



CHAPTER 4



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Future policy pathways for urban finance

CHAPTER 4

The future of urban finance

4.1 The 2030 vision for urban finance

In 2030, an Asia-Pacific mayor convenes a cabinet meeting and requests a full report in order to prepare for an upcoming speech on the state of the city. She wants to know what has changed in the last decade to enable her city to take more control over its financial situation. Having implemented many of the recommendations of this report, the mayor is pleased to find out from the housing secretary that the city's housing deficit has decreased dramatically due to a public-private housing scheme that built affordable multifamily flats in an underutilized parcel of land near the city centre. The public works director reports that a new district has sprung up along the river that runs through the city with all the necessary infrastructure – lighting, water, sewers, paved roads, public transport – already in place, paid for by a value-capture mechanism that collected money from the new district's property developers. Finally, the transportation secretary points to decreased city centre vehicle traffic after 10 years of a downtown congestion pricing scheme which has generated revenue that the city invested in increased public transport services.

As this hypothetical story illustrates, extending options for municipal finance is vital for the sustainable development of future Asian and Pacific cities. As well as providing all-important funding to help meet capital and operational expenditure requirements, these future pathways also help develop local financial accountability, ensure that the priorities and needs of the local community are met and assist with local environmental protection (UN-Habitat, 2016). Finance is the thread that ties together this report's forecast for future scenarios in planning,

resilience and smart technologies. Vital municipal efforts to implement plans for future growth, prepare for disaster and deploy new urban data-monitoring tools will not come to fruition without a strong foundation of financial security and the prospect of future revenue.

The municipal finance vision for 2030 will have a key difference from that of today. Intermediary cities, which currently struggle to access the existing global architecture for municipal finance, must be empowered to utilize those mechanisms.



"What can – and needs to – change is making these funding options available to as wide a variety of local governments as possible."

The vast majority of municipalities will typically enact some blend of grant, private or public equity, standard commercial or concessional debt and own-source financing. What can – and needs to – change is making these funding options available to as wide a variety of local governments as possible, especially intermediary cities that historically lack the capacity to pursue sophisticated fiscal tools. This urgent need means both educating policymakers as to how these financing mechanisms work and then giving them the skills and resources to understand how to apply them within their local context. Ultimately, local governments require the future pathways to access the finance necessary for construction and maintenance of their infrastructure and they can adapt their legal and administrative circumstances now in order to position themselves for future success.

The challenges and opportunities of urbanization

The New Urban Agenda recognizes that cities are drivers of development and local governments have a crucial role to play in order to foster global prosperity. While the impending urbanization of the coming decades is a major challenge in its own right, this forecast also presents an opportunity for local governments in these regions to learn from good practices adopted around the world and avoid the mistakes that

have taken place in more urbanized and better developed regions. This experience will be needed both to meet current infrastructure gaps and plan for future needs.

Although a definitive Asia-Pacific urban infrastructure financing gap measurement does not exist, one can approximate the scope of the need. The Asian Development Bank estimated that the region's developing countries need to invest \$1.7 trillion annually to keep their current growth pace, with Governments covering 40 per cent of the bill and the private sector footing the rest. With current annual investment at about \$881 billion, the gap is approximately \$460 billion, or just under half of total need (ADB, 2017a) (see figure 8). In 2019, ESCAP estimated that the region's developing countries need to invest an additional \$1.5 trillion annually to achieve the Sustainable Development Goals by 2030. This includes social and environmental infrastructure, such as hospitals and clinics, classrooms, water and sanitation, and conservation areas as well as transport, ICT and clean energy. Taken together, capital expenditures would make up nearly two thirds of the additional investment needed for achieving the Sustainable Development Goals (see figure 9). Much of these investments are expected to take place in urban areas.

Not all of this investment will require local governments to source the public sector share of the financing, but much of the infrastructure

"To meet this yawning infrastructure gap, new local-level initiatives supported by appropriate legal, city planning and financial frameworks will be required."

is likely to serve urban areas, with the best estimates on city climate finance indicating that 70 per cent of global low-emission and carbon-resilient infrastructure built through 2030 will be located in cities (Z/Yen Group, 2015). In turn, such estimates are hampered by their omission

of slum upgrading and public housing, which may account for the bulk of municipal spending. For example, China spent the equivalent of \$278.2 billion on shantytown redevelopment in 2017 alone (Chen, Yawen, and Beijing Monitoring Desk, 2018).

