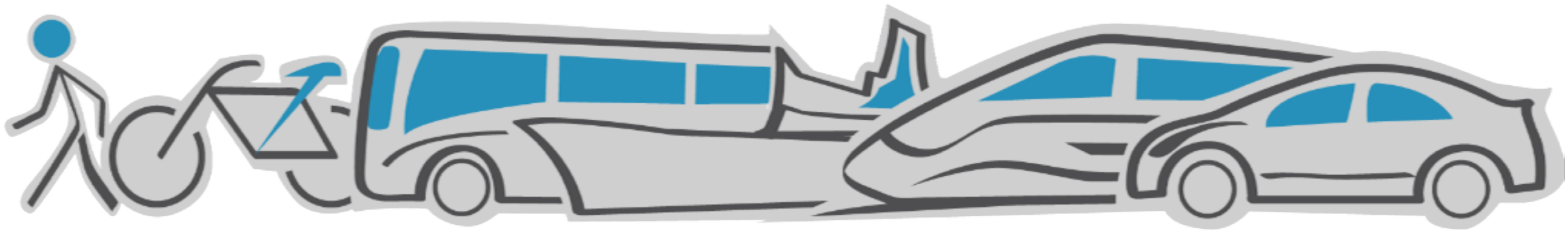
WORLD BANK GROUP

NCRTC
Regional Rail Transit System

Value Capture Financing and TOD

Gerald Ollivier
Lead Transport Specialist
World Bank



TOD
Value Creation and Capture

TOD

Understanding market demand

When to Invest? Key Parameters for Real Estate

Micro-perspective(Local-wide) analysis can capture better opportunities

List of Parameters

Stats & Indexes

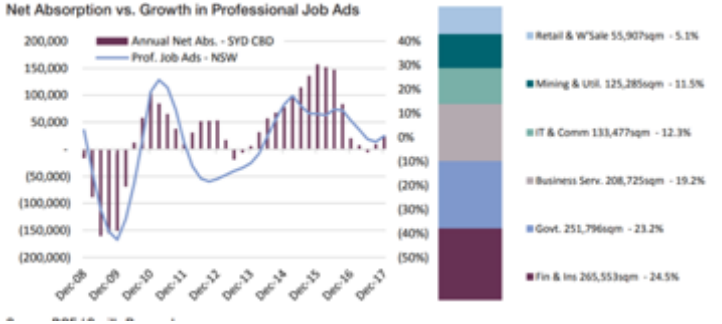
- Local Demographic (Population, Age, Gender)
- Local Employment Growth
- Local Industry Growth
- Household Income Growth
- Loan to Value(LTV), Debt to Income(DTI)
- Local Bank Mortgage Rate
- Number of stations & modes of transport within 800m
- Distance to CBD, University
- Number of passenger or pedestrian (Station, Spot)

Property

- Effective Rent (Office, Retail, Residential)
- Vacancy (Office, Retail, Residential)
- Net Absorption Area (Office, Retail, Residential)
- RevPAR (ADR x Occupancy, Hotel)
- Market Stock (Common)
- Market Pipeline (Planning & Under construction)
- Cap rate, Price per square meter
- Transaction Volume
- Leasing Activity by Tenant Type

*Source: Savills Australia, Briefing Sydney Office, Feb 2018

Sample Micro Parameter*

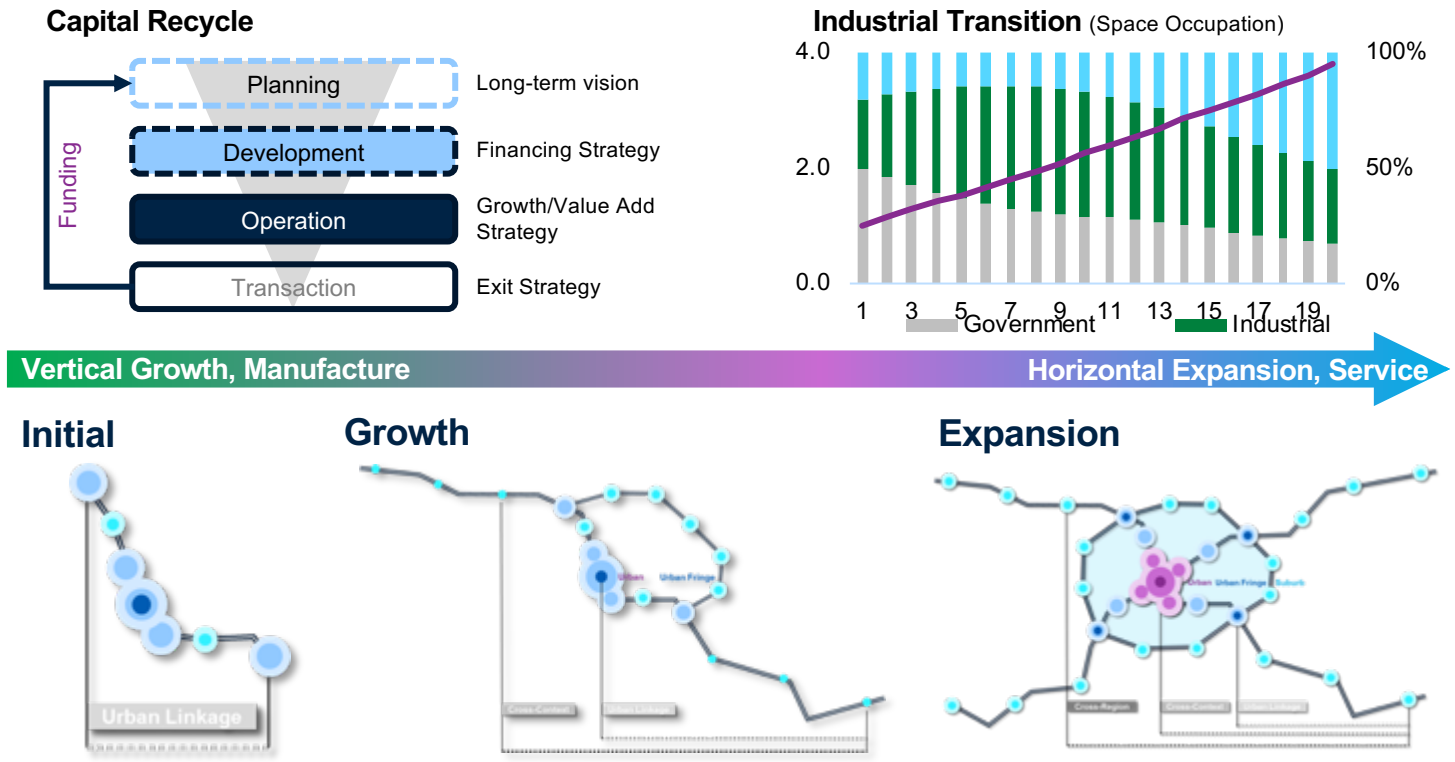


Sydney CBD Key Indicators

Sydney CBD	Premium		A Grade		B Grade	
	Low	High	Low	High	Low	High
Rental – Gross Face ($/sq m)	1,175	1,550	1,130	1,245	890	1,090
Rental – Net Face ($/sq m)	975	1,350	960	1,075	750	950
Incentive Level Gross	18	21	17	21	15	21
Rental – Net Effective ($/sq m)	745	1,045	745	840	590	755
Outgoings – Operating ($/sq m)	140	155	110	130	80	110
Outgoings – Statutory ($/sq m)	45	55	45	50	40	50
Outgoings – Total ($/sq m)	185	210	155	180	120	160
Typical Lease Term	8	10	5	10	5	7
Yield – Market (% Net Face Rental)	4.63	4.88	4.75	5.13	4.63	5.25
IRR (%)	6.63	6.75	6.63	6.75	6.25	6.75
Cars Permanent Reserved ($/pcm)	990	1,080	900	1,070	720	790
Office Capital Values ($/sq m)	22,000	29,000	18,000	21,000	13,500	20,000

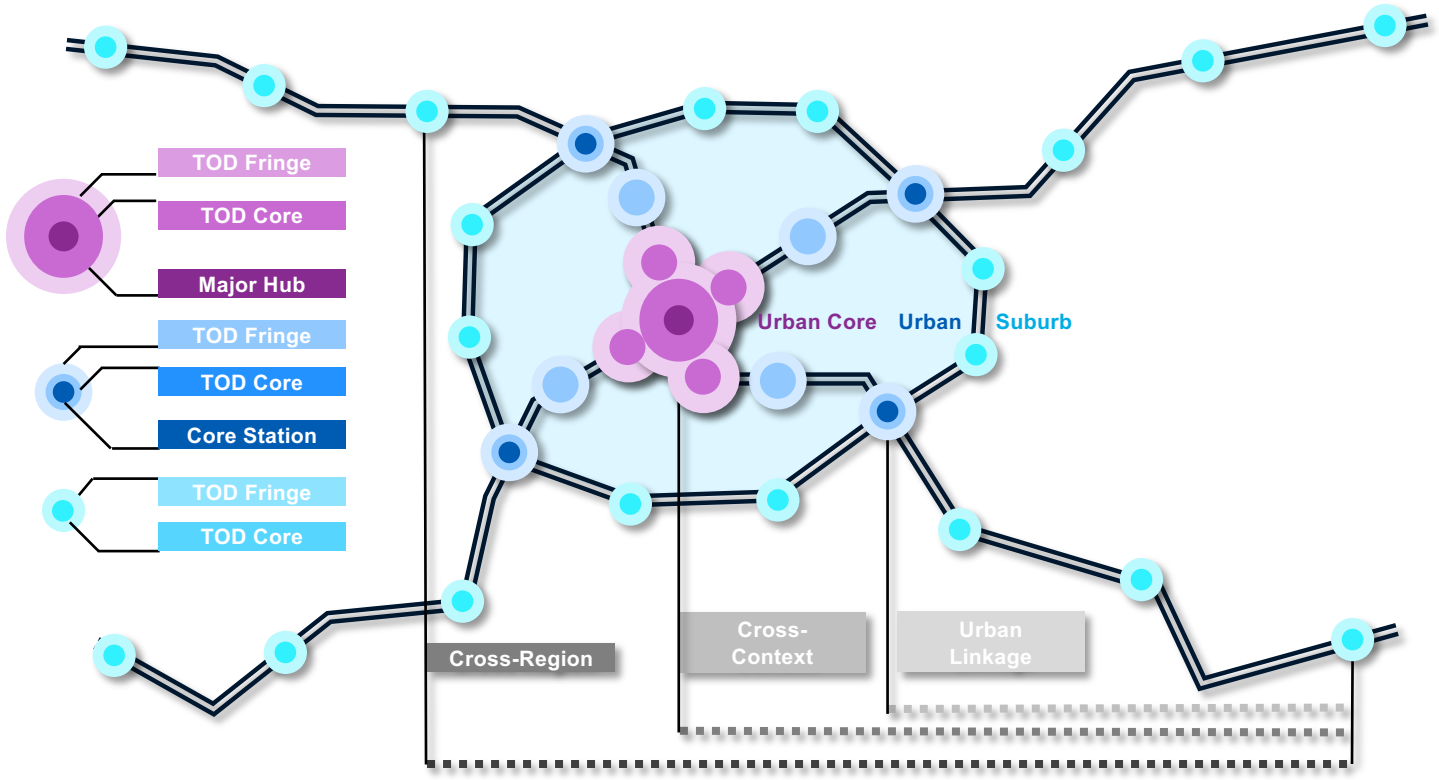
When to Invest? Phasing strategy

Based on capital recycle structure, phasing strategy should be aligned with the industrial transition



Where to Invest? TOD Context

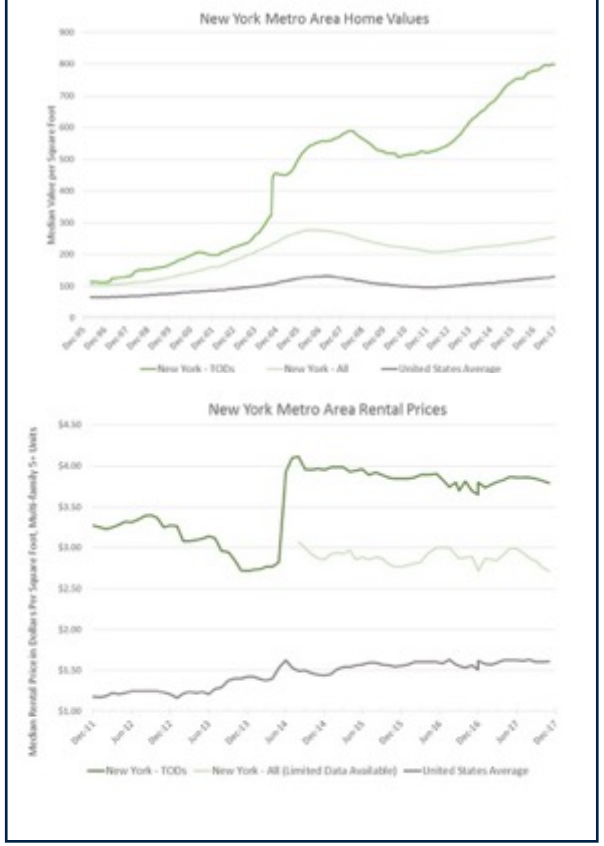
Urban structure based on public transport corridors creates various investment opportunities



Why Private Investors Invest in TOD?

Transit Oriented Development area offers long term real estate return

New York



Chicago

Los Angeles

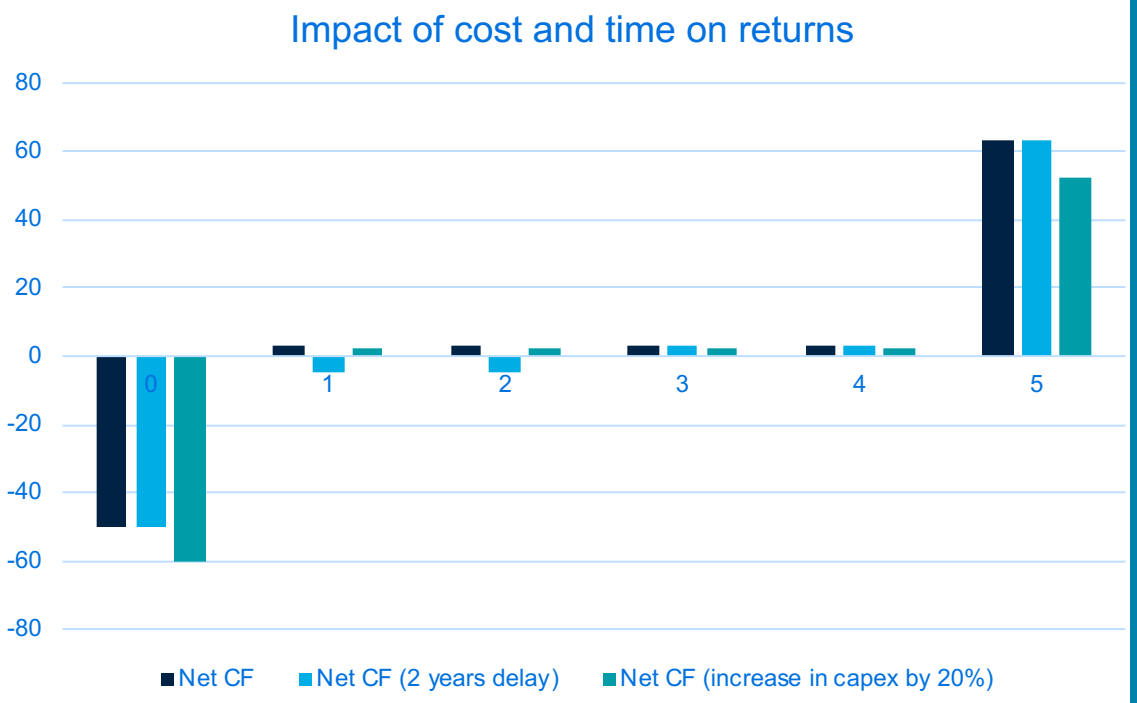
Source: Renne-Greschner TOD Index, www.TODINDEX.com, 2018

What is different about TOD?

