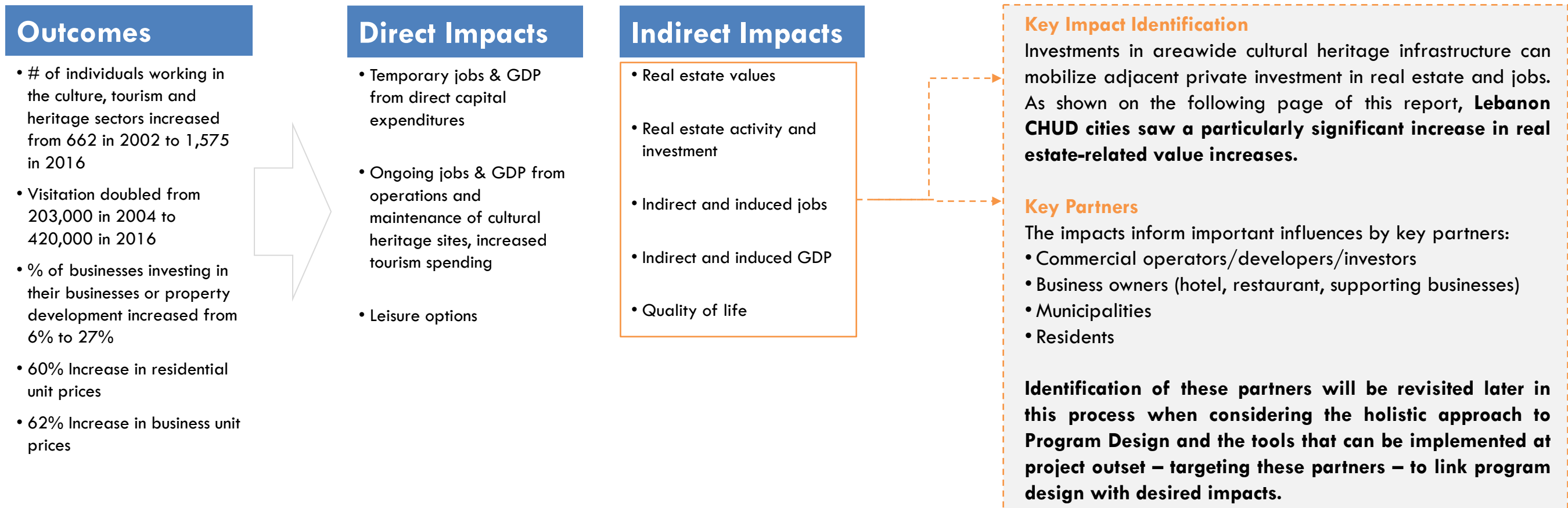
Evaluating Impacts | Identification of meaningful indirect project impacts informs potential partners for implementation.



Impact Identification

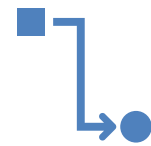
These outputs and outcomes further translate to direct and indirect impacts in each Lebanese city. Indirect impacts, like real estate value and activity, can have a substantial effect on the economy and quality of life in a city. Real estate values may represent the capitalization of other direct and indirect impacts rather than independent benefits themselves but provide a quantifiable tool to measure impact.

Lebanon CHUD Outcomes & Impacts



Source: World Bank, Vivid Economics

Evaluating Impacts | Indirect real estate value increases were particularly meaningful in proximity to cultural heritage investments.



Impact Identification

The CHUD project saw significant increase in real estate values in areas where cultural heritage investments were made, based on a small sample of 7 residential and 8 business units in each city. Impacts were noticeably significant in Byblos. The Macquarie University study of the Lebanon CHUD project also evaluated the city of Bcharre as a counterfactual to Byblos and Tyre (Sour), to frame the impact from cultural heritage investments. The Macquarie assessment included a survey that estimated the project had an impact on residential property values in Byblos, with 22% of Byblos respondents indicating an increase in values more than elsewhere in Lebanon, compared to only 5% of respondents in Bcharre. Survey respondents in Byblos also reported a 30% increase in prospects for earning additional household income from renting out property since 2009, compared to little change in Bcharre.

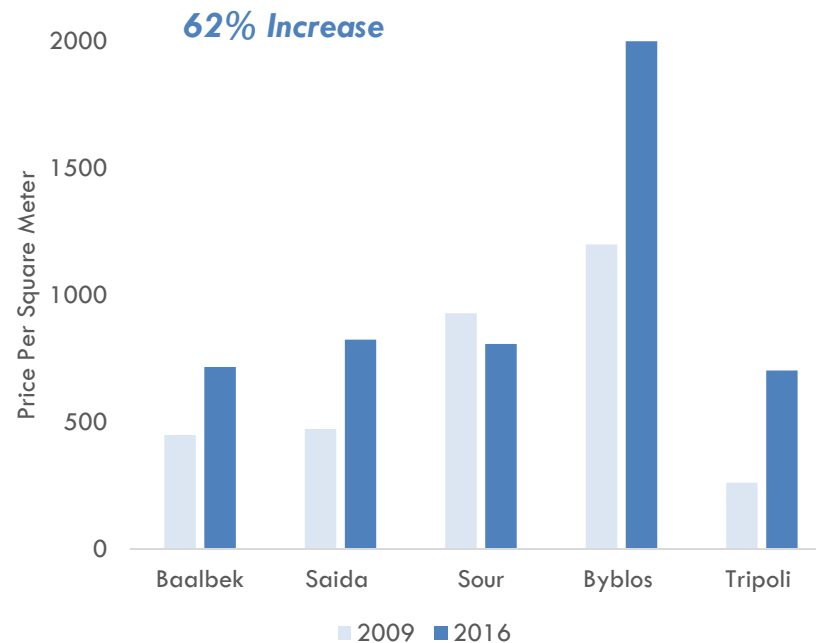
Lebanon CHUD Impacts

Indirect Impacts

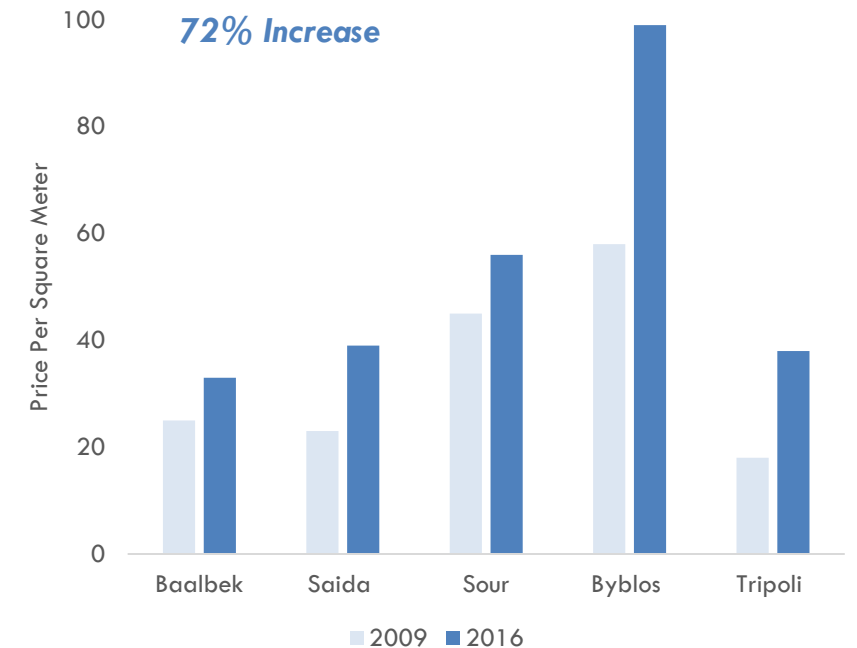
- Real estate values
- Real estate activity and investment
- Indirect and induced jobs
- Indirect and induced GDP
- Quality of life

Lebanon Real Estate Impacts Across CHUD Cities

Residential Sales



Business Sales



Source: World Bank

Evaluating Impacts | A range of evaluation methodologies are relevant to quantifying impacts tied to real estate values and other indirect impacts including jobs, GDP, and quality of life.

Impact Identification Measurement Approach

The World Bank can employ a variety of measurement approaches to evaluate indirect impacts like real estate values, indirect jobs and GDP, and quality of life. These assessments inform how to think about mobilization of private investment. In the case of the Lebanon CHUD project, the World Bank ICRR and CRI reports largely focused on outputs and outcomes with a qualitative assessment component. Macquarie University conducted an input-output model for the City of Byblos that analyzed the direct and indirect impact of the project on jobs and economic output.

Opportunity to quantify and link mobilization of private investment.
To be revisited in Program Design

Indirect Impacts	Impact Evaluation Methodologies	Conducted for CHUD?	Data Collection Needs
<ul style="list-style-type: none"> • Indirect and induced jobs • Indirect and induced GDP 	<p>1. Input-Output Modeling Economic analysis calculating the flow of money in an economy among industries. Analyzes the direct, indirect, and induced effects on jobs, earnings, and economic output.</p>	<p>Yes, conducted by Macquarie University in 2016</p>	<ul style="list-style-type: none"> - Detailed industry multipliers at the city level - Operational spending on cultural heritage - Tourism spending
<ul style="list-style-type: none"> • Real estate values • Real estate activity and investment 	<p>2. Cost-Benefit Analysis Comparison of the costs of a cultural heritage project investment to a variety of benefits, which could include increases in real estate values, tourism spending, and additional household spending from economic growth.</p>	<p>Not conducted for CHUD Consider for future projects</p>	<ul style="list-style-type: none"> - Residential and commercial property sale data before and after project implementation - Tourism spending - Additional household spending
<ul style="list-style-type: none"> • Quality of life 	<p>3. Hedonic Price Modeling Estimates economic benefits from increased land values associated with proximity to cultural heritage sites that have undergone rehabilitation</p>	<p>Not conducted for CHUD Consider for future projects</p>	<ul style="list-style-type: none"> - Residential and commercial property sale data before and after project implementation - Neighborhood/city statistics and amenities
	<p>4. Qualitative Assessment Assesses the impacts of a cultural heritage investment on socioeconomic factors, such as quality of life, education, health, and disparate impacts on specific populations</p>	<p>Yes, conducted by CRI and Macquarie University in 2016</p>	<ul style="list-style-type: none"> - Socioeconomic data - Neighborhood/city statistics and amenities

Source: World Bank, CRI, Macquarie University, Vivid Economics, HR&A Analysis

Evaluating Impacts | Data collection is difficult in developing world contexts but is critical to assess indirect impacts. CHUD’s restructuring in 2011 - and a shift in the World Bank’s required indicators – made baseline data collection difficult.



Measurement Approach

The World Bank, CRI and Macquarie University made great efforts to collect significant data for the project assessment. CHUD project indicators changed between project inception and project restructuring in 2011, due to a shift in the indicators required by the World Bank, making it difficult to conduct a cost-benefit analysis or hedonic price modeling given the lack of baseline data. Additional data collection in future projects would allow for even more robust analysis of indirect impacts.

Impact Evaluation Methodologies

Data Collected in Lebanon CHUD

Informing indirect impact assessment

Additional Data

In an ideal scenario, the following data is critical to accurately assessing indirect project impacts.

1. Input-Output Modeling

Ex ante or ex post

Conducted by Macquarie University in 2016

- **World Bank/CRI:** One-time cultural heritage rehabilitation costs (project construction spending), Business/residential investment
- **Macquarie:** Detailed industry multipliers at the city level, Tourism visitation (Ministry of Tourism), Tourism spending (survey), Counterfactual comparison

- Ongoing operational spending on cultural heritage
- Additional public and private investment in heritage conservation and surrounding area

2. Cost-Benefit Analysis

Ex ante or ex post

Not specifically conducted for CHUD

- **World Bank/CRI:** One-time cultural heritage rehabilitation costs, limited real estate data given availability, business/residential investment
- **Macquarie:** Tourism visitation (Ministry of Tourism), tourism spending (survey), increased cultural sector spending

- Additional public and private investment in heritage conservation and surrounding area
- More detailed residential and commercial property sale data before and after project implementation (around project area and city-wide)

3. Hedonic Price Modeling

Ex ante or Ex post

Not specifically conducted for CHUD

- **World Bank/CRI:** Limited real estate data, relative change in commercial and residential property values compared to elsewhere in Lebanon

- More detailed residential and commercial property sale data before and after project implementation (around project area and city-wide)
- Neighborhood/city statistics and amenities

4. Qualitative Assessment

Ex post

Conducted by CRI and Macquarie University in 2016

- **Macquarie:** Social cohesion, city cultural identity, accessibility to recreational and visitor facilities and activities, social equity, cultural heritage education, intrinsic value of cultural capital (surveys)
- **Other:** Labor Force and Housing Living Conditions Survey 2018-2019

- Education data
- Health data

Source: World Bank, Vivid Economics, HR&A Analysis

Evaluating Impacts | For real estate values and activity, alternative data collection approaches can support a more robust assessment.

Measurement Approach

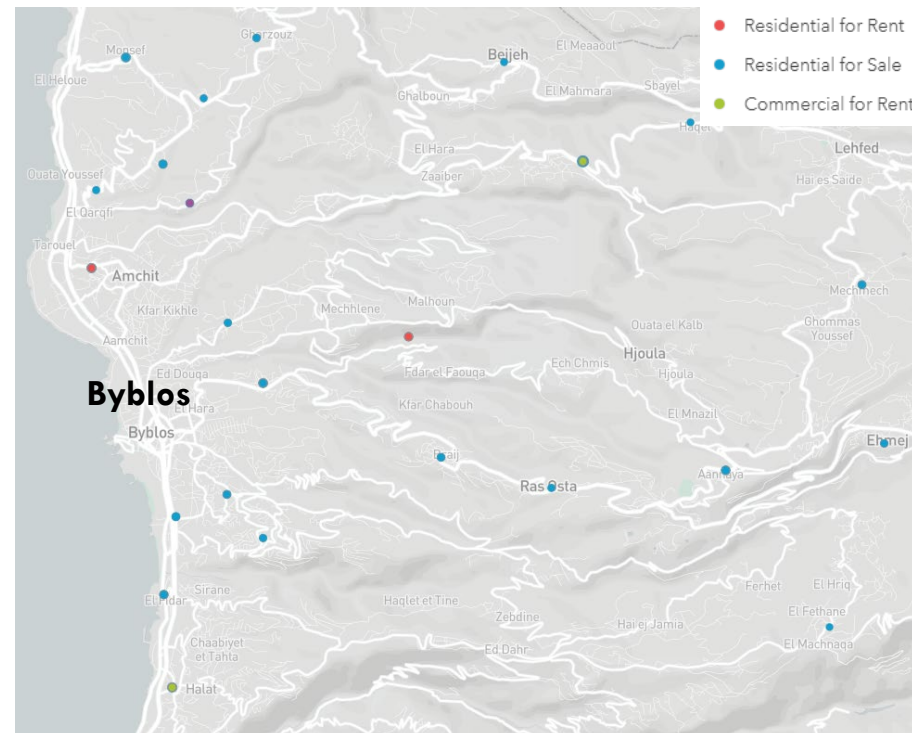
Lebanon CHUD Impacts

Indirect Impacts

- Real estate values
- Real estate activity and investment
- Indirect and induced jobs
- Indirect and induced GDP
- Quality of life

Public data “scraping” exercises, before and after the project can provide more robust data.

In addition to sampling conducted by CRI, real estate impacts can also be measured through sales and rental data pulled or “scraped” - using specific querying approaches - from real estate agencies and publicly available information. This results in a more robust data set beyond the more manual approach of direct property surveying. The map below shows residential and commercial real estate data from one real estate source in May 2021. This exercise could be implemented at the beginning and end of a cultural heritage investment – both in the areas targeted for investment and in counterfactual locations - to better quantify and isolate the indirect impacts of cultural heritage investments.



Source: Property Finder, ArcGIS

Applying to Program Design | There are opportunities to align the World Bank’s internal and external existing processes with strategies to assess indirect impacts that mobilize private investment.



Program Design

HR&A reviewed the World Bank’s internal and external program design processes to align findings and recommendations from our analysis to the specific processes that the Bank follows in project scoping. In the context of the Lebanon cultural heritage project, our team reviewed both the World Bank’s internal Project Cycle and external CURE Framework to identify steps in each process that can align with strategies to mobilize private investment.

Internal



Project Cycle

1. ID Stage
2. Preparation Stage
3. Appraisal Stage
4. Negotiations/ Board Approval
5. Implementation & Support
6. Completion & Evaluation

The World Bank Project Cycle is used as a framework to design, prepare, implement, and supervise projects in partnership with low and middle-income countries to support development.