Figure 8
Estimated infrastructure investment needs by ADB region, 2016-2030

Billions of United States dollars in 2015 prices,
climate-adjusted

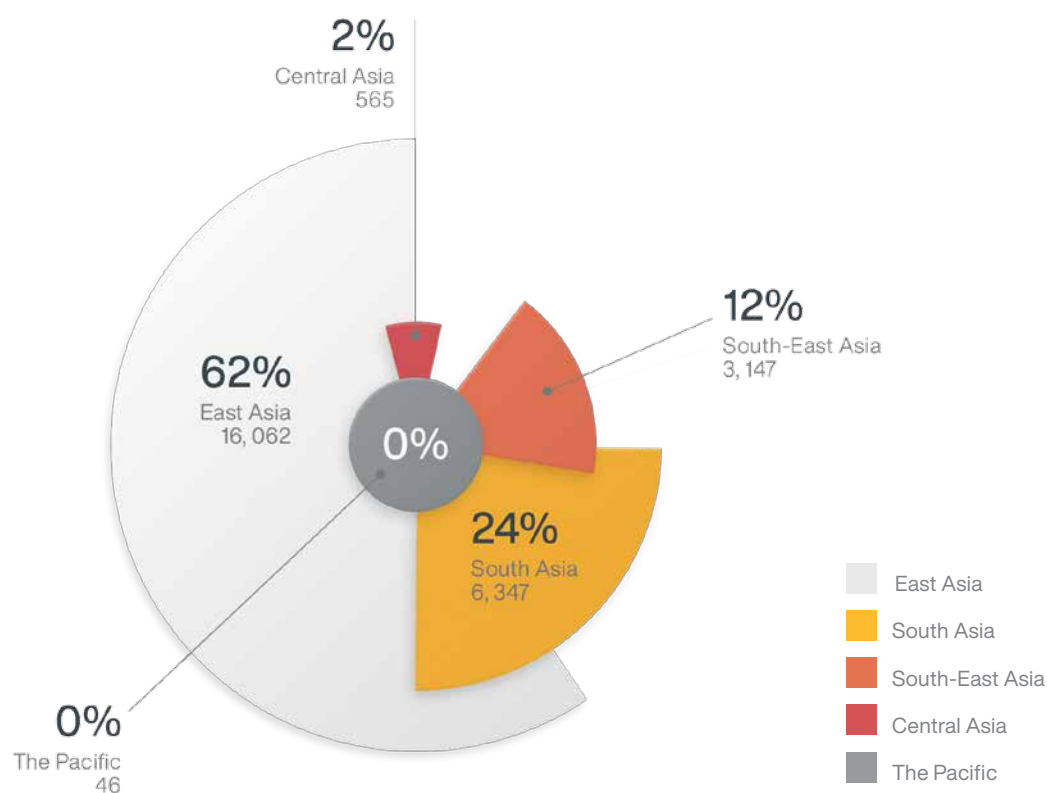
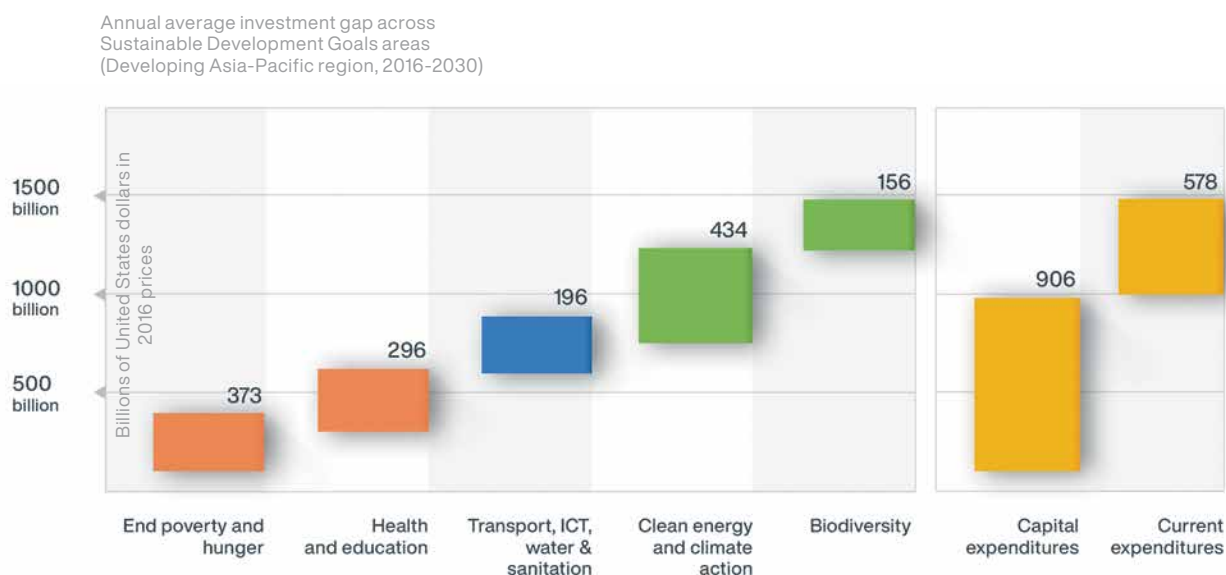


Figure 9
Sustainable Development Goals investment gaps



Source: ESCAP, 2019c.

In order to meet this yawning infrastructure gap, new local-level initiatives supported by appropriate legal, city planning and financial frameworks will be required, as indicated in the New Urban Agenda (UN-Habitat, 2017d). Improvements in traditional local government revenue sources will play the most significant part in helping finance this infrastructure gap, but there are also future pathways that policymakers should consider. These pathways are complementary to existing needs to secure transfers from the central Government proportional to cities' contribution to national GDP, improve creditworthiness to access international finance and develop bankable projects that will attract multilateral institutions.

Apart from the imbalances between cities' responsibilities to their citizens and their power to collect revenue, there are unfunded mandates caused by imperfect fiscal transfer rules. Namely, there is considerable variation in the share of these assigned revenues across and within countries, as well as in the predictability and timeliness of these transfers. There are also major differences in the shares and types

of own-source revenues that are allocated to local governments, including powers to assess, set rates, establish collection mechanisms and allocate efficiency rewards (Tax Policy Centre, 2018). The extent of powers transferred is clearly a factor that affects creditworthiness and risk. Reforms that improve the rationality of assigned sources and the efficiency and buoyancy of own-source revenues are necessary and already under way in many countries in the region.

Several of those alternative financing tools to provide funding for necessary urban infrastructure are addressed here: public-private partnerships, targeted levies or charges, land value capture mechanisms, municipal pooled financing and climate funding sources. While these pathways may not account for the largest potential share of revenue sources for local governments, they represent a toolkit that local leaders can develop simultaneously with more politically, legally and institutionally challenging efforts, such as negotiating larger transfers with ministries of finance or navigating municipal bond markets.

"While local governments in Asia still heavily rely on intergovernmental transfers as a revenue source, in recent years they have also been making endeavours to reduce the relative share of such transfers."

If local governments are to be empowered to take proactive decisions on infrastructure rather than perpetuate the status quo as passive recipients of scattered grants, these financing tools must go hand in hand with reforms to improve both assigned and own-source revenues. The intergovernmental fiscal transfer rules would need to be rational and predictable, without which planning at the local level would become impossible, especially in cities where

the size of assigned revenues is large. Further, apart from the absolute size of the transfers, the internal distribution between cities should be rule based. Further still, these reforms are a necessary first step for empowered local governments to leverage these public finance sources with private sources, as potential lenders would base credit decisions on the stability of the fiscal transfer rules.

4.2 Analysing the financing options for addressing the infrastructure gap

Analysing the options

Asian and Pacific cities' most pressing priority is to acquire productive revenue streams in order to assist with the reliable provision of basic services. If well planned, managed and implemented, own-source revenues can enable Governments to invest these resources in infrastructure that supports basic service provision.

While local governments in Asia still heavily rely on intergovernmental transfers as a revenue source (table 1 and figure 10), in recent years they have also been making endeavours to reduce the relative share of such transfers. This has been

to both reduce the national fiscal burden and support decentralization efforts more broadly. Meanwhile, property tax remains an important source of revenues for Asian cities (ESCAP, 2017a).