TOD Real Estate investments have a different risk profile

	Traditional RE	Institutional Support	TOD RE
Time Horizon	Medium (3-7 Years)	TOD Plan	Long (> 7Years)
Sector	Core/Value Add/Opportunistic	Designated District Design Guideline / TOD Policy	Opportunistic (Development)
Area	Wide / Passive(Demand-Pull)	Transit Corridor Planning	Limited / Active(Supply-Pull)
Regulation	Broad & General	Designated land use	Specific & Detailed
Accessibility	Less Correlated / Ex-Post plan	FAR Incentive	High Correlated / Ex-Ante plan
Diversity	Limited / Naturally formed	Public Equity	Various / Artificially designed
Density	Regulated		Supported
Ownership	Private		Private / Public

Cash flows and impact of government decisions



❶ Base case – 9% return
- Cost 100/50% debt@10%
- 8% Net Operating Income
- Resell in year 5 with 10% increase

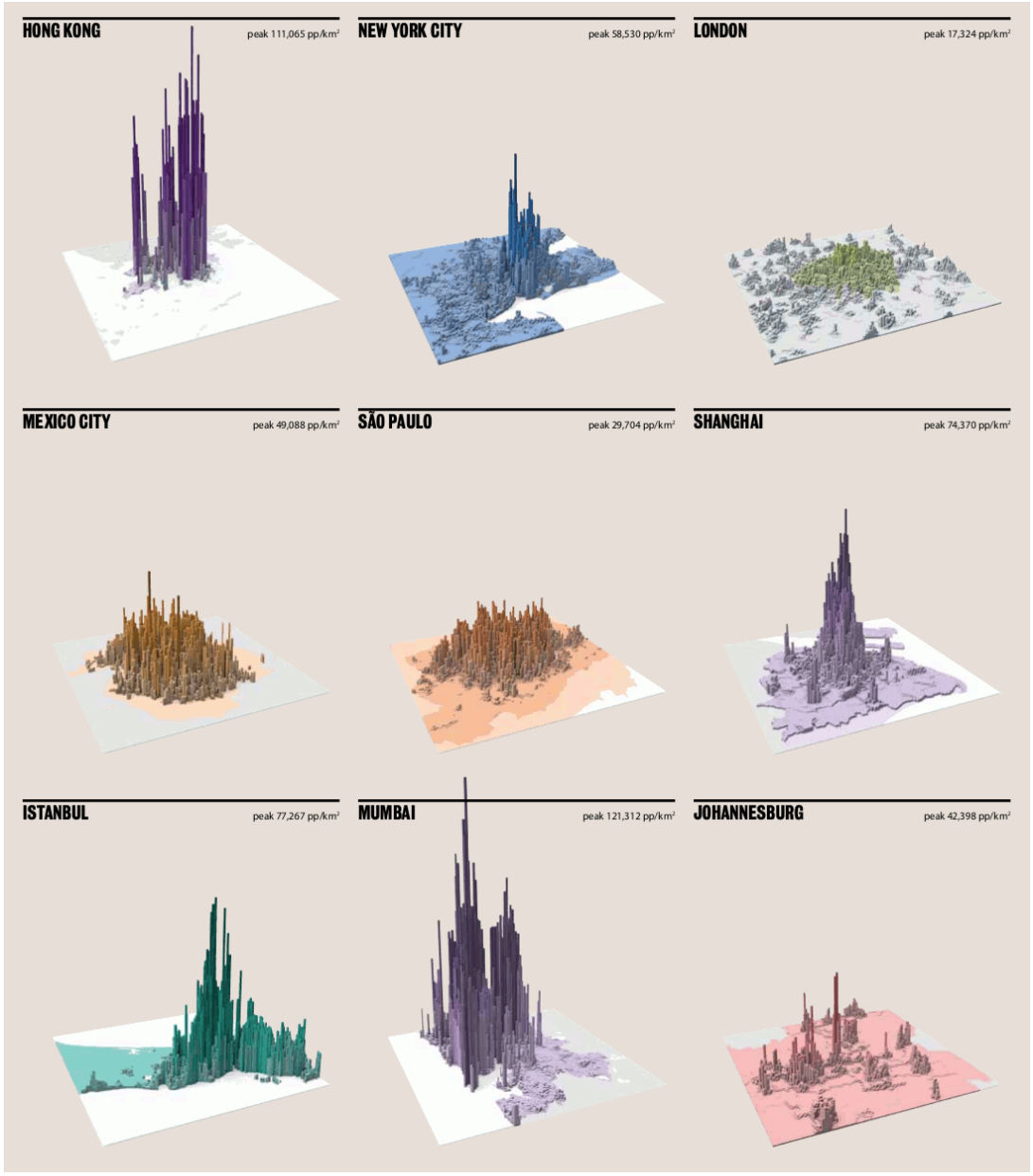
❷ Delay by 2 years in CF-3% return

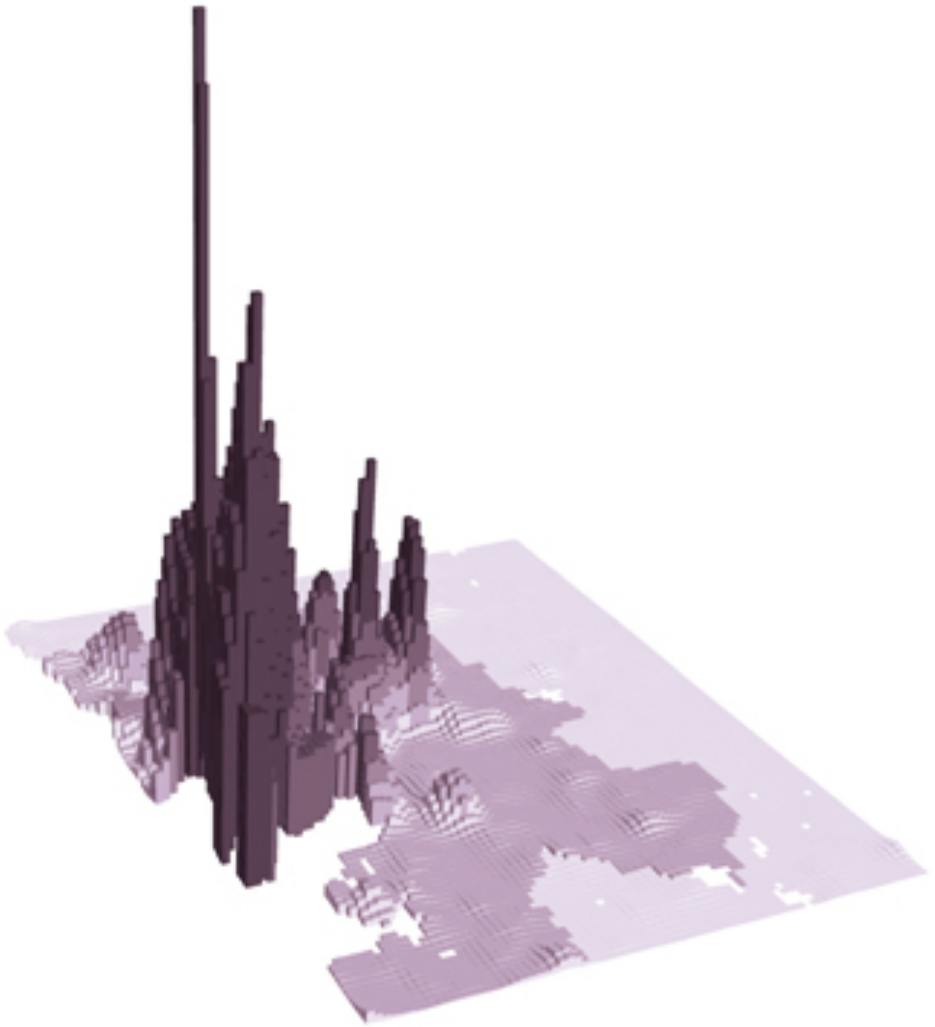
❸ Increase in upfront cost by 20%-0% return

TOD Value Creation

Leveraging Station Area Assets

THE SPIKY URBAN ECONOMY OF GLOBAL CITIES



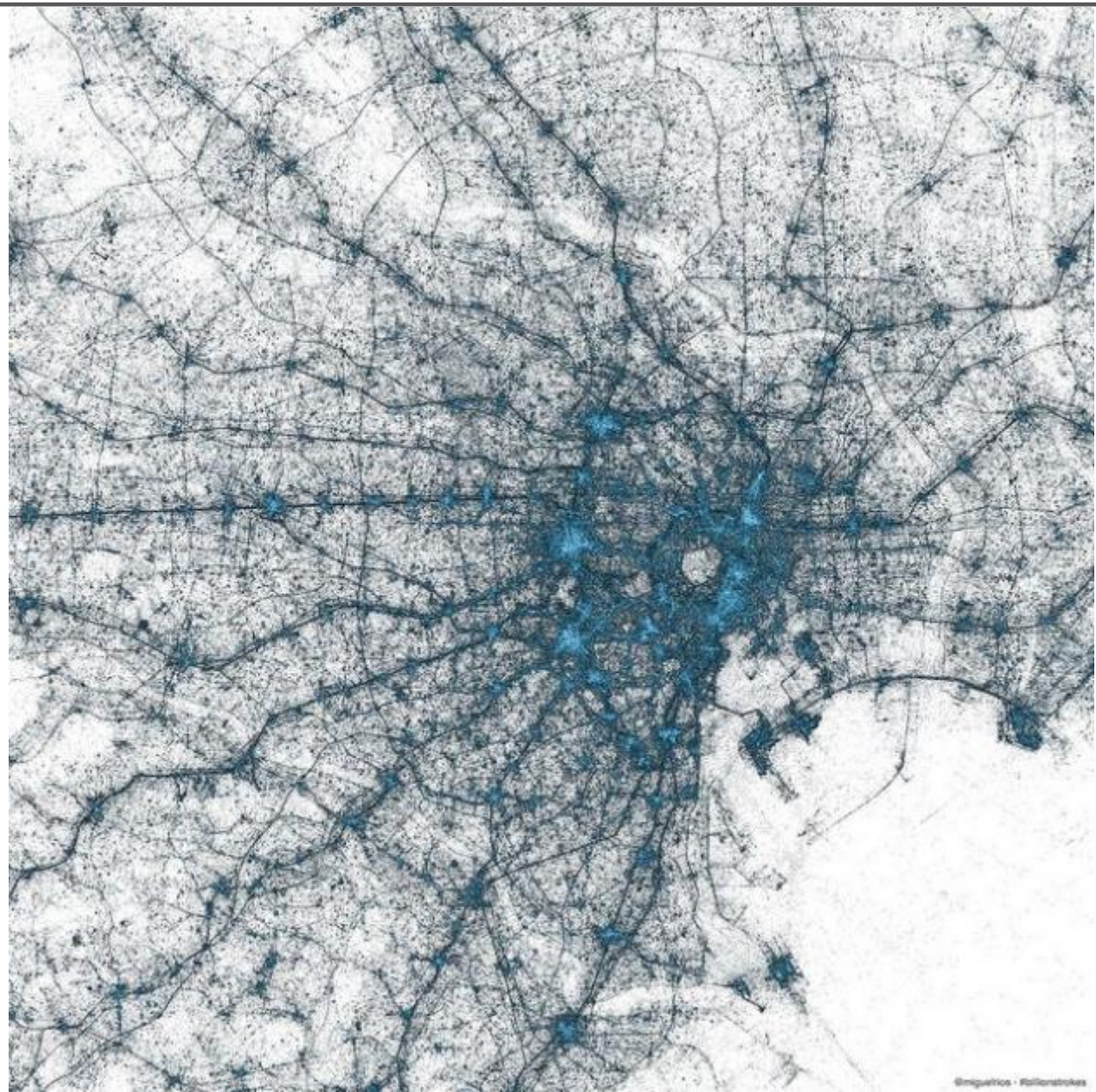


Source: LSE/Urban Morphology Institute

DENSITIES ARE UNEVEN, DEVELOPMENT UNEQUALLY DISTRIBUTED

- Articulated urban densities are shaped by the transport network
- Higher densities are enabled at well-connected nodes that are most accessible to the region
- These areas have the highest demand for space and therefore the highest land values

At right: example of high densities along well-connected Yamanote Line loop in Tokyo



NODE/PLACE/MARKET POTENTIAL VALUES FOR A CORRIDOR?

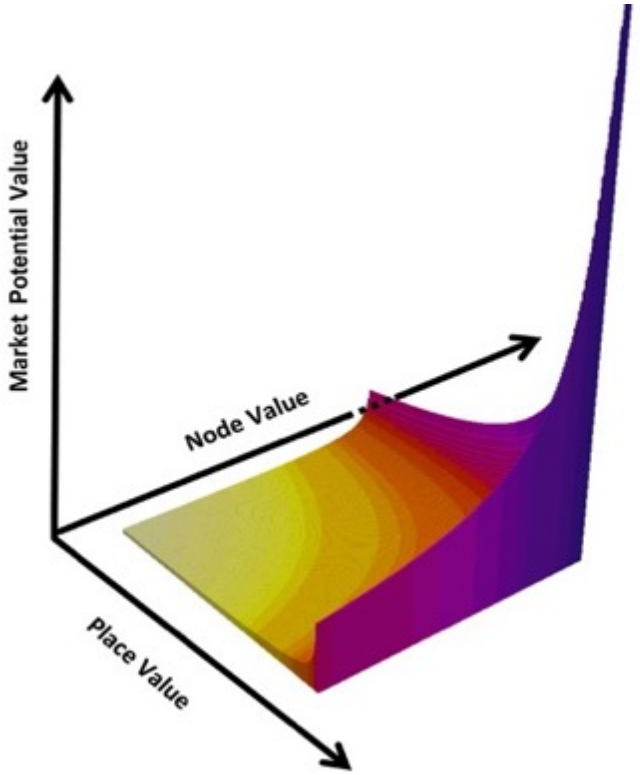
Node Value

Place Value

Market Potential Value

Example: Crossrail in London

3V FRAMEWORK: WHERE, WHEN AND HOW OF VALUE CREATION ?



❶ Quantify

Provides a quantified basis for understanding development opportunities around stations

❷ Facilitate Dialogue

Identifies misalignment and imbalances between connectivity, accessibility, place quality, market potential value, to support interagency dialogue

❸ Align vision

Achieves shared development vision with citizens, private developers and other stakeholders

INCREASING THE THREE VALUES

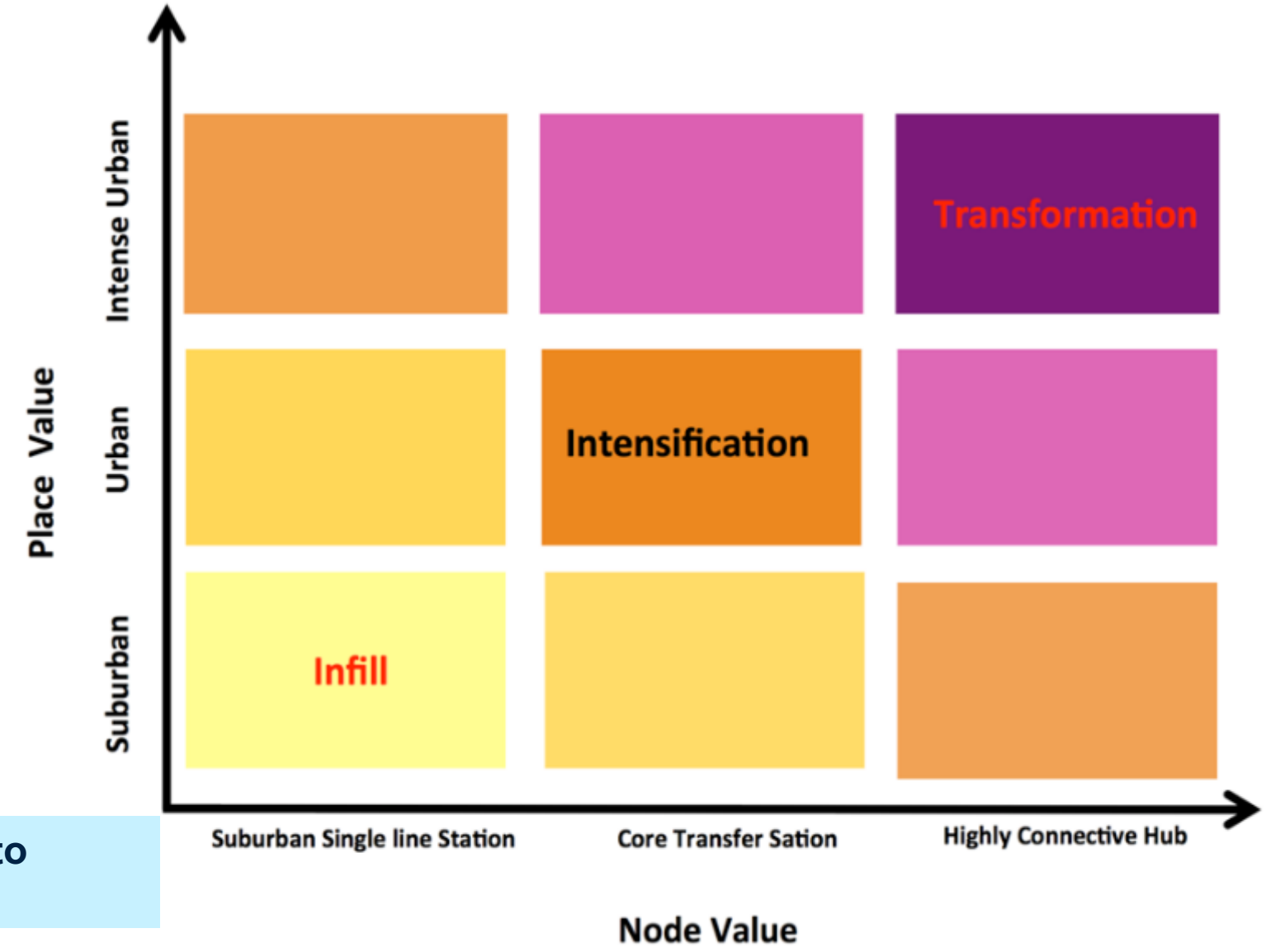
Node Value	Place Value	Market Potential Value
• Increase number of hubs and number of lines/modes they connect to • Interlink neighboring stations into clusters • Increase accessibility within the network for all	• Increase compactness (proximity to existing urban activity and short travel time to main destinations) • Increase diversity of uses • Increase concentration of commercial, cultural and education amenities • Design neighborhood that promote walking and biking • Create a vibrant public space	• Increase residential density • Increase job density • Increase human density • Increase diversity of land parcels to create a vibrant land market • Increase social diversity • Increase Floor Area Ratios
Address Imbalances		

Source: The 3V Framework (World Bank)