The World Bank may consider the evaluation of indirect impacts specifically in the (2) Preparation, (3) Appraisal, and (6) Completion and Evaluation stages of this process to inform program design. During the Preparation and Appraisal stages, the Bank assesses the capacity to collect certain impact data points before the project starts and throughout its implementation.

External



CURE Framework
Culture in City Reconstruction
and Recovery Framework

Phase 1	Damage & Needs Assessment
	Scoping
Phase 2	Setting Policy & Strategy (or Planning)
Phase 3	Financing
Phase 4	Implementation

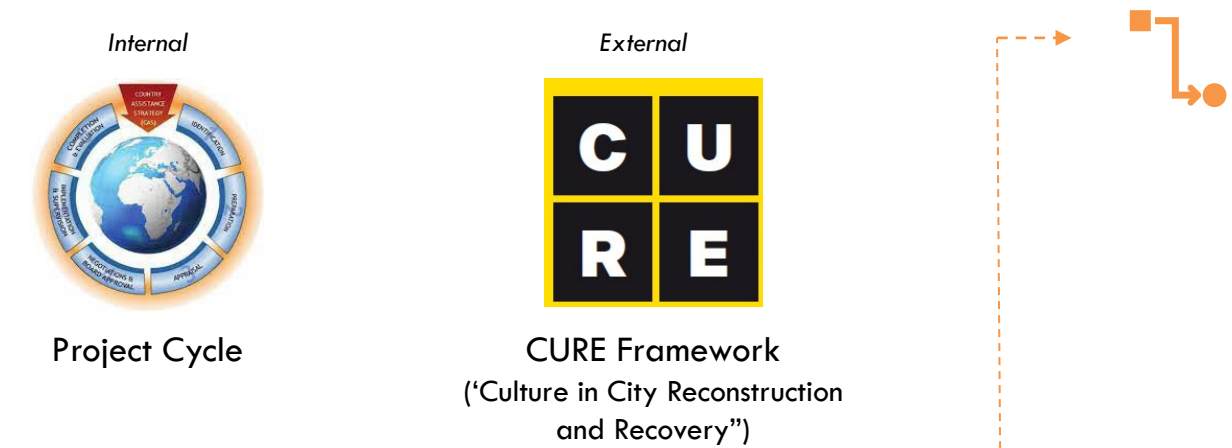
The World Bank Culture in City Reconstruction and Recovery (“CURE”) Framework was designed to reflect the World Bank’s commitment with UNESCO to promote cultural heritage as a critical tool for urban reconstruction and recovery in post-conflict and post-disaster situations.

The World Bank may consider tying private partner identification, and impact assessment data needs, which are tied to specific direct and indirect impacts, to the (1) Scoping and (2) Policy & Strategy phases of the CURE framework when advancing cultural heritage program design.

Applying to Program Design | The World Bank can incorporate further economic analysis of indirect real estate benefits when designing cultural heritage projects.

Program Design

The World Bank can incorporate further economic analysis of indirect benefits into its internal and external processes when approaching cultural heritage projects. Anticipating impacts of urban infrastructure can help the World Bank mobilize more public and private sector investment.



Impact Identification

- In the case of cultural heritage investments, like that seen in the Lebanon CHUD project, indirect real estate, business improvement and tourism job impacts were measured as meaningful.
- In the case of indirect real estate and business improvement impacts, this presents an opportunity to identify key real estate owners/operators and developers/investors earlier in the Preparation (Internal) and Scoping (External) stages of Program Design as potential partners in project implementation. At minimum, these groups will remain priority stakeholders throughout the process.

Measurement Approach

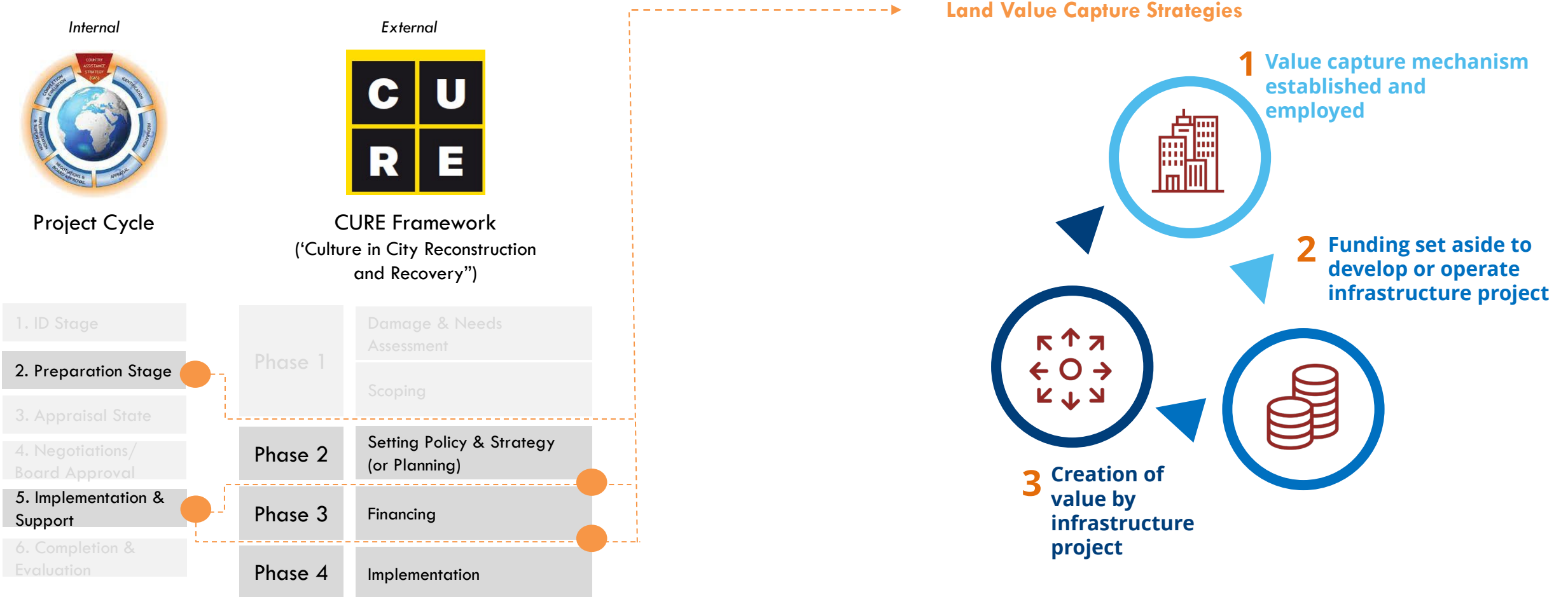
- Implement cost-benefit analysis and hedonic price modeling (ex ante + ex post) measurement approaches to narrow in on the impacts associated with real estate and tourism-related spending to both inform Program Design and the methods to collect necessary data.
- In prioritizing these ex ante and ex post indirect impact measurement approaches, it requires that data collection efforts are enhanced and better informed with large sample sizes, leading to more robust collection efforts and project assessment.
- Identify counterfactual options at project start to allow for robust data collection, as well as evaluation that isolates project impacts.

Applying to Program Design | In some contexts the indirect impacts of cultural heritage projects on real estate can be harnessed through value capture tools to leverage investment in support of funding infrastructure or ongoing O&M.



Program Design

Identifying real estate value capture opportunities in program scoping and establishing the tools to facilitate value capture in program design can align mobilization of private capital with funding cultural heritage projects.

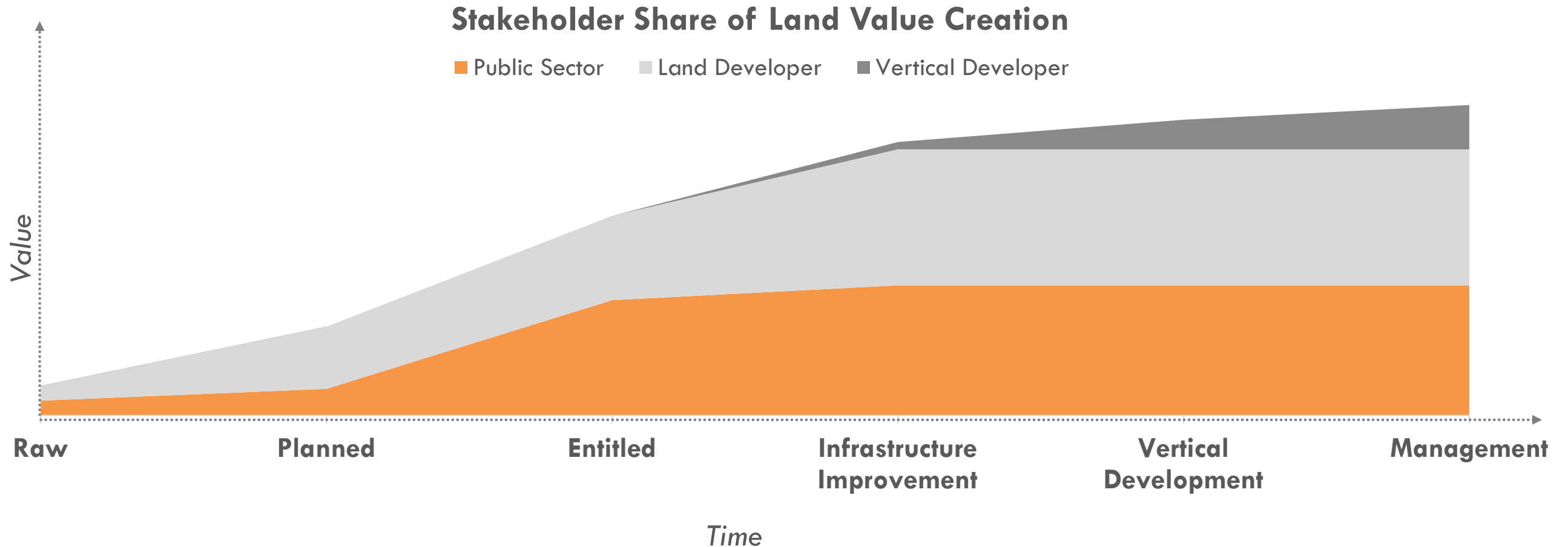


Applying to Program Design | Different stakeholders have a claim on the creation of value that allows the transfer of surplus future value to fund cultural heritage projects.



Program Design

The public sector acts as a propelling stakeholder early in the development process to create significant land value in the planning and entitlement phases. The land developer then captures future land value and can allocate a share of it to deliver infrastructure in cooperation with the public sector. The top structure developer captures value in later phases of the development process through sale of property to end users and operators.



Value Capture Tools | A range of value capture tools can leverage existing partnerships and assets to further mobilize private investment.

Approach	Tools	Description	Benefits	Considerations	Potential Partners	Case Studies
Tax-Based Financing	<ul style="list-style-type: none"> Betterment levies/Special Assessment District Value-added developer tax payments General tax revenue, property tax Tax Increment Financing (TIF) 	Existing or additional taxing districts to capture value appreciation associated with infrastructure investments. In places where a property tax system is in place, tools like TIF can be used.	Effective mechanism to co-fund capital infrastructure (TIF) or districts that can collect a tax tied to funding operations of improvements.	Requires a robust property tax system in place and pathways to implement tax-based mechanisms for value capture	<ul style="list-style-type: none"> Municipality Developers/investors Business owners Residents 	<ul style="list-style-type: none"> Baranquilla, Colombia Klyde Warren Park, Dallas Waller Creek, Austin Bayfront Park, Sarasota Detroit Watershed District Gentilly District, New Orleans Dunkeld, Johannesburg
Public Assets	<ul style="list-style-type: none"> Land disposition and banking Long-term lease 	Successful publicly-funded infrastructure must creatively use existing public assets, such as land leasing to provide capital funding	Leverages existing assets and allows public sector to inform strategy and use of public land	Requires public sector – or key partner ownership of strategic assets	<ul style="list-style-type: none"> Municipality Developers/investors 	<ul style="list-style-type: none"> Cosmo City, Johannesburg Lideta, Addis Ababa, Ethiopia
Regulatory Tools	<ul style="list-style-type: none"> Zoning tools Land readjustment Development/air rights 	Rezoning, expedited entitlement processes, additional development rights, and other regulatory tools can provide value to the private sector to spur contribution to infrastructure	Adjusting regulatory tools like land use management and development fee collection enables municipalities to apply a range of value capture instruments	Requires a robust existing zoning regime .	<ul style="list-style-type: none"> Municipality Developers/investors 	<ul style="list-style-type: none"> Ciudad Verde, Bogotá, Colombia
Bond Financing	<ul style="list-style-type: none"> Tax-increment financing (TIF) bonds Payment in Lieu of Taxes (PILOT) bonds 	Value-capture mechanisms can transfer value added to fund initial infrastructure	Initial infrastructure can help enhance the physical and social environment around a development	Most successful in high-value developments with an established surrounding context	<ul style="list-style-type: none"> Municipality Developers/investors Business owners Residents 	<ul style="list-style-type: none"> Hudson Yards, New York City Los Angeles River
Developer-Based Financing	<ul style="list-style-type: none"> Proceeds from private land sales Contributions from developers (building permit charges) In-kind developer contributions 	Developer-led financing of development, through direct financing or through land value	Developer contributions can provide necessary infrastructure for the development that is also a broader public benefit.	Private investment in infrastructure is more common in high-value developments, component likely require public incentives and subsidies are likely needed in exchange for private financing for developments with a large social component	<ul style="list-style-type: none"> Municipality Developers/investors 	<ul style="list-style-type: none"> Budiriro, Harare, Zimbabwe Riverstone Villas, Cape Town Canary Wharf, London Riverhorse Valley/Bridge City, Durban

Source: HR&A Advisors

Value Capture Examples | Examples from the U.S. show that cultural heritage projects - in the form of urban park infrastructure – are assets that produce indirect real estate impacts that can be harnessed to co-fund investments.

Cultural heritage is an effective means of preserving urban public spaces, which have economic benefits. Examples from Texas and Washington, DC demonstrate how investment in areawide small scale infrastructure tied to signature urban parks, a form of cultural heritage, can accelerate the pace of real estate development and increase real estate premiums on surrounding properties. This real estate value can be captured to fund future infrastructure investments.

Public Space as an Asset

- *The Economics of Uniqueness*

A literature review on the economic value of public space preservation also highlights the ways urban public space can contribute to cities undergoing post-conflict reconstruction or rapid urbanization.

"An urban heritage area—including the network of streets and public spaces, the built structures, and the land-use pattern—comprises material assets that carry different values for different actors."

"There are also indirect use values, such as the value gained by non-heritage properties that benefit from their location in proximity to heritage properties."

Reviewed in more detail on the following pages

Real Estate Value Capture Examples

Klyde Warren Park Bond Financing

Dallas, TX



76% office rent growth 2x faster than city, 2013-2020

Waller Creek Park Tax-Based Financing

Austin, TX



3x faster property value growth than city, 2019-2021

Yards Park & Capitol Riverfront Bond Financing

Washington, DC



Over \$8 billion in economic investment catalyzed

Source: HR&A Advisors. All values are not adjusted for inflation. Note HR&A uses residential and commercial rents as a proxy for value increases, depending on data availability.

