

# Enabling Better Mechanisms for Green TOD

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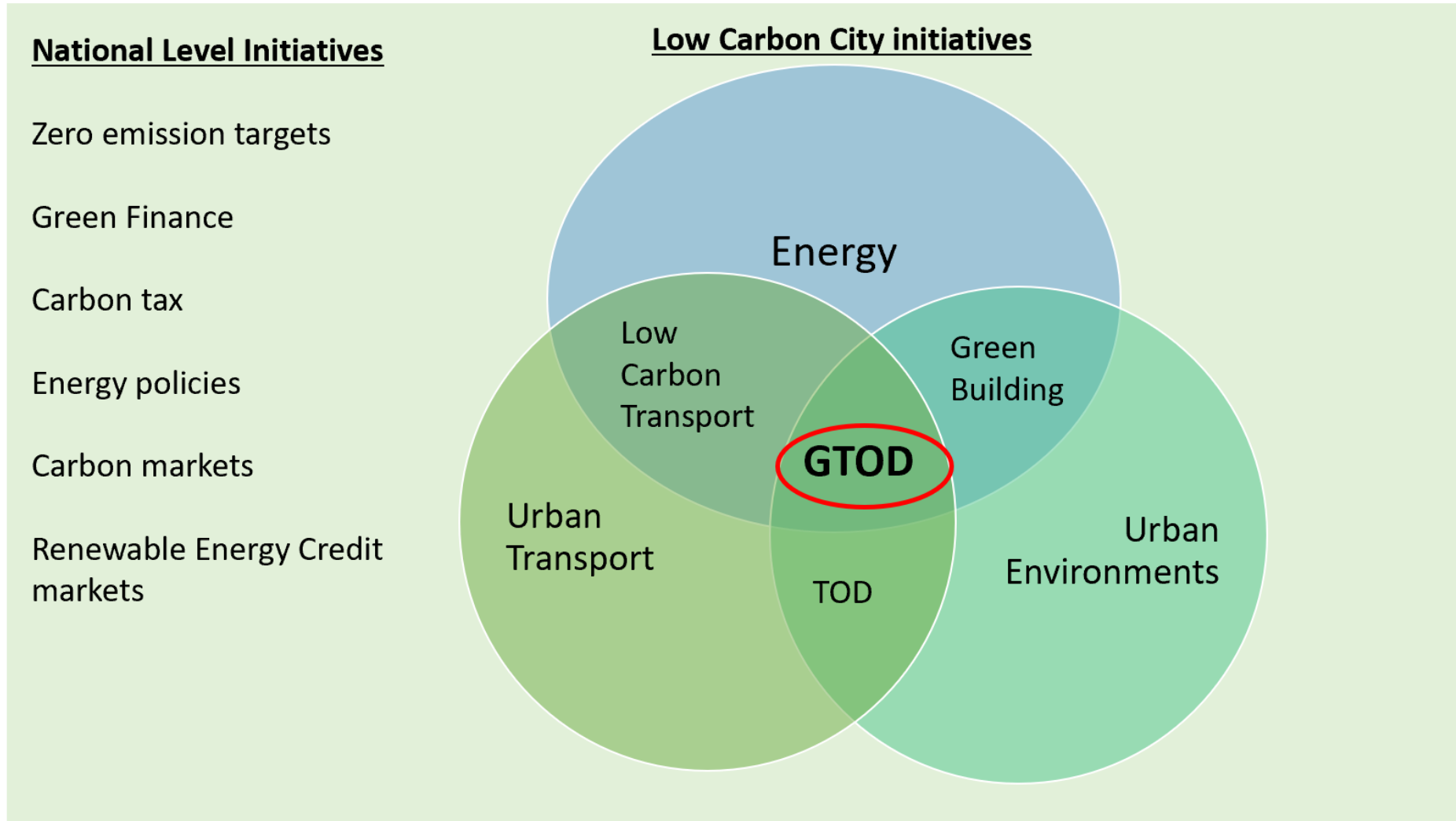
University of Hawaii at Manoa