TO DECIDE HOW STATION AREAS WILL DEVELOP, AN EVIDENCE-BASED APPROACH IS USEFUL – THE 3V FRAMEWORK

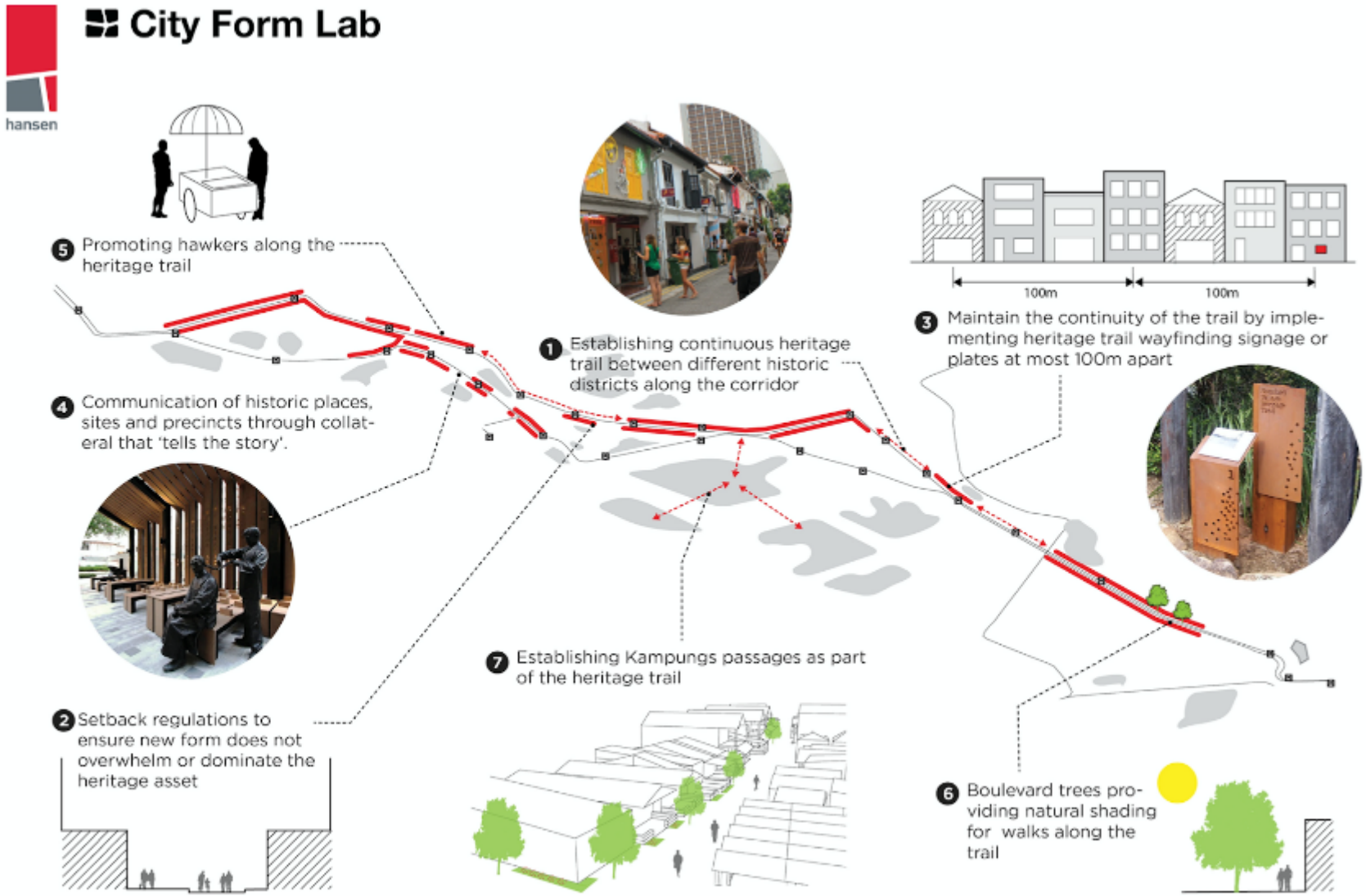
By understanding station's position in the urban landscape, you can understand how each can change.

- **Node value:** where it sits within the transit network
- **Place value:** the quality of the urban space around the station
- **Market potential value:** how favorable development is based on market dynamics (e.g. jobs/resident concentration)



Framework can help you decide how to develop around the different stations

ENVISIONING TRANSIT CORRIDORS: AN EXAMPLE FROM INDONESIA



STATION-LEVEL PLANNING FOR COMMUNITIES

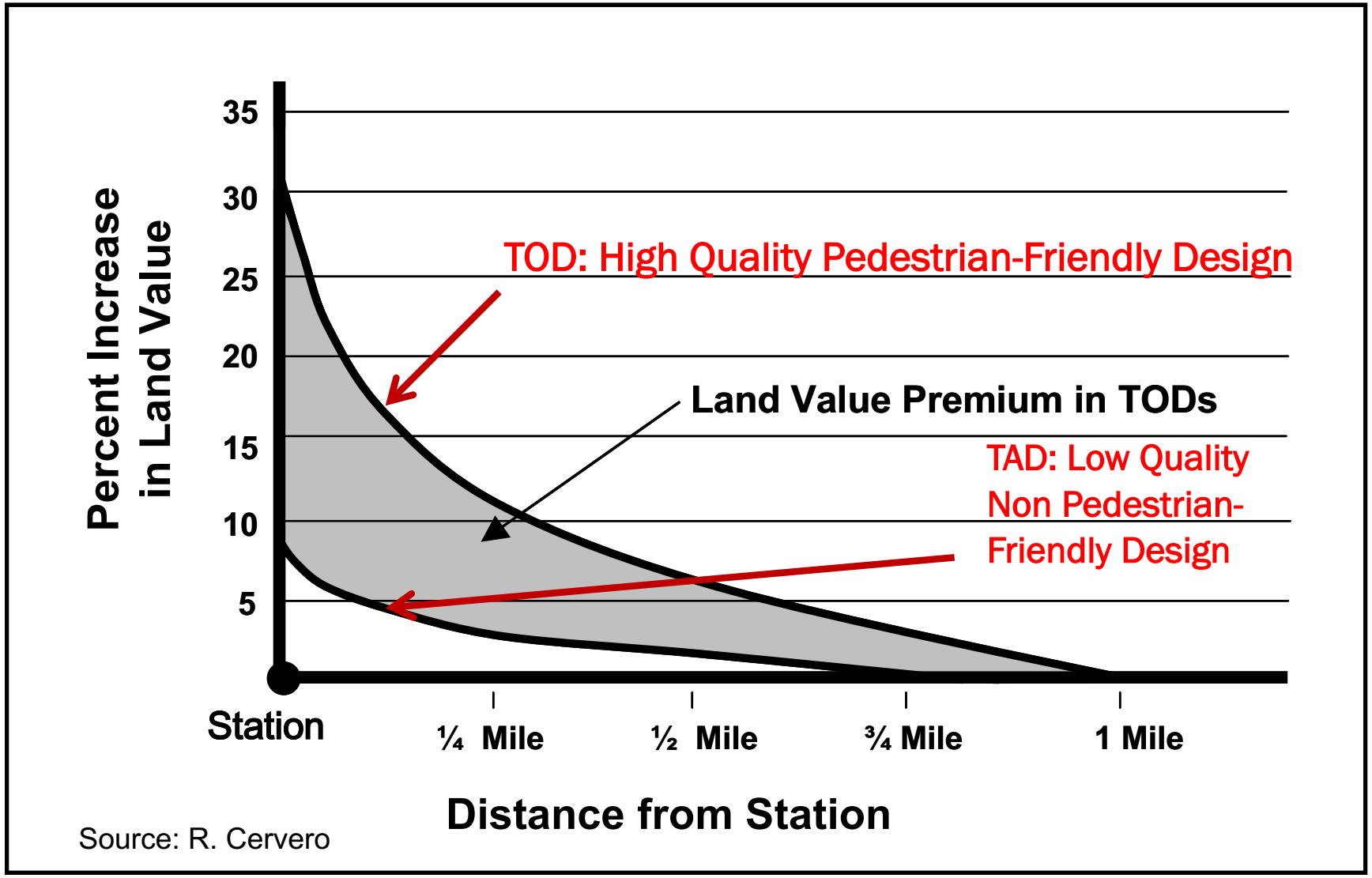
Best addressed through city level guidelines tailored to the context.

Also consider:

- *Resilience*
- *Smart city components*
- *Balanced use of energy uses*
- *Role of bikes, new electric mobility and new transport solutions*
- *Underground and elevated space management*

Source: TOD COP Knowledge Product

URBAN DESIGN'S IMPACT ON VALUE: BEYOND JUST TRANSIT-ADJACENT DEVELOPMENT



Source: R. Cervero

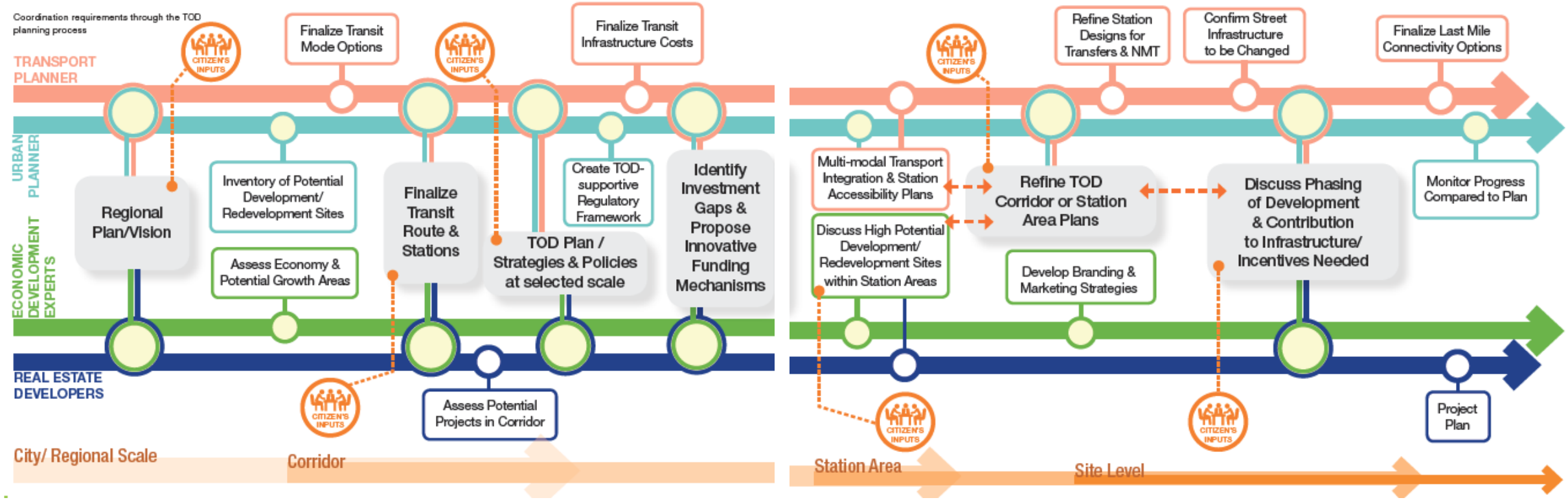
Why Invest in TOD from a private sector perspective?

Market Potential Value created by dense and flexible land use with high accessibility

	Non Transit Oriented Development Zone	Transit Oriented Development Zone
Government Incentive	• Limitation / Positive Regulation base	• **Incentive / Regulation Adjustment** • Planning: Higher FAR*, Flexible land use • Financial: Subsidies, Tax exemption, Lower interest
Accessibility	• Automobile-friendly access • Barriers on path between asset and mass transit	• **High accessibility through multi-modal node** • Seamless connection between asset and transit • Less car park required, less traffic congestion
Variety	• Restriction based on given land use plan • Difficult to adapt change in economy	• **Mixed use based on actual space demand** • Flexible use of land (ex. Commercial → Residential) • Positive interaction among various land use
Density	• Limited density based on given land use plan • High density area is already occupied • Less population and job	• **Additional density on given land use plan** • FAR Incentive provided by local government • Higher target population and job

*Floor-Area Ratio: Gross Floor Area(excluding underground) divided by land area (ex. 100% = 1,000sqm(Building GFA)/1,000sqm(Site area)

OVERALL TOD PROCESS



Source: TOD COP Knowledge Product

Guangzhou CADRE (凱達爾) International Transit Hub

Use : Office, Retail, Hotel,
Station, Bus Interchange
Floors : 46F, B4F
Area:Site : 39,000㎡
BUA : 360,000㎡
Underground : 88,000㎡
Schedule:will complete in 2019