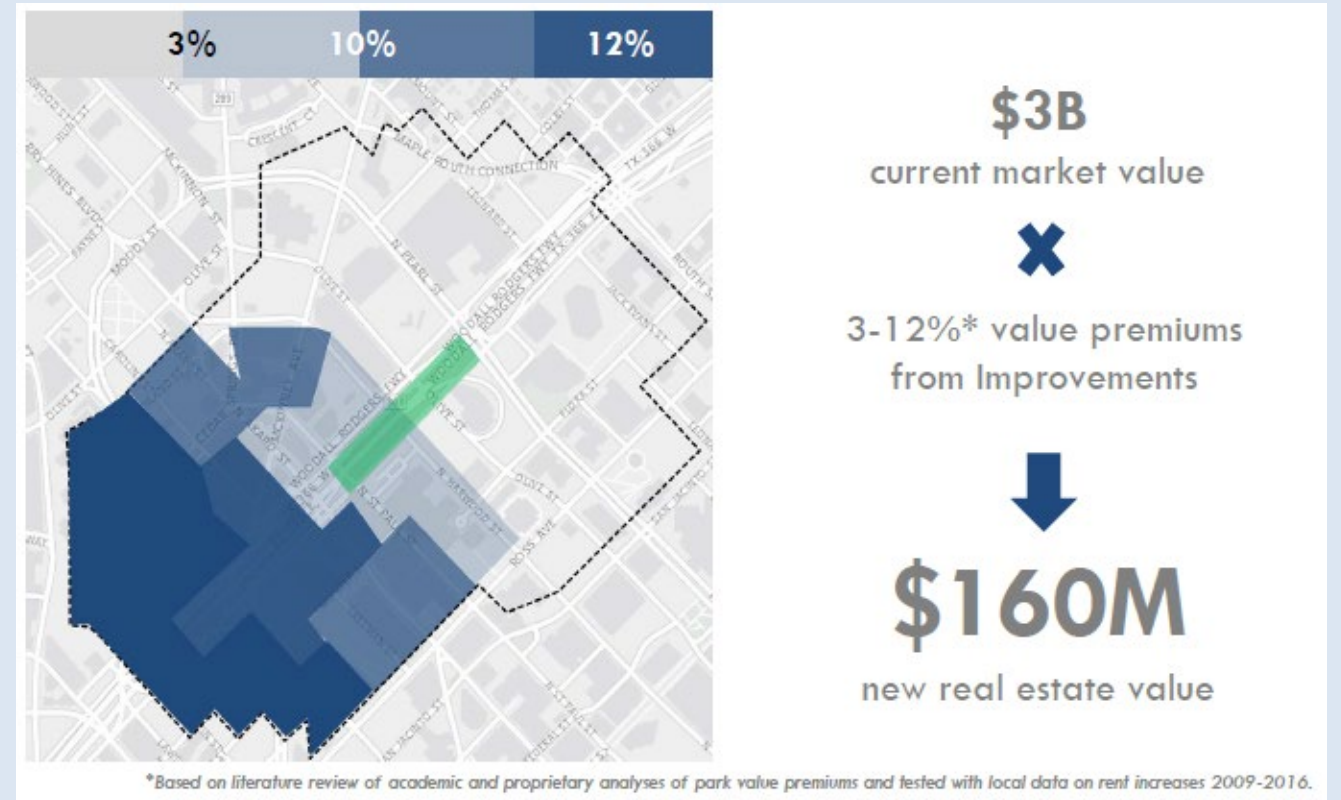
Klyde Warren Park, Dallas, TX | Ex ante analysis of Klyde Warren Park expansion and infrastructure improvements estimated a 3-12% premium on properties adjacent to the investments.

In 2016, the Woodall Rodgers Park Foundation in Dallas, TX advanced analysis to demonstrate the economic rationale for proposed park infrastructure improvements and expansion at Klyde Warren Park. The park was originally constructed between 2009 and 2012, funded by \$20 million in City of Dallas bond funds, \$20 million from Texas DOT, \$50 million in private donations, and \$16 million in stimulus funds for transportation enhancement construction. The City created two Planned Development Districts in the surrounding area to ensure all projects would be reviewed by the City Department of Environmental Services.

Ex Ante Impact Estimate

The ex ante analysis calculated how one-time real estate premiums, ongoing park-oriented development, visitor spending, and local spending multipliers would accrue a total \$875 million in economic impact in the community as a result of the park improvements. Klyde Warren Park ultimately secured \$10 million in city bond funding for the \$76 million expansion.

Real Estate Premiums: Based on precedent park improvement projects, and real estate premiums from the original park construction, it was estimated that there would be a premium ranging from 3-12% for the existing \$3B market value in the 1/4 mile area from the park infrastructure, leading to \$160M in new real estate value. The 3% premiums were projected for areas that already saw substantial premiums from park construction and would not intersect with the 1/4 mile buffer of the new improvements, whereas the 12% premiums would apply to areas newly within the 1/4 mile buffer of the park after improvements.



Source: HR&A Advisors completed project. All values are not adjusted for inflation.

Klyde Warren Park, Dallas, TX | Up to \$160M in new real estate value was estimated.

Ex Ante Impact Estimate (continued)

Potential Development: Precedent park improvements demonstrate that parks can accelerate the build out of undeveloped sites with higher density development. HR&A used market conversations with CBRE and analysis of CoStar and Dallas Central Appraisal District data to project new development on 16 parcels within the study area. The projections isolated the impact of Klyde Warren Park on absorption rates by evaluating the historical pace of development in the study area vs. the Uptown and Downtown Dallas areas and establishing baseline projections to compare against. Assuming an increase in FAR from 4 to 5 and 40% increased absorption as a result of the park improvements, HR&A estimated 1M SF net new development would create \$390M in new development value.

Visitor Spending: By enhancing capacity throughout the park, strengthening the connectivity with institutions, and adding signature programs, the park improvements would increase visitation by over 1M visitors. Through assumptions about day/overnight visitor spending, HR&A estimated an annual benefit of \$11M from visitor spending, accruing to \$150M (present value) over the next 30 years.

One-Time Impacts	
Area of Impact	Incremental Value
Park Premium	\$160M
Construction Spending	\$125M
Total	\$285M
Ongoing Impacts	
Area of Impact	Incremental Value (30-year PV)
New Development	\$390M
Visitor Spending	\$150M
Ongoing Operation	\$50M
Total	\$590M
GRAND TOTAL	\$875M

Source: HR&A Advisors completed project. All values are not adjusted for inflation.

Klyde Warren Park, Dallas, TX | Ex post analysis has demonstrated the dramatic increases in commercial rental rates and new development.

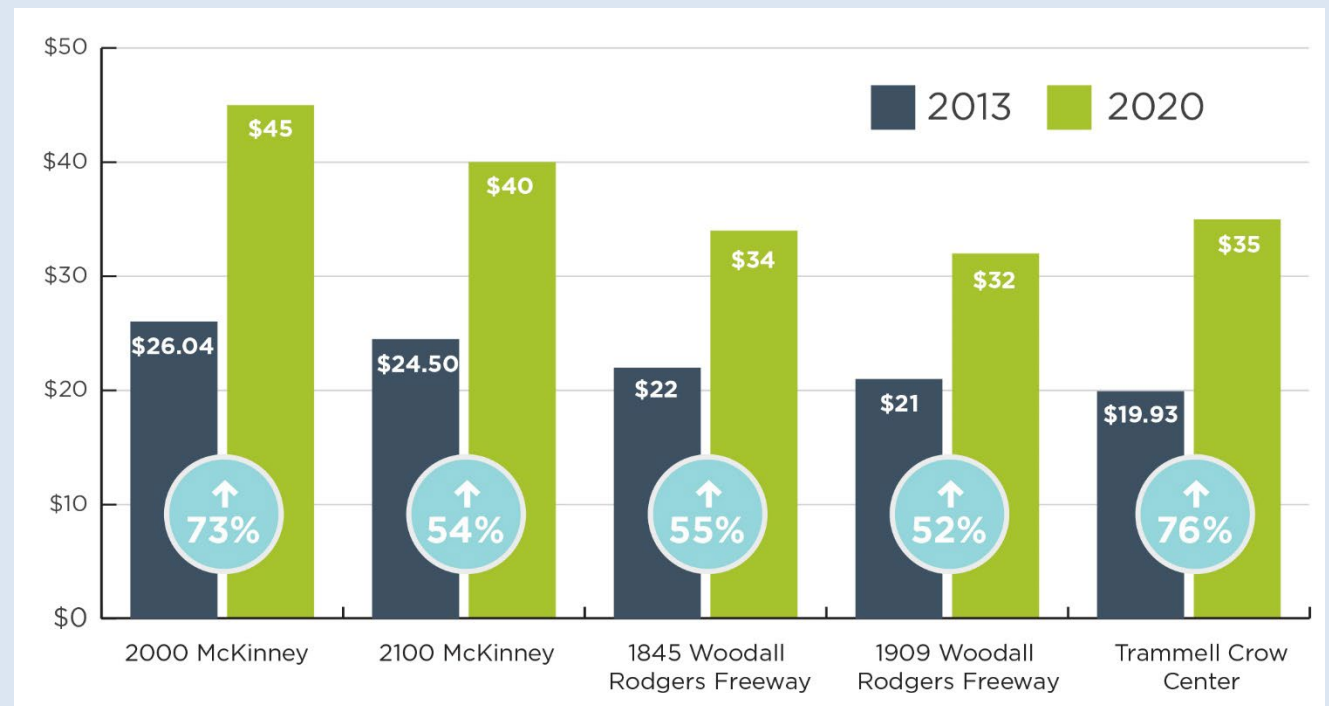
Ex Post Impact

Klyde Warren Park has had a significant impact on the surrounding commercial district. From 2013 to 2020, assessed values in the Klyde Warren Park and Dallas Arts District Public Improvement District (PID) more than doubled from \$2.5 billion to \$6.2 billion. Commercial rental rates across five major developments have increased by up to 76% from 2013 to 2020, in comparison to gross rents increasing by 23% in the larger 1.5-mile radius of Klyde Warren Park and by 32% citywide in Dallas during that time period. In addition to real estate impacts, the PID has resulted in year-round security, custodial services, cultural enhancements and programming, and wayfinding that contribute to a vibrant urban core around the park.

New Development and Re-Development in Klyde Warren Park PID, 2013-2020



Change in Commercial Rental Rates, Klyde Warren Park PID, 2013-2020



Source: Klyde Warren Park PID, CoStar. All values are not adjusted for inflation.

Waller Creek, Austin, TX | Ex ante analysis informed the extension of an existing Tax-increment Zone (TIRZ) to fund development of Waller Creek park and park infrastructure.

In 2017, the Waller Creek Conservancy in Austin, TX performed an ex ante analysis demonstrating the economic rationale for a proposed 20-year extension of an 88-acre tax increment reinvestment zone (TIRZ) to build a chain of park and park infrastructure investments. In May 2018, City Council approved the TIRZ extension, providing \$110 million in funding for the parks. Another \$42 million in public sources and \$94 million in philanthropy and private investment funded the park in total. Much of the zoning in the Waller Creek District was already zoned Central Business District, allowing for unlimited height, but the District Master Plan proposed rezoning for select properties to shift from auto-oriented to a full range of mixed-use development.

Ex Ante Impact Estimate

The ex ante analysis to secure the \$110 million calculated how one-time real estate premiums, ongoing park-oriented development, visitor spending, and local spending multipliers would accrue a total \$2.3 - \$9.2 billion in citywide economic impact as a result of the park improvements. HR&A's analysis assumed that Waller Creek's potential ROI could correspond to projects with similar capital cost intensity and total benefits, quantifying a range of real estate impacts of the Park to inform and leverage funding.

Real Estate Premiums: Based on precedent park improvement projects (see below), HR&A estimated a 20% value premium on existing and new properties in the TIRZ and a 5% premium in a Secondary boundary, which could generate \$550 million in total enhanced value over a 20-year period.

Summary of Park Impacts on Real Estate Premiums

Park	Study Area	Value Premium	Increased Pace of New Development	Drivers of New Development & Implications for Waller Creek
Klyde Warren	Adjacent	12-60% 2009-2014	x8.0	Major development opportunities in the downtown core previously hindered by highway adjacency
High Line	1/2 mile	10% 2007-2014	x3.0	High potential for densification and strong market conditions
Katy Trail	1/4 mile	25% 1997-2014	x2.1	Similar boundary as Waller Creek District with a similarly low FAR, high baseline development trends
Rose Kennedy	1/4 mile	31% 2005-2009	x1.4	Limited capacity for new development in a high-demand market, increased values of existing properties
Waller Creek District		estimated 20%	estimated x2.0	

Source: HR&A Advisors completed project. All values are not adjusted for inflation.

Waller Creek, Austin, TX | A 20% value premium on existing and new properties adjacent to improvements was quantified, along with a 2.0x increase in pace of development.

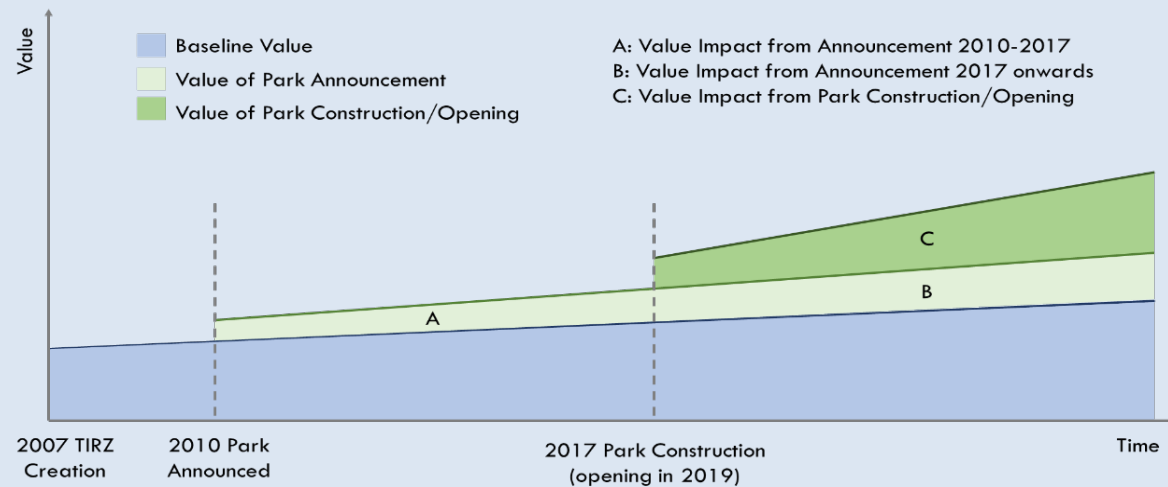
Ex Ante Impact Estimate (continued)

Potential Development: Areas adjacent to Waller Creek started experiencing increased development activity in anticipation of the new Park. The study found that, based on precedent park impacts, Waller Creek could cause development activity to double in pace. Accelerated new demand could also trigger denser typologies and increase the area's FAR by 25%. These impacts could increase overall development capacity in the TIRZ to up to 585,000 SF of new development annually, valued around \$2 billion over 20 years. The total real estate benefits created by the park would lead to \$370 million in new tax revenues for the City of Austin and Travis County over a 20-year period.

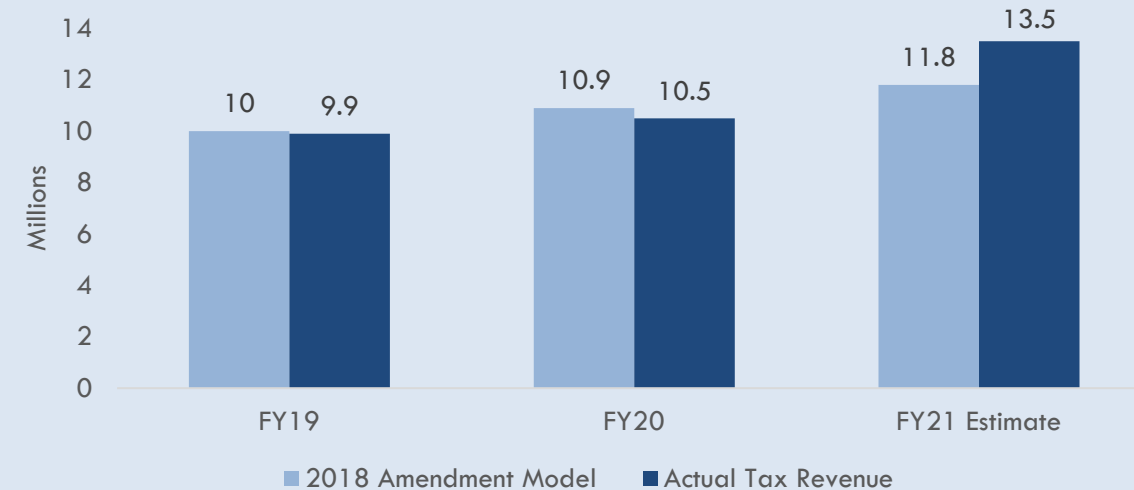
Ex Post Impact

Taxable value in the TIRZ has increased from \$1.29 billion in FY19 to \$1.87 billion in FY21, a 45% increase compared to a 15% increase in total citywide taxable value in the same time period. While property tax revenue in FY19 and FY20 was slightly lower than the projections estimated, FY21 values surpass expectations. Property tax revenues increased from \$9.9 million in FY19 to \$13.5 million for FY21.

Ex Ante: Conceptual Assessed Value in the TIRZ



Ex Post: TIRZ Property Tax Revenue FY19-FY21



Source: HR&A Advisors completed project, City of Austin Approved Budget FY19-FY21. All values are not adjusted for inflation.

Capitol Riverfront, Washington, DC | A PILOT agreement and TIF district were both used to secure financing for the mixed-use neighborhood, which has since catalyzed over \$8 billion in economic development investment.