However, the different financing mechanisms upon which local governments rely do vary from each country based on the degree of centralization versus decentralization. In some cases, fiscal decentralization has been an efficient method for cities to raise revenues for increased expenditure on public services and infrastructure (UN-Habitat, 2017d). For example, Surabaya in Indonesia has pioneered

Table 1

Intergovernmental transfers as a revenue source for selected local governments in Asia

Country	Share of transfers in total local revenues (percentage)	Relative importance of type of transfer		
		Revenue sharing	General purpose	Special purpose
 China	60-66%			
 India	90%			
 Indonesia	90%			
 Japan	40%			
 Philippines	70%			
 Republic of Korea	40%			
 Thailand	85%			
 Viet Nam	50%			

■ High ■ Medium ■ Low

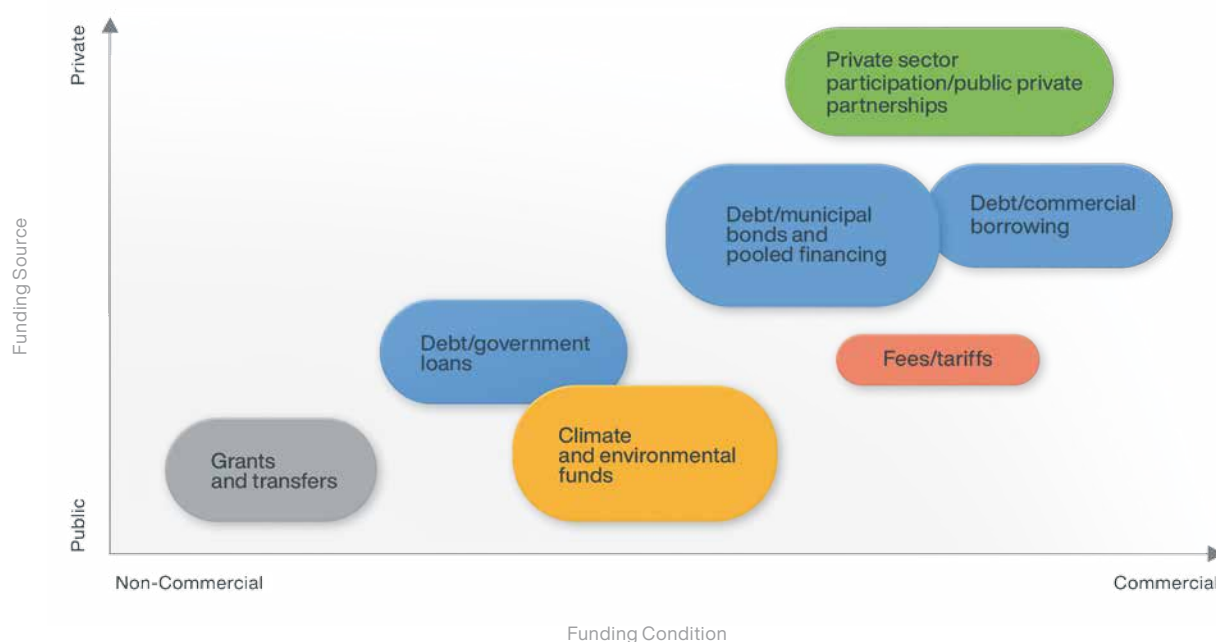
Source: ADBI, 2017.

an environmentally friendly urban development model with the benefit of the country's regional autonomy laws (Bunnell and others, 2013). In other cases, such as in India and Indonesia, there have been enormous fiscal governance and revenue mobilization challenges associated with ambitious federalism reforms in recent years (ESCAP, 2018d). Meanwhile, some other countries have further strengthened central control over revenue mobilization. In 2015, China sought to replace a rather informal local government borrowing system with a more formal approach by converting some local government debt into local government bonds and merging a number of local tax authorities into the central tax

authority (Lin, 2016). Ultimately, fiscal autonomy is no more important than the ability to strengthen transparency, accountability and efficiency in revenue assignment.

Although there are potentially a wide range of financing options available to local governments, in practice these choices will be limited by a combination of the specific requirements associated with each financing mechanism and the nature of the local environment, that is, the relevant rules regulations and customs.

Figure 10
Infrastructure financing options



Source: Infographic by Stuart King, Senior Infrastructure Finance Specialist, Cities Development Initiative for Asia.

Table 2 presents a selection of the kinds of factors that will shape a local government's choice of financing modality. Table 3 applies these criteria to the broad array of financing options available to local governments using a simple scoring process. This produces a shortlist of financing mechanisms – public-private partnerships, land value capture and fee charging – that are potentially available to local governments in a wide variety of contexts thereby addressing the “common (financing) solutions for common urban problems” theme that underlies the present chapter. These mechanisms are relatively new in relation to their application within the context of addressing some key urban challenges: housing, land availability and congestion/pollution within the context of an intermediary city environment in the Asia-Pacific region.

In the two tables that follow, five key enabling criteria – ease of implementation; relevance to intermediary cities; affordability/sustainability; expected scale/relevance impact; and positive secondary impact – have been identified that help determine the relevance and practicability of deploying alternative financing mechanisms within the urban context upon which this chapter is focused.

Table 2

Factors having impacts upon financing modality availability

Criteria	Criteria subcategory	Description
► Ease of implementation (resourcing/regulations)	Enabling regulatory framework	Degree to which the financing mechanism relies on a relatively complex set of enabling rules and regulations to be put into place in order to be effective
	Administration requirements	Expected human capacity requirements and/or institutional burden imposed in order for the financing mechanism to be implemented effectively
► Relevance to intermediary cities	Applicability to intermediary cities	Degree to which the inputs and outputs of the financing mechanism are expected to be suitable for smaller cities (i.e. the mechanism is relatively easy to implement and the scale of funding requirement is relatively small)
	Decentralization requirement	Extent to which the financing solution requires or does not require local government to have a high degree of autonomy
	Absence of a solution	Degree to which the financing solution might be expected to add to the range of funding mechanisms currently utilized by a city
► Affordability/financial sustainability	Financial burden	Extent to which the financing option directly imposes a financial burden on local government versus the degree to which this burden can be shared with other parties
	Contribution to financial sustainability	Consideration of the degree to which the financing option can help cover operational expenditure (as well potentially as capital costs)
► Expected scale/relevance of impact	Scale of expected impact	Degree to which the financing solution potentially targets and/or addresses the needs of a wide range of stakeholders (i.e. poorer households, women and children, marginalized groups, etc.)
	Level of need	Degree to which the financing mechanism is targeted at providing a solution to a critical infrastructure shortage
► Positive secondary impact	Externalities	Consideration of whether the financing mechanism will result in any positive or negative impacts outside of its direct intended purpose (e.g. improved institutional coordination)
	Link with other key themes	Degree to which the financing solution is reliant upon and/or helps deliver advances in governance, technology and planning

Table 3

Applying selected rationalization criteria to financing options available to local governments

		Ease of implementation (resourcing/regulations)	Relevance to intermediary cities	Affordability/financial sustainability	Expected scale/relevance of impact	Positive secondary impact
Grant	Direct	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	Output-based	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
Debt	Concessional	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	Commercial	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	Market	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
Equity	Government	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	Private	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	Public-private partnerships (PPP)	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
Own source	Taxes	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	Land value finance	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●
	Fees/tariffs	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●



Mechanisms for housing finance

Housing is a pressing urbanization issue that many developing countries are facing today. The World Bank (2010) estimated that 70 million new residents are being added to urban areas every year. UN-Habitat subsequently suggested that such population increases would result in dramatic growth in the number of people living in slums and informal settlements. At the global level, the number of people living without adequate housing will be 3 billion by 2050, if no action is taken right now (UN-Habitat, 2016).