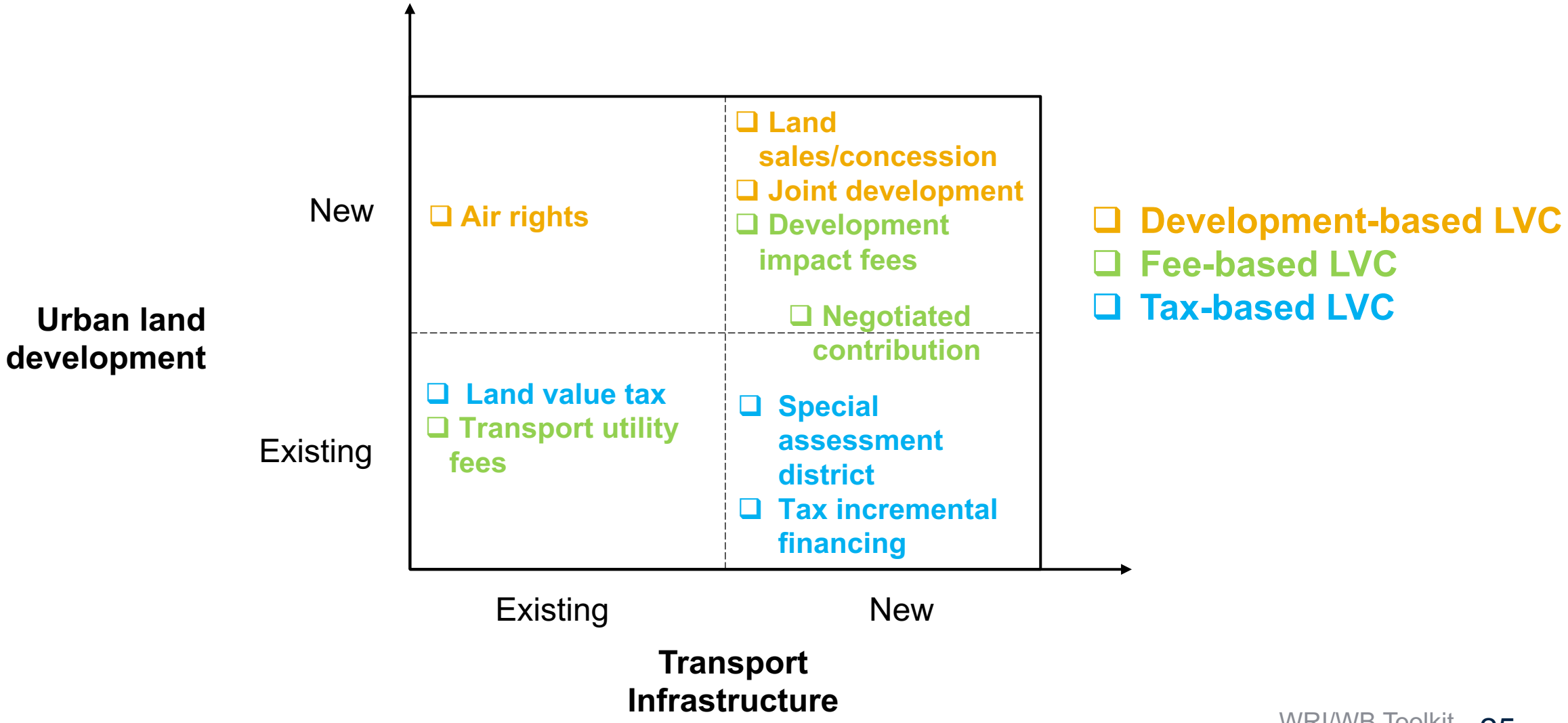

Intercity Rail
Station
Transit Plaza
HSR
Metro Lines
Parking

TOD LVC Examples

International

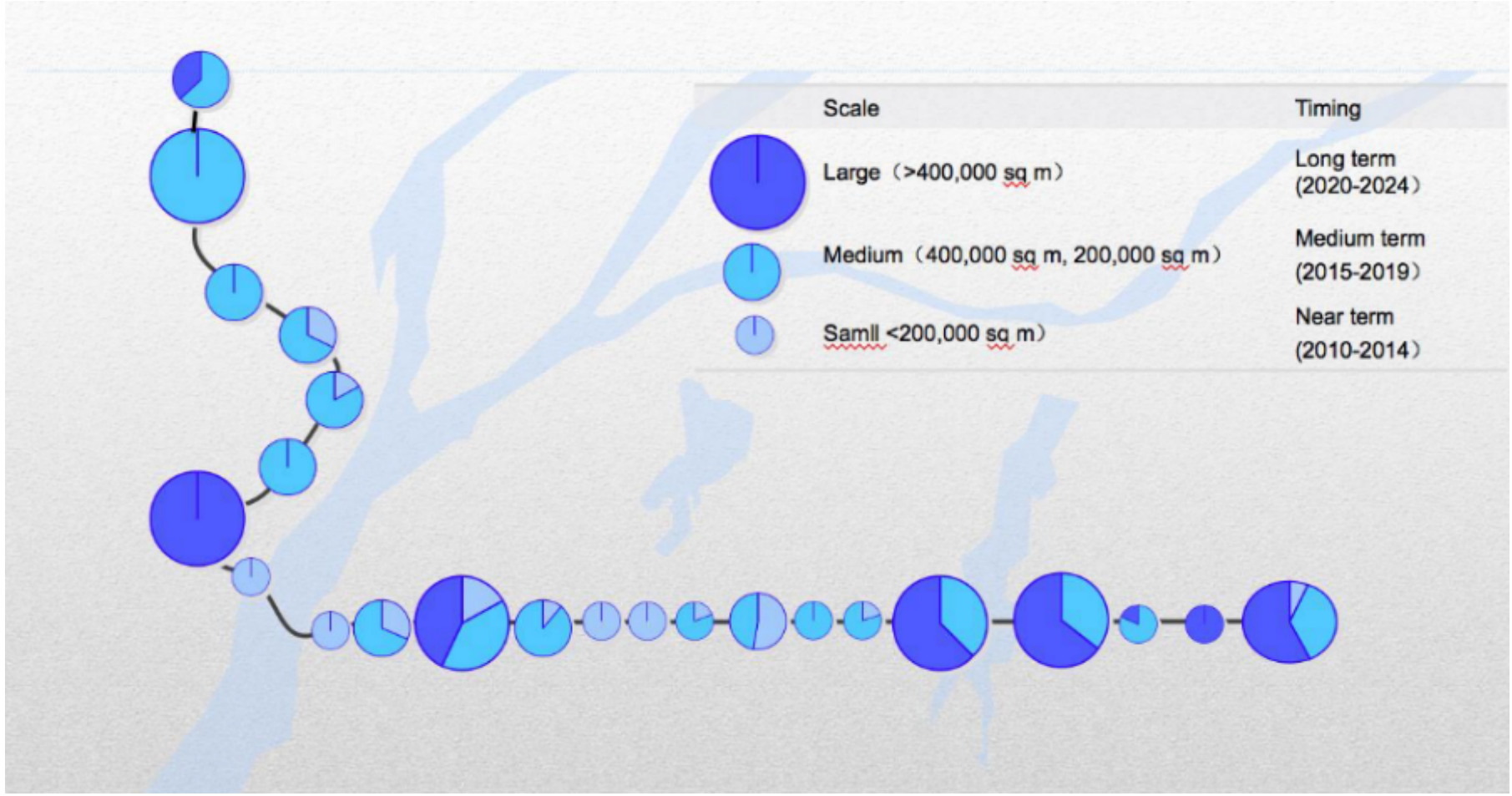
WORLD BANK GROUP
Transport

A BROAD RANGE OF LAND VALUE CAPTURE INSTRUMENTS



WORLD BANK GROUP
Transport

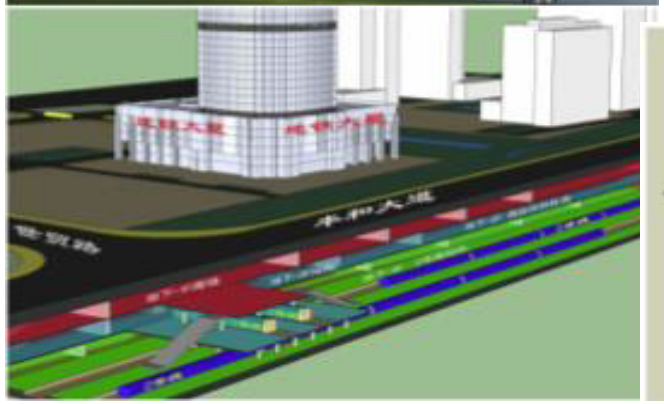
NANCHANG: SCALE AND SEQUENCE OF TOD

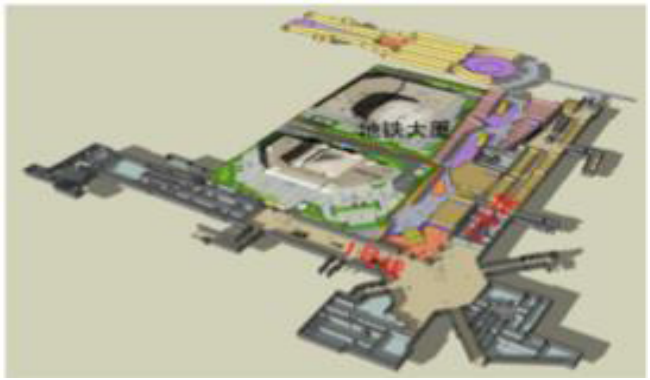


Metro Group adopted phased strategy for TOD along Line #1, starting from stations in downtown and move on to the suburbs.

As of 2016, estimated profits from TOD will cover 15-20% of the total construction costs of Line #1 and #2.

METRO MANSION STATION





45 story 193 m office

FAR 7.04

Partly used by Urban Rail Company

US$213 m investment

Development right transfer ($26 m)

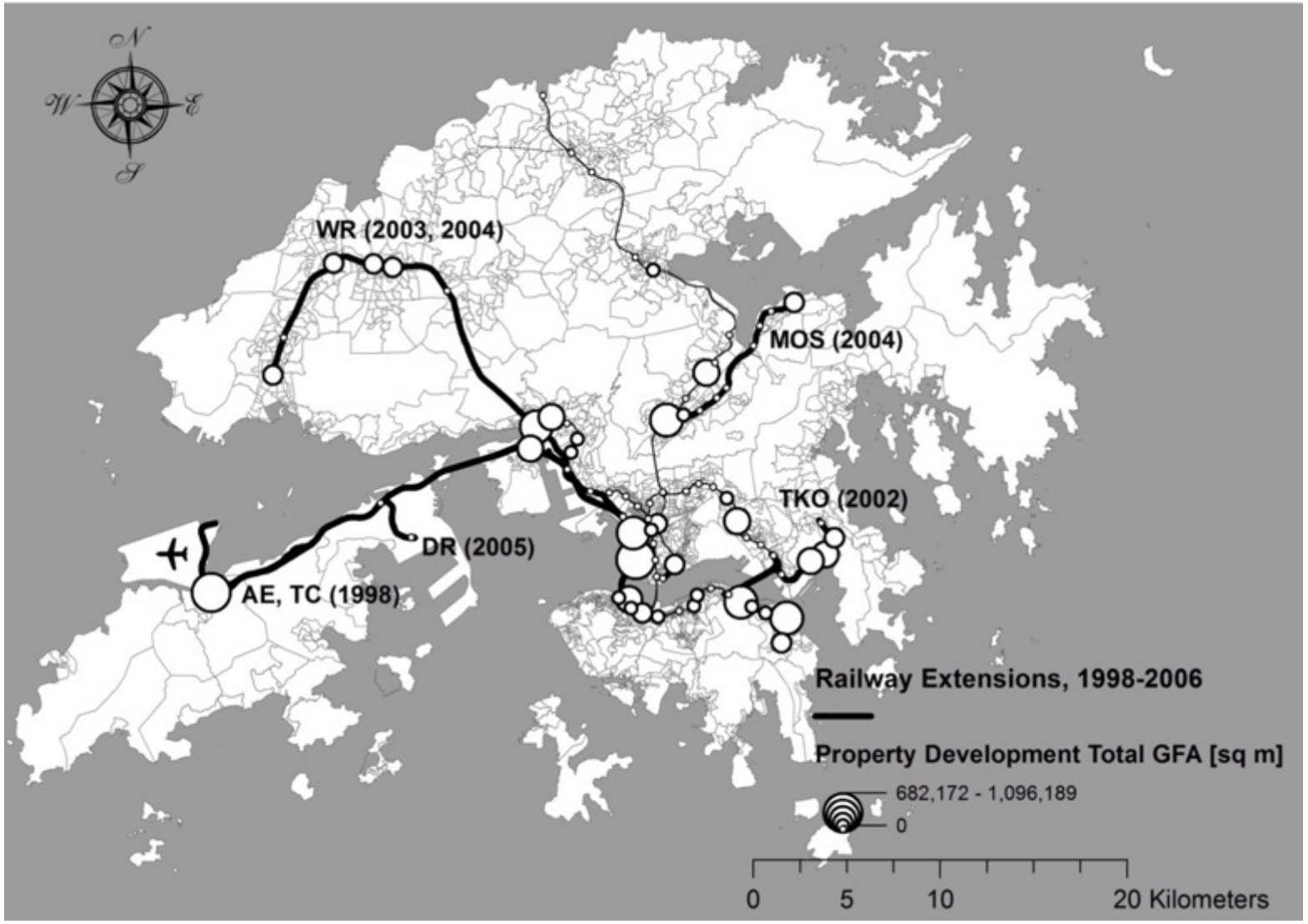
Expected to be paid by: and rental of part of the space or sale of rental units

NANCHANG:
STATION AREA DESIGN

Case study: Time Square station on Line #1

- A mixed-use, high density community with high-end apartments, retail stores, recreation facilities and offices
- Floor area of 388,827 square meter over 8.3 ha of land, FAR of 3.5.
- 80 % of revenue from land sales allocated to finance metro investment, in addition to sales of apartment and rental income from office buildings and commercial space, etc.

HKSAR: R+P MECHANISM

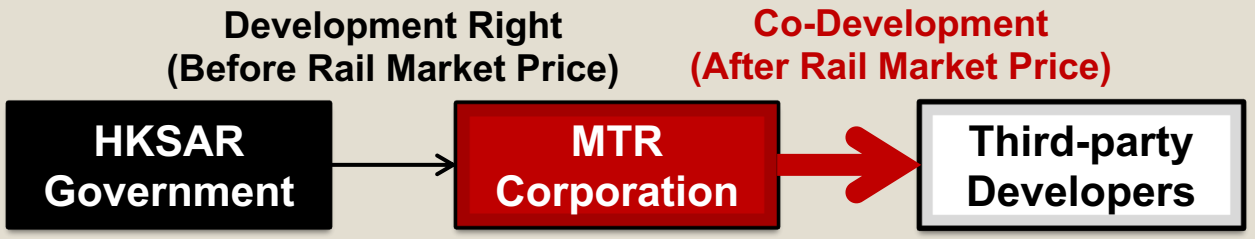


Sources: Murakami, 2010; Suzuki, Murakami, Hong and Tamayose, 2013

HKSAR: R+P MECHANISM

(a) Usual Government Land Leasing Program

(b) Rail Plus Property (R+P) Program

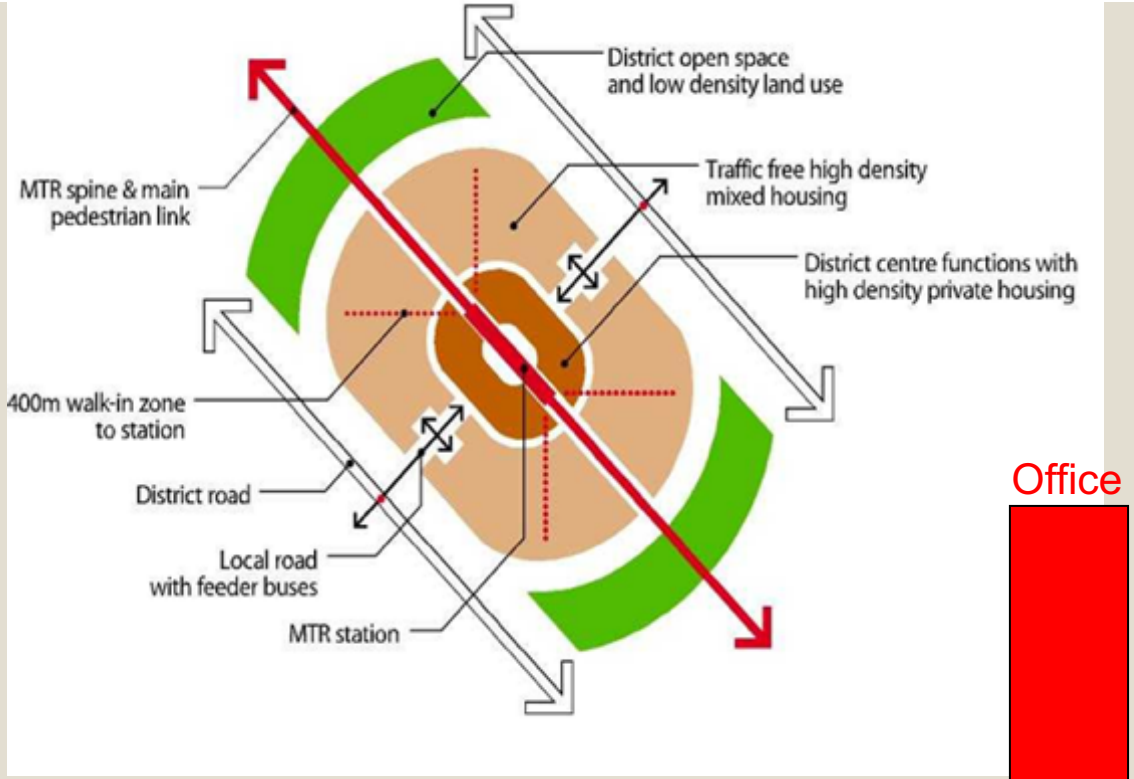


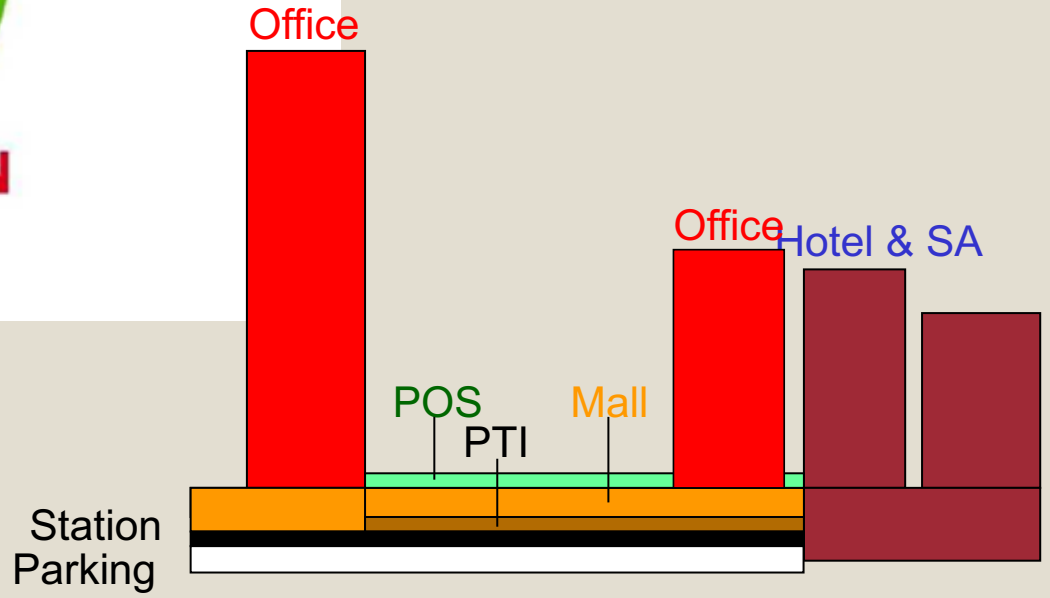
"Profit Sharing"

- **Profits in Agreed Proportions**
- **Assets In-Kind**
- **Upfront Payments**

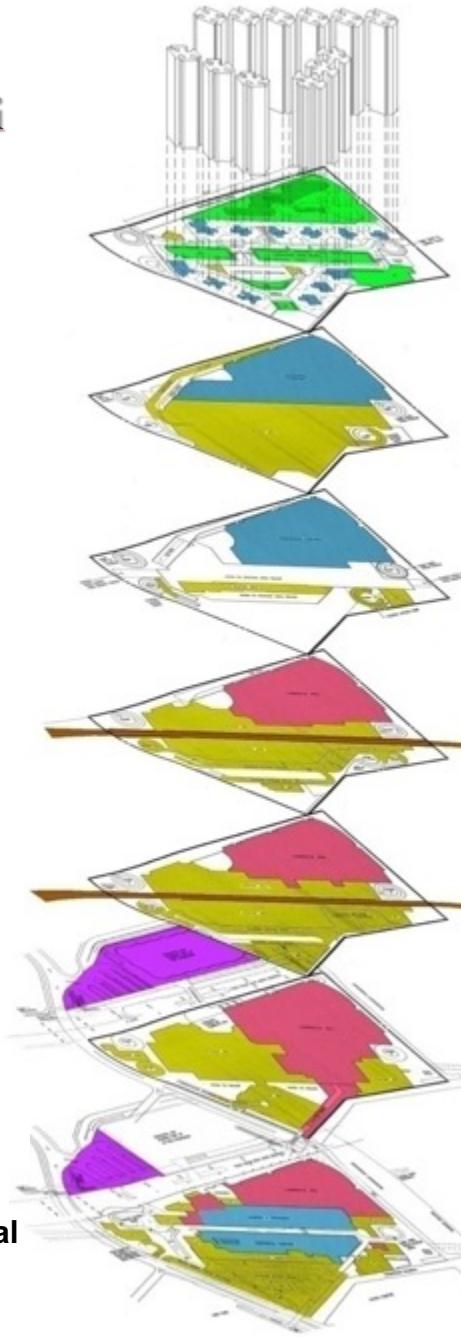
Sources: Murakami, 2010; Suzuki, Murakami, Hong and Tamayose, 2013

MTR'S CONCEPT OF TOD





Tsing Yi Station



- PTI
- Station Facilities
- Shopping
- Residential Facilities
- Recreational Facilities