Formerly an industrial Navy yard, the Capitol Riverfront has transformed into a new mixed-use neighborhood along the Anacostia River with 5,000 residents, 34,000 workers, and a host of open space, retail, and signature entertainment. A payment in lieu of taxes (PILOT) agreement was negotiated between the private developer for the US DOT building and the District. **Bonds were issued against these future PILOT payments and the proceeds were used to fund development of Yards Park and Canal Park, signature parks anchoring the Capitol Riverfront neighborhood.** A Tax Increment Finance (TIF) district was also created around the planned Washington Nationals ballpark site; TIF funding provided the last tranche of financing for the completion of the ballpark.

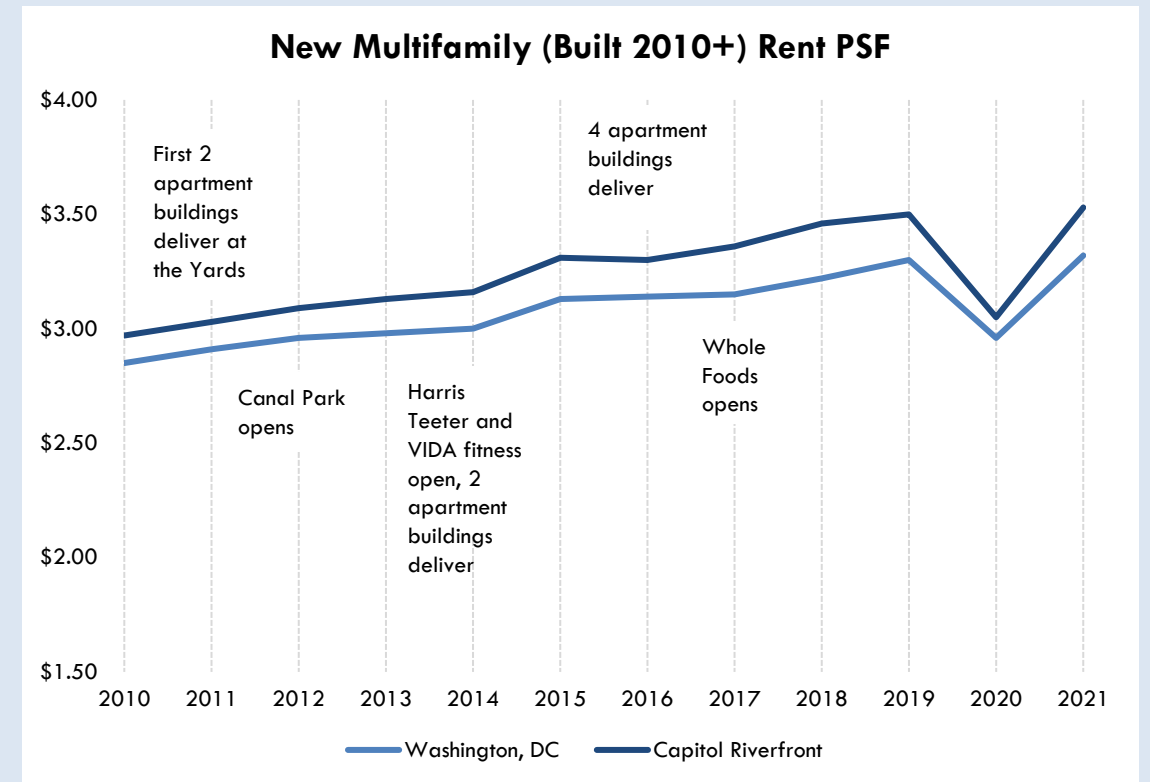
The master planning process for Capitol Riverfront involved rezoning from an industrial/manufacturing area to a high density, mixed-use TOD community. The Anacostia Waterfront Initiative Framework Plan and the DC Office of Planning supported these rezoning efforts for the neighborhood.

Ex Post Impact

The first phase apartments opened in 2011 with rents intentionally low to attract residents to what was then a non-existent neighborhood. As retail was added and the neighborhood gained traction, rents climbed to \$3.36 PSF on average in 2017, compared to \$3.15 for similar new buildings elsewhere in DC. By 2017, residential buildings were 95% occupied at stabilization and 90% leased after two years. Today, new multifamily rents for over \$3.50 PSF on average.

The project attracted more than 12 million SF of mixed-use development and more than \$3.3 billion in public and private development that is completed or currently under construction. According to the Washington, D.C. Mayor's Office, the Anacostia Waterfront Initiative has catalyzed over \$8 billion in economic development investment to date.

Capitol Riverfront Rents, 2011-2021



Source: HR&A Advisors completed project, CoStar. All values are not adjusted for inflation.

CASE STUDY 2: India

Karnataka Municipal Reform Project (KMRP)

Introduction | World Bank's Karnataka Municipal Reform Project (KMRP) sought to improve the delivery of urban services through quality urban infrastructure and institutional strengthening.

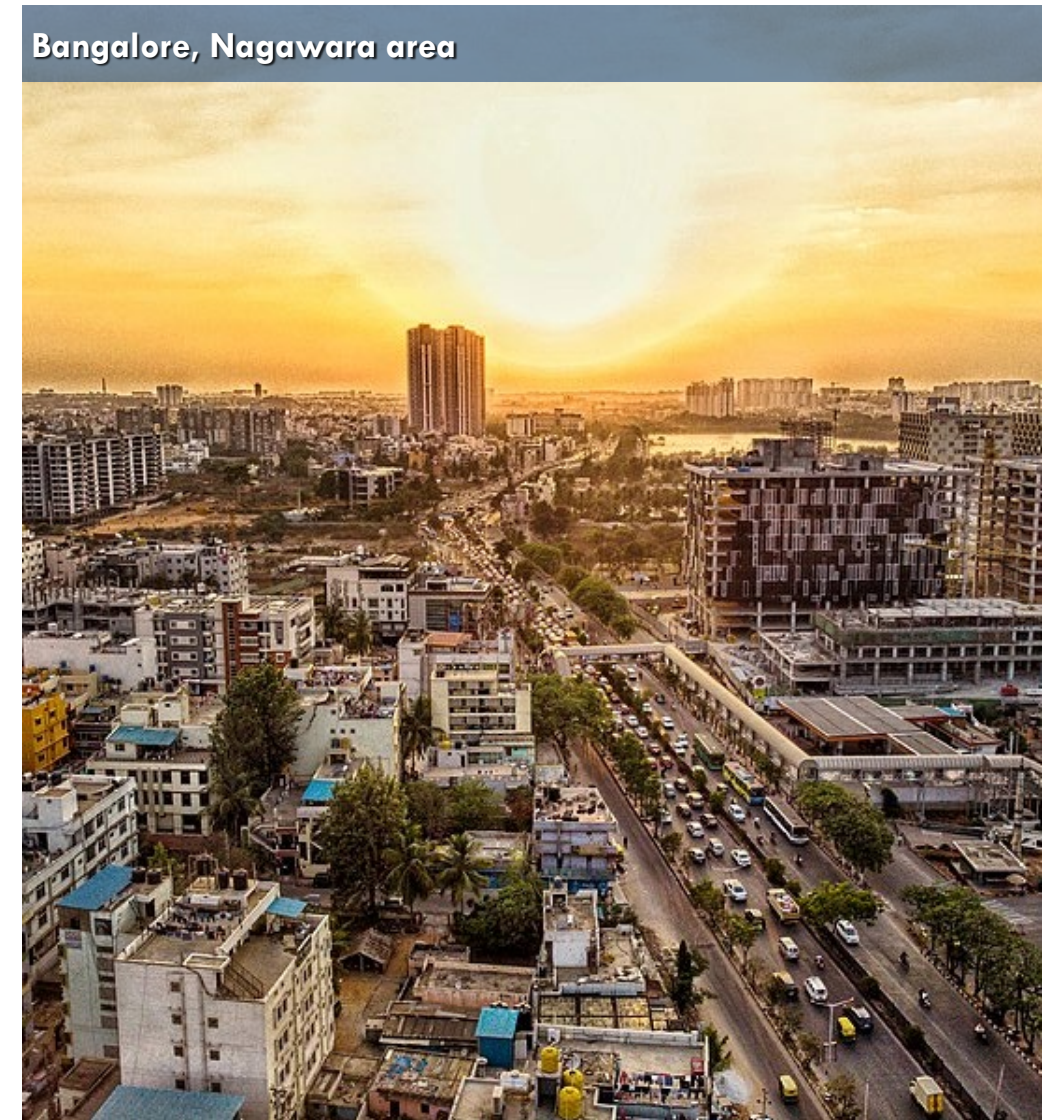
Project Origins. At the point of project appraisal in 2005, India's cities had nearly 300 million urban residents, contributed to over 60% of national GDP, and accounted for over 90% of government revenues. A gap in provision of urban services was increasing in these urban center and implementation of the Government of India's Tenth Five-Year Plan (2002-2007)

Project Overview. The World Bank initiated the Karnataka Municipal Reform Project (KMRP) to improve the delivery of urban services through

- a) enhancing the quality of urban infrastructure and
- b) strengthening institutional and financial frameworks at the Urban Local Body (ULB) and state levels.

In 2005, the Bank originally committed US\$216 million through the International Bank for Reconstruction and Development (IBRD) loan, but the loan was disbursed at US\$204.6 million. The Government of Karnataka contributed about US\$73 million. The project started in March 2006 and was completed in March 2015.

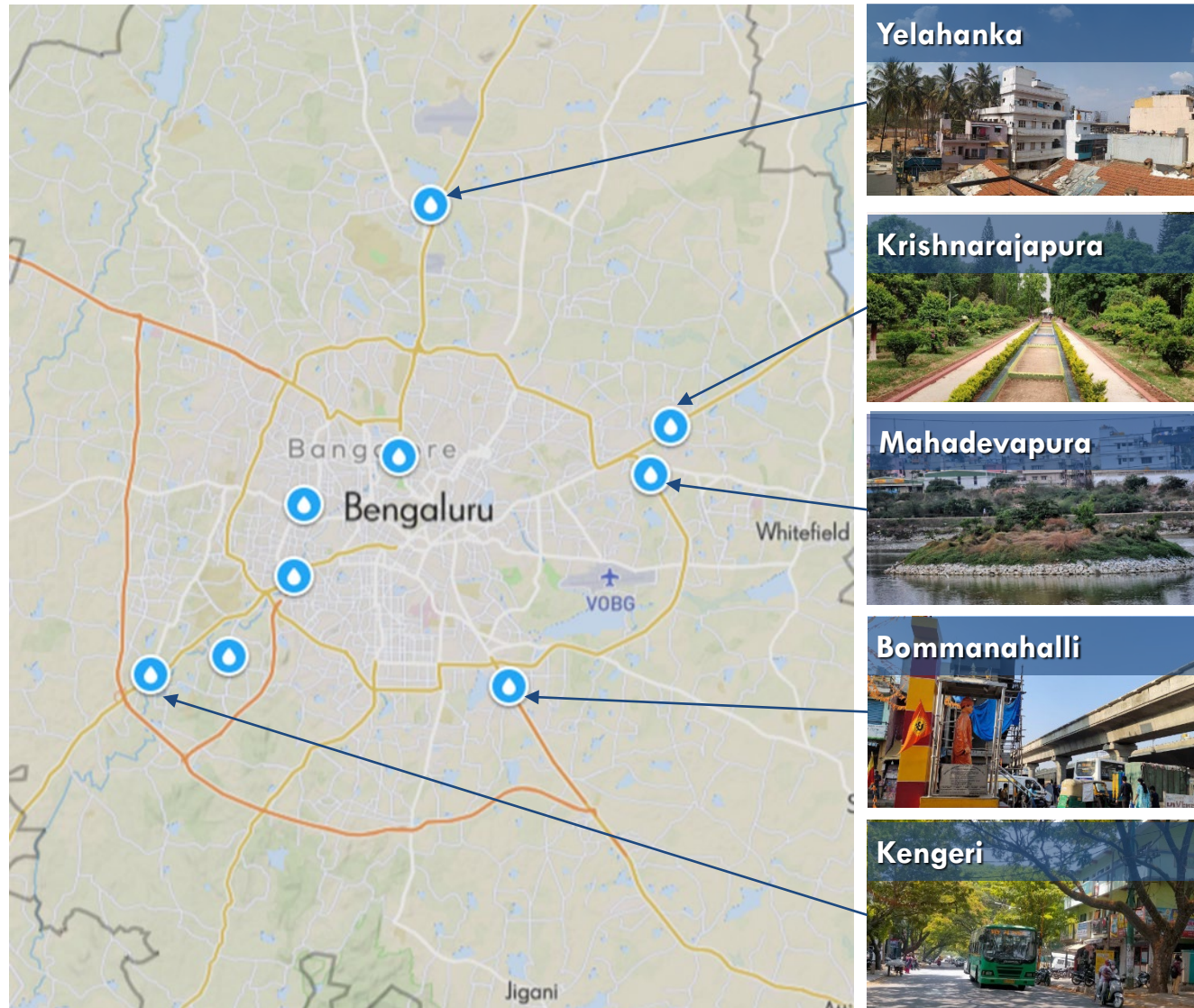
Project Context. Karnataka is a rapidly urbanizing state in India. A growing population, rising incomes and a business-friendly environment made the demand for quality services very strong. Infrastructure investments in Bangalore specifically were a crucial priority. In addition to delivering new infrastructure services, a major focus of the project was to improve government effectiveness through a decentralization process that strengthened the financial and administrative capacity of ULBs to deliver services with fiscal sustainability.



Bangalore, Nagawara area

Source: World Bank, Karnataka Urban Infrastructure Development & Finance Corporation (KUIDFC)

Project Overview | World Bank advanced large-scale sewerage infrastructure investments in eight Urban Local Bodies (ULBs) around Bangalore City and local capacity building in 32 ULBs across Karnataka.



Source: World Bank

Priority World Bank Investments

- **The eight ULBs in Bangalore that received investment are:**
 - Yelahanka
 - Krishnarajapura
 - Mahadevapura
 - Bommanahalli
 - Kengeri
 - Byatarayanapura
 - Rajarajeshwarangagar
 - Dasarahalli

- **Bangalore Sewerage Investment:** Construction of a sanitary sewerage system covering about 2.7 million people in eight ULBs. Comprises 1750 km of main and trunk sewers and branch sewers and laterals, with 3 intermediate sewage pumping stations, and about 120,000 sewerage service connections

- **Bangalore Road Rehabilitation:** Improvement of about 140km of medium- and high-density roads within Bangalore, including to pavement, footpath and side drains, cross drainage, and traffic management. Restoration of about 2,000 km of urban roads affected by the sewerage construction in the 8 ULBs.

- **Institutional Development:** Creation of a municipal e-governance platform to improve the delivery of public services in the state through the following:
 - Property Taxation with GIS
 - Fund-based double entry accrual accounting
 - Public Grievance Redressal
 - Birth and Death Registration

Project Overview | The project cost a total of US\$277.1 million, with four major components spanning from 2006 to 2015.

The World Bank focused its investments across the following four components:

1 Institutional Development *Total Cost: \$16.2 million*

Supported institutional capacity building initiatives to improve transparency and accountability at the urban local body (ULB) and state levels, including:

- Computerization
- Urban land management and planning
- Financial management reforms
- Training to ULB and state-level staff

2 Municipal Investment Support *Total Cost: \$74.9 million*

Provided performance-based loans and grants to ULBs outside of Bangalore for investments in urban services, including:

- Water supply
- Urban roads
- Street lighting
- Slum upgrading
- Solid waste disposal
- Sewerage
- Storm water drains

3 Bangalore Development *Total Cost: \$171.1 million*

Provided financing support for:

- Rehabilitation of the Bangalore City road network
- Construction of a sanitary sewerage system in the eight ULBs around Bangalore City
- Construction of pro-poor sanitation facilities at the community and individual levels in the eight ULBs around Bangalore City

4 Project Management *Total Cost: \$14.4 million*

Supported the project implementation, including:

- Incremental operating costs of relevant implementing units
- Project development advisory facility to support preparation and implementation of subprojects by the ULBs

Project Overview | This massive infrastructure project was implemented over a total of nine years, including two project extensions.

The project end date was extended twice, from April 2012 to March 2015.

1999-2003

2006

2009

2011

2015

Project concept introduced in 1999, and subsequent scoping worked to support implementation of decentralization in accordance with the Government of India's Tenth Five-Year Plan.