**Hawaii Interagency Council for TOD**

Council Meeting

Sep 20, 2024

# GTOD = Energy efficient buildings + Sustainable TOD



# Cervero and Sullivan (2011) Green TODs

<b><u>Hammarby Sjostad:</u> Stockholm Sweden</b>	<b><u>Rieselfeld:</u> Frieburg, Germany</b>	<b><u>Kogarah Town Square,</u> Sydney, Australia</b>
<ul style="list-style-type: none"><li>• Brownfield redevelopment</li><li>• 160 ha</li><li>• 20,000 inhabitants</li><li>• Tramway connection</li></ul>	<ul style="list-style-type: none"><li>• Planned in early 1990s</li><li>• 90 ha</li><li>• 9100 residents</li><li>• Tramway extension</li></ul>	<ul style="list-style-type: none"><li>• 50,000 sqf of <u>office&amp;retail</u> space</li><li>• 30,000 sqf of <u>community</u> space</li><li>• 194 residents</li><li>• Kogarah train station</li></ul>
		





📍 Civic Square in West Kowloon. The shopping mall, apartments and two five-star hotels were all developed or are now owned and managed by the MTR. Photograph: Photogenic/Alamy

Hong Kong  
West Kowloon



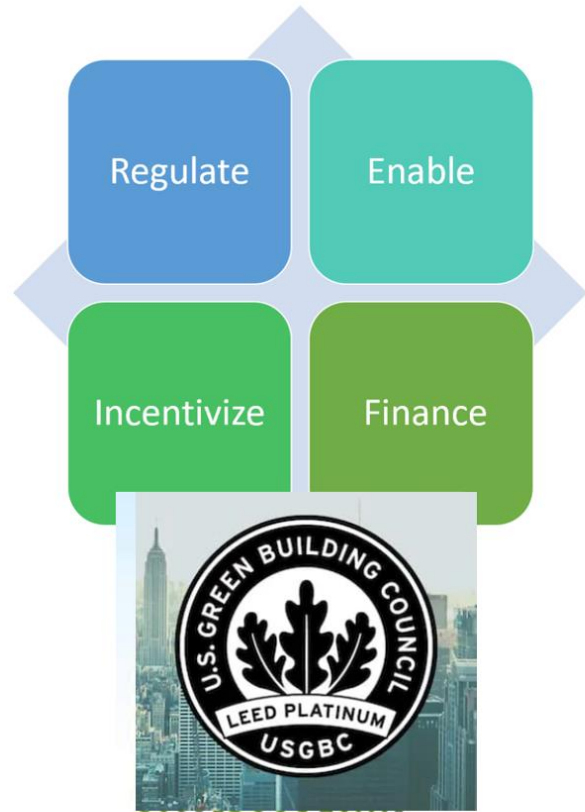
Shanghai  
Lujiazui



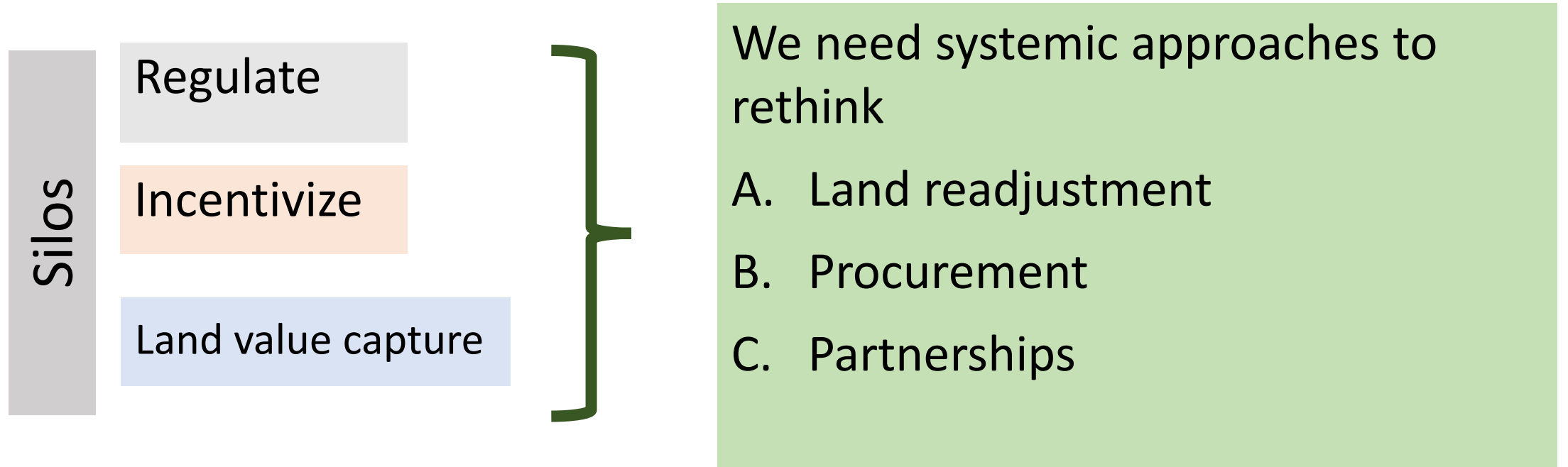
Singapore  
Marina Bay

## Asia's High Density Green Mass Rapid TODs

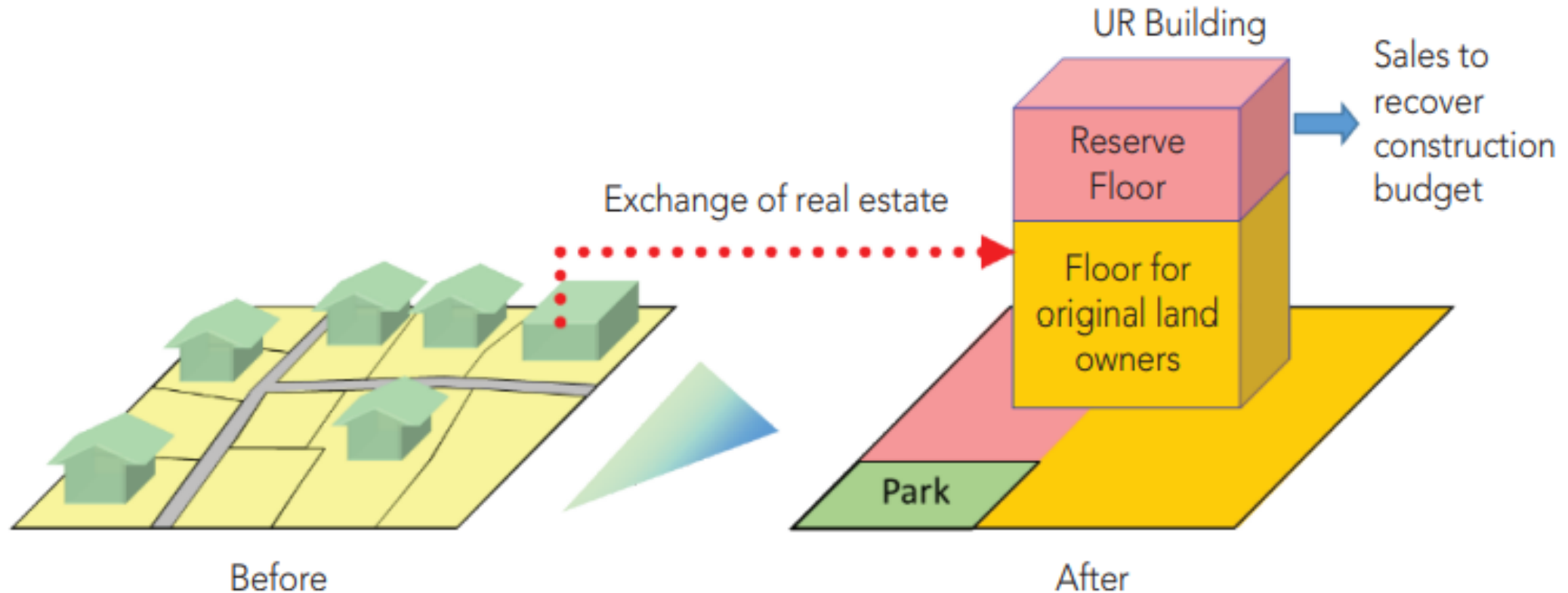
# Siloed Policies for Green Buildings & Green Transit



# Enable Better Mechanisms for GTOD



# A. Land Readjustment Model in Earlier Phases of Urban Development



Source: Arai, Yuko; Sakaki, Shigeyuki; Chen, Mansha (2019).