Podium Garden

5/F (Park-and-ride Facilities and Residential Parking)

4/F (Residential Parking)

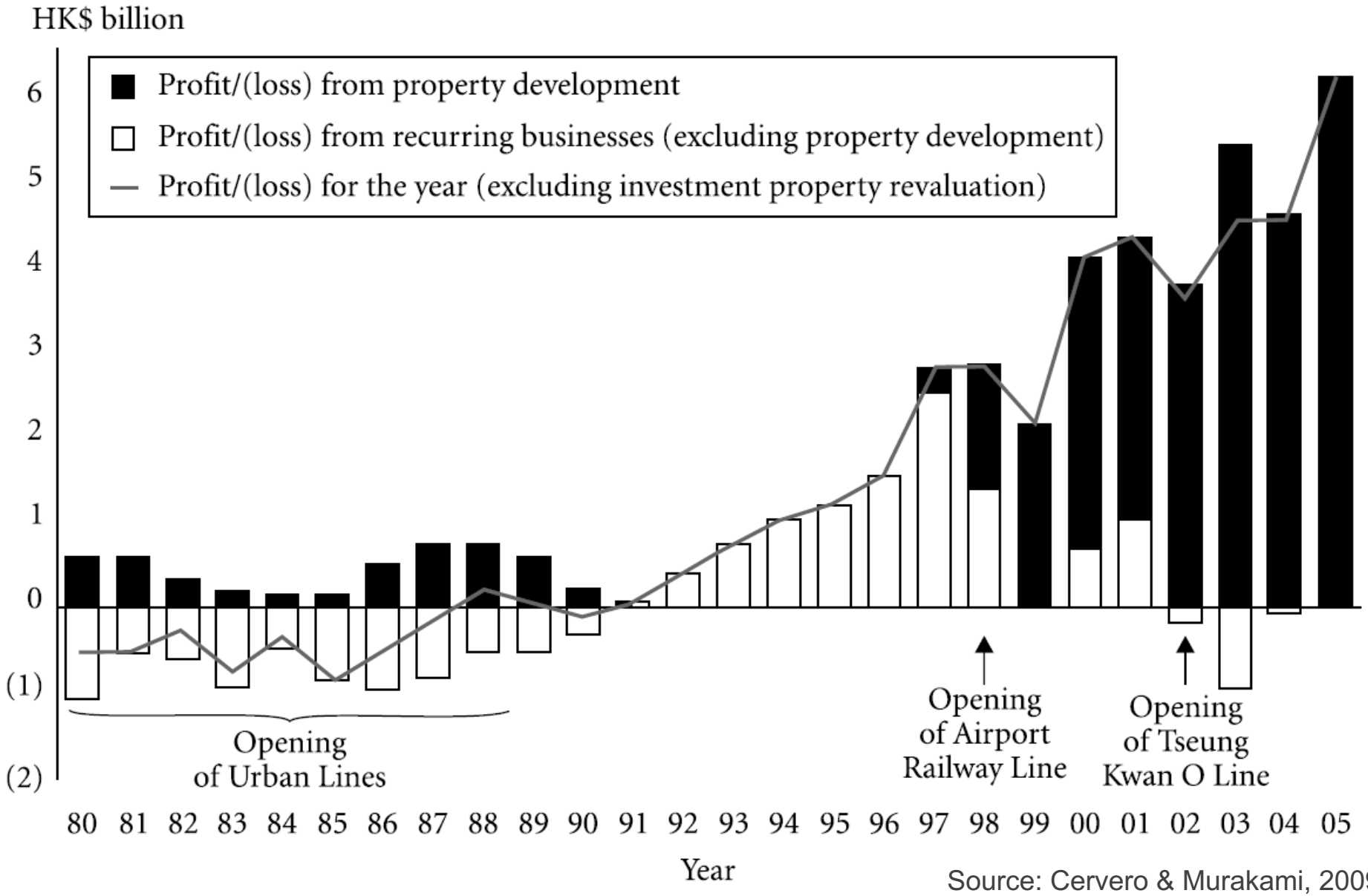
3/F (Platforms of Airport Express and Tung Chung Line, Shopping Mall)

2/F (Platforms of Airport Express and Tung Chung Line, Shopping Mall)

1/F (Station Concourse, Shopping Mall and PTI)

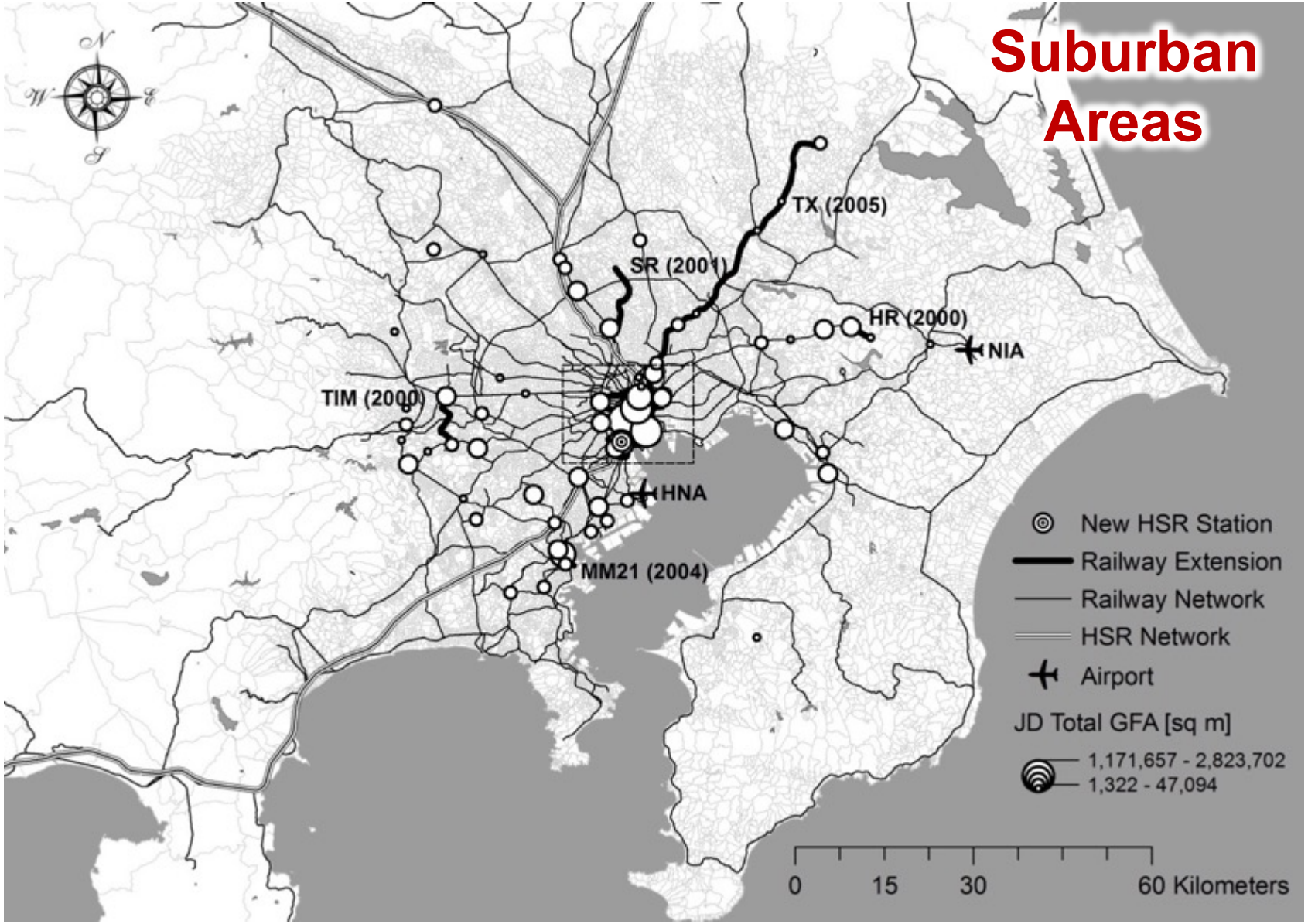
G/F (Loading/ Unloading, Shopping Mall, PTI and Parking)

HKSAR: R+P EVOLUTION



Source: Cervero & Murakami, 2009

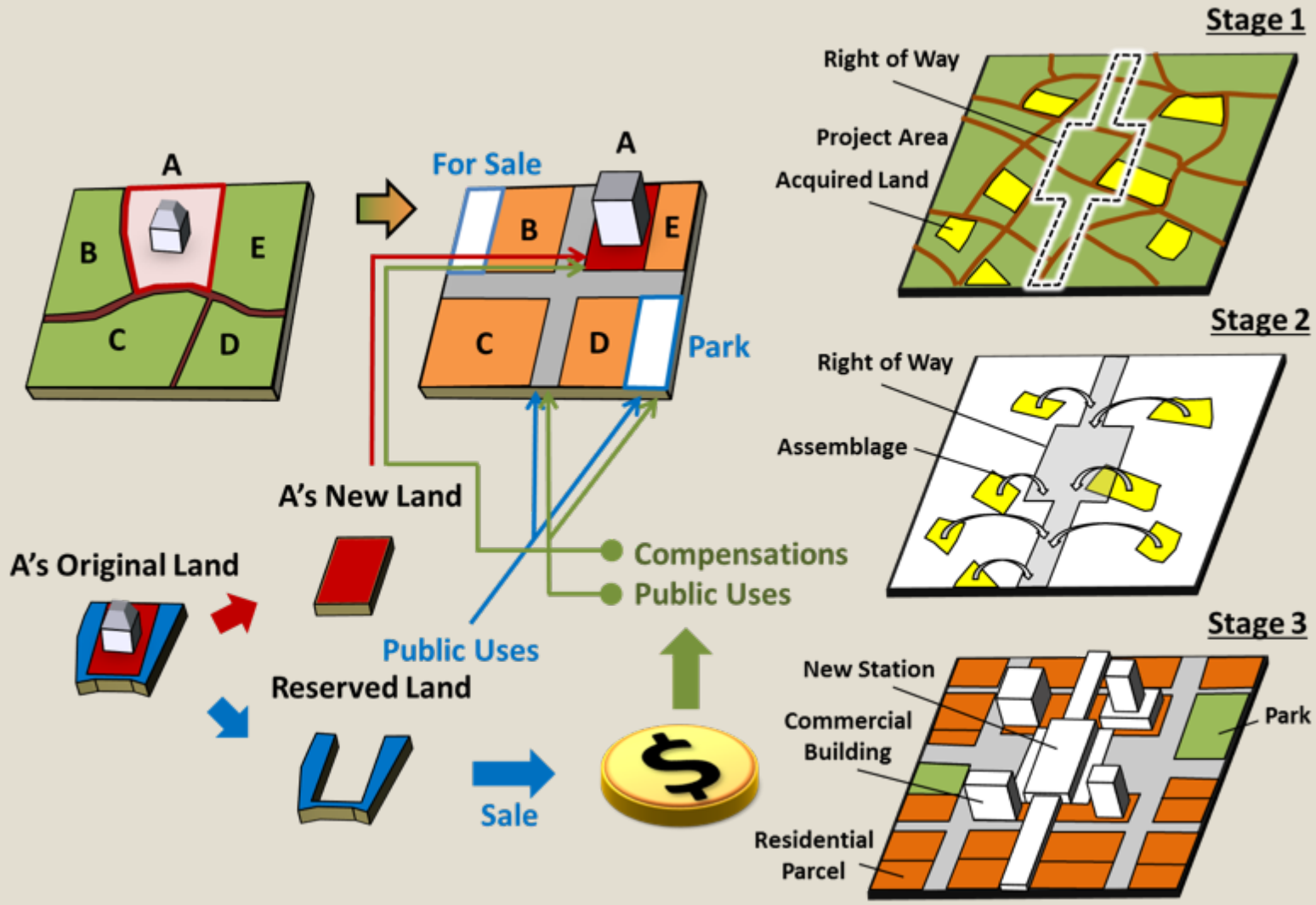
TOKYO: STRATEGIC EXTENSION



Sources: Murakami, 2010; Suzuki, Murakami, Hong and Tamayose, 2013

TOKYO: STRATEGIC EXTENSION

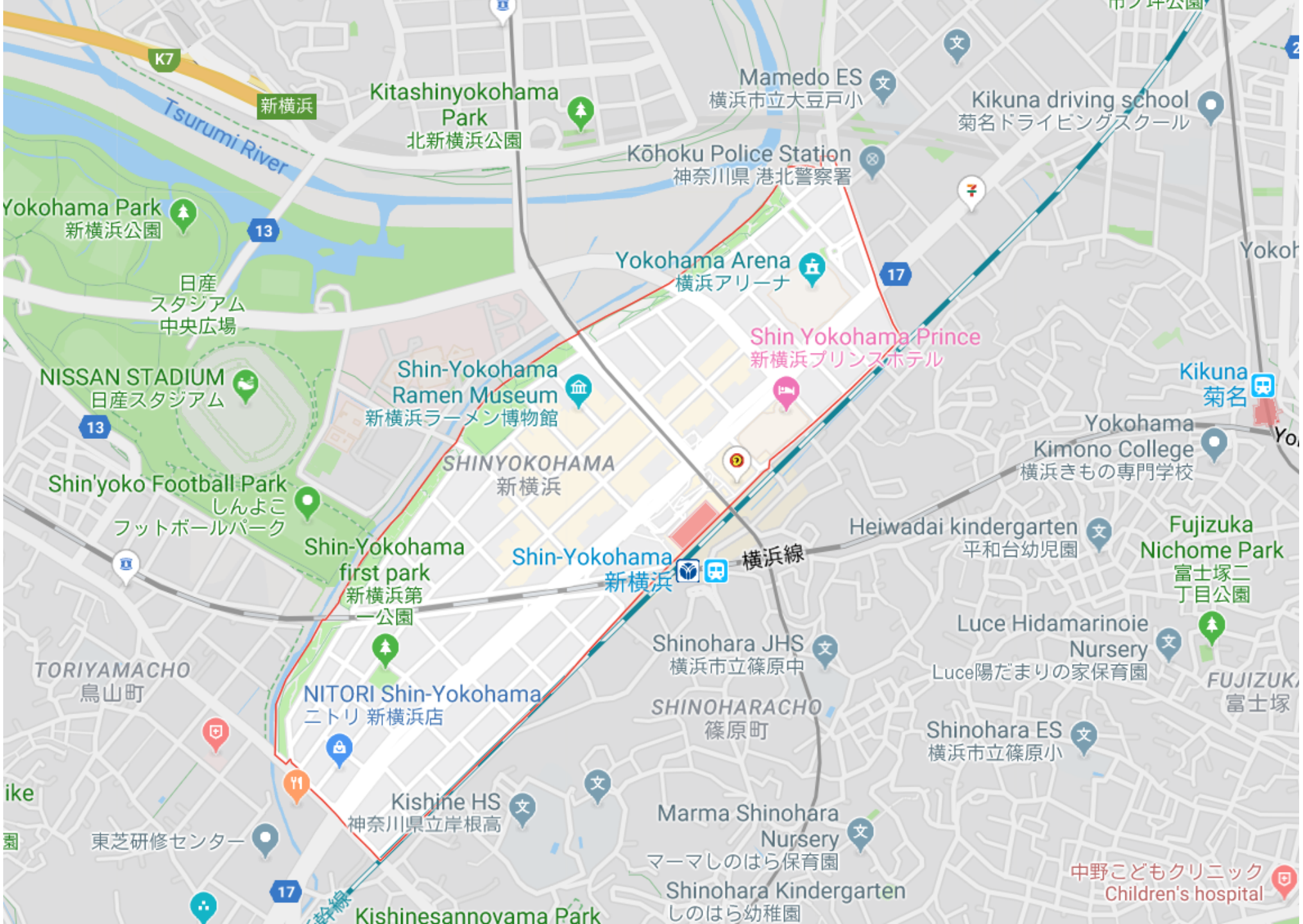
Inclusive Land Readjustment Scheme in Suburban Areas