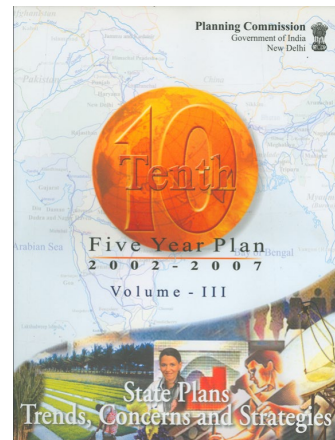
Project approved in March 2006 as an IBRD Investment Project Financing and became effective in June 2006. The World Bank loan was disbursed at \$204.6 million, and the Government of Karnataka contributed \$73 million in collaboration with the ULBs and the Bangalore Water Supply Sewerage Board.

Bangalore Road Rehabilitation completed.



The project scope was modified in March 2011. The number of ULBs across Karnataka receiving loans/grants was reduced from 50 to 32 and the number of ULBs with geo-referenced large-scale mappings was reduced from 202 to 49.

Project Closing in March 2015. The ICR rated the overall bank and borrower performances as *Moderately Satisfactory*.



Source: World Bank Project Performance Assessment Report

Project Overview | Multiple project partners were involved across Karnataka; World Bank advanced local capacity building in targeted neighborhoods within Bangalore.

The main institutions involved in project implementation included:

- **Urban Development Department (UDD) of Karnataka** had ultimate responsibility for the project, managed through various implementing agencies.
- **Karnataka Urban Infrastructure Development and Finance Corporation (KUIDFC)** is a state-owned financial corporation, responsible for the Municipal Investment Support. An Empowered Committee (EC) was constituted in KUIDFC to coordinate agencies and departments.
 - **Department of Municipal Administration (DMA)** was responsible for implementation of the Institutional Development Component.
 - **Bruhat Bengaluru Mahanagara Palike (BBMP)** was responsible for the Bangalore Urban Roads Rehabilitation Component.
 - **Bangalore Water Supply and Sewerage Board (BWSSB)** was responsible for implementing the Greater Bangalore Under Ground Component, including the road restoration works.
 - **Department of Town Planning (DTP)** supported the urban mapping components.
 - **ULBs** supported Municipal Investment Support in their respective locations.



A Municipal Reform Cell (MRC) was created to implement the computerization and other reforms in the ULBs. The Karnataka Government created the Karnataka Municipal Data Society in 2007 to manage e-governance initiatives in ULBs, ensuring that the initiatives were sustainable after the external World Bank support ended.

Summary Findings | The project was successful in improving sanitation and government efficiency but did include counterfactuals to contextualize results.

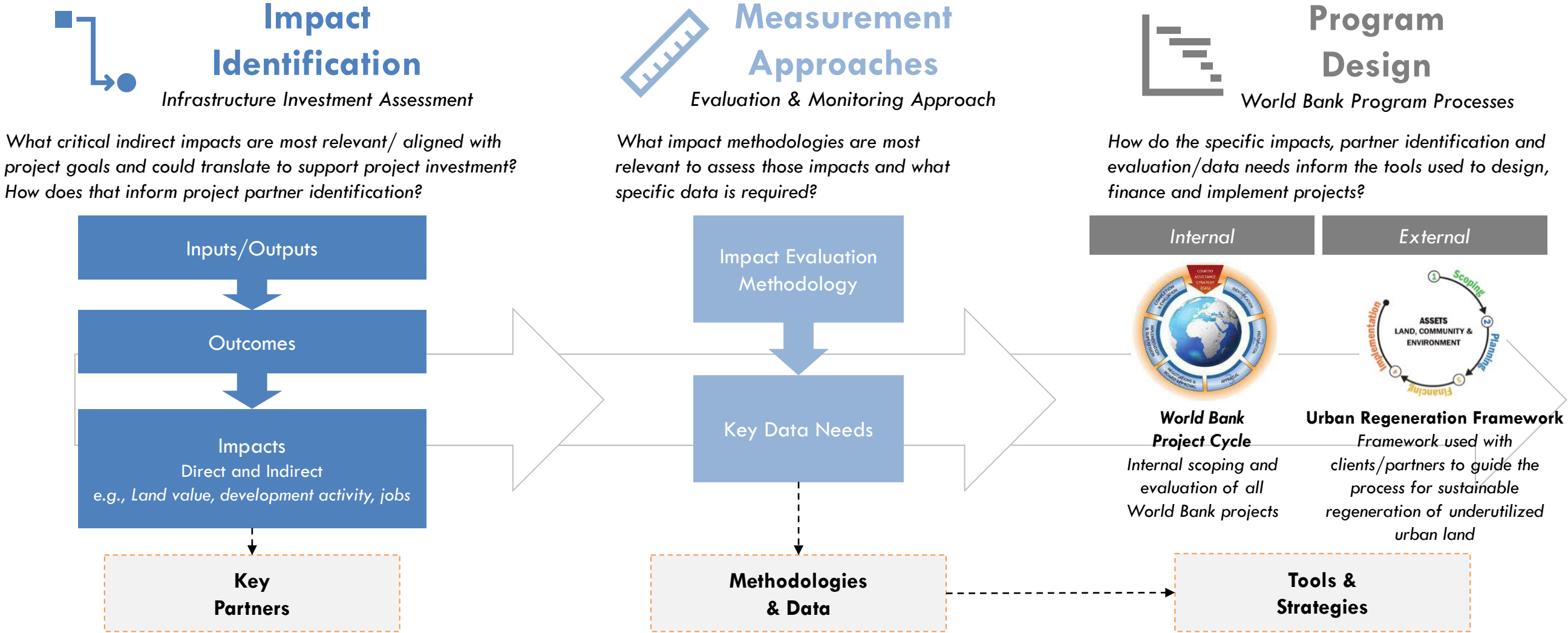
<p>INCREASE IN PROPERTY VALUES</p>	<ul style="list-style-type: none"> • Properties in slum areas saw a 50-75% increase in property values from Rs.250-Rs. 500 per sq. ft. after households were connected to under-ground drainage
<p>IMPROVED SANITATION</p>	<ul style="list-style-type: none"> • 32 slums were declared open defecation free, with 100% of residents having access to toilets with underground drainage and disposal • An estimated 610,000 residents of Greater Bangalore and its poor peri-urban areas have benefited from the sewerage connections and reduced contamination of ground water resources
<p>IMPROVED GOVERNMENT EFFICIENCY</p>	<ul style="list-style-type: none"> • At the time of project closing, the Bangalore Water Supply and Sewerage Board revenues from water and sanitation user fees were sufficient to meet the regular operating & maintenance expenditures • Over 18 million beneficiaries are estimated to benefit from the municipal e-governance reform, with ULBs seeing increased revenues from local services and reduced financial leakages
<p>ENVIRONMENTAL BENEFITS</p>	<ul style="list-style-type: none"> • Reduced pollution in about 70 lakes, as well as in other storm water channels, tanks, and ground water aquifers. • Eliminated unsanitary overflows from septic tanks and other sanitation facilities, which also led to cost savings and other public health benefits
<p>MOBILIZATION OF ADDITIONAL FINANCING</p>	<ul style="list-style-type: none"> • The State committed to provide funding assistance to complete the spill over works beyond the project period • The Japan Bank for International Cooperation (JBIC) committed financing to the Bangalore Water Supply and Sewerage Board for construction of sewerage treatment plants

Source: World Bank Project IEG, ICRR

Assessing Indirect Impacts to Inform Program Design

Evaluating Impacts | HR&A applied a similar framework assessment to the Karnataka Municipal Reform Project, replacing the CURE framework with one for Urban Regeneration.

HR&A applied the three-step framework to evaluate the impacts of urban service improvements in Bangalore.



Evaluating Impacts | The Karnataka Municipal Reform Project comprised a range of urban service investments across Bangalore and Karnataka more broadly.

URBAN SERVICE INVESTMENTS



Karnataka Municipal Reform Project Interventions in Bangalore

Many facets of urban service investment were implemented across Bangalore and more broadly in Karnataka through the KMRP.

Priority urban regeneration investments:

- 1) Institutional capacity building initiatives to improve transparency and accountability at ULB and state levels
- 2) Rehabilitation of the Bangalore City road network
- 3) Construction of a sanitary sewerage system in the eight ULBs around Bangalore City
- 4) Construction of pro-poor sanitation facilities at the community and individual levels in the eight ULBs



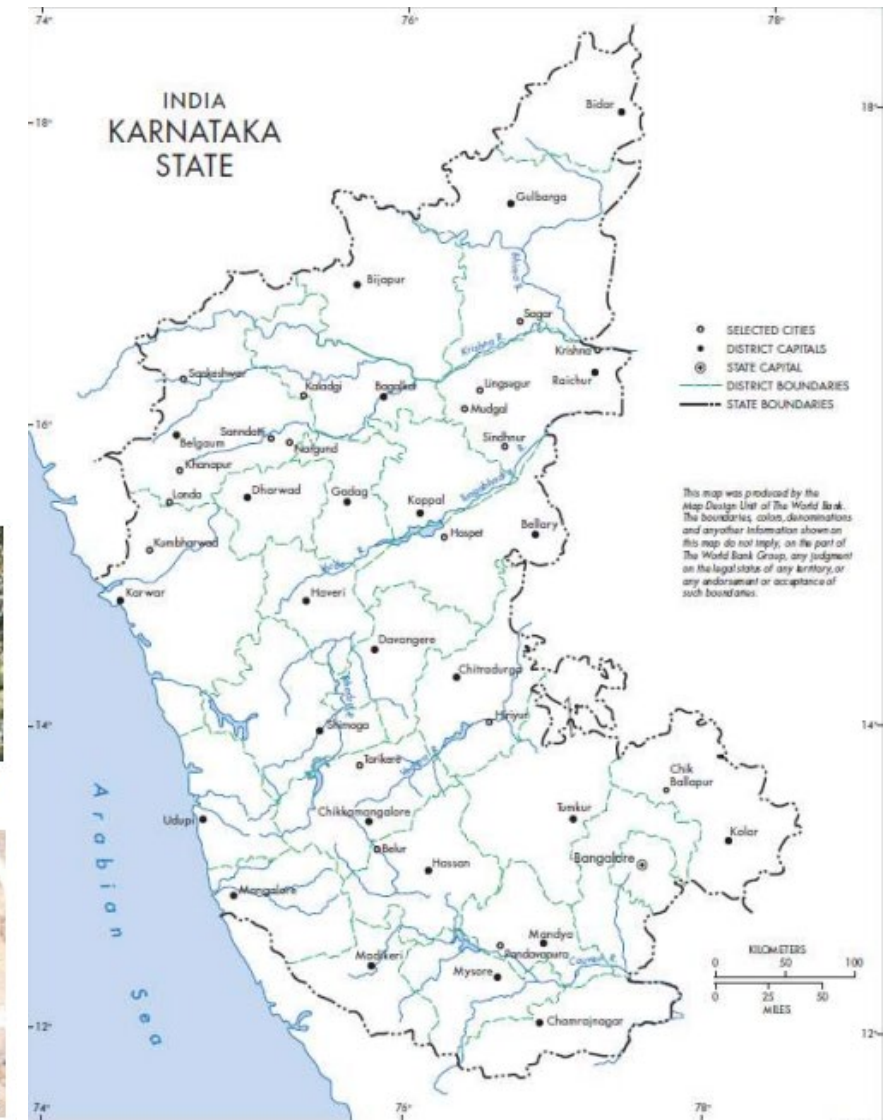
Varathur Lake (600 Dia RCC Pipe- 2400 rmt)



Agara Lake (600 Dia RCC Pipe- 900 rmt)

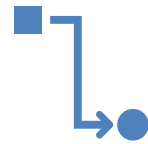


Underground Cables passing through trenches



Source: World Bank Project Appraisal Document

Evaluating Impacts | The project delivered powerful outcomes in terms of institutional reform at the state level and infrastructure investments in Bangalore.



Impact Identification

The World Bank Implementation Completion and Results Report (ICRR) details the project inputs, outputs, and outcomes of the Karnataka Municipal Reform Project. These indicators were assessed through a commissioned study, third-party evaluators, and the Karnataka Infrastructure Development and Finance Corporation (KUIDFC).

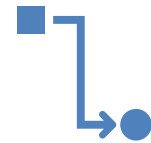
Bangalore KMRP Outcomes

Inputs	Outputs	Outcomes
<ol style="list-style-type: none"> 1) Institutional capacity building initiatives to improve transparency and accountability at ULB and state levels 2) Rehabilitation of the Bangalore City road network 3) Construction of a sanitary sewerage system in the eight ULBs around Bangalore City 4) Construction of pro-poor sanitation facilities at the community and individual levels in the eight ULBs 	<ul style="list-style-type: none"> • E-governance platform completed and rolled out to 164 ULBs • 25,000 staff trained at state and ULB levels • 152,167 sewerage connections provided • 125 km of roads built • 15,778 households reached in awareness campaigns for improved hygiene practices 	<ul style="list-style-type: none"> • All 164 project-supported ULBs undertook institutional and financial reforms to better finance urban services • The GIS-based property tax system has brought 1.2 million previously unassessed properties (32% of total) into the tax net, increasing municipal revenues by 30-40% • 29 ULBs received municipal infrastructure services, benefitting 2 million citizens • 32 slums declared open defecation free • 610,000 residents benefited from sewerage connections

Measurement Approaches Taken in Bangalore		
Tool	Type	Sample
Economic Assessments	Cost benefit analysis and cost-effectiveness analysis of Bangalore development & municipal investment support, including field interviews for property values	63% of KMRP investments were covered by economic analysis
Pro-Poor Sanitation Survey	Case studies and focus group discussions about pro-poor sanitation project components	Focus group discussions with 67 adults and 15 adolescents and case studies with 10 individuals/beneficiaries; selected across 4 slums, 2 community organizers, and 2 site engineers
Third-Party Evaluation of Training Activities	Course observations, interviews of program trainees	12 out of 17 training programs; 20 trainees interviewed per program
ULB Assessments of Institutional Reforms	Questionnaire for participating ULBs on the usefulness of 10 areas of municipal reform	15 ULBs completed the questionnaire

Source: World Bank, Consultation and Research Institute

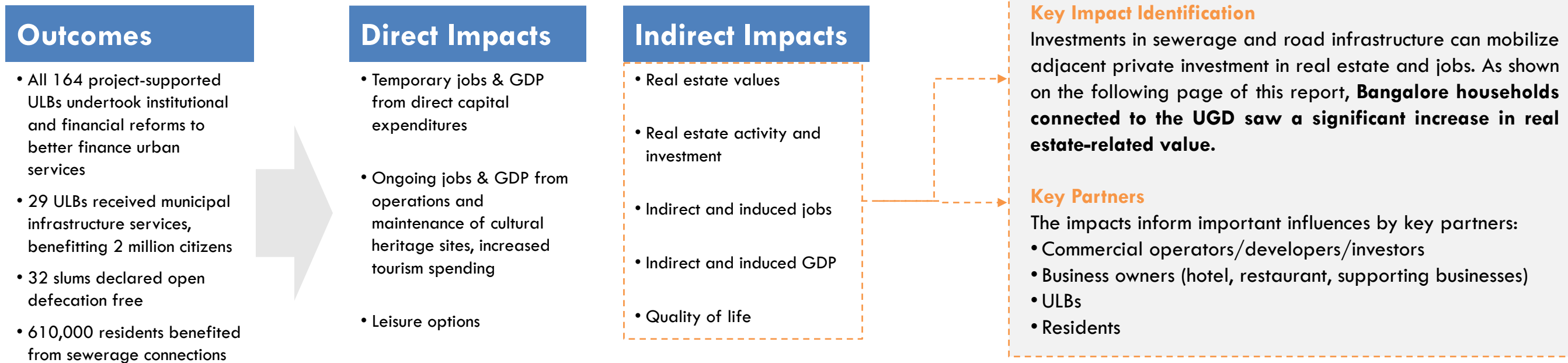
Evaluating Impacts | Identification of significant indirect project impacts inform potential partners for implementation.



Impact Identification

These outputs and outcomes further translate to direct and indirect impacts in Bangalore. Indirect impacts, like real estate value and activity, can have a substantial effect on the economy and quality of life in a city.

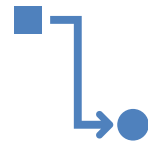
Bangalore KMRP Impacts



Source: World Bank, Vivid Economics

Evaluating Impacts | Sewerage and road investments in Bangalore led to indirect real estate value increases.