*Land Readjustment in Japan : Case Study (English)*. Washington, D.C. : World Bank Group.



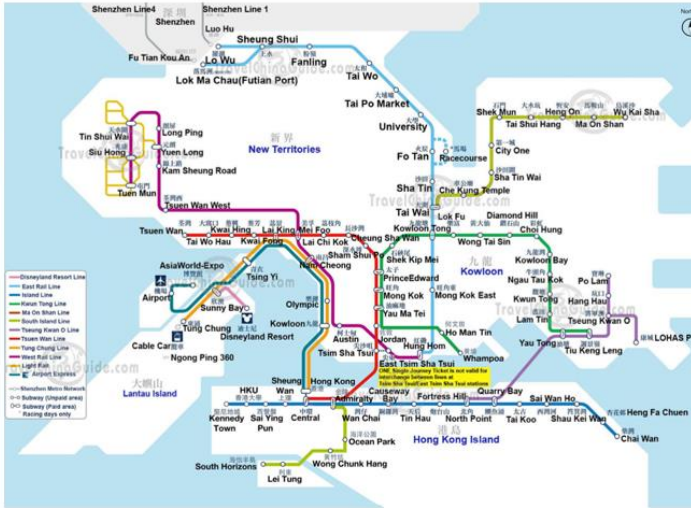
# Challenge: Gridlocks of aging urban buildings

Green buildings



Public spaces

Land sales revenue to cover compensation of owners, MRT construction and operating costs





# Singapore's Strategic Development Incentive Scheme

2019 -2024 Pilot

**Goal:** encourage the redevelopment of older buildings in strategic areas into new, bold and innovative developments that will positively transform the surrounding urban environment

## **Incentives:**

- Increase in gross plot ratio or gross floor area;
- Land use and use quantum;
- Building height.

# GTOD Placemaking

## Singapore's Strategic Development Incentive Schemes 2019 -2024

- **Goal:** encourage the redevelopment of older buildings (*under multiple ownership*) in strategic areas (*near MRT stations*) into new (*green*), bold and innovative developments (*mixed uses*) that will positively transform the surrounding urban environment (*public spaces*)

# Harnessing local community's ingenuity and creativity

**Regulation:** planning parameters + **green building regulation** + **voting mechanism**

**Incentive:** deviations from planning parameters allowed if proposal is approved, **benefits must be sufficiently large**

**Land value capture:** Betterment charge for Bonus GFA or additional development intensity to **finance transit and other green building initiatives**