Sources: Murakami, 2010; Suzuki, Murakami, Hong and Tamayose, 2013

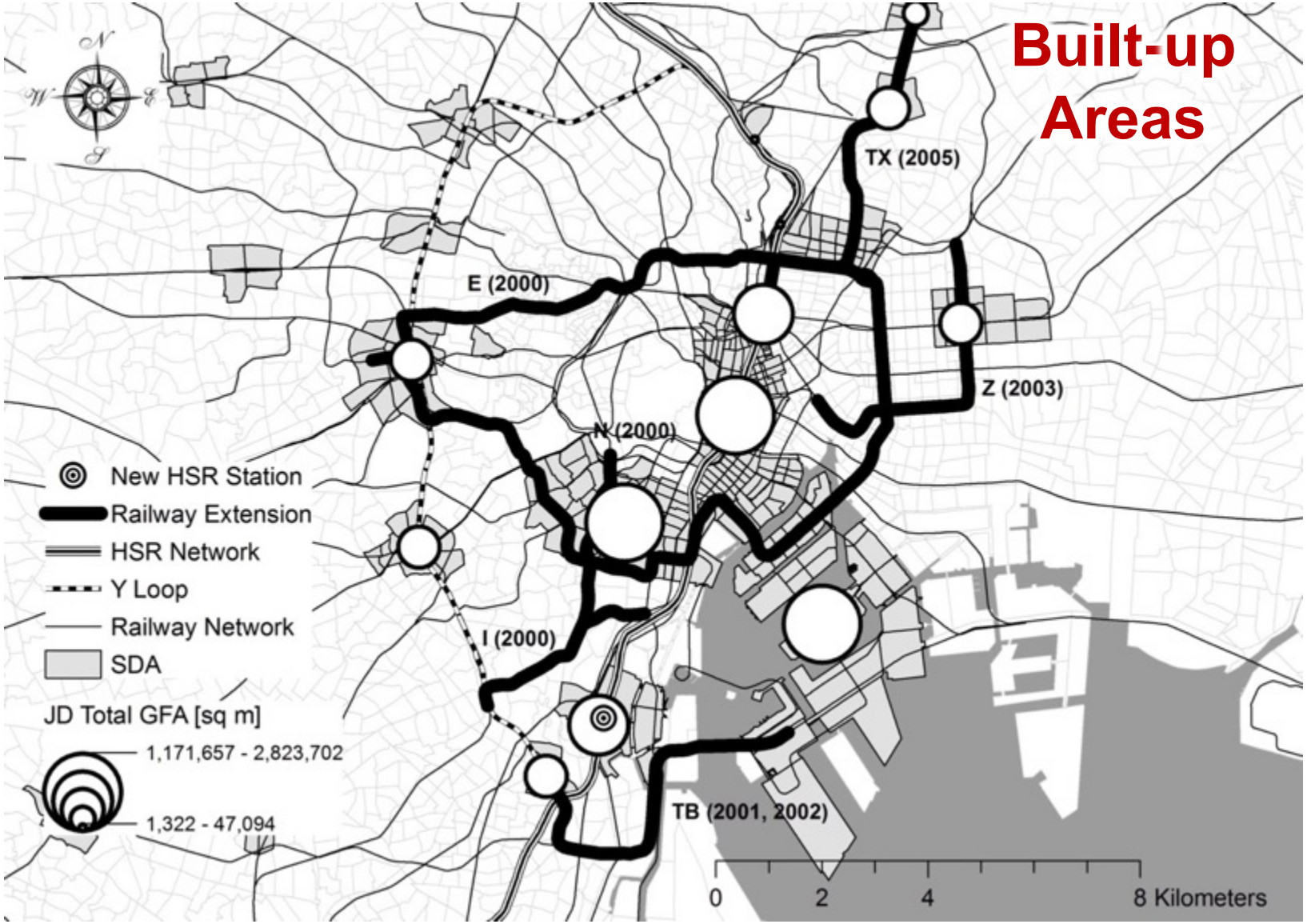
Shin-Yokohama District before Project

1962


K7
新横浜
Tsurumi River
Kitashinyokohama Park
北新横浜公園
Mamedo ES
横浜市立大豆戸小
Kikuna driving school
菊名ドライビングスクール
Kōhoku Police Station
神奈川県 港北警察署
Yokohama Park
新横浜公園
13
日産スタジアム
中央広場
Yokohama Arena
横浜アリーナ
17
Shin Yokohama Prince
新横浜プリンスホテル
NISSAN STADIUM
日産スタジアム
Shin-Yokohama Ramen Museum
新横浜ラーメン博物館
Kikuna
菊名
Yokohama Kimono College
横浜きもの専門学校
SHINYOKOHAMA
新横浜
Shin'yoko Football Park
しんよこフットボールパーク
Shin-Yokohama first park
新横浜第一公園
Shin-Yokohama
新横浜
横浜線
Heiwadai kindergarten
平和台幼児園
Fujizuka Nichome Park
富士塚二丁目公園
Luce Hidamarinoie Nursery
Luce陽だまりの家保育園
Shinohara JHS
横浜市立篠原中
TORIYAMACHO
鳥山町
NITORI Shin-Yokohama
ニトリ 新横浜店
SHINOHARACHO
篠原町
Shinohara ES
横浜市立篠原小
FUJIZUKA
富士塚
Kishine HS
神奈川県立岸根高
東芝研修センター
Marma Shinohara Nursery
マーマしのはら保育園
Shinohara Kindergarten
しのはら幼稚園
中野こどもクリニック
Children's hospital
17
Kishinesannoyama Park


新横浜公園
Yokohama Arena
横浜アリーナ
Shin-Yokohama
Ramen Museum
新横浜ラーメン博物館
Shin Yokohama Prince
新横浜プリンスホテル
NISSAN STADIUM
日産スタジアム
13
Shin-Yokohama
新横浜
横浜線
Tokaido-Shinkansen
SHINOHARACHO
篠原町
Kishine HS
神奈川県立岸根高
17

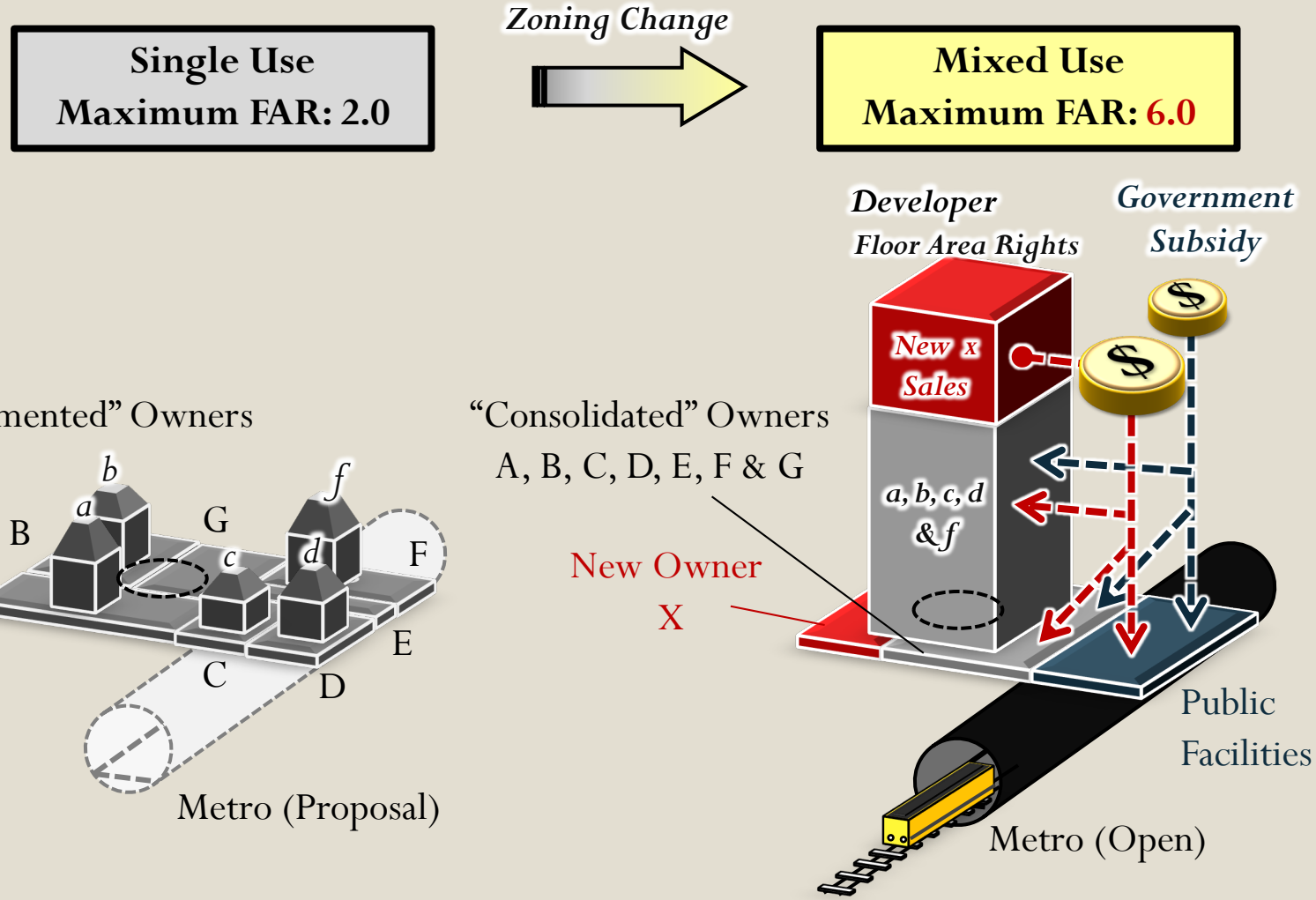
TOKYO: STRATEGIC REGENERATION



Sources: Murakami, 2010; Suzuki, Murakami, Hong and Tamayose, 2013

TOKYO: STRATEGIC REGENERATION

Inclusive Urban Redevelopment Scheme in Built-up Areas



Sources: Murakami, 2010; Suzuki, Murakami, Hong and Tamayose, 2013

Corridor Development Strategy

In Dar es Salaam, Tanzania

BRT as an opportunity

- Improved mobility, access to jobs, and better quality services for the urban poor
- Catalyst for rejuvenation and urban upgrading, including improvements in streetscape, pedestrian mobility & overall environment
- Potential to curb expansion and encourage further densification

Approach

IMPROVING CORRIDOR CAPACITY

Corridor's Population Change

2017
1,037,000 people

2032
1,800,000 people

*Based on Medium Growth Scenario

Corridor's Employment Offer

2017
310,000 jobs

650,000 jobs
2032

* Formal Jobs

New Homes Needed

2032
218,000 homes
(new & refurbished = over 400,000 units)

Open Space

1,560 Ha
2032

IMPROVING CORRIDOR FACILITIES

1 NEW HOSPITAL

24 HEALTH CENTRES
NEW & UPGRADED

96 PRIMARY SCHOOLS
UPGRADED + 92 UPGRADED SECONDARY SCHOOLS

4 COLLEGES
NEW & UPGRADED

12 SPORT FACILITIES
NEW & UPGRADED

CORRIDOR LAND VALUE CAPTURE CAPABILITY:

Proposed Land Value Capture could save...