Impact Identification



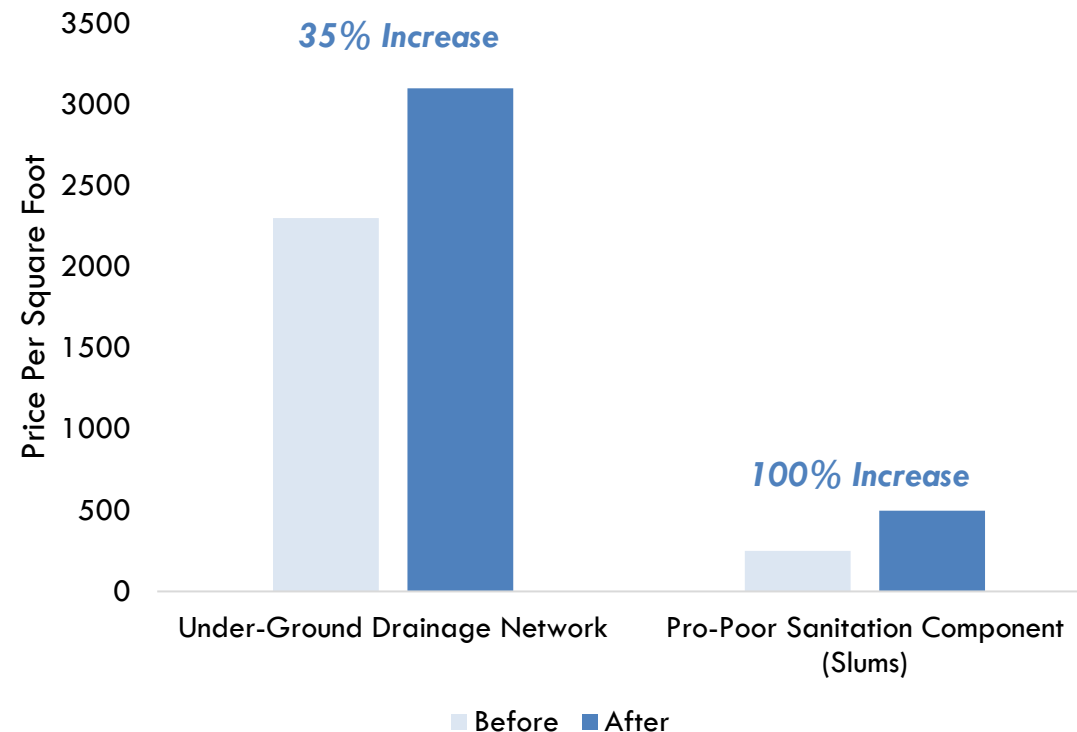
The KMRP project saw significant increase in property values in areas where sewerage and road investments were made, based on field interviews. Property value increases were not compared to a counterfactual.

Bangalore KMRP Impacts

Indirect Impacts

- Real estate values
- Real estate activity and investment
- Indirect and induced jobs
- Indirect and induced GDP

Bangalore UGD Real Estate Impacts



35% Increase in Property Values

For Bangalore households newly connected to the Under-Ground Drainage Network, based on field interviews with BWSSB. Every capital investment of Rs. 1 yielded a property value increase of Rs. 1.4 for each household that is connected to the network

30-40% Increase in Municipal Revenues

Across Karnataka, as a result of the GIS-based property tax system bringing 1.2 million previously unassessed properties (32% of total) into the tax net

Evaluating Impacts | A range of evaluation methodologies are relevant to quantifying indirect impacts from KMRP.

Impact Identification Measurement Approach

The World Bank can employ a variety of measurement approaches to evaluate indirect impacts like real estate values, indirect jobs and GDP, and quality of life. The World Bank ICRR reports focused on outputs and outcomes with economic and qualitative assessment components. *Karnataka Urban Infrastructure Development and Finance Corporation (KUIDFC)* conducted cost-benefit and cost-effective analyses that analyzed the rate of return for road, underground drainage and water supply investments.

Opportunity to quantify and link mobilization of private investment. To be revisited in Program Design

Indirect Impacts	Impact Evaluation Methodologies	Conducted for KMRP?	Data Collection Needs
<ul style="list-style-type: none"> • Indirect and induced jobs • Indirect and induced GDP 	<p>1. Input-Output Modeling Economic analysis calculating the flow of money in an economy among industries. Analyzes the direct, indirect, and induced effects on jobs, earnings, and economic output.</p>	<p><i>Not conducted for KMRP</i> <i>Consider for future projects</i></p>	<ul style="list-style-type: none"> - Detailed industry multipliers at the city level - Operational spending on road & sewerage investments - Household spending
<ul style="list-style-type: none"> • Real estate values • Real estate activity and investment 	<p>2. Cost-Benefit Analysis Comparison of the costs of sewerage investments and road rehabilitation to a variety of benefits, which could include an increase in property values, savings in sanitation expenditures, and time savings</p>	<p>Yes, conducted by KUIDFC</p>	<ul style="list-style-type: none"> - BWSSB revenue growth - Household savings - Residential and commercial property value before and after project implementation (GIS)
<ul style="list-style-type: none"> • Quality of life 	<p>3. Hedonic Price Modeling Estimates economic benefits from increased land values associated with proximity to road rehabilitation and/or sewerage investments</p>	<p><i>Not conducted for KMRP</i> <i>Consider for future projects</i></p>	<ul style="list-style-type: none"> - Residential and commercial property sale data before and after project (GIS) implementation - Neighborhood/city statistics and amenities
	<p>4. Health Benefits Assessment Assesses the impacts of a water and sanitation investment on reduction in water-borne diseases and other illnesses; avoided costs to health sector and households; improved wellbeing</p>	<p>Partially conducted for KMRP</p>	<ul style="list-style-type: none"> - Community health data - Hospital/medical care data - Socioeconomic data - Neighborhood/city statistics and amenities

Source: World Bank, Vivid Economics, HR&A Advisors

Evaluating Impacts | KMRP data collection allowed for cost-benefit analyses, and additional data in future projects would increase options for further economic analysis of indirect impacts.



Measurement Approach

The World Bank ICR and KUIDFC cost benefit and cost effectiveness analyses collected some of the data needed for impact evaluation methodologies, but additional data collection in future projects would allow for a more robust analysis of indirect impacts.

Impact Evaluation Methodologies

Data Collected in Bangalore *Informing indirect impact assessment*

Additional Data

In an ideal scenario, the following data is critical to accurately assessing indirect project impacts.

1. Input-Output Modeling

Ex ante or ex post
Not conducted for KMRP

- One-time sewerage and road rehabilitation costs (project construction spending)
- Household time savings

- Detailed industry multipliers at the city level
- Ongoing operational spending on sewerage & road projects
- Additional public and private investment in urban regeneration in Bangalore

2. Cost-Benefit Analysis

Ex ante or ex post
Conducted by KUIDFC, outlined in ICRR

- One-time sewerage and road rehabilitation costs
- BWSSB revenue growth
- Savings in monthly sanitation expenditures for households newly connected to UGD
- Household time savings
- Increase in property values for UGD component

- Additional public and private investment in urban regeneration in Bangalore

3. Hedonic Price Modeling

Ex ante or ex post
Not conducted for KMRP

- Increase in property values for UGD component

- Neighborhood/city statistics and amenities
- Relative change in commercial and residential property values compared to elsewhere in Karnataka

4. Health Benefit Assessment

Ex post
Partially conducted for KMRP, outlined in ICRR

- Qualitative assessment of health outcomes (focus groups and interviews)

- More detailed health data from surveys, local hospitals, etc.

Source: World Bank, Vivid Economics, HR&A Analysis

Applying to Program Design | There are opportunities to align the World Bank’s existing processes with specific strategies to harness the mobilization of private investment.



Program Design

HR&A reviewed the World Bank’s internal and external program design processes to align findings and recommendations from our analysis to the specific processes that the Bank follows in project scoping. In the context of the Karnataka Municipal Reform Project, our team reviewed both the World Bank’s internal Project Cycle and external Urban Regeneration Framework to identify steps in each process that can align with strategies to mobilize private investment.

Internal



Project Cycle

1. ID Stage
2. Preparation Stage
3. Appraisal Stage
4. Negotiations/ Board Approval
5. Implementation & Support
6. Completion & Evaluation

The World Bank Project Cycle is used as a framework to design, prepare, implement, and supervise projects in partnership with low and middle-income countries to support development.

The World Bank may consider the evaluation of indirect impacts specifically in the (2) Preparation, (3) Appraisal, and (6) Completion and Evaluation stages of this process to inform program design. During the Preparation and Appraisal stages, the Bank assesses the capacity to collect certain impact data points before the project starts and throughout its implementation.

External



Urban Regeneration Framework

1. Scoping
2. Planning
3. Financing
4. Implementation

The World Bank Urban Regeneration Framework was designed to guide the process for sustainable regeneration of underutilized urban land.

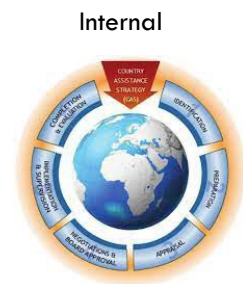
The World Bank may consider tying private partner identification, and impact assessment data needs, which are tied to specific direct and indirect impacts, to the (1) Scoping and (2) Planning phases of the Urban Regeneration framework when advancing urban infrastructure program design.

Applying to Program Design | The World Bank can incorporate further economic analysis of indirect real estate benefits when designing urban infrastructure projects.



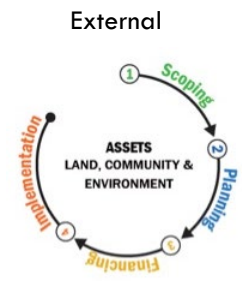
Program Design

The World Bank can incorporate further economic analysis of indirect benefits into its internal and external processes when approaching urban regeneration projects. Anticipating impacts of urban infrastructure can help the World Bank mobilize more public and private sector investment.



World Bank Project Cycle

1. ID Stage
2. Preparation Stage
3. Appraisal State
4. Negotiations/ Board Approval
5. Implementation & Support
6. Completion & Evaluation



Urban Regeneration Project Phases

1. Scoping
2. Planning
3. Financing
4. Implementation

Impact Identification

- In the case of sewerage and road infrastructure investments, like that seen in the KMRP, indirect real estate, household time savings, and health impacts were measured as meaningful.
- In the case of indirect real estate impacts, this presents an opportunity to identify key real estate owners/operators and developers/investors earlier in the Preparation (Internal) and Scoping (External) stages of Program Design as potential partners in project implementation. At minimum, these groups will remain priority stakeholders throughout the process.

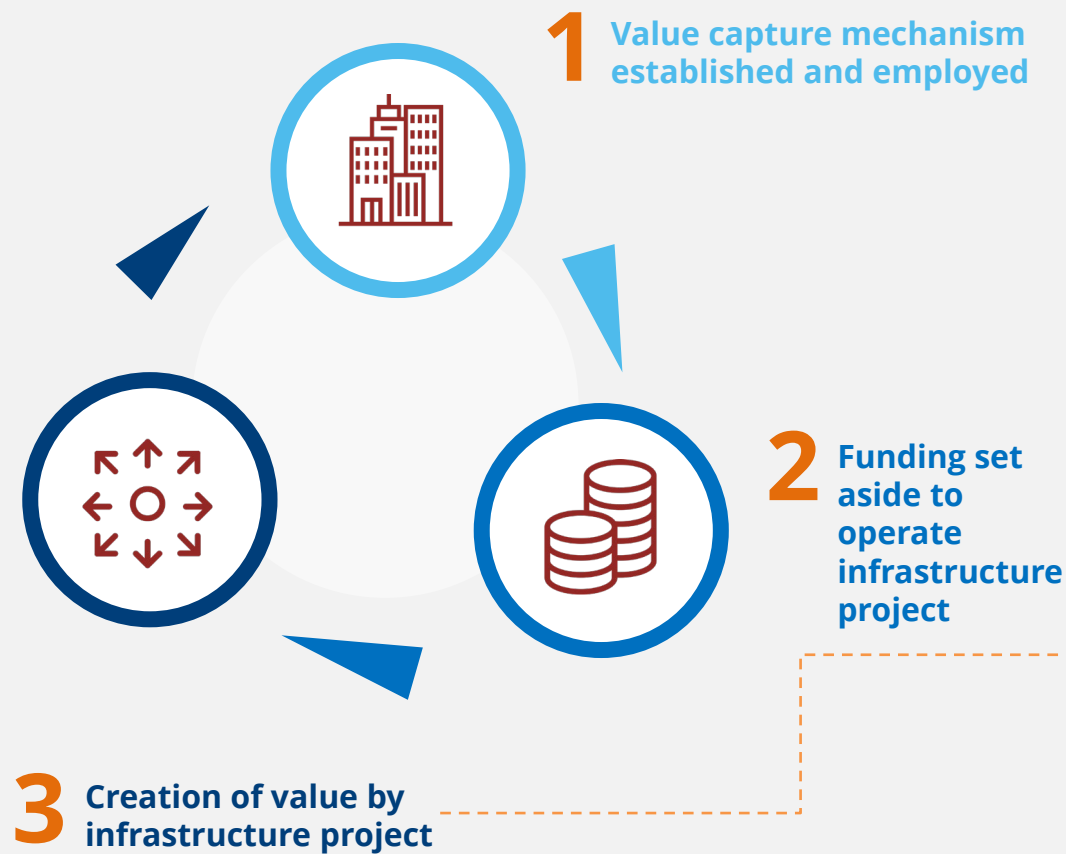
Measurement Approach

- Implement input-output modeling and hedonic price modeling (ex ante + ex post) measurement approaches to narrow in on the impacts associated with real estate and household time savings to both inform Program Design and the methods to collect necessary data.
- In prioritizing these ex ante and ex post indirect impact measurement approaches, it requires that data collection efforts are enhanced and better informed, leading to more robust collection efforts and project assessment.
- Identify counterfactual options at project start to allow for robust data collection, as well as evaluation that isolates project impacts.

Applying to Program Design | Land value capture tools can be considered in Program Design for urban service projects to leverage real estate value appreciation in support of funding infrastructure capital investment or ongoing operations and maintenance.



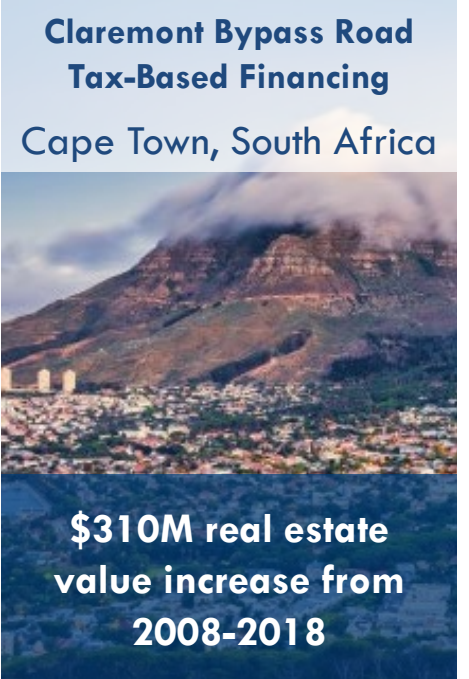
Investment in large scale infrastructure tied to transit, a form of urban regeneration, can accelerate the pace of real estate development and increase real estate premiums on surrounding properties. This real estate value can be captured to fund future infrastructure investments.

Tools & Strategies: Land Value Capture



Reviewed in more detail on the following pages

Real Estate Value Capture Examples

<p>NoMa Transit Station Tax-Based Financing Washington, DC</p>  <p>21% residential rent increase since 2010, faster than city</p>	<p>Union Station Bond and Tax-Based Financing Denver, CO</p>  <p>6% rent premium over surrounding downtown multifamily</p>	<p>Claremont Bypass Road Tax-Based Financing Cape Town, South Africa</p>  <p>\$310M real estate value increase from 2008-2018</p>
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Source: HR&A Advisors. All values are not adjusted for inflation. Note HR&A uses residential and commercial rents as a proxy for value increases, depending on data availability.

NoMa Metro, Washington, DC | Following transit investment, over \$3 billion of follow-on investment occurred and rents have continued to increase faster than the rest of the city.

A special assessment against landowners was used to fund investment in a new transit station to connect adjacent communities and spur development. Landowners adjacent to the planned station funded construction through a special assessment over 30 years, with any cost overruns above initial budgets, absorbed by the City.

Project Background

Given the large amount of underutilized land in the area as well as its proximity to downtown, Washington DC planners identified NoMa as a prime area of redevelopment. The building of a Metrorail station was crucial for the redevelopment of NoMa to occur, as the existing street network was already congested. A feasibility study concluded that a station was possible with project costs expected to be around \$75 million.