Despite the challenges encountered in implementation, data show that PPPs and community schemes have helped develop a significant amount of housing for low-income and medium-income groups in target areas. In Kolkata, India, the Shukhobrishti Housing PPP Project in New Town Rajahat Kolkata specifically targets about 100,000 people (Nallathiga, 2018).

The Anupama project, meanwhile, comprises 1,400 dwelling units, of which 73 per cent have been set aside for low- and medium-income residents (Sengupta, 2004). As for community housing finance, by 2014 the Community Mortgage Program projects in the Philippines had assisted 271,660 families in obtaining loans for land purchase and housing development (Ballesteros, Ramos, and Magtibay, 2015).

On a much smaller scale, but of significance within its geographical context, is the Lagilagi housing upgrade project in Fiji. Operated by the Pacific Community Network, this project targeted the Lagilagi community in Suva, which is part of Jittu Estate and Fiji's largest squatter settlement with more than 2,000 households (ACHR, 2014). A group of 150 families in Lagilagi negotiated to collectively rent the 2.8 hectares of government land they had used for squatting, on a long-term lease worth the equivalent of \$235 per year. As part of the agreement, the families own



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"Housing is a pressing urbanization issue that many developing countries are facing today."

their houses but the land belongs collectively to the whole community. If anyone wants to move out, they have to sell their house back to the community who can then resell it to a new family. This project involved the first-ever housing partnership between a community of poor squatters, the Government and the community network. It combined funds from several sources: besides providing the land, the Government contributed funds equivalent to \$659,000 as a construction subsidy; the people contributed the labour and half the cost of the houses through their savings; an NGO, the Ecumenical Centre for Research, Education and Advocacy (ECREA), added the equivalent of \$612,000 in donor funds from Misereor; and a \$40,000 project grant from the Asian Coalition for Housing Rights (ACHR) supplemented the housing loans, through the Suva Federal Audit Office, or CDF. The two-story house model that the community members developed cost about \$11,000, of which half is to be paid for by the people (\$5,650 in instalments

of \$8.50 per week for 12 years) through savings groups and the city fund, and the other half is to be paid for by the government subsidy (ACHR, 2014). The money the people repay will go into the city fund, where it will revolve and enable more houses to be built. Although conducted at a micro-level, this positive example demonstrates the potential for such a model to be scaled up into larger contexts.

With proper and locally designed policy support, the Kolkata and Philippines' models (or versions thereof) could potentially target the almost 1.2 million slum families living in Mumbai (Praja Foundation, 2014) or the 1.8 million people living in informal settlements in the former capital of Myanmar, Yangon (ADB, 2018). For the case of Yangon, this would cost on the order of \$11 billion to provide every family an apartment unit and would take approximately 10 years to complete.²²

²² Estimated by consultants based on data provided in ADB, 2018.



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Housing public-private partnerships in Kolkata, India

The business model for Kolkata's housing PPP is a joint venture.²³ The public sector has several housing partners, including the West Bengal Housing Board and the Kolkata Metropolitan Development Authority, the equity shares of which range from 11 per cent to 49.5 per cent. In order to incentivize the private sector to participate, while also anticipating the potential adverse impacts on low-income groups, the partnership adopted a cross-subsidy approach under which some units are priced at or below cost and set aside for low-income residents while pricing for other units is left to the private developer to maximize market-rate return. The Government therefore makes decisions concerning the pricing of some housing units, as well as their size, location, construction quality and the kinds of amenities to be provided, such as enclosed shopping arcades and open space. In Kolkata's PPP scheme, at least 10-15 per cent of the units constructed will be allocated to low- or medium-income occupants. The prices for these units are set purposely low, thereby generating little to no profit while, as described above, the price for the remaining units, which will be sold to higher-income groups, can be set freely by the private sector to generate profit.

Housing has generally become more affordable thanks to government regulations relating to prices and minimum size requirements. For example, low-income unit pricing – ranging from 365 to 600 Indian rupees (\$8-13) per square foot – has dropped significantly compared with private housing offering similar size, flooring, location and other features. However, low-income residents still have limited access to housing finance options, such as low-cost and/or low-down-payment mortgages. Applicants' monthly income typically does not qualify for a mortgage, and they may not be able to present evidence of a regular salary, such as a tax return. Under such circumstances the Government needs to consider linking a mortgage programme for the poor with the PPP scheme.

The only private sector partners who have participated in Kolkata's housing PPP are builders. Although many private companies are eligible to participate, the Government has reached agreement with fewer than a dozen private partners even a decade since the introduction of the scheme. It is therefore recommended that the Government consider diversifying its portfolio of partners to potentially include NGOs, housing cooperatives, not-for-profit housing developers and other alternatives to the private real estate industry.

²³ This case is a summary based on a study conducted by Sengupta, 2004.

"Value capture comes in a variety of forms and can contribute to local government revenue, generate employment, contribute to the national economy and increase the city's fiscal independence."

Land linked financing mechanisms

Land value capture is a financial policy mechanism used to capture the increment in land value due to public investment (World Bank, 2018a). It is imposed where major infrastructure by the public sector increases the value of

adjacent land, sharing the cost of infrastructure among future beneficiaries (UN-Habitat, 2009). Value capture comes in a variety of forms and can contribute to local government revenue, generate employment, contribute to the national economy and increase the city's fiscal independence.

Table 4
Land value capture tools used by the public sector

▶ Leveraging public real assets	Disposition (sale or lease) of excess/underutilized public assets (land, property) for cash that is reinvested in local infrastructure
▶ Development charges	Developer receives development rights (or tenure rights in land, or approval of land use changes) in exchange for obligation to compensate in cash (or provide in-kind) the cost of certain items of public infrastructure benefiting larger area.
▶ Sale of development rights	Development rights or certificates of additional density are sold for cash to finance infrastructure improvements
▶ Land pooling/readjustment	Land owners or occupants voluntarily contribute part of their land for infrastructure development and for sale to cover some project cost. In return, each land owner receives a serviced plot of smaller area with higher value within the same neighbourhood.
▶ Special assessments/betterment levies	Locally administered tax increments (property taxes, sales taxes, etc.) that generate additional tax revenues for reinvestment in local infrastructure
▶ Tax increment financing	Capturing increases in property/land tax base (after infrastructure upgrades) and using such incremental tax proceeds as collateral and refinancing source for infrastructure loans

Source: Adapted from World Bank, 2018b.