US$ 4.4 Bn

76,000
AFFORDABLE HOMES

MOBILITY IMPROVEMENTS

Provision of new roads & links

2032
203 km
OF NEW ROADS
48%
EXTRA CAPACITY

Extra BRT users

2017
155,000
PASSENGERS DAILY

2032
395,000
PASSENGERS DAILY

NEW INFRASTRUCTURE

2032
69.1 km
NEW BULK PIPES AND CABLES FOR WATER, SEWERAGE AND ELECTRICITY

Access to Sanitation

2017 54,000 homes

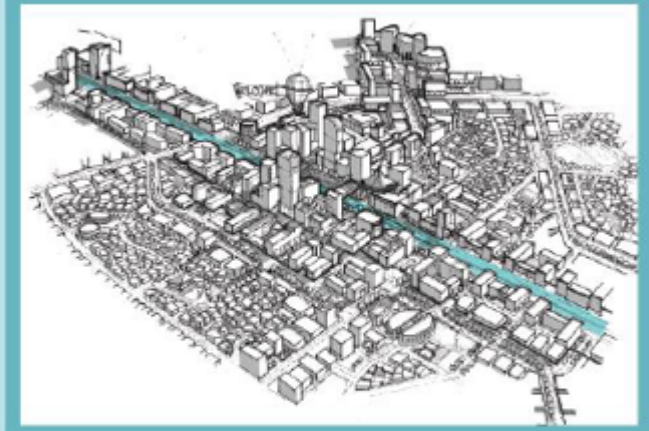
2032
450,000
homes

Access to Electricity

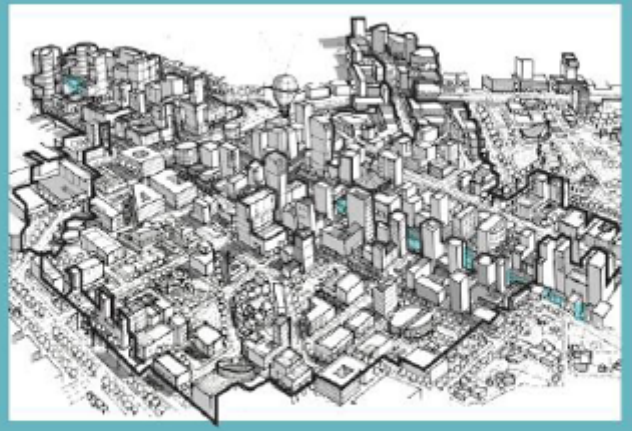
2017 90,000 homes

2032
450,000
homes

Overview of Scenarios



SCENARIO 1: POLYCENTRIC



SCENARIO 2: SUPER DISTRICT

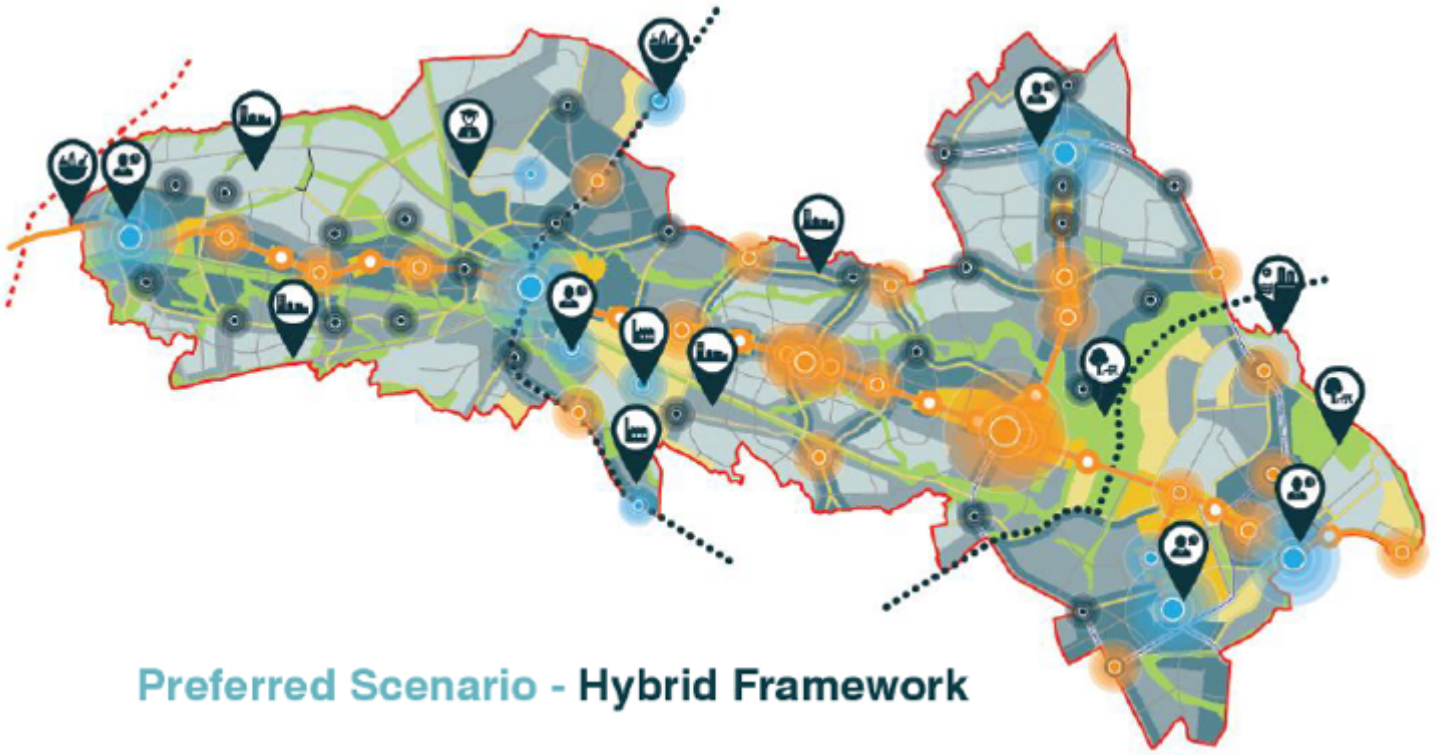
SCENARIO 3: HIGH DENSITY CORRIDOR

PROVISION OF MORE DIVERSE HOUSING & REAL ESTATE OFFER

BETTER "LAST MILE" CONNECTIVITY VIA SAFE, DIRECT AND PLEASANT ROUTES

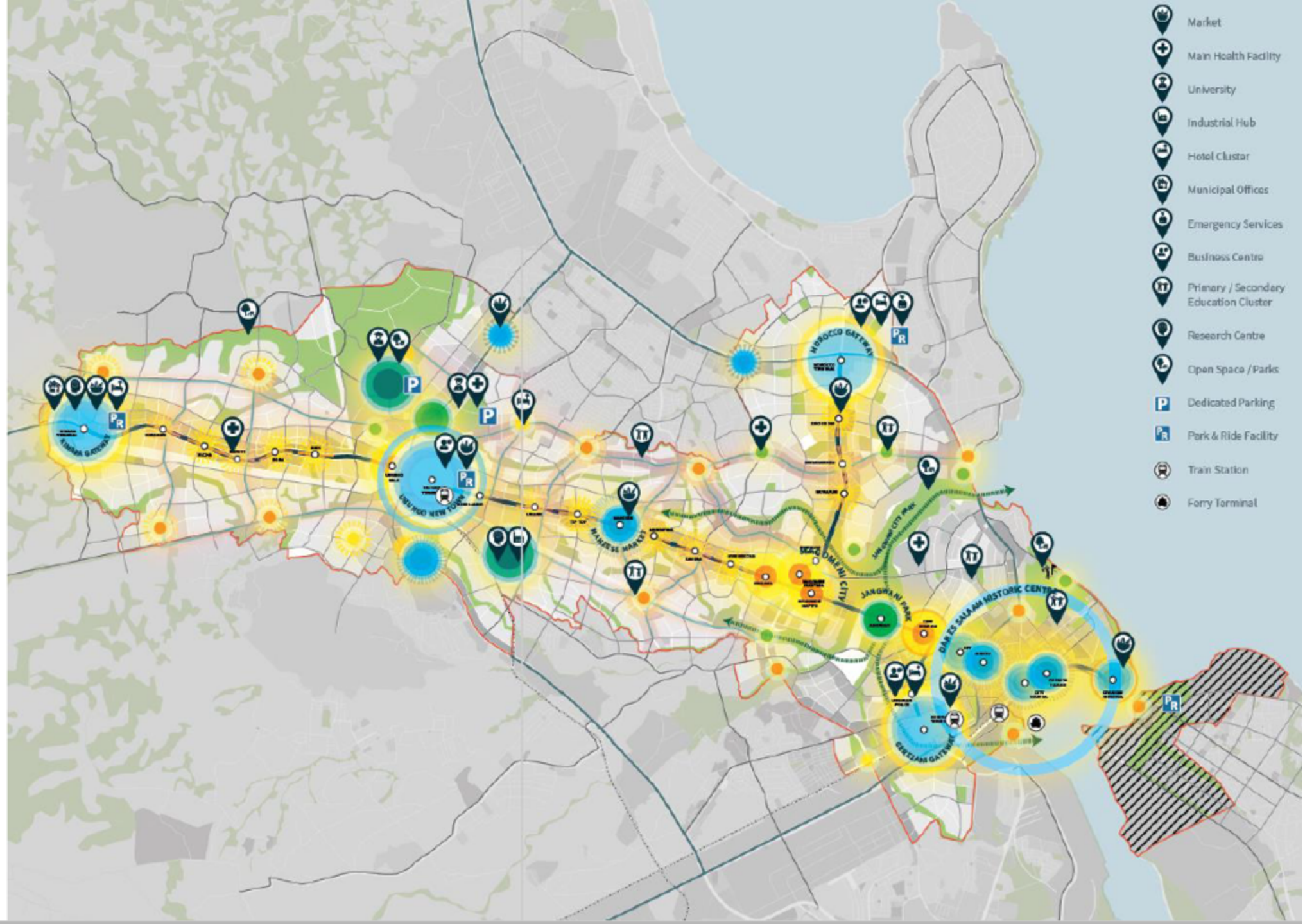
FOCUS INFRASTRUCTURE & DEVELOPMENT TO DELIVER TRANSFORMATIVE CHANGE

IMPROVE SERVICE STANDARDS TO SUPPORT DENSITY AND MAXIMISE RETURN ON INVESTMENT

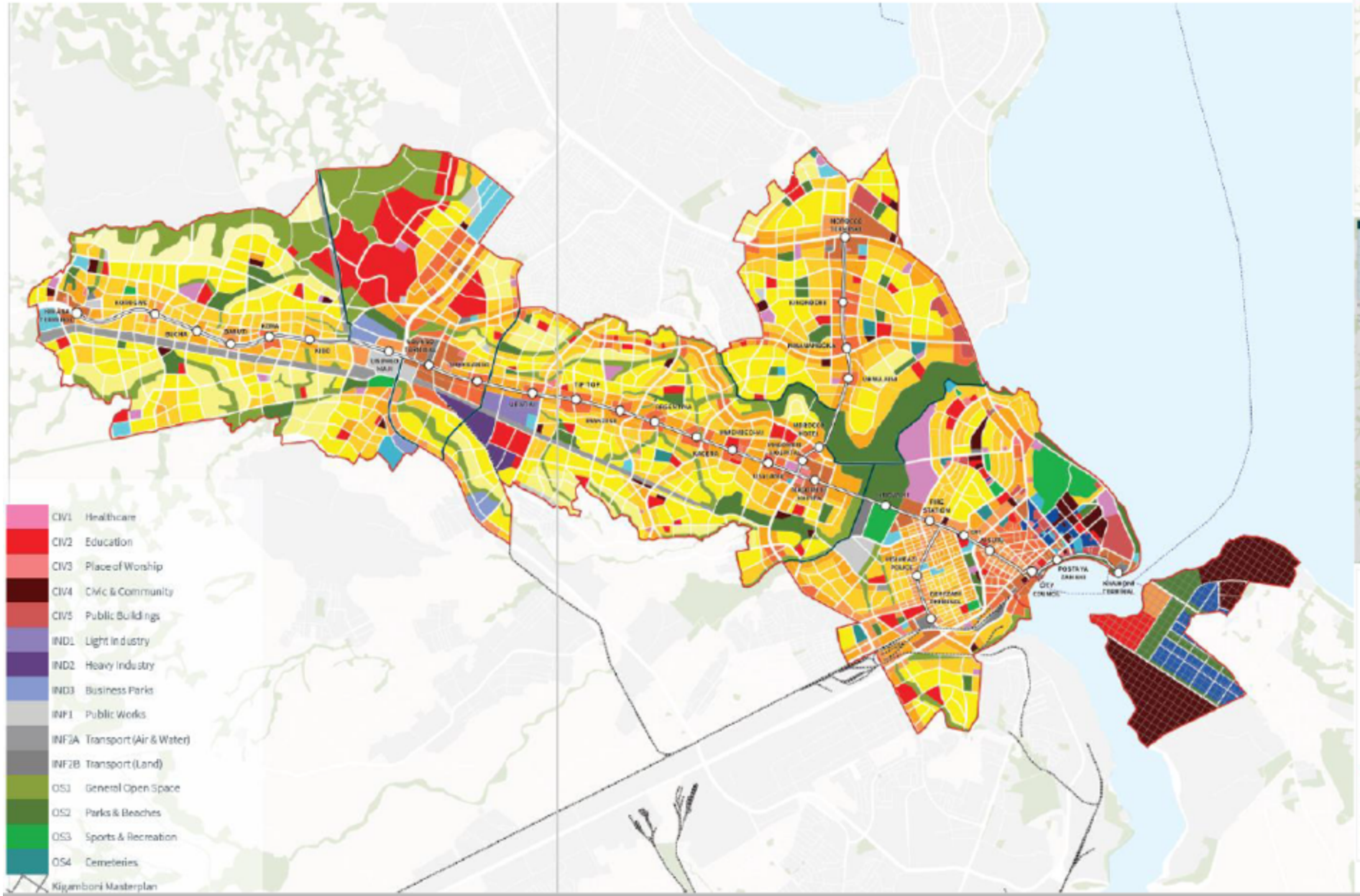


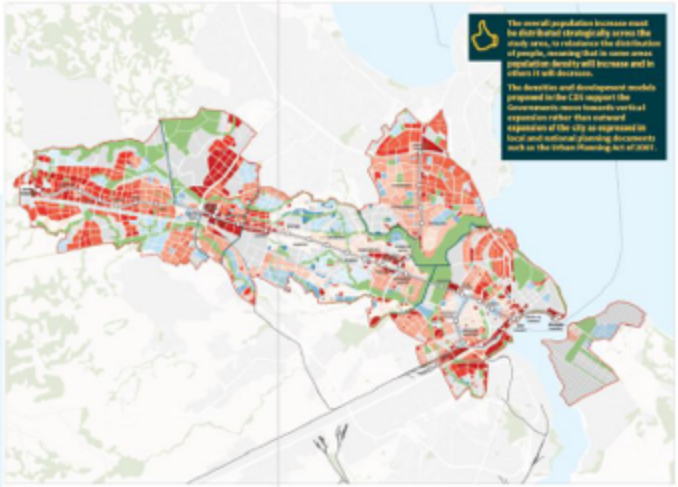
Preferred Scenario - Hybrid Framework

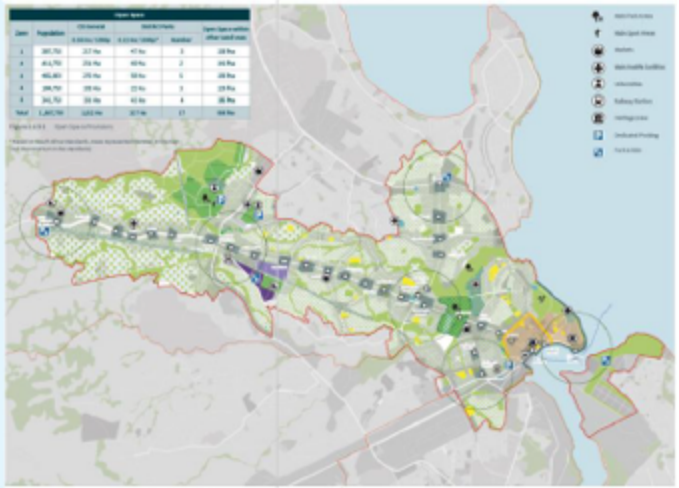
Development Framework



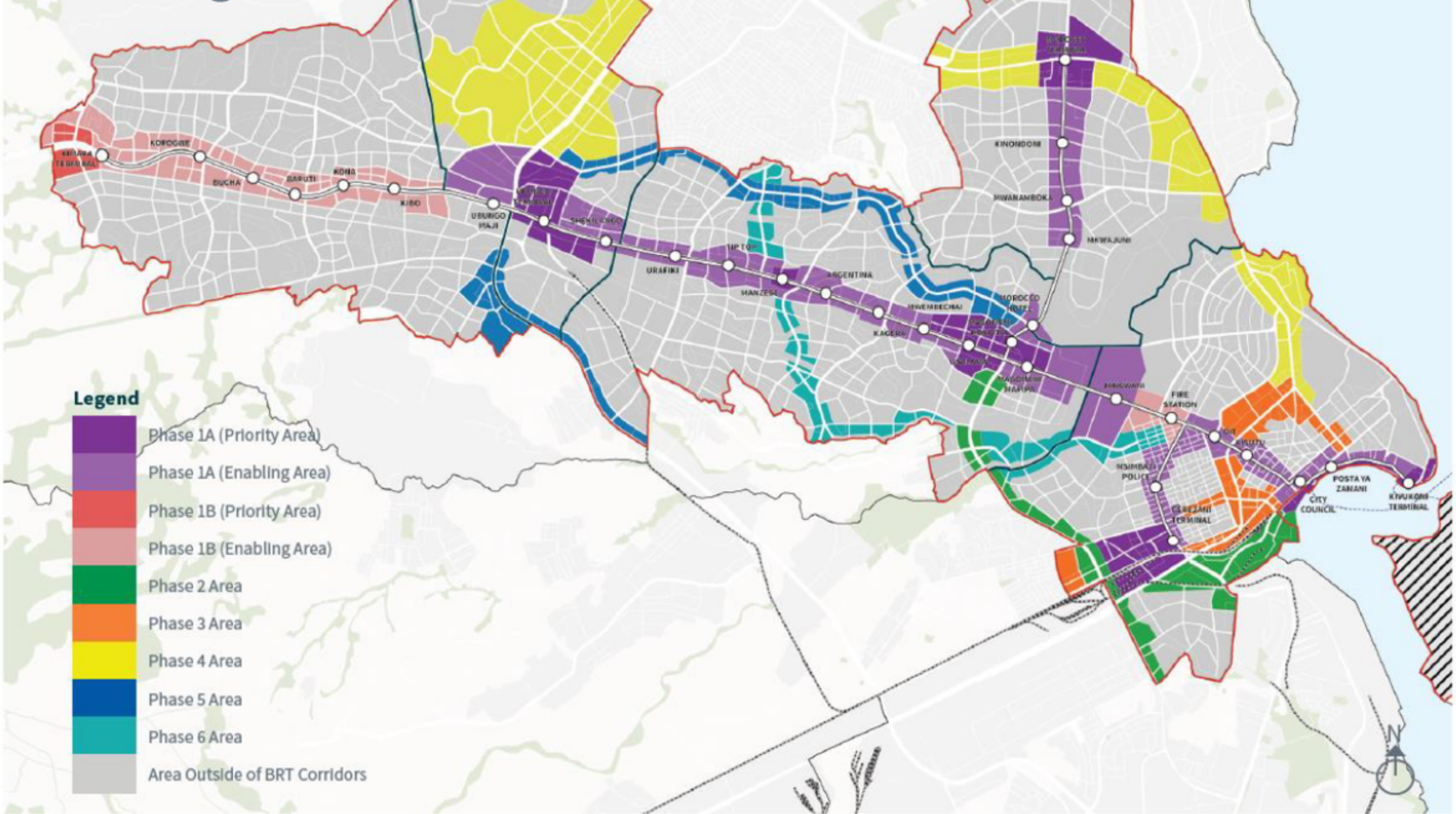
Detailed Strategies



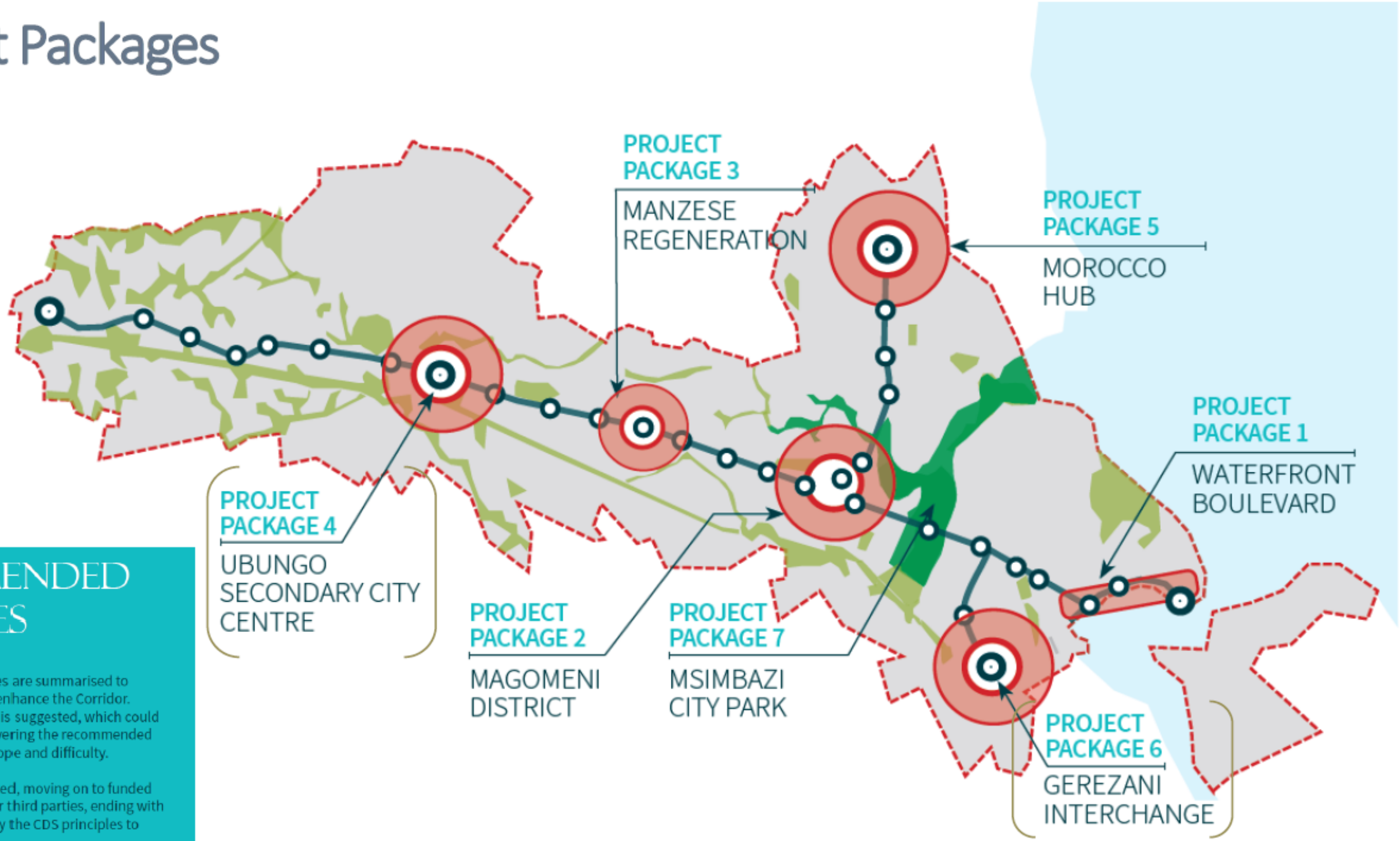




Phasing


Legend
Phase 1A (Priority Area)
Phase 1A (Enabling Area)
Phase 1B (Priority Area)
Phase 1B (Enabling Area)
Phase 2 Area
Phase 3 Area
Phase 4 Area
Phase 5 Area
Phase 6 Area
Area Outside of BRT Corridors

Project Packages



RECOMMENDED INITIATIVES

Twelve suggested Initiatives are summarised to promote the strategy and enhance the Corridor. In each case a lead agency is suggested, which could take responsibility for delivering the recommended initiative. Each varies in scope and difficulty.

The first are planning-related, moving on to funded programmes and grants for third parties, ending with physical projects that apply the CDS principles to sites of key importance.