## B. Renewable energy procurement

### On-vehicle solar (consumer-owned)



*Chinese Battery Electric Buses, with solar panels.*



Indian Railways



# On-site solar (consumer-owned)

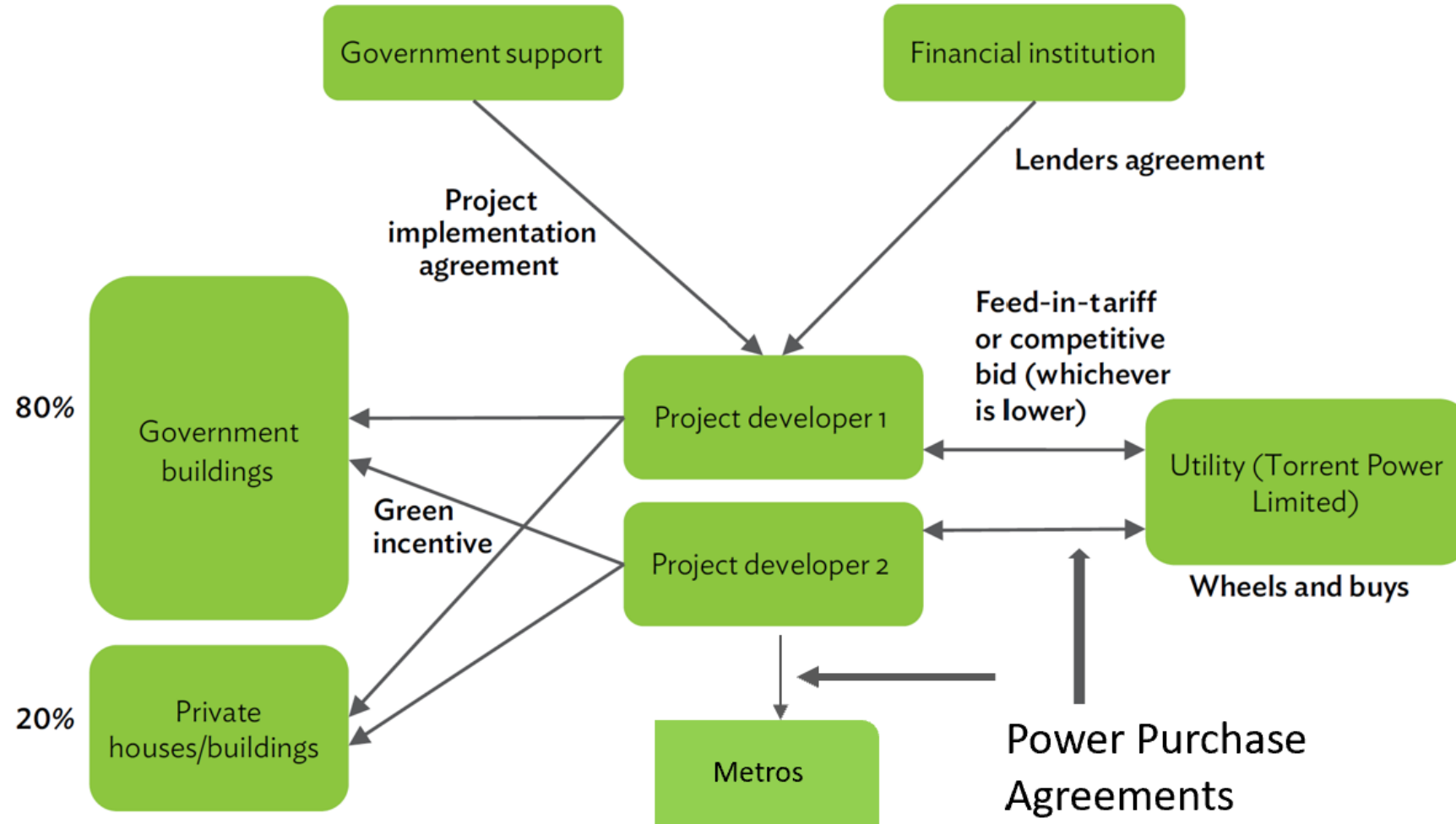


Shanghai Metro Rooftop Solar



Delhi Metro Vertical Solar

# Aggregating rooftop solar & batteries for transit



Source: ADB (2022) "Guidebook for Demand Aggregation: Way forward for rooftop solar in India." Figure 9 (modified).

# C. Risk sharing PPPs for larger-sites

- Larger sites can impact and transform the built environment in a major way
- Examples:
  - Canary Wharf, London (40 ha site, GFA 1.5 million sqm)
  - Roppongi Hills, Tokyo (11 ha site, GFA 724,000 sqm)
  - Tianhui TOD TOWN, Shanghai (20 ha site, GFA 700,000 sqm)
- Benefits:
  - allows developers to apply a more holistic approach to larger-scale integrated development projects
  - a master developer has far more discretion in the development process—from master planning, mix of uses, **phasing** and construction to asset management and sale of the completed projects
- Risks:
  - for developer and financiers include changing business cycles, volatility in supply and demand, interest rate hikes and increases in construction cost, changes in policies and regulations

# Concluding observations

- Race to zero requires transformational changes and major investments
- Honolulu [2022 commute mode shares](#): Transit **7%**; Walking 8.5%; Biking 2.1%
- TOD acceptance require supporting policies
  - Amenities within 15 minutes walk of housing developments
  - Infrastructure for walking, biking and transit connections
  - Policies to discourage auto use
  - Engagement with communities to change preferences
- Develop improved and integrated approaches for GTOD
  - From land readjustment to strategic GTOD placemaking
  - From consumer-owned to utility scale third party aggregation for rooftop and battery systems
  - From risk transfer to risk sharing PPP arrangements