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Land value capture tools, such as land pooling, can significantly ease the pressure on the Government to fully finance infrastructure delivery. It also represents a potentially useful alternative to solving traditional land acquisition issues, by facilitating public participation in future urban planning. The investment cost of the land pooling pilot project in Viet Nam was estimated to be 25 billion dong (\$1.08 million). While still ongoing, the project is set to upgrade the road network in the flood-prone area, which covers 24 hectares of land, 480 land users and 1,000 land parcels (Chen and Pham, 2017). In Nepal's case, 50 per cent of the project cost was covered through land pooling (Pradhan, 2017). The project benefited about 500 households, and the value of the 40 hectares of land also doubled after project completion (Pradhan, 2017).

Land pooling in Tra Vinh, Viet Nam

This land pooling and readjustment scheme,^{24, 25} was designed and implemented for a road construction urban upgrading project in Tra Vinh, aimed at minimizing forced demolition and resettlement. The plan was to cover 70-80 per cent of the total investment cost from land users and the remaining 20-30 per cent from the sale of surplus land. Although only two thirds

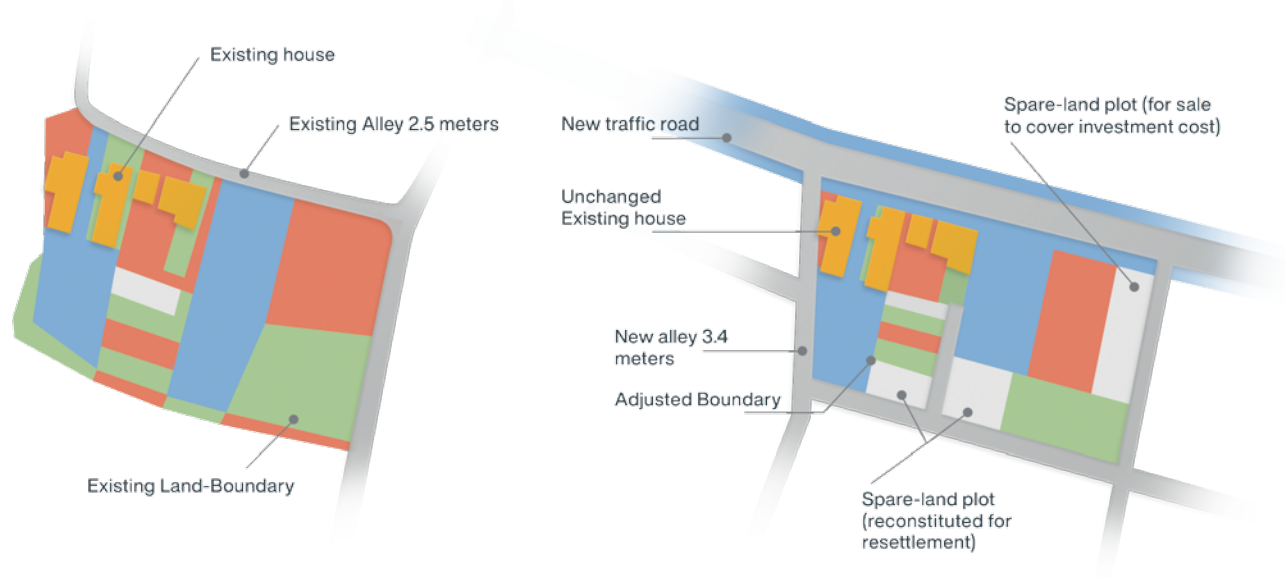
of the affected households needed to agree, more than 90 per cent agreed to participate by 2017. The project was estimated to increase the value of the developed land by 3.5-5 times, and data show that affected land values have tripled since the urban upgrading project got under way. Contributions from households can be made in the form of cash, land, or a combination of both. After completion of the project, parcels returned to participating households will be at their original location.

As the first land pooling project in Viet Nam, the absence of a legal framework presented a major challenge. The project backers addressed this challenge by defining best-suited approaches, including a standard land record-keeping format, increasing capacity for the project management team and drafting land decrees. The second challenge was in obtaining agreement from households and communities. A community working group was established at the beginning of the project that included representatives from the community, city government and local organizations which assisted the project management team in consultation and communication with households. The third challenge was the lack of funding sources for infrastructure construction. While it was potentially possible to attract

²⁴ This case study is a summary of information based on studies conducted by the World Bank, 2018b; and Chen and Pham, 2017.

²⁵ Other recommended case studies include the riverfront project in Pune, India (Betterment Levies); the sewerage programme in Bonifacio Global City, Metro Manila (Leveraging Publicly Owned Land); the metro rail project in New Delhi (Land Pooling); and the urban infrastructure improvement project in Bhutan (Land Pooling).

Figure 11
Part of the land pooling project in Ward 7, Tra Vinh, Viet Nam



Before land pooling and readjustment implementation

After deploying land pooling and readjustment

Source: Nguyen and others, 2018.

private funding by providing land as a return on investment, removing associated bureaucratic and administrative roadblocks would have been necessary to avoid significantly delaying the project.

Naya Bazar Land Pooling Project in Nepal

Land pooling and readjustment is considered a highly applicable scheme for Nepal where the Government has little control over private land and informal settlements, and the majority of the population live below the poverty line with minimal capability to improve urban infrastructure services either directly or via local tax contributions to the local government.

The Naya Bazar land pooling project²⁶ involved collaboration between different levels of government and international organizations, such as the Asian Development Bank. Among the actors involved, Kathmandu's Municipality Infrastructure Improvement Project was the main implementation body chaired by the mayor of Kathmandu Municipality City (KMC). There was also a user's committee, which represented the interest of all landowners and tenants in the project area. The project covered areas in two wards in KMC. Approximately 95 per cent of the land was privately owned by farmers. At project completion, road infrastructure covered 21.5 per cent of the area, compared with the previous 1.6 per cent.

²⁶ This case is a summary of information based on ADB, 2017b; and Pradhan, 2017.



A key challenge was that most of the people living in the project area were illiterate, and it took more than 18 months to simply explain the land pooling concept. It is therefore worth considering launching public awareness programmes before project initiation to educate the public about the merits of land pooling projects.

Congestion-charging and environmental user fees

Urbanization brings with it negative externalities, such as traffic congestion, water pollution, deforestation and air pollution. While environmental taxes can potentially play a large part in facilitating green and sustainable urban development, they are typically applied as a national policy and rarely practiced at the municipal level. Congestion-charging and environmental user fees, on the other hand, are usually locally designed and implemented policies that can simultaneously target environmental problems.

Both congestion-charging and environmental user fees can be used as incentives to reduce negative externalities, improve health and quality of life, provided they offer options for low income passengers. Congestion-charging schemes that feature sound technical design, enjoy solid political support and work hard to engender broad public acceptance can be a tool that enables cities to simultaneously tackle traffic congestion and high levels of pollution. Environmental user fees, on the other hand, encourage firms and households to take environmental responsibility and exercise self-regulation. These schemes can also potentially raise significant revenues, which may be used to improve the lives of users, and will likely further engender support for these initiatives.