TOD Examples

Mumbai, India

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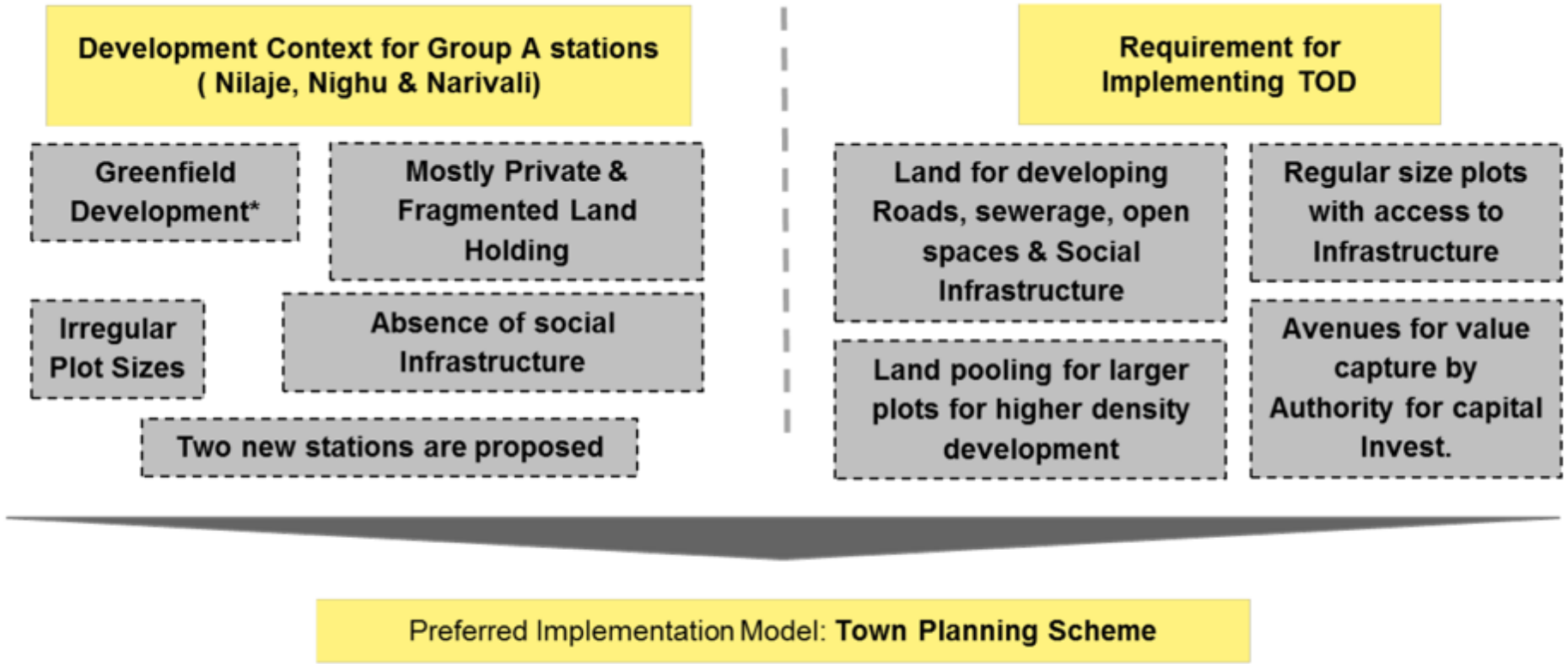
Rethinking the corridor : Mumbai

OASIS DESIGNS INC. EY

WORLD BANK GROUP Transport

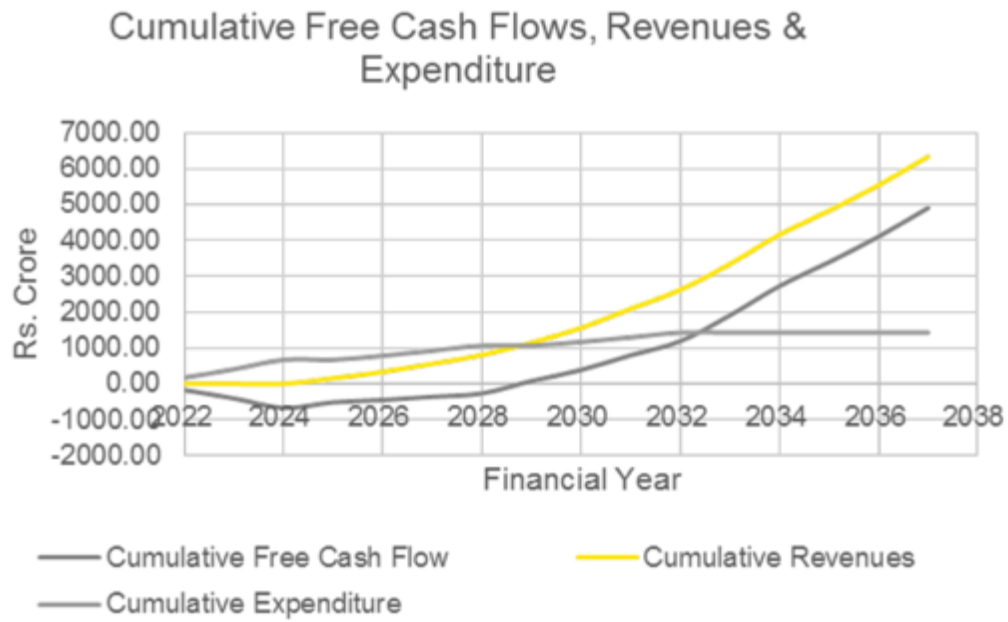


Source: EY and Oasis Designs Inc.

Salient features of TP scheme:
• No acquisition/ purchase of land
• Land owners get a share of value creation because of infrastructure development
• Laying out of land parcels
• Developing internal road network and public spaces
• Development of internal infrastructure including water supply, drainage, electricity
• Preserving the archaeological sites/ areas and natural features in the area
• Amalgamation or joint ownership of plots possible with mutual consent of land owners

No.	Land Use	Share
1	Land owners	50%
2	Roads	15%
3	Socially weak & EWS	5- 10%
4	Parks, playground and open space	5%
5	Social Infrastructure	5%
6	Sale by planning authority	10-15%

Narivali TOD Zone					
TOD FSI					
	Capex	Total Phase Wise Revenue	Revenue from Land Sale/Lease	Revenue from Betterment Charges	Revenue from FSI Sale
Phase 1	396.05	427.96	167.78	102.10	158.08
Phase 2	266.91	433.11	83.50	168.39	181.22
Phase 3	245.20	327.33	70.71	130.90	125.72
Total	908.16	1,188.40	321.99	401.39	465.02



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Transport

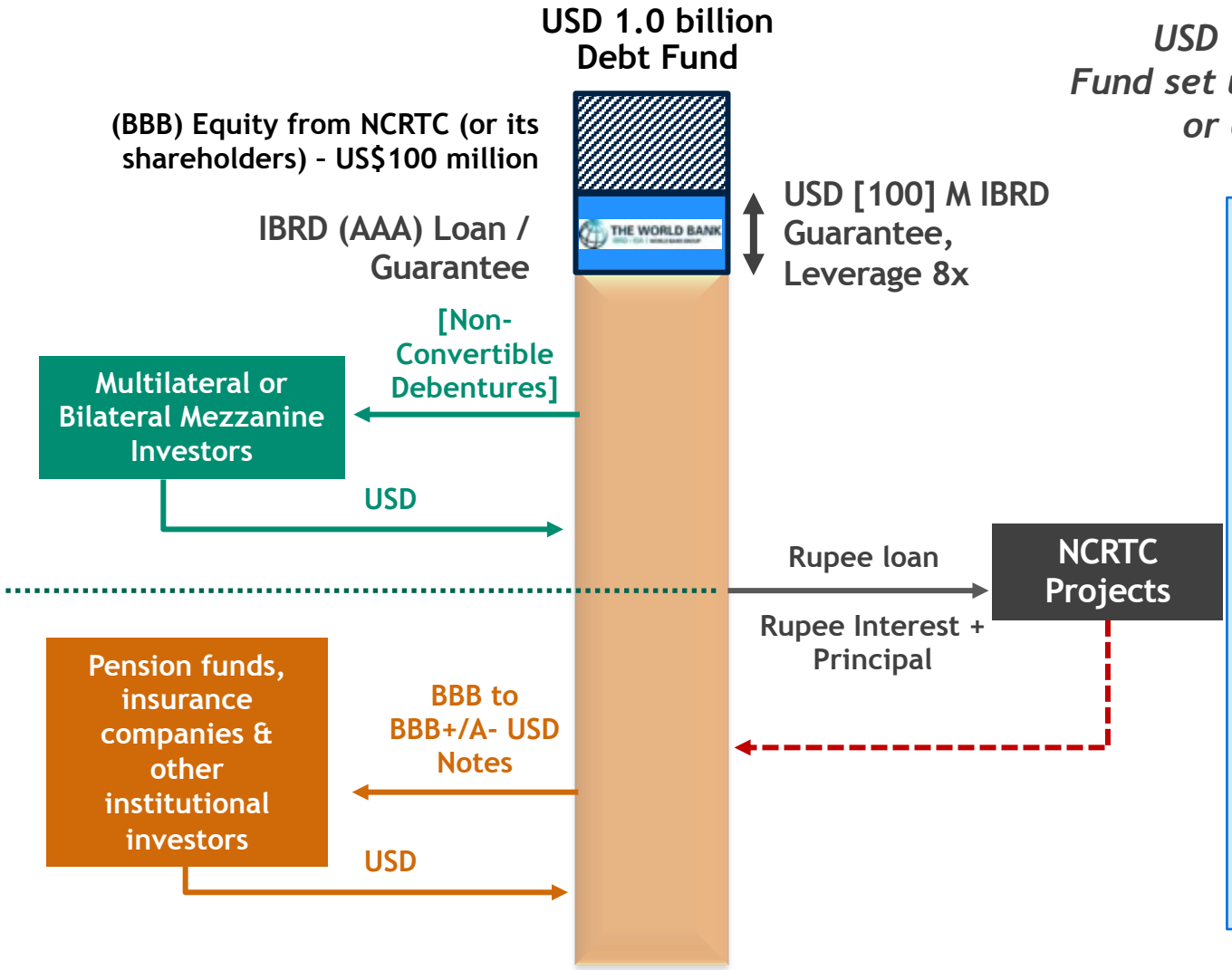
Innovative Financing:

TOD and Land Use

Raising Financing against TOD/Land Use Funding

- Primary Challenge of Funding Coming in the future whereas Financing needed today
- Uncertainties against timing of such cash flow
- Uncertainties against amount of such cash flows
- Uncertainties against use of such cash flows for other more critical needs
- Leads to inability to find financing against such critical value added of such projects
- Therefore needs government-MDB intervention to take the short-medium terms risks and provide mitigation against lack of performance on TOD/Land Development activities

NCRTC TOD/LVC Fund – An Example



USD 1 B TOD/Land Development Fund set up by NCRTC to issue notes or convertible debt to lend to NCRTC projects

Mechanics

- TOD Fund would raise money from various markets sources
- IBRD guarantee would backstop the fund's first losses
- Potential credit uplift (1 to 2 notches) would broaden the base of international investors able to buy the notes issued by TOD Fund
- TOD/Land Development/stamp duty/development charge would be primary source for repayment debt

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TOD LESSONS AND BUILDING BLOCKS

❶ TOD takes time

5-15 years

Need to withstand government change

Need public support and a vision at scale

❷ TOD takes capacity

Diverse agencies need to be engaged

New skills (real estate, market understanding)

Need for a common narrative and understanding

❸ TOD requires a supportive market & community

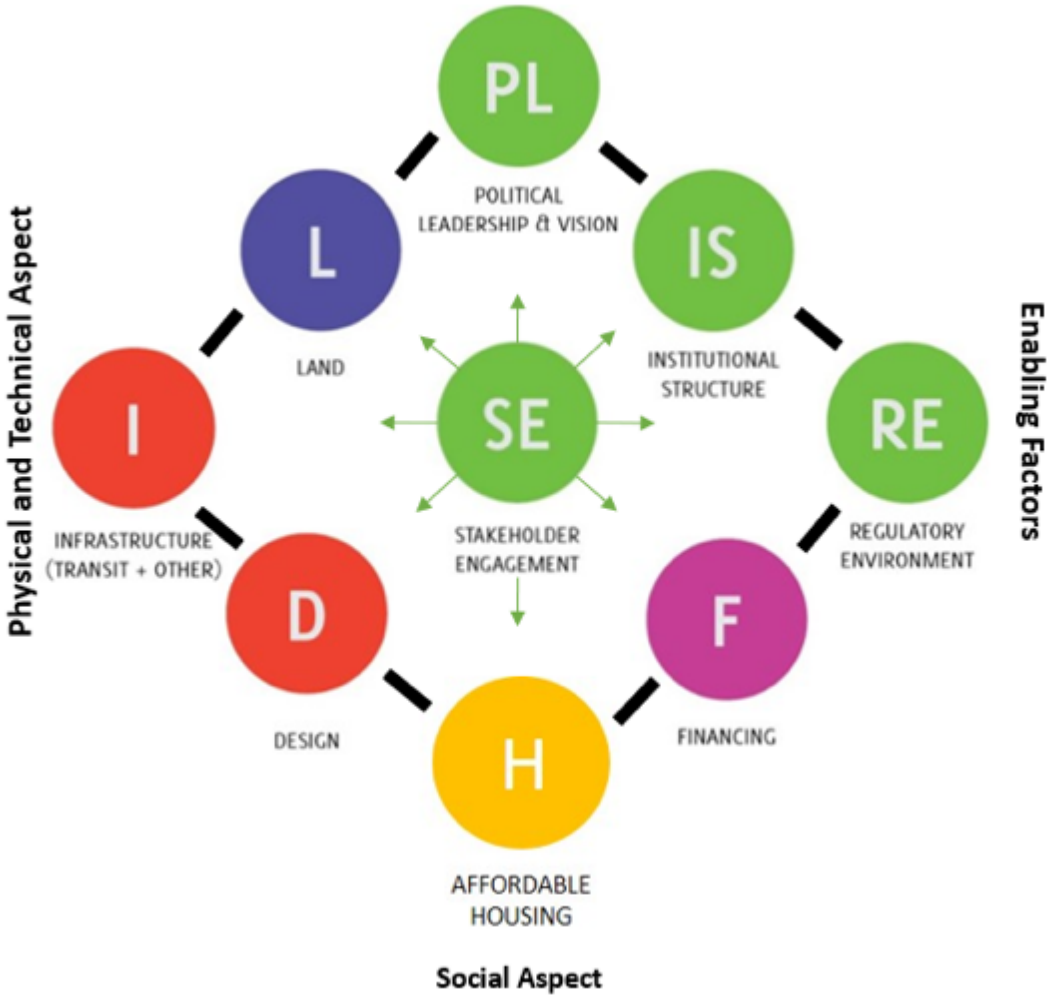
Understand the real estate market

Allow for flexible approach over long market cycles

Need to reduce transaction cost

Need to engage communities

Include affordable housing and informality



TOD Toolkit

How to of TOD

TOD KNOWLEDGE PRODUCTS

OVERVIEW

TOD Framework

1 **Overview**

The Overview chapter introduces the Knowledge Products and the principles, barriers and existing resources related to transit-oriented development that will act as the foundation for the tools provided. This overview will also introduce the five steps of TOD and tools for each.

2 

Assess

The Assess chapter provides an overview of the steps required to examine a city's preparedness for undertaking TOD initiatives, including defining scale and scope of the planning of the area and identifying stakeholders for undertaking TOD projects.

3 

Enable

The Enable chapter provides the steps necessary to create an enabling environment for implementing successful TODs, prior to embarking on detailed TOD planning initiatives.

4 

Plan + Design

The Plan + Design chapter contains a series of detailed planning principles and design components to formulate TOD plans at various scales of intervention [city, corridor, station area and site scales].

5 

Finance

The Finance chapter provides an overview of the financing tools that can be used by a city to achieve the TOD planning policies, projects and initiatives identified in the previous steps.

6 

Implement

Implementation provides an overview of the tasks and sub-tasks required to implement TOD plans, including the institutional framework and supportive public policies.

Toolkit Types

KNOWLEDGE PRODUCTS

ANALYTICAL

The Products under this category build on the available facts or information to make critical evaluations

SPREADSHEETS | REFERENCE DOCUMENT | CHECKLIST

COMMUNICATION

This category of Products impart or exchange information with the purpose of conveying a message or expecting better results

INTERACTIVE GAMES | REFERENCE DOCUMENT

'HOW-TO' GUIDES

Products created as a step-by-step approach for evaluating the multitude of information to reach a conclusion

STEP-BY-STEP GUIDE

RESOURCES

Products include details of external sources that can be referred for informed assessment

CHEAT-SHEETS | SPREADSHEETS | WEBLIOGRAPHY | GLOSSARY OF TERMS

PROCUREMENT

The Products help in acquiring services/works from an external source to accomplish a task/attain the objectives

REFERENCE DOCUMENT | TOR TEMPLATE

More on TOD Toolkit

http://hdl.handle.net/10986/31121

TRANSFORMING THE URBAN SPACE WITH TOD: THE 3V APPROACH

	Key messages
Overview	Adopt TOD for more sustainable city development.
Metropolitan scale	Maximize citywide accessibility to jobs through a hierarchically integrated transit system. Embrace nonuniform densities, concentrating jobs where accessibility is highest. Ensure local accessibility to health, education, and amenities.
Network scale	Align network centrality characteristics and intensity of land use.
Station scale	Create accessible, diverse, dense, mixed-use, vibrant communities based on station characteristics and good design.
3V[a] Framework	Cluster stations based on node, place, and market potential value. Identify imbalances between values to stimulate interagency dialogue and understand opportunities.
Developing solutions	Understand the drivers of and interplay between values. Apply infill, intensification, and transformation strategies based on the 3V typology.
Station examples	Hammarby, Bo01, Marina Bay, Hudson Yards, King's Cross
Corridor examples	Crossrail, Line 3 (Zhengzhou)
City examples	London, Zhengzhou

Available at http://hdl.handle.net/10986/26405