Public Private Partnership

The new Metro station was built with funds from private landowners, the District of Columbia, and the federal government. In 1998, each party originally agreed to pay \$25 million. The landowners funded their portion through a special assessment over the period of 30 years, as an additional charge on top of usual property taxes, with the understanding that the new station would increase the value of their land over time. The District of Columbia issued bonds to bring in the capital for the station and repays the bond using the funds collected through the special assessment. The station opened in 2004.

In 2006, the DC Office of Planning produced the *NoMa Vision Plan and Development Strategy* to guide the land use mix, open space, building design, and other development considerations. The Small Area Plan recognizes the large development opportunity around the station and recommends implementing a Mixed-Use Creative Industries District, increasing use of floor-area bonuses, developing Retail Overlay Zoning, and encouraging a diversity of housing products.

Ex Post Impact Estimate:

Since construction of the station began, the economic development of the area has been robust. Many media and communications companies chose to locate around the station. From the beginning of station construction at the end of 2000 through early 2006, 2.1 million feet of office space were built in NoMa. The area continues to see real estate growth. **New multifamily rents have increased by 21.2% in NoMa since 2010, compared to a 16.5% increase citywide.**

Following development of the new station over \$3 billion of follow-on investment occurred. From station opening in 2004 through 2021, the area has added over 5,000 residential units and 6.5 million square feet of office development.

Source: HR&A Advisors completed project, CoStar. All values are not adjusted for inflation.

Denver Union Station, Denver, CO | Completed and future development includes 3,000 residential units, 4.6 million square feet of office, 550 hotel rooms, and 15 acres of parks and plazas.

A combination of federal grants, loans, and value capture strategies paid for the Union Station and surrounding area infrastructure projects. In 2004, Denver metropolitan area voters approved a .4 percent sales tax increase for the FasTracks transit expansion. The FasTracks sales tax, TIF revenue, RTD contributions, and a lodger's tax covered the debt service for two major federal loan programs. The total project cost \$488 million and was completed in 2014.

Project Background

Union Station is the gateway to downtown Denver. Redevelopment of the Station was a large-scale transit investment for Denver that has anchored larger redevelopment efforts. The 127-acre Union Station district consists of three areas that are a mix of public and private ownership: Union Station Redevelopment (43-acre transit district that includes Union Station); the Commons (58-acre planned unit development); and Commons Park (26-acre open space amenity).

Public Private Partnership

Denver Union Station is a public-private partnership with a jointly funded Intergovernmental Agreement among the Regional Transportation District (RTD), the City and County of Denver, the Colorado Department of Transportation and the Denver Regional Council of Governments. RTD acquired the station facility and adjoining 20 acres and rezoned it for mixed-use development. RTD then joined with several other entities from local, regional, and state levels to form the Denver Union Station Project Authority (DUSPA) to oversee project execution. DUSPA selected Union Station Neighborhood Company (USNC), a joint venture, as the master developer. USNC in turn assembled a design-build team to facilitate decision-making and ensure project delivery. In 2008, Denver City Council approved a 3-year TIF district comprised of the entire Union Station and surrounding 20 acres.

The City of Denver also approved a rezoning of the site to Transit Mixed-Use 30 zoning to encourage denser, mixed-use development around the planned transit station.

Ex Post Impact Estimate:

The construction of Denver Union Station has had a significant impact on surrounding real estate. Completed and future development includes 3,000 residential units, 4.6 million square feet of office, 550 hotel rooms, and 15 acres of parks and plazas.

Multifamily rents in the half mile around the station have grown by 15% since completion in 2014 and hold a 6% premium over rents in the surrounding downtown submarkets.

Source: HR&A Advisors completed project, CoStar. All values are not adjusted for inflation.

Claremont SRA, Cape Town, South Africa | Since the public investment, the total value (in ZAR2018) of property within the SRA rose from R2.3 billion (\$160 million USD) in 2008 to over R7 billion (\$470 million USD) in 2018.

The Claremont Improvement District Company (CIDC) in Cape Town arranged to finance the construction of a bypass road to ease traffic around an office node's main artery in (total cost \$46 million). The CIDC used a Special Rating Area (SRA) public-private partnership to take out a loan with the municipal lender and collect levies from residents and businesses over the 15-year span of the loan. "Special Rating Areas" (SRAs, used interchangeably with "City Improvement District" or CID) are a legal mechanism designed to levy additional property rates within a defined area, to finance additional municipal services that enhance the physical and social environment.

As a first of its kind, this Public Private Partnership strategy required a number of financial and institutional innovations. The CIDC approached South Africa's largest municipal lender, the DBSA, for a loan to fund the project. The DBSA had never before lent to a private entity. To overcome legal and risk challenges:

- The Claremont Road Bypass Company ('Roadco') was established as a Special Purpose Vehicle sharing a board and staff with the CIDC to collect levies in addition to municipal rates and the SRA levy.
- Whereas SRAs are only guaranteed for 5 years, the City agreed to allow Roadco's lifespan to be equal to the tenor of the loan (i.e., 15 years).
- Cape Town undertook to pay the CIDC the rates collected from ratepayers, who in turn paid Roadco the portion allocated to repayment of the \$22 million DBSA loan.
- The DBSA required a cessation agreement in terms of which the CIDC relinquishes all rights and title to the infrastructure levy, and Cape Town required bank guarantees from Roadco to ensure it bears all construction risks.

Cape Town also played an important role in conducting two planning studies around urban upgrade projects in the Claremont CBD. Changing citywide land use regulations helped stimulate further development in the SRA.

Ex Post Impact Estimate:

Since the construction of the bypass, the total value (in ZAR2018) of property within the SRA rose from R2.3 billion (\$160 million USD) in 2008 to over R7 billion (\$470 million USD) in 2018, with 6 new developments scheduled for completion as of 2018.

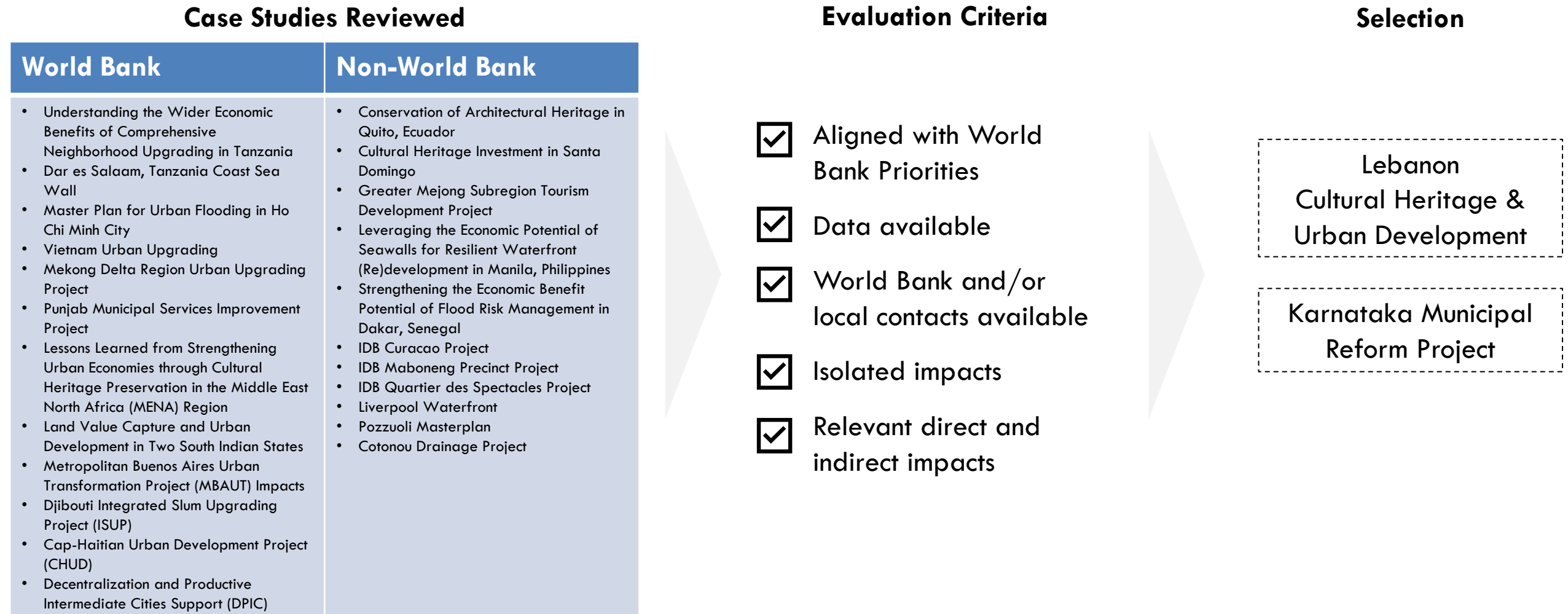
Property value increases are attributed to higher office and residential rentals, lower neighborhood risk, and new private sector developments.

Source: HR&A Advisors. All values are not adjusted for inflation.

APPENDIX

Case Study Selection

HR&A reviewed 12 World Bank and 11 Non-World Bank case studies and narrowed them down to Lebanon and Karnataka based on the following criteria.



Data Availability

Data availability in Lebanon and Karnataka, India is limited. HR&A reviewed the following data resources for each case study.

	Bangalore, Karnataka, India	Lebanon (Byblos focus)
Employment	Years: Up to 2019 Geography: State-level Variables: Worker population ratio (2017 - 2019, State-level); Employment (Quarterly, State-level)	Years: Only 2018/2019 Geography: County-level; Point in time City-level Variables: Standard labor force data; labor force participation, employment to population ratio (city-level, 2018/2019)
Housing	Years: Up to 2019 Geography: State- and city-level Variables: Number of dwellings approved (State-level, 2008-2019), Housing characteristics in housing census (State/city-level, most recent year 2011)	Years: Only 2018/2019 Geography: City-level Variables: Stats on housing conditions (number of rooms, persons per room, costs, connectivity, home appliances)
Health	Years: Up to present Geography: City-level Variables: Mortality Rate (2013-2017, City-level); Life expectancy (1990-present, State-level); Birth/death rates (2014-2018, State-level); Other health indicators such as disease (2017, 2019, state-level); Environment stats (Date varies up to 2018, not always time series, State-level)	Years: Current, see below Geography: Points/City-level Variables: List of private and public hospitals & pharmacie, list of primary care health centers; Access to health insurance (2018/2019, City-level)
Education	Years: Up to 2019 Geography: State-level Variables: Gender parity indices (2015-2019, State-level)	Years: Only 2019/2018 Geography: City-level Variables: Enrollment ratios and residents by level of education
Property Values	Years: Up to 2019 Geography: City-level Variables: Construction cost index Bangalore (2007-2019)	Years: Up to 2020, but limited Geography: Country-level and District-level Variables: Value of real estate transactions, 2011 - 2020; Real estate taxes and real estate taxes by foreginers (2011-2016; District Level); Value of real estate sales and number of real estate sales (2011-2016; District Level)

Data Availability

Data availability in Lebanon and Karnataka, India is limited. HR&A reviewed the following data resources for each case study.

	Bangalore, Karnataka, India	Lebanon (Byblos focus)
Demographic	Years: Census years 1991, 2001, 2011 Geography: Village/town level Variables: Standard census	--
Business Formation /Establishments	--	Years: 2004 Geography: City-level Variables: Census of buildings by use
Income/Wealth	Years: Up to 2012 Geography: State-level Variables: Key indicators of slums (1993, 2002, 2009, 2012); Economic survey reports (1990-2019, State-level)	Years: 2011-2020 Geography: City-level Variables: Byblos banks data - cash and balances with central banks, financial assets, etc (2011 - 2020); Household income, self classification of wealth (2018/2019)
Other Opportunity Access	--	Years: Varies Geography: City-level Variables: Access to services (% of pop in Jbeil vs Lebanon, includes grocery, public transport, bakery, pharmacy, private clinic, etc)
Tourism	--	Years: Varies Geography: Country-level Variables: Tourism factbook (spending, number of hotels, etc)
GIS	Years: Current Geography: Local Variables: Health GIS, Education GIS, Emergency Services GIS, Employment Offices, etc	--

Brooklyn Bridge Park, New York City, NY | Value capture from real estate rent and PILOT payments fund most of the park's ongoing operations and maintenance budget.

Brooklyn Bridge Park achieves self-sufficient park operation and maintenance through the entitlement and disposition of a portion of the project's land for residential, retail, hotel, and parking uses – value capture from the land and municipal tax proceeds generate an endowment fund to support the 85-acre project's operations and maintenance requirement in perpetuity.

Public Private Partnership

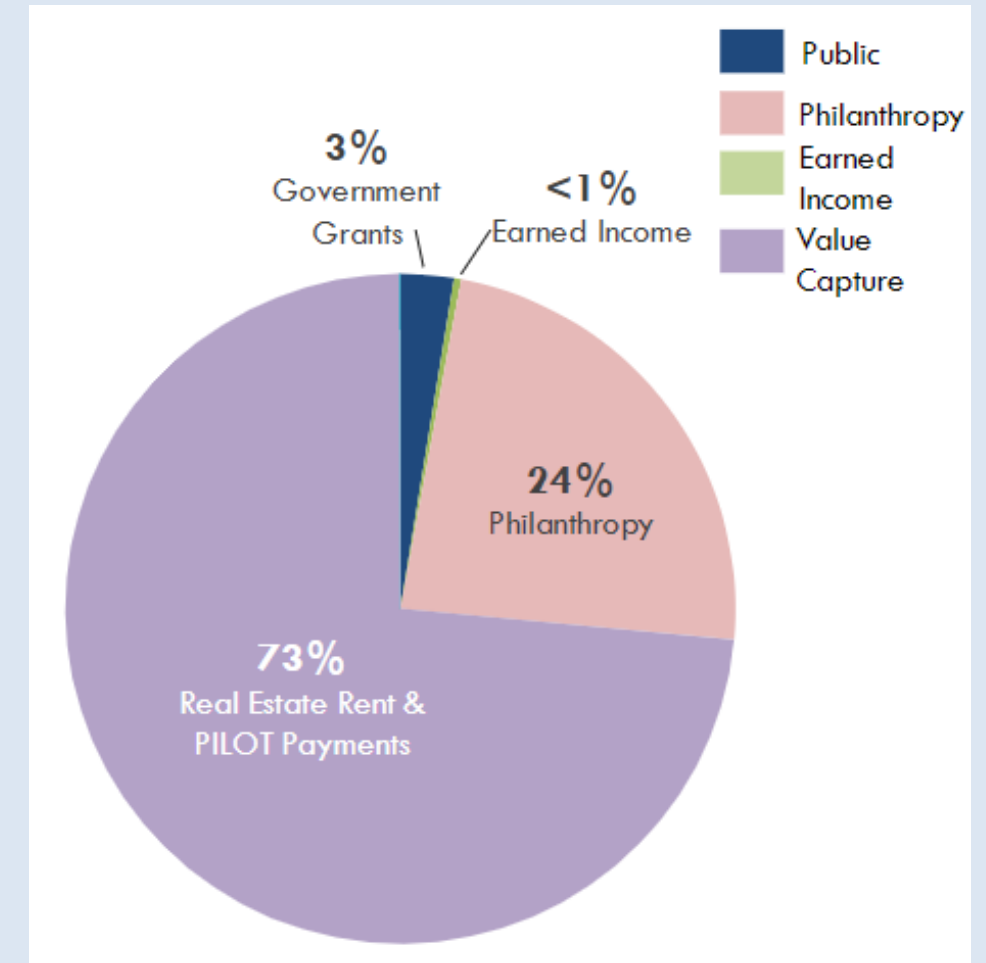
Brooklyn Bridge Park is a moderately-programmed 75-acre waterfront park built on a former industrial site. The potential to revitalize underutilized industrial waterfront attracted public commitment, but the park is almost entirely supported by real estate capture. The park is governed by a private, community-led nonprofit in partnership with the Brooklyn Bridge Park Corporation (quasi-public non-profit management entity) and the Brooklyn Bridge Park Development Corporation, a subsidiary of New York State.

Ex Post Impact

In a 2015 analysis, 73% of Brooklyn Bridge Park operations were funded by lease revenues from 1 Brooklyn Bridge Park. The park is expected to earn approximately \$16M per year from ground leases on 5 adjacent development parcels.