Singapore's electronic road pricing

The Electronic Road Pricing system²⁷ was designed by the Land Transport Authority of Singapore to address the drawbacks of the



²⁷ This case study is a summary of information based on research conducted by Bhatt and Higgins, 2008; ADB and GIZ, 2015; Menon and Guttikunda, 2010, and Wilson, 2017; as well as information extracted from Singapore's Land Transport Authority website.

"Congestion-charging and environmental user fees are usually locally designed and implemented policies that can simultaneously target environmental problems."

existing, paper-based license scheme that controlled entry into a restricted zone around the central business district. The system charges vehicles per entry into the restricted zone. However, it is worth noting that Singapore is replacing its gantry-based infrastructure with a

more sophisticated, smartphone-sized onboard system using satellite data. The new system, which is expected to be rolled out in 2020, will be able to cover the entire island and levy charges according to the distance travelled, resulting in a full-scale road-pricing scheme.

Table 5
Categories of passenger car unit

Passenger car unit (PCU)	Vehicle type
0.5	 Motorcycles
1	  Cars, taxis and light goods vehicles
1.5	  Heavy goods vehicles and small buses
2	  Very heavy goods vehicles and big buses

Source: Singaporean Land Transport Authority. Available at www.lta.gov.sg/content/ltaweb/en/roads-and-motoring/managing-traffic-and-congestion/electronic-road-pricing-erp.html.



An in-vehicle unit uses satellite data to levy charges in the central business district of Singapore. Photo from Lewis Lehe (2017). A history of downtown road pricing. Available at <https://medium.com/@lewislehe/a-history-of-downtown-road-pricing-c7fca0ce0c03>. Accessed on 5 July 2018.



The system operates from 7 a.m. to 8 p.m. The charges range from zero to S\$2.00 per entry and vary by location, time of day and vehicle type. Charges are also adjusted quarterly by the Land Transport Authority in an attempt to keep driving speeds within pre-defined ranges (45-65 kph on expressways and 20-30 kph on other roads). The system cost S\$197 million (\$145 million) to develop, including S\$100 million for the in-vehicle units as well as S\$97 million for the gantries and the computing system. The annual operating cost is estimated to amount to approximately 20-30 per cent of revenues.

This case study indicates that an effective urban road pricing system needs to be designed to fit local traffic conditions and combined with other policy tools, such as vehicle entitlement fees and taxation. The physical infrastructure needs to be planned and exhaustively tested before being fully implemented. Concerns over citizen privacy need to be addressed: the system applies its charges to anonymously purchased cash cards

and only records a vehicle's license plate in the event of payment failure. Finally, the Government needs to exert a major effort in educating the public concerning the reasoning behind and the benefits of the scheme. Information about the system was communicated to the public presenting it as a necessary measure to help ensure long-term economic growth and maintain the quality of life of Singaporeans. Through this pre-policy education campaign, the Government was able to adjust the policy in response to public reaction before implementation of the system.

Environmental charging in Laguna Lake, the Philippines

Considered to be the first of its kind in the Philippines, the Environmental Users Fee System²⁸ is a market instrument used by the Laguna Lake Development Authority since 1997 to reduce industrial water pollution. It encourages companies via a "polluter pays principle" to invest

²⁸ This case study is a summary of information based on research conducted by Ancog and others, 2008; Briones, 2006; and Mercado, 2008, as well as information from Laguna Lake Development Authority's website (<http://gwhs-stg03.i.gov.ph/~s3lldagov/index.php/environmental-users-fee-system-eufs/>) and (<http://llda.gov.ph/wp-content/uploads/dox/br/euf/br33s1996.pdf>).



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"As with all community-based schemes, it is critical that a strong, respected and therefore effective governance regime be installed to help ensure that financing mechanism rules are properly adhered to."

and operate water pollution prevention and/or abatement systems within their establishment. The system covers all enterprises within the administrative jurisdiction of the Development Authority that discharge wastewater into the Laguna de Bay system. These include commercial/industrial establishments; agribased industries/establishments, such as swine farms and slaughterhouses; clustered dwellings (i.e. residential subdivisions); and domestic households.

Under the system, an enterprise is required to obtain a discharge permit, renewable annually, from the Laguna Lakes Development Authority. The permit costs 1,150 pesos (about \$22), adjustable every year, and is a legal authorization for the enterprise to discharge wastewater into the tributary rivers within the Laguna de Bay region. Permits are issued by the Development Authority only if the wastewater being discharged complies with the effluent standards set by the Government.

The system consists of a fixed and a variable fee. The fixed fee covers the administrative cost to implement the system and is based on the volume of wastewater that is discharged. The variable fee is calculated with reference to the biological oxygen demand (BOD) loading as well as to the volume and concentration of the wastewater being discharged. Since the implementation of the system in 1997, the Development Authority observed a reduction in industrial BOD loading, yet it also encountered a host of problems and issues, including insufficient coverage, inefficient fee collection and a failure to plough fees back into the industries and the communities. As with all community-based schemes, it is critical that a strong, respected and therefore effective governance regime be installed to help ensure that financing mechanism rules are properly adhered to.



4.3 Future policy pathways for urban finance

This chapter proposes three financing
mechanisms for sustainable urban development:

Encourage technology firms to
become more civic minded
and create sustainable smart
city solutions with social
enterprises

Adopt cybersecurity
safeguards in both digital and
physical urban infrastructure
development planning

Develop smart mobility
investment plans that prioritize
sustainable urban mobility
options for citizens

Expand viable smart city
funding mechanisms by
enabling cross-sector
sustainable partnerships and
business matching platforms

Scale up public-private
partnerships and community
schemes to transition to
localized housing finance
solutions

Adopt land-linked financing
mechanisms that leverage
urban growth to build
people-centred urban
infrastructure

Introduce congestion-charging
and environmental user fees to
improve urban air quality

"A common theme underlying the successful implementation of all three of the financing mechanisms presented here is the need to put into place a robust legal and policy framework."

A common theme underlying the successful implementation of all three of the financing mechanisms presented here is the need to put into place a robust legal and policy framework, which provides three tangible benefits.

First, it helps ensure the legitimacy of the proposed financing schemes and projects, including, importantly, authorization from higher levels of government, such as national legislation. Second, such a framework often ideally translates into the creation of a dedicated public authority that is concentrated on managing, implementing and monitoring the chosen schemes and projects. Third, a sound legal and policy framework helps secure participants' rights. If in place, such a framework can facilitate the implementation of the three future policy pathways for urban finance proposed here.

. 1

Scale up public-private partnerships and community schemes to transition to localized housing finance solutions

Housing development solutions are typically nationally led, large-scale programmes, although these assets are often later managed or maintained by local authorities. However, with large-scale national funding being increasingly scarce, it is becoming more important for local authorities themselves to design and implement housing solutions. Of course, local authorities also face credit limitations but as the scale of development – particularly for lower-income housing – at the local level is relatively smaller, local housing finance solutions can prove to

be practical, particularly where the public and private sector combine to develop and maintain the assets.

Successful housing finance requires more than simply an influx of capital. Municipalities need legal and policy frameworks that allow capital to be invested in the construction and maintenance of housing for targeted populations with a fair and equitable system for determining who is provided access to new housing and under what tenure conditions, namely rental or homeownership, and subsidized in what format, such as a percentage of salary.

Public-private partnerships. Adopting a PPP model in affordable housing projects potentially conveys a number of benefits for municipal governments. Better usage of the private sector's resources and expertise during project design and construction can relieve the financial distress caused by a Government facing cashflow problems from taking on debt, as well as better anticipation and balancing of housing demand and supply (Liu, Chan, and Wang, 2014). Successful affordable housing PPP programmes have been documented in developed countries, such as the United Kingdom, and middle-income countries, such as India (UN-Habitat, 2011).

Among different models of PPP, allowing a developer to build on government land is one of the more feasible approaches for municipalities in developing Asia-Pacific countries to adopt. In this approach, the Government provides the land while the private sector is responsible for housing design and construction.



*Community schemes.*²⁹ Successful municipal-level PPPs require strong and capable institutional support. The establishment of a housing board or a similar authority that is willing to dedicate time and effort to housing projects is crucial. In a community-based scheme, for example, the housing board's tasks also include conducting background investigations of contracting authorities and their household members, loan application examination and implementation monitoring (e.g. to ensure that the contracting authorities and households respect environmental regulations in the case of self-built housing construction). There is also a need for commitment and capacity from both the public and private sectors throughout the PPP cycle, encompassing feasibility study preparation, contract negotiation and operation monitoring. Of particular importance is for the public sector to lend its support for the land acquisition and transaction process, which entails identification of stakeholders' interests, agreements on sale and compensation, and land registration for smooth PPP implementation (Sengupta, 2006).

There needs to be a viable financial implementation structure. For housing PPP projects, the special purpose vehicle needs to have sufficient financial depth (i.e. an appropriate combination of equity, primary debt and subordinated loans). For community-based schemes, the authority should consider providing low-cost mortgages or zero down payment deals for the dwellers. Meanwhile, the local authority should ensure that the selected private partner is properly qualified to deliver

the required housing assets so as to minimize possible economic, financial and technical risks. In the experience of Kolkata in India, the chosen private sectors were "large, reputable indigenous business groups with established financial credentials" (Sengupta, 2006).

An enabling regulatory and policy framework should be put into place to support PPP projects. This framework includes authorization from higher levels government typically translating into national legislative support, such as in relation to contract enforcement regulations (UN-Habitat, 2016) and land acquisition laws (Sengupta, 2006). For housing projects in particular, municipal governments should also consider looking for policy support, such as subsidies or cross-subsidization with the private sector, to reduce the overall costs for private counterparts to keep developed housing costs at affordable levels.³⁰ Meanwhile, the local authority should also consider introducing rent control and quality requirement codes to better deliver good-quality affordable housing for its residents.

. 2

Adopt land-linked financing mechanisms that leverage urban growth to build people-centred urban infrastructure

Land pooling is an incentive-based and self-financing form of land value capture. It usually involves private landowners voluntarily contributing some portion of their land for public infrastructure development. In return, each landowner receives a smaller area of

²⁹ Community schemes can be applied to many other forms of urban infrastructure development, such as utility services (water, wastewater and solid waste), schools and health facilities.

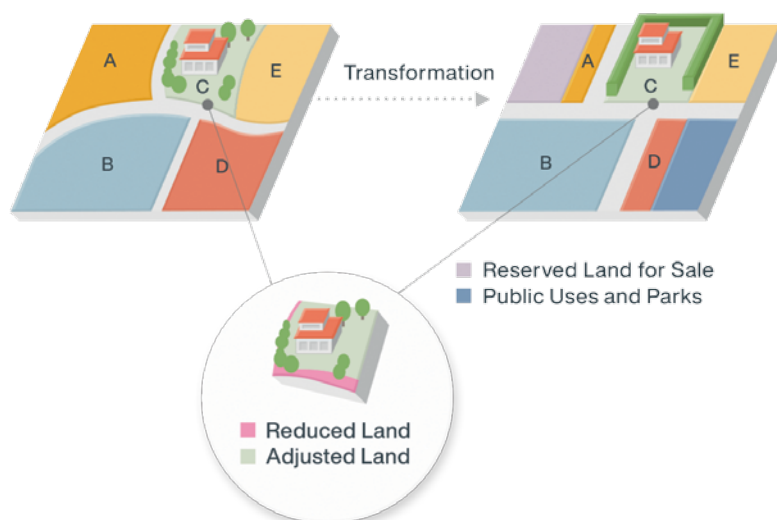
³⁰ A government subsidy might not be entirely applicable for municipal governments in developing countries.

"Land pooling is an innovative method that can minimize displacement and land expropriation, mitigate project costs and encourage citizen participation in policy decision-making."

land, but a portion, the value of which has appreciated due to the new infrastructure that has been developed at the site. In similar fashion, Governments can exchange land rights with the private sector in exchange for lower-cost or free construction services. Land pooling is an innovative method that can minimize displacement and land expropriation, mitigate project costs and encourage citizen participation in policy decision-making (World Bank, 2018b). In the figure below, contributed land has been redesigned for infrastructure and public space, while households (area C) remain in their original neighbourhood.

In order to capture and make use of the value of the land, the Government first needs to identify land titles. This is a critical and usually quite difficult step for the Government to undertake. The Government also needs to produce a full project feasibility study that encompasses project design and financing options as well as other forms of due diligence (e.g. environmental and resettlement impacts), carry out land valuation, conduct public consultation and finalize other preparation elements. It is recommended that the Government establish a separate, dedicated agency to manage these processes.

Figure 12
Conceptualization of land readjustment



Source: Nguyen and others, 2018.



The second step entails negotiation with landowners. The agency needs to be clear on land contribution rules: What percentage do landowners contribute? In what form, land or cash (in case some do not have enough land)? How much will be returned after project completion? What is the compensation for those who refuse to participate? After the majority of landowners agree with the scheme, as defined in the design phase, the Government can move on to the next step.

To ensure successful implementation, land pooling requires the following enabling factors:

- As previously discussed, a sound legal framework that supports land pooling to ensure the legitimacy of the project and to secure landowners' property rights
- Appropriate land registration and cadastre map system for land title identification and valuation
- A public body that is willing to handle the funding process; this requires political support from municipal and higher-level authorities
- Consent from the majority of landowners, as land pooling and readjustment is a voluntary process and hence requires majority agreement from the community to minimize adverse effects, such as displacement
- A site development plan to ensure that the project is aligned with the city's overall master development plan

One of the tool's major challenges is the difficulty in obtaining consensus from landowners. This requires the municipal government to have strong capacity in project management, particularly in relation to negotiation.