Brooklyn Bridge Park continues to generate a substantial real estate premium. In 2021, the median one-bedroom condo at 1 Brooklyn Bridge Park has rented for about \$4,500. In comparison, the median one-bedroom rental rate in the surrounding Brooklyn Heights neighborhood is \$3,500, a 29% premium.

Brooklyn Bridge Park Operations Funding by Source, 2015



Source: HR&A Advisors completed project, StreetEasy

High Line, New York City, NY | The High Line has generated a substantial 130-214% premium for surrounding real estate and will contribute \$1 billion in tax revenues by 2027, which exceeds the City's investment by 800 percent.

When Friends of the High Line sought to convert the High Line, an abandoned railway on Manhattan's west side, into a public park, HR&A prepared an economic and fiscal impact study to demonstrate that the economic and social benefits of converting the rail line would far outweigh the necessary capital costs of development. The City invested about \$200M in the High Line, 90% of total capital costs. Friends of the High Line raised the rest of the funding.

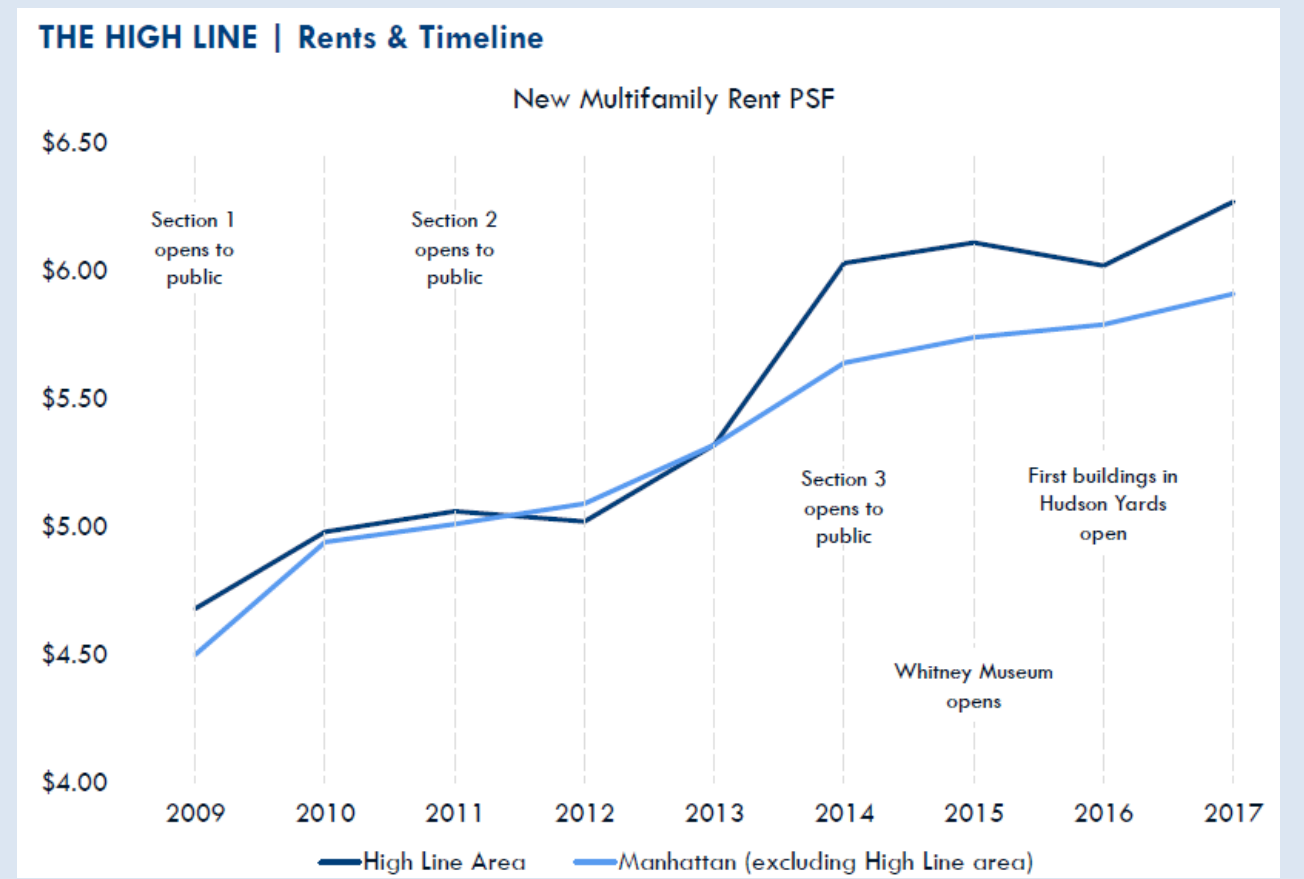
Ex Post Impacts

The High Line has generated significant net new economic activity for the City and will contribute \$1 billion in tax revenues by 2027, which exceeds the City's \$200M investment by 800 percent. As of 2017, it had already seen a return of \$300M in incremental tax revenues.

The High Line has had a substantial effect on adjacent real estate value and pace of development. By the time the first section opened in 2009, 30+ projects were either planned or under construction. According to a 2016 analysis by StreetEasy, apartments near Section 1 sold for an average of \$4.42M, 130% more than the average in East Chelsea. Apartments near Section 2 had a 214% premium over the East Chelsea neighborhood.



High Line Rents, 2011-2017



Source: HR&A Advisors completed project.

Detroit, MI | A Watershed Improvement District (WID), supported by surrounding new development, to fund stormwater infrastructure and sewerage relief improvements in Detroit.

From 2015 to 2019 a team led by The Nature Conservancy (TNC) and HR&A Advisors analyzed the effects of a proposed stormwater ordinance on real estate and the feasibility of a watershed improvement district (WID) in Detroit, Michigan. The City of Detroit had a combined sewerage system that discharged nearly 8 billion gallons of untreated combined sewage into the Great Lakes. The cost of bringing the stormwater system into compliance with the National Pollution Discharge Elimination System Permit was approximately \$1.2 billion.

The watershed improvement district concept was advanced as a collective, property-owner led mechanism to build, own and operate green stormwater infrastructure (GSI). Two revenue streams were considered:

- **Compliance payments from developers** required by the stormwater management ordinance to fund GSI construction and maintenance for new developments that create or replace .5 acre or more of impervious surface
- **Drainage charge credits** from the Water and Sewerage Department generated from detention and retention of stormwater by GSI interventions, a portion of which would fund construction and maintenance, as well as WID administration

Prior to the WID concept creation, the team first quantified the supportable land value within the WID for three typologies by constructing multi-year development models calibrated to reflect current market conditions: downtown commercial buildings converted to multifamily residential, newly-constructed multifamily residential buildings, and large box retail development sites.

Projected Benefits

\$4.5M real estate value appreciation, 155+ jobs

Impact	Conservative	Expected	Optimistic
Real Estate Value Appreciation for Existing Property	<i>Potential Appreciation of Up to \$4.5M</i>		
Increased Value of Future Development	<i>Potential Increases in Pace and Value of New Development</i>		
Increase in Drainage Charges with +10% Collection Rate Improvement	+\$205k	+\$255k	+\$310k
Economic Opportunity from Construction & Ongoing Operations*			
Total Worker Compensation	\$3.8M	\$8.5M	\$16.6M
Total Jobs Created	70	155	300
Total Potential Stormwater Management Capacity	34M gal	41M gal	49M gal
Acreage Activated with GSI, of which a Portion May Be Converted to Greenspace	26 AC	46 AC	80 AC

Source: HR&A Advisors

Gentilly District, New Orleans, LA | Ex ante tax increment analysis guided planning and financing for necessary flood infrastructure investments and to support neighborhood revitalization.

In 2019, the City of New Orleans was supported by a team including HR&A Advisors to evaluate a funding and governance strategy for the Gentilly Resilience District (GRD), a pilot effort to address chronic flooding with stormwater infrastructure, layered with investment in neighborhood improvements. The district has seven Urban Water sites that would store approximately 10 million cubic feet of stormwater for a 1-year storm event, providing cost savings of up to \$170k for the Sewage & Water Board of New Orleans.

In order to be successful, the GRD needed long-term operating funding. The team estimated revenue potential for four recommended funding tools:

- Dedicated value capture from increased tax revenue,
- A special assessment,
- Shared maintenance agreement, and
- A drainage fee set-aside.

The tax revenue tool focused on dedicating a portion of the City budget to the GRD, based on the project's value to the city as existing homes become more valuable and as vacant lots are developed. While an unprecedented approach in New Orleans, the study found the GRD property tax increment could be valued at up to \$800k.

Preliminary Property Tax Increment Estimate: \$400K – \$800K total

Total Built Parcels	5,470
Total Assessed Value	\$89.1M
Real Growth in Value	20-40%
Undedicated Increment	\$185K - \$370K

Newly Developed Parcels	100 – 200
Per-Parcel Assessed Value	\$20,000
Total Assessed Value	\$2M - \$4M
Undedicated Increment	\$210K - \$415K

Los Angeles, CA | Infrastructure Financing District to Fund LA River Capital Projects

In 2016, the City of Los Angeles Economic and Workforce Development Department (EWDD) was supported by a team to evaluate the potential property tax-increment revenue yield and funding capacity of one or more Enhanced Infrastructure Financing Districts (EIFD) along the LA River. The 51-mile LA River had primarily been a flood control mechanism, but increasingly is seen as a unique ecological, recreational and cultural asset.

Capital projects, including ecological restoration, new parks and open space, bridges and streetscape improvements, faced significant funding challenges. The team considered several boundaries to evaluate the potential revenue yield of an EIFD and found that revenue yield of a 30-year bond backed by a share of the property tax increment generated within one mile on each side of the River could total nearly \$2B.

As demonstrated in the tables to the right, the team found that areas near the LA River have already experienced value growth associated with the proposed revitalization and would therefore not experience additional premiums. Because California law caps assessed value growth on existing properties, any River-related premium would have minimal impact on revenue yield. The analysis also assumed that new development would occur only on vacant parcels and did not estimate redevelopment of underutilized parcels.

30-Year Bond Yield from Property Tax Increment: \$1.895 billion

The team conducted sensitivity analyses for the bond yield based on real estate value growth and development pace:

Real Estate Value Growth	30-Year Bond (2016 \$M)
3.0%	\$1,380
3.5%	\$1,615
4.0% (a 0% premium over historical averages)	\$1,895

Development Pace (% on Projection)	30-Year Bond (2016 \$M)
50%	\$1,760
75%	\$1,835
100% (on par with citywide projections)	\$1,895

Source: HR&A Advisors

Mission Bay, San Francisco, CA | Following coordinated investment, development activity has increased markedly, and vacancy rates are only 2.7% compared with 7.7% for other Class A buildings in San Francisco.

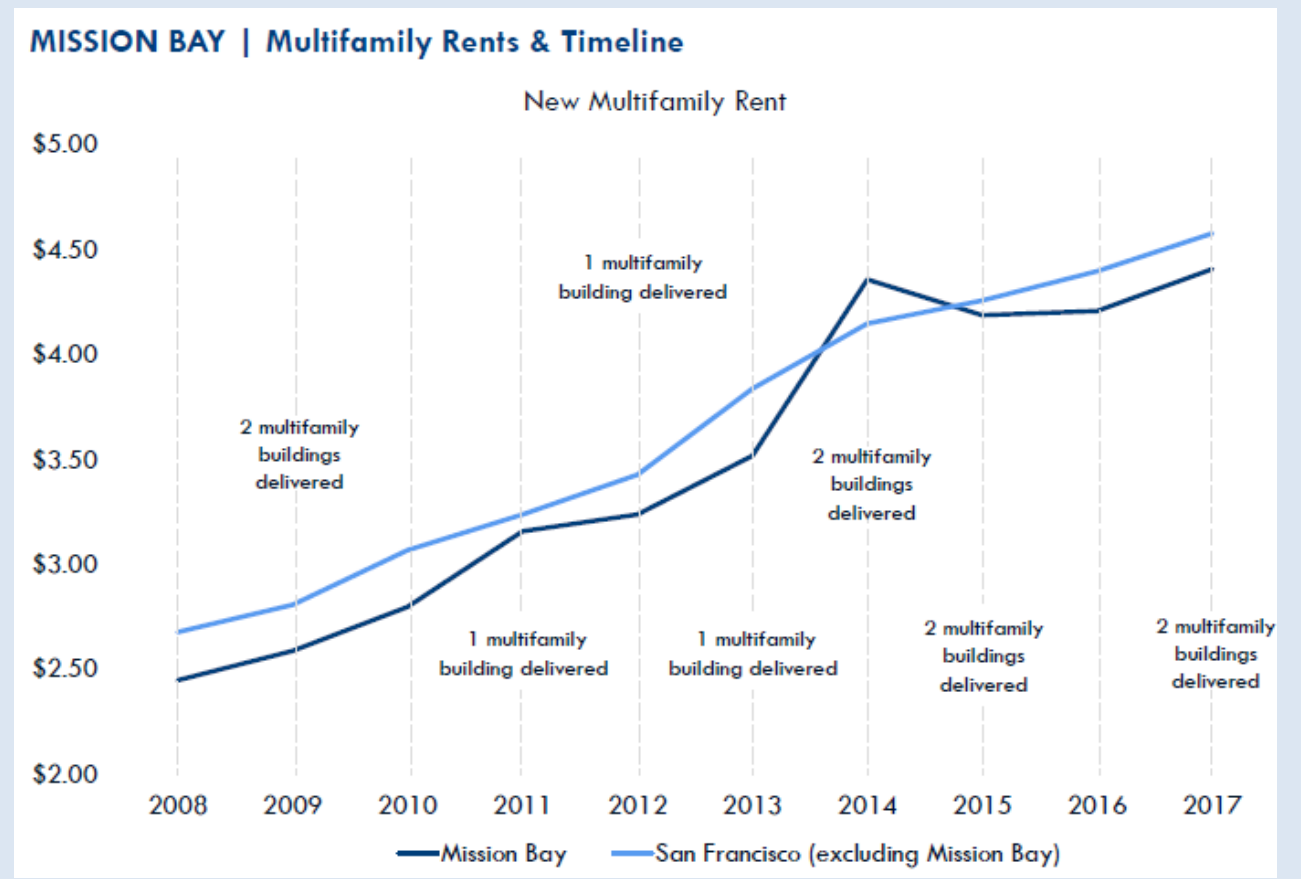
Originally a 303-acre rail yard, Mission Bay has used public/private partnerships to transform into an enormous mixed-use neighborhood and biotech hub with over 6,000 residential units and 4M SF of office. Catellus Development Corporation invested \$700M in public infrastructure and 8 acres of new parks, in partnership with the Redevelopment Agency, which would reimburse these expenses through increased tax revenue on the property.

Ex Post Impact

Since 2006, Mission Bay has been home to 30% of total Class A construction in San Francisco. Buildings have leased up quickly and vacancy rates are only 2.7% compared with 7.7% for other Class A buildings in San Francisco.



Mission Bay Rents, 2011-2017



Source: HR&A Advisors completed project.

Bayfront Park, Sarasota, FL | Land value appreciation analysis estimated \$48 million in incremental property tax revenue tied to redevelopment of Sarasota Bayfront, which informed City approval of Tax Increment Finance (TIF) to fund redevelopment.

In 2018, The Bay Sarasota, FL and the Sarasota, FL Bayfront Planning Organization identified potential sources of capital and operational funding for redevelopment of the Sarasota Bayfront.

Result

In October 2020, the Sarasota City Commission approved the creation of a tax increment financing district along the bayfront to allocate approximately \$200 million in local tax revenue towards the construction of The Bay Sarasota park, park infrastructure and a waterfront performing arts center. The TIF will capture 95% of any property tax revenue increase above 2019, the baseline year. The TIF is expected to generate \$189 million over 30 years. Other funding sources include state and federal contributions, development impact fees, city capital support, tourist development tax, and philanthropy.

Impacts

Analysis estimates an additional \$48 million in property tax revenue from increases in existing property value and an additional \$134.7 million from new development along the Bayfront.

\$139M in value capture expected over 30 years

TIF | Multiple adjacent development sites will eventually be built out, generating substantial incremental property taxes, which can be captured via a TIF structure.



Source: HR&A Advisors completed project.

This report is a case study evaluation of the indirect impacts of urban infrastructure projects that mobilized private investment. The objective of the work is to inform World Bank program design and an approach to identifying partners for co-investment. Two urban infrastructure case study narrative assessments were conducted to identify how the projects impacted private sector partners and/or economic sectors, to inform potential opportunities for targeting and collaborating with private co-investment, and to enhance the design of future projects.



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