The municipality should also be prepared in case of project failure. One way to prevent this possibility is to have a legal framework that ensures timely project approval. This measure ensures that the project will not take too long and require re-evaluation of land value. The Government should also be prepared to inject public funding into land pooling and readjustment projects as an incentive for landowners as well as a precaution in case there are difficulties in achieving self-financing (see figure 13).

. 3

Introduce congestion-charging and environmental user fees to improve urban air quality

Urban road pricing schemes impose charges on vehicles entering into a specific urban zone, such as a central business district. Such charges can be made on a per entry basis or across longer periods, although typically no more than a single day. Such schemes are not principally designed to generate revenue for Governments, although revenue raised can be a useful by-product that builds citizen support if the revenue is clearly allocated to improving the environment or to funding alternative modes of transport. Rather, they are designed to influence car-dependent behaviour by shifting travel by time, mode and

Figure 13
Risks and solutions associated with land pooling and readjustment



route, as well as reducing overall travel demand. Only a few cities in the world have adopted this scheme. In the Asia-Pacific region, Tehran and Singapore have congestion pricing. Outside the region, Dubai, Stockholm and Gothenburg, London and Milan all maintain congestion charges (Lehe, 2017).

During implementation, the Government's role will include technology procurement, installation, testing, hiring and training of personnel, as well as communicating to the public how to use the system. After the charging system has been implemented, the Government needs to monitor daily operations and carry out system maintenance as well as conduct regular evaluation of scheme effectiveness and make adjustments as necessary.

A successful charging system requires a robust local legal and institutional basis to support and

enforce the system (see table 6). Cities need to clarify whether they have the right to levy charges in relation to a road that may not have been funded by the municipality and whether they have the right to apply detection, identification and registration systems in relation to privately owned vehicles. It is also important for cities to clarify whether they are able to enact their own local laws to enable implementation or they are reliant on the state or national legislative system.

A clear understanding of the local traffic and transport situation is needed during the preparation and feasibility stage as it affects the design of a sensible policy. Are there measurable levels of congestion and/or environmental outputs? Will a significantly large proportion of car owners be included in the scheme and be charged? What will be the anticipated impact of the scheme? Are suitable alternative transport modes available and of sufficient capacity?

Table 6

Process of designing a system for applying charges to vehicles using certain areas

Feasibility study	<ul style="list-style-type: none"> • Identify opportunities and barriers, including the need for a legal and political basis • Understand that the traffic situation (e.g. modal split in different areas, parking capacity, where the traffic exists) of the city has to match a better charging model (e.g. London uses daily-entry-based charging as it has a clear inner city ring area)
Functional design	<ul style="list-style-type: none"> • Define where, when, whom, and how much to charge through a comprehensive study of different alternatives
Technical design	<ul style="list-style-type: none"> • Develop the charging system (how the vehicles will be detected, how the system will be enforced), the control centre, and a customer service centre
Institutional and legal design	<ul style="list-style-type: none"> • Design a regulatory system (e.g. vehicle registration, license plate database) according to the gaps identified by the feasibility study to support the charging system • Identify policy windows to roll out the system (e.g. avoid election time)
Communication plan	<ul style="list-style-type: none"> • Design a strategy to communicate and educate the public and stakeholders about the system and its benefits to gain support, as well as to prepare for potential public criticism

Source: Adapted from ADB and GIZ, 2015.

Third, municipal governments in developing countries seeking to enact road pricing must reconcile their local priorities with national policies to promote domestic consumption and industrial growth. For example, some countries heavily subsidize their domestic car industry, which would constitute a conflicting agenda with any effort to reduce car use. If examined as a component of the overall fiscal policy package in a country, a congestion tax could be a costly policy measure with little ultimate impact when the public sector continues to call for incentives for more cars. Consequently, alternative policies, such as phasing out some subsidies and incentives, should also be part of any strategy to reduce automobile congestion in developing countries.

Finally, the policy will require public acceptance in the long term. This is one of the major challenges in introducing congestion charging policies. Failing to gain support from citizens might lead to political unrest. The evidence to date from cities that have implemented urban road pricing schemes is that concerns and opposition have been expressed during pre-project public survey process, but opinion has shifted towards supporting the scheme after the policy was implemented and its results were proven.

Conclusion

This chapter proposes that local governments – and particularly intermediary cities – consider utilizing (and adapting to their unique circumstances) three specific financing options and, in combination with traditional financing schemes, use these to help meet their infrastructure development needs. In order to achieve this objective, it is recommended that municipal governments:

- a. Construct a sound legal system and policy framework as these form the foundation of a solid financial structure. As stated in multiple places in this chapter, this foundation is not just to ensure the legitimacy and implementation of the government's work, but also to protect the rights of local people and gain trust from the public. It is also essential to make sure that local regulations and policies are in line with the regional and national frameworks;
- b. Consider taking steps – such as establishing strong intergovernmental relations – to support fiscal decentralization initiatives. Decentralized fiscal autonomy can provide cities with the opportunity to raise their own revenues as well as greater responsibility not just for delivering local goods and services, but also for constructing transparent municipal financial management systems, such as open budgeting and expenditure information-sharing;
- c. Learn from best practices. While this chapter has been devoted to finding “common (financing) solutions to common urban problems”, it is still important to keep in mind that there is no “one size fits all” when it comes to a local government seeking to finance its infrastructure and utility service needs. That said, governments can still learn from the kinds of experience presented in this chapter.

The road forward to finance the future Asia-Pacific city is challenging but not impossible. Better preparing cities to help finance themselves in a feasible way should be the goal of all national Governments given current trends in urbanization and development. It is the goal of this chapter that policymakers be able to take away some understanding of what has been applied elsewhere and seek to utilize similar mechanisms in their cities.

As a final note, it is worth considering how progress may be measured in relation to municipalities' ability to finance themselves. Metrics can indicate the degree to which local governments are becoming more financially autonomous, such as the share of national government transfers as a percentage of total municipal receipts; the share of own-source funding, including fees, tariffs and local property taxes as a percentage of total municipal receipts; and measurement of diversity in debt funding options utilized by municipalities. National and local governments could report on progress in relation to such key performance indicators and set targets for achieving financial autonomy goals. Given the Addis Ababa Action Agenda resolution to strengthen local initiatives with respect to the financing of basic public goods, it would be useful for development partners to assist national and city governments with the identification of a core basic agenda that improves leverage of capital and promotes scale and sustainability. The time for linking municipal demands with domestic finance has